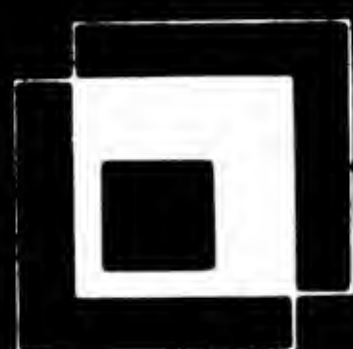


**U. S.  
OFFICIAL GAZETTE  
UNITED STATES  
PATENT OFFICE  
VOL. 902  
SEPTEMBER  
1972**

**MICRO PHOTO DIVISION**



**BELL & HOWELL**

**S<sub>W</sub>**



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## PATENT OFFICE NOTICES

### Earlier Notification of Serial Numbers

Various procedures are being revised in an effort to reduce pre examination processing time for newly filed patent applications and to implement the new Patent Application Locator and Monitoring System. The first change which has been effected results in the assignment of serial numbers in the Correspondence and Mail Division immediately after mail has been opened.

With the implementation of this new procedure, it is no longer necessary to submit two self-addressed post cards when early notification of the serial number is desired. If a self-addressed post card is submitted with a patent application, that post card will be stamped with both the receipt date and serial number prior to returning it to the addressee.

The identifying data on the post card should include: (1) applicant's name(s); (2) title of invention; (3) number of pages of specification, claims, and sheets of drawing; (4) whether oath or declaration used; and (5) amount and manner of paying the fee.

A return post card should be attached to each patent application for which a receipt is desired.

This notice supersedes the notice of March 10, 1971 (584 O.G. 970).

WILLIAM I. MERKIN,  
Assistant Commissioner for Administration.

August 9, 1972

## TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

### Chapter I—Patent Office, Department of Commerce

#### PART 2—RULES OF PRACTICE IN TRADEMARK CASES

##### Petition for Review of Interlocutory Decision

The Commissioner of Patents is amending § 2.127(b) of the rules of practice to extend the time for filing a petition for reconsideration or modification of an interlocutory decision. The existing rule requires that such petition be filed within 10 days from the date of the decision. Recent experience has demonstrated that this time period is insufficient in view of the possibility of delays in communicating the decision to the concerned parties. Accordingly, the rule is amended to permit filing of a petition within 30 days from the date of the decision. Since this change imposes no burden on any person, notice and public procedures thereon are deemed unnecessary.

Therefore, pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123) and section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), Part 2 of Chapter 1 of Title 37 of the Code of Federal Regulations is hereby amended as follows:

#### § 2.127 Motions.

(b) Any petition for reconsideration or modification of a decision must be filed within 30 days from the date thereof. Any brief in opposition shall be filed within 15 days after service of the petition.

*Effective date.* This amendment shall be applicable to all decision dated on or after September 1, 1972.

ROBERT GOTTSCHALK,  
Commissioner of Patents.

July 18, 1972.

Approved: July 21, 1972.

JAMES H. WAKELIN, Jr.,  
Assistant Secretary for  
Science and Technology.

[FR Doc. 72-11883; Filed 7-28-72; 8:54 am]

Published in 37 F.R. 15304; July 29, 1972

### Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

(D.C.N.Y.) Tuohy Patent No. 2,510,438 (88—54), for CORNEAL CONTACT LENSES. Held valid. *Plastic Contact Lens Co. v. W.R.S. Contact Lens Laboratories, Inc.*, 330 F. Supp. 441; 169 USPQ 684.

(D.C. Ill.) Butterfield Patent No. 2,544,246 (88—54.5), for CORNEAL CONTACT LENS. Held claim 1 invalid. *Butterfield v. Oculus Contact Lens Co. et al.*, 332 F. Supp. 750; 171 USPQ 527.

(D.C. Ill.) Grieb Patent No. 2,600,240 (128—1), for CONSTRUCTION OF INFANT INCUBATORS. Held claims 2, 4, 5, 8, 10 and 12 invalid. *Air-Shield, Inc. v. Air Reduction Co.*, 331 F. Supp. 673; 169 USPQ 450.

(D.C. Va.) Welch et al. Patent No. 2,602,103 (173—259), for BATTERY TERMINAL CONNECTIONS. Held not infringed. *Welch v. General Motors Corp.*, 330 F. Supp. 80; 170 USPQ 22.

(C.A. Fla.) Hobbs Patent No. 2,617,621 (251—31), for INSTRUMENT VALVE. Held valid and infringed. *Hobbs v. U.S. Atomic Energy Comm.*, 451 F.2d 849; 171 USPQ 713.

(C.A. Conn.) Potter Patent No. 2,626,841 (308—72), for SELF-ALIGNING BEARING. Held invalid. *Southwest Products Co. v. Heim Universal Corp.*, 443 F.2d 621; 170 USPQ 185.

(C.A. Ill.) Rhine Patent No. 2,628,568 (103—135), for HIGH PRESSURE PUMP. Held claim 3 valid and infringed, claim 1 not infringed. *Ellipse Corp. v. Ford Motor Co.*, 452 F.2d 163; 171 USPQ 513.

(D.C. Ill.) Gibbon Patent No. 2,648,327 (128—1), for INFANT INCUBATOR EQUIPMENT. Held claims 6, 8 and 10 invalid. *Air-Shield, Inc. v. Air Reduction Co.*, 331 F. Supp. 673; 169 USPQ 450.

(C.A. Okla.) Miller Patent No. 2,674,957 (104—64), for AMUSEMENT DEVICE RUNNING ON TRACKS. Held claim 6 invalid. *Boutell v. Volk et al.*, 449 F.2d 673; 171 USPQ 669.

(C.A. La.) Lapeyre et al. Patent No. 2,694,218 (17—2), for SHRIMP DEVEINING MACHINE. Held claim 3 valid and infringed. *Laitram Corp. v. DeepSouth Packing Co. Inc.*, 443 F.2d 928; 170 USPQ 190.

(D.C. Tex.) MeierJohan Patent No. 2,695,190 (204—90), for ARTICLE TRANSFERRING APPARATUS. Held claim 12 invalid. *Lodge & Shipley Co. v. Holstein and Kappert G.m.b.H.*, 322 F. Supp. 1039; 167 USPQ 625.

(C.A. Wash.) Regimbal et al. Patent No. 2,699,172 (130—30), for MACHINE FOR STRIPPING HOP VINES. Held claim 13 invalid. *Regimbal et al. v. Symansky et al.*, 444 F.2d 333; 169 USPQ 773.

(C.A. Conn.) Potter Patent No. 2,724,172 (29—149.5), for METHOD OF FORMING A SELF-ALIGNING BEARING. Held invalid. *Southwest Products Co. v. Heim Universal Corp.*, 443 F.2d 621; 170 USPQ 185.

(D.C. Ohio) Karr et al. Patent No. 2,733,145 (99—6), for CORN COB ABSORBENT. Held claims 4 and 7 invalid. *Karr et al. v. Botkins Grain & Feed Co.*, 329 F. Supp. 411; 169 USPQ 27.

(C.A. Mo.) Gallo Patent No. 2,746,262 (214—84), for ICE-MAKING MACHINE. Held claims 10 and 15—17 invalid. *Gallo v. Norris Dispensers, Inc.*, 445 F.2d 649; 171 USPQ 14.

(D.C. Calif.) Anderson et al. Patent No. 2,748,001 (99—6), for FOOD SUPPLEMENTS FOR RUMINANT ANIMALS. Held claim 2 invalid. *Rawlings et al. v. National Molasses Co. et al.*, 328 F. Supp. 913; 171 USPQ 21.

(C.A. W. Va.) Compton Patent No. 2,760,255 (29—156.8), for METHOD OF MANUFACTURING SCREW CONVEYORS. Held invalid. *Compton et al. v. Metal Products, Inc.*, 453 F.2d 38; 171 USPQ 257.

(D.C. Pa.) Barr et al. Patent No. 2,765,202 (308—212), for CAGE TYPE ROLLER BEARINGS. Held claims 1—3 invalid. *Roller Bearing Co. of Am. v. Bearings, Inc.*, 328 F. Supp. 923; 169 USPQ 407.

SEPTEMBER 5, 1972

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3

(D.C. Ill.) Gibbon Patent No. 2,778,617 (261—19), for COMPARTMENT HUMIDIFIER. Held claims 1 and 6 invalid. *Air-Shields, Inc. et al. v. Air Reduction Co., Inc.*, 331 F. Supp. 673; 169 USPQ 450.

(D.C.N.Y.) Callinicos Patent No. 2,821,297 (206—46), for PAPERBOARD BOX BLANK. Held invalid. *Boas Box Co. v. Proper Folding Box Corp.*, 330 F. Supp. 401; 170 USPQ 123.

(C.A. La.) Lapeyre et al. Patent No. 2,825,927 (17—2), for SHRIMP VEIN REMOVER. Held claim 1 valid and infringed. *Laitram Corp. v. DeepSouth Packing Co.*, 443 F.2d 928; 170 USPQ 190.

(D.C. Tex.) McHugh Patent No. 2,873,996 (294—61), for LIFTING CUP FOR AN ARTICLE TRANSFERRING APPARATUS. Held claim 8 invalid. *Lodge & Shipley Co. v. Holstein and Kappert G.m.b.H.*, 322 F. Supp. 1039; 167 USPQ 625.

(C.A. Ill.) Hause Patent No. 2,896,587 (121—45), for AUTOMATIC WASHING APPARATUS. Held claim 5 valid and infringed. *Molsbary Mfg. Co. et al. v. Aid, Inc.*, 447 F.2d 809; 171 USPQ 7.

(D.C. Fla.) Rosen Patent No. 2,907,614 (309—4), for PUMP ASSEMBLY. Held valid and infringed. *Rosen v. Kahlberg*, 337 F. Supp. 1075; 171 USPQ 386.

(C.A. Tex.) Clark Patent No. 2,913,386 (204—195), for ELECTROMECHANICAL DEVICE FOR CHEMICAL ANALYSIS. Held invalid. *Beckman Instruments, Inc. v. Chemtronics, Inc.*, 439 F.2d 1369; 165 USPQ 355.

(D.C. Tex.) Clark Patent No. 2,913,386 (204—195), for ELECTROMECHANICAL DEVICE FOR CHEMICAL ANALYSIS. Held invalid. *Beckman Instruments, Inc. v. Chemtronics, Inc.*, 328 F. Supp. 1132; 170 USPQ 467.

(D.C. Ala.) Bean Patent No. 2,914,823 (22—126), for CASTING MOLD. Held claim 1 valid and infringed. *Morris Bean & Co. v. Reichhold Chemicals, Inc.*, 329 F. Supp. 1396; 169 USPQ 813.

(C.A.N.Y.) Power Patent No. 2,919,061 (230—101), for VAPOUR VACUUM PUMPS. Held invalid. *Norton Co. v. Bendix Corp.*, 449 F.2d 553; 171 USPQ 449.

(D.C. Va.) Richman Patent No. 2,933,558 (178—7.3), for NOISE-IMMUNE SYNCHRONIZING-SIGNAL SEPARATOR FOR TELEVISION RECEIVER. Held claim 1 valid, not infringed. *Hazeltine Research, Inc. v. Firestone Tire & Rubber Co.*, 332 F. Supp. 408; 171 USPQ 481.

(C.A. Minn.) Johnson Patent No. 2,947,104 (43—3), for ANIMAL SWING FRAME TRAPS. Held claim 2 invalid. *Woodstream Corp. v. Herter's, Inc.*, 446 F.2d 1143; 170 USPQ 380.

(C.A.N.Y.) Lemelson Patent No. 2,962,837 (46—175), for TOY GUN CONTAINING A RICOCHET NOISE MECHANISM. Held invalid. *Lemelson v. Topper Corp. et al.*, 450 F.2d 845; 171 USPQ 705.

(C.A. Va.) Whitcomb Patent No. 2,967,030 (244—41), for BOUNDARY-LAYER CONTROL MEANS FOR LIFTING WINGS. Held not infringed. *General Dynamics Corp. v. Whitcomb*, 443 F.2d 630; 170 USPQ 242.

(C.A. Calif.) McCoy Patent No. 2,967,997 (324—73), for METHOD AND APPARATUS FOR CHECKING ELECTRONIC ANALOG COMPUTERS. Held claims 7, 8 and 13 valid and infringed. *Reeves Instrument Corp. v. Beckman Instruments, Inc.*, 444 F.2d 263; 170 USPQ 74.

(D.C.N.C.) Long Patent No. 2,974,467 (56—19), for PICK-UP AND THRESHING UNIT FOR PEANUT COMBINE. Held claims 1—4 invalid. *Long Mfg. Co. v. Lilliston Implement Co.*, 328 F. Supp. 268; 171 USPQ 228.

(D.C.N.Y.) Callinicos Patent No. 2,988,259 (229—34), for PAPERBOARD BOX BLANK. Held invalid. *Boas Box Co. v. Proper Folding Box Corp.*, 330 F. Supp. 401; 170 USPQ 123.

(D.C. Ala.) Bean Patent No. 2,991,267 (260—38), for COATED SAND. Held claims 1, 2, 3, 5, 6, 8, 9, 10, 11 and 16 valid and infringed. *Morris Bean & Co. v. Reichhold Chemicals, Inc.*, 329 F. Supp. 1396; 169 USPQ 813.

(D.C. Md.) Aghnides Patent No. 2,998,927 (239—430), for FLUID MIXING DEVICES. Held invalid. *Aghnides v. F. W. Woolworth Co.*, 335 F. Supp. 370; 172 USPQ 275.

(D.C.N.C.) Long Patent No. 3,007,475 (305—56), for PEANUT COMBINE. Held claims 1—8 invalid. *Long Mfg. Co. v. Lilliston Implement Co.*, 328 F. Supp. 268; 171 USPQ 228.

(C.A. Minn.) Conibear Patent No. 3,010,245 (43—90), for ANIMAL SWING FRAME. Held claim 5 invalid. *Woodstream Corp. v. Herter's, Inc.*, 446 F.2d 1143; 170 USPQ 380.

(C.A. Mich.) Muller et al. Patent No. 3,022,204 (148—15.5), for PROCESS FOR NITRIDING METALS. Held claim 1 valid and infringed. *Kolenc Corp. v. Motor City Metal Treating Co.*, 440 F.2d 77; 169 USPQ 77.

(C.A. Mo.) Rusoff Patent No. 3,047,395 (99—14), for DOG FOOD. Held invalid. *Ralston Purina Co. v. General Foods Corp.*, 442 F.2d 389; 170 USPQ 202.

(D.C. Ill.) Kinkaid Patent No. 3,075,167 (339—176), for PANEL CONNECTOR WITH FLAG-TYPE TERMINALS. Held claims 5—8 and 10 valid and infringed. *Amp Inc. v. Moler Products Co.*, 329 F. Supp. 1364; 170 USPQ 2.

(C.A. Tex.) Kay Patent No. 3,086,297 (35—35), for TALKING BOOK. Held claims 1—3 and 9 not infringed. *Marrin Glass and Associates v. Sears, Roebuck & Co.*, 448 F.2d 60; 171 USPQ 263.

(C.A. Ind.) Wahl Patent No. 3,173,583 (222—189), for BIN ACTIVATOR. Held claims 1—4 invalid. *Wahl et al. v. Carrier Mfg. Co.*, 452 F.2d 96; 171 USPQ 185.

(D.C. Ill.) Shoup Patent No. 3,174,863 (99—1), for SMOKELESS BROILER. Held not infringed. *Shoup v. Marshall Field & Co.*, 329 F. Supp. 1240; 170 USPQ 239.

(C.A. Ind.) Reese Patent No. 3,194,584 (280—406), for LOAD TRANSFERRING TRAILER HITCH. Held claims 5, 7 and 9 valid and infringed. *Reese et al. v. Elkhart Welding & Boiler Works Inc.*, 447 F.2d 517; 171 USPQ 129.

(C.A. Calif.) Holkesvick et al. Patent No. 3,197,204 (272—79), for EXERCISING DEVICE. Held invalid. *Ezer-Genie, Inc. v. McDonald et al.*, 453 F.2d 132; 171 USPQ 277.

(D.C. Calif.) George Patent No. 3,229,083 (240—8.16), for MINIATURE LAMP ASSEMBLY. Held not infringed. *Shelby Associates, Inc. v. Chicago Miniature Lamp Co.*, 332 F. Supp. 311; 170 USPQ 315.

(D.C. Fla.) MacIntosh Patent No. 3,238,736 (62—63), for METHOD OF FREEZING PERISHABLES. Held invalid. *Elmwood Liquid Products, Inc. v. Singleton Packaging Corp.*, 328 F. Supp. 974; 170 USPQ 399.

(C.A. Kans.) Baribo et al. Patent No. 3,246,336 (99—6), for CATTLE FEED BLOCK. Held valid. *J. E. Staley Mfg. Co. v. Harvest Brand, Inc.*, 452 F.2d 735; 171 USPQ 795.

(C.A.N.Y.) Kilngel Patent No. 3,275,724 (264—82), for METHOD OF AUTOCLAVING CONCRETE BLOCKS. Held invalid. *Struthers Scientific & Intern. Corp. v. Rappl & Hoenig Co. Inc.*, 450 F.2d 250; 172 USPQ 257.

(C.A. S. Dak.) Schlitz Patent No. 3,298,550 (214—505), for HAYSTACK-TRANSPORTING DEVICE. Held infringed. *Farmhand, Inc. v. Craven*, 455 F.2d 609; 173—USPQ 1.

(D.C.N.Y.) Rosenberg Patent No. 3,304,371 (179—1), for INFORMATION PROCESSING SYSTEM. Held claim 1, invalid. *Rosenberg v. Standard Food Products Corp.*, 331 F. Supp. 1065; 171 USPQ 545.

(C.A. Pa.) Kinnan Patent No. 3,307,363 (61—72.6), for APPARATUS FOR LAYING FLEXIBLE CABLE UNDERGROUND. Held invalid. *Henkels & McCoy, Inc. v. Elkin*, 455 F.2d 936; 172 USPQ 333.

(D.C. Fla.) Meece et al. Patent No. 3,327,745 (144—34), for TREE CUTTER DEVICE. Held claims 1, 2, 5, 7 and 10 valid but not infringed. *Harrington Mfg. Co. v. White*, 323 F. Supp. 1345; 169 USPQ 193.

(D.C. S. Dak.) Schlitz Patent No. 3,298,550 (214—505), for HAYSTACK TRANSPORTING DEVICE. Held not infringed. *Farmhand Inc. v. Craven*, 324 F. Supp. 207; 169 USPQ 811.

(D.C. Tex.) Heenan Patent No. 3,332,327 (94—1.5), for PAVEMENT MARKERS. Held claims 1—16 valid and infringed. *Amerace Esna Corp. v. Highway Safety Devices, Inc.*, 330 F. Supp. 313; 171 USPQ 186.

(C.A. Md.) Miller et al. Patent No. 3,356,226 (210—437), for SINGLE HELICALLY WOUND FILTER UNIT. Held valid but not infringed. *Filterite Corp. v. Tate Engineering, Inc.*, 447 F.2d 62; 170 USPQ 190.

(D.C. Ill.) Grosholz et al. Patent No. 3,338,233 (128-1), for INCUBATOR TEMPERATURE CONTROL SYSTEM. Held claims 5, 7, 8, 9, 10, 11 and 12 invalid. *Air-Shields, Inc. v. Air Reduction Co. Inc.*, 331 F. Supp. 673; 169 USPQ 450. (C.A.N.Y.) Klingel Patent No. 3,423,805 (25-133), for AUTOCLAVING APPARATUS. Held invalid. *Struthers Scientific & Intern. Corp. v. Rappl & Hoenig Co., Inc.*, 450 F.2d 250; 172 USPQ 257. (D.C.N.Y.) Slater Patent No. Re. 26,110 (323-22), for CONTINUOUSLY VARIABLE DIMMER SWITCH. Held claims 1, 2, 8 and 9 invalid. *Leviton Mfg. Co. v. Slater Elec. Inc.*, 331 F. Supp. 395; 169 USPQ 202.

## Patent Numbers For Which No Patents Exist

Issue of September 5, 1972			
3,688,351	3,688,693	3,689,089	3,689,509
3,688,390	3,688,725	3,689,125	3,689,518
3,688,422	3,688,761	3,689,130	3,689,542
3,688,423	3,688,769	3,689,170	3,689,552
3,688,427	3,688,786	3,689,179	3,689,581
3,688,428	3,688,792	3,689,196	3,689,599
3,688,442	3,688,793	3,689,201	3,689,600
3,688,446	3,688,817	3,689,228	3,689,606
3,688,462	3,688,819	3,689,230	3,689,624
3,688,469	3,688,842	3,689,231	3,689,627
3,688,470	3,688,862	3,689,235	3,689,628
3,688,480	3,688,887	3,689,247	3,689,631
3,688,481	3,688,903	3,689,256	3,689,635
3,688,489	3,688,913	3,689,261	3,689,642
3,688,503	3,688,923	3,689,263	3,689,650
3,688,519	3,688,927	3,689,281	3,689,666
3,688,529	3,688,949	3,689,306	3,689,682
3,688,536	3,688,970	3,689,321	3,689,685
3,688,547	3,688,975	3,689,340	3,689,706
3,688,572	3,688,976	3,689,363	3,689,707
3,688,591	3,688,977	3,689,368	3,689,712
3,688,603	3,689,006	3,689,390	3,689,745
3,688,613	3,689,034	3,689,409	3,689,765
3,688,616	3,689,043	3,689,416	3,689,834
3,688,618	3,689,068	3,689,420	3,689,869
3,688,628	3,689,070	3,689,422	3,689,916
3,688,629	3,689,073	3,689,423	3,689,918
3,688,651	3,689,085	3,689,426	
3,688,658	3,689,086	3,689,476	

## Certificates of Correction for the Week of Sept. 5, 1972

Re. 27,359	3,635,846	3,647,499	3,657,738
D. 223,789	3,636,033	3,647,680	3,657,853
D. 223,833	3,636,067	3,647,968	3,657,995
3,166,567	3,636,071	3,648,278	3,658,301
3,472,521	3,636,140	3,648,446	3,658,440
3,474,530	3,636,569	3,648,568	3,658,487
3,494,862	3,636,861	3,649,084	3,658,576
3,569,988	3,637,126	3,649,217	3,658,650
3,576,532	3,637,138	3,649,318	3,658,700
3,581,137	3,637,292	3,649,437	3,658,718
3,582,636	3,637,381	3,649,746	3,658,728
3,584,208	3,637,383	3,650,665	3,658,826
3,584,642	3,637,592	3,650,753	3,659,310
3,585,590	3,637,667	3,650,902	3,659,409
3,591,334	3,637,716	3,651,035	3,660,197
3,592,618	3,637,796	3,651,115	3,660,280
3,593,891	3,637,928	3,651,163	3,660,429
3,596,763	3,638,473	3,651,558	3,660,833
3,596,948	3,639,242	3,651,882	3,660,984
3,598,583	3,639,282	3,652,032	3,661,734
3,600,076	3,639,295	3,652,213	3,661,769
3,601,702	3,639,306	3,652,289	3,661,770
3,606,825	3,640,026	3,652,736	3,662,002
3,607,034	3,640,157	3,652,842	3,662,009
3,609,172	3,640,514	3,653,184	3,662,243
3,609,217	3,640,894	3,653,925	3,662,275
3,613,658	3,641,061	3,654,060	3,662,810
3,617,556	3,641,127	3,654,419	3,663,042
3,620,727	3,641,215	3,654,487	3,663,046
3,623,203	3,642,385	3,654,534	3,663,151
3,623,441	3,642,456	3,654,595	3,663,221
3,623,539	3,642,665	3,654,650	3,663,548
3,623,627	3,642,780	3,654,689	3,663,668
3,625,283	3,642,820	3,654,910	3,664,136
3,625,322	3,642,908	3,655,142	3,664,442
3,625,716	3,644,272	3,655,383	3,664,559
3,625,915	3,644,351	3,655,399	3,664,900
3,625,937	3,644,352	3,655,685	3,664,981
3,626,605	3,644,603	3,655,741	3,665,184
3,627,473	3,644,617	3,655,917	3,665,317
3,628,061	3,645,313	3,656,134	3,665,344
3,630,242	3,645,338	3,656,383	3,665,377
3,630,398	3,645,448	3,656,532	3,665,660
3,632,646	3,645,491	3,656,715	3,666,394
3,633,492	3,645,750	3,656,716	3,666,705
3,634,672	3,645,779	3,657,001	3,668,562
3,635,142	3,645,808	3,657,074	3,668,641
3,635,288	3,646,172	3,657,209	3,669,472
3,635,841	3,647,245	3,657,375	3,669,473
	3,647,466	3,657,536	

## Patents Available for Licensing or Sale

D. 223,048. TURTLE-SHELL TOY. Edwin B. Tillinger, 517B Teakwood, Laredo, Tex., 78040.  
 3,636,240. CABLE SPLICE PROTECTOR. Wilhelm Qjante, et al., Germany. Correspondence to: Michael Striker, 360 Lexington Ave., New York, N.Y., 10017.  
 3,640,043. WALL FACING. Max Langenslepen, Germany. Correspondence to: Michael Striker, 360 Lexington Ave., New York, N.Y., 10017.  
 3,648,493. LOCK CONSTRUCTION. Merit-Werk Merten & Co., K.G., Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.  
 3,653,221. LATENT STORAGE AIR CONDITIONING SYSTEM. Frank M. Angus, 6809 S. Ridge Drive, Dallas, Tex., 75214.  
 3,665,638. HYDRAULICALLY ACTUATED CHILDREN'S TOY. Elizabeth N. Weistrop, 505 Dolores Ave., Half Moon Bay, Calif., 94019.  
 3,669,200. AUTOMATIC PARKING DEVICE. Paul J. Odell, 116 Starkdale Road, Steubenville, Ohio, 43952.  
 3,673,615. BODY ATTACHED STILTS WITH VERTICALLY ADJUSTABLE STEPS. Forest M. Ellis, 2301 N. 59th St., Kansas City, Kans., 66104.

The Ansul Company offers to grant non-exclusive licenses on reasonable terms and conditions under the following patent.

Inquiries respecting licenses should be addressed to: The Ansul Company, Corporate Legal Department, 1 Stanton St., Marinette, Wis., 54143.

3,378,364. DEFOLIATION OF PLANTS.

General Motors Corporation is prepared to grant non-exclusive licenses under the following patent upon reasonable terms.

Applications for license may be addressed to: The Director, Patent Section, General Motors Bldg., 3044 W. Grand Blvd., Detroit, Mich., 48202.

3,504,563. EXTERNAL FINAL DRIVE DISCONNECT.

General Electric Company is prepared to grant non-exclusive licenses under the following 22 patents upon reasonable terms to domestic manufacturers.

Applications for licenses under the following patent may be addressed to: Patent Counsel, Telecommunication Products Dept., General Electric Co., Mountain View Road, Lynchburg, Va., 24502.

3,577,099. MICROWAVE OSCILLATOR HAVING DIRECTIONAL COUPLER IN FEEDBACK PATH.

Applications for license under the following patent may be addressed to: Division Patent Counsel, Switchgear Equipment Business Div., General Electric Co., 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,654,378. BUS DUCT ASSEMBLY.

Applications for license under the following patent may be addressed to: General Electric Co., Automation Business Div., 3001 W. Lake Road, Erie, Pa., 16501. Attn: Patent Counsel.

3,671,836. POWER CONVERSION CONTROL SYSTEM.

Applications for licenses under the following 2 patents may be addressed to: Division Patent Counsel, Space Division, General Electric Co., P.O. Box 8555, Philadelphia, Pa., 19101.

3,560,812. HIGH SELECTIVITY ELECTROMAGNETIC RADIATION DETECTING DEVICES.

3,668,006. FORMATION OF HIGH-STRENGTH HIGH-MODULUS COATED FILAMENTS.

Applications for licenses under the following 17 patents may be addressed to: General Electric Co., Appliance Components Business Div., 1635 Broadway, Fort Wayne, Ind., 46804. Attn: Patent Counsel.

D. 196,113. DYNAMOELECTRIC MACHINE.

Re. 24,977. CIRCUIT FOR MEASURING THE TEMPERATURE OR RESISTANCE CHANGE OF ENERGIZED ALTERNATING CURRENT APPARATUS.

2,819,356. MULTIPLE PUSH-BUTTON SWITCH.

2,869,094. ADJUSTABLE PANEL MOUNTING FOR CORD CONNECTOR.

2,882,002. MOTOR PROTECTOR BRACKET.

2,778,965. DYNAMOELECTRIC MACHINE HOUSING ASSEMBLY.

2,909,719. MOTOR PROTECTIVE MEANS.

2,961,556. STATOR CORE MEMBERS FOR DYNAMOELECTRIC MACHINES.

2,977,926. FLUID COATING APPARATUS.

2,978,371. FILM DRAWING PROCESS.

3,075,106. DYNAMOELECTRIC MACHINE.

3,153,184. MULTI-SPEED INDUCTION TYPE MOTOR.

3,165,816. METHOD OF MANUFACTURING DYNAMOELECTRIC MACHINES.



3,195,561.	PLASTIC VALVE DEVICE WITH TORQUE ABSORBING COUPLING AND BRACKET MEANS.	3,293,301.	PREPARATION OF CARVONE.
3,235,762.	STATOR FOR USE IN ALTERNATING CURRENT INDUCTION MOTORS.	3,325,553.	ISOMERIZATION OF ALPHA-PINENE.
3,328,577.	LAMPHOLDER WITH IMPROVED MOUNTING MEANS.	3,351,225.	NOVEL CAMPHANE DERIVATIVES.
3,638,606.	APPARATUS FOR CONTROLLING THE COATING OF SELECTED SURFACES OF AN ARTICLE OF MANUFACTURE.	3,359,342.	PRETREATING AND ISOMERIZING $\alpha$ -PINENE.
		3,383,422.	ALKOXYCAMPHANE AND CAMPHOR PROCESS.
		3,401,051.	OXIDIZABLE METALLIFEROUS POWDERS COATED WITH TERPENE ETHER.
		3,420,910.	COPPER SWEETENING PRETREATING BEFORE ISOMERIZING ALPHA-PINENE.
		3,423,219.	PROCESS FOR GRINDING PORTLAND CEMENT CLINKER.
		3,423,220.	SALT OF $\beta$ -PROPIOLACTONE ADDUCT OF ROSIN AND SIZING COMPOSITIONS MADE THEREFROM.
		3,466,267.	TERPENE RESIN COMPOSITIONS.
		3,510,514.	PROCESS FOR THE MANUFACTURE OF SORBIC ACID.
		3,551,404.	PROCESS FOR REMOVING COLOR AND ODOR IN TALL OIL ROSIN.
		3,565,649.	PROCESS FOR GRINDING PORTLAND CEMENT.
		3,594,438.	CATALYTIC CONVERSION OF 3-CARENE BY ETA ALUMINA.
		3,636,927.	ANIMAL LITTER AND PROCESS.
		3,660,512.	PROCESS FOR REMOVING SULFUR FROM CRUDE SULPHATE TURPENTINE OR DISTILLATE FRACTION THEREOF.
		3,346,650.	PREPARATION OF CITRONELLOL.

Glidden-Durkee Division, SCM Corporation, is prepared to grant licenses under the following 24 patents.

Applications for licenses may be addressed to: Glidden-Durkee Division, SCM Corporation, 900 Union Commerce Bldg., Cleveland, Ohio, 44115. Attention: Mr. Harris G. Beck, Director of Development and Technical Services.

2,961,452. TERPENE PRIMARY ALCOHOLS.

3,208,863. PORTLAND CEMENT CONCRETE MASONRY UNITS AND PROCESS FOR PREPARING SAME.

3,219,517. POLYKETENE-MONOKETENE CONDENSATION COPOLYMER REACTION PRODUCTS AND FIBER TREATMENT.

3,270,075. CATALYTIC TERPENE ISOMERIZATION PROCESS.

3,277,206. PREPARATION OF 2,6-DIMETHYL-2,7-OCTADIENE.

3,278,623. ALPHA PINENE ISOMERIZATION PROCESS AND PRODUCT.

3,288,688. p-CYME NE PURIFICATION PROCESS.

## PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner  
WILLIAM FELDMAN, Deputy Assistant Commissioner

### CONDITION OF PATENT APPLICATIONS AS OF AUGUST 22, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director.....	7-09-71
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—J. MARCUS, Director.....	6-01-71
Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director.....	8-02-71
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pre-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director.....	7-02-71
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant).....	4-02-71
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director.....	12-29-71
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Holography; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director.....	6-08-71
Ordnance, Firearms and Ammunition; Radar, Underwater Signaling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director.....	9-14-71
Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant).....	5-17-71
Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Airlifting; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director.....	9-27-71
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGNS, GROUP 290—R. L. CAMPBELL, Director.....	2-23-71
Industrial Arts; Household, Personal and Fine Arts.	
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director.....	7-23-71
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director.....	6-09-71
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director.....	8-03-71
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director.....	8-23-71
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director.....	7-01-71
Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	

Expiration of patents: The patents within the range of numbers indicated below expire during September 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,716,748 to 2,719,293, inclusive  
Plant Patents..... Numbers 1,417 to 1,422, inclusive



# REISSUES

## SEPTEMBER 5, 1972

Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

**27,467**  
**COMPLEXES OF  $B_{11}H_{14}^-$  AND  $B_{11}H_{13}^{2-}$**   
 Frank K. Klanberg and George W. Parshall, by E. I. du Pont de Nemours and Co., assignee  
 No Drawing. Original No. 3,455,977, dated July 15, 1969, Ser. No. 601,308, Dec. 13, 1966. Application for reissue Feb. 26, 1971, Ser. No. 119,423  
 Int. Cl. C07f 1/10, 1/12, 1/08

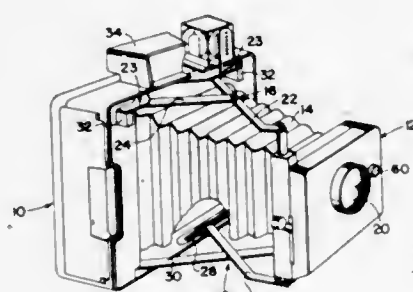
U.S. Cl. 260—430 4 Claims  
 Complexes selected from those represented by the formulas

- (1)  $(R_3P)_3MB_{11}H_{14}$   
 and  
 (2)  $[(R_3P)_4Ag]_2B_{11}H_{13}$

wherein M is either copper or gold and each R is phenyl, [aryl or alkaryl]. The compounds are prepared by reacting a salt of  $B_{11}H_{14}^-$  with a salt of the metal M in the presence of the phosphine and an inert solvent. The compounds are useful in depositing metal films on substrate surfaces.

**27,468**  
**CAMERA WITH EXPOSURE CONTROL AND FLASH APPARATUS**  
 Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.  
 Original No. 3,491,667, dated Jan. 27, 1970, Ser. No. 637,768, May 11, 1967. Application for reissue Jan. 7, 1971, Ser. No. 104,822  
 Int. Cl. G03b 15/04

U.S. Cl. 95—11 L 16 Claims

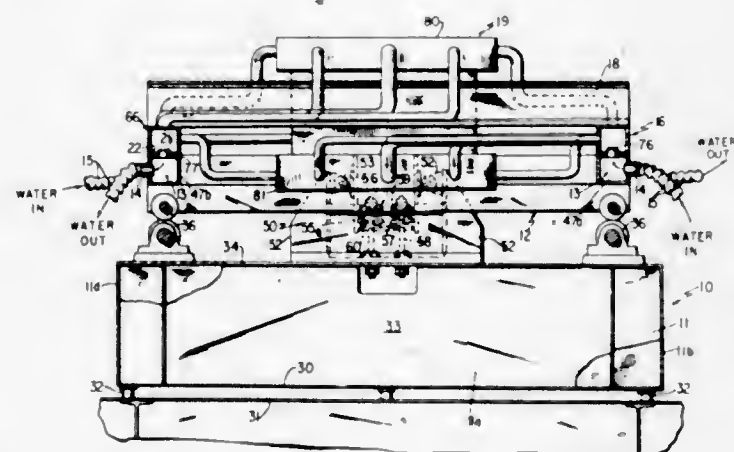


A photographic camera having a mounting member for the objective lens which is movable along the optical axis, a linkage system including a manually engageable element for supporting the mounting member for movement relative to the camera body, a socket for receiving a photoflash device, and a cover mechanism engageable with the manual element for controlling the amount of light emitted by the photoflash device as a function of the lens-to-subject distance for which the lens is focused. The cover mechanism and manual element are mounted on the exterior of the camera body for reciprocating motion in a direction transverse to the optical axis. The camera also has a control circuit for controlling the exposure time of the camera including a photoresponsive resistor which is normally coupled to the circuit and receives light from the subject being photographed, and a second resistor which is coupled to the circuit in place of the photoresponsive resistor when a photoflash device is being used. A motion transmitting member mounted within the cam-

era socket actuates a switch to couple either the photoresponsive resistor or the second resistor into the control circuit in response to insertion or removal of a photoflash device from the socket.

**27,469**  
**QUICK-CHANGE MOUNTING FOR WATER-COOLED MOLD**  
 Charles H. Bode, Jr., Upper St. Clair Township, Allegheny County, Pa., assignor to United States Steel Corporation  
 Original No. 3,381,743, dated May 7, 1968, Ser. No. 404,002, Oct. 15, 1964. Application for reissue May 4, 1970, Ser. No. 34,663  
 Int. Cl. B22d 11/00, 27/08

U.S. Cl. 164—283 8 Claims



A continuous-casting mold is mounted in a vertically reciprocating horizontal rectangular frame. On each of two opposite sides of the frame, separable cooling-water manifolds are mounted, one on the other, with self-acting make-and-break connections therebetween. The mold is secured within the frame to beams bridging the upper manifolds. Piping conducts water from the upper manifolds to and from water-cooling passages in the mold. Flexible hose connected to the lower manifold provides for a supply of cooling water thereto and its return. On lifting the beams, and the upper mold-supporting manifolds, the self-acting connections are broken.

**27,470**  
**VAT DYEING WITH SULFONATED BENZOYL-IMINODIANTHRAQUINONE VAT DYES OR VAT DYES WITH FIVE-FUSED RINGS**  
 Kurt Weber, Max Staebble, and Paul Ulrich, Basel, and Walter Kern, Sissach, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland  
 No Drawing. Original No. 3,464,780, dated Sept. 2, 1969, Ser. No. 452,356, Apr. 30, 1965, which is a continuation of Ser. No. 155,479, Nov. 28, 1961. Application for reissue Apr. 13, 1970, Ser. No. 28,156  
 Claims priority, application Switzerland, Nov. 29, 1960, 13,358/60

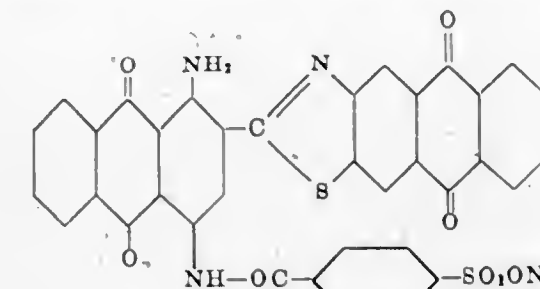
U.S. Cl. 8—34 7 Claims  
 Vat dyeing polyhydroxylated textile materials such as cellulosic or polyvinyl alcohol fibrous materials with vat dyes having two anthraquinone groups or 5 fused rings,

SEPTEMBER 5, 1972

U. S. PATENT OFFICE

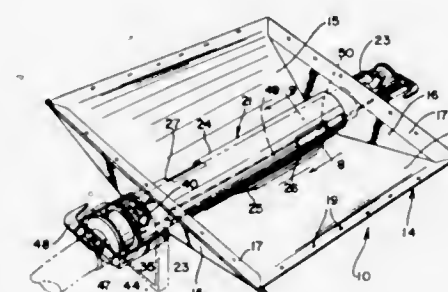
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each of said dyes having a sulfonated benzoylamino group thereon. In an example, the vat dye is



**27,471**  
**PNEUMATIC OUTLET ASSEMBLY FOR HOPPERS**  
 William D. Munding, Highland, Ind., assignor to Pullman Incorporated, Chicago, Ill.  
 Original No. 3,527,503, dated Sept. 8, 1970, Ser. No. 750,224, Aug. 5, 1968. Application for reissue Sept. 30, 1970, Ser. No. 76,962  
 Int. Cl. B65g 53/40

U.S. Cl. 302—52 12 Claims



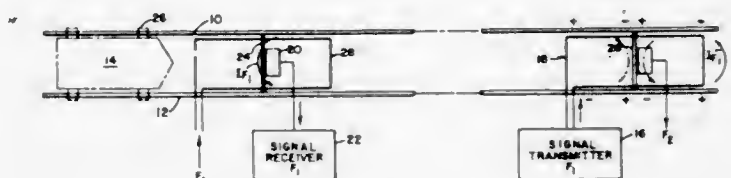
A pneumatic outlet assembly includes a pan which is connected to the discharge end of a hopper and comprises a stationary tube with an inner section disposed within the pan and having sections projecting outwardly with respect thereto. The inner section is slotted on its bottom surface and is further cut out on opposite sides to provide apertures adjacent opposite ends of the pan. A control tube is rotatably mounted in the stationary tube and includes an elongated intake slot and separate clean-out slots which provide for effective cleanout of the pan and tubes after most of the material has been removed by suction. The control tube is movable to a plurality of indexed positions to provide for the most efficient and rapid discharge of material from the hopper.

**27,472**  
**SIGNAL SYSTEM FOR DETERMINING THE PRESENCE OF A TRAIN VEHICLE**  
 George M. Thorne-Booth, Tarzana, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.  
 Original No. 3,526,378, dated Sept. 1, 1970, Ser. No. 662,711, Aug. 23, 1967. Application for reissue June 14, 1971, Ser. No. 152,784  
 Int. Cl. B61l 21/00

U.S. Cl. 246—34 CT 21 Claims  
 Audio frequency signals, operative with track circuits for the purpose of sensing the presence of a train vehicle in any signaling block circuit, are modulated for fail-safe speed control of train vehicles and for train operation information transmission.

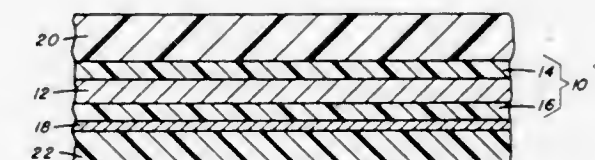
The train track is divided into signaling blocks of predetermined length, with a very low impedance short circuit connection placed across the track rails at the ends

of each such block. A signal transmitter operating at one of several audio carrier frequencies, with its output modulated at a subaudio rate, is coupled to the rails across the short circuit connection at one end of each block.



One or more cooperative signal receivers are coupled to the short circuit connection at the remote end of each block; intermediate receivers are coupled to the rails as required for desired train control.

**27,473**  
**THIN FILM COATING FOR SUNGLASSES**  
 Paul B. Mauer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.  
 Original No. 3,516,720, dated June 23, 1970, Ser. No. 715,464, Mar. 4, 1968. Application for reissue Oct. 21, 1970, Ser. No. 82,651  
 Int. Cl. B29d 11/00; G02b 1/10, 3/00, 7/10  
 U.S. Cl. 350—2 21 Claims



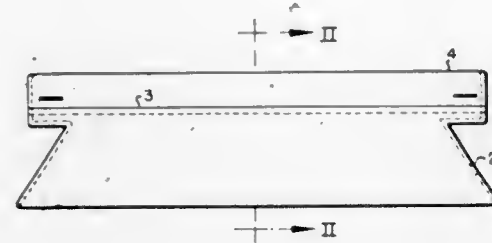
The present invention provides a multilayer article of manufacture for use in sunglasses which article consists of a thin metal foil "sandwiched" between two transparent layers of a material having an index of refraction approaching that of the metal foil, the outer surface of at least one of the transparent layers of the "sandwich" (preferably that which lies nearest the wearer's eye) being coated with a reflection-reducing material. The thin metal foil serves to filter infrared and ultraviolet rays while providing adequate transmission in the visible spectrum while the reflection-reducing material which preferably lies between the bulk of the article and the eye of the viewer serves to eliminate the back-reflectivity problem which has arisen in prior attempts to utilize thin metal foils as filters in similar sunglass applications.

**27,474**  
**COLLAR AND CUFF-LIKE GARMENT MEMBER AND METHOD OF MAKING IT**  
 Manuel A. Thomas, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.  
 Original No. 3,448,462, dated June 10, 1969, Ser. No. 396,257, Sept. 14, 1964. Application for reissue Aug. 25, 1969, Ser. No. 853,572  
 Int. Cl. A41b 3/00, 7/00; A41d 27/08; D06m 15/38, 15/52

U.S. Cl. 2—143 15 Claims  
 An abrasion resistant woven or knitted apparel fabric wherein the uppermost fibers of one face of the fabric are held tightly together by a polymeric coating composition. The fabric is further characterized in that a substantial



number of yarns below the coated face thereof have the ability to move freely relative to adjacent yarns. The



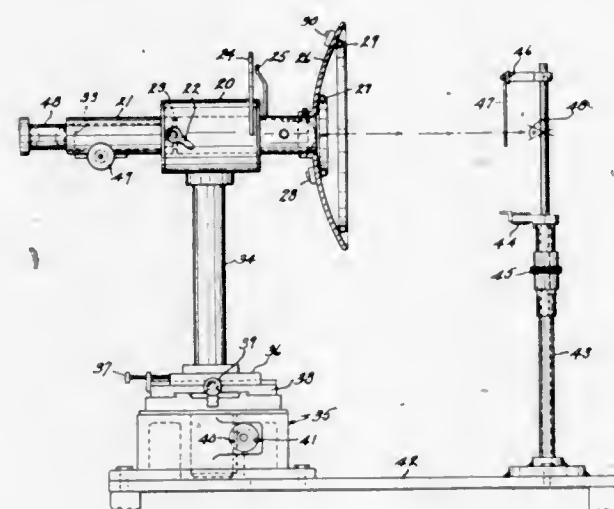
fabric is suitable for use in garment members such as collars, lapels, cuffs and the like.

**27,475**  
**METHOD FOR MEASUREMENT OF THE SHAPE AND CURVATURE OF A CORNEA**  
David Volk, 2460 Fairmount Blvd.,  
Cleveland, Ohio 44106

Original No. 3,542,458, dated Nov. 24, 1970, Ser. No. 710,557, Mar. 5, 1968. Application for reissue Feb. 8, 1971, Ser. No. 113,775

Int. Cl. A61b 3/00, 3/10  
U.S. Cl. 351—39

1 Claim



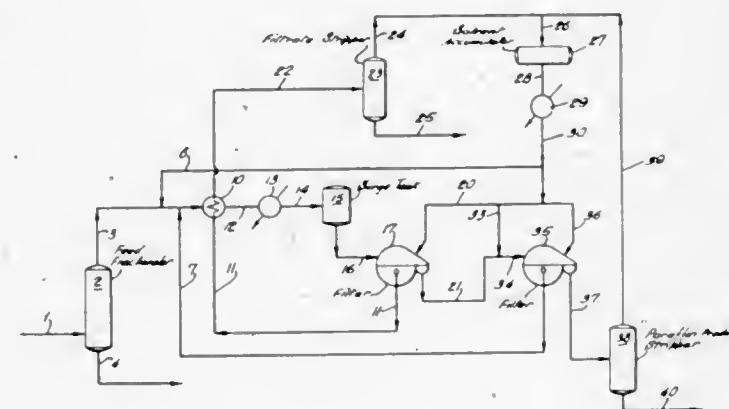
A method and apparatus are provided for measuring the apical radius of curvature and eccentricity of a conicoid surface, such as a cornea or lens, by supporting larger and smaller circular targets concentric to the optical axis of a telescope which has its optical axis aligned with the optical axis of the conicoid surface. The telescope is focused on the reflected image of the smaller target which is measured to determine the apical radius of curvature of the conicoid surface. The telescope is then focused on the reflected image of the larger target which is measured, and its size and the determined apical radius of curvature are used to determine the eccentricity of the conicoid surface.

**27,476**  
**SEPARATION OF LONG CHAIN NORMAL PARAFFIN HYDROCARBONS**

Thomas A. Cooper and Richard L. Coleman, Port Arthur, and Herbert C. Morris, Groves, Tex., and John I. Nixon, deceased, late of Bridge City, Tex., by Roberta Lois Nixon, administratrix, Bridge City, Tex., by Texaco, Inc., New York, N.Y., assignee  
Original No. 3,507,785, dated Apr. 21, 1970, Ser. No. 639,000, May 16, 1967. Application for reissue May 11, 1971, Ser. No. 142,150

Int. Cl. C07c 7/14; B01d 9/00  
U.S. Cl. 208—308

8 Claims



Separation of long chain normal paraffin hydrocarbons from hydrocarbon mixtures containing said normal paraffin hydrocarbons by distillative separation of a fraction having an end point selected to include the highest carbon number constituent of the desired normal paraffin hydrocarbon product to the exclusion of the next higher carbon number normal paraffin hydrocarbon followed by solvent fractional crystallization involving dilution of said fraction with a solvent and chilling to a temperature effective to precipitate the lowest carbon number constituent of the desired normal paraffin hydrocarbon product to the exclusion of lower carbon number constituents.

**PATENTS**  
GRANTED SEPTEMBER 5, 1972  
**GENERAL AND MECHANICAL**

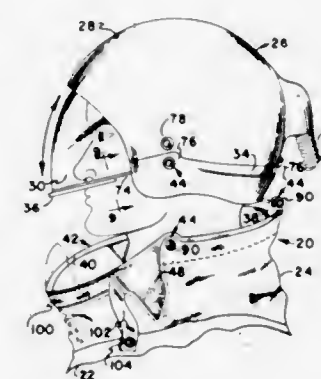
**3,688,314**  
**PROTECTIVE GARMENT**  
Rodney S. Hill, Dover, Del., assignor to ILC Industries, Inc.,  
Dover, Del.

Filed Dec. 10, 1969, Ser. No. 883,962

Int. Cl. A62b 17/00

U.S. Cl. 2—2.1 A

21 Claims



A protective environmental suit and helmet device having retaining means in the lower portion of the helmet and sealing means in the margin of a distensible neck portion of the suit adapted to engage over the retaining means on the helmet to provide a quick sealing of the suit to the helmet to protect the wearer from a hostile environment.

**3,688,315**  
**GARMENT WITH A REMOVABLE SECRET POCKET FLAP**

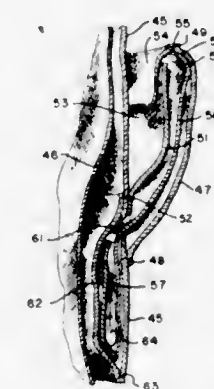
Helmur Oliver, 160 9th Ave., New York, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,453

Int. Cl. A41d 27/20

U.S. Cl. 2—252

2 Claims



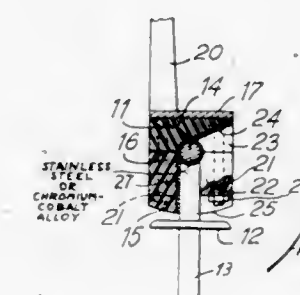
A garment with a pocket opening either in patch pocket form or otherwise is provided with a secret pocket and flap that is attached either to the upper edge of the main pocket or to the garment or adapted to be inserted through the garment cloth into a pocket within the garment, but at the same time this flap is attached at all times to one side or the other of the pocket and when it is pulled out and allowed to depend from the upper edge of the pocket its own pocket is readily accessible. When the flap and the secret pocket is returned to the main pocket the opening of the flap pocket will lie against one wall of the pocket and closed by the main flap from access by a hand extended into the main pocket. The flap can also be long and its pocket can be extended downwardly beyond the lower end of the pocket and into a pocket on the inner wall of

the garment cloth, the garment cloth having been provided with an opening through which the flap and its pocket can be extended.

**3,688,316**  
**TOTAL KNEE JOINT PROSTHESIS**  
Jean Lagrange, 7, rue Pasteur, Saint-Cloud, and Emile Letournel, 15, Avenue de la Porte de Cholsy, Paris, both of France  
Filed Nov. 4, 1970, Ser. No. 86,695  
Int. Cl. A61f 1/24, 1/00

U.S. Cl. 3—1

11 Claims



A prosthetic knee joint is formed from a polymeric bearing member, with an upstanding shank received in the femoral shaft, and a metallic rocking member inserted into the tibia. The rocking member, having a stem with a disk below the bearing member abutting the tibia, is pivotally supported with the aid of a transverse pin in the bearing member which is partly out away at the rear to permit a relative swinging of the two members over an arc of about 120°.

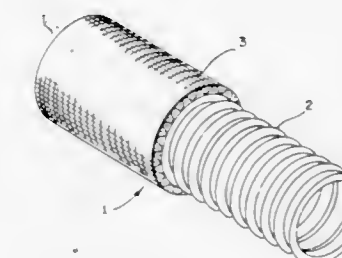
**3,688,317**  
**VASCULAR PROSTHETIC**  
Leonard D. Kurtz, Woodmere, N.Y., assignor to Sutures Inc.,  
Coventry, Conn.

Filed Aug. 25, 1970, Ser. No. 66,710

Int. Cl. A61f 1/24

U.S. Cl. 3—1

6 Claims



A vascular prosthetic comprising a multilayered tubular fabric contains an anticoagulant on an inner layer to reduce the likelihood of clot formation. An outer layer does not contain an anticoagulant and may contain an anticoagulant inhibitor or antagonist to permit clot formation adjacent the outer layer to thus prevent exsanguination.



3,688,318

**METHODS AND ARTICLES FOR PREVENTING CLOTTING OF BLOOD**

Louis J. Alfano, San Diego, Calif., assignor to Introspec, Inc., San Diego, Calif.

Filed Sept. 17, 1970, Ser. No. 73,193  
Int. Cl. A61f 1/24, 1/22

U.S. Cl. 3-1

8 Claims

A method for preventing the formation of clots in blood in contact with synthetic articles and preventing deterioration of said synthetic articles involving coating the entire blood contacting surface of said articles with a layer of molybdenum and placing the molybdenum coated surface of said article in contact with blood. The present invention is well adapted to be utilized in replacing cardio-vascular organs such as blood vessels and heart valves because the molybdenum coated articles of this invention are flexible, will last indefinitely when in contact with blood, will not react with the blood and are nonthrombogenic.

3,688,319

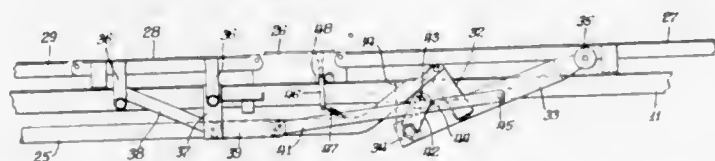
**HOSPITAL BED**

Barron J. Gulliver, Stevens Point, Wis., assignor to Joerns Furniture Company, Stevens Point, Wis.

Filed Oct. 19, 1970, Ser. No. 81,655  
Int. Cl. A61g 7/06

U.S. Cl. 5-66

7 Claims



Hospital bed with two actuating screws, one for Hi-Low and the other for spring head section, with selectively operable control for interconnecting thigh section for operation with head section by interengagement of slotted link with pin head operating mechanism. Spring connects control member to link to prevent disengagement of link from pin by control member unless head section is in horizontal position.

3,688,320

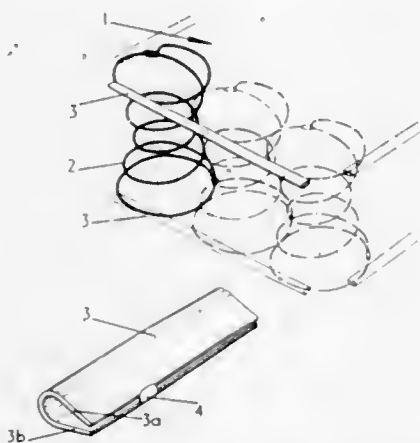
**SPRING UNITS FOR FURNITURE**

Roderick James Hartley, Cross Hills, near Keighley, and George Charters, Skipton, both of England, assignors to Silentnight Limited, Colne, Lancashire, England

Filed Jan. 19, 1971, Ser. No. 107,705  
Int. Cl. A47c 23/04, 25/00, 25/00

U.S. Cl. 5-260

3 Claims



A spring unit for furniture in which a plurality of helical springs are disposed on parallel axes in which adjacent upper and lower helices are integrated by channel elements having opposed legs of the spring into tangential, gripping relation to

the helices; the channel elements having free ends isolating the spring effect, and in which the channel elements are produced from an extruded plastic material.

3,688,321

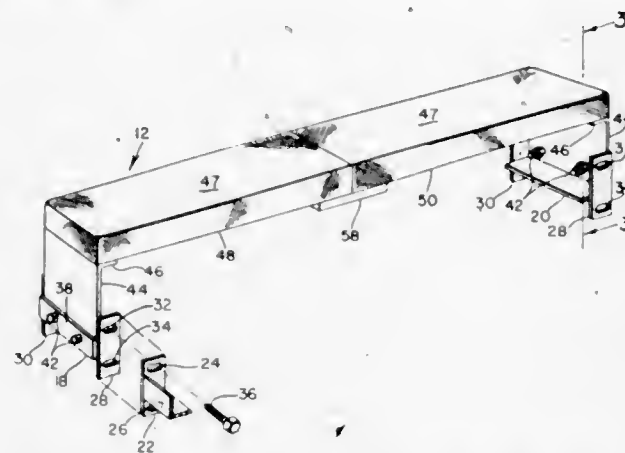
**BED EXTENDER**

Jack J. Moss, 640 Ardleigh Drive, Akron, Ohio, and Archie F. Hunt, 129 Kent Court, Akron, Ohio

Filed Oct. 12, 1970, Ser. No. 80,013  
Int. Cl. A47c 19/00; A61g 7/02

U.S. Cl. 5-317

3 Claims



A bed extender for attachment to the side rails of a bed frame and which includes members attachable to the side rail and having upwardly extending members securable thereto. The upwardly extending members are engageable with a transversely extending support means which is positioned flush with the upper surface of the mattress on the bed but at the head end thereof to extend the bed.

3,688,322

**MACHINE FOR UPSETTING BOLTS AND SIMILAR ARTICLES**

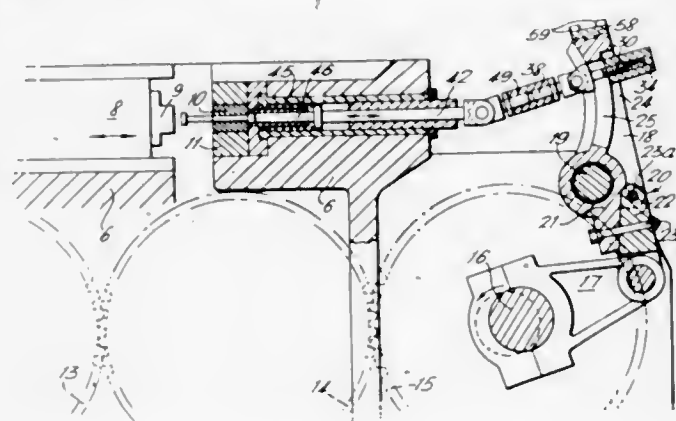
Gerardus C. Van De Meerendonk, Helmond, Netherlands, assignor to Nedischroef Octrool Maatschappij N.V., Helmond, Netherlands

Filed July 8, 1970, Ser. No. 53,092

Int. Cl. B21k 1/44, 1/58; B23g 9/00; B21J 5/08

U.S. Cl. 10-12 R

10 Claims



The present invention relates to a machine for upsetting bolts and similar articles comprising dies fixed in the frame of the machine, a carriage reciprocable with regard to said dies, holding means for holding punches attached to said carriage, said punches being engageable with said dies by means of said reciprocable carriage, and pins which can be shifted in said frame and positioned coaxially with said dies, for ejecting the upset articles from said dies.

Because of the oscillation of the shaft and the action of the ejecting levers by means of cams it is impossible to drive such a machine with an elevated number of revolutions since the moving masses are considerable.

Furthermore, in such a machine it has been unusual up to now to apply a separate ejecting lever for each processing station. Said ejecting levers receive their oscillation movement from an oscillation shaft, an ejecting cam being provided for each lever said cams being subjected to a cumbrous and time-consuming adjustment or must be replaced when the ejecting length must be changed.

holder to compensate for the difference in the rate of movement of the tap into the workpiece and the drive speed of the rotary power source. A positive rotary drive is applied through a double ended pin transversely carried by a portion of the tap holder. The pin is engaged by the surfaces of a bayonet-type slot in the holder.

3,688,323

**APPARATUS FOR CHASING AND REPAIRING THREADS**

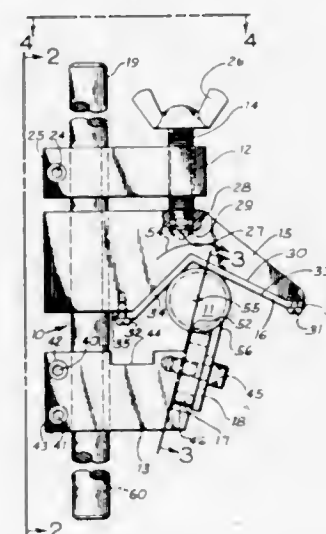
Robert F. Bruck, 400 North St., P.O. Box 69, Logansport, Ind.

Filed Sept. 4, 1970, Ser. No. 69,732

Int. Cl. B23g 1/26, 5/00

U.S. Cl. 10-1 B

5 Claims



An apparatus for repairing damaged threads on a shaft, rod or other similar member. An adjustable plate, a cutter support block and a pressure block are slideably mounted to a rod. Fasteners securely fasten the adjustable plate and the support block to the rod whereas the pressure block is loosely mounted to the rod. The support block is suspended from the adjustable plate by a wing bolt threadedly received in the adjustable plate with an end seating in the pressure block. A V-shaped pressure plate is fixedly fastened to the pressure block cradling the top of the threaded member to be repaired. A chaser having a cutting edge matched to the threads of the member to be repaired is mounted to the support block beneath the pressure plate. A thread support is mounted to the support block having an angular end abutting the member to be repaired.

3,688,324

**TAP HOLDER**

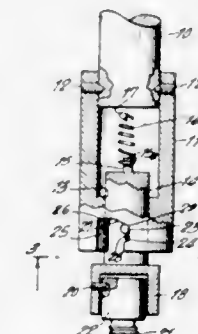
Neil W. Gosman, Northport, N.Y., assignor to Maehr Lesnor Manufacturing, Farmingdale, N.Y.

Filed Nov. 19, 1970, Ser. No. 91,065

Int. Cl. B23g 5/14

U.S. Cl. 10-141 H

3 Claims



A tap holder which couples a threading tap tool to a power rotary drive. Free vertical movement is provided for the tap

3,688,325

**TORSION ACTION CUTTING AND MARKING DIE**

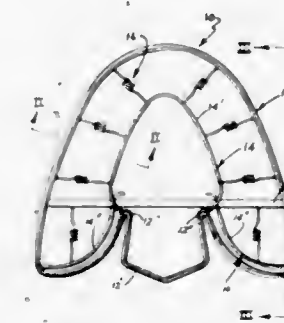
Peter D. Panter; Claude P.-E. Denis, both of Grand Rapids, and Gerhard P. Kaempfer, Wyoming, all of Mich., assignors to Wolverine World Wide, Inc., Rockford, Mich.

Filed June 4, 1970, Ser. No. 43,506

Int. Cl. A43d 7/12

U.S. Cl. 12-52.5

4 Claims



A combination cutting and marking die having the marking die portions resiliently attached to the cutting die portions with a unique torsion spring arrangement.

3,688,326

**METHOD OF MANUFACTURING LEATHER GOODS AND THE LIKE**

Raymond Charles White, Newtonhurst, Darlington Road, Bath, and William Frank Walker, 8, Friars Close, Croyland Park, Wellingborough, both of England

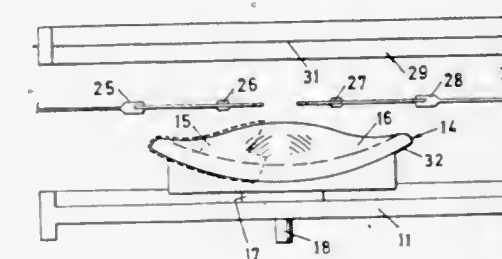
Filed March 19, 1971, Ser. No. 126,042

Claims priority, application Great Britain, April 13, 1970, 17,384/70

Int. Cl. A43d 11/00

U.S. Cl. 12-146 C

4 Claims



Method of and apparatus for manufacturing goods made of leather or like material in which a flat piece of the material, preconditioned to be readily deformable, is located between a diaphragm and a former, the diaphragm is moved to nip the material between the diaphragm and the former, the locating means is removed, the diaphragm is moved towards the former until a frame in which it is held makes a vacuum-tight seal with a table on which the former is mounted, and vacuum is applied to cause the diaphragm to draw and shape the material closely around the former.



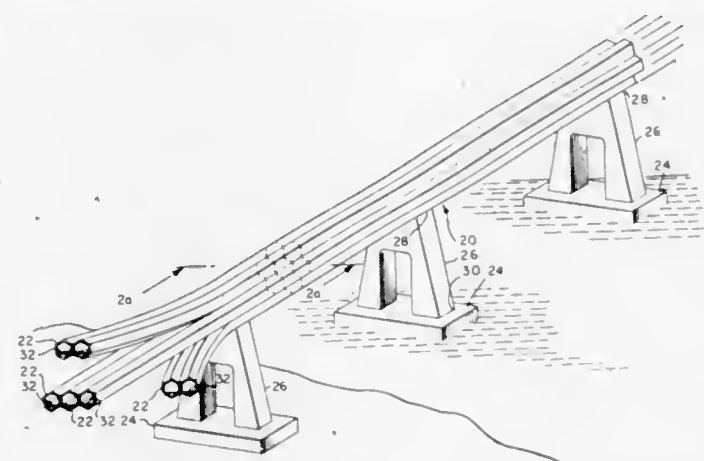
### 3,688,327 CELLULAR BUILDING STRUCTURE

Rolf F. Marshall, 2 Warrenton Court, Huntington, N.Y.  
Filed July 27, 1970, Ser. No. 58,213

Int. Cl. E01d 1/00

U.S. Cl. 14-1

8 Claims



A cellular building structure comprised of a multiplicity of cells, each cell in the structure being a substantially fully enclosed unit and having a regular geometric cross-sectional configuration. The cells are situated around and in close proximity to one another with the sides of any one of the cells being at an angle supplementary to a side of another one of the cells, where the supplementary sides are adjacent and parallel to one another to form a compartmentalized cell structure, or where adjacent cells share a common side.

### 3,688,328

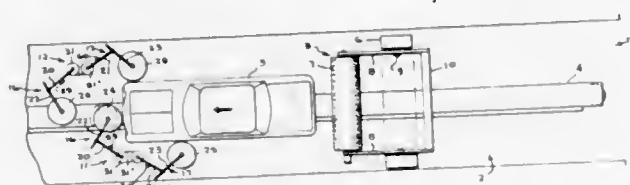
#### SIDE BRUSH ASSEMBLY FOR CAR WASH APPARATUS

Larry C. Wilkins, 18 Caddington Court, West Lafayette, Ind.  
Filed Sept. 23, 1970, Ser. No. 74,774

Int. Cl. B60s 3/06

U.S. Cl. 15-21 D

11 Claims



Automatic car wash apparatus having brush assemblies on each side of the path of a car moving through the car wash, wherein each side brush assembly includes a pair of brush units pivotally mounted upon fixed post support means, with the brush units extending in opposite directions either toward, or away from, one another and being yieldingly biased toward a predetermined, at rest, angular relationship with respect to one another. Each brush mounting unit has two arm components, pivotally interconnected, with the free end of one arm pivoted to the fixed post support means and the free end of the other arm carrying a brush. The arm components of each unit have a predetermined minimum angular relationship, and they are yieldingly biased to assume that angle.

### 3,688,329

#### CONTROL MECHANISM FOR HORIZONTAL VEHICLE-SCRUBBING BRUSH

Uberto Capra, Alite Ceccato, Vicenza, Italy  
Filed Dec. 18, 1970, Ser. No. 99,408

Claims priority, application Italy, Dec. 20, 1969, 26091 A/69

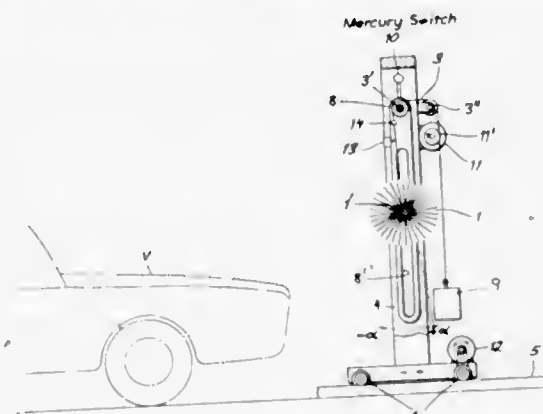
Int. Cl. B60s 3/06

U.S. Cl. 15-21 E

7 Claims

A horizontal scrubbing brush for a vehicle-washing apparatus is vertically guided on a support which is pivotally

mounted on a portal frame for swinging about a horizontal axis, on either side of a normal vertical position, whenever the brush is deflected by contact with a transverse vehicular surface. If the swing exceeds a predetermined angle of inclination, a hoist motor is operated by an inclination-sensing switch to raise the rotating brush until the latter has returned to substantially its normal position, the weight of the brush being



### 3,688,330

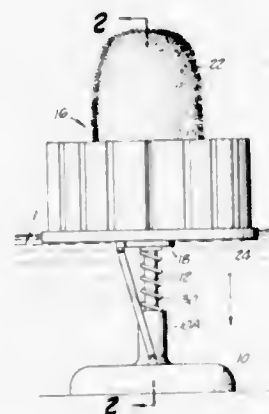
#### GLASS WASHING DEVICE

Walter J. Zipper, 463 Mesa Road, Santa Monica, Calif.  
Filed March 15, 1971, Ser. No. 124,025

Int. Cl. B67c 1/04

U.S. Cl. 15-76

1 Claim



Drinking glasses are washed in a device having a brush assembly which is slidably mounted on a vertical post extending upwardly from a supporting base. A spring normally urges the brush assembly in an upper position. A link has its opposite ends swiveled respectively to said base and to said brush assembly to cause said assembly to turn about the axis of said post when a glass is inserted in said assembly and pressed downwardly towards said base.

### 3,688,331

#### MOP HAVING A HOLDER WITH CLAMPING JAWS

Julian I. Saltzstein, Cleveland, Tenn., assignor to American Uniform Company, Cleveland, Tenn.

Filed June 7, 1971, Ser. No. 150,296

Int. Cl. A471 13/252

U.S. Cl. 15-229 A

19 Claims

A mop holder for holding a mop head and a mop handle, the mop holder comprising a one-piece construction of a rod shaped to provide a first pair of clamping arms and a second

pair of clamping arms moveable between an open position thereof and a clamping position thereof. A lever is pivotally connected to the first pair of clamping arms and is shiftable between an unlatched position thereof and a latched position thereof to move the pairs of clamping arms from the open position thereof wherein a mop may be inserted therebetween

with the cover and being operable in response to said rotatable element continuing its rotation to move said cover from its open position towards its closed position whereby the cover is not moved to its closed position until the wiper assemblies are in their parked position.

### 3,688,333

#### DRIVE MECHANISM FOR WINDSHIELD WIPERS

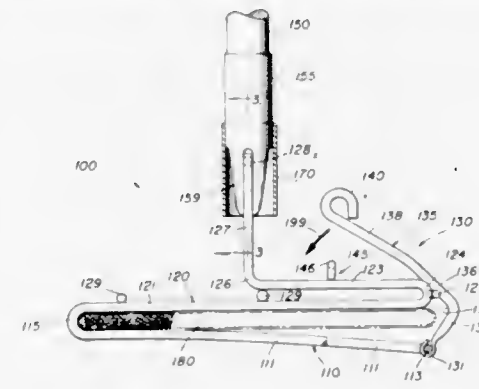
James J. Cimino, Bellbrook, and David C. Bodem, Kettering, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 12, 1971, Ser. No. 142,603

Int. Cl. B60s 1/08

U.S. Cl. 15-250.16

2 Claims



to the clamping position thereof wherein the mop head is firmly clamped therebetween. A casting may be provided for holding the mop handle, the casting being connected to a pair of third clamping arms extending from the one-piece construction, and a sleeve may be provided surrounding the casting and the pair of third clamping arms firmly to hold the mop handle within the one-piece construction.

### 3,688,332

#### MECHANISM FOR OPENING AND CLOSING A COVER FOR A CONCEALED WINDSHIELD WIPER SYSTEM

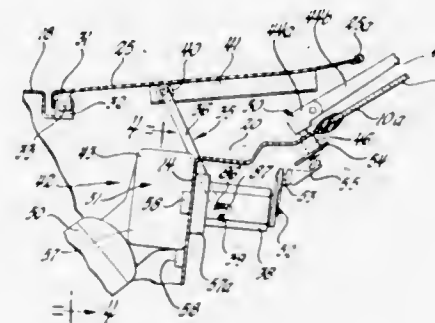
James D. Bellware, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed April 7, 1971, Ser. No. 132,101

Int. Cl. A471 1/00; B60s 1/02

U.S. Cl. 15-250.16

3 Claims



In a preferred form, this disclosure relates to a cover concealed windshield wiper apparatus for an automotive vehicle having a windshield which extends within a well extending transversely of the vehicle and a cover movable between a closed position in which it covers the well and an open position in which it uncovers the well. The windshield cleaning apparatus includes a pair of spaced oscillatable windshield cleaner assemblies and an actuating mechanism for oscillating the windshield cleaner assemblies between inboard and outboard positions during running operation and for parking the same in its inboard position in the well when running operation is being terminated. The actuating mechanism includes a rotary crank arm operatively connected with the windshield cleaner assemblies, a drive motor including a rotatable element and having an interruptible driving connection with the crank arm and means for establishing a driving connection between the rotatable element and the crank arm during running operation and for disestablishing the driving connection therebetween when the wiper assemblies reach their inboard position when running operation is being terminated while allowing the rotatable element to continue rotation through a given angular extent prior to de-energizing the motor, and a cover operating mechanism operatively connected

In a preferred form, this disclosure relates to a windshield wiper apparatus having a pair of windshield wipers which are adapted to be oscillated across a windshield between inboard and outboard positions during running operation and which are adapted to be moved to a depressed park position when wiper operation is being terminated. The windshield wiper apparatus includes a pair of oscillatable drive pivots to which the wipers are drivingly connected, a drive mechanism having a rotatable output shaft and a crank arm connected to the output shaft and a drive transmission or linkage operatively connected with the crank arm and the drive pivot for oscillating the same to oscillate the wipers. The drive mechanism is operable to rotate the crank arm through a first orbit of the given radius during running operation and is operable to eccentrically move the crank arm to increase the throw thereof to effect movement of the wipers from their inboard position toward their park position when wiper operation is being terminated. The crank arm is a generally U-shaped member having one leg connected to the output shaft and its other leg to the drive linkage and the legs are longitudinally movable relative to each other upon the wiper encountering an obstruction when being moved from their inboard position toward their park position.

### 3,688,334

#### WINDSHIELD WIPER BLADE HAVING HORIZONTAL PATH

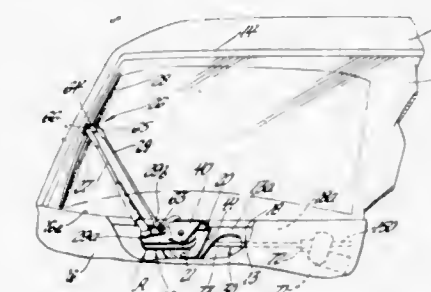
Donald W. Peterson, Fenton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 16, 1970, Ser. No. 98,621

Int. Cl. B60g 1/02

U.S. Cl. 15-250.21

3 Claims



In a preferred form, this disclosure relates to a windshield wiper apparatus which is operable to reciprocate a windshield wiper in a generally horizontal path across the windshield



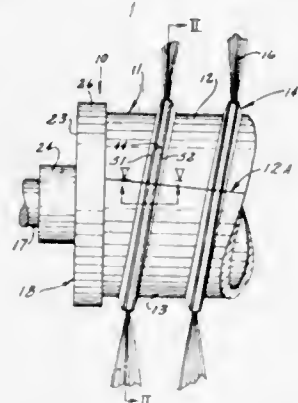
while maintaining the wiper in a generally vertical disposition during running operation and which is operable to park the same in a generally horizontal position adjacent the lower edge of the windshield when wiper operation is being terminated. The windshield wiping apparatus includes a stationary support means, a lever means pivotally supported at one end by the support means and which is adapted to be swung to and fro for reciprocally moving a wiper pivotally connected to its other end through first and second strokes across the windshield, a first drive means operatively connected with the wiper for simultaneously rotating the wiper relative to the lever means to increase the stroke length in response to swinging movement being imparted to the lever means, a second drive means for moving an articulating means relative to the lever means to maintain the wiper blade assembly in a generally vertical disposition as it moves through its strokes, and a parking mechanism which is operable to permit the wiper and articulating means to move relative to the lever means as the latter is swung to and fro during running operation and which is operable to prevent relative movement therebetween when the wiper is midway through one of its strokes when running operation is being terminated to effect movement of the wiper from a generally vertical disposition to a generally horizontal park position adjacent the lower edge of the windshield.

3,688,335

## BRUSH STRUCTURE

Gaylord J. Clark, P. O. Box 216, Coloma, Mich.  
Filed March 2, 1971, Ser. No. 120,138  
Int. Cl. A46b 7/10

U.S. Cl. 15-182



A rotary brush construction comprised of an elongated, channel-shaped member wrapped around a cylindrical core and rigidly secured thereto to form a plurality of closely spaced, spiral flights by which the brush elements are firmly secured to the core. The core is cut substantially lengthwise thereof into two or more segments, either before or after the flights of the channel-shaped member are secured thereto, and the channel-shaped member is mounted upon the core with the brush elements rigidly seated in said channel-shaped member. The parting surfaces between the core segments are not parallel with the axis of the core. Alternatively, the brush elements may be rigidly seated between the flights of the channel-shaped elements by bending the adjacent flanges on a pair of adjacent, spaced flights of the channel-shaped member toward each other to clamp the brush bristles to the cylindrical core.

3,688,336

## EXTENDED-LIFE DOCTORING APPARATUS

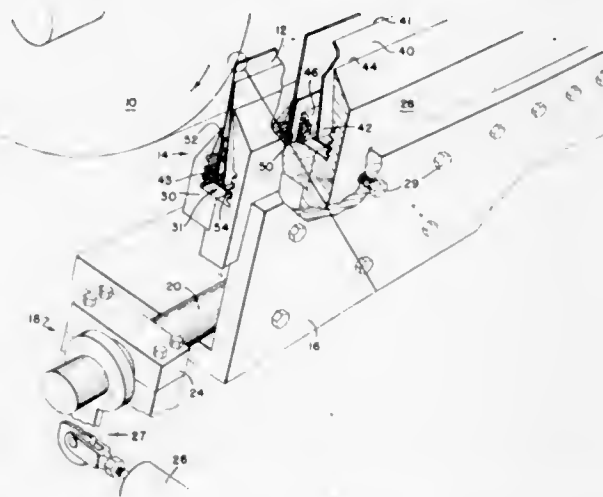
Edward Costello, Jr., Leicester; Joseph S. Cooper, Worcester, and Harold E. Dunlap, Auburn, all of Mass., assignors to Lodging Engineering Corporation, Auburn, Mass.  
Filed July 16, 1970, Ser. No. 55,406  
Int. Cl. D21g 3/04

U.S. Cl. 15-256.51

13 Claims

Doctoring apparatus for doctoring a moving work surface is disclosed as including novel extended-life blade structures and

combined therewith blade holding apparatus for supporting a blade for engagement with the work surface including means acting on the blade differentially along the length thereof to cause the blade to conform to deviations in the work surface. Blade holding apparatus is disclosed which minimizes the width-wise deflection of a supported blade and thus maximizes its length-wise flexibility. Extended-life blade embodiments are disclosed which include means defining on an end surface



of a tip portion of the blade a narrow relatively wear-susceptible land having along one side thereof a leading edge for making initial line contact with a work surface, and a relatively wear-resistant structure adjacent the land on the side thereof opposite the leading edge. Upon contacting a work surface, the land wear relatively rapidly to break in the blade before contact is made between the wear-resistant structure and the work surface, the wear-resistant structure wearing thereafter relatively slowly.

3,688,337

## SCRAPING DEVICE FOR REMOVING THE SURFACE OF PRECOAT LAYER IN THE PRECOAT-TYPE ROTARY DRUM VACUUM FILTER

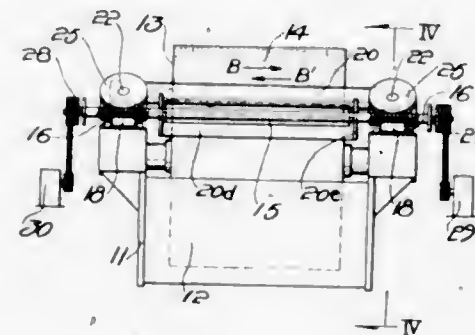
Ichiro Noda, Sakaide, Japan, assignor to Ishigaki Kiko Co., Ltd., Sakaide, Japan

Filed Dec. 8, 1970, Ser. No. 96,051

Int. Cl. B01d 33/36

U.S. Cl. 15-256.53

4 Claims



A scraping device for removing the surface of precoat layer in the precoat-type rotary drum vacuum filter wherein carriages for a scraping blade are mounted on the machine- or filter-frame in such a manner that said carriages can be moved in the forward and backward directions toward the rotary drum and in the left and right directions along the axis of the drum, and said carriages are reciprocated in the latter directions in connection with the advancing movement of the carriages by suitable driving means and a cooperatively moving device whereby the scraping blade is reciprocated along the axis of the rotary drum when the blade is advanced toward the drum so as to scrape off the surface of the precoat layer smoothly.

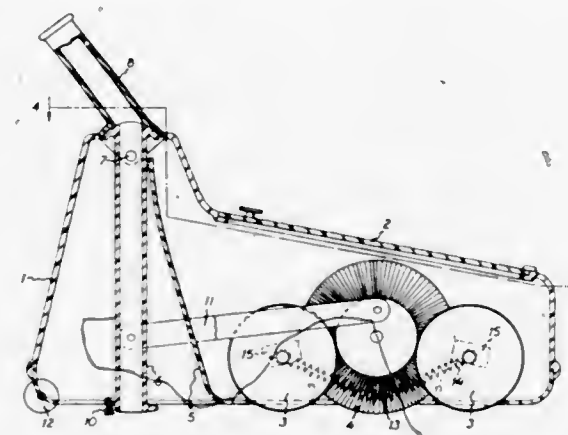
3,688,338

## CARPET CLEANING APPARUSES

Sven Albert Lundvall, Kristinehamn, Sweden, assignor to Aktiebolaget Borst & Penselfabriken, Kristinehamn, Sweden  
Filed April 27, 1970, Ser. No. 32,193  
Int. Cl. A47i 5/00

U.S. Cl. 15-364

3 Claims



A carpet cleaning apparatus comprising a cylindrical brush rotating in contact with the floor and at least one brush reciprocatory in the direction of travel of the apparatus in contact with the floor and mechanically connected to the rotary brush, and a vacuum cleaner nozzle associated with said reciprocatory brush.

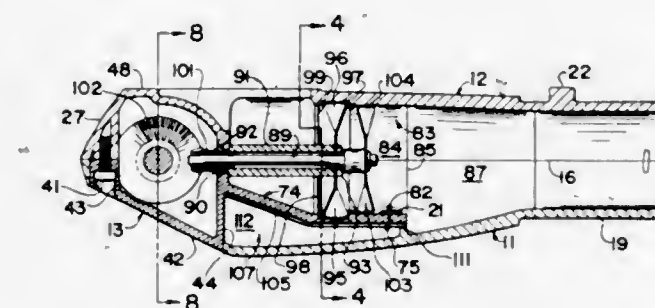
3,688,339

## TURBINE DRIVEN CLEANING TOOL

Conway Vincent, 1539 Clarendon Ave., N.W., and Siegfried Garbe, 4551 3rd St., N.W., both of Canton, Ohio  
Continuation of Ser. No. 805,486, March 10, 1969, abandoned. This application Feb. 4, 1971, Ser. No. 112,803  
Int. Cl. A47i 9/04

U.S. Cl. 15-387

4 Claims



In a cleaning tool having a nozzle provided with a brush rotated by an air turbine to remove dirt from surfaces, the body sections of the tool cooperate to form dirty and clean air passageways, support the turbine brush drive and enclose the latter in the nozzle to prevent contact with the dirty air stream.

3,688,340

## ROLLER ASSEMBLY FOR SLIDING PANELS

Michael P. Schoenbrod, Miami, Fla., assignor to Aircheck, Inc., Dade County, Fla.

Filed Dec. 21, 1970, Ser. No. 100,326

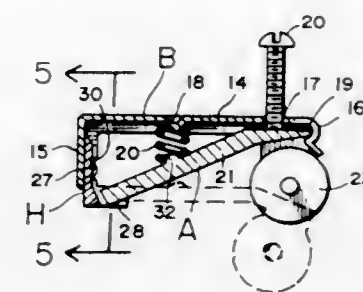
Int. Cl. E05d 13/02

U.S. Cl. 16-91

2 Claims

A roller assembly for sliding door panels consisting of a bracket having a resilient restraining member at one end and pivot pins at the other end with an elongated arm having a roller secured at one end pivotally mounted to the pivot pins and engaging the restraining member at its other end. A coil spring extends between the bracket and the elongated arm and is prevented from outwardly pivoting said elongated arm until

a bolt which is mounted in a threaded bore on the bracket is threaded outwardly to force said other end of said elongated



arm to free itself of said restraining member and a stop limiting the outward swinging movement of the elongated arm.

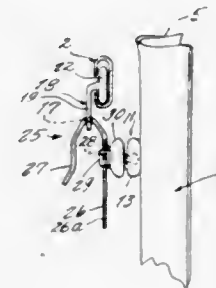
3,688,341

## SLIDABLE SNAP FASTENER DEVICE FOR SUPPORTING DRAPES OR CURTAINS

Augustus W. Peckham, 7012 150th Ave. N., Clearwater, Fla.  
Filed Feb. 19, 1971, Ser. No. 116,800  
Int. Cl. A47h 13/12, 15/02

U.S. Cl. 16-93 D

3 Claims



A slide member mountable in a horizontal, slotted track or traverse rod, has an arm carrying a U-shaped hook member. One part of a snap fastener is secured to one leg of the hook member and the other part is adapted to be secured to a drape or curtain.

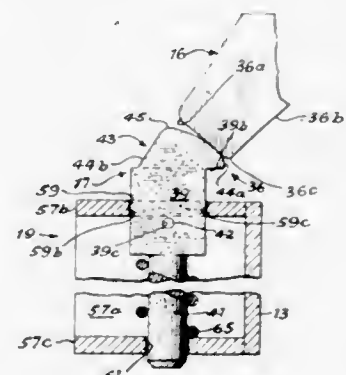
3,688,342

## HINGE LATCH

Carl H. Little, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.  
Continuation-in-part of Ser. No. 2,150, Jan. 12, 1970. This application Aug. 11, 1970, Ser. No. 62,787  
Int. Cl. E05d 11/10

U.S. Cl. 16-144

3 Claims



A hinge latch for attachment of a door to a cabinet including a pair of hinge parts mounted one on each of the door and cabinet and joined by a hinge pin, a strike carried on one of the hinge parts, and a resiliently biased keeper movably mounted within a keeper mounting assembly carried on the other of the hinge parts; the keeper cooperating with the strike



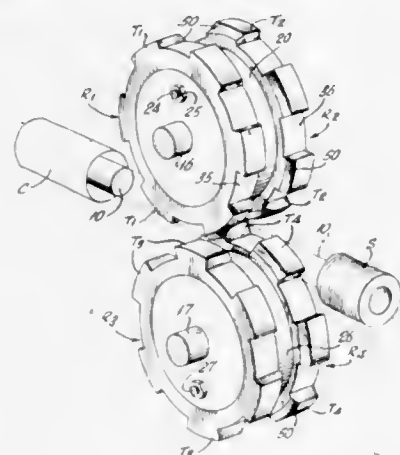
to latch the door in closed position. The keeper is formed of a plastic material and characterized by a construction including a head portion shaped to define a generally wedge-shaped cam surface engageable by said strike, and secured in assembled relation within the keeper mounting assembly by a pin insert.

### 3,688,343 SHIRRING APPARATUS

Francis J. Ziolk, Somerville, N.J., assignor to Devro, Inc.  
Filed June 22, 1970, Ser. No. 48,224  
Int. Cl. A22c 13/00

U.S. Cl. 17-42

3 Claims



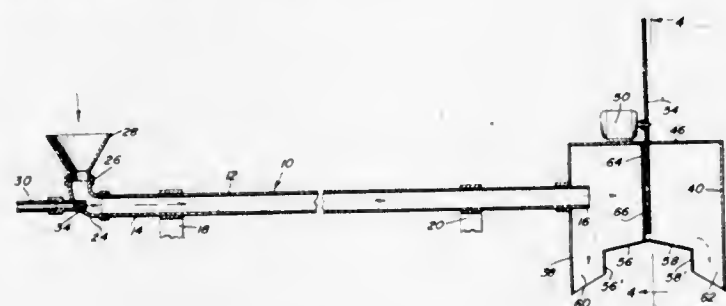
A pair of angularly adjustable shirring rolls is mounted on each of two parallel rotatable shafts on opposite sides of a shirring mandrel over which a tube of material suitable for use as sausage casing is fed. The rolls are provided around the periphery thereof with tube-contacting teeth separated by grooves and each roll may be angularly adjusted on its shaft to align the teeth on the roll with the teeth or the grooves of the other rolls so that a variety of shirred tube configurations is obtainable.

### 3,688,344 IMPACT CLAM EXTRACTOR

Harold C. Carlson, 8806 Pacific Ave., Wildwood Crest, N.J.  
Filed Aug. 27, 1970, Ser. No. 67,531  
Int. Cl. A22c 29/00

U.S. Cl. 17-53

8 Claims



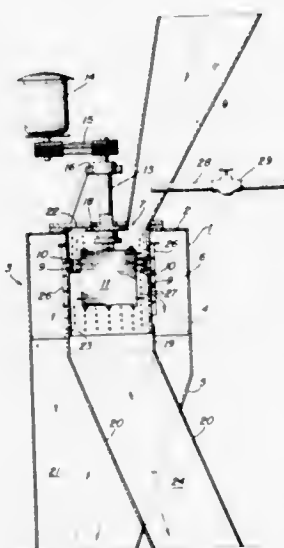
A method and apparatus of extracting the "belly" of a marine mussel such as a clam from the remainder of the clam meat after the clam has been shucked and including the utilization and provision of an impact surface upon which the whole clam meat including the "belly" is directed at high speed for impact along a path disposed substantially normal to the impact surface. A first form of impact surface utilized in the instant invention comprises an imperforate rigid surface and a second form of impact surface utilized in the instant invention comprises an expanded metal panel. The whole clam bodies directed upon the impact surface are conveyed thereto in a high speed fluid jet defined either by a high speed column of liquid such as water or a high speed column of gas such as air and the high speed impact of the whole clam meat results in the "belly" of the clam being partially broken up and separated from the remainder of the clam body.

### 3,688,345 METHOD FOR PROCESSING FIBROUS STALKS

Eduardo Joel Villavicencio, Brennan, Peru, assignor to Process Evaluation and Development Corporation, New York, N.Y.  
Continuation-in-part of Ser. No. 743,344, July 9, 1968, Pat. No. 3,537,142. This application July 13, 1970, Ser. No. 54,580. The portion of the term of this patent subsequent to Nov. 3, 1987, has been disclaimed.  
Int. Cl. D01b 1/30

U.S. Cl. 19-7

4 Claims



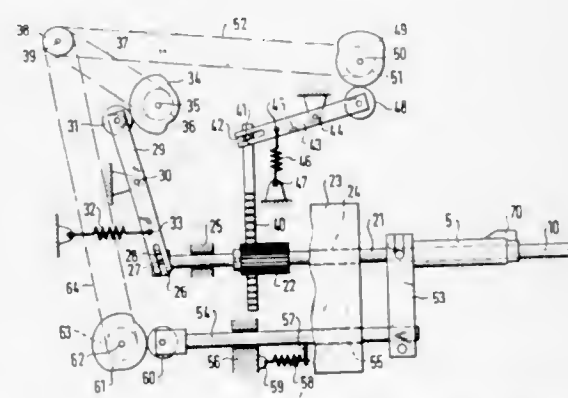
Method for processing crushed fibrous stalks containing pith, to separate the pith and the fiber, comprising gravity feeding fragments of the said stalks into the upper end of a vertical screening element, simultaneously feeding an aqueous carrier liquid either concurrently or separately in amounts sufficient to provide at least about 4.5 parts by weight of carrier liquid (e.g., water) per part by weight (dry weight basis) of fiber in the crushed fibrous stalks, centrifugally and helically propelling and gravity feeding the fragments through the treating zone defined by the screening element, in the absence of any extraneous artificially created air pressure differentials, so that a layer of axially aligned oriented fragments is formed on the inner surface of the screening element and the pith is separated by the rolling and rubbing action of the fragments on each other, and the separated pith particles which become relatively heavier due to absorption of carrier liquid are forced to the exterior of the screening element by centrifugal forces applied.

### 3,688,346 APPARATUS FOR MANUFACTURING TAMPONS

Wolfgang Johst, Gevelsberg, and Herbert Etz, Wuppertal-Langerfeld, both of Germany, assignors to Dr. Carl Hahn KG, Dusseldorf, Germany  
Filed July 30, 1970, Ser. No. 59,399  
Int. Cl. A611 15/00

U.S. Cl. 19-144.5

1 Claim



Improvement over the apparatus of U.S. Pat. No. 3477102, which apparatus is used for the purpose of producing a rolled

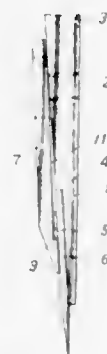
wad of material with a string depending from one end of the roll for use as a tampon, which prior apparatus includes a rotatable winding mandrel; a coaxial nonrotating winding tube superimposed on the mandrel; means for reciprocating the tube; means for feeding a textile fiber batting of predetermined size and shape to the apparatus; and means for tying a string about said batting, whereby the rotation of the mandrel with the batting mounted thereon winds the batting about the string tied therearound so as to form a recess in one end of the rolled batting in which the pendant string resides; which improvement comprises the winding tube being of one-piece construction with a guiding curve in the forward end thereof, for guiding the string into its proper position, which guiding curve has a circumference which extends over about 10° to 15° of the winding mandrel and has a radius of curvature of about 2 to 3 mm, and a planar surface extension from the winding tube side in a plane generally parallel to the long axis of the tube having a guiding plate at the forward end thereof whose front edge is substantially perpendicular to the tube long axis and is in the plane of an annular shoulder in the forward end of the tube.

### 3,688,347 TOP COMB

Junkichi Nakagawa, and Etsuo Kurata, both of Oazaoka, Japan, assignors to Nakagawa Seisakusho Co., Ltd., Anomura, Agegun, Miken, Japan  
Filed July 20, 1970, Ser. No. 56,493  
Int. Cl. D01g 19/10

U.S. Cl. 19-221

1 Claim



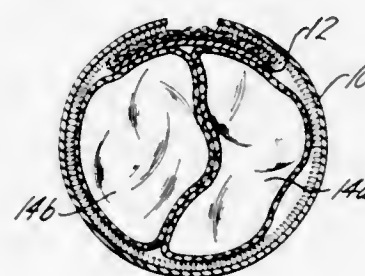
A top comb for a comb comprising a top comb plate tapered at one end and having a stepped portion formed therein and a presser plate, with a stepped portion, adjustably secured to said comb plate by means of screws. A needle-row ribbon having a strip plate soldered thereto is inserted into the stepped portion of the comb plate and is removably secured thereto by means of said presser plate.

### 3,688,348 METHOD AND ARTICLE FOR FASTENING SOCKS TOGETHER

Theodore Klotz, 156 Oak Tree Road, and Howard R. Messner, 85 Campbell Ave., both of Tappan, N.Y.  
Filed Dec. 16, 1970, Ser. No. 98,678  
Int. Cl. B65d 63/00; A44b 17/00

U.S. Cl. 24-16

9 Claims



A sock fastener includes a band of tape fastener which can be secured in a loop around a pair of socks to hold the

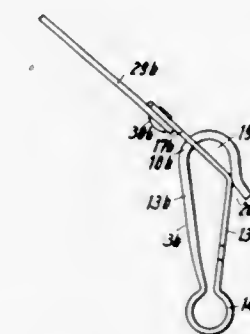
matching sock mates together during laundering. The tape includes hooks thereon facing inwardly of the loop and engaging the socks. The tape is secured in the loop by a piece of tape fastener having loops thereon engaging the hooks.

### 3,688,349 SKI CATCHING BELT

Claus Benk, Isny/Allgau, Germany, assignor to Edelmann & Ridder, Isny/Allgau, Germany  
Filed March 16, 1970, Ser. No. 19,806  
Claims priority, application Germany, March 4, 1969, P 19 12 910.3  
Int. Cl. A44b 21/00, 11/00, 13/02

U.S. Cl. 24-73 R

36 Claims



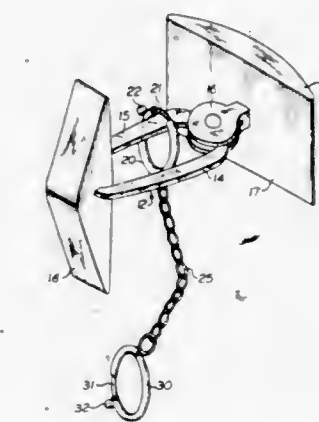
A ski catching belt which has a closure member connected to one end of the belt and an eye member connected to the other end of the belt for cooperation with the closure member, said closure member comprising a hook element and a closing element which has one end portion fixedly connected to said hook element and has a movable end portion continuously urged into engagement with and being movable toward and away from the free end portion of said hook element, said free end portion of said hook element and said movable end portion of said closing element respectively pointing in the opposite direction while respectively defining with each other a first acute angle opening toward the inner surfaces of said hook element and said closing element and a second acute angle opening toward the outside of said two elements, said eye means being movable from the area defined by said second angle into the area defined by said first angle and vice versa.

### 3,688,350 CUFF LINK PROTECTOR

Samuel Feldman, 20 Canterbury Road, Great Neck, N.Y.  
Filed Dec. 28, 1970, Ser. No. 101,924  
Int. Cl. A44b 1/18

U.S. Cl. 24-90.5

2 Claims



In combination with a cuff link having a stud extending downwardly from the back of the face plate of the cuff link, with the stud adapted to extend through a cuff button hole, means for securing the stud of the cuff link with respect to the cuff button hole, said means comprising a first manually



operable selectively openable clasp removably secured to said stud beneath the face plate of the cuff link, and a second manually operable clasp connected to said first clasp via a flexible member such as a chain or the like, with the second clasp manually operable and selectively securable to the stud on the opposite side of the cuff of said first clasp.

3,688,351

Patent Not Issued For This Number

3,688,352

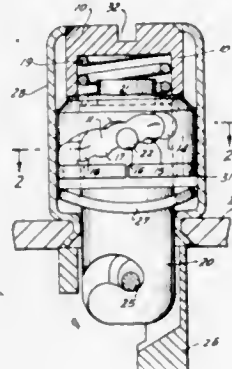
# FASTENER HAVING IMPROVED LOAD CARRYING CAPACITY

Conrad J. Gunther, Uniondale, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.  
Continuation-in-part of Ser. No. 866,698, Oct. 19, 1969, Pat. No. 3,594,876. This application March 24, 1971, Ser. No. 127,604

Int. Cl. A44b 17/00

U.S. Cl. 24—221 A

24 Claims



A fastener for substantially rigidly interengaging two members. The fastener includes a stud element adapted to extend through an opening in one of the members and having a cam slot adapted to engage a pin on the other of the members. A stud element is rotatable between an open and closed position on the pin. A housing surrounds the upper portion of the stud element in rotatable relationship therewith and is positioned on one side of the surface of the one member distal from the other member when the cam slot is engaged with the pin. The housing has surfaces thereon forming a slot in the wall thereof inclined with respect to the transverse axis of the housing. A bar extends laterally from the stud element through the slot and engages the slot forming surface of the housing. The housing has an upper rim and a lower rim and the slot in the wall of the housing extends through at least one rim thereof so as to interrupt the exterior surface of said rim and to facilitate insertion and removal of the bar with respect to the slot. Means are provided for retaining the bar in the slot so that when the pin is in the closed position in the cam slot and the housing or stud are rotated relative to one another, the bar will shift in the slot from a relaxed position to a locked position and will be supported by a portion of the slot forming surfaces while in the locked position to thereby increase the load carrying capacity of the fastener.

3,688,353

# CLAMPING APPARATUS

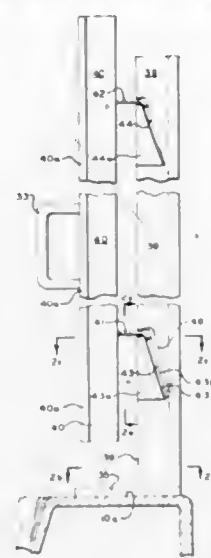
Richard P. Lauser, 48 Mead St., Walton, N.Y.  
Division of Ser. No. 63,522, Aug. 13, 1970, Pat. No. 3,631,543.  
This application Sept. 16, 1971, Ser. No. 180,972  
Int. Cl. A47k 3/14, 3/16

U.S. Cl. 24—263 PJ

5 Claims

A sheet clamp means clamps the vertical edge of a bathtub

shower curtain adjacent a wall to provide an effective seal. The clamp means includes a camming means which applies



forces to rotate pins carrying a swinging clamp plate. Both gravity-actuated and force-actuated sheet clamps are shown.

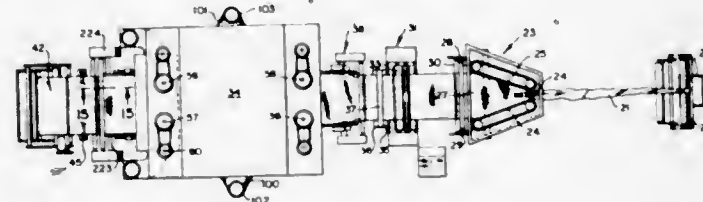
3,688,354

# METHOD OF HANDLING AND PROCESSING OPEN WIDTH FABRIC

Eugene Cohn, Great Neck; Andrew P. Cecere, Valley Stream, and Robert Frezza, Carle Place, all of N.Y., assignors to Samco Holding Corporation, Woodside, N.Y.  
Division of Ser. No. 698,899, Jan. 18, 1968, Pat. No. 3,551,970. This application July 28, 1970, Ser. No. 58,855  
Int. Cl. D06c 3/02

U.S. Cl. 26—59

2 Claims



The application is directed principally to a method of processing open width fabrics, particularly distortable fabrics such as those of knitted construction, in a rotary-type of tenter processor in which the fabric is acted upon by high velocity air streams. The fabric is first engaged by its opposed edge extremities and distended to a predetermined width; it remains so engaged throughout the processing operation. The thus engaged fabric is supplied to and mechanically supported by a synchronously rotating processing drum. Of significance, the fabric, regardless of its width, is applied symmetrically to the center area of the drum and held by its edges at a uniform width regardless of the overall axial length of the drum, which may be considerably greater than the width of a given fabric web. While the fabric is supported on the drum, high velocity streams, extending over the full axial length of the drum and independent of the width of the fabric, are directed radially through the fabric and drum to effect the desired processing. Exceptional uniformity of processing results is thus achieved.

3,688,355

# METHOD AND APPARATUS FOR PREPARING NON-WOVEN FIBROUS MATERIALS

Masahide Okzaki, and Tuyo Endo, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan  
Filed May 11, 1970, Ser. No. 36,159  
Int. Cl. D02g 1/16

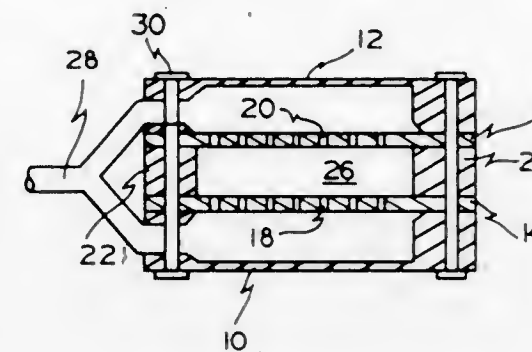
U.S. Cl. 28—1.4

6 Claims

A method and apparatus for preparing non-woven fibrous materials employing fluid jets is provided comprising feeding

fiber strands to a contact zone defined by a pair of symmetrically arranged opposed plates, each plate containing a plurality of apertures therein and forcing a fluid under pressure

comprising a plurality of hook-shaped configurations made from plastic or any other spring-biased material. The mounting means are arranged for convenient cooperation with a



through said apertures to impinge upon said fiber strands causing the fiber strands passing through said contact zone to open and interlock.

3,688,356

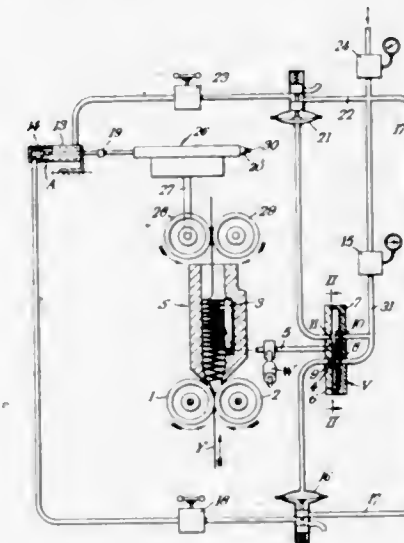
# WAD OR PLUG CONTROL FOR STUFFER-BOX CRIMPING APPARATUS

Hector Scowcroft; Albert J. Cartledge, and Frank Greenwood, all of Bolton, England, assignors to T.M.M. (Research) Limited, Oldham, Lancashire, England  
Filed March 10, 1970, Ser. No. 18,093  
Claims priority, application Great Britain, March 13, 1969, 13,399/69

Int. Cl. D02g 1/12

U.S. Cl. 28—1.7

4 Claims



A variable drive for controlling the relative speeds at which textile material is fed to and is withdrawn from the chamber of a stuffer crimper.

A member senses the level of the core of crimped yarn within the chamber and actuates fluid operated control mechanism to vary the drive ratio so as to maintain the core at a desired level in the stuffer crimper.

3,688,357

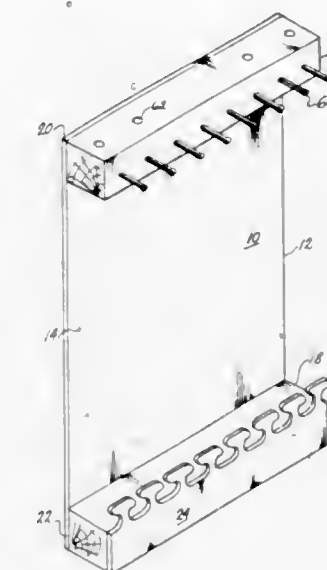
# MACRAME LOOM

Richard H. Nielsen; Edith M. Nielsen, and Joan H. Fetty, all of 3128 N.E. 83rd St., Seattle, Wash.  
Filed June 28, 1971, Ser. No. 157,355  
Int. Cl. D02h 13/38

U.S. Cl. 28—15

9 Claims

A macrame loom having a substantially rectangular base plate with a first and a second oppositely positioned elevated uprights or flanges. The first flange is provided with evenly-spaced mounting means, such as pins, twine, rope, etc. The second flange is provided with a thereon-connected tie-on bar



dowel or any other object to be knotted onto associated macrame work which subsequently is held elevated from the base between the mounting means and the tie-on bar.

3,688,358

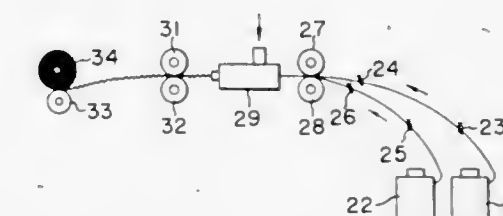
# PROCESS FOR PRODUCING BULKY YARN FROM MULTIFILAMENT YARN

Hiroshi Kashima; Katsushige Tomizuka, and Yoshinobu Uozumi, all of Osaka, Japan, assignors to Asahi Kasei Kogyo Kabushiki, Kaisha, Osaka, Japan  
Filed May 4, 1970, Ser. No. 34,200  
Claims priority, application Japan, May 9, 1969, 44/35896; May 9, 1969, 44/35897

Int. Cl. D02q 1/16

U.S. Cl. 28—72.12

5 Claims



Novel yarn having an improved bulk, a sufficient softness, strength and an appearance like spun yarn is prepared by using an improved process in which one or more kinds of multifilament yarn, including multifilament yarns of different strength, are supplied into a fluid jet zone, with different filaments in the same yarn or different yarns have different knot strength, one having a knot strength above 4.0 g/d and the other having a knot strength below 2.4 g/d. A fluid-jet-disturbing treatment, conditioned to have a disturbing strength sufficient to sever filaments of lower strength by increasing the fluid pressure over the fluid pressure used for the preparation of usual loop yarn, is applied to the multifilament yarn for severing the lower knot strength filament or yarn, thus causing the resulting short severed filaments entangle with the unsevered long filament group, forming naps having free ends which cover the surface of the long filament group.



3,688,359

**METHOD FOR PRODUCING A COMPOSITE SHADOW MASK**

Mitsuru Oikawa, Tokyo; Shozo Tamura, Hachioji, and Tadao Okabe, Hachioji, all of Japan, assignors to Hatachi, Ltd., Tokyo, Japan

Filed Sept. 1, 1970, Ser. No. 68,601

Claims priority, application Japan, Sept. 5, 1969, 44/70001  
Int. Cl. H01J 9/00

U.S. Cl. 29—25.14

2 Claims



A mesh electrode is coated with an electrically insulating material. The portions of the insulating material are removed where the beam apertures of a shadow mask are to be located when the coated mesh electrode and the shadow mask are combined together. And after finishing the partial removal of the insulating material, the mesh electrode is combined with the shadow mask to produce a composite shadow mask having a converging action upon the electron beam.

3,688,360

**METHOD OF MANUFACTURING COLOR PICTURE TUBES**

Yoshihiko Miyata, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

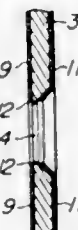
Filed Oct. 28, 1970, Ser. No. 84,812

Claims priority, application Japan, Dec. 24, 1969, 44/103375

Int. Cl. H01J 9/16, 9/44

U.S. Cl. 29—25.18

4 Claims



A method of manufacturing color picture tubes comprising the steps of forming openings or beam-permeating apertures in a color selective electrode with smaller dimensions than the ones finally required in the completed tube, exposing a phosphor screen on the inner surface of a face plate of a panel portion to light through said color selective electrode, thereafter coating an anti-etching protective film with the necessary portions uncovered by the inversion development process, and expanding said openings to said predetermined dimensions by etching.

3,688,361

**METHOD OF MAKING A TRIMMABLE MONOLITHIC CAPACITOR**

Joseph N. Bonini, Plainfield, N.J., assignor to Gulton Industries, Inc., Metuchen, N.J.

Division of Ser. No. 3,011, Jan. 15, 1970, Pat. No. 3,586,933.

This application June 18, 1971, Ser. No. 154,285

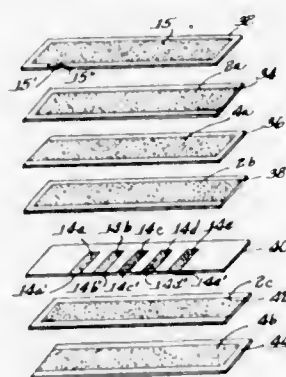
Int. Cl. H01g 13/00

U.S. Cl. 29—25.42

3 Claims

Forming a capacitor having an insulating body with a plu-

rality of capacitor forming plates therein defining two groups of capacitor plates with edge portions of one group of plates extending to a margin of the body and interconnected by a terminal, and edge portions of the other group of plates extending to a margin of the body and interconnected by another terminal. Trimming plates are provided opposite one or more plates of said one group of plates and having edge portions extending to a margin of the body in alignment therealong and spaced and insulated from one another and said terminals,



each trimming plate when connected to the terminal of said other group of plates adding a small given increment to the value of the overall capacitance of the capacitor. The capacitance between said terminals is measured and, if the capacitance is less than the desired value by an amount which can be added by said trimming plates, the terminal of said other group of plates is extended to contact physically and electrically said edge portions of a number of said trimming plates necessary to obtain the desired capacitance value.

3,688,362

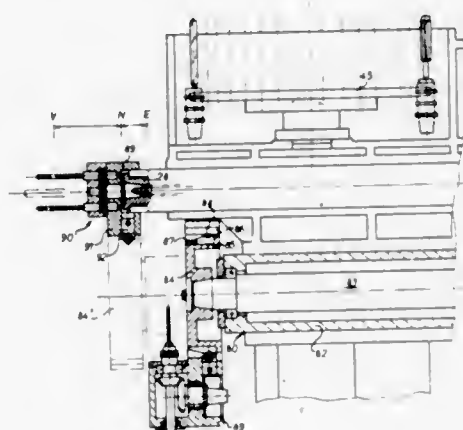
**MACHINE TOOL WITH ADDITIONAL TOOL MAGAZINE**  
Alfred W. Durr; Otto Gunsser, and Hubert H. Heller, all of Nürtingen/Württemberg, Germany, assignors to Gebrüder Heller Maschinenfabrik GmbH, Nürtingen/Württemberg, Germany

Division of Ser. No. 667,441, Sept. 13, 1967, Pat. No. 3,524,248. This application July 15, 1969, Ser. No. 841,939

Int. Cl. B23g 3/157

U.S. Cl. 29—26 A

13 Claims



A machine tool with additional tool magazine is described wherein a tool magazine for special tools is arranged below the spindle with the tools held parallel to the spindle axis and inserted directly from the magazine into the spindle. The magazine is a drum which rotates around an axis parallel to the spindle axis and slides in the direction of this axis with axially parallel fixing grooves for the tool.

3,688,363

**INDEXING MACHINE**

Elvind Christian Thobroe, The Vikings, Rodborough Common, Stroud, England

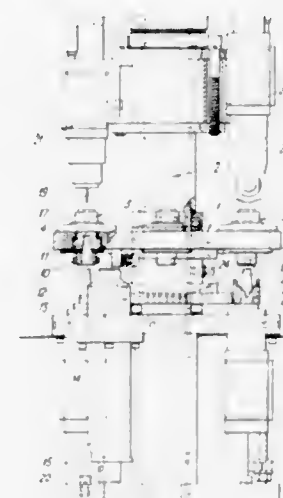
Filed Nov. 7, 1969, Ser. No. 874,796

Claims priority, application Great Britain, Nov. 14, 1968, 54,131/68

Int. Cl. B23b 9/06

U.S. Cl. 29—38 A

10 Claims



A multi-station machine tool has floating workholders in a common carrier which executes general locating movements to bring the workholders in succession to the stations. Precise indexing of the workholders with tools which are at those stations is provided by locating members which are driven into engagement with the workholders while the carrier is stationary, and these may either rotate the workholders or hold them stationary in a known rotational position while the tools operate on workpieces in the holders. The locating members are, in a preferred form, conical-ended plungers powered by a double-acting ram, and included power units for driving the tools towards and away from the work in the form of rams which are interchangeable with those used for driving the plungers.

3,688,364

**MULTIPLE-SPINDLE MACHINE TOOL**

Alfred Ledergerber, Bielefeld, Germany, assignor to Werkzeugmaschinenfabrik Gildemeister Co. & AKT-GES, Bielefeld, Germany

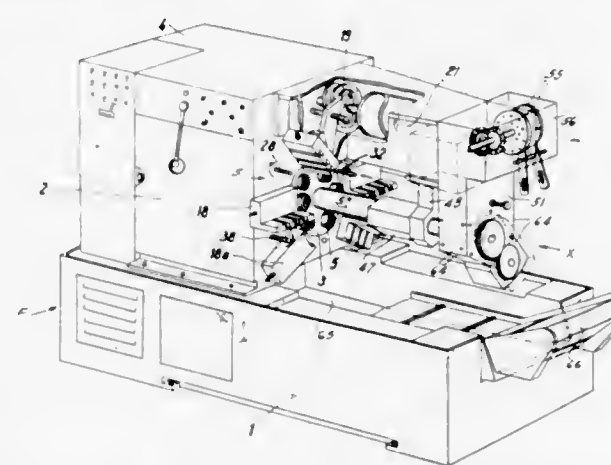
Division of Ser. No. 671,691, Sept. 29, 1967. This application April 28, 1970, Ser. No. 32,621

Claims priority, application Germany, Oct. 5, 1966, W 42520

Int. Cl. B23b 9/10

U.S. Cl. 29—38 D

8 Claims



An automatic multiple-spindle bar or chucking machine wherein the carrier for work spindles is indexible in an upright support of the machine frame and has a side face beyond which the work supporting ends of the spindles extend. The

side face of the support mounts several cross slides movable by cams separably mounted on auxiliary shafts which are journaled in the support and are rotated by an endless chain which is driven by a control shaft mounted in the support at a level above the carrier. The auxiliary shafts transmit motion to rotary, reciprocable and oscillatable additional shafts which extend beyond the side face of the support and can transmit motion to special attachments.

3,688,365

**INFED RACK CUTTER FOR CUTTING GEAR TEETH IN A WORKPIECE**

Walter Gubelmann, Zurich, Switzerland, assignor to Maag Gear Wheel & Machine Company Limited, Zurich, Switzerland

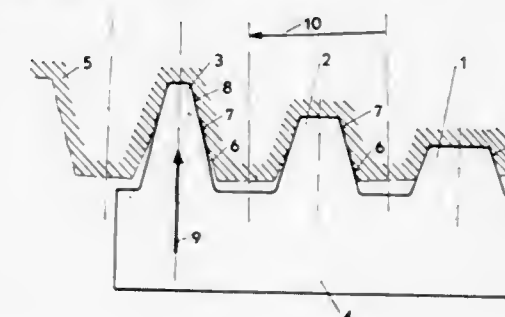
Filed Oct. 7, 1970, Ser. No. 78,694

Claims priority, application Switzerland, Oct. 9, 1969, 15154/69

Int. Cl. B26d 1/00

U.S. Cl. 29—95

2 Claims



In an infed rack cutter for cutting gear teeth in a workpiece, and provided with teeth which differ from each other and for generating premachined tooth gaps, the tool tooth at one end of the rack, intended for the first engagement with the workpiece, has a maximum tooth root thickness and a minimum tooth height, each successive tool tooth having a smaller root thickness and a larger tooth height than the receding tooth, so that the tool tooth at the other end of the rack, intended for the last engagement with the workpiece, has the smallest root thickness and the largest tooth height.

3,688,366

**CUTTING TOOL**

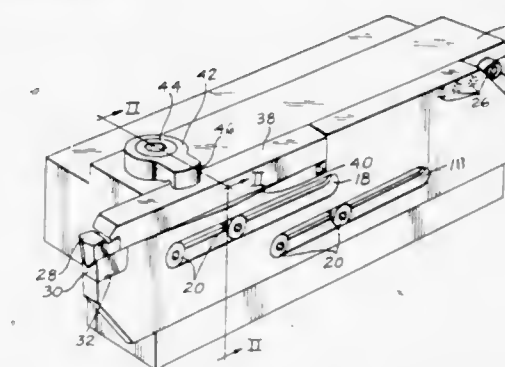
Dennis Glyn Jones, Greensburg, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Ser. No. 54,524

Int. Cl. B26d 1/00

U.S. Cl. 29—96

15 Claims



The specification discloses a cutting tool especially useful for cut-off and grooving operations. The tool comprises a relatively massive block-like body with a plate adjustably mounted on one side and having a V-groove in the top toward one end extending longitudinally of the plate and adapted to receive an elongated cutting element having a ridge on the bottom engaging said groove, or a short cutting element with an elongated clamping bar both seated in the groove and held in place by a clamp mounted on the block.



3,688,367

**TOOL HOLDER WITH PROVISIONS FOR ACCURATELY POSITIONING CUTTING INSERTS AND AN IMPROVED CHIP BREAKING INDEXIBLE INSERT**

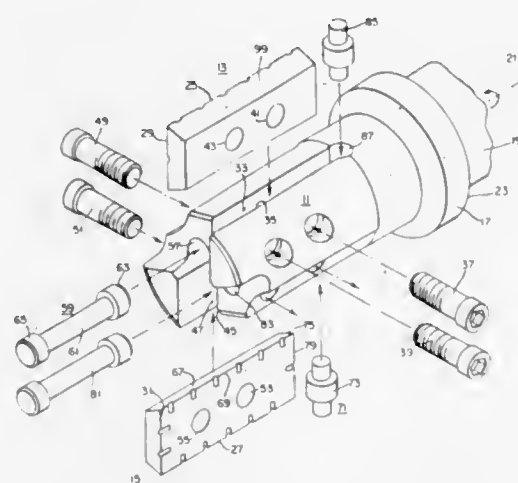
John T. Bennett, 47 Paper Mill Lane, Newtown Square, Pa.

Filed March 12, 1970, Ser. No. 19,023

Int. Cl. B26d 1/12

U.S. Cl. 29-105

8 Claims



A tool holder having at least one cutting insert (blade) receiving slot that is formed in part by a pair of spools at adjacent small side areas of the slot. The spools are held at a finite angle with each other which matches the angle between adjacent edges of a blade to be inserted in the slot. The spools provide a ridge to contact blade edge surfaces for only a small portion of their width. An application of this blade positioning technique is a multiple indexible blade rotary tool holder. Indexible blades for use in a wide variety of tool holders have improved chip breaking grooves adjacent to its cutting edges in surfaces thereof which lead into the work piece.

3,688,368

**MILLING TOOLS FOR THE MACHINING OF GEARS**

Johann Bodem, Reutte, Tirol, Austria, assignor to Schwarzkopf Development Corporation, New York, N.Y.

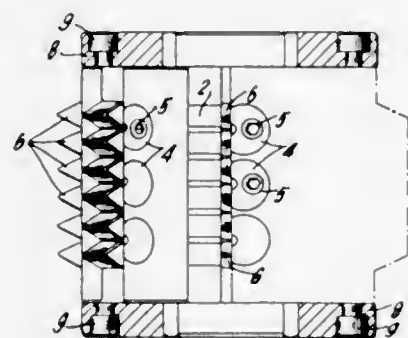
Filed Aug. 4, 1970, Ser. No. 60,889

Claims priority, application Austria, Aug. 13, 1969, A 7818/69

Int. Cl. B26d 1/12

U.S. Cl. 29-103 C

2 Claims



A milling tool for gear cutting in which the cutting edges consist of clamped cemented carbide inserts with all-sided free-cutting action having a clearance angle of 3°-10°, the inserts capable of being individually replaced or reversed.

**ATTACHMENT OF ELEMENTS TO ROTATIONAL MEMBERS**

Richard C. Turner, and Ronald J. Stanton, both of Durban, Natal, Republic of South Africa, assignors to Hulett's Sugar Corporation Limited, Durban, Natal, Republic of South Africa

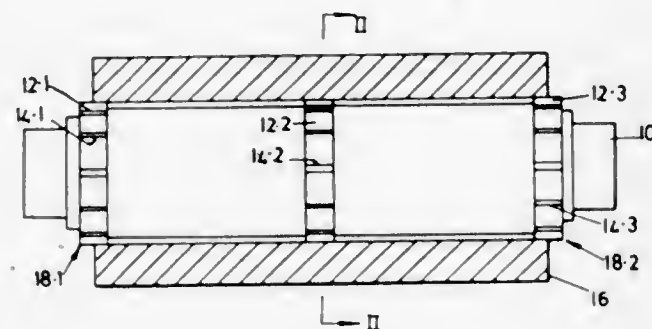
Filed July 1, 1970, Ser. No. 51,558

Claims priority, application South Africa, July 1, 1969, 69/4656

Int. Cl. B21p 31/08

U.S. Cl. 29-110

2 Claims



A sugar mill roller is formed of a shaft and a shell secured to the shaft by means of adhesive. The shaft is formed with very low circumferential centering collar formations having axial grooves. The shell fits over the centering collar formations so that a space is formed between the shell and the body of the shaft. Adhesive is pumped into the space and allowed to cure.

3,688,370

**TENDENCY IDLER ROLL AND IDLER ROLL**

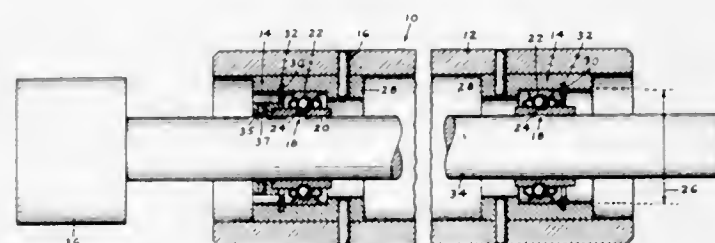
George N. Cahill, Frederick D. Stringer, and Gary R. Whitcher, all of Pottsville, Pa., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 22, 1970, Ser. No. 100,747

Int. Cl. B21b 13/02

U.S. Cl. 29-116 R

4 Claims



The tendency idler rolls and idler rolls used to convey and support extruded plastic films during the curing thereof, are improved to provide increased rolling capability with reduced internal friction in the ball bearings.

3,688,371

**THE METHOD OF MANUFACTURING COMPOSITELY FORMED ROTORS**

Bernard L. Koff, Cincinnati, Ohio, assignor to General Electric Company,

Filed April 30, 1970, Ser. No. 33,437

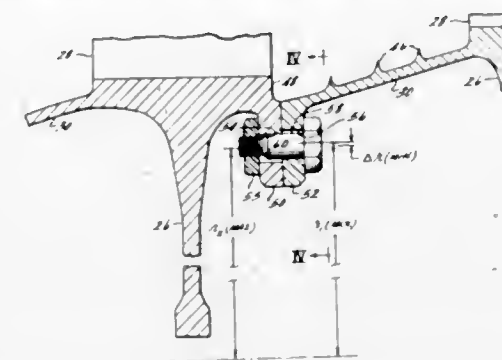
Int. Cl. B21k 3/04; B23p 15/02, 15/04

U.S. Cl. 29-156.8 B

5 Claims

The present disclosure is of a disc type compressor rotor. One disc has an integral annular spacer with an inwardly projecting radial flange which is bolted to a flange projecting inwardly from the rim of an adjacent disc. The flanges are clamped together by bolts which also provide positive locating

wardly from the rim of an adjacent disc. The flanges are clamped together by bolts which also provide positive locating



means for preventing relative radial shifting between the connected discs. A method for forming rotors with this positive locating function is also described.

3,688,372

**THE METHOD OF MAKING A HEAT EXCHANGER**

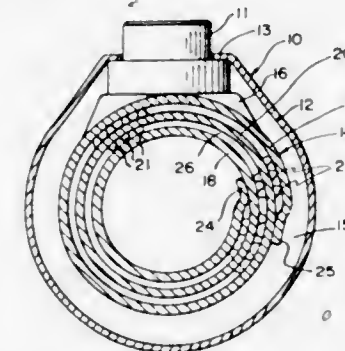
Donald J. Frost, Racine, Wis., assignor to Modine Manufacturing Company,

Filed March 27, 1970, Ser. No. 23,192

Int. Cl. B21d 53/00; B21k 29/00; B23p 15/26

U.S. Cl. 29-157.3 C

3 Claims



A heat exchanger in which a continuous, integral, formed sheet of heat exchange material such as heat conducting metal is shaped to provide a first area and a second area spaced from each other to provide a fluid flow space and a third area in this flow space provided with displaced turbulence producing portions in the flow space.

3,688,373

**METHOD OF FORMING AND ROUNDING WHEELS**

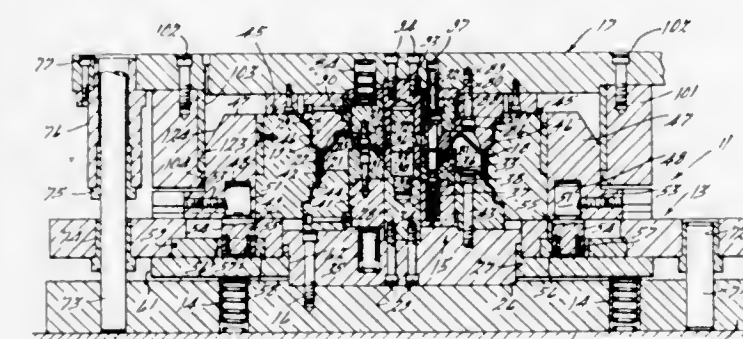
Horace D. Gregg, Wayne, Mich., assignor to Kelsey-Hayes Company,

Division of Ser. No. 826,760, April 22, 1969, Pat. No. 3,530,717, which is a continuation of Ser. No. 637,424, May 10, 1967. This application March 5, 1970, Ser. No. 26,462

Int. Cl. B21d 53/26; B21k 1/28, 1/42

U.S. Cl. 29-159 R

3 Claims



This application discloses a machine having a plurality of dies that coax with an assembled wheel to true any axial or

radial runout present in the wheel rim and for performing certain other forming operations simultaneously with the truing. The machine is comprised of a fixed base plate having a pilot die that engages and locates the wheel spider and is adapted to engage the inner periphery of the rim. Rounding dies are supported for movement in a radial direction and engage the periphery of the rim, which is preferably formed oversize when the wheel is assembled, for bringing the rim into axial and radial alignment. When the rim is held in its true position by this locating opening. If the wheel is located by its central opening, a machining operation may be performed upon this central opening when the rim is held in its true position. If the wheel is located by the attachment holes formed in the spider around the central opening, these holes may be accurately located and formed by forming members carried by a ram that engage the spider and which accomplish a finish forming operation upon the wheel attachment holes of the spider. Lift-out fingers are pivotally carried by the ram for lifting the rounded wheel out of the die base assembly.

3,688,374

**METHOD OF MAKING AN INTEGRAL PINION AND INNER BEARING RACE FOR RACK AND PINION ASSEMBLY**

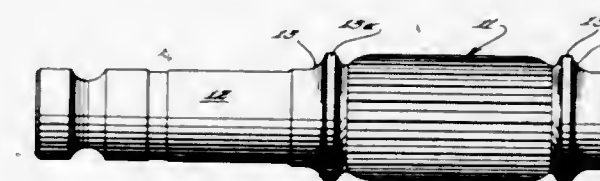
Ronald Goldsmith, Hitchin, England, assignor to Cam Gears Limited, Hitchin, England

Division of Ser. No. 839,420, July 7, 1969, abandoned. This application Oct. 23, 1970, Ser. No. 83,344

Int. Cl. B21d 53/28; B21h 5/00; B21r 1/30; B23p 15/14; B29d 15/00

U.S. Cl. 29-159.2

2 Claims



A method of making a forged integral pinion and bearing seat member, especially suited for rack and pinion steering gear assemblies, which has a cylindrical body with longitudinally spaced radially projecting flanges or collars, gear teeth between the flanges, and bearing raceways adjacent the outboard sides of the flanges. The one-piece member eliminates the necessity for inner bearing rings, and the gear teeth are conveniently formed by a die rolling operation, with the dies sinking into the cylindrical body portion between the flanges for about one-half of the tooth depth to displace metal outwardly to form the tips of the teeth.

3,688,375

**MACHINE FOR MANUFACTURING HEAT EXCHANGER TUBE**

Herbert J. Venables, III, Cleveland, Ohio

Filed July 13, 1970, Ser. No. 54,304

Int. Cl. B23p 15/26

U.S. Cl. 29-202 D

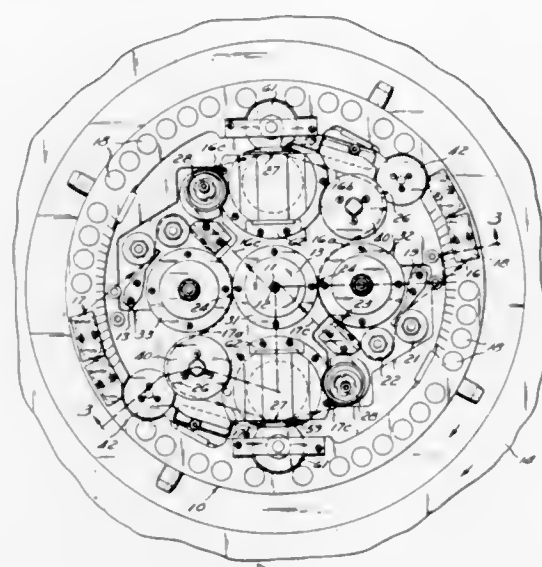
8 Claims

Apparatus is disclosed for forming heat exchanger tubes having two helically wound foil strips each of which is provided with two lanced legs extending substantially perpendicular to the base tube. The foil stock is supplied from the interior



of a coil consisting of two interleaved strips wound in a spiral form. The strips are separately fed and formed and are sub-

a guide for directing a plastic photographic slide mount between the rollers so that the pressure of the rollers against



sequently wound on an axially movable non-rotating tube. The winding head subassemblies are symmetrically positioned to provide dynamic balancing.

3,688,376

# DEVICE FOR MANUFACTURING FLUX-CORED WIRE

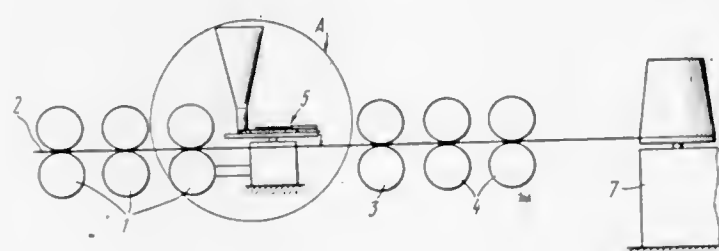
Igor Konstantinovich Pokhodnya, Vladimir Fedorovich Alter, Igor Prokofievich Kaplenko, Sergei Alexandrovich Suprun, Alexandr Mikhailovich Suptel, and Valery Nikolaevich Shlepakov, all of Kiev, U.S.S.R., assignors to Institut Elektrosvarok E.O. Patona Akademii Nauk Ukrainskoi SSR, Kiev, U.S.S.R.

Filed Oct. 30, 1970, Ser. No. 85,484

Int. Cl. B23p 19/04

U.S. Cl. 29—202.5

3 Claims



The invention relates to a machine for manufacturing flux-cored wire which is an enclosed metal casing filled with a powder-like charge, the machine comprising rollers for continuously shaping of the strip into a trough; a feeder in the form of a hopper with a device under it for feeding the charge into the trough; and rollers for shaping the trough into a tube and compacting the charge in it. According to the invention, provision is made for a mechanism for synchronizing the movement of the charge-feeding device with the movement of the strip, the mechanism being built-in between the charge-feeding and the strip-feeding mechanisms.

3,688,377

# PHOTOGRAPHIC SLIDE MOUNT RIVETING PRESS

Stanley C. Kaiser, P.O. Box 3101, Colorado Springs, Colo.

Filed Aug. 24, 1970, Ser. No. 66,438

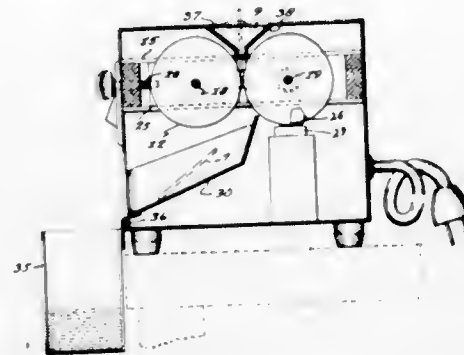
Int. Cl. B23q 7/10

U.S. Cl. 29—211

1 Claim

The present invention includes a pair of spaced apart rotatable rollers and motor means for turning one of the rollers and

An elongated tube rigidly supported horizontally at one end portion is arcuately curved, to substantially describe a circle



the frame members of the slide mount will deform rivots integral with one side of the slide mount frame in order to secure the two sides of the frame together.

3,688,378

# SOIL PIPE ASSEMBLY TOOL

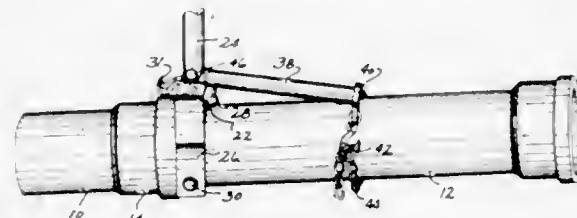
Jerry W. Garvey, 2331 E. Evergreen Drive, Appleton, Wis.

Filed June 22, 1970, Ser. No. 48,277

Int. Cl. B23p 19/04

U.S. Cl. 29—237

1 Claim



A tool for assembling an disassembling soil pipes having telescoping bell and spigot type joints employing a resilient gasket type of seal and lock. The tool includes a yoke for embracing the pipe having the bell end and for being placed in abutment with the bell end. An operating lever having a bifurcated end is pivotally mounted on the yoke. A chain is fastened around the second pipe adjacent the spigot end and hooked to the operating handle so that by pivoting the operating lever on the yoke, the pipes may be assembled by pulling the spigot end of one pipe into the bell end of the other pipe. For disassembly of the pipes, a strut may be linked between the operating lever and the pipe having the spigot end so as to remove the spigot end from the bell end upon pivotal movement of the operating lever.

3,688,379

# BAG DRAWSTRING THREADER

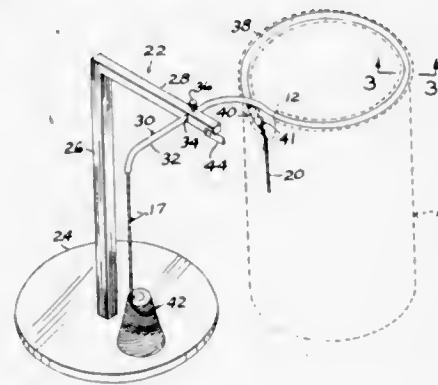
Buell L. Davis, and Richard D. Pulliam, both of 311 N.W. 8, Oklahoma City, Okla.

Filed Feb. 25, 1971, Ser. No. 118,719

Int. Cl. B23p 19/04

U.S. Cl. 29—241

2 Claims



with the free end portion of its curved end underlying in spaced relation an intermediate portion of the tube. The free end portion of a drawstring, from a supply spool, extends longitudinally through the bore of the tube and beyond its free end. One end of the drawstring receiving loop, at the mouth of a bag to be drawstring threaded, progressively accepts the free arcuately curved end of the threading tube until the drawstring loop of the bag is substantially coextensive with the circular path defined by the threading tube.

3,688,380

# MEANS FOR THE CORRECTION OF UNBALANCE IN AN AUTOMOBILE WHEEL

Dionys Hofmann, Darmstadt, and Dietrich Ende, Onstmettingen, both of Germany, assignors to Dionys Hofmann Maschinenfabrik, Darmstadt, Germany

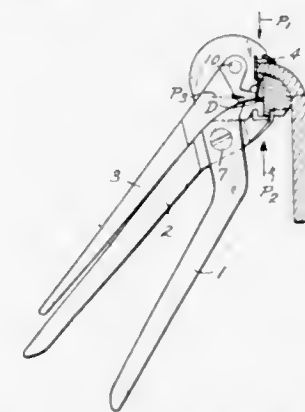
Filed Dec. 1, 1969, Ser. No. 881,063

Claims priority, application Germany, Dec. 2, 1968, P 18 12 186.3

Int. Cl. B23p 11/00

U.S. Cl. 29—243.56

12 Claims



A balance weight for balancing vehicle wheels comprising a weight portion and a separate holding clip which is adapted to engage the weight portion in any of a number of radial positions with respect to the wheel and to also engage a rim flange upon the vehicle wheel to thereby attach the weight portion to the wheel.

A tool is provided for applying the weight to the rim flange which applies diametrically opposed forces to the rim flange and the weight and also applies a third force, perpendicular to the first two forces, which urges the holding clip into the weight portion.

3,688,381

# APPARATUS FOR INSTALLING BUSHINGS

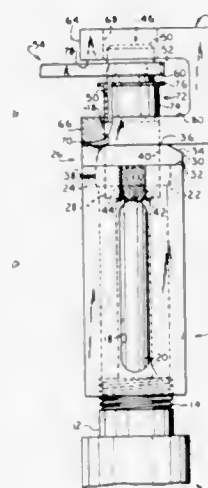
Robert H. Shifflet, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed March 16, 1970, Ser. No. 19,672

Int. Cl. B23p 19/04

U.S. Cl. 29—263

4 Claims



A tube is coaxially mounted on one end of a pressure cylinder so that a ram mounted in said cylinder extends and

retracts axially of the tube, and a centrally apertured support member is releasably mounted on the free end of the tube in coaxial relation with the ram. One end of a bar is releasably connected to the free end of the ram, a portion of this bar being slidably engaged in the aperture in the support member and in an apertured part one side of which is placed against the end surface of the support member while a bushing is being installed in the part. The free end of the bar projects from the other side of the part and is slidably disposed in the bushing, one edge of which is initially engaged with an edge of the aperture in the part. A pull plate is engaged with the free end of the bar so that retraction of the ram into its cylinder causes the pull plate to draw the bushing into the aperture in the part.

3,688,382

# METHOD OF PRESSURE WELDING OF METALS AND DEVICE FOR ITS REALIZATION

Konstantin Konstantinovich Khrenov, ulitsa Cheljusintsev, 15, kv. 11; Pavel Ivanovich Gursky, Bulvar Lesi Ukrainki, 2, kv. 58; Grigory Alexandrovich Shulman, ulitsa Vladimiro-Lybedskaya, 16, kv. 48; Gennady Alexeevich Klimenko, ulitsa Izhakevicha, 7/10, kv. 71; Ivan Viktorovich Kirdo, ulitsa Aviatso, 8, kv. 55; Georgy Viktorovich Dmitrenko, ulitsa Stepana Khakurina, 14, kv. 3; Ivan Nikolaevich Yagupov, ulitsa Artema, 12, kv. 11, all of Kiev; Mark Irmovich Tsyrlin, prospekt Kirova, 4, kv. 13, Gorky; Anatoly Petrovich Novikov, prospekt Iliche, 32a, kv. 50, Gorky, and Filimon Efimovich Puzov, ulitsa Krasnykh partizan, 8, kv. 63, Gorky, all of U.S.S.R.

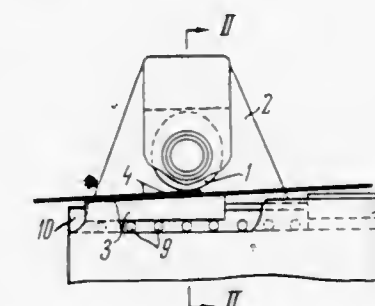
Filed March 16, 1970, Ser. No. 19,842

Claims priority, application U.S.S.R., May 5, 1969, 1332271

Int. Cl. B23k 21/00

U.S. Cl. 29—470.1

7 Claims



Pressure welding of metals is effected by subjecting the welded metal to plastic deformation by forcing a working tool into the metal, the squeezing speed of the working tool being changed relative to the speed of flow of the welded metal so that at the moment of welding the squeezing speed is between 0.1 and 0.6 of the flow speed.

3,688,383

# METHOD OF DISASSEMBLING SHEET METAL ASSEMBLIES

Albert Michael Martin, Cleveland, Ohio, assignor to Barea Road Auto Body, Inc.,

Filed April 23, 1970, Ser. No. 31,085

Int. Cl. B23p 19/02

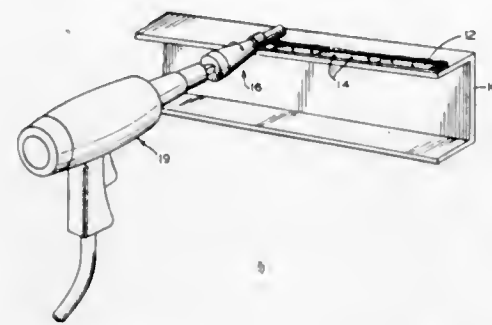
U.S. Cl. 29—427

5 Claims

A method and apparatus for disassembling or removing an elongated, flexible metal strip joined, such as by spot welding, to a relatively rigid base member. The method includes loosening a first end of the strip from the base member. A tool is provided having a bifurcated end portion adapted to be rotated about an axis generally aligned with the mid-plane of the bifurcation. The first end portion of the strip is positioned in the bifurcation. Thereafter, the tool is rotated about its axis causing the strip to be wound on the tool and ripped from the base member. The tool disclosed is especially suited for carry-



ing out the method and includes a generally conical, truncated body with a bifurcated cylindrical portion extending outwardly from the small diameter end of the body. When used to



carry out the method, the relationship of the bifurcated portion conical body causes the strip to wind up on the conical body which makes the strip much easier to remove from the tool.

3,688,384

# METHOD OF PRODUCING A SYNTHETIC RESIN BOX WITH DOUBLE WALL STRUCTURE

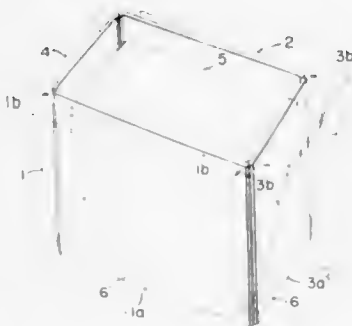
Kyohei Mizushima, and Yukio Yada, both of Tokyo, Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan  
Filed Aug. 14, 1970, Ser. No. 63,677

Claims priority, application Japan, Sept. 9, 1969, 44/71003; Dec. 19, 1969, 44/101694; Dec. 19, 1969 44/101695; Dec. 29, 1969; 44/123951; Dec. 29, 1969, 44/123952; Mar. 24, 1970, 45/24091

Int. Cl. B21d 39/00; B23p 19/04

U.S. Cl. 29—455

11 Claims



A method of producing a synthetic resin-made box with double wall structure, adapted for use as the box frame of a refrigerator or the like, comprising the steps of molding a double-walled box body of a synthetic resin in a metal mold by injection molding in such a manner that wall sections constituting the inner wall of the box body are formed integrally, while wall sections constituting the outer wall of the box body are formed separately extending obliquely outwardly with one edge each thereof connected to said respective inner wall sections, after molding bringing said outer wall sections to the normal positions extending horizontally or vertically in adjacent relation to said inner wall sections respectively, connecting the adjacent edges of said outer wall sections with each other by means of coupling members, filling the space defined between said inner wall and said outer wall with a heat insulating material and closing the open rear end of the box body with a closure plate.

3,688,385

# METHOD OF MAKING A RIVETED JOINTURE

Omar L. Brown, Dayton, Ohio, assignor to Eral C. Frazee, Dayton, Ohio

Filed Nov. 4, 1969, Ser. No. 873,829

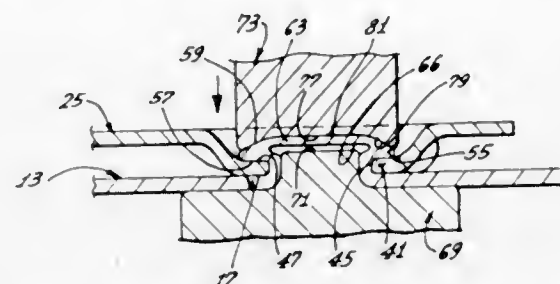
Int. Cl. B21d 39/00; B23p 11/00

U.S. Cl. 29—509

8 Claims

An easy opening container wall including a container wall of sheet material having a line of weakness therein defining a tear portion at least partially removable from the container wall. A hollow rivet is formed integrally with the sheet materi-

al of the tear portion and projects through an aperture of a tab. The hollow rivet is headed by a punch which forces the material making up the bead of the rivet tightly against the re-



gion of the tab immediately surrounding the aperture therein so that the area of engagement between the bead and the tab is generally annular and has substantial radial width.

3,688,386

# METHOD FOR FENESTRATION OF CONTACT LENSES

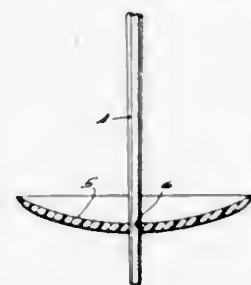
Adolf J. Pereira, 9800 S.W. 15th St., Miami, Fla.

Filed March 15, 1971, Ser. No. 124,237

Int. Cl. B23p 13/04

U.S. Cl. 29—558

4 Claims



This disclosure shows a means and method of fenestrating contact lenses by use of a series of very small tools specifically a small hand drill, a tapered reamer, and a bevelling tool having a 90° point to bevel the edges of the hole, and a polishing and smoothing device combined with the bevelling tool so as to give a final polish to the edges of the hole. The method is carried out by first drilling the hole, reaming the thus drilled hole to predetermined size, and finally bevelling then polishing the edges of the hole.

3,688,387

# SHUTTLE TYPE AUTOMATIC TOOL CHANGER

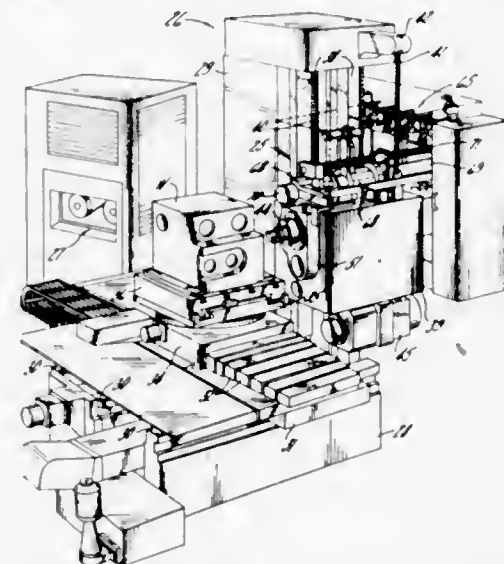
William D. Zettler, Fond du Lac, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Feb. 17, 1970, Ser. No. 12,158

Int. Cl. B23q 3/157

U.S. Cl. 29—568

14 Claims



An improved shuttle type automatic tool changer is disclosed in the environment of a multi-purpose horizontal spin-

dle machine tool and is adapted to effect the transfer of a succession of tools between a remote tool storage matrix and the machine spindle. The tool changer operates with simple shuttle motions, carrying the tool through a relatively long rectilinear path parallel to the spindle and a substantially shorter orbital path which intersects the axis of the spindle, and utilizing tool handling elements which maintain precise control of the position and orientation of the tool throughout the transfer movement. The tool changer is mounted on the machine tool as a unitary assembly adapted for operation through the numerical control system of the machine.

3,688,388

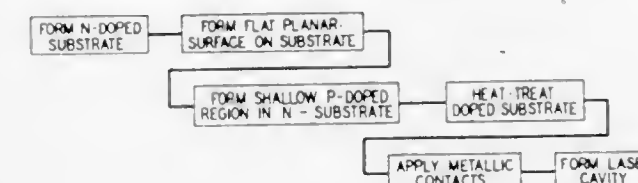
# METHOD OF MAKING Q-SWITCHED DIODE LASER

John C. Dymont, Chatham, N.J., and Jose E. Ripper, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 14, 1968, Ser. No. 775,777

U.S. Cl. 29—569

6 Claims



A junction diode laser which exhibits internal Q-switching can be fabricated from a direct gap semiconductor substrate having a sufficiently low concentration of donor impurities by the steps of diffusing a shallow p-doped region into the substrate by a sufficiently slow diffusion process, heat-treating the doped substrate, applying stripe geometry electrical contacts, and forming the substrate into a laser cavity. These lasers are potentially useful in light communications systems utilizing pulse code modulation.

3,688,389

# INSULATED GATE TYPE FIELD EFFECT SEMICONDUCTOR DEVICE HAVING NARROW CHANNEL AND METHOD OF FABRICATING SAME

Sho Nakanuma; Tohru Tsujide, and Toshio Wada, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

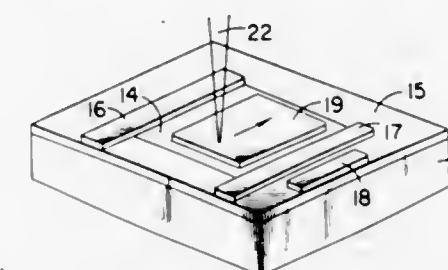
Filed Feb. 19, 1970, Ser. No. 12,731

Claims priority, application Japan, Feb. 20, 1969, 44/12967

Int. Cl. B01j 17/00; H01g 13/00

U.S. Cl. 29—571

11 Claims



A method for fabricating an integrated gate field effect transistor is disclosed wherein an induced conduction region is formed between the source and drain regions by the application of a suitable potential between the gate electrode and substrate. The surface of the device is irradiated by a high-energy beam, thereby to form a narrow channel in the conduction region which defines the gate channel of the field effect transistor.

3,688,390

Patent Not Issued For This Number

3,688,391

# IGNITION DISTRIBUTORS

William Harold Cooksey, 5, Penryn Close, Park Hall, Walsall, England

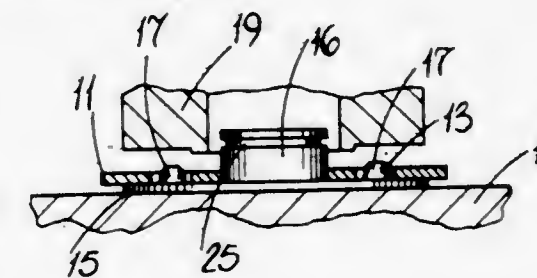
Filed Aug. 12, 1970, Ser. No. 63,247

Claims priority, application Great Britain, Aug. 12, 1969, 40,188/69

Int. Cl. H02k 15/02

U.S. Cl. 29—598

3 Claims



A method of assembling an ignition distributor of the kind which includes a base plate which is secured to the casing of the distributor and a timing plate which is mounted for angular movement on the base plate includes the steps of engaging a first annular plate with an annular base plate so that three projections provided on the first plate extend through corresponding apertures in the base plate. The three projections of the first plate are so disposed that any one of the projections is on the opposite side of a diameter of the first plate from the remaining projections. The portions of the projections which extend from the base plate are then subject to a levelling operation so that the free ends of the projections lie in a common plane parallel to, but above the plane of the base plate. A third annular plate is then engaged with the free ends of the projections where they extend from the base plate, and resilient means is utilized to couple the first plate and the third plate to define an assembly. The resilient means urges the third plate towards the first plate, and the first or third plate includes a cylindrical spigot which extends through a hole in the base plate, so that the assembly of the first and third plates is movable angularly relative to the base plate. Either the first plate, or the third plate constitutes the timing plate of the distributor in use, and carries the contact breaker assembly of the distributor.

3,688,392

# IGNITION DISTRIBUTORS

William Harold Cooksey, 5 Penryn Close, Park Hall, Walsall, England

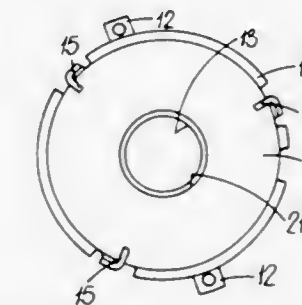
Filed Aug. 12, 1970, Ser. No. 63,248

Claims priority, application Great Britain, Aug. 12, 1969, 40,187/69

Int. Cl. H02k 15/02

U.S. Cl. 29—598

1 Claim



A method of assembling an ignition distributor of the kind including a base plate which is secured to the casing of the dis-



tributor and a timing plate mounted for angular movement on the base plate, the timing plate carrying in use the contact breaker assembly of the distributor, including the steps of engaging the annular timing plate with the base plate. The base plate and the timing plate include mating surfaces which locate the timing plates for angular movement on the base plate when the timing plate and base plate are interengaged. Three tags or ears formed on the base plate are then deformed to overlie the surface of the timing plate remote from the base plate, the ears being such that any one of the ears is on the opposite side of a diameter of the plate from the remaining ears. The ears are bent to a position such that a predetermined clearance exists between the lower surfaces of the ears and the upper surface of the timing plate, so that the timing plate is held against disengagement from the base plate in an axial direction, but there is a predetermined amount of clearance between the ears and the timing plate, so that the timing plate is capable of small movements in an axial direction. In a first alternative the ears are deformed to the desired position prior to engagement of the timing plate with the base plate, and the timing plate is formed with slots through which the ears pass when the timing plate is engaged with the base plate. In a further modification the timing plate includes a plurality of projections onto which the ears are bent, the projections defining the extent of the clearance, and in a still further alternative the timing plate has projections which engage the base plate, and the base plate has apertures into which the projections can locate upon angular movement of the timing plate relative to the base plate. In this embodiment, the ears are deformed into engagement with the timing plate while the projections engage the surface of the base plate, and the timing plate is then rotated so that the projections locate in the apertures, and the predetermined clearance exists between the timing plate and the ears.

3,688,393

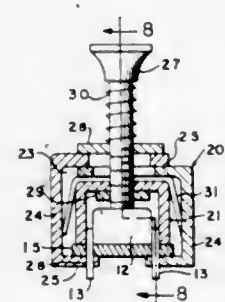
# METHOD AND DEVICE FOR STRAIGHTENING AND ALIGNING LEADS OF A MODULE INSERTABLE IN A CIRCUIT BOARD

William M. Halstead, P. O. Box 881, Glen Burnie, Md.  
Continuation-in-part of Ser. No. 12,673, Feb. 19, 1970, Pat. No. 3,628,244. This application Sept. 17, 1970, Ser. No. 73,124

Int. Cl. H05k 3/30, 13/04

U.S. Cl. 29—626

10 Claims



The two rows of terminal leads of an electrical module are inserted into a pair of parallel slots formed within a body of a device. A pair of notched jaws disposed at opposing sides of the body are moved towards each other for engaging each lead within a respective notch of the jaws. The module is then pulled from the slots in a direction longitudinal to the leads while maintaining engagement of the leads by the notches. In this way, the leads are straightened and aligned. A tool may be used having a slotted head into which the module is applied. The tool with the module thereon is then inserted into the parallel slots of the head.

3,688,394

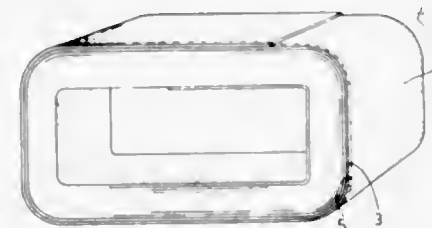
# METHOD OF MAKING A DEFLECTION COIL

Sing Liong Tan; Mathijs Willem Bartels, and Walter Wilhelmus Degger, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.  
Continuation of Ser. No. 3,138, Jan. 15, 1970. This application May 20, 1971, Ser. No. 145,503

Int. Cl. H01f 7/06

U.S. Cl. 29—605

7 Claims



Deflection coil obtained by winding a strip of foil, from which thin slices are cut after having been baked to a block, said slices being bent into a cylindrical shape.

3,688,395

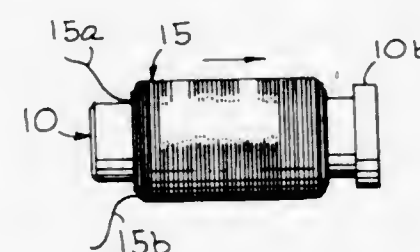
# CONSTRUCTION METHOD OF MAKING ELECTRICAL CONNECTION

Harold K. Cummings, Whitewater, Wis., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.  
Filed March 26, 1969, Ser. No. 810,451

Int. Cl. H01f 7/05

U.S. Cl. 29—605

4 Claims



A construction and method of making an electrical connection in which a base member having a metal outer surface is provided with cutting serrations for cutting through the immediately adjacent insulation of an insulated wire wound thereon to provide electrical contact therebetween. To increase the reliability of electrical contact, the insulated wire is wound at an initial position on the base member and then slidably moved across the cutting serrations to a final position.

3,688,396

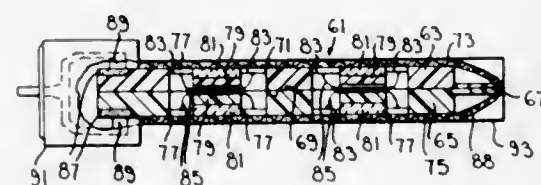
# CIRCUIT BOARD PROCESS

Jack S. Kilby, and James H. Van Tassel, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.  
Continuation of Ser. No. 515,903, Dec. 23, 1965, abandoned.  
This application Oct. 13, 1969, Ser. No. 871,756

Int. Cl. H05k 3/28

U.S. Cl. 29—627

7 Claims



Disclosed is a method of forming a single-sided or a double-sided circuit board with mounted semiconductor devices. The metal conductors on the circuit board are interconnected by wires embedded in the board itself, thereby dispensing with the need for a multilayered circuit board.

3,688,397

# METHOD OF JOINTING AND TERMINATING ELECTRIC CABLES

John Stephen Cleaver, Faversham, Kent; Peter Guilford, Erith, Kent; Frederick James Kimpton, Bexleyheath, Kent; Thomas John Page, Beckenham, Kent, and Norman Richard Steinberg, London, all of England, assignors to British Insulated Callender's Cables Limited, London, England

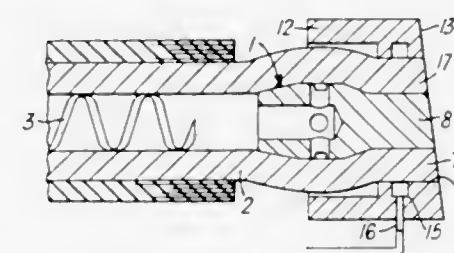
Filed April 4, 1969, Ser. No. 813,523

Claims priority, application Great Britain, April 11, 1968, 17,484/68; June 10, 1968, 27,499/68; June 10, 1968, 27,500/68; Nov. 11, 1968, 53,371/68; Nov. 11, 1968, 53,372/68

Int. Cl. H01r 43/00

U.S. Cl. 29—628

21 Claims



In a method of jointing or terminating an electric cable having at least one conductor in the form of a hollow strand through the bore and the interstices of which liquid impregnant for the cable dielectric can pass the stranded conductor is bonded to a terminal or to another conductor by application in the molten state of an adherent body of metal to substantially the whole of the cut end face of the stranded conductor or between the cut end face of the stranded conductor and the end of the terminal or of the other conductor. During the process a mandrel is inserted in the end of the bore of the conductor and passage of impregnant from the bore to an end portion of the strand is inhibited, by said mandrel or otherwise, a heat sink is formed so as to surround the end of the stranded conductor and liquid impregnant is removed from the interstices between the wires of the stranded conductor in the end portion thereof by applying vacuum thereto. The bonding process is preferably an MIG (metal/inert gas) or other welding process. Preferably oil flows through radial passages formed in the wall of the strand. In the case of a joint, these radial passages are preferably interconnected by longitudinal passages formed in a ferrule.

3,688,398

# CAN OPENER WITH CUTTING ELEMENT CARRYING HAND LEVER AND PUSH BUTTON OPERATED MECHANISM FOR REMOVING SAME

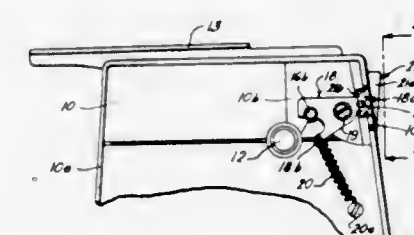
Leo F. Aberer, Shawnee Mission, Kans., assignor to Rival Manufacturing Company, Kansas City, Mo.

Filed Feb. 19, 1970, Ser. No. 12,742

Int. Cl. B67b 7/38

U.S. Cl. 30—4 R

3 Claims



An electrically powered can opener has a cutter wheel carrying hand lever pivotally attached to its forward upright frame by an elongate pin assembly. The frame and various parts of the can opener include a spring biased movable latch which engages a portion of the pin assembly to retain same in

its operative environment. This latch is enclosed by an open front box-like casing which has an exteriorly accessible push button located on the casing and engaging a portion of the movable latch. The push button has a position which when moved thereto pivots the movable latch out of contact with said pin assembly thereby allowing the hand lever to be removed from the can opener frame.

3,688,399

# APPARATUS FOR PIERCING A CONTAINER

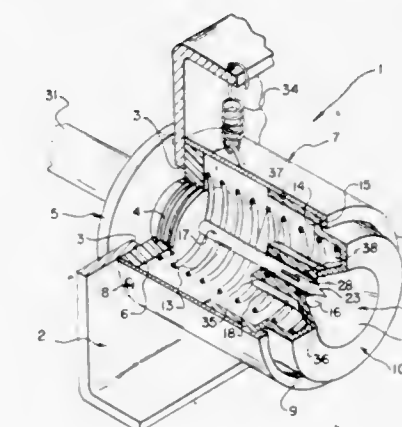
Lloyd A. Mengel, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed March 1, 1971, Ser. No. 120,017

Int. Cl. B67b 7/24

U.S. Cl. 30—16

11 Claims



Container-piercing apparatus, wherein an inwardly tapered cup member is provided with an opening into the innermost region thereof for admitting a piercing member. The cup and the piercing member are supported for movement of one relative to the other so that the last-mentioned member can be admitted through the inner opening of the cup in a direction enabling engagement of the piercing member tip with a container received in the cup. Support of the piercing member and the cup for movement along a path transverse to the foregoing direction is provided so that the piercing member tip can be centered with respect to a predetermined location on the container as the container is received in the cup. For conveying fluid from or to a pierced container, the piercing member includes a chamber and a pair of spaced openings which communicate with such chamber.

3,688,400

# CAN OPENER WITH REMOVABLE HAND LEVER

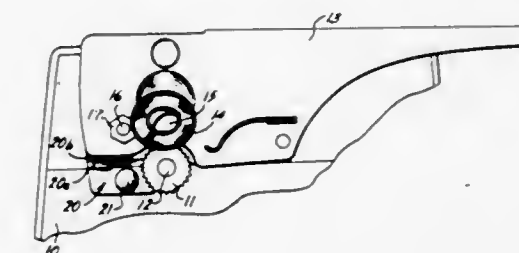
James B. Aberer, Lake Winnebago; Bill G. Mead, Raytown, and Joseph J. Farkas, Kansas City, all of Mo., assignors to Rival Manufacturing Company,

Filed Sept. 10, 1970, Ser. No. 71,078

Int. Cl. B76b 7/38

U.S. Cl. 30—4 R

3 Claims



An electrically powered can opener has a cutter wheel carrying hand lever pivotally attached to its forward upright frame by an elongate pin assembly. The frame has a latch plate fixedly attached to the forward surface thereof and located in a plane parallel to the forward frame surface for operation



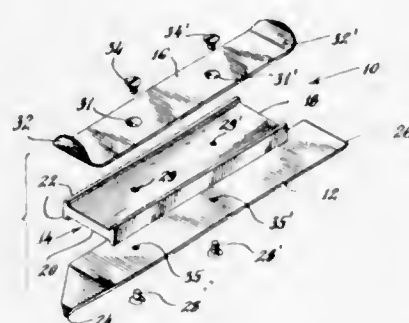
with a latch, same being attached to and extending from a portion of the hand lever pin assembly. The latch and latch plate engage but cooperate to permit the pivotal movement of said hand lever within its operative environment toward and away from the frame mounted rotative can feed wheel. At the same time removal of the hand lever from the can opener frame is precluded by the engagement of the two latch members. Pivotal movement of the hand lever past the normal operating positions will cause the latch to be disengaged from the latch plate and the hand lever-pin assembly combination may be removed from the can opener frame and reassembled by an appropriate sliding movement of the hand lever with respect to the frame.

### 3,688,401 PAINTER'S TOOL

Fred Hartman, 8 Harding Ave., Stamford, Conn.  
Filed April 29, 1971, Ser. No. 138,636  
Int. Cl. E04f 21/28

U.S. Cl. 30—171

8 Claims



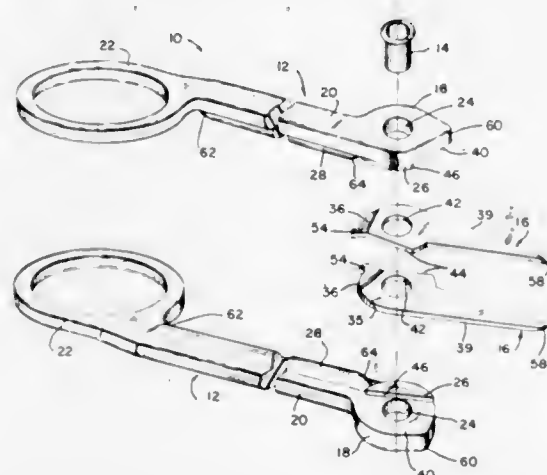
Appainter's scraping tool is formed with a handle having a pair of end-located thumb stops for enhanced leverage during the working of a surface. The scraping tool includes a replaceably mounted scraping blade located below the thumb stops and provided with end-located working edges. The tool is conveniently reversible, one thumb stop being engaged by a thumb while the other cooperates to seat against the heel of the hand for firm gripping of the tool.

### 3,688,402 DISPOSABLE SURGICAL SCISSORS

Suel Grant Shannon, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.  
Filed July 16, 1970, Ser. No. 55,544  
Int. Cl. B26b 13/04

U.S. Cl. 30—260

2 Claims



Disposable scissors including a pair of blades, each having a cutting section, mounting section pivotally mounted together, and a camming section inclined and cooperating with a like camming section of the opposed blade. The camming sections of the blades slidably engage as they are moved toward closed

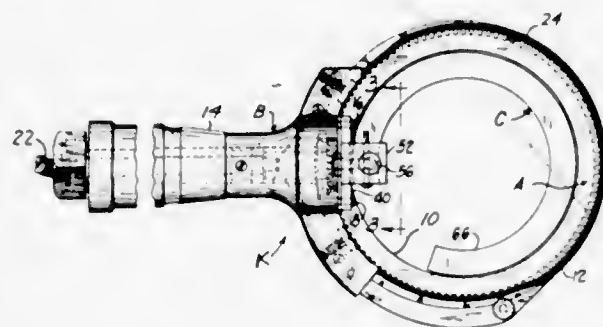
positions in order to urge the cutting sections together and provide cutting pressure. The camming sections are provided with tabs which abut to limit movement of the blades beyond their closed positions.

### 3,688,403 KNIFE

Louis A. Bettcher, Amherst, Ohio, assignor to Bettcher Industries, Inc., Birmingham, Ohio  
Filed Oct. 21, 1970, Ser. No. 82,773  
Int. Cl. B26b 29/00

U.S. Cl. 30—276

6 Claims



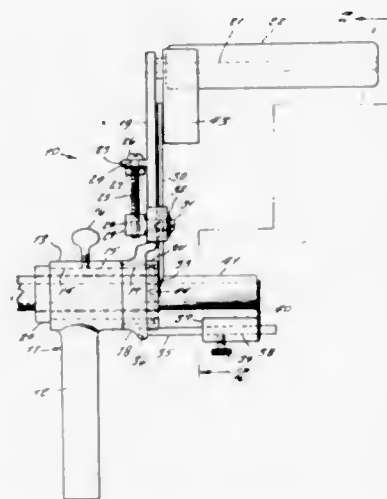
A manually held and manipulated motor drive meat product trimming and slicing knife comprising a ring-like rotary blade of considerably greater diameter than its axial length supported in a handle assembly including a hand grasp portion extending radially outwardly of the blade having an inwardly facing peripheral cutting edge at one axial end thereof, and an annular or a semi-annular ring-like member carried by the handle assembly within the blade and adjustable axially of the blade adapted to bear upon the product being cut and limit the penetration of the blade into the product.

### 3,688,404 INSULATION CABLE CUTTER

Albert G. Muller, 84-29 247 St., Bellerose, N.Y.  
Filed Dec. 29, 1970, Ser. No. 102,444  
Int. Cl. B26b 27/00

U.S. Cl. 30—91.2

3 Claims

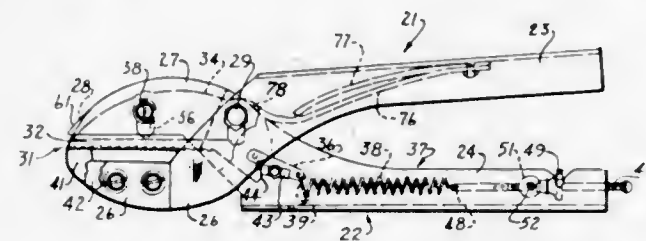


A hand tool for cutting through the insulation casing without injury to the wire conductors carried through the center of the cable, the device comprising a holder for securing the cable from which a portion of the cable to be skinned extends an adjustable stop for measuring the length of the cable to be skinned, and rotatable hand crank carrying a knife that is preset to a desired cutting depth through the cable, the knife accordingly cutting only through the insulation, after which the cut off insulation can be pulled off the exposed end of the cable.

### 3,688,405 PRUNING SHEARS

Joseph G. Dutra, Jr., 4568 Thornton Ave., Fremont, Calif.  
Continuation-in-part of Ser. No. 843,073, July 18, 1968, abandoned. This application April 21, 1971, Ser. No. 136,096  
Int. Cl. B25f 3/00; B26b 1/00, 3/00  
U.S. Cl. 30—135

9 Claims



A pruning shears is disclosed which is formed with a holder for gripping prunings after cutting of the same. The pruning holder is mounted for reciprocal displacement on a plane parallel to the cutting blade and is spring biased toward the opposite jaw of the pruning shears. Manual adjustment means is provided for selective continuous adjustment of the spring biasing force applied to the pruning holder to enable holder to grip light and delicate plants, such as flowers, without damaging the same as well as heavy branches. The pruning shears are additionally preferably provided with manually adjustable spring biasing of the return of the jaws to opened position, and they are also preferably provided with a housing extending around and enclosing the back side of the jaw in which the pruning holder is carried to prevent entry of prunings into the holder biasing mechanism.

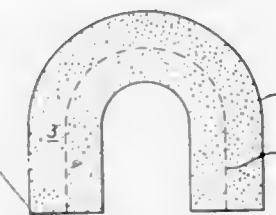
### 3,688,406 APPARATUS FOR AND METHOD OF APPLYING DECAY RETARDANT COMPOSITIONS TO TEETH

William I. Porter, 2829 Chanate Road, S.W.; Frank W. Hindsley, and James E. Hesse, all of Albuquerque, N. Mex., assignors to said Porter, by said Hindsley and Hesse, a part interest

Filed Aug. 7, 1970, Ser. No. 61,911  
Int. Cl. A61c 3/00

U.S. Cl. 32—40 R

8 Claims



Disclosed is a pliable support member which is substantially U-shaped so that it may be fit over a row of human teeth. One side of the support member is for carrying decay retardant compositions and may have a non-noxious adhesive coating thereon. The support member with its adhesive coating provides a vehicle for carrying and applying decay retardant compositions to teeth. The apparatus comprised of the support member, and adhesive coating may be electrically conductive so that electromotive force may be used for enhancing ion transfer from an ionizable decay retardant composition to teeth being treated.

### 3,688,407 DENTAL CUTTING TOOL

Omer E. Paquette, USAARMC Dental Detachment, Fort Knox, Ky.

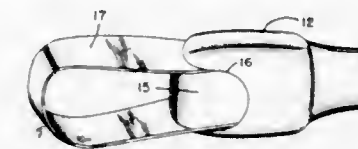
Filed Feb. 19, 1970, Ser. No. 12,654  
Int. Cl. A61c 3/00

U.S. Cl. 32—40 R

12 Claims

A tool holder and cutting tool having a handle with a recess at one end, a wedge means which fits in the recess, a blade

which is held between the recess and the wedge means, and a locking rod connected at one end to the wedge means and engaging a locking nut on its opposite end whereby the wedge



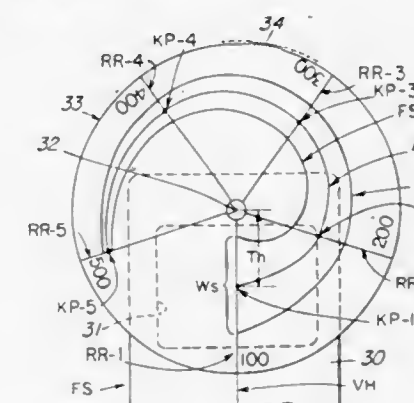
means may be tightened in the recess to securely hold the blade. A double-ended embodiment incorporating these elements is also described.

### 3,688,408

RANGE AND ELEVATION DETERMINING DEVICE  
James P. Smith, 71 Vanderwater Ave., Floral Park, N.Y., and Erwin Michelson, 102 Eighteenth Ave., East Paterson, N.J.  
Filed Feb. 19, 1971, Ser. No. 116,843  
Int. Cl. G01c 3/00

U.S. Cl. 33—64 B

8 Claims



A range and elevation determining device serving in one form as a sight for direct fire gunnery. May be in the form of a stadimetric ranging and sight setting device that when adjusted by the gunner to frame a target automatically will dictate proper elevation of the gun muzzle to accommodate known trajectory and range characteristics of certain ammunition and will direct, upon firing the gun, the projectile thereof to a selected kill point on the target. A front sight is provided as a rotatable disk that is pivotally mounted on an upright support on the gun muzzle. It may be a "see-through" or transparent disk. This disk is provided about its axis with a spiraled framing area having curved marginal framing stadia or lines that gradually converge in the direction of disk rotation from point blank or near range toward the longest effective range of the gun on which it is mounted and the ammunition used therein. Framing of the height of the image of a distant target between these marginal stadia automatically will indicate range whether or not such data is readably provided on the device. Preferably the disk is provided with annularly spaced radial lines that are respectively identified by readable range markings. The spiraled framing area may be a slot in the disk. The disk may be a reticule that is rotatably mounted in image planes of optical instruments, such as binoculars, gunner's telescopes and periscopes, and provided with suitable readable markings that inform one accurately of the range and elevation data.

### 3,688,409

#### 1-SQUARE AND GUIDE MEANS FOR DRAFTING

Murray K. Robers, deceased, late of Somerset, Ky.; by May B. Rogers, Executrix, assignor to Multi-Line Pen Company Incorporated, Ferguson, Ky.

Filed Nov. 4, 1969, Ser. No. 873,962  
Int. Cl. B43i 13/24

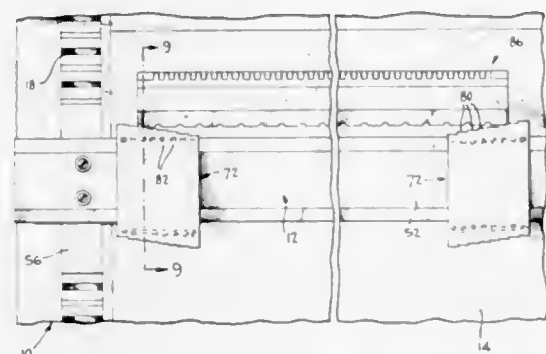
U.S. Cl. 33—81

15 Claims

A drafting board has elongated recesses along the sides thereof, said recesses having specially formed teeth for inter-



locking with corresponding teeth on cross members of an I-square. The bottom of the drafting board converts into legs thereby opening up the translucent center portion for conversion to a tracing table. Step spacers for lines are positionable on the I-square and include stepped surfaces for forming multiple parallel lines; a single step spacer being usable with a



novel rider rule by cooperation with a guide finger on the same. Fractional notches on the finger provide increased numbers of accurately spaced lines. The rider rule is movable along a 45 degree angle to provide station keeping force during use; a scale on the rider rule and perpendicular thereto providing a quick reference for line spacing. Side guides snap on the I-square and extend beneath the rider rule.

3,688,410

## MEASURING AND DISPLAY SYSTEM

Herman Rudolf Zeldler, Massapequa Park, and Ronald M. Aurnou, Deer Park, both of N.Y., assignors to Linear Motion Technology, Inc., Farmingdale, N.Y.

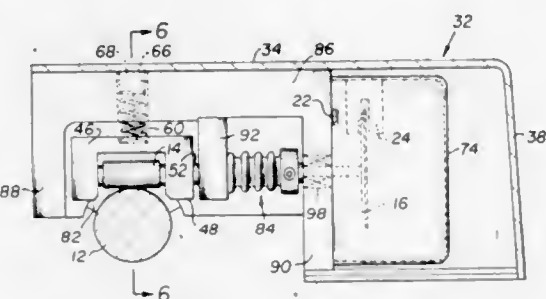
Filed April 15, 1970, Ser. No. 28,783

Claims priority, application Great Britain, Aug. 26, 1969, 42,375/69

Int. Cl. G01b 3/12

U.S. Cl. 33-142

7 Claims



Apparatus for measuring and displaying the amount and degree of movement of a movable element of a machine tool comprising a linear member and a rotatable member angularly disposed thereto and in surface engagement therewith. Either or both of the members is displaceable in correspondence with the movable machine element so as to cause rotation of the rotatable member by interaction of the surface engagement. The rotatable member is provided with means for producing a signal indicative of the incremental rotation thereof. The signal is fed to a display device whereon the degree of displacement from an initial position can be seen.

3,688,411

## WIDE RANGE DIMENSION MEASURING APPARATUS

Hiroaki Asano, and Masao Ohtsu, both of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Asahi-machi, Kariya-shi, Aichi-ken, Japan

Filed April 7, 1970, Ser. No. 26,334

Claims priority, application Japan, April 26, 1969, 44/32560

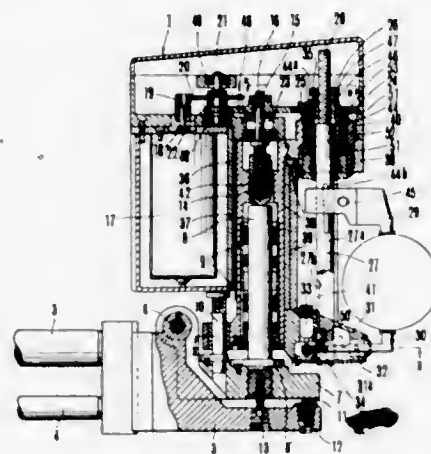
Int. Cl. G01b 5/08, 5/10

U.S. Cl. 33-143 L

7 Claims

Measuring apparatus for measuring the diameter of a workpiece over an extended range thereof being provided with first

and second measuring members to engage the workpiece and respectively being mounted on the first and second support members. The first support member is slidably mounted on a tilting base and the second support member is slidably mounted on the first support member. A first means is provided to move the first support member relative to the tilting



base and a second means is provided to move the second support member relative to the first support member in a direction opposite to that of the first support member by an amount twice that of the movement of the first support member whereby the spacing between said measuring members is variable without changing the center position of said spacing.

3,688,412

## SQUARE GAGE

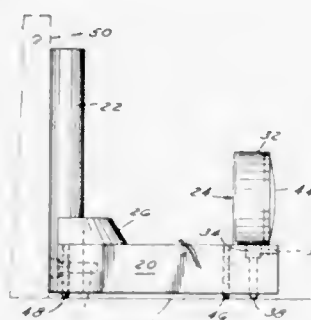
William E. Keener, 869 Fairfax, Birmingham, Mich.

Filed Aug. 31, 1970, Ser. No. 68,348

Int. Cl. G01b 3/56

U.S. Cl. 33-174 M

6 Claims



This disclosure relates to a toolmaker's square gage or try square and is adapted to indicate the deviation from square of two surfaces of a part. The square gage includes a horizontal beam having a fulcrum point or edge adjacent one end, a fixed upwardly extending gage post secured to the beam, in fixed relation, and a feeler gage secured to the beam, spaced from the post. The gage includes a gage feeler or plunger which engages the supporting surface of the gage and a dial indicator which indicates the linear movement of the feeler; such that the gage reading is proportional to the angle of inclination of the gage post, as it is tilted to engage the part, relative to a predetermined standard.

3,688,413

## DISPLAY AND SELECTION APPARATUS FOR VISUAL INSTRUCTION

James Richard Harte, 10 W. Concord Ave., Kansas City, Mo.

Filed Dec. 17, 1970, Ser. No. 99,052

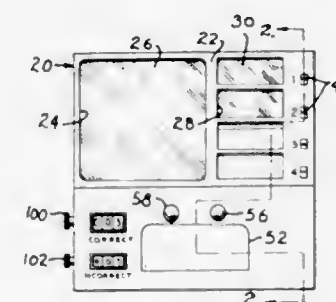
Int. Cl. G09b 3/06

U.S. Cl. 35-9 E

8 Claims

A visual instruction apparatus employing individual frames, each of which has a primary image zone containing a presenta-

tion of learning material and/or a question with multiple choice answers, and a row of secondary image zones in which one such secondary zone would be a response for the correct answer, the remaining secondary zones being for notification or instructions for incorrect answers, or for a series of steps in problem solving. The apparatus has a projection system and a viewing screen, and is provided with shutters which normally mask the projected images from the secondary zones. Each shutter may be opened by the student by manual operation of an associated push button corresponding to a particular answer selection. Where score keeping is desired, each frame



is also provided with a row of indicator zones associated with respective secondary zones. Each indicator zone is either transparent or opaque depending on whether the corresponding selection is correct or incorrect. If correct, as the corresponding indicator zone is reflected from the rear of the shutter and momentarily redirected to a photocell, causing activation of a right answer counter. Through the use of two rows of indicator zones, incorrect answers may also be separately counted or answers may be scored on a weighted basis.

3,688,414

## METHOD AND APPARATUS FOR MACHINE MAINTENANCE

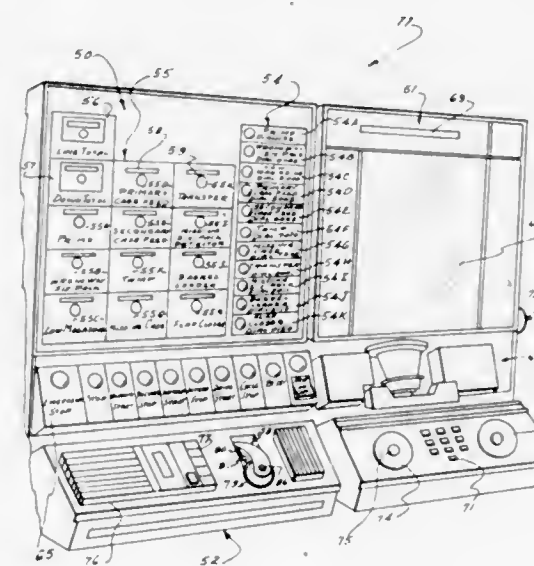
Allen W. Koehlinger, and Laurence A. Chrouh, both of Cincinnati, Ohio, assignors to R. A. Jones & Co., Inc.,

Filed Oct. 23, 1970, Ser. No. 83,318

Int. Cl. G09b 25/02; B65b 57/18

U.S. Cl. 35-13

7 Claims



Method and apparatus for locating and correcting faults in machinery comprising fault detector indicators at the fault area, a viewer for fault correcting instructions, means to correlate the indicators with the viewer. The apparatus further includes recorded audio instructions keyed to said indicators for aurally leading plant personnel through a maintenance operation. The apparatus further including a monitor for counting and timing the duration of the faults.

3,688,415

## VIBRATION DEMONSTRATOR

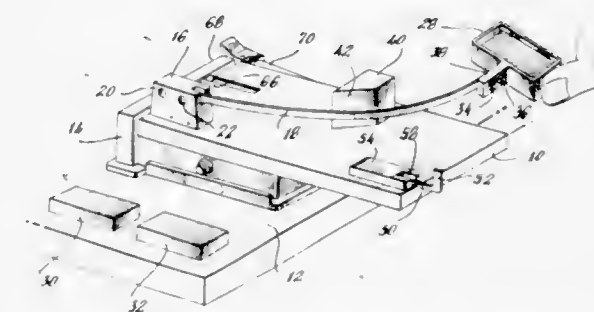
George Stehl, Kew Gardens, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed May 19, 1971, Ser. No. 144,935

Int. Cl. G09b 23/08

U.S. Cl. 35-19 R

8 Claims



An educational device for observing the physical characteristics of a vibrating mass comprises a generally planar shaped support base from which an elongated resilient body is supported in a parallel spaced apart plane, a receptacle mounted to the elongated body for receiving materials of different mass and an indicating means also supported from the base and proportioned with respect to the receptacle for providing an indication of movement of the receptacle through an equilibrium position when the resilient body is deflected and caused to vibrate.

3,688,416

## ARITHMETICAL TEACHING AID

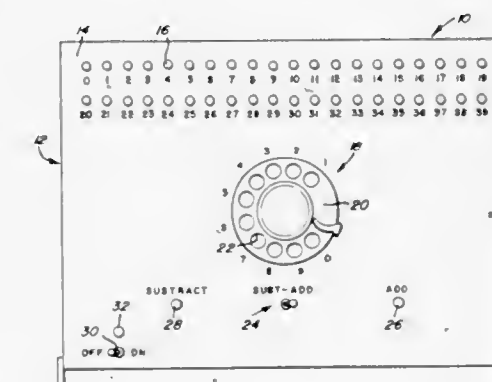
Barbara Koenig, P.O. Box 48091, Niles, Ill., and Christopher E. Pfannkuche, 7720 W. Greenleaf Ave., Chicago, Ill.

Filed Aug. 31, 1970, Ser. No. 68,338

Int. Cl. G09b 19/02

U.S. Cl. 35-31 R

9 Claims



Numeral labeled indicator lamps are sequentially illuminated and extinguished on a panel to display addition or subtraction operation. The quantity added or subtracted is selected by a pulse transmitting dialing machine. A reversing switch controls the direction in which the pulse advances a step switch to sequentially operate the indicator lamp in an addition or subtraction mode.

3,688,417

## TEACHING DEVICE

James A. Jones, 1637 Prospect Ave., Willow Grove, Pa.

Filed June 4, 1971, Ser. No. 150,111

Int. Cl. G09b 19/02

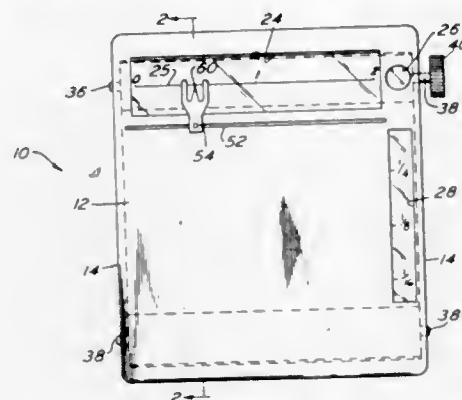
U.S. Cl. 35-31 A

5 Claims

A device for teaching fractions and their equivalents comprising a web of material having a plurality of horizontally



disposed lines extending across it. The lines are divided into segments with each of the lines being divided into a different number of segments corresponding to different fractions.



Means are provided for moving the web past a window whereby each of the lines and the fractions thereon may be observed by the student.

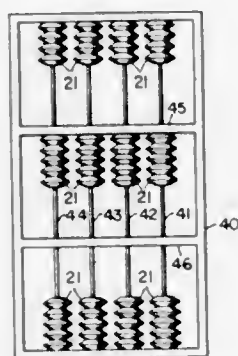
3,688,418

## MANUAL COMPUTING DEVICE

Henry Allen Wilson, 81 Atherton Ave., Atherton, Calif.  
Continuation-in-part of Ser. No. 881,732, Dec. 3, 1969,  
abandoned. This application March 9, 1970, Ser. No. 17,703  
Int. Cl. G06c 1/00

U.S. Cl. 35-33

10 Claims



A manual computing device is disclosed in which tokens representing abstract numerical quantities are moved with respect to each other to perform arithmetical processes. An elemental structure comprising a specific arrangement of such tokens according to the invention is described. Various combinations including such elemental structure are disclosed and a preferred color code for use on the tokens of such combinations is described.

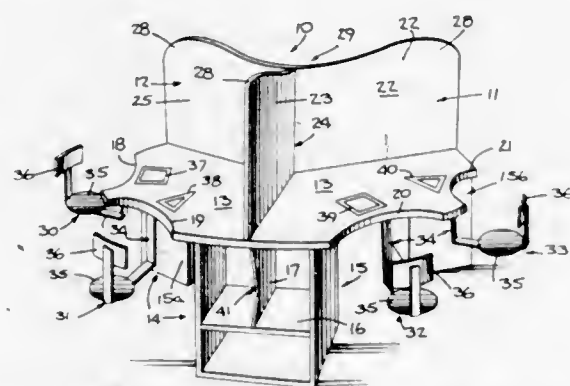
3,688,419

## PERCEPTION CONVERGENCE DEVICE FOR PAIRED LEARNING

Myron Woolman, 55 E. 86th St., New York, N.Y.  
Filed May 28, 1970, Ser. No. 41,257  
Int. Cl. A47b 41/00

U.S. Cl. 35-60

29 Claims



A device and modifications thereof are disclosed to provide for converging the perception of two individuals engaged in a

paired interactive, instructional program. The perception convergence device blocks external, non-programmed stimuli from the learner pair and focuses their combined perception on each other and on a program comprised of predetermined learning stimuli so that the learning stimuli and learner responses can be fully specified in order to facilitate mutually interactive paired learning. The device comprises barrier members and positioning means for each learner of said learner pair arranged in a manner to accomplish this purpose.

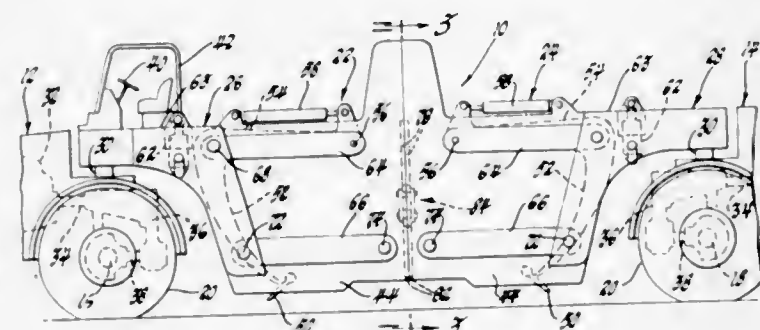
3,688,420

## EARTHMOVING VEHICLE HAVING TANDEM BOWLS

Janis Mazzarins, Macedonia, Ohio, assignor to General Motors Corporation, Detroit, Mich.  
Filed Nov. 23, 1970, Ser. No. 91,848  
Int. Cl. E02f 3/64

U.S. Cl. 37-127

6 Claims



An earthmoving vehicle having a front frame unit and a rear frame unit, each of which are rigidly supported by a transverse axle having wheels located on the opposite ends thereof. A pair of material-handling bowls are located in tandem between and supported by said frame units and are interconnected in a manner so that the bowls are permanently aligned along the longitudinal axis of the vehicle and each bowl can oscillate relative to the other about an axis parallel to the longitudinal axis of the vehicle.

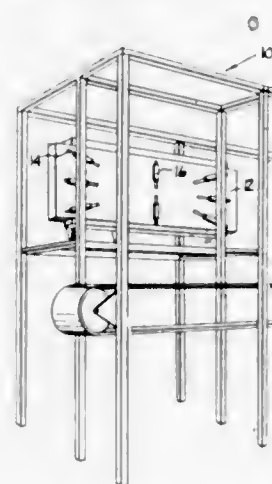
3,688,421

## MATERIAL SECURING AND TRANSPORTING APPARATUS

James Burr Hodsman, Richmond, Quebec, Canada, assignor to Canadian Johns Manville Company, Limited, Asbestos, Quebec, Canada  
Filed Jan. 22, 1971, Ser. No. 108,883  
Int. Cl. D06c 3/08

U.S. Cl. 38-102.1

11 Claims



A material securing and transporting apparatus for handling porous or non-porous materials. The device is provided with a main support having a plurality of material securing implements slidably mounted thereon for contact with a wrinkled material. Upon impinging the material each implement can be outwardly displaced from an interior portion of the support to effectively eliminate undesirable wrinkles within the material.

3,688,422

Patent Not Issued For This Number

3,688,423

Patent Not Issued For This Number

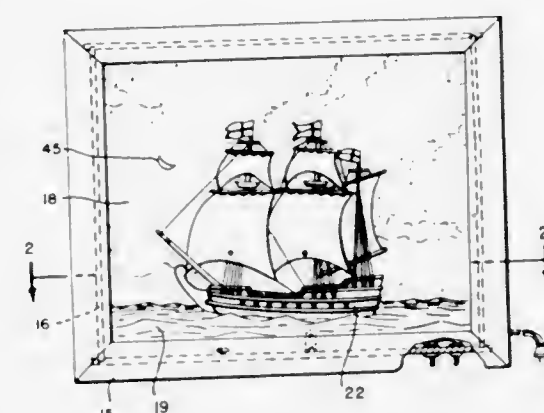
3,688,424

## THREE DIMENSIONAL DISPLAY

Peter Von Zanten, Farmington, Maine  
Filed April 27, 1970, Ser. No. 32,139  
Int. Cl. G09f 13/34

U.S. Cl. 40-106.53

10 Claims



Three dimensional displays are disclosed in which a pitching motion is imparted to a model ship. The display has a background member provided with apertures simulating stars and the moon and lighting behind the background member creates a star and moon light effect. The object moving means may be a part of a music reproducing device and has a control making music reproduction optional.

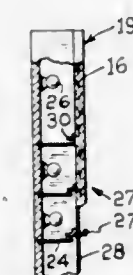
3,688,425

## REMOTE CONTROLLED LIGHTED HYMN BOARD

Paul M. Hobbs, 920 W. 23rd St., Odessa, Tex.  
Filed Aug. 17, 1970, Ser. No. 64,336  
Int. Cl. G09f 13/04

U.S. Cl. 40-132 D

6 Claims



A lighted hymn board in the form of a lighted sign adapted especially for use in a church to selectively identify a specific page number or song number in a hymn book. The apparatus is comprised of spaced apart indicia bearing lighted stations. The illuminating means associated with each station is remotely controlled to selectively highlight the indicia contained thereon. The indicia selectively affixed to each station is of a size and configuration to facilitate recognition from a considerable distance when illuminated.

3,688,426

## ARTICLE OF JEWELRY AND METHOD OF ASSEMBLING SAME

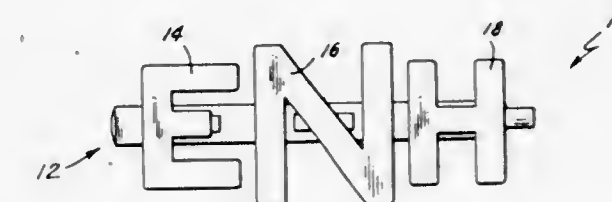
Robert M. Andreoli, Cranston, R.I., and Leo K. Stupell, Bronx, N.Y., assignors to Stupell Industries, Ltd. Inc., Providence, R.I.

Filed Aug. 17, 1970, Ser. No. 64,159

Int. Cl. G09f 7/02

U.S. Cl. 40-140

2 Claims



An article of jewelry comprising a base portion and an ornamental portion, means for detachably securing said ornamental portion to said base portion, said means comprising a non-circular lug extending rearwardly from the ornamental portion and complementary shaped opening in the base portion snugly receiving said lug so that the free end portion of the lug is exposed, said free end portion being twisted about its own axis so as to be out of alignment with the opening, thus maintaining the portions in assembled relation.

3,688,427

Patent Not Issued For This Number

3,688,428

Patent Not Issued For This Number

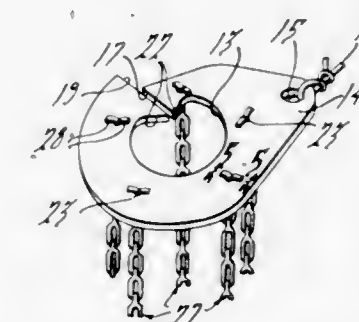
3,688,429

## FISHING LURE RETRIEVER

Robert J. Mauck, Pinconning, Mich.  
Filed Nov. 23, 1970, Ser. No. 91,824  
Int. Cl. A01k 97/00

U.S. Cl. 43-17.2

7 Claims



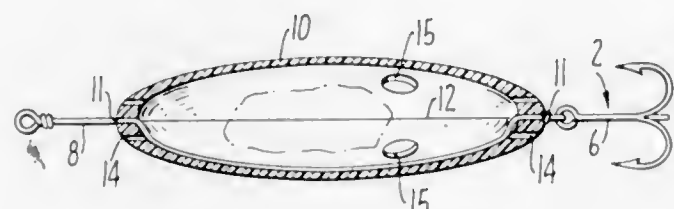
The fish lure retriever is constructed from a flat washer having a slot extending from the outer edge to the inner aperture through which the line on a snagged lure can be passed. A retrieving line along with a plurality of chain sections are attached to the body so that when the body is slid down on the fish line to the lure the weight will produce a downward pull thereon or produce an outward prying force or a chain may engage the barbs of the hooks on the lure so that it can be released upon the pulling of the retrieving line.



### 3,688,430 FISHING LURE

Duane C. Balch, 4976 Hames Drive, Concord, Calif.  
Filed Oct. 2, 1970, Ser. No. 77,547  
Int. Cl. A01k 85/00, 97/02, 97/04  
U.S. Cl. 43—42.06

8 Claims

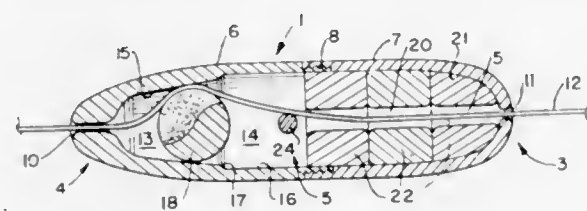


A fishing lure having an easily openable normally closed bait bag. The bag is a hollow flexible body having a longitudinal slit so that axially inward pressure on the ends thereof opens the bag for insertion or removal of bait. In one alternative embodiment snap-resistant barb recesses in the bag are provided. In further alternative embodiments a frangible capsule containing bait is provided in the bait bag for use in survival kits or the like.

### 3,688,431 TROLLER

Edgar B. Nichols, 325 W. Main St., Moorestown, N.J., and J. Howard Cundiff, Jr., 1365 Paddock Way, Cherry Hill, N.J.  
Continuation-in-part of Ser. No. 836,484, June 25, 1969, abandoned. This application Nov. 13, 1970, Ser. No. 89,378  
Int. Cl. A01k 91/00, 95/00  
U.S. Cl. 43—43.14

9 Claims



An improved troller for use with a fishing line that is capable of being varied in weight and of releasing when the troller contacts the tip of a fishing rod. The troller has a hollow casing and a ball movably disposed therein, one portion of the casing interior being tapered for wedging and locking the line between the casing and the ball in response to the pull of the line, a second portion of the casing interior being enlarged for movably encasing the ball after the troller has been released from the line in response to its contact with the tip of the fishing rod, and a third portion of the casing interior having at least one weight removably mounted therein.

### 3,688,432 ANIMAL TRAP

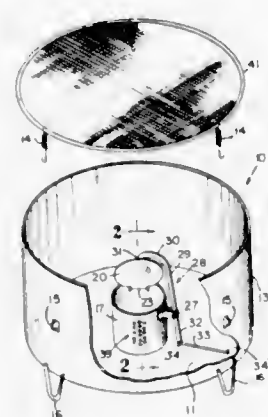
Burl E. Fruits, R.R. # 1, Waynetown, Ind.  
Filed March 29, 1971, Ser. No. 128,872  
Int. Cl. A01m 23/18

U.S. Cl. 43—61

7 Claims

An animal trap consisting of a container having a floor provided with a single entry port, an upstanding perimetral wall, a removable cover, preferably resiliently removably held in place on the container, the floor being supported above the ground or other supporting surface at such a level as to provide shelter for a rat or other animal as he seeks to enter the port, a chimney or substantially vertical passageway inside the container and registering with the port, a light, hinged closure for the upper end of the chimney gravity-biased to closed position to which it tends to fall without binding and without a loud clapping noise, latch means for holding the closure in

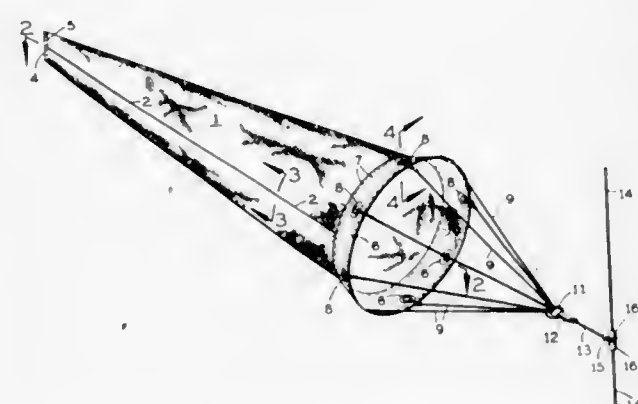
open position and trigger means disposed near the floor and within the container and effective to release the latch means when actuated by an animal within the container. Preferably, the perimetral wall of the chimney is provided with a vertically extended cluster of small perforations through which an animal within the chimney can see and scent bait on the floor



of the container and which aids the animal in climbing the vertical wall of the chimney to enter the container past the chimney door; and preferably the device includes a spring finger which overlies the closure and is slightly flexed when the closure is in fully open, latched position, whereby some pressure is applied to the latch to resist accidental disengagement of the latch.

3,688,433  
NET FOR COLLECTING MARINE SPECIMENS  
Shale J. Niskin, 9400 S.W. 63 Court, Miami, Fla.  
Filed June 6, 1969, Ser. No. 830,951  
Int. Cl. A01k 69/00, 71/00  
U.S. Cl. 43—100

2 Claims



A conical net for collecting marine specimens having a predetermined divergent conical arcuate angle with a collar at the opening thereof shaped at a larger acute divergent angle and attached to a bridle terminating in a junction for retention by a line. The net is normally rolled into a generally cylindrical form for storage and self opening when submerged by the line in a current of water.

### 3,688,434 SNAGLESS FISHING APPARATUS

Walter H. Le Vau, Minneapolis, Minn., assignor to Ronald E. Anderson, Minneapolis, Minn., a part interest  
Filed Oct. 28, 1970, Ser. No. 84,553  
Int. Cl. A01k 95/00

U.S. Cl. 43—44.97

3 Claims

A snagless fishing lure or sinker having a smoothly curved wire bail embedded in an extending from the body of the lure or sinker near the front and rear ends thereof to form front and rear notches with the body at the bail's points of entry. A fishing swivel, attachable to a fishing line or leader, is slidably mounted on the bail for smoothly sliding movement between

front and rear notches, the swivel nesting at the front notch to define a normal trolling position wherein the swivel contacts the body. In response to a forward pull on the line or leader, the front end of the body rises thereby avoiding snagging of the body as the body moves forward through the water. If the

reverse and rearward motion of the car is checked so that the track which is supported on rollers begins to advance passing under the car in the same direction. When the rear end of the track has arrived at the car, the wheels are again reversed and the car automatically begins to run along the track again, so



front end of the body wedges in a snag and thereby tensions the fishing line, line tension exerts a force on the body which causes the rear end of the body to rise sliding the swivel rearwardly along the bail and rotating the body and nesting the swivel at the rear notch so the snagged body can be pulled out of the snag.

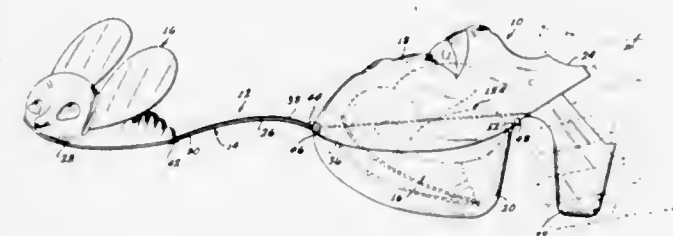
### 3,688,435 EXTENSIBLE QUICK CONFIGURATION-CHANGING TOY

Jurgis Sapkus, Manhattan Beach, and Armando M. Balza, Whittier, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 9, 1970, Ser. No. 96,373  
Int. Cl. A63h 13/00, 13/02

U.S. Cl. 46—119

12 Claims



A figure which rapidly converts from one configuration another by quickly receiving a part which previously extended therefrom or by quickly expelling a part, including a pair of pivotally joined housing parts which are urged to close by a rubber band but which can quickly open to receive or eject a device. In one toy, the housing parts represent a frog and the receivable device is in the form of a tongue that extends from the frog and carries an insect. The tongue has two elongated members, including an inner member pivotally joined to one housing part and an outer member pivotally joined to the inner one. A rubber band extends from the housing to the outer tongue member to urge the tongue device to fold into the housing. When a child briefly depresses a lever portion that opens the housing parts, the tongue is released to rapidly fold and enter the housing and the housing then closes again.

### 3,688,436 TRACK AND VEHICLE WITH MEANS FOR PROPELLING BOTH TRACK AND VEHICLE

Kazuo Wakimura, Tokyo, Japan, assignor to Nomura Toys, Ltd., Tokyo, Japan

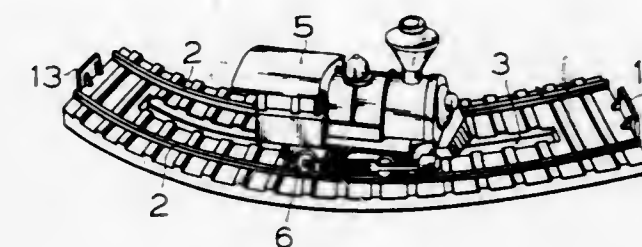
Filed Aug. 11, 1971, Ser. No. 170,898

Claims priority, application Japan, Aug. 11, 1970, 45/81017  
Int. Cl. A63h 33/26

U.S. Cl. 46—243 LV

4 Claims

A toy track and a self-driven car such as a locomotive, which runs on the track to a front end thereof and, when it has arrived at the front end, the wheels are switched to drive in



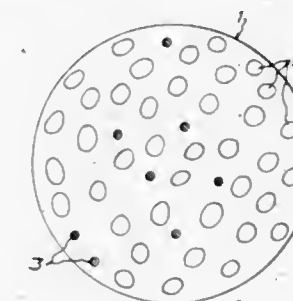
that the car and the track may go alternately ahead. The track has a pair of buffer-stops which actuate switches at the front and rear of the car to reverse rotation of wheels, and the car has a retrogression checking means extending through a slot in the track.

3,688,437  
PELLETS IN THE FORM OF FOAMED BODIES, AND METHODS FOR THE PREPARATION THEREOF  
Bjorn Staffan Artur Hamrin, Bjarred, Sweden, assignor to Ak-tiebolaget Forenede Superfosfatfabrika, Landskrona, Sweden

Filed Jan. 22, 1971, Ser. No. 108,858  
Claims priority, application Sweden, Jan. 29, 1970, 1097/70  
Int. Cl. A01n 21/02

U.S. Cl. 47—57.6

8 Claims



A method for covering and enlarging individual seeds by a chemical process, comprising the steps of introducing said seeds into a first solution containing at least one gelatinizable compound and a catalyst for the decomposition of a further compound capable of giving off a gas, and then introducing the seeds thus treated into a second solution containing at least one salt causing gelatinization of said gelatinizable compound and said further compound for the simultaneous evolution of gas for inflating the individual seeds to foamed bodies.

3,688,438  
PRODUCTION OF A METHANE-RICH SYNTHESIS GAS  
William L. Slater, and Warren G. Schlinger, both of c/o Texaco Inc., P.O. Box 400, Montebello, Calif.

Filed Dec. 28, 1970, Ser. No. 102,129  
Int. Cl. C01b 2/14

U.S. Cl. 48—215

5 Claims

Methane-rich synthesis gas comprising H<sub>2</sub>, CO, CO<sub>2</sub> and 10 to 26 percent by volume of CH<sub>4</sub> (dry basis) is produced by the partial oxidation of a hydrocarbonaceous fuel in a free flow noncatalytic synthesis gas generator at a reaction temperature below 1,700°F., a pressure in the range of about 15 to 250 atmospheres, and a steam of fuel weight ratio in the range of about 3 to 5. The product gas, after removal of CO<sub>2</sub> and H<sub>2</sub>S, has a heating value in excess of 400 BTU/SCF.

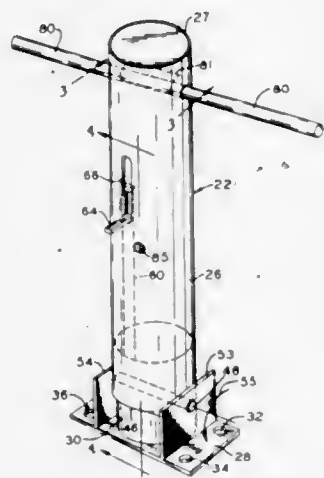


### 3,688,439 BARRIER FOR PARKING SPACES

Donald D. Dossie, R.R. # 1, Cedar Canyons, Grabill, Ind.  
Filed May 26, 1971, Ser. No. 146,902  
Int. Cl. E01f 13/00

U.S. Cl. 49—35

4 Claims



The invention pertains to a barrier which can be raised and lowered to permit only authorized parking within a given parking space. The barrier is pivotally mounted on a base plate which is fixed in the ground, and the barrier is in the form of a post having an internal locking member and a lift mechanism which is reinforced by the post against bending or other distortion. A lift handle is located transversely within the post and extends on either side for a sufficient distance so that conventional size automobiles cannot fit between adjacent barriers. A security device prevents lifting of the locking means except by operation of a key issued to the authorized user.

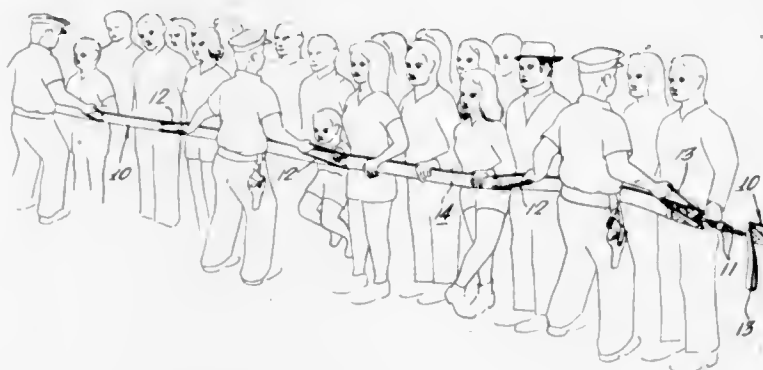
### 3,688,440 PORTABLE BARRICADE

John C. Applegarth, Kevin Carroll, and Donald D. Hyland, all of Lancaster, Pa., assignors to Lift-All Company, Inc., Manheim, Pa.

Filed May 21, 1971, Ser. No. 145,767  
Int. Cl. E01f 13/00

U.S. Cl. 49—34

8 Claims



A portable barricade which is particularly adapted for controlling crowds of people. The barricade consists of a length of

multiple-ply nylon webbing having hand holds or support loops disposed at spaced intervals along the length and including between the plies a steel cable which extends beyond the ends of the webbing and has fastener loops which are adapted to be connected together. The webbing and the cable therein are sufficiently flexible to permit coiling of the barricade upon itself to form a compact package which may be conveniently carried from place to place.

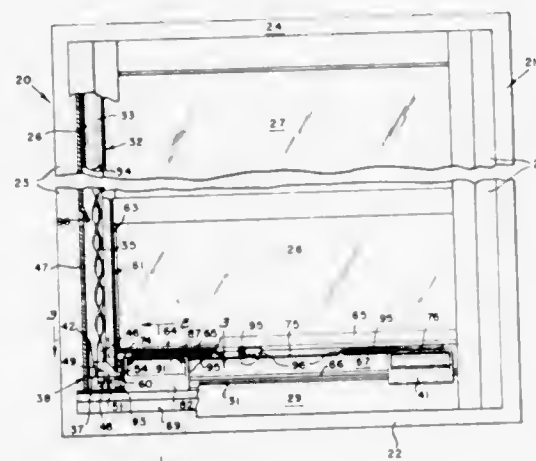
### 3,688,441 TAKEOUT MECHANISM FOR SASH TYPE SINGLE HUNG WINDOWS

Troy D. Rackard, Rte. 1, Millen, Ga.  
Continuation-in-part of Ser. No. 89,637, Nov. 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 1,205, Jan. 7, 1970, abandoned. This application June 24, 1971, Ser. No. 156,389

Int. Cl. E05d 13/10

U.S. Cl. 49—446

14 Claims



A takeout mechanism for sash type single hung windows associated with spiral balances composed of a self-lubricating, plastic foot balance and a metallic foot balance bracket independently pivoted to the lower end of the spiral balance ribbon, and a foot balance bracket retainer lug including a cylindrical attachment rib slidably associated with the sash bottom rail and spring biased to a normal cooperating retaining position beneath the foot balance bracket. The independent pivoting of the foot balance and foot balance bracket and the spring biasing to a normal cooperating retaining position together protect the takeout mechanism from accidental breakage, establish a normal full open position for the sash, and assure a readily operable takeout mechanism for removing and replacing the sash for servicing of the window. The retainer lug may also be employed to serve as a sash latch by forming the body carrying the cylindrical attachment rib to project outwardly from the channel passage of the lower sash bottom rail and downwardly past the dependent trim flange of the sill and providing it with a rearwardly directed lip to latchingly cooperate with the trim flange.

3,688,442

Patent Not Issued For This Number

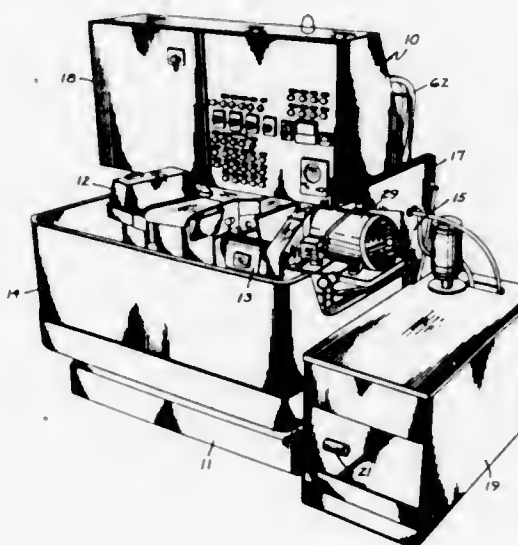
### 3,688,443 GRINDING MACHINE

Frederick A. Hohler, Holden, Mass., assignor to The Heald Machine Company, Worcester, Mass.  
Division of Ser. No. 724,057, April 25, 1968, Pat. No. 3,568,374, which is a division of Ser. No. 451,550, April 28, 1965, Pat. No. 3,382,623, which is a division of Ser. No. 217,683, Aug. 17, 1962, Pat. No. 3,197,921. This application Dec. 21, 1970, Ser. No. 100,253

Int. Cl. B24b 5/06

U.S. Cl. 51—5

3 Claims



This invention has to do with the generation of surfaces of revolution by the abrasive process in which an abrasive wheel is fed into the surface of revolution with a controlled force.

### 3,688,444 GRINDING MACHINE

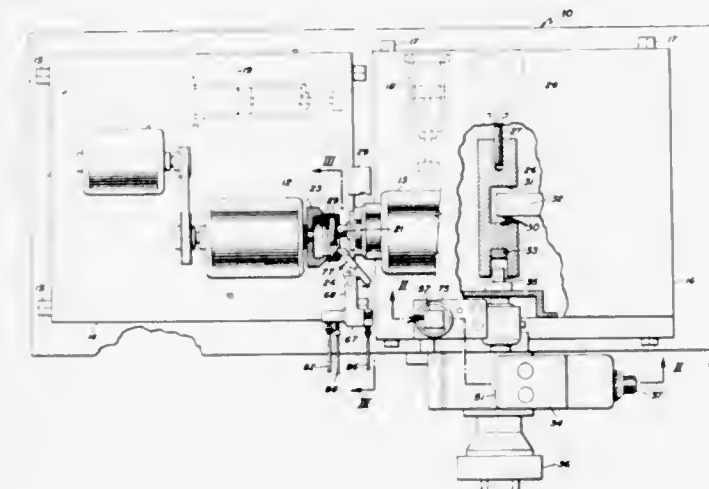
Herbert R. Uhtenwoldt, Worcester; Fredrick A. Hohler, Holden, and Edmund E. Wodyka, Saxonville, all of Mass., assignors to Cincinnati Millacron-Heald Corp., Worcester, Mass.

Continuation-in-part of Ser. No. 796,291, Jan. 22, 1969, abandoned, Continuation of Ser. No. 572,930, Aug. 17, 1966, abandoned. This application Jan. 8, 1971, Ser. No. 104,859

Int. Cl. B24b 5/00

U.S. Cl. 51—5

7 Claims



This invention relates to a grinding machine and, more particularly, to apparatus for finishing a surface of revolution by the abrasion process wherein a wheel-dressing operation is regulated by a single-finger gage operating on the surface of revolution.

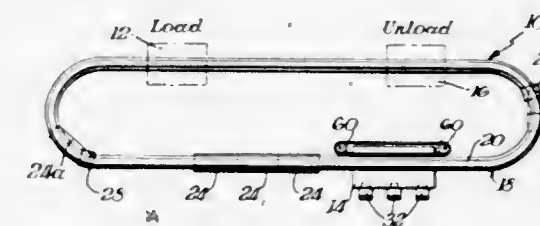
### 3,688,445 BLAST CLEANING ARRANGEMENT

William W. Long, III, Hagerstown, Md., assignor to The Carborundum Company, Niagara Falls, N.Y.  
Filed Nov. 16, 1970, Ser. No. 89,548

Int. Cl. B24c 3/00

U.S. Cl. 51—14

7 Claims



An abrasive blast cleaning arrangement includes a variable speed tractor for moving individual workpiece holders into and out of a blast station in such a manner that the tractor may move at an accelerated speed until it approaches a group of stacked holders whereupon the tractor may decelerate and discharge its holder at the rear of the stack to subsequently become engaged with the holder at the front of the stack.

3,688,446

Patent Not Issued For This Number

### 3,688,447 GRINDING MACHINE

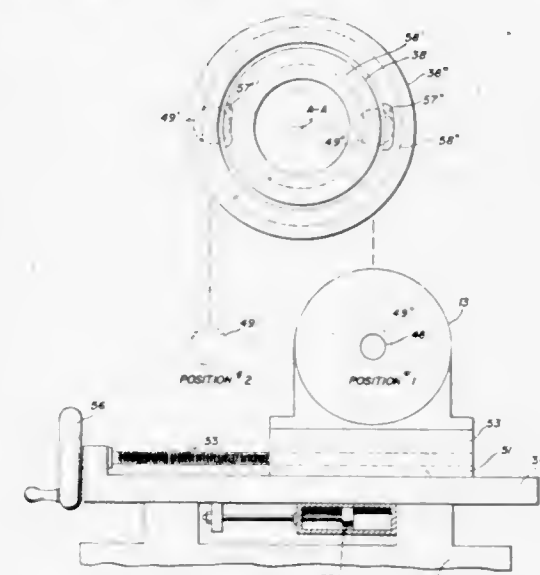
Herbert R. Uhtenwoldt, Worcester, and James M. Lynch, W. Boylston, both of Mass., assignors to The Heald Machine Company, Worcester, Mass.

Filed May 4, 1970, Ser. No. 34,414

Int. Cl. B24b 5/04

U.S. Cl. 51—96

8 Claims



This invention relates to a grinding machine and, more particularly, to apparatus for producing a notch on the periphery of the race of an anti-friction bearing to allow the introduction of a rolling element between the races.

### 3,688,448 APPARATUS FOR GRINDING THE BOTTOM OF DRINKING GLASSES

Claus Spaeth, Wadgassen, Saar, and Gunter Wilhelm, Bous, Saar, both of Germany, assignors to Villeroy Boch Keramische Werke, K.G., Mettlach, Saar, Germany  
Filed July 15, 1970, Ser. No. 55,017

Int. Cl. B24b 19/00

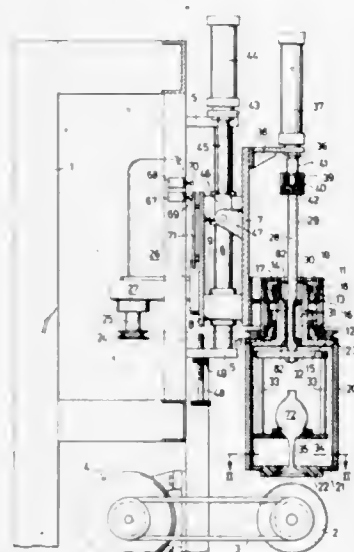
U.S. Cl. 51—105 R

8 Claims

The specification describes an apparatus for grinding the bottoms of glasses, more particularly stemmed glasses. The



apparatus comprises a grinding wheel, glass holding means capable of being moved in relation to the grinding wheel so as to increase and decrease the distance between them, the glass holding means being capable of being turned about an axis



aligned with the direction of relative movement, a yoke, a holding element capable of being moved in the above-mentioned direction in relation to the yoke, the holding element serving for moving the glass in the above-mentioned rotational axis against the yoke leaving the underneath of the glass free.

3,688,449

#### DRUM GRINDER PARTICULARLY FOR GRINDING THE LINING OF BRAKE SHOES

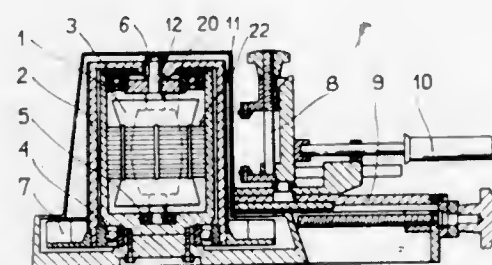
Piotr Jedrzejewski, Warsaw, Poland, assignor to Warszawskie Wytwarzanie Samochodowych Urzadzzen Naprawczych, Warsaw, Gwiazdzista, Poland

Filed Oct. 6, 1969, Ser. No. 863,849

Claims priority, application Poland, Oct. 7, 1968, P. 129419  
Int. Cl. B24b 5/04

U.S. Cl. 51-96

2 Claims



An apparatus for grinding a brake shoe lining includes a hollow grinding drum having a grinding surface for grinding a brake shoe lining, a motor including a rotor and a stator in surrounding relation with the rotor, means for mounting the motor within the hollow drum coaxially therewith and means for fixedly connecting the drum to the rotor for rotation therewith.

3,688,450

#### PAINT AND ENAMEL TOUCH-UP TOOL

Edwin Brockman, 31 Joseph Drive, Tonawanda, N.Y.

Filed May 12, 1971, Ser. No. 142,624

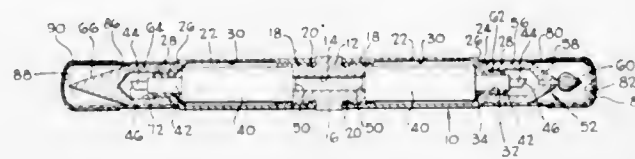
Int. Cl. B24d 15/02

U.S. Cl. 51-181

7 Claims

A paint and enamel touch-up tool assembly comprising a pair of replaceable cartridge inserts containing desired coating compositions enclosed in a pair of cylindrical housings attached to the opposite ends of a nipple. Tool implements are

carried by the other ends of the housings for preparing and treating the surface to be reconditioned. End covers are



mounted on the housings about the tool implements and are provided with elements for treating the reconditioned surface.

3,688,451

#### AUTOMATIC PROFILE GRINDING MACHINE WITH AN INDEXING MECHANISM

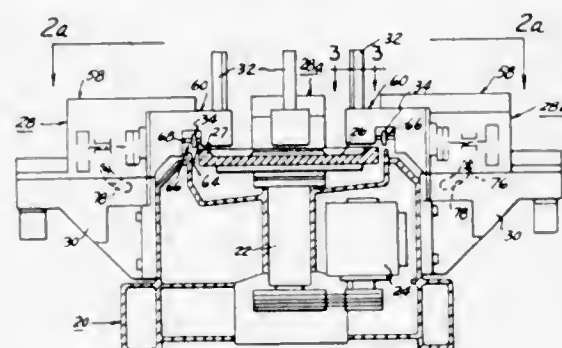
Oscar Schnellman, Zurich, Switzerland, and Henry Willy Stier, Dearborn Heights, Mich., assignors to Carmet Company, Pittsburgh, Pa.

Division of Ser. No. 751,879, Aug. 12, 1968. This application  
April 28, 1971, Ser. No. 138,183

Int. Cl. B24b 41/06

U.S. Cl. 51-216 ND

6 Claims



An automatic profile grinding machine with indexing mechanism especially for contour grinding of relatively small parts such as tool inserts, comprised of a grinding wheel, work stations arranged around said grinding wheel, universal work feeding mechanism associated with each work station, individual cam mechanisms for each work station to index the grinding steps, electric and fluid pressure control mechanisms to control operation of the machine, work measuring mechanism and adjusting mechanism associated with the measuring mechanism to compensate for wear or out of balance condition of the grinding wheel.

3,688,452

#### LAPIDARY HOLDER AND ATTACHMENT THEREFOR

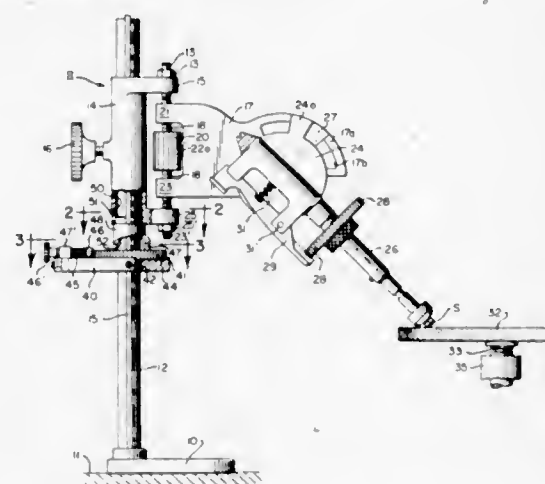
Arthur L. Stevens, Box 123, R.R. # 2, Lake Wales, Fla.

Filed July 1, 1970, Ser. No. 51,538

Int. Cl. B24b 9/16

U.S. Cl. 51-229

2 Claims



A lapidary holder including an attachment for generating different types of cuts or facets on non-circular stones in a

semi-automatic manner, such holder including a vertical mast extending upwardly from a base, a body member mounted on the mast for axial movement, a shaft rotatably mounted on the body member and extending outwardly at an angle to the mast, for mounting a stone at its outer end, and a first indexing wheel associated with the shaft for adjusting the circumferential position of the shaft relative to the body member, such attachment including a second indexing wheel on the mast, a cam mounted relative to the body member and a cam follower on the indexing wheel for adjusting the height of the body member on the mast, whereby different cuts may be generated on a stone by coordinating the settings of the two indexing wheels.

3,688,453

#### ABRASIVE ARTICLES

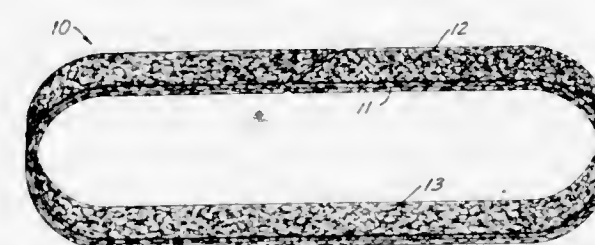
Lloyd W. Legacy, White Bear Lake; Thomas R. McAvoy, Stillwater, and Leonard E. Nelson, Saint Paul, all of Mich., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Mich.

Filed Dec. 11, 1970, Ser. No. 97,185

Int. Cl. B24d 3/00, 11/02

U.S. Cl. 51-400

7 Claims



Abrasive belts suitable for offhand and automated article finishing provide a uniform finish without lapping or parting lines. The belts comprise a lofty non-woven web securely needled to a woven backing and impregnated with resin and abrasive.

3,688,454

#### LANDMARK

Serge Wolfcarlus, 21 Avenue de Floreal, Brussel 18, Belgium

Continuation-in-part of Ser. No. 792,028, Jan. 17, 1969,

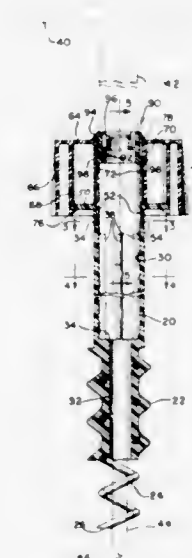
abandoned. This application March 31, 1971, Ser. No.

129,887

Int. Cl. E04h 13/00

U.S. Cl. 52-103

9 Claims



A body is formed of rigid synthetic material and the lower end portion of the body has an integral screw thread formed

thereon. A metallic helix of cork screw shape has the upper end thereof embedded in the lower part of the body and the helix extended downwardly from the lower end of the body. A central stepped bore extends longitudinally through the body and is adapted to receive a tool extending downwardly through the bore. Longitudinally extending ribs are provided within the bore for engaging a tool to enable rotation of the body by the tool. Suitable landmark means such as a cap, a flat plate or a geodesic beacon is adapted to be supported at the upper end of the body. A closure means is provided for closing off the upper end of the bore formed through the body or through a landmark means such as a cap.

3,688,455

#### TELESCOPING SUPPORT WITH DOUBLE ACTING PISTON AND LATCH AND RETAINING MEANS

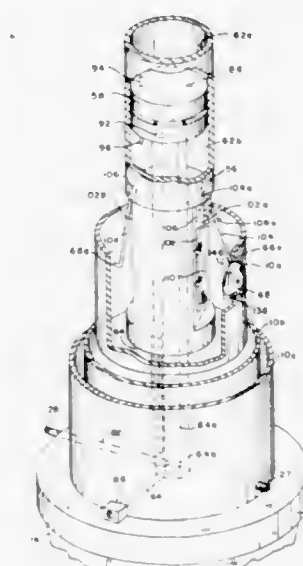
William Henry Zebuhr, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 23, 1970, Ser. No. 83,564

Int. Cl. E04h 12/34

U.S. Cl. 52-115

34 Claims



A telescoping support such as a mast or boom employs a number of separate telescoping sections which fit one inside the other, with the outermost section being secured to a base. A double acting piston is situated completely inside the innermost section, with the piston rod being secured to the base and the piston cylinder arranged to reciprocate up and down within that section. On the upstroke of the cylinder, a hook mounted thereon engages a fixture located near the bottom of the innermost section. The cylinder hitches up the mast section, whereupon the fixture latches onto a retainer near the top of the next outer mast section. The cylinder then returns to its lowermost position and commences a second upstroke. Another hook engages a similar fixture near the bottom of the next outer mast section so that that section is lifted up until the fixture thereon latches onto the top of the third outer mast section. Again, the cylinder returns to its lowermost position and the process is repeated with the cylinder reciprocating up and down and each time hitching up the next outer mast section as well as all those supported by it until the mast is fully extended with all its movable sections being supported by the outermost section of the mast.

The lower the mast, the same procedure is followed in reverse until all mast sections are recovered.



3,688,456

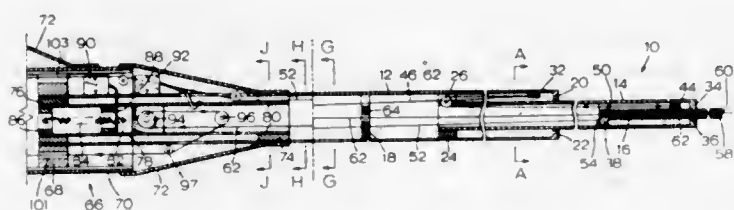
## FISHING APPARATUS

Godwill M. Igwe, 180 Queen Mary Road, Apartment 708,  
Kingston, Ontario, Canada

Filed July 10, 1970, Ser. No. 53,874;  
Int. Cl. E04h 12/34

U.S. Cl. 52-121

2 Claims



A fishing device includes a telescoping rod, line spool, rod actuator and fishing line spool actuator. The device is energized electrically and is capable of a plurality of simultaneous or sequential operations.

3,688,457

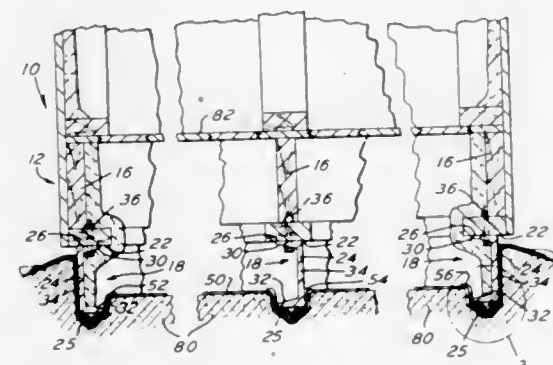
## BUILDING FOUNDATION WITH FROST DEFLECTOR

Stanley A. Sherno, Cresco, Pa., assignor to Stanley A. Sherno,  
Cresco, Pa.

Filed March 16, 1970, Ser. No. 19,607  
Int. Cl. E02d 27/34

U.S. Cl. 52-169

7 Claims



A building foundation that comprises a deflector so that frost which may accumulate under the building will be deflected. This prevents the frost from raising the foundation off the ground.

3,688,458

## STRUCTURAL JOINT

Aubrey W. Inmon, Hickory, and Moses Vincent Sanderford,  
Morganton, both of N.C., assignors to U.S. Plywood Cham-  
pion Papers Inc., Hamilton, Ohio

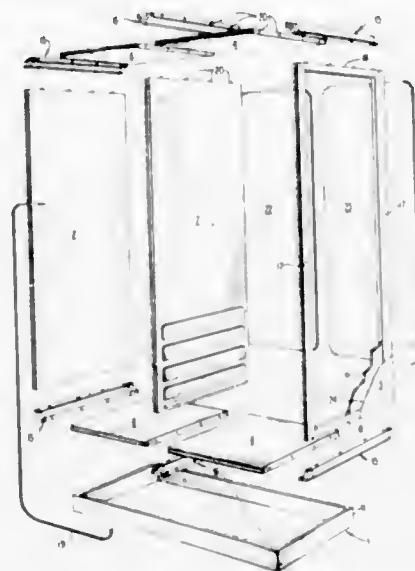
Filed May 22, 1970, Ser. No. 39,733  
Int. Cl. E04b 1/38, 2/08

U.S. Cl. 52-280

16 Claims

A joint removably secures adjacent flat structural elements at an angle to each other with a connecting assembly that has a base member and a sliding catch. The base member has surfaces that are placed against mating surfaces on the flat ele-

ments and the sliding catch holds the same together by sliding a wedge underneath a headed stud that extends from each of



the flat elements through the base member surfaces. The joint is suitable for a corner of a piece of furniture.

3,688,459

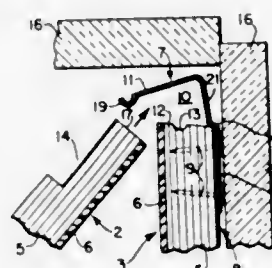
## CONCEALED CORNER LOCK CLIP SYSTEM

Jacob M. Mattix, 341 N. Hennessy, New Orleans, La.

Filed Aug. 5, 1970, Ser. No. 61,194  
Int. Cl. E04b 1/40

U.S. Cl. 52-285

10 Claims



A concealed corner lock clip system for installing and securing sheet material such as laminated plastic wallboards, plywood and the like for finishing off bathtub and/or shower walls and the like; the locking system includes a vertically extending resilient clip attached to one wallboard and into which the other, adjacent wallboard can be easily and quickly inserted and locked into place; the clip is unobtrusive and compact and is completely invisible after installation.

3,688,460

## SEALING OR CAPPING STRIPS FOR STRUCTURES

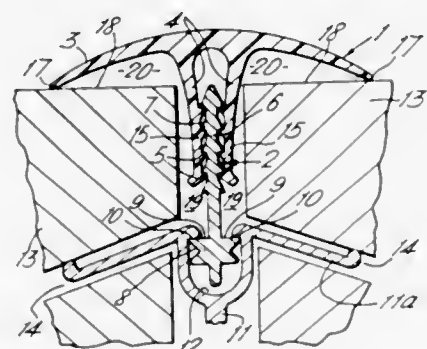
Johannes Jacobus Van Loghem, and Johannes La Grouw, both

of P. O. Box 520, Rotorua, New Zealand

Filed Sept. 2, 1970, Ser. No. 68,948  
Int. Cl. E04d 1/36

U.S. Cl. 52-466

1 Claim



A capping or sealing strip is tee shaped with the stem of the tee in the form of a U having inwardly directed barbs on the

inner walls thereof which engage with a barbed protruding member disposed within a slot which is to be covered and sealed by the sealing member.

3,688,461

## FRAMEWORK FOR BUILDING STRUCTURES

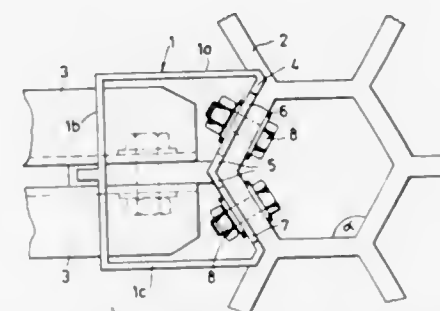
Eberhard G. Rensch, Lerchesberggring 24, D-6 Frankfurt am  
Main, Germany

Filed May 18, 1970, Ser. No. 38,214  
Claims priority, application Germany, May 17, 1969, P 19  
25 262.1; Nov. 24, 1969, P 19 58 878.4; Feb. 27, 1970, P 20  
09 252.8

Int. Cl. E04b 1/24, 5/55

U.S. Cl. 52-650

17 Claims



A framework for building structures and the like in which a triangle-grid lattice is formed in a horizontal plane star-shaped junction elements having radial arms and beams and girders connecting these elements. Tubular columns join the junction elements of the vertically spaced latticework and they serve as fluid conduits.

3,688,462

Patent Not Issued For This Number

3,688,463

## VACUUM PACKAGING SYSTEM

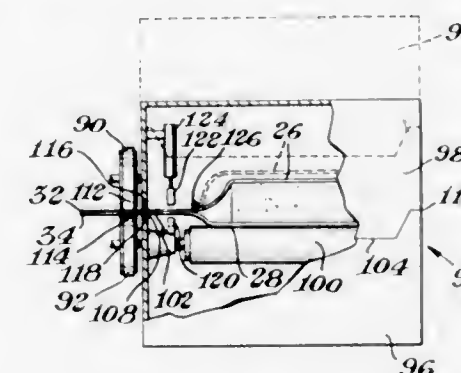
Oliver R. Titchenal, Berea, Ohio, assignor to The Dow Chemi-  
cal Company, Midland, Mich.

Continuation-in-part of Ser. No. 727,464, May 8, 1969, Pat.  
No. 3,559,874. This application July 15, 1970, Ser. No. 55,141

Int. Cl. B65b 31/02

U.S. Cl. 53-22 B

11 Claims



Improved bag constructions, and automatically operable methods and apparatus are disclosed for vacuum packaging various products that can be either regular or irregular in shape. The bag construction includes spreadable flaps adapted to be "plowed open" to assist in automatically filling the bags, and which are thereafter gripped and held in an extended, preferably substantially flat planar fashion during bag vacuumization and sealing. Apertures pre-cut in the flaps permit rapid vacuumizing cycles without need for probes, spreaders or the like to open the bags for evacuation. In addition, the bags can be formed of a wide variety of films, such as soft or alternately supported films, as desired.

3,688,464

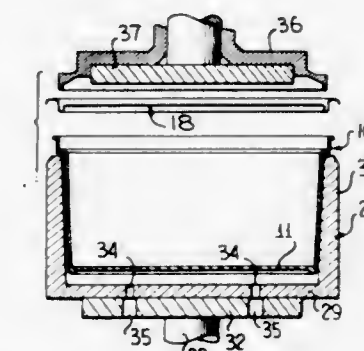
## METHOD OF AND APPARATUS FOR CLOSING CONTAINER

James F. Fox, Chicago, Ill., assignor to Continental Can Com-  
pany, Inc., New York, N.Y.

Division of Ser. No. 815,306, Sept. 15, 1969, which is a  
continuation-in-part of Ser. No. 688,081, Dec. 5, 1967, Pat.  
No. 3,491,936. This application Feb. 25, 1970, Ser. No. 13,885  
Int. Cl. B65b 1/24

U.S. Cl. 53-24

8 Claims



This disclosure relates to an apparatus for applying a metal end unit to the upper end of a molded flexible plastic body. The apparatus includes a mold which receives the container after being filled, and effects the true shaping of the container, especially the upper portion thereof. The mold cooperates with a seaming chuck to maintain the configuration of the upper portion of the container during the seaming of the end unit thereto.

3,688,465

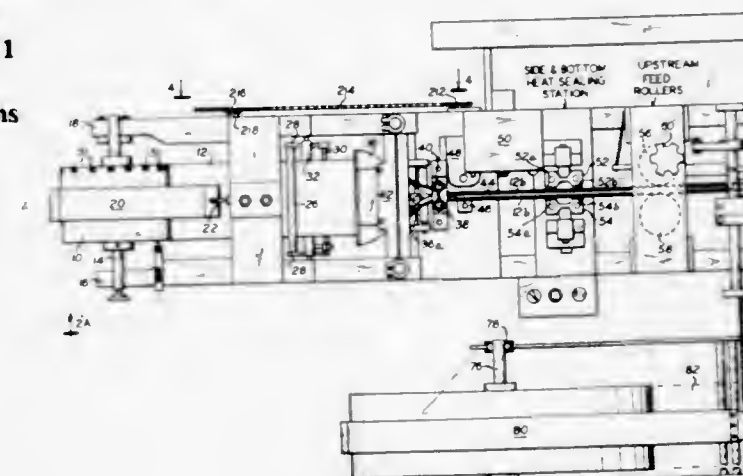
## AUTOMATIC MACHINERY FOR MANUFACTURING MOIST TOWELETTE PACKETS

Ramon Benitez, 61 Hemlock Road, Little Falls, N.J., and Au-  
gusto Luis Oneto, 11 Dennard Road, Hauppauge, N.Y.

Filed Aug. 31, 1970, Ser. No. 68,128  
Int. Cl. B65b 57/04

U.S. Cl. 53-64

27 Claims



An automated machine for manufacturing packets of moist hand towelettes wherein sheet material forming the outer foil wrappers of the packets is intermittently fed through the machine to intersect towelette material being fed in a direction transversely thereof, with insertion of the towelettes to within the sheet material forming the packets occurring at the intersection of the feed directions. The machine operates intermittently by suspending the sheet material drive to permit performance of machine operations, including dual-stage heat sealing of the sheet material to form the packets and simultaneous introduction of towelettes and a moisturizing liquid, while the sheet material is stationary. Power is delivered to the machine through a main drive shaft which has mounted



thereon a series of cam organized to control the timing sequence of certain functions of the machine by actuation of appropriate cam follower mechanisms. The intermittent feeding of the wrapper material is accomplished through a transmission mechanism which intermittently transmits power from the main drive shaft to an auxiliary shaft to operate the feed rollers driving the sheet material. The auxiliary shaft receives about half the rotational motion of the main shaft and an electric eye scanner mechanism, controlling a clutch interposed between the feed rollers and the main shaft, maintains the precision of the sheet material feed control. The wrapper continuously is fed from a normally continuous operating feed roller which is synchronized to the intermittent machine operation by a dancer roll mechanism which temporarily terminates the continuous feed when it is in excess of machine requirements. The wrapper material is converted from a generally planar horizontal continuous strip, into a vertically folded arrangement to partially form the packets by a triangularly-shaped plate and a pair of upright posts downstream thereof which constrict the material to form a bottom fold with its edges uppermost and spaced proximate each other. Stuffing bars are reciprocally vertically moved in a particular sequence for stuffing the towelettes into the partially formed packets. A liquid feed mechanism including conduits extending through the stuffing bars injects moisturizing liquid into the towelette packet simultaneously with stuffing therein of the towelette material. Heat sealing of the sheet material occurs in two stages, with a first heat sealing operation partially forming the packets into which towelettes are stuffed and with a subsequent heat sealing operation completing formation of the sealed packets.

3,688,466

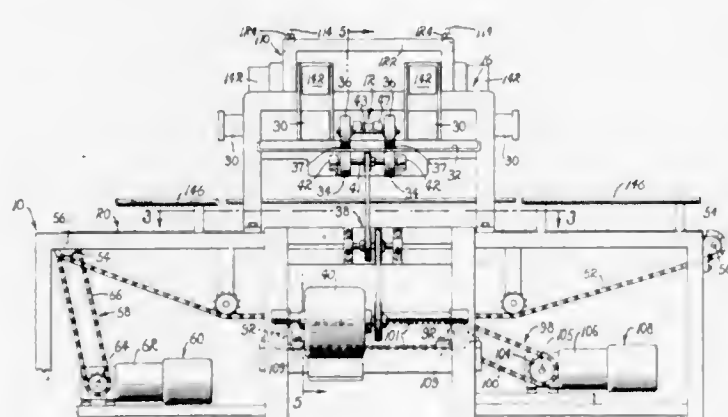
## CARTON LIDDING MACHINE

Robert L. Geyer, Merced, Calif., assignor to Foster Poultry Farms,

Filed Sept. 21, 1970, Ser. No. 73,948  
Int. Cl. B65b 57/02, 7/28

U.S. Cl. 53-67

12 Claims



A carton lidding machine particularly suited for use in lidding open-top cartons, characterized by a horizontally disposed carton transporting conveyor extending through a lidding station at which conveyed cartons receive lids formed from prescored blanks. A particular feature of the invention resides in the provision of a vertically reciprocable elevator located at the lidding station adapted to be operated in a manner such that each carton is lifted from the conveyor and forced into lid-forming engagement with a prepositioned, prescored blank of a planar configuration, and then returned to the conveyor, in stepped progression, for accommodating a sequential stapling of the thus formed lid to the walls of the carton.

### 3,688,467 APPARATUS FOR DETECTING AND PREVENTING IRREGULAR CONDITIONS IN ARTICLE HANDLING MACHINE

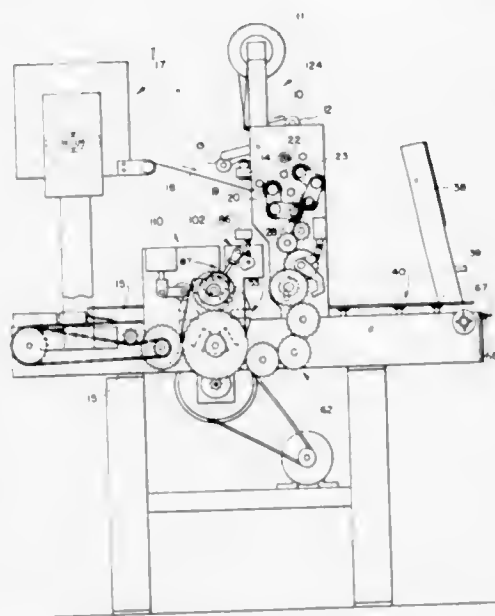
Alexander, James, Belleville, and Lester A. Higgins, Montville, both of N.J., assignors to Scandia Packaging Machinery Company, North Arlington, N.J.

Filed April 9, 1970, Ser. No. 26,942

Int. Cl. B65b 57/08

U.S. Cl. 53-77

8 Claims



Electrical and mechanical means are provided in combination for detecting and preventing irregular conditions in an article handling machine. Means are also provided for sequentially starting a machine used with a supply of articles to avoid the running of a machine when an irregular condition exists in the machine. One embodiment comprises a combination including a sensing means located between a receiving means and a package supply work station to detect an irregular package feed condition. A means responsive to the sensing means will stop the feeding of packages into the receiving means thereby preventing damage to the wrapping machine. Various specific structures of the sensing means and responsive means are disclosed. The sensing means and responsive means may be used in any apparatus for conveying articles at predetermined intervals.

3,688,468

### APPARATUS FOR EXTRUDING AND WRAPPING COMESTIBLES

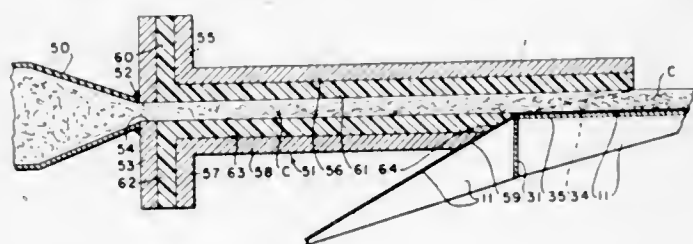
Arthur B. Erekson, Scarsdale, N.Y., assignor to Borden Inc., New York, N.Y.

Continuation of Ser. No. 776,862, Nov. 14, 1968, Pat. No. 3,532,516, which is a continuation of Ser. No. 661,661, Aug. 18, 1967, abandoned. This application May 28, 1970, Ser. No. 41,268. The portion of the term of this patent subsequent to Oct. 6, 1987, has been disclaimed.

Int. Cl. B65b 9/06

U.S. Cl. 53-122

7 Claims



Top, bottom and side walls define a forming chamber which is rectangular in cross-section, the bottom wall being shorter than the top wall and being beveled at the leading end thereof; a wrapping section includes a base and side walls extending

above the base and having beveled edges at the receiving end thereof, the leading end of bottom wall being juxtaposed with the receiving end of the wrapping section so that the base and the bottom wall present a planar inner surface; and means for moving comestible through the chamber. Plastic film is passed between the forming chamber and the wrapping section over the base and side walls of the wrapping section to envelop the comestible as it is forced through the chamber and the wrapping section.

3,688,469

Patent Not Issued For This Number

3,688,470

Patent Not Issued For This Number

3,688,471

## BAG HANGER

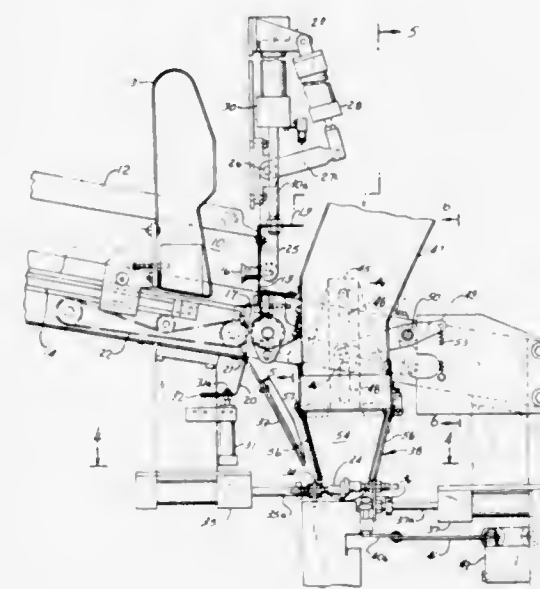
Kenneth G. Clark, Pennington, N.J.; Thomas J. Cook, Kendall Park, N.J., and Ernest T. De Pass, Bound Brook, N.J., assignors to Union Camp Corporation, Wayne, N.J.

Filed Oct. 14, 1970, Ser. No. 80,644

Int. Cl. B65b 43/18

U.S. Cl. 53-188

3 Claims



A bag hanger is provided for packaging products such as ice, charcoal, onions and like items in bags. The machine is a free standing unit and comprises a magazine for holding a quantity of bags which bags are dispensed one at a time, positioned and opened under a filling spout. Such hanger is installed adjacent to a filling machine (either volumetric or auger type) which drops a premeasured charge of product into the bag, after which the bag is removed for closing in a conventional manner.

3,688,472

## TRANSFER APPARATUS FOR A PACKING MACHINE

Leon Revaz, Bienne, Switzerland, assignor to Firma Otto Hansel GmbH, Hannover, Germany

Filed Feb. 10, 1970, Ser. No. 10,249

Claims priority, application Switzerland, Feb. 7, 1969, 1875/69

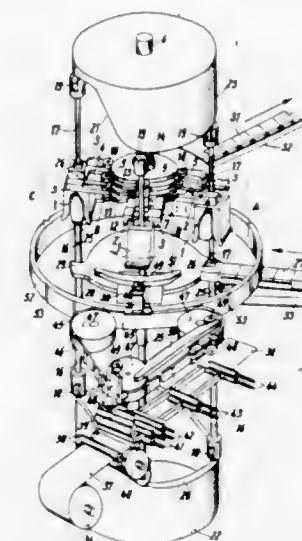
Int. Cl. B65b 11/28, 41/04

U.S. Cl. 53-225

12 Claims

An apparatus, for a packing machine, for feeding of work pieces, as objects to be wrapped comprising working stations

rotating along a closed, curved path, which follow each other at predetermined distances, and control members engaging the working stations during the turning movement of the latter, so that at each of the stations for each cycle at least one wrapping operation is performed by successive performance of a plurality of partial operations. A driven, endless, non-positive and flexible feeding member has at least one driver for an object to be fed thereto and thereaway, respectively,



and is guided by deviation- and guide-means such, that it passes within the range of the moving path of the wrapping stations, a curved length adjusted to the run of the path. The peripheral speeds of the feeding member and of the working stations are adjusted toward each other such, that within the range of a transfer- and receiving-station the relative movement between driver and the working station disposed opposite thereto is at least about zero.

3,688,473

## UNDERWATER OIL PRODUCTION SEPARATOR

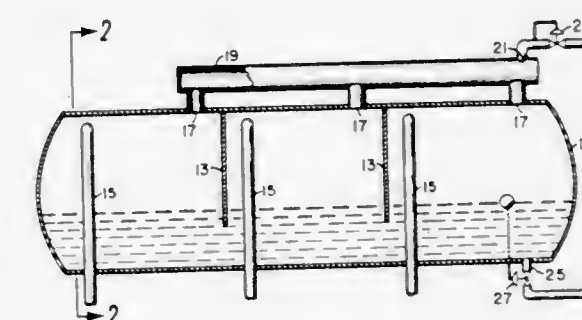
Stephen S. Brown, Baytown, Tex., assignor to ESSO Production Research Company

Filed March 12, 1969, Ser. No. 806,639

Int. Cl. B01d 19/00

U.S. Cl. 55-38

11 Claims



This horizontal separator is partitioned into two or more separation zones. A mixture of liquid and gas is introduced into each zone, where the phases are separated. Gas is discharged through a port in each separation and may be collected in a manifold for compression. Liquid from all the separation zones commingles in the bottom of the separator and is discharged through one or more ports. If the liquid is to be further separated into oil and water, one or more additional liquid outlet ports are added to the structure.



3,688,474

## COLLECTION OF METAL CARBONYLS

Michael David Head, Copper Cliff, Ontario, and John Robert Michael Thompson, Oakville, Ontario, both of Canada, assignors to The International Nickel Company, Inc., New York, N.Y.

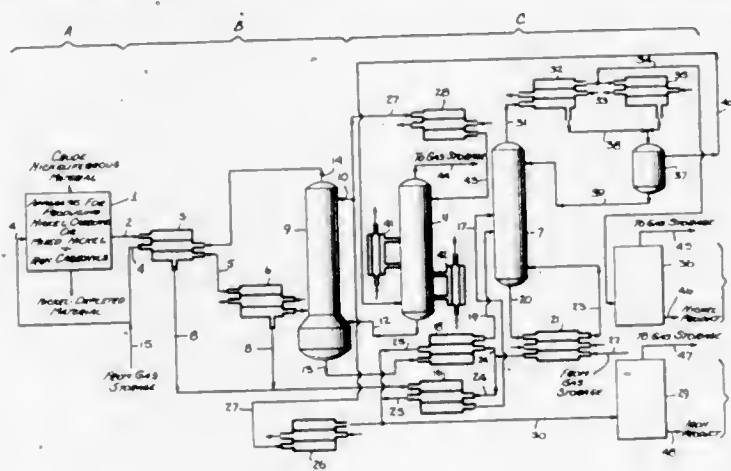
Filed June 22, 1971, Ser. No. 155,532

Claims priority, application Canada, July 8, 1970, 87,695

Int. Cl. B01d 3/14; C22b 23/00

U.S. Cl. 55-48

13 Claims



Gaseous streams of carbon monoxide containing nickel and iron carbonyls are contacted with cooled liquid iron pentacarbonyl to dissolve the carbonyls and to provide purified carbon monoxide. When the liquid iron pentacarbonyl has dissolved controlled amounts of nickel carbonyl, the solution is fractionally distilled to recover nickel carbonyl and liquid iron pentacarbonyl which can be recycled. The process can also be conducted under pressure and in conjunction with intermediate pressure carbonyl processes for recovering nickel.

3,688,475

## ELECTRO-PRECIPITATION

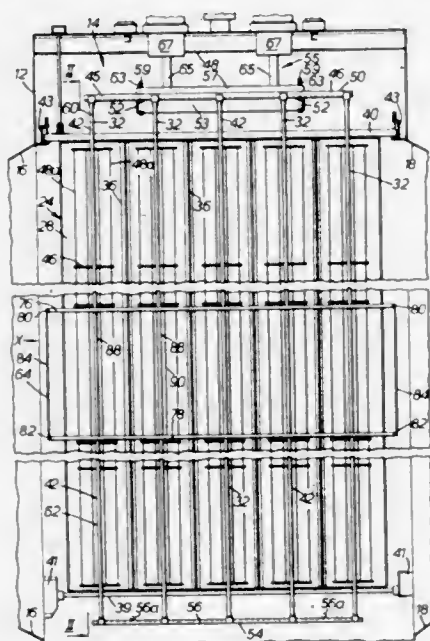
John F. Dyla, Birmingham; William M. Moore, and Robin A. Attfield, both of Walsall, Staffordshire, all of England, assignors to Lodge-Cottrell Limited, Birmingham, England  
Filed March 16, 1970, Ser. No. 19,948

Claims priority, application Great Britain, April 3, 1969, 17,631/69; Oct. 17, 1969, 51,007/69

Int. Cl. B02c 3/41

U.S. Cl. 55-148

8 Claims



An electro-precipitator discharge electrode support structure comprises an upper portion comprising a plurality of vertical elongated discharge electrode support masts which extend upwardly from a central region of the structure, and a

lower portion also comprising a plurality of vertical elongated discharge electrodes support masts which are non integral with the support masts of the upper portion and extend downwardly from the central region. A rectangular bracing cage is provided at the central region to connect the support masts of the upper portion to the support masts of the lower portion so that relative movement between the upper and lower ends of the structure is minimized.

3,688,476

## EXHAUST SYSTEM

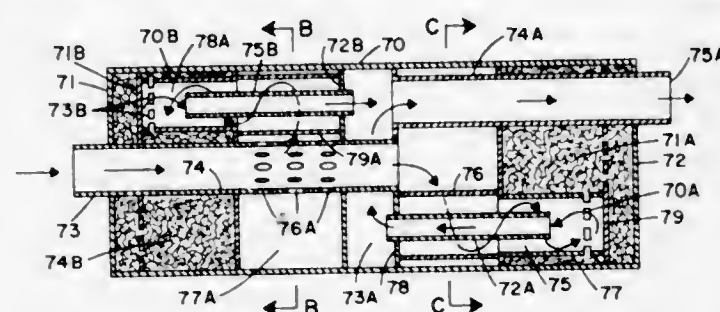
Denis L. Lenane, Ferndale, Mich., assignors to Ethyl Corporation, New York, N.Y.

Filed Nov. 24, 1969, Ser. No. 879,043

Int. Cl. B01d 45/12

U.S. Cl. 55-276

19 Claims



Particulates are removed from a particulate-laden gas stream such as the exhaust gas from an internal combustion engine by passing the gas through a cyclone type inertial separator. The separator has particulate reject slots cut in the side wall of the cyclone chamber through which particulates are rejected into a collection chamber. The collection chamber can be filled with a porous material such as wire mesh. The bottom of the cyclone chamber is a solid plate. The separator can be built into a conventional muffler.

3,688,477

## AIR DISTRIBUTION/FILTRATION DEVICE FOR CLEAN ROOMS

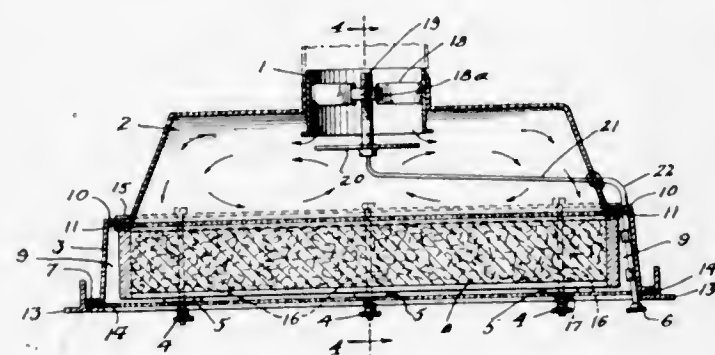
Charles Coward, Jr., R.D. # 1, Box 64, Moorestown, N.J.

Filed July 1, 1970, Ser. No. 51,641

Int. Cl. B01d 51/00

U.S. Cl. 55-418

6 Claims



An air distribution/filtration device containing a removable filter and a deflector plate combination used for supplying clean filtered air to such rooms as laboratories and "white" rooms. The filter is installed on the air leaving side of the deflector plate combination providing the required filtration just prior to the air entering the work area. The unit is preferably ceiling mounted, but may be also installed on a side wall or on a portable clean bench. Should requirements dictate this unit may be used with a return air plenum located below the work room floor so that the conditioned air may be tempered, re-filtered and returned to the clean work area.

3,688,478

## AQUATIC HARVESTING APPARATUS WITH AIR BORNE DISCHARGE

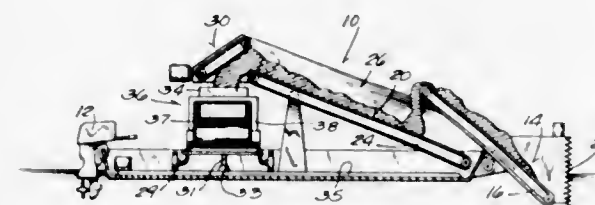
Charles Brate Bryant, Rte. 1, Box 150, Wildwood Point Road, Hartland, Wis.

Filed March 3, 1971, Ser. No. 120,401

Int. Cl. A01d 45/08

U.S. Cl. 56-1

4 Claims



Aquatic harvesting apparatus particularly adapted for harvesting floating vegetation or oil absorbent material spread on an oil slick includes a harvesting barge with a forwardly located inclined pickup conveyor having a lower end extending into the water and a discharge end located over a consolidation chute on the barge. The chute has converging side walls to compact the vegetation, and a live bed which accelerates the weeds as they are conveyed to a thrower which projects the weeds above the surface of the water to a shore disposal site or a transport barge. When the harvesting barge is moored in a channel to intercept weeds carried by a current, the harvesting barge can be used with a boom which has an end pivoted adjacent the harvesting barge to vary the intake volume of weeds delivered to the harvesting barge. The boom can be provided with a driven endless chain having flights to maintain continuous weed flow along the boom and prevent bunching of the weeds.

3,688,479

## LEAF COMMUNUTING APPARATUS

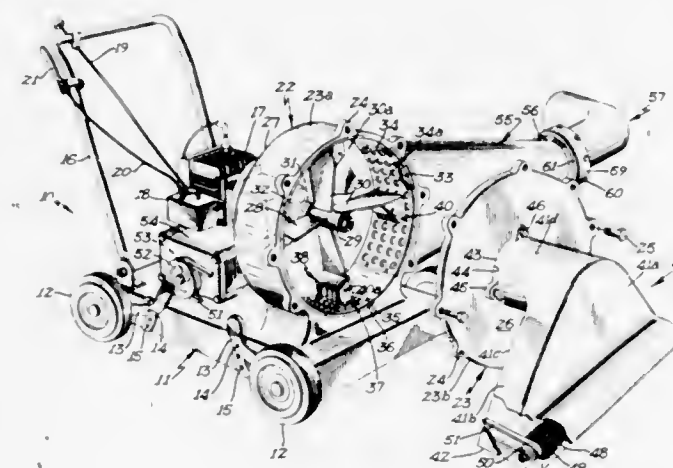
Milton B. Martinson, 601 Gilman, Sheffield, Iowa, and Glenn A. Risbrudt, Dalton, Minn.

Filed July 15, 1971, Ser. No. 162,762

Int. Cl. A01d 49/00

U.S. Cl. 56-13.2

7 Claims



A mobile comminuting apparatus comprises a housing in which is positioned a fan driven by a power unit. A suction nozzle is connected to the housing and air entrained leaves the like flow through the nozzle into the housing where the leaves and other material are comminuted by comminuting blades connected to the fan and to the housing. The comminuted leaves are discharged into a chute structure and outwardly through an adjustable discharge tube.

3,688,480

Patent Not Issued For This Number

3,688,481

Patent Not Issued For This Number

3,688,482

## STRIKER ROD MOUNTING

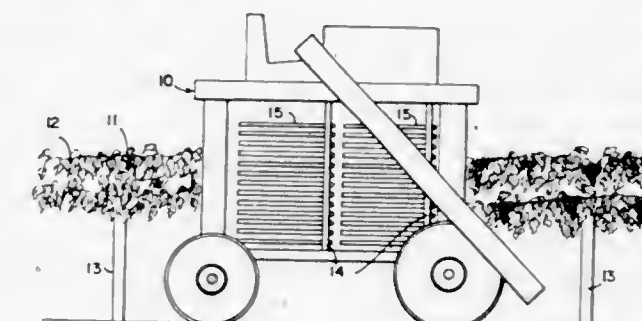
Darrell C. Horn, Lafayette, Calif., assignor to Up-Right, Inc., Berkeley, Calif.

Filed Nov. 11, 1971, Ser. No. 197,795

Int. Cl. A01g 19/00

U.S. Cl. 56-330

3 Claims



A mechanical harvesting machine having horizontal striker rods each of which is secured at one end to a vertical, oscillating shaft, the improvement wherein a tubular holder extends through the shaft, projecting from either side thereof. The rod is mounted in the holder with a resilient sleeve between the rod and holder and with the major portion of the length of the rod extending from one end of the holder. The rod is bolted to the holder at the opposite end thereof, on the other side of the shaft.

3,688,483

## MULTI-PURPOSE HOUSEHOLD GARDEN AND YARD HAND TOOL

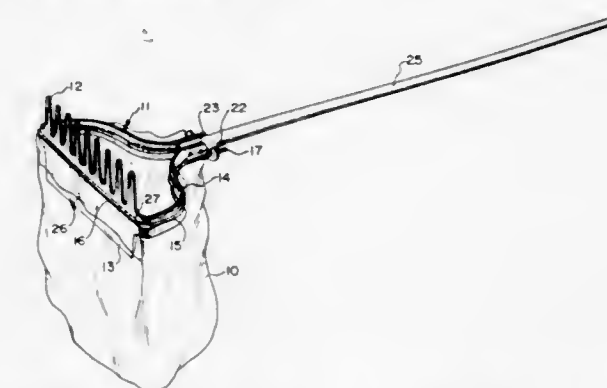
David H. Hamilton, 7060 N. Mill Road, Rockford, Ill.

Filed May 18, 1971, Ser. No. 144,530

Int. Cl. A01d 7/10

U.S. Cl. 56-400.11

13 Claims



This hand tool has a yoke on one end of the handle with a scraping or hoe blade on one side and rake teeth on the other side in the same plane with the blade. A generally U-shaped spring wire clip fits over the yoke to fasten the opened mouth end of a bag onto the yoke with either the rake teeth forward or the blade forward relative to the open mouth of the bag to enable collecting refuse in the bag. The cross portion of the U-shaped spring wire clip grips the mouth end of the bag across the yoke its full width and the arms do the same on both sides of the yoke and are retained in outwardly projecting hooks provided on both sides of the upper end of the yoke where it is fastened to the handle. When not used for refuse collection, the hand tool does double duty as a combination garden hoe and rake.



### 3,688,484 GARDEN TOOL

Eugene O. Cox, 16150 E. Harvest Moon St., La Puente, Calif.  
Filed Sept. 13, 1971, Ser. No. 179,785  
Int. Cl. A01d 7/10  
U.S. Cl. 56—400.12

3 Claims

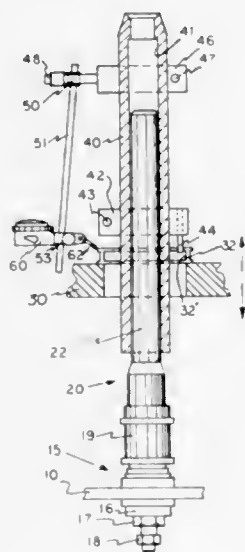


A first rake head is fixed to an elongate handle and combined with a second rake head and handle by a pivot pin connecting the handles at a central point such that the rake tines may be brought together in opposite hand orientation to lift gathered material to a receptacle. Preferably the pivot pin connects the rake handles at a flatted area on each handle to provide free motion of the rake heads to and from each other. The flatted portion of each handle may be separable from the shank of the rake handle extending from the tines.

### 3,688,485 SPINDLE PLUMBING DEVICE

Larry N. Lancaster, P.O. Box 17, Pauline, S.C.  
Filed May 25, 1971, Ser. No. 146,618  
Int. Cl. D01h 7/10  
U.S. Cl. 57—1 R

13 Claims



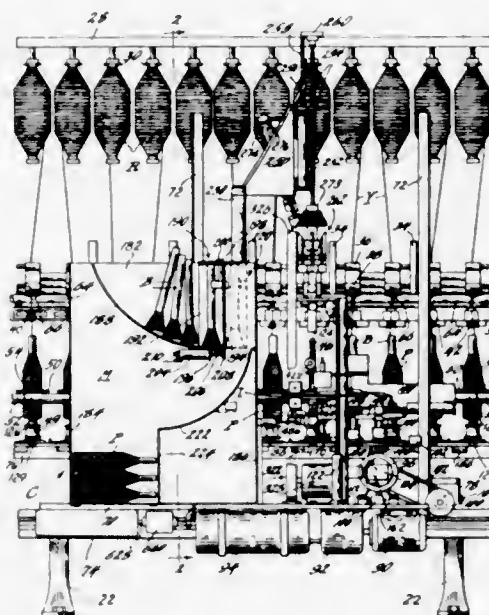
A device is disclosed for plumbing a vertical spindle on a textile machine wherein the machine has a rail that traverses up and down to distribute yarn along the length of a textile yarn carrier that resides around the spindle during normal operation. The device includes an elongated cylindrical member having a longitudinal bore therein that snugly fits about a spindle. A collar is positioned around the cylindrical member and is vertically adjustable therealong. The collar has initial spindle adjustment means such as one or more pins depending downwardly therefrom, whereby once the device is positioned over a loosened spindle, the pin engages a traverse rail ring that surrounds the spindle and automatically biases the spindle into approximate plumb (a condition perpendicular to the traverse rail and in the center of the ring) to within a few thousandths of an inch. An adjustable indicator is also provided that can be moved up and down the length of the spindle and can be rotated around the spindle to indicate a particular position where the spindle is out of plumb and also

the magnitude of deviation. The device may also be equipped with an internal bearing surface which permits use of the device on a rotating spindle. Furthermore, the device may optionally include a spirit level positioned in the top of the cylindrical member and also an extensible stop to prevent the device from rotating with the spindle.

### 3,688,486 TEXTILE MACHINE

Charles C. Bell, East Greenwich, R.I., and Kurt W. Niederer, Charlotte, N.C., assignors to Leesona Corporation, Warwick, R.I.  
Division of Ser. No. 728,637, May 13, 1969, which is a division of Ser. No. 534,081, March 14, 1966, Pat. No. 3,403,866. This application Aug. 19, 1970, Ser. No. 65,192  
Int. Cl. D01h 9/00, 15/00  
U.S. Cl. 57—34 R

59 Claims

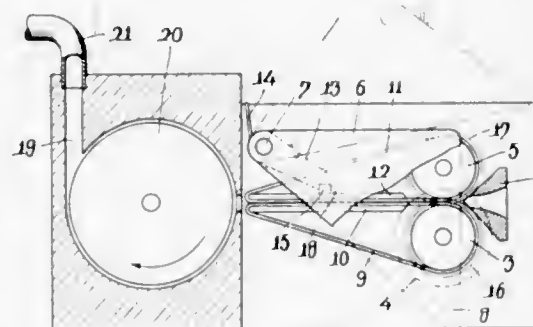


A textile spinning frame including apparatus for automatically doffing and donning bobbins and, if desired, for rejoining breaks occurring in a strand of yarn. A carriage passes the numerous spinning positions on the frame and automatically delays its travel to service any spinning position requiring attention.

### 3,688,487 METHOD AND APPARATUS FOR SPINNING FLYING FIBERS INTO A TWISTED YARN

Kenji Fukuta, Yokohama, and Yoshihiro Miura, Yokosuka, both of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan  
Filed June 10, 1970, Ser. No. 45,153  
Claims priority, application Japan, June 11, 1969, 44/45931; June 11, 1969, 44/45932; June 25, 1969, 44/50129; Nov. 17, 1969, 44/91955  
Int. Cl. D01h 1/12, 7/00  
U.S. Cl. 57—58.95

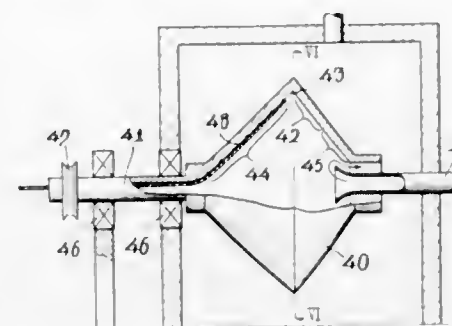
6 Claims



A twisted yarn is spun by pressing a strand of fibers against a rapidly rotating roller to separate the fibers, pressing the

separated fibers against the wall of a main rotary drum, allowing the fibers pressed against the drum wall to be moved in the direction of a fiber condensing portion of the drum, and caus-

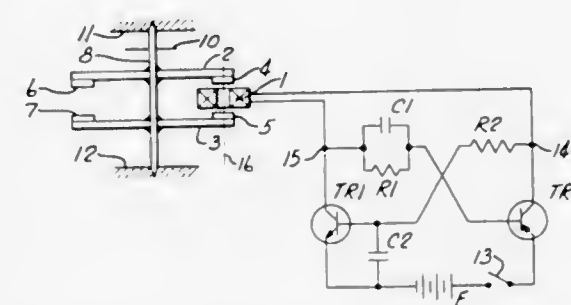
wheels has two arms joined together and adapted to pivot about a point proximate the junction. The structure is such



ing the fibers at this drum portion to be twisted and intertwined with the end of a preceding yarn portion spun in this manner.

3,688,488  
ELECTROMAGNETIC DRIVING APPARATUS  
Masashi Usui, Kawasaki, Japan, assignor to Tokyo Tokai Seizo Kaisha, Ltd., Futako, Kawasaki-shi, Kanagawa-ken, Japan  
Filed Nov. 3, 1970, Ser. No. 86,509  
Claims priority, application Japan, Nov. 17, 1969, 44/91614  
Int. Cl. G04c 3/04  
U.S. Cl. 58—28 A

6 Claims



An electromagnetic driving apparatus for both driving at a uniform oscillation a balance wheel in a timepiece as well as detection and having a driving circuit which provides a series of pulses to an electromagnetic coil supported between two permanent magnets having opposite polarity and mounted on the balance wheel. The coil, due to the electromagnetic effect imposed upon the coil by the periodically passing magnets, causes the production of a series of resultant positive pulses for driving the balance wheel. The balance wheel is maintained in a natural period of simple harmonic motion by the time period of the resultant pulses imposed upon the coil, this time period determined by a pulse timing circuit in the driving circuit.

3,688,489  
Patent Not Issued For This Number

3,688,490  
JUMPER FOR A CALENDAR WATCH MECHANISM  
Toshihiko Oki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan  
Filed Dec. 27, 1971, Ser. No. 212,246  
Claims priority, application Japan, Dec. 28, 1970, 45/132711  
Int. Cl. G04b 19/24  
U.S. Cl. 58—58

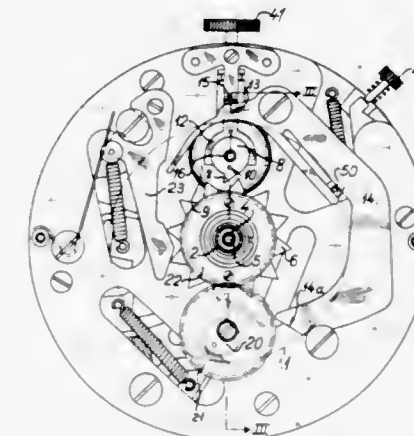
2 Claims

A jumper for a calendar watch having both day and date

that the force necessary to move the day and date wheels is minimized.

3,688,491  
TIMER  
Gerald Dubois, 1345 Le Lieu, Vaud, Switzerland  
Continuation-in-part of Ser. No. 868,312, Oct. 22, 1969, abandoned. This application March 2, 1971, Ser. No. 120,297  
Claims priority, application Switzerland, Oct. 28, 1968, 16048/68  
Int. Cl. G04f 7/04  
U.S. Cl. 58—74

10 Claims



A timer has push-piece mechanisms for starting, stopping and returning time indicating members of the timer to a zero position. A zero-setting push-piece acts indirectly on an hours disc through an eccentric wheel carrying a zero-setting cam. The hours disc is driven by a star-wheel intermittently driven by a finger-piece, and held by a jumper. When the zero-setting push-piece is actuated, the finger-piece and jumper are disengaged from the star-wheel.

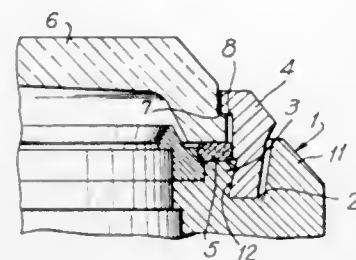
3,688,492  
BEZEL, CRYSTAL AND CASE ASSEMBLY IN A WATER-PROOF WATCH  
Yakamori Yabana, Nagano, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan  
Filed March 10, 1971, Ser. No. 122,892  
Claims priority, application Japan, March 10, 1970, 45/19736  
Int. Cl. G04b 39/00  
U.S. Cl. 58—91

5 Claims

A watch case is so designed that its outer surface can be



ground without the risk of damage to that surface of the case which engages the bezel. Corresponding modification of the



bezel results in a decrease in its width, and in a decrease in the overall diameter of the watch.

3,688,493

**HYDRODYNAMIC TORQUE CONVERTERS**

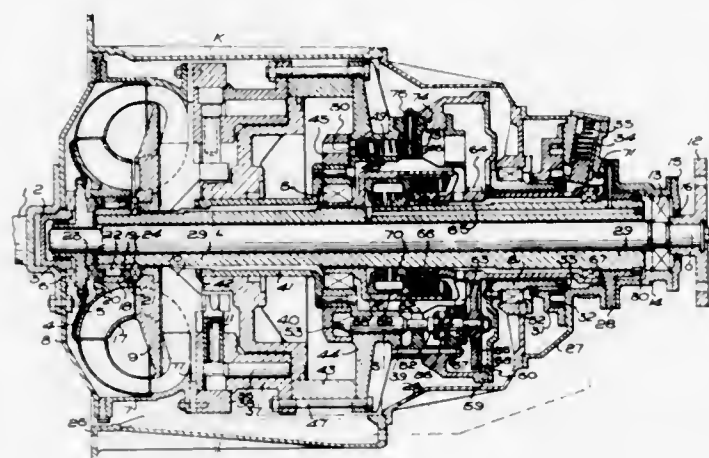
Joseph Hobson Cotterill, 8 Cotswold Way, Huntington, York 03, 9 RN, Yorkshire, England

Filed Feb. 8, 1971, Ser. No. 113,176

Int. Cl. F02b 41/00; F16d 33/04

U.S. Cl. 60-12

13 Claims



A hydrodynamic torque converter or converter-coupling, either on its own or as part of a motor vehicle automatic transmission, wherein the impeller blades are adjustable over a range, so as to provide over said range, variation in the effective diameter of the impeller.

3,688,494

**PROCESS AND APPARATUS FOR HEATING HYDROCARBONS**

Paul Mevenkamp, Lichtendorf, and Hans-Dieter Marsch, Dortmund, both of Germany, assignors to Friedrich Uhde GmbH, Dortmund, Germany

Continuation of Ser. No. 845,676, July 22, 1969, abandoned.

This application April 6, 1971, Ser. No. 131,795

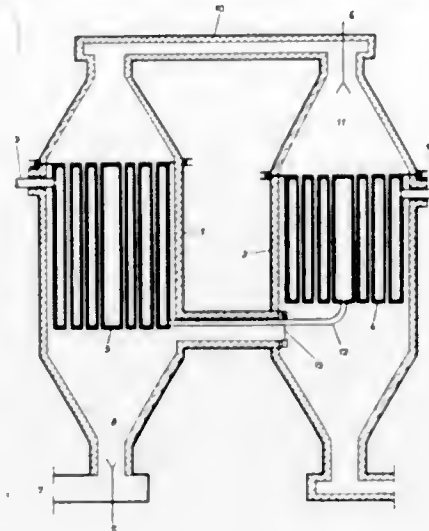
Int. Cl. C10g 9/20; F02c 3/24

U.S. Cl. 60-39.02

2 Claims

The invention covers a process and an apparatus for heating gaseous or liquid hydrocarbons within a reaction apparatus in which the hydrocarbons are cracked at high temperatures and

elevated pressures. The reaction product is then fed, for example, to a high-pressure synthesis plant. The flue gas is fed to



the reaction furnace at a pressure that approximates the reaction pressure on the product side.

3,688,495

**CONTROL SYSTEM FOR METERING THE FUEL FLOW IN GAS TURBINE ENGINES**

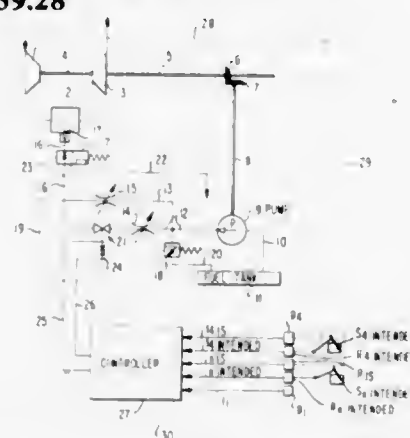
Adolf Fehler, Baumstrasse 10, 8031 Puchheim; Christian Greune, Bahnhofstrasse 8, 8081 Schongelting, and Hilbert Holzhauser, Leopoldstrasse 127/129, 8000 Munich, all of Germany

Filed April 17, 1970, Ser. No. 29,624

Int. Cl. F02c 9/08

U.S. Cl. 60-39.28

22 Claims



Control system for metering fuel flow as a function of the parameters of a gas turbine engine comprising, at least, a compressor, a combustion chamber and a turbine, said control system featuring a two-position solenoid valve as a control element for the fuel metering mechanism which meters the minimum fuel flow in its closed position and the maximum fuel flow in its opened position, with intermediate values between minimum and maximum fuel flow being adjustable by a pulse time modulation signal of an electrical controller connected to said solenoid valve operating as a function of the parameters of a gas turbine engine.

3,688,496

**COMBUSTION TYPE POWER PLANT HAVING DUAL FUNCTION CYLINDRICAL ROTOR AND STEAM INJECTION**

George C. Sorensen, 589 S.E. 4th St., Ontario, Ore.

Continuation-in-part of Ser. No. 825,131, May 12, 1969, Pat.

No. 3,572,037. This application March 17, 1971, Ser. No. 125,128

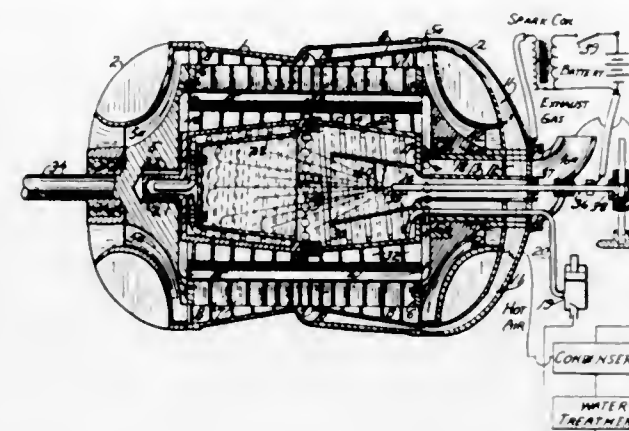
Int. Cl. F02c 3/04

U.S. Cl. 60-39.36

10 Claims

A novel compact internal combustion turbine prime mover is disclosed. The turbine comprises a cylindrical housing, a

centrifugal impeller at one or both ends thereof, a cylindrical air compressor which is concentric about and is attached to a cylindrical power turbine. An internal combustion chamber is located within the cylindrical power turbine and exhausts



combustion gases into helically disposed vanes of said power turbine which results in rotation of said power turbine, which causes rotation of the cylindrical air compressor and the centrifugal impeller.

3,688,497

**GAS TURBINE FUEL ATOMIZING SYSTEM**

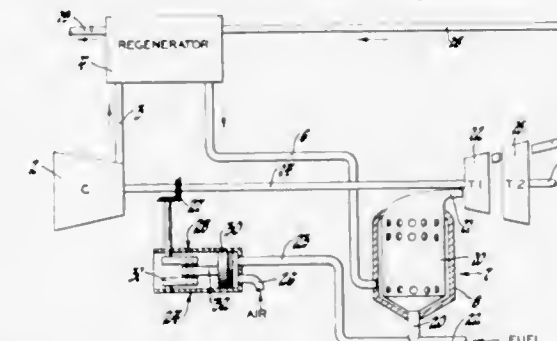
Joseph W. Bracken, Jr., Redford Twp.; Roger A. Davison, and Glenn W. Thebert, both of Carmel, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed March 31, 1971, Ser. No. 129,870

Int. Cl. F02c 9/14

U.S. Cl. 60-39.74 R

3 Claims



A gas-coupled regenerative gas turbine engine includes an air-assembled fuel atomizing nozzle in the combustion apparatus. Air is supplied to the nozzle by a positive-displacement pump driven by the engine. The pump has a relatively high ratio of clearance volume to displacement so that, at higher operating speeds of the engine, flow from the pump is blocked by the back pressure in the discharge line from the compressor of the engine. Thus air assist is available for starting and idling, but little energy is used by the pump at high power levels of the engine.

3,688,498

**AUXILIARY FLUID SUPPLY FOR BRAKE BOOSTER**

Lloyd G. Bach; Jerome T. Ewald, and Keith H. Fulmer, all of South Bend, Ind., assignors to The Bendix Corporation,

Filed Sept. 21, 1970, Ser. No. 73,933

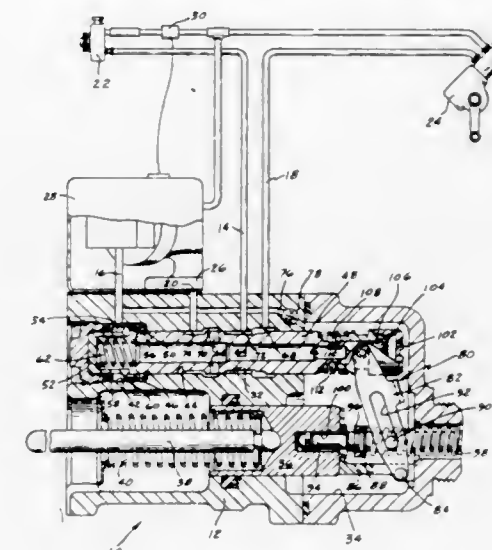
Int. Cl. F15b 13/09

U.S. Cl. 60-52 B

12 Claims

A hydraulic brake booster is disclosed which provides a power assist to the vehicle operator during a brake application. Pressurized fluid is normally supplied to the booster from the vehicle's power steering pump. However, an electric pump is provided to supply fluid to the booster when the power steering pump malfunctions. Flow of fluid between the power steering pump and the booster is controlled by an operator-actuated spool valve which is shiftable from a first position in

which the booster chamber is communicated to a fluid reservoir to a second position in which the fluid communication between the chamber and the reservoir is terminated and flow of fluid between the power steering pump and the chamber is initiated. However, when the electric pump is actuated, a stop piston prevents movement of the spool valve. Fluid at a relatively low pressure then circulates through the booster



chamber and through internal passages within the spool valve. When the operator applies the brakes of the vehicle while the electric pump is operating, a cap member which is slidably mounted on the spool valve is shifted to a position impeding flow of fluid through the passages within the spool valve, thereby increasing the fluid pressure level within the chamber to apply the brakes of the vehicle.

3,688,499

**INERTIAL POWER TRANSMISSIONS**

James Ronald Esperson, Vermont, Victoria, Australia, assignor to General Motors Corporation, Detroit, Mich.

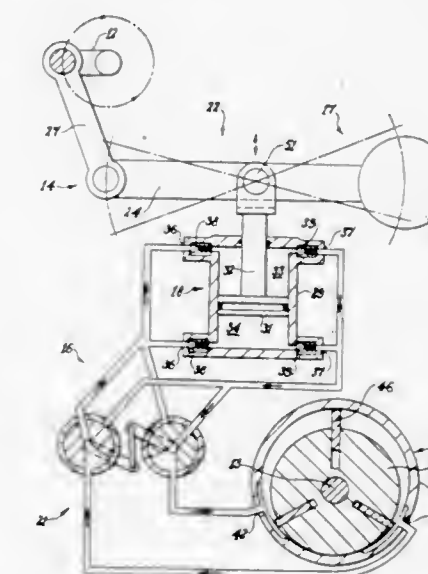
Filed Oct. 1, 1970, Ser. No. 77,211

Claims priority, application Australia, Oct. 3, 1969, 61853/69

Int. Cl. F16d 31/02

U.S. Cl. 60-53 C

14 Claims



This invention relates to an automatic inertial power transmission for motor vehicles and other machines including a driving apparatus and a driven apparatus. The automatic power transmission is operatively connectable between the driving apparatus and the driven apparatus to transmit power supplied from the driving apparatus at an input torque to the driven apparatus at an output torque. The automatic power transmission includes a mechanical transmission section



operatively connected to an hydraulic transmission section. The mechanical transmission section includes an inertial modulating means operative to regulate the interaction between the mechanical and hydraulic transmission section to automatically vary the ratio of the output torque to the input torque according to the load encountered by the driving apparatus. The invention also relates to a machine including automatic power transmission.

3,688,500

# FLUID PRESSURE SYSTEM FOR OBTAINING, CONTROLLING OR CORRECTING MICROMETRIC DISPLACEMENTS IN MACHINE-TOOLS AND OTHER APPARATUS

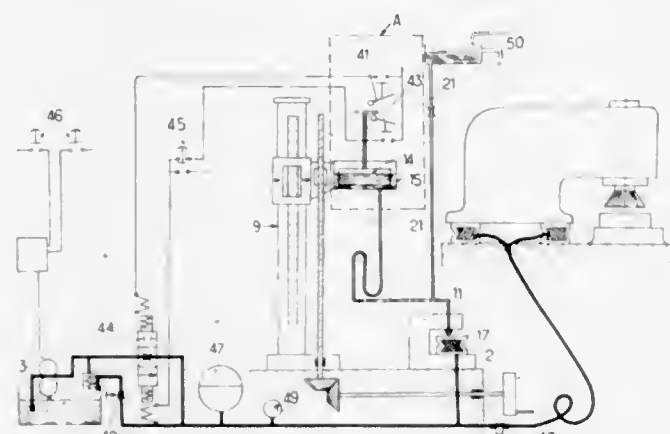
Marcel Georges Chancel, 218, rue Gabriel Peri, Vitry sur Seine, France

Filed Sept. 17, 1969, Ser. No. 858,738

Int. Cl. F15b 7/00, 13/14; B23q 3/08

U.S. Cl. 60—54.5 R

3 Claims



This invention relates to a procedure and installation to obtain, control and correct micrometric displacements of machine tools or other apparatus, wherein one or more elements which deform under internal pressure are placed between two components of a machine and the micro-displacements obtained are measured against a reference element submitted to the same pressure but, if necessary, positioned outside the machine so that the measuring or control apparatus is not subjected to the disturbing effects of vibrations, noises or other causes.

3,688,501

# FLUID PRESSURE AMPLIFIER

John T. Ellis, Jr., Bloomington, Ill., assignor to Ellis Engineering, Inc., Bloomington, Ill.

Continuation-in-part of Ser. No. 706,487, Feb. 9, 1968, Pat. No. 3,541,792. This application July 30, 1970, Ser. No. 59,625

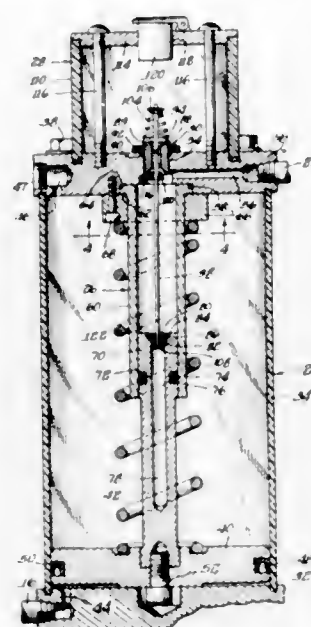
Int. Cl. F15b 7/00

U.S. Cl. 60—54.6 A

1 Claim

This fluid pressure amplifier utilizes air at low pressure to deliver hydraulic fluid at high pressure. The amplifier includes a relatively large diameter air cylinder and a relatively small diameter hydraulic fluid cylinder. A piston is reciprocally mounted in the air cylinder, which has a rod connected to the piston. A high pressure piston is formed integral with the rod. The hydraulic cylinder and the air cylinder have a common head. A liquid reservoir is mounted on the common head, and

a valve controls the flow of hydraulic fluid between the high pressure cylinder and the reservoir. The valve is connected to



3,688,502

# LIQUID TURBINE ENGINE

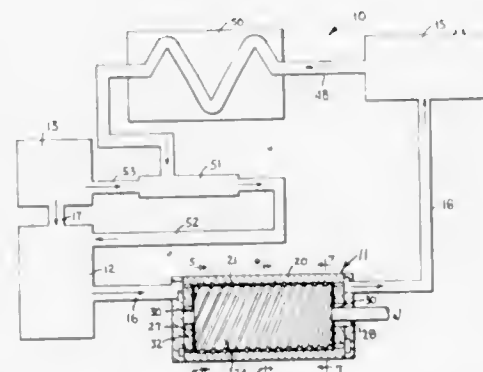
Willard Glen Hasen, 426 E. Brown Ave., Moses Lake, Wash.

Filed April 1, 1971, Ser. No. 130,091

Int. Cl. F01k 7/22

U.S. Cl. 60—56

5 Claims



A liquid turbine engine is described having a rotor mounted in a stator in which traversing spiral grooves are formed in cylindrical surfaces of the stator and rotor to receive a liquid from a high pressure manifold and to transfer the momentum of the liquid as it flows through the grooves to the rotor to cause the rotor to rotate. The high pressure liquid is generated by injecting a high pressure vapor of the liquid into a high pressure vessel containing the liquid to force the liquid under pressure into the high pressure manifold. A vapor injector is utilized to pump the liquid into the high pressure vessel.

3,688,503

Patent Not Issued For This Number

3,688,504

# BYPASS VALVE CONTROL

Charles A. Hutchinson; Richard L. Henderson, and Thomas L. Schilling, all of Cincinnati, Ohio, assignors to General Electric Company,

Filed Nov. 27, 1970, Ser. No. 93,271

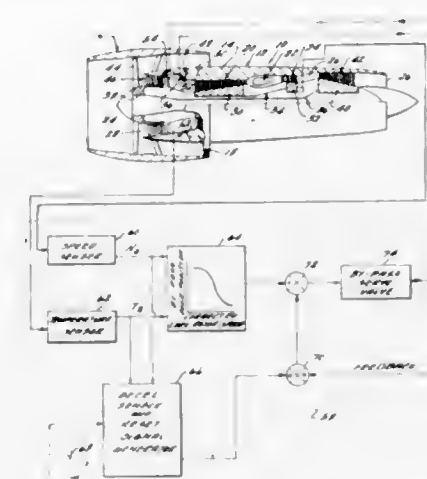
Int. Cl. F02k 3/04; F02c 9/14

U.S. Cl. 60—226 R

10 Claims

An arrangement for bypassing fluid from a location intermediate two independently rotatable compressor rotors in-

cludes a bypass passageway, means for varying the bypass flow area and means for controlling the flow area varying means as a predetermined scheduled function of selected parameters of



operation of the downstream rotor and for effectively resetting the predetermined scheduled function in response to a signal indicative of rate of change of speed of the downstream rotor.

3,688,505

# DUCTED FAN ENGINE

James R. Dison, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

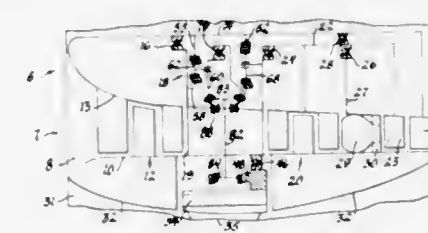
Division of Ser. No. 865,573, Oct. 13, 1969, Pat. No.

3,611,834. This application March 17, 1971, Ser. No. 125,161

Int. Cl. F02k 3/04; F02c 3/06

U.S. Cl. 60—226 R

4 Claims



A gas turbine engine of the lift type exerts lift principally by a ducted fan mounted around the mid-portion of the gas turbine engine and coaxial with it. The engine shaft drives two coaxial gear sets, one having a rotating spider and the other a rotating ring gear, these rotating in opposite directions at the same speed. Each gear set drives a bevel gear coaxial with the turbine axis, these gears being coupled together by a thrust bearing. A substantial number of radial drive shafts extend across the motive fluid duct of the gas turbine, each bearing a bevel pinion meshing with both of the bevel gears. The outer ends of these shafts bear spur pinions which mesh with a circular rack type gear external to the motive fluid duct and fixed to the hub of the fan. The fan is mounted on a large ball bearing on the exterior of the turbine casing.

3,688,506

# APPARATUS FOR REMOVING OIL SLICK FROM WATER SURFACES

Alphonso E. Marrocchio, 2239 S. Camden Ave., Los Angeles, Calif.

Continuation-in-part of Ser. No. 11,538, Feb. 16, 1970, abandoned. This application Dec. 28, 1970, Ser. No. 101,766

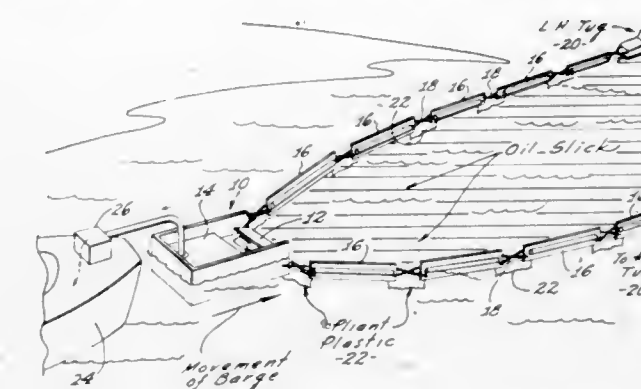
Int. Cl. E02b 15/04; B01d 21/00

U.S. Cl. 61—1 F

8 Claims

A barge-like float having a forward end shaped to be in skimming contact with the surface of the water. Two series of

booms of special construction are attached to the forward end of the float, and the booms extend out from the barge in substantially an inverted V formation. The booms are intercou-



pled with one another in a particular manner, so that the booms may ride ocean swells without turning over, and without permitting the oil slick to seep under the booms.

3,688,507

# GROUTING

Donald Sinclair Muller, 2 Stirling Ave., Hurlingham, Johannesburg, Transvaal, South Africa

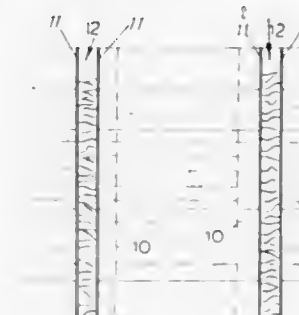
Filed March 13, 1970, Ser. No. 19,302

Claims priority, application Great Britain, March 13, 1969, 13,350/69

Int. Cl. E02d 3/12

U.S. Cl. 61—36

10 Claims



A method of providing waterproof barriers in water bearing ground formations by means of grouting. Holes are drilled to outline the barrier and the formations between holes are pre-split to provide artificial cracks or fissures. Subsequently grout is forced down the holes or other holes drilled in the same area so that the pre-split rock is impregnated with the grout.

3,688,508

# SHEET PILING CONNECTORS

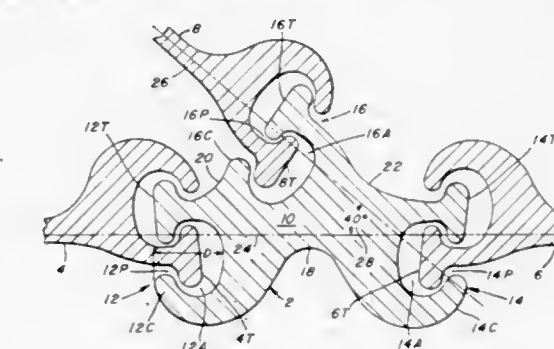
Rene A. Taylor, Mount Lebanon Twp., Allegheny Cty., Pa., assignor to United States Steel Corporation,

Filed Oct. 21, 1970, Ser. No. 82,667

Int. Cl. E02d 5/08

U.S. Cl. 61—62

3 Claims



An extruded steel connector for connecting three sheet pilings has three spaced apart appendages radiating from a



solid core. The angle between the appendages may vary, but should not be less than 30°. Each appendage includes a C-arm, spaced from a T-arm to form an oval opening having a restricted passage to the outer periphery of the connector. The T-arms of the pilings are received one in each oval opening. The core has a concave arcuate outer portion between adjacent appendages. The distance between the bottoms of adjacent openings is a maximum of four times the depth of the openings as measured from the outside of the connector.

3,688,509

# METHOD OF ASSEMBLING A SHEET PILING IN THE EARTH FROM SHEET PILE SECTIONS; AS WELL AS A SHEET PILE SECTION SUITABLE FOR APPLICATION IN THIS METHOD

Abraham Francois Van Weele, Waddinxveen, Netherlands, assignor to N.V. Tot Aanneming van Werken voorheen H. J. Nederhorst, Gouda, Netherlands

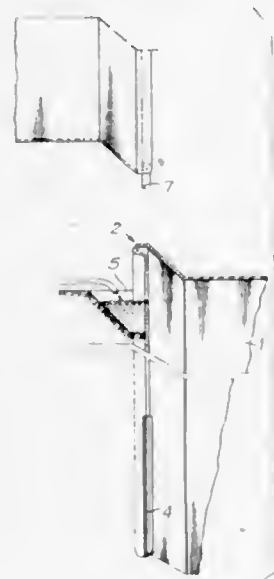
Filed Nov. 18, 1970, Ser. No. 90,617

Claims priority, application Netherlands, Nov. 22, 1969, 6917636

Int. Cl. E02d 5/16

U.S. Cl. 61—62

10 Claims



A method of assembling a sheet piling in the earth from sheet pile sections which are each provided on either side with a locking channel and which are successively introduced into the earth. Prior to the introduction of a sheet pile section into the earth, its locking channel which is to co-operate with the adjacent locking channel of the next sheet pile section is sealed on the lower side as well as in the lower area of the upright open side. During the introduction of this sheet pile section into the earth a liquid having a low internal friction and a high specific gravity is fed into said locking channel, said liquid keeping the locking channel filled to approximately the level of the ground surface. This liquid is forced out of the locking channel when the next sheet pile section is being introduced into the earth.

A sheet pile section provided on either side with a locking channel, wherein one of said locking channels is sealed on its lower side by a lower end plate and on the upright open side by an upright side plate, which extends from the lower side of the locking channel over part of the height of said locking channel.

3,688,510

# SUBMARINE ROCK PLACING TRAVELER

James J. Keating, Richmond, Calif., assignor to Peter Kiewit Sons' Company, Omaha, Nebr.

Filed Sept. 3, 1971, Ser. No. 177,656

Int. Cl. E02d 15/10, 27/46

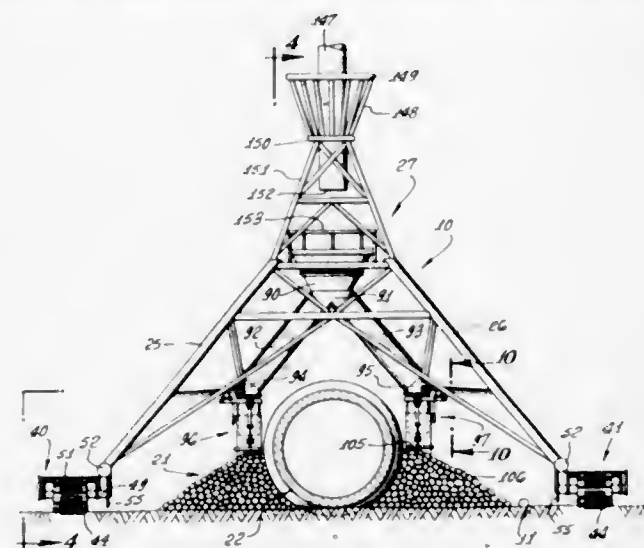
U.S. Cl. 61—63

17 Claims

A ballast placing system for underwater pipe lines makes use of a traveler vehicle operating on the ocean floor to place

aggregate material at the sides of a pipe line as ballast. The vehicle has a frame including side members which straddle the pipe line and a central structure located above the pipe line interconnecting the side members. Adjacent the aft end of each side member is a hydraulic activated Caterpillar Drive unit for moving the vehicle in a forward direction and forward of the Caterpillar Drive unit is a supporting sled and a guide structure for aligning the vehicle relative to the pipe line. At the top of the central structure is a hopper from which extends a downwardly directed chute which divides into two branch chutes, one located on each side of the pipe.

A screed device at the lower end of each branch chute gages the amount of aggregate which is deposited by each respective



branch chute. Caterpillar treads of the drive unit are actuated to move the vehicle progressively forward as promptly as aggregate deposited at the sides of the pipe line reaches a predetermined level.

The hopper is supplied through a telescoping feed chute from a tender anchored at the surface, above and in alignment with the pipe line. The tender is pulled forward on anchor cables at a pace matching travel of the vehicle on the ocean floor and a crane on the tender lifts aggregate from a supply barge and discharges it into the feed chute.

Hydraulic circuits for operating parts of the system stem from a control panel carried by the tender and are supplied by a pump on the tender.

3,688,511

# METHOD OF AND APPARATUS FOR FLUSH-JET EMBEDDING STRUCTURAL ELEMENTS AND FOR SUCKING OFF GROUND MATERIAL

Rudolf Harmstorf, Schillerstr. 45, Hamburg-Altona, Germany

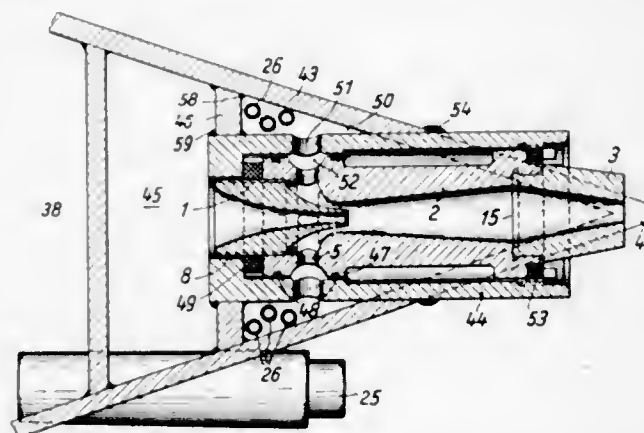
Filed July 8, 1970, Ser. No. 53,189

Claims priority, application Germany, Aug. 18, 1969, P 19 41 993.3

Int. Cl. E02f 5/00; B05b 7/28

U.S. Cl. 61—72.4

4 Claims



The method of the invention consists in directing a jet of a mixture of water and air into the ground whereby the ground

material is loosened and removed. A ditch is formed in this way and an element is laid into the ditch. The apparatus for performing this method has water jet pumps arranged at the side adapted to penetrate into the ground. The method and apparatus are especially suited for laying cables and pipes in a water bed.

3,688,512

# COLD-GAS REFRIGERATOR, DISPLACER SEAL TO REDUCE FROZEN CONTAMINANTS

Gljsbert Prast, and Hendrik Jan Rauwerdink, both of Emmasingel, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.

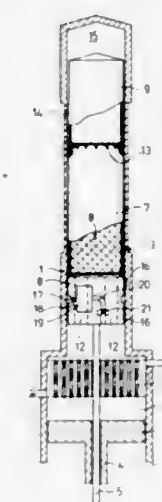
Filed Dec. 22, 1970, Ser. No. 100,662

Claims priority, application Netherlands, Jan. 2, 1970, 7000001

Int. Cl. F25b 9/00

U.S. Cl. 62—6

8 Claims



A cold-gas machine includes first and second pistons for varying the volumes of a cold and a warm space; the first piston has a seal and a duct which communicates with a buffer space, the latter communicating via a duct with the warm space, debouching at a place situated between the axial boundaries of said seal. A non-return valve opens in the direction of the warm space is incorporated in this duct.

3,688,513

# PRODUCTION OF NITROGEN AND ARGON-FREE OXYGEN

Martin Streich, Urseler Weg 44, Nieder-Eschbach, and Hartmut Voigt, Heimchenweg 82, Frankfurt am Main-Unterliederbach, both of Germany

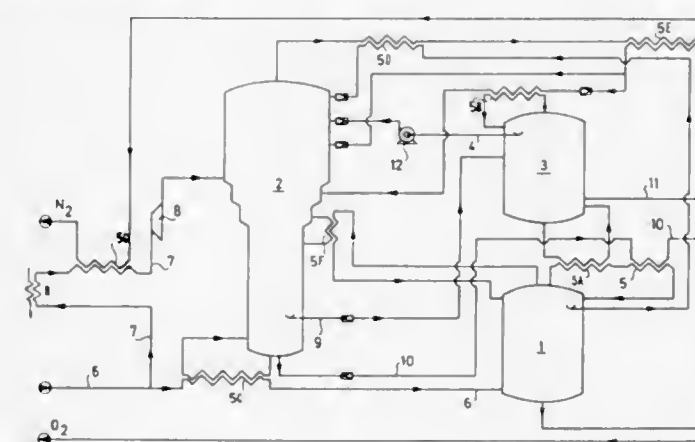
Filed April 20, 1970, Ser. No. 30,208

Claims priority, application Germany, May 6, 1969, P 19 22 956.2

Int. Cl. F25j 3/00, 3/02, 3/04

U.S. Cl. 62—22

5 Claims



Nitrogen- and argon-free oxygen is recovered from air by a three-stage rectification system in which the third stage is

maintained at an absolute pressure of 0.8 to 1.1 atmosphere while the pressure of the second stage is higher by only 0.3 to 0.5 atmosphere. A side stream containing argon flows from the second rectifying stage to the third stage which yields a head product enriched in argon. This head product is pumped back into the upper portion of the second stage. High-purity oxygen is recovered from the pumps of the second and third rectifying stages.

3,688,514

# CRYOSTATS

Roger Prost, Saint Egreve, France, assignor to L'Air Liquide, Societe Anonyme pour L'Etude et L'Exploitation des

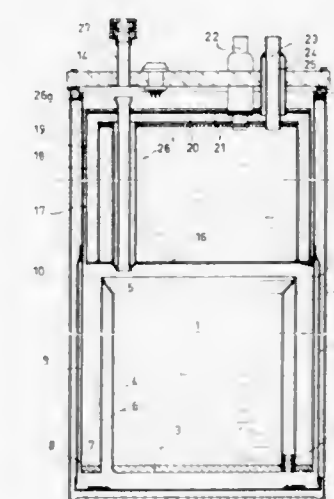
Procédes Georges Claude, Paris, France

Filed Dec. 21, 1970, Ser. No. 100,271

Claims priority, application France, Dec. 24, 1969, 6944794

Int. Cl. F17c

8 Claims



A cryostat, which makes use of a cryogenic liquid at very low temperature, for example liquid helium, as a medium to surround a specimen being tested, comprises a double-walled tank disposed within and spaced from a double-walled insulating jacket under vacuum. The suspension of the tank is effected by a double annular connection with the bottom of the inner wall of the insulating jacket. A reflector screen is cooled by the nitrogen of a reservoir. The cryostat can be used for testing materials or for enabling apparatus to function at very low temperature.

3,688,515

# METHOD AND APPARATUS FOR REMOVING WATER AND NONCONDENSIBLE GASES FROM CERTAIN REFRIGERANTS

William J. Lavigne, Jr., Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed June 29, 1971, Ser. No. 157,904

Int. Cl. F25b 47/00

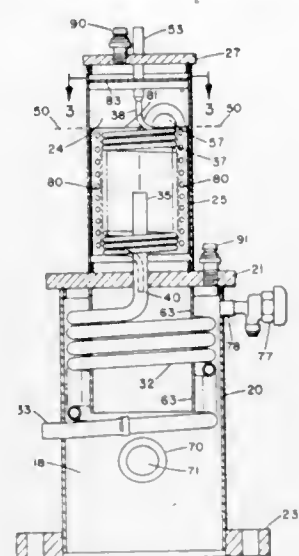
U.S. Cl. 62—85

9 Claims

The invention is directed to a system for removing water and noncondensable gases from a refrigerant used in a refrigeration system, which refrigerant has the property of supporting more water in the liquid phase than in the vapor phase. Liquid refrigerant is maintained at a level in a chamber and is heated to drive off the refrigerant vapor. As the liquid refrigerant in the chamber vaporizes, the water content increases until the refrigerant is saturated with water. The water being less dense than the refrigerant, it will collect on the surface of the refrigerant and can be conveniently drained off. The liquid refrigerant is preferably heated by hot gas refrigerant taken from the high side of the system and after



passing through a heating coil in the chamber, it is passed to a second chamber in which the vapor of the refrigerant is con-



densified by the liquid refrigerant flowing to the first chamber. The noncondensable gases are vented from the second chamber in conventional manner.

3,688,516

## AIR CONDITIONING CONTROL SYSTEM

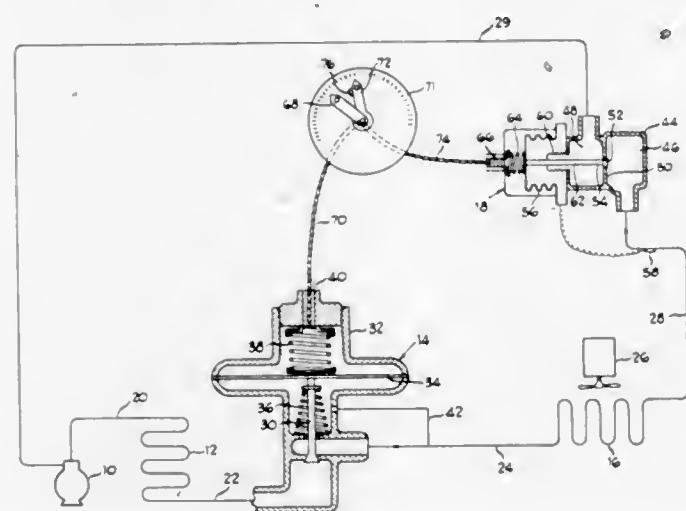
Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 21, 1970, Ser. No. 99,807

Int. Cl. F25b 41/04

U.S. Cl. 62-205

4 Claims



A control system for an air conditioning or refrigeration apparatus includes a constant pressure regulating valve (automatic expansion valve) between the condenser and the evaporator and a temperature responsive valve between the evaporator and the compressor. Both valves are capable of adjustment to establish: (1) a predetermined pressure (and corresponding temperature) in the evaporator; and (2) a predetermined temperature of the refrigerant in the suction line leading to the compressor. Means are provided for coordinating the setting for both such valves to maintain a certain minimum superheat in the suction gas.

3,688,517

## AIR CONDITIONING CONTROL SYSTEM

Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 21, 1970, Ser. No. 99,806

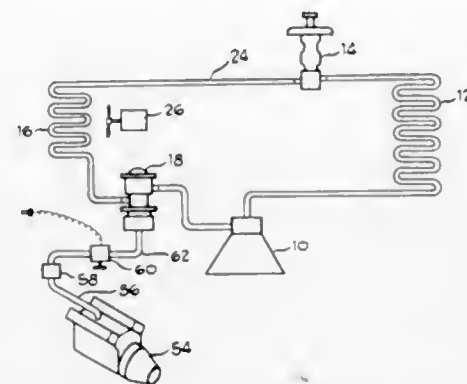
Int. Cl. F25b 41/00

U.S. Cl. 62-209

5 Claims

A control system for air conditioning apparatus, particularly well suited for automotive applications, includes a constant

pressure regulating valve between the condenser and the evaporator and a superheat responsive valve between the evaporator and the compressor. The superheat responsive valve is responsive to the temperature of air within the controlled space; and the control mechanism may be adjusted by



the operator to obtain any desired setting. This assures optimum comfort air conditioning under a variety of load and air flow conditions. The system is designed to prevent carryover of liquid refrigerant into the compressor and also avoids evaporator coil freeze-up.

3,688,518

## REFRIGERATED CONVEYOR SYSTEM

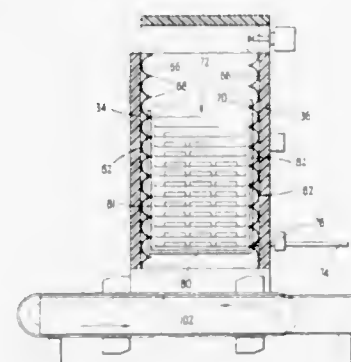
Costas E. Goltso, Weston, Mass., assignor to Teckton, Inc., Waltham, Mass.

Filed Oct. 16, 1970, Ser. No. 81,466

Int. Cl. F25d 17/02

U.S. Cl. 62-374

18 Claims



A system for quick freezing of articles in which an elongated, vertically oriented housing is provided with elevator means for successively and incrementally lowering trays containing the articles through a freezing chimney within the housing. A cryogenic coolant is introduced through metered orifices along vertical pipes extending upwardly through the chimney. The internal chimney surfaces are arranged to cooperate with the trays and coolant orifices so that the articles in the trays are subjected to a zig-zag, reversed flow of coolant as the trays advance downwardly through the chimney.

3,688,519

Patent Not Issued For This Number

3,688,520

## ADJUSTABLE TWO-FINGER RING WITH REMOVABLE ORNAMENT

Donald C. Strassel, Newark, N.Y., assignor to C. H. Stuart & Co., Inc., Newark, N.Y.

Filed Dec. 11, 1970, Ser. No. 97,146

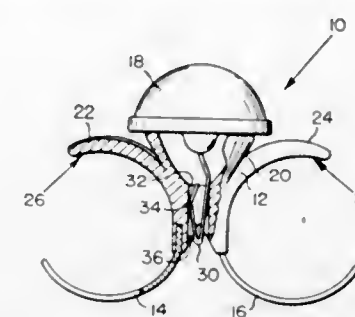
Int. Cl. A44c 9/02

U.S. Cl. 63-15.5

2 Claims

An ornamental finger ring for two adjacent fingers including a removable ornament, an upper rigid member forming both

an ornament support member and the upper part of two semicircular rings, and a lower formable member connected to said upper member and including a pair of subtending



formable elements forming the lower part of said two semi-circular rings and permitting adjustment relative to the two rigid upper parts of the two rings to provide, in cooperation with the two upper parts, a desired fit on the fingers.

3,688,521

## CONSTANT VELOCITY UNIVERSAL JOINTS

Henry Thomas Smith, Whittington, near Lichfield, and Thomas Hughes Millward, Sutton Coldfield, both of England, assignors to G.K.N. Birfield Transmission Limited, Birmingham, England

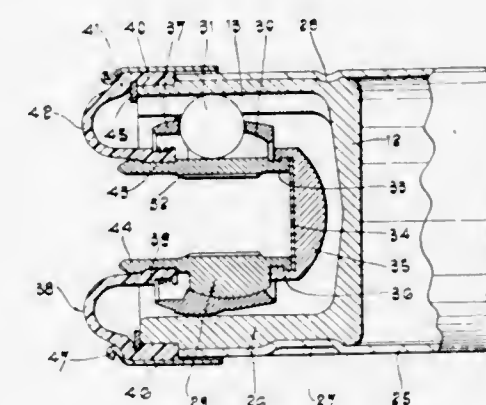
Filed March 10, 1971, Ser. No. 122,902

Claims priority, application Great Britain, May 1, 1970, 20,995/70

Int. Cl. F16d 3/10

U.S. Cl. 64-21

10 Claims



The outer member of a constant velocity universal joint is provided with a number of external grooves. The grooved outer member is then fitted within an end portion of a tube and the tube deformed inwardly so as to obtain a positive mechanical interlocking engagement between the outer member and the tube to hold the outer member against movement relative to the tube.

3,688,522

## OVERLOAD CLUTCH PERMITTING TORQUE TRANSMISSION DURING OVERLOAD

Peter Schmuck, Mauren, Liechtenstein, Germany, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein, Germany

Filed Dec. 10, 1970, Ser. No. 96,844

Claims priority, application Germany, Dec. 29, 1969, P 19 65 275.6

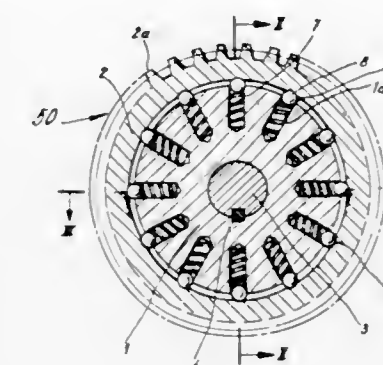
Int. Cl. F16d 7/00

U.S. Cl. 64-29

5 Claims

An overload clutch includes a first drive part of circular cross-section having a circumferential surface with a groove which mates with a second drive part of ring-shaped configuration which has a surface in running engagement with the first part and which also contains a circumferential groove. One of the two parts includes a plurality of radially extending and angularly spaced recesses or bores each of which carries a

spring-loaded ball member which is urged toward engagement with the other part. The other part includes an engagement opening for receiving the ball and the two parts rotate together in a form-locked manner with the balls engaged in the engagement openings to transmit torque. During an over-



3,688,523

## ROTATING SEALING SLEEVE OF ELASTIC MATERIAL ESPECIALLY FOR DRIVING JOINTS OF MOTOR VEHICLES

Lutz Schafer, Stuttgart-Bad Cannstatt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertürkheim, Germany

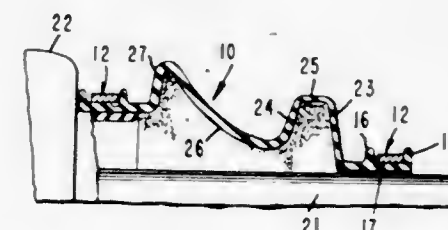
Filed Dec. 17, 1970, Ser. No. 99,091

Claims priority, application Germany, Dec. 17, 1969, P 19 63 175.5

Int. Cl. F16d 3/84

U.S. Cl. 64-32 F

14 Claims



A rotating sealing sleeve made from elastic material and intended in particular for drive joints of motor vehicles, which includes a collar of smaller diameter for the fastening at the shaft element and a collar of larger diameter for the fastening at the joint part; the collar area for the mounting of a clamping band includes outwardly a boundary collar and inwardly a relief groove which is adjoined inwardly by a further boundary collar; the width of the clamping band is thereby so selected in relation to the clamping area that the relief groove is at least partially covered thereby; the elastic sleeve may be of the type which includes a deformation part provided adjacent each collar area in the sleeve body which consists of one diaphragm part or of two diaphragm parts connected by a short spacer section; the two deformation parts are connected with each other by a relatively large and stiff spacer section.



3,688,524

## WARP KNITTING MACHINE

Ervin Peschl, Ceska, and Jan Skrepek, Post Habrovany, both of Czechoslovakia, assignors to W. Schlafhorst & Co., Monchengladbach, Germany; and Vyzkumny Ustav Pletarsky, Brno, Czechoslovakia

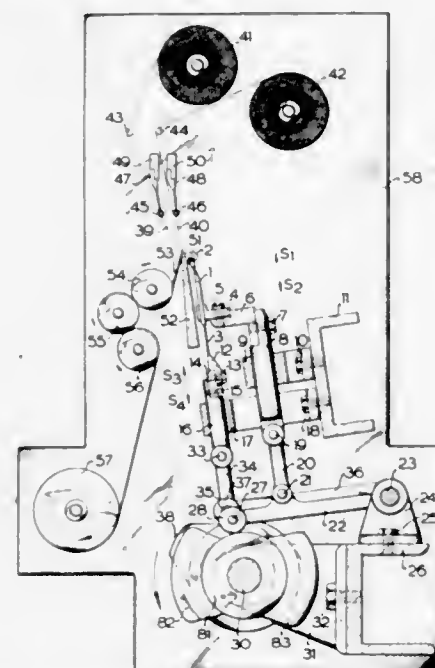
Filed Dec. 5, 1969, Ser. No. 882,671

Claims priority, application Czechoslovakia, Dec. 6, 1968, 832068

Int. Cl. D04b 23/00

U.S. Cl. 66—86 R

11 Claims



In a warp knitting machine with bipartite knitting needles respectively having a hook part and a latch part and provided with at least one needle bar for the hook parts and at least one latch bar for the latch parts of the needles, there is included a control device for controlling movement of the latch bar, the control device comprising means for uniformly and non-uniformly varying movements of the latch parts in opening and closing the hook parts of the knitting needle, for each course knitted in the warp knitting machine.

3,688,525

## FLAT BED KNITTING MACHINES

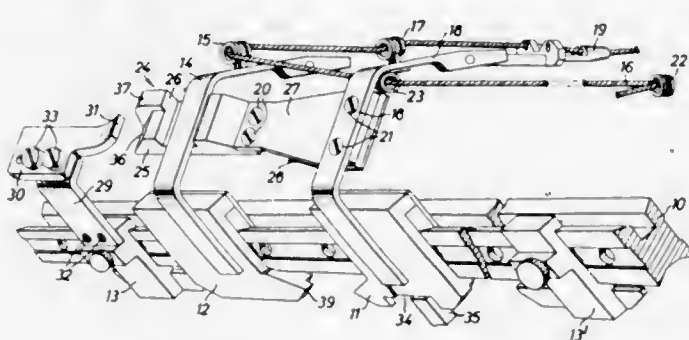
Keith Jeffcoat, Nuneaton, England, assignor to Courtaulds Limited, London, England

Filed Nov. 27, 1970, Ser. No. 92,993

Int. Cl. D04b 15/44, 27/12, 27/14

U.S. Cl. 66—146

22 Claims



A flat bed knitting machine comprises a needle bed, a yarn feeder arranged to traverse the needle bed and to feed yarn to the needles of the needle bed from a stationary yarn package, means for forming a loop in the yarn prior to its passage through the yarn feeder, and means for varying the length of the loop in timed relation to the traversing movements of the yarn feeder for the purpose of preventing any substantial build-up of tension in the yarn. The provision of such a loop prevents tightening of the end stitches of a piece of fabric being knitted on the machine.

3,688,526

## ARRANGEMENTS IN FLAT JACQUARD KNITTING MACHINES FOR AVOIDING DAMAGE IN THE EVENT OF FAULTY POSITIONING OF NEEDLES OR JACKS

Walter Wörner, Pfullingen, Germany, assignor to H. Stoll & Company, Stollweg, Germany

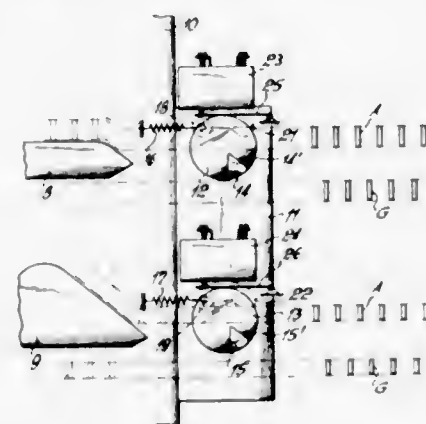
Filed Feb. 10, 1971, Ser. No. 114,300

Claims priority, application Germany, Feb. 13, 1970, P 20 06 550.3

Int. Cl. D04b 35/10

U.S. Cl. 66—165

9 Claims



For avoiding damage when jacks or needles are faultily positioned in a jacquard knitting machine, pivotable cams are provided in front of the lock parts to, depending on the position of the butt of the faultily positioned jack or needle, either correctly land the butt on the lock part or to pivot and move the butt to its base position. Stop motion switches are arranged to be actuated by the cams when they pivot to move a butt to the base position.

3,688,527

## APPARATUS FOR CLEANING RESILIENT WEBS

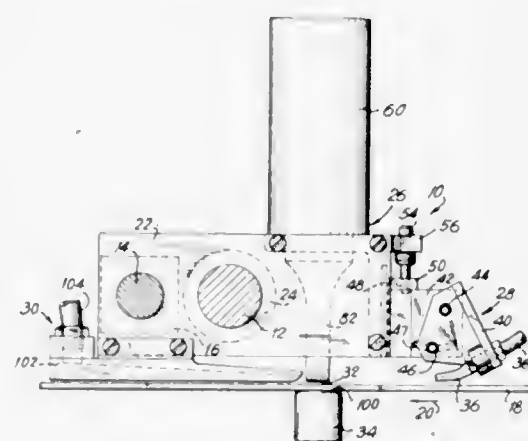
Stanley Blustain, Brooklyn, N.Y., assignor to Stam Instruments Corporation, Brooklyn, N.Y.

Filed July 13, 1970, Ser. No. 54,172

Int. Cl. D06f 7/04

U.S. Cl. 68—3 SS

26 Claims



A method and apparatus for cleaning mechanically bonded contaminants from a resilient web in a fluid medium wherein longitudinal vibrations of large displacement amplitude are radiated from the output radiator of a generator means to produce periodic perturbations of large displacement amplitude in the fluid medium. Said output radiator is positioned adjacent said web and reflecting means is disposable in facing relation with said output radiator, with said web therebetween, for reflecting said vibrations back into said fluid medium, said reflecting means and output radiator being spaced a distance apart such that the reflected vibrations are substantially in phase with the vibrations radiated into said fluid medium by said generating means output radiator.

3,688,528

## APPARATUS FOR THE FLUID TREATMENT OF THREAD OR SHEET-LIKE FABRIC

Hermann Vorderbruegge, Senne I Post Windelsbleiche, and Ludwig Mehrmann, Detmold, both of Germany, assignors to Heberlein & Co. AG., Wattwil, Canton of St. Gall, Switzerland

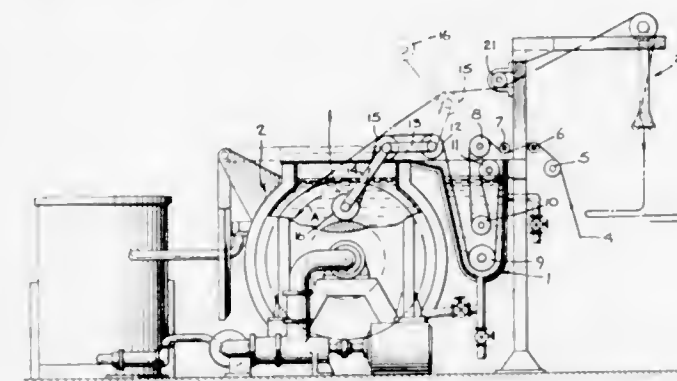
Filed Nov. 18, 1970, Ser. No. 90,640

Claims priority, application Germany, Nov. 24, 1969, P 19 58 867.1

Int. Cl. B05c 8/02

U.S. Cl. 68—150

5 Claims



Apparatus and method for the treatment of thread or sheet-like fabric with fluids wherein a drum upon which the thread or fabric is supported in a container, and a trough for pre-treatment of the material is associated with the container.

3,688,529

Patent Not Issued For This Number

3,688,530

## POLYCHROMATIC DYE APPLICATOR

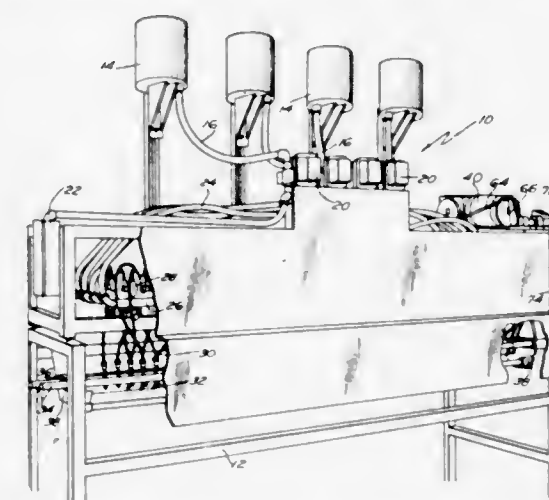
Stephen C. Harris, Pojac Point, North Kingstown, R.I., and John F. Damon, 734 Greenwich Ave., Warwick, R.I.

Filed June 15, 1971, Ser. No. 153,366

Int. Cl. B05b 13/04

U.S. Cl. 68—205 R

7 Claims



A polychromatic dye applicator having a frame positioned transversely to the flow of material being dyed as it passes through the frame. Traverse bars are supported above the material passing therethrough. A plurality of nozzles are attached to said traverse bars such that their open end is directed toward the material passing therebeneath. Dye tanks mounted on the frame have a flow system that carries the dyes to their individual manifold pipes from whence they are distributed through feed tubes to the nozzles. A variable speed motor mounted on the frame produces a rotational drive motion on its shaft which is transmitted to a disc having a reciprocally mounted cam follower in its open face. A split ring cam

mount frame removably receives a cam having a predetermined configuration and it is positioned adjacent said disc to place said cam follower in contact with said cam surface. Rotational motion directed into said disc is transmitted therefrom by an arm connected to the cam follower in the form of a reciprocating pivotal motion to a crank arm. The crank arm is mounted on a shaft which in turn receives the reciprocal pivoting motion. A rocker arm mounted on the shaft transmits its up and down motion to bell crank members that are connected to the traverse bars. The ultimate motion of the traverse bars is a reciprocating back and forth motion over the fabric being dyed as it is passing transversely through the dye applicator apparatus.

3,688,531

## AUTOMATIC LOCKING SYSTEM

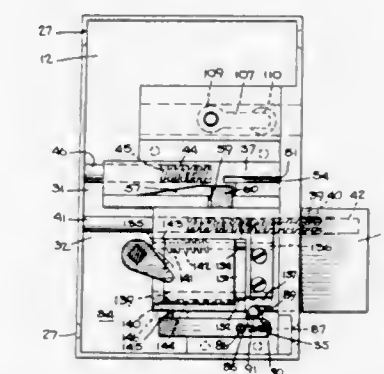
Paul Maddison Hawkins, Stillwater, Minn., assignor to Minnesota Mining Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 721,809, April 16, 1968, Pat. No. 3,554,593. This application Jan. 22, 1970, Ser. No. 10,681

Int. Cl. E05b 63/20

U.S. Cl. 70—151

10 Claims



A security system for locking closure members and having a locking bolt adapted to be automatically projected to its locking position when the closure members are also in the locking position and having means for automatically deadlocking the locking bolt when it is in the locking position.

3,688,532

## CONTROL SYSTEM FOR TANDEM ROLLING MILL BASED ON THE CONSTANT VOLUME PRINCIPLE

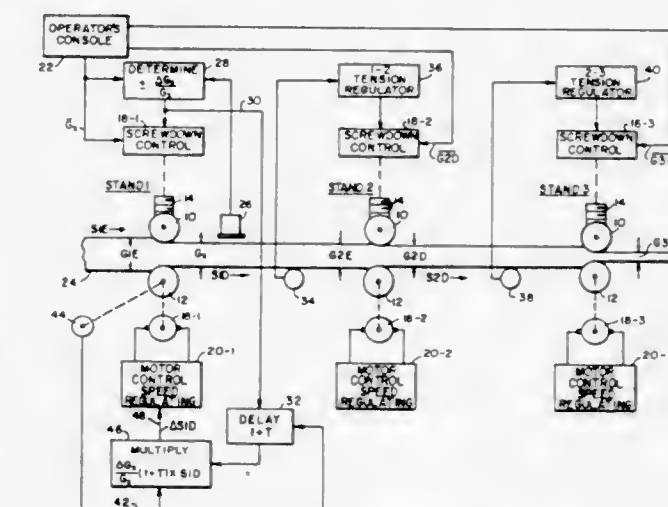
Antonio Vicente Silva, c/o Westinghouse Electric S.A., Coxie Postal 5156, San Paulo, Brazil

Filed Nov. 24, 1970, Ser. No. 92,349

Int. Cl. B21b 37/12

U.S. Cl. 72—8

9 Claims



Automatic gauge control system for tandem rolling mills based on the constant volume principle. The percentage gauge deviation from desired gauge at the output side of a first stand



in a tandem mill is derived and stored until the off-gauge material reaches the bite of the rolls of a succeeding stand; whereupon the first stand speed is increased or decreased by an amount equal to the percent gauge deviation from the desired gauge at the output of the first stand. Tensiometer means are provided between the first and second stands for controlling the screwdown on the second stand in a manner such that when the speed of the first stand is varied in response to a deviation in gauge from desired gauge, the tension between the stands is also varied as is the screwdown on the second stand to compensate for the tension variation. The adjustment to the screwdown on the second stand, in addition to maintaining tension constant, also compensates for off-gauge material.

3,688,533

## TUBE EXPANSION APPARATUS

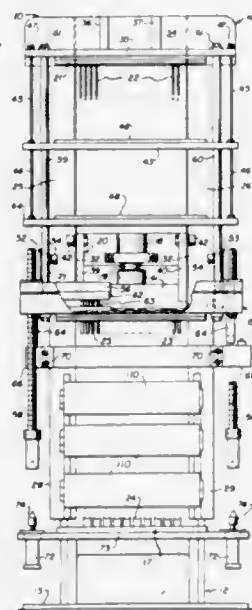
Ward A. Ames, Danville, Ill., assignor to Tridan Tool & Machine, Inc., Danville, Ill.

Filed Oct. 19, 1970, Ser. No. 81,726

Int. Cl. B21J 7/26; B21d 45/00

U.S. Cl. 72-22

13 Claims



A tube expansion apparatus which includes a vertically supported frame, a main ram and a main cylinder which is affixed to the frame and has a piston which is affixed to a main ram guide carriage and reciprocally drives the latter and hence the main ram. The main cylinder is disposed such that its piston, upon being extended, moves vertically downwardly. This piston rather than being affixed to the main ram is affixed to main ram guide carriage to forcibly urge it and the main ram downwardly, the arrangement being such that the height of the tube expansion apparatus can be substantially reduced in comparison to that of a conventional vertical tube expander.

3,688,534

## BENT TUBE INSPECTION METHOD AND APPARATUS

Gunnar P. Anderson, Danbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 23, 1970, Ser. No. 92,103

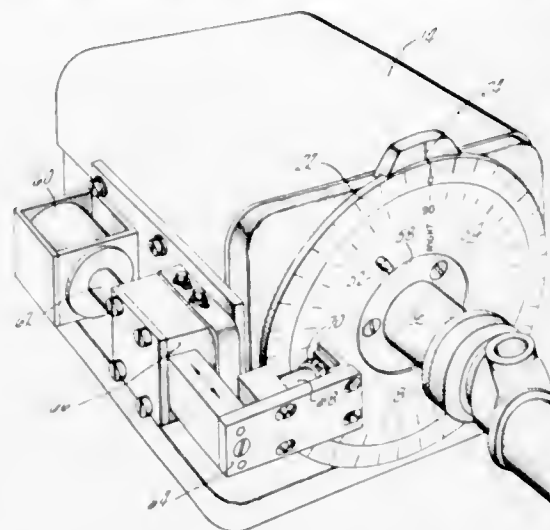
Int. Cl. B21c 51/00

U.S. Cl. 72-32

16 Claims

A conventional tube bending machine is disclosed including a longitudinal bed along which a head is movable. The head has a rotatable spindle provided with a tube holding chuck and a protractor dial which indicates in degrees the angular rotation of the spindle about the tube axis at which successive bends in the tube are made at spaced points along the tube. The protractor dial is fitted with two dowel pins for positioning a smaller paper protractor dial in registry with the head dial. As the tube is rotated about its axis and is clamped at

each bend position along the tube, a switch is operated which energizes a solenoid and moves a numbered, self-indexing stamping head against the paper dial to print thereon the number of the bend being made at the corresponding angular



position at which the bend is made. The paper dial is removed at the completion of the bending operation and is attached to the tube for inspection purposes, enabling the inspector to determine the number of degrees the tube was rotated about its longitudinal axis at consecutive bends.

3,688,535

## APPARATUS FOR ELECTROHYDRAULIC PRESSURE ARC CONTROL

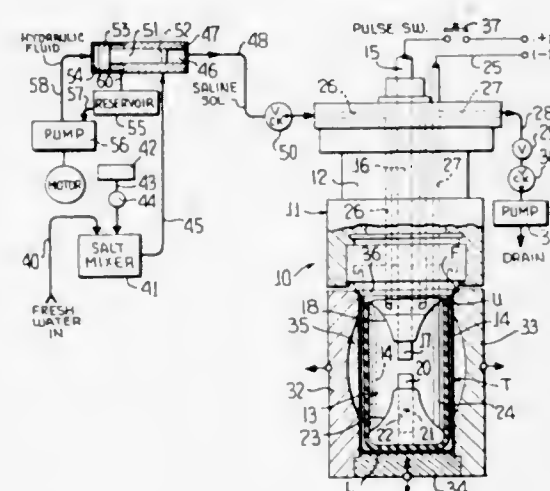
Henry J. Keiminen, Hickory Hills, and John B. Pearson, Justice, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed June 7, 1968, Ser. No. 735,345

Int. Cl. B21d 26/12

U.S. Cl. 72-56

4 Claims



This disclosure relates to an apparatus for preventing erroneous arcing during electrohydraulic pressure reforming of tubular elements, and includes a flexible electrohydraulic chamber wherein is supported a plurality of electrodes, means are provided for introducing a fluid medium into the chamber and for preventing erroneous arcing during the discharge of electrical energy across the electrode gap by pressurizing the fluid medium between 300-3,000 p.s.i., and preferably between 600-800 p.s.i.

3,688,536

Patent Not Issued For This Number

3,688,537

## PROCESS FOR FORMING ON SURFACE OF ARTICLES RELIEF FEATURING PROJECTIONS AND RECESSES OF UNIFORM HEIGHT SHAPE AND DISPOSITION SMOOTHLY CHANGING FROM ONE INTO THE OTHER, AND DEVICES FOR ACCOMPLISHING SAME

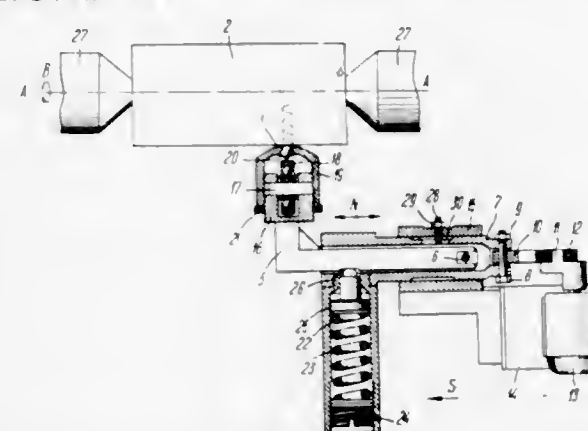
Jury Gdaliyevich Schneider, Leningrad, U.S.S.R., assignor to Leningradsky institut stochnoi Mekhaniki i optiki, Leningrad, U.S.S.R.

Filed May 26, 1970, Ser. No. 40,551

Int. Cl. B21d 31/00

U.S. Cl. 72-74

5 Claims



The invention is concerned with processes related to changing the relief of an article surface by way of introducing into the surface layer of said article a hard deforming member. The invention makes it possible to form on the surface of articles a relief whose projections rise above recesses to a value of the order of tens of microns.

3,688,538

## APPARATUS FOR NECKING-IN AND FLANGING CAN BODIES

Benjamin Luke Hoyne, Toms River, N.J., assignor to American Can Company, New York, N.Y.

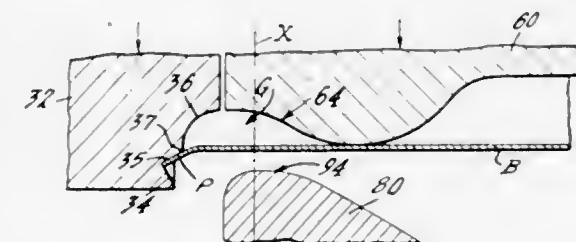
Filed Oct. 24, 1969, Ser. No. 868,999

Int. Cl. B21d 19/06

U.S. Cl. 72-94

26 Claims U.S. Cl. 72-208

15 Claims



A method and apparatus for forming a necked-in and flanged can body wherein an end of the body is forced by a spinning roll into a spinning groove, which is formed jointly by continuous groove segments formed both in a spinning pilot and in a spinning anvil, the spinning roll being movable to a limited degree axially of the body so that relative axial movement between the spinning members is obtained to permit the spinning operation to progress to completion. The axial movement of the movable spinning roll is obtained automatically by spring mounting it on its shaft so that it can slide along the shaft as the contour of the body changes.

3,688,539

## APPARATUS FOR STRAIGHTENING METALLIC FISHING ROD MANDRELS AND METHOD OF USING SAME

Harold P. Hogarth, 8605 7th St., Downey, Calif.

Filed May 7, 1971, Ser. No. 141,234

Int. Cl. B21d 3/16, 3/02

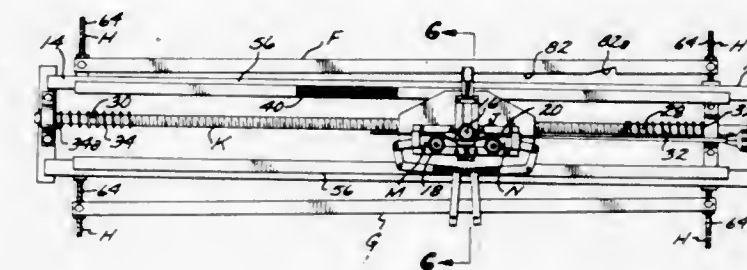
U.S. Cl. 72-109

9 Claims

An apparatus for use in selectively straightening any desired one of a number of metallic mandrels, which mandrels may

vary in length, degree of taper, and diameter. Such mandrels are used in the manufacture of fishing rods to form tubular tapered sections from a resin impregnated fiber glass sheet.

The apparatus is adapted to removably grip a bent mandrel and power rotate the same on the longitudinal axis thereof, with the mandrel while so rotating having sequential sections of a selected longitudinal portion thereof subjected to a trans-



verse bowing operation to straighten said portion. The apparatus is of such design that the magnitude of the transverse bowing of the portion being straightened varies as the straightening operation takes place, with the length of the bowed section decreasing as the diameter of said section decreases. Such variation in the degree of bowing of the sections has been found necessary to attain true straightening of a mandrel.

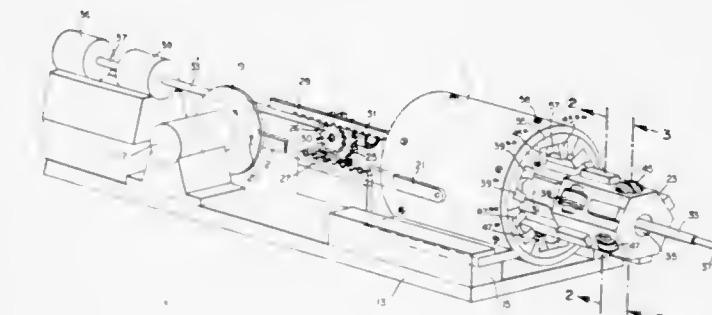
3,688,540

## TUBE ROLLING MILL EMPLOYING A TAPERED MANDREL AND A CLUSTER OF ROLLS THAT EACH HAVE SPECIALLY DESIGNED TUBE CONTACTING GROOVES

Richard E. Russel, Paoli, Pa., assignor to Superior Tube Company, Norristown, Pa.

Continuation-in-part of Ser. No. 845,832, July 29, 1969, abandoned. This application July 7, 1970, Ser. No. 52,838

Int. Cl. B21b 17/06



A tube rolling mill having two sets of three rolls each which are reciprocatingly driven along a length of a tube supported by a tapered mandrel. Each roll is forced against the tube by its individual cams each having a surface with one or more tapers which are related to multiple mandrel taper in a manner to provide reduction in both wall thickness and inside diameter of the tube. Each roll is provided with a tube contacting groove having in cross-section a central arc with a radius of curvature substantially equal to the smallest radius of that portion of the tube contacted by the roll, with either side of the central arc joined by lines tangent thereto with large radii of curvature chosen so that each roll contacts a tube in two zones around its circumference. The rolls are pressed against the tube upon the urging of the tapered cam surface against a roll trunnion. The radius of the trunnion is carefully chosen to control longitudinal forces transferred to the tube by the roll.

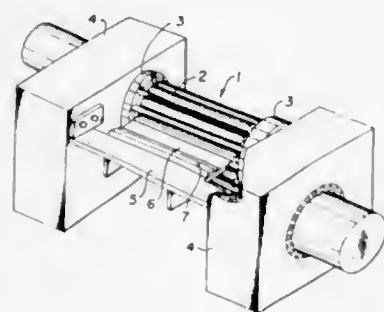


### 3,688,541 STRIPPER GUIDE

Hiroyuki Ohkubo, and Shigeo Saotome, both of Yokohama, Japan, assignors to Ghikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo-to and Daido Seiko Kabushiki Kaisha, Nagoya-shi, Japan  
Filed Oct. 19, 1970, Ser. No. 82,046  
Claims priority, application Japan, Oct. 20, 1969, 44/83701  
Int. Cl. B21b 39/20

U.S. Cl. 72-250

7 Claims



A stripper guide with a plate spring of suitable elasticity is located at the exit of a planetary mill. The leading edge of the plate spring extends beyond the envelope of the planetary roll so that the leading edge of the strip may be accurately guided by the deflection of the plate spring.

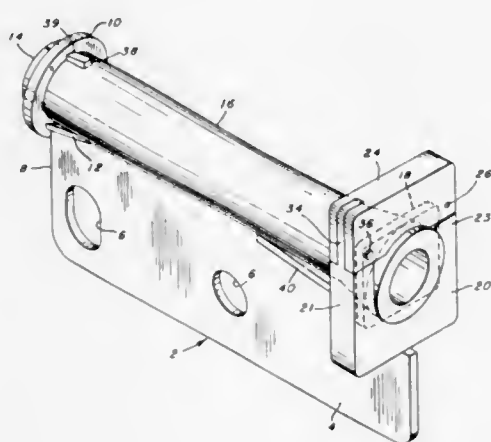
### 3,688,542 DEVICE FOR ADJUSTABLY SUPPORTING A ROD GUIDE TUBE

John M. Platko, Joliet, Ill., assignor to United States Steel Corporation

Filed March 3, 1971, Ser. No. 120,415  
Int. Cl. B21b 39/20; B21d 43/16

U.S. Cl. 72-250

2 Claims



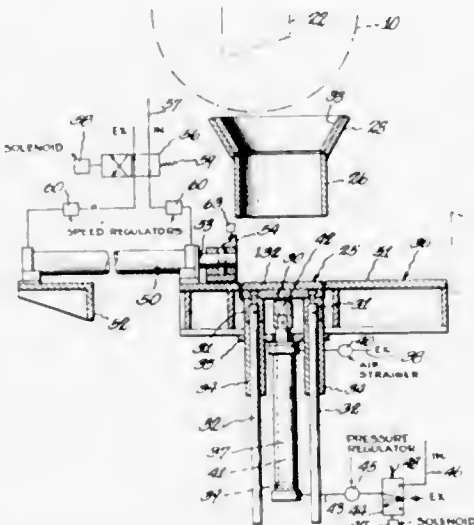
Device supports a rod guide tube so that it is capable of circumferential adjustment to avoid worn surface areas. Device includes an elongated vertical web having a ring upstanding at one end for receiving the exit end of a rod guide tube and a substantially U-shape collar upstanding at its opposite end parallel with the ring for receiving the flanged entrance end of the rod guide tube. A cap is provided hinged at one end to one of the legs of the U-shaped collar adapted to be placed in locking position across a rod guide tube resting in the collar and be secured in the locking position.

### 3,688,543 EXTRUSION PRESSES

Fred Kamena, Youngstown, and Anthony P. Sgambati, Campbell, both of Ohio, assignors to Wean Industries, Inc., Youngstown, Ohio  
Filed Nov. 12, 1970, Ser. No. 88,746  
Int. Cl. B21c 35/04

U.S. Cl. 72-253

10 Claims



Our invention minimizes damage to dummy blocks normally used in the billet container of an extrusion press when the container is stripped following the end of an extrusion cycle. The invention provides a chute adjacent to the exposed dummy block and billet butt and a platform which extends into the chute. In the event the dummy block separates from the butt, it falls into the chute to rest on the platform. In the event the dummy block adheres to the butt, they both fall into the chute when the butt is sheared from the extrusion in the die. The chute and platform are lined with a soft metal to avoid damage to the dummy block, even in the short amount of fall. The platform is then lowered at a controlled rate to a position wherein a pusher mechanism removes the dummy block and butt from the platform.

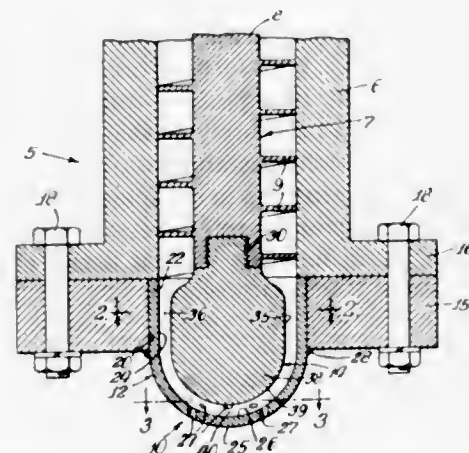
### 3,688,544 EXTRUSION DIE ASSEMBLY

Joseph R. Sagmuller; John F. Joyce, and Hoy O. McIntire, all of Columbus, Ohio, assignors to National-Standard Company, Niles, Mich.

Filed July 24, 1970, Ser. No. 58,072  
Int. Cl. B21c 23/00; B29f 3/00

U.S. Cl. 72-261

4 Claims



An extrusion die assembly embodying an arrangement of components including a die component at the end of an auger screw contained within an auger barrel to prevent retention of extrudable material in the space between the end of the auger screw and the die component.

### 3,688,545 WIRE-WORKING APPARATUS

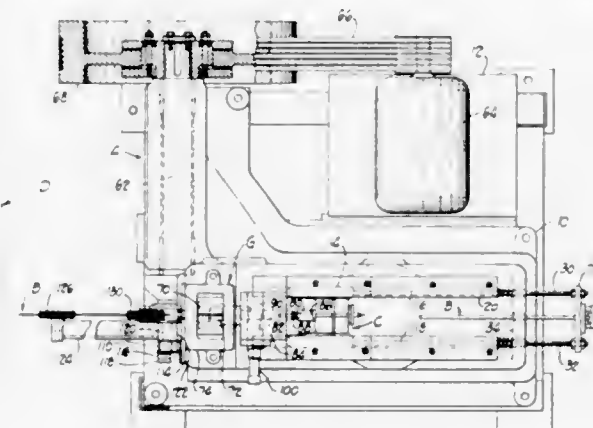
Leo D. Mersek, Richmond Heights, and Robert G. Backus, South Euclid, both of Ohio, assignors to The Ajax Manufacturing Company, Cleveland, Ohio

Filed March 20, 1970, Ser. No. 21,453

Int. Cl. B21c 3/12; B21b 37/12

U.S. Cl. 72-285

12 Claims



Wire-working apparatus including an electric motor machine which draws, i.e., sizes linear stock, such as, rod stock, bar stock, wire stock, etc., as it is advanced or fed to be operated upon intermittently in a discretely driven fabricating machine, for example, a header or a cut-off machine located a short distance away. The machine for drawing the stock has a reciprocable die which is spring-biased in the nonworking direction and is intermittently advanced along the stock in the stock working direction by a power-actuated movable member having a predetermined stroke and with respect to which the die is relatively movable, a movable stop for limiting movement of the die in the nonworking direction the position of which stop is changed as a function of the slack in the stock between the two machines, an automatic wire grip assembly at the fabricating machine side of the die, selectively operable power means for rendering the grip assembly inoperative to grip the stock and/or selectively operable power means to prevent return of the die and thus discontinue the advancing of the stock through the die.

### 3,688,546 APPARATUS FOR PRESETTING THE ROTATIONAL SPEEDS OF PARTS USED TO CREATE THE DEFORMATION OF A METAL IN ORDER TO OBTAIN WIRES OR STRIPS, SUCH AS BY WIRE DRAWING MACHINE BLOCKS

Jean Tranter, Vaires, France, assignor to Office Technique Des Trefiles, Vincennes, France

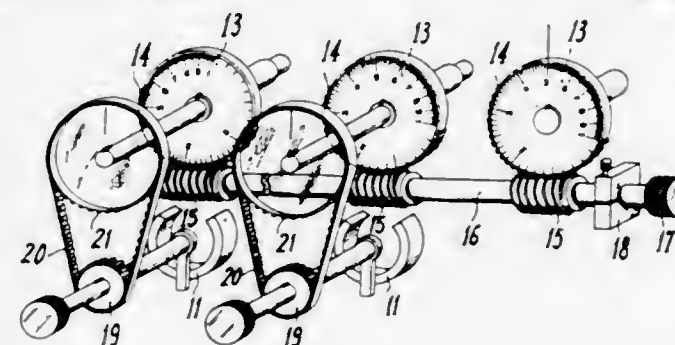
Filed July 10, 1970, Ser. No. 53,734

Claims priority, application France, Aug. 5, 1969, 6926791

Int. Cl. B21c 1/02; B21b 37/12; B21j 7/12

U.S. Cl. 72-289

6 Claims



Apparatus for the presetting of the rotational speeds of the various blocks of a multiple wire drawing machine by simple dialling on dials or rules corresponding respectively to each block, at first of the finished wire diameter, then of the wire diameter at each pass.

902 O.G.—3

### 3,688,547

Patent Not Issued For This Number

### 3,688,548 APPARATUS FOR THE MANUFACTURE OF ALUMINUM STRIP CONDUCTORS

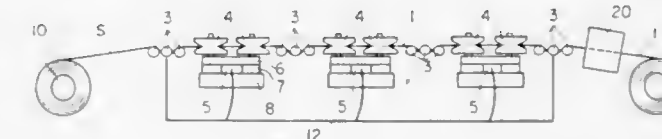
Shigenori Kawaguchi, Numazu; Yoshioki Toi, and Shiyozo Suyama, both of Susonomachi, all of Japan, assignors to Mitsubishi Aluminum Company Limited, Tokyo, Japan

Filed May 26, 1970, Ser. No. 40,598

Claims priority, application Japan, June 3, 1969, 44/42935  
Int. Cl. B21d 1/02

U.S. Cl. 72-234

5 Claims



This invention relates to apparatus for reshaping both edges of an aluminum strip of 0.2-3.00 mm. in thickness into rounded smooth edges adapted for an electric conductor. The edge of the strip has irregular burrs resulting from slitting of the aluminum strip of commercial width. In operation, the strip is pulled from its coiled supply, through a three-roll assembly, engaged with the groove of the reshaping rolls, through a cleaning chamber, and finally to a recoiler to be coiled again. The reshaping roll is urged by fluid pressure toward the edge so as to treat it with a relatively weak force in order to prevent the roll from damaging the strip.

### 3,688,549 PROCESS FOR COLD PLASTIC FORMING OF SPACED TOOTH-LIKE PROJECTIONS ON A RING OR SIMILARLY SHAPED MEMBER

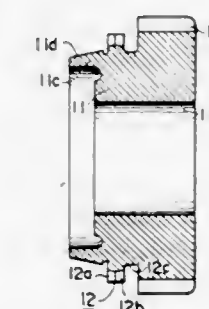
Toshimi Ohnishi; Takamitsu Suzuki, Akio Takahashi; Hiroshi Yagi, and Shunichi Ohya, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Aug. 14, 1970, Ser. No. 63,736

Int. Cl. B21d 28/00; 53/26

U.S. Cl. 72-334

8 Claims



Spaced tooth-like projections are formed on the circumferential periphery of a ring-like body member by cold plastic forming operations carried out on an annular section made of a forgeable material which projects transversely from the body member. The annular section has a substantially rectangular cross-section with a pair of spaced transversely extending face surfaces. Initially, while the ring-like member is supported against movement, alternate flat bottomed indentations and chamfered surfaces are formed in a pressing step on one of the transversely extending face surfaces. Next, grooves are extruded from the annular section between the chamfered sections so that the chamfered sections form an end, and the side surfaces of the grooves form sides of the tooth-like projections. The extruded material is cut off and the sides of the grooves are tapered by a working operation performed from the other one of the transversely extending face surfaces for completing the formation of the tooth-like projections.



3,688,550

**CRUSHING AND BENDING OF SECTIONS OF MEMBERS**

Kenneth Ernest Stanley, 1, Green Acre, Aylesbury, England

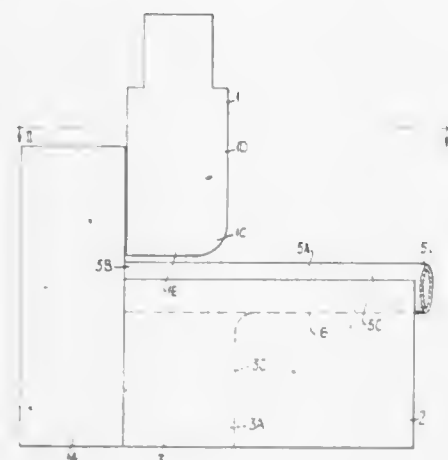
Filed Jan. 6, 1970, Ser. No. 935

Claims priority, application Great Britain, Jan. 7, 1969, 998/69

Int. Cl. B21d 51/02

U.S. Cl. 72—369

17 Claims



A method of crushing and bending an end section or an intermediate section of a tube comprises placing in a cradle of a die of a press a part of the tube including the section, and moving a punch of the press towards the die such that the section and the remainder of the tube part are bent one relatively to the other and one wall portion of the section is crushed inwardly towards a diametrically opposite wall portion of the section. The tube having a section so crushed and bent can be connected to another tube, for example, by disposing the section face-to-face with a complementarily shaped portion of the other tube such that the remainder of the part extends away from the latter portion, and then, for example, welding or bolting the section to the other tube.

3,688,551

**HYDRAULIC BLIND RIVET GUN**

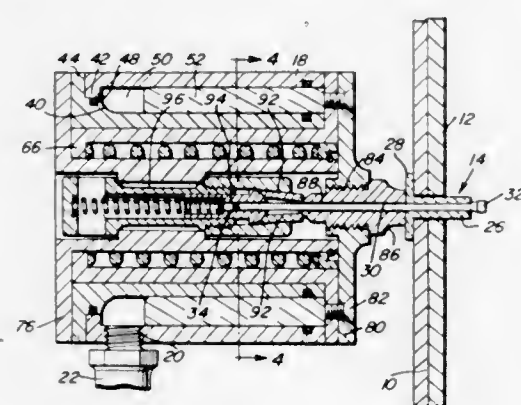
Gerald F. Alm, Rte. 1, Box 7, Grangeville, Idaho

Filed Feb. 16, 1971, Ser. No. 115,439

Int. Cl. B21d 9/05

U.S. Cl. 72—391

6 Claims



A blind rivet gun having a hydraulic cylinder including inner and outer radially spaced concentric cylinder sleeves and an intermediate tubular piston. A cover plate is provided and engaged with one end of the piston and extends across the corresponding ends of the inner and outer cylinder sleeves and supports the head of a blind rivet. Also, the pin of a blind rivet is supported within the inner cylinder sleeve for shifting of the rivet head relative thereto upon shifting of said tubular piston between said cylinder sleeves.

**3,688,552  
APPARATUS FOR FORGING CRANKSHAFTS AND LIKE PARTS**

Gabriel Ruget, Saint-Etienne, France, assignor to Compagnie des Ateliers et Forges de la Loire, Paris, France

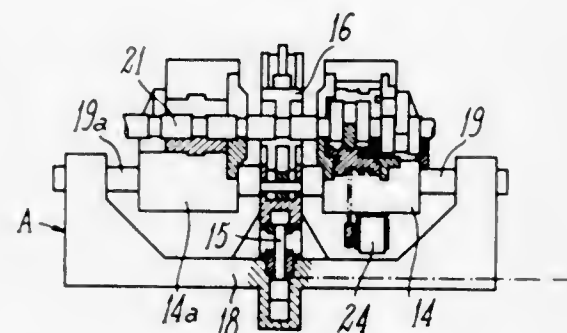
Continuation of Ser. No. 655,148, July 21, 1967, abandoned.

This application June 19, 1970, Ser. No. 48,939

Int. Cl. B21d 41/00

U.S. Cl. 72—402

13 Claims



This apparatus for forging crankshafts and like parts comprises a fibrating apparatus proper and a separate distributor adapted to control the movable elements of the fibrating apparatus through hydraulic transmission means.

**3,688,553  
TUBE COUPLING**

Henry William Demler, Sr., 719 E. Maple St., Lebanon, Pa.

Division of Ser. No. 704,661, Feb. 12, 1968, Pat. No.

3,534,583, which is a division of Ser. No. 517,747, Dec. 30, 1965, Pat. No. 3,378,282, Continuation-in-part of Ser. No.

364,228, May 1, 1964, abandoned, Continuation-in-part of Ser. No. 387,623, Aug. 5, 1964, abandoned, Continuation-in-

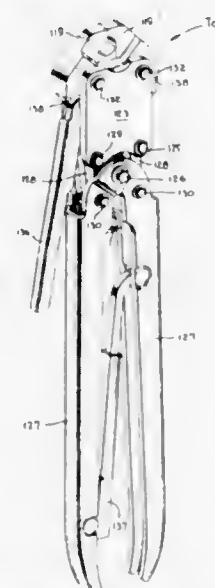
part of Ser. No. 476,949, Aug. 3, 1965, abandoned, Continuation-in-part of Ser. No. 427,010, Jan. 21, 1965,

abandoned. This application June 9, 1970, Ser. No. 57,009

Int. Cl. B21d 9/08

U.S. Cl. 72—410

5 Claims



A tool comprising jaw members pivotable relative to each other and capable of engaging a ferrule member in an open position, the jaw members being moved to a closed position to deform the ferrule member into an oblong configuration and a slidable member slidably engageable with the oblong ferrule member to form the ferrule member into a round configuration of less diameter than that of the original diameter.

**ERRATUM**

For Class 72—6 see:  
Patent No. 3,688,555

**3,688,554  
APPARATUS FOR TESTING MANOMETRIC INSTRUMENTS**

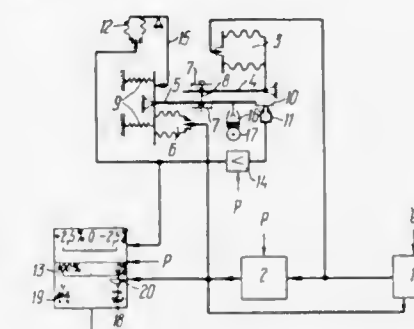
Aron Mikhailovich Kipnis, Leningradsky prospekt, 28, kv. 14, and Stella Mikhailovna Kesselman, ulitsa Dzerzhinskogo, 1/19, kv. 16, both of Moscow, U.S.S.R.

Filed June 17, 1971, Ser. No. 153,973

Int. Cl. G011 27/00

U.S. Cl. 73—4 R

3 Claims



An apparatus for testing fluid pressure relays providing an air-pressure output signal in response to an air pressure input signal, including an input pressure generator, a pair of pressure-responsive members connected through a balanced arm and reproducing in association with this arm the rated value of the transformation factor of the manometric instrument under testing; and the indicator of the position on the balanced arm, comprising a movable member carried by this balanced arm and a stationary member mounted in opposition to the movable member. The apparatus further comprises a power output member pneumatically connected with the indicator of the position of the balanced arm and operatively associated through a pivoted arm with this balanced arm, and a double-channel recording device.

The apparatus provides for testing and gauging manometric instruments with the testing error up to 0.1 percent it also records continuous diagrams of the errors of these instruments and the values of the output pressure thereof on the moving record tape of the secondary double-channel recording device.

**3,688,555  
METHOD OF AND AN APPARATUS FOR DETERMINING AN OPTIMUM SCHEDULE OF OPERATION FOR REVERSIBLE HOT ROLLING MILLS**

Tohru Minami; Mikio Nishio, both of Sakai-shi; Ichiro Toyama, Kisarazu-shi; Shigeyoshi Kawano, Hitachi-shi; Masumi Imai, Hitachi-shi; Yutaka Takuma, Hitachi-shi, and Hidehiro Kitano, Hitachi-shi, all of Japan, assignors to Hitachi, Ltd., and Yowata Iron &amp; Steel Co., Ltd., Tokyo, Japan

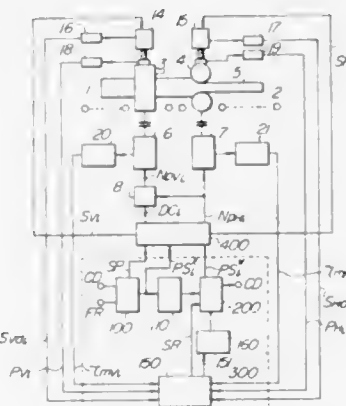
Filed Aug. 20, 1969, Ser. No. 851,622

Claims priority, application Japan, Feb. 8, 1969, 44/9407

Int. Cl. B21b 37/00

U.S. Cl. 72—6

7 Claims



A method of and an apparatus for determining such an optimum schedule of operation as to provide a shortest total

rolling time for reversible hot rolling mills, wherein an initial schedule of operation for initial passes is determined based upon the properties of a material to be rolled, rolling conditions and standard resistance to deformation of the material, and based upon the actual resistance to deformation obtained in the initial passes, an optimum schedule of operation for subsequent passes is determined so that it provides a shortest total rolling time.

3,688,556

**WEAR TESTING APPARATUS**

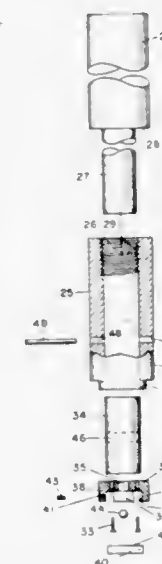
Hugh A. Bigelow, Wharton, N.J., assignor to The United States of America as represented by the Secretary of the Army,

Filed June 25, 1971, Ser. No. 156,628

Int. Cl. G01n 3/56

U.S. Cl. 73—7

8 Claims



A slide assembly which carries a plurality of wear plates is longitudinally reciprocated in a horizontal plane. Intermediate the ends of the travel of the plates and disposed vertically thereabove, is a specimen holder block which supports a generally hollow cylindrical specimen holder. A weighted mass is inserted into the upper end of the holder and bears downwardly on a specimen carrier through an intermediate block. The carrier is formed with a central aperture for confining therein a spherical member that extends outwardly thereof and rides against the specimen disposed on the opposite side of the carrier. The carrier face is recessed so as to provide a specimen confining area which includes four outwardly extending flange walls with the corner portions thereof deleted and of dimensions somewhat greater than the specimen. This structure in conjunction with the spherical member, permits the specimen all the necessary degrees of freedom as it slidably abuts the wear plate. Additionally, there are disclosed means for releasably securing both the intermediate block and the specimen while loading in proper position, of the specimen holder prior to operational testing. A spring loaded alternate structure may be substituted for the weighted mass and which structure may include a depth indicator for providing direct, continuous wear data.

3,688,557

**TESTING OF A CHAIN LINK-MECHANISM**

Victor Alois Marinus, Wilrijk, Belgium, assignor to Gevaert-Agfa N.V., Mortsel, Belgium

Filed Oct. 26, 1970, Ser. No. 83,980

Claims priority, application Great Britain, Oct. 27, 1969, 52,574/69

Int. Cl. G01n 19/02

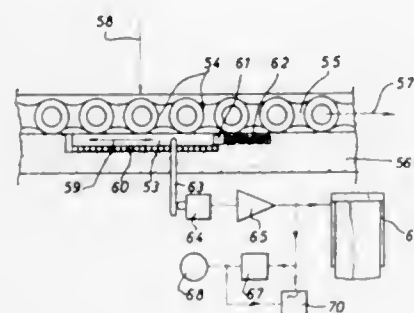
U.S. Cl. 73—9

9 Claims

A method and a device for testing in an endless rotating chain link mechanism the bearing friction of the rollers of the chain which co-operate with stationary guide rails to guide the chain. A detector is provided adjacent the path of the rollers



of the mechanism which makes frictional contact with the rollers, and which is arranged for limited movement in a direction parallel to the path of the rollers to be tested. The detector is biased in a direction which is opposite to the



direction in which the rollers of the chain tend to displace the detector by the frictional contact therewith. The equilibrium position which is taken by the detector is a measure for the resistance to rotation of the rollers.

3,688,558

#### ESTIMATION OF THERMAL FEELING INTENSITY ON HUMAN SKIN

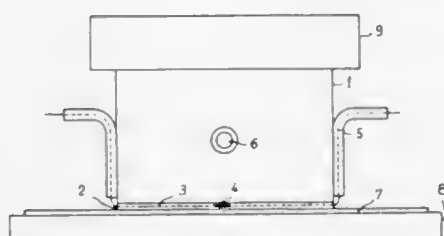
Michel Tixier, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

Filed Sept. 16, 1970, Ser. No. 72,603

Int. Cl. G01n 25/00, 33/36

U.S. Cl. 73—15

13 Claims





3,688,565

## ULTRASONIC THICKNESS GAUGE

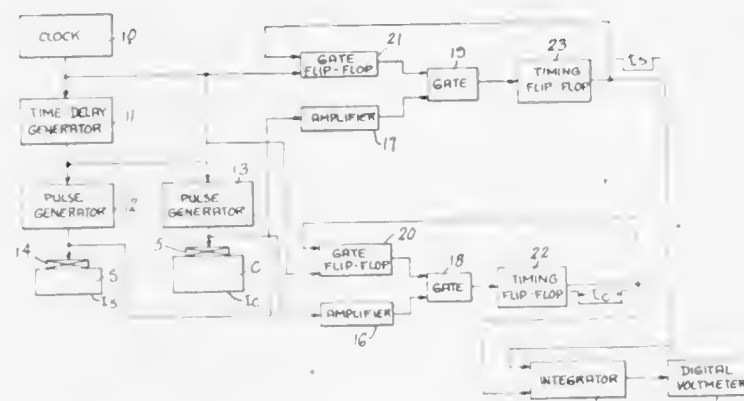
Kilian H. Brech, Newhope, Pa., assignor to Sonke Instruments, Incorporated, Trenton, N.J.

Filed Sept. 28, 1970, Ser. No. 76,180

Int. Cl. G01n 29/00

U.S. Cl. 73-67.9

21 Claims



This disclosure relates to an ultrasonic thickness gauge in which the thickness of a test object is compared with the thickness of an object of known thickness and of the same material. The instrument provides an output indicative of the thickness of the test object by generating a signal which is inversely proportional to the thickness of one object and directly proportional to the thickness of the other object. Use of an object of known thickness as a calibration measurement permits the system to be self-calibrating for different materials.

3,688,566

## MEASURING THE TENDERNESS OF MEAT

Leo J. Hansen, Clarendon Hills, Ill., assignor to Armour and Company, Chicago, Ill.

Continuation-in-part of Ser. No. 776,234, Nov. 15, 1968, Pat.

No. 3,593,572, which is a continuation-in-part of Ser. No.

705,722, Feb. 15, 1968. This application May 6, 1970, Ser.

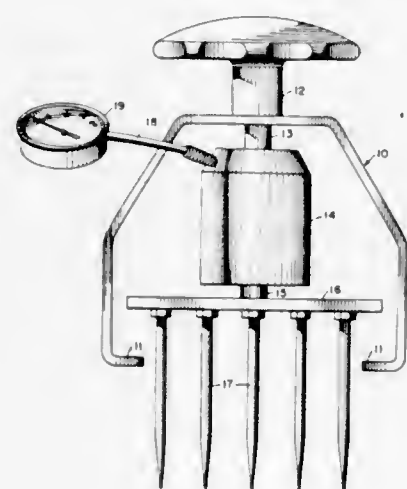
No. 35,147. The portion of the term of this patent subsequent to

July 22, 1988, has been disclaimed.

Int. Cl. G01n 33/12

U.S. Cl. 73-78

8 Claims



To test raw meat in order to determine how tender it will be upon cooking, meat bodies to be tested are first classified as to their fat content and probe tests are then made upon the meat portions in a particular class and the results of individual tests compared.

## METHOD OF AND APPARATUS FOR CHECKING THE SEALING OF A FILM CASSETTE

Harald Thorwest; Helmut Lehmann; Helmut Lange, all of Leverkusen; Udo Schlossarek, Opladen; Jakob Siefen, Leverkusen, and Hermann Mathner, Köln, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

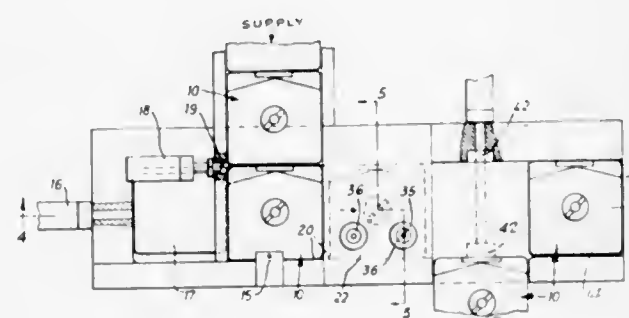
Filed Jan. 14, 1971, Ser. No. 106,457

Claims priority, application Germany, Jan. 27, 1970, P 20 03 409.7

Int. Cl. G01n 3/08

U.S. Cl. 73-88 B

9 Claims



An apparatus for checking the correct sealing of film cassettes having a U-shaped cassette cover. The loaded and closed film cassettes are supplied in a defined position to the testing station and are supported therein. The checking is effected by means of tension devices which exert a certain tensile force on the arm ends of the U-shaped cassette cover, an electric or pneumatic signal being produced on release of the cassette cover.

3,688,568

## VISCUMETER

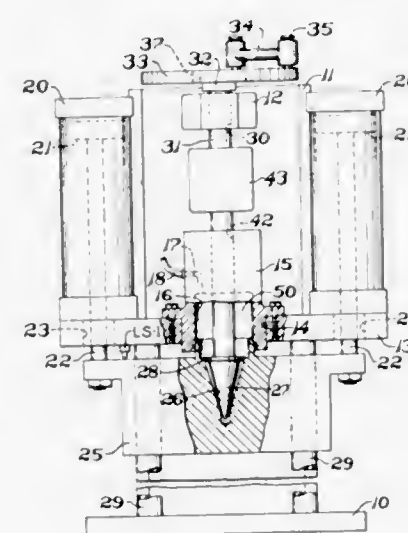
Paul W. Karper, Stow, and John P. Porter, Cuyahoga Falls, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed July 28, 1970, Ser. No. 58,872

Int. Cl. G01n 11/16, 25/00

U.S. Cl. 73-101

16 Claims



A method and apparatus for determining the physical properties of vulcanizable elastomeric materials utilizing a cone-shaped oscillating rotor that is cooperative with a cone-shaped cavity in a stationary mold section whereby a sample of material is confined therebetween and subjected to a confining pressure, as well as an oscillating shearing force. The walls of the test chamber are heated to a predetermined temperature during cure, while torque sensing means are connected to the input of the rotor to measure the variation in force required to oscillate such projection. Means are provided to maintain a programmed confined pressure which increases

linearly during the cure cycle permitting gradual closure of the stator and rotor rubber filled cavity compensating for any shrinkage of the sample. A recorder is connected to the torque sensing device to record the variations in shearing strain.

3,688,569

## ULTRASONIC SURFACE ROUGHNESS INDICATOR

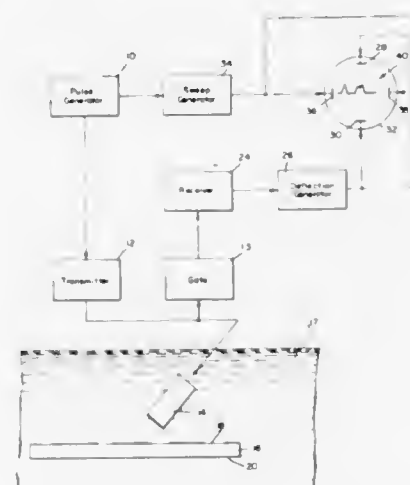
Andrew M. Murdoch, Bethel, Conn., assignor to Automation Industries, Inc., Los Angeles, Calif.

Filed July 16, 1970, Ser. No. 55,444

Int. Cl. G01b 5/28

U.S. Cl. 73-105

6 Claims



There is disclosed herein a test system for measuring the surface roughness of a workpiece by transmitting a beam of ultrasonic energy onto the surface at an oblique angle. Smooth surfaces reflect the beam with a minimum effect upon the shape of the beam whereas rough surfaces reflect the beam so as to cause it to be scattered. The detected reflected energy varies as a function of surface roughness.

3,688,570

## ANGULAR DEFLECTION METER

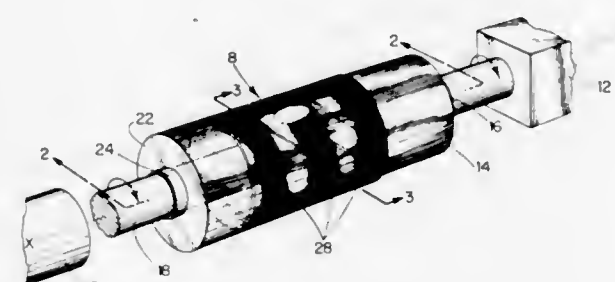
Edward F. Burke, Jr., Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 5, 1970, Ser. No. 43,683

Int. Cl. G0113/08

U.S. Cl. 73-136 A

11 Claims



A device for indicating axial angular deflection between two elements is shown. In one configuration, two concentric cylinders are used, each having a helical line pattern thereon and each rigidly attached to one of the elements. The outer cylinder is transparent. Optical overlapping of the helical patterns produces axially spaced circumferential Moire fringes. Their axial position is sensitive to the difference in angular rotation between the elements, but insensitive to their rotation together.

3,688,571

## APPARATUS FOR DETERMINING FLATNESS DEVIATION IN SHEET OR STRIP

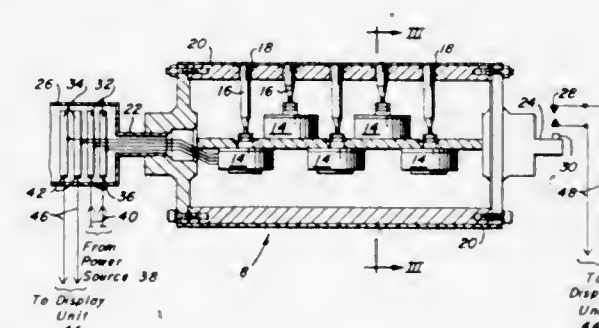
Anthony G. Atkins, Oxford, England; Bay E. Estes, III, Franklin Township, Westmoreland County, and Richard L. Renner, Dravosburg, Allegheny County, both of Pa., assignors to United States Steel Corporation

Filed Dec. 11, 1969, Ser. No. 884,087

Int. Cl. G0115/10

U.S. Cl. 73-144

3 Claims



Continuous monitoring of the shape of cold rolled strip is provided by passing the strip, under tension, over a roll. A line of sensors on the roll surface measures the longitudinal stress distribution across the width of the strip indicating the location, magnitude and type of flatness defect which will appear when the tension is removed.

3,688,572

Patent Not Issued For This Number

3,688,573

## MEANS FOR DETERMINING FLOW RATE AND VOLUME OF A FLOWING FLUID MASS

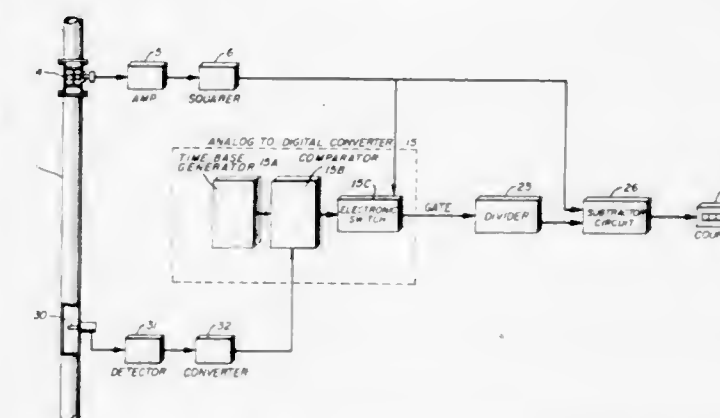
Sheyrl W. Garrett, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.

Filed Nov. 12, 1970, Ser. No. 88,656

Int. Cl. G01f 1/00

U.S. Cl. 73-194 R

5 Claims



A system is disclosed which includes a flow meter producing voltage pulses of a frequency proportional to the flow rate of a flowing mass, and a sensing element responsive to a physical condition of the flowing mass with circuitry which produces a D.C. voltage signal analogous to that condition. A generator provides linear sawtooth voltage pulses against which a comparator circuit compares the analog voltage from the sensing element and circuit. The voltage resultant of the comparison passes a portion of the voltage pulses from the flow meter to a divider circuit element and a subtractor circuit element of the system for conversion of relatively low order changes in the physical condition to an expanded range equivalent, and for correction of the flow rate or volume as a function of such changes. The flow rate or volume as thus corrected is registered on a suitable flow rate indicator or volume counter.



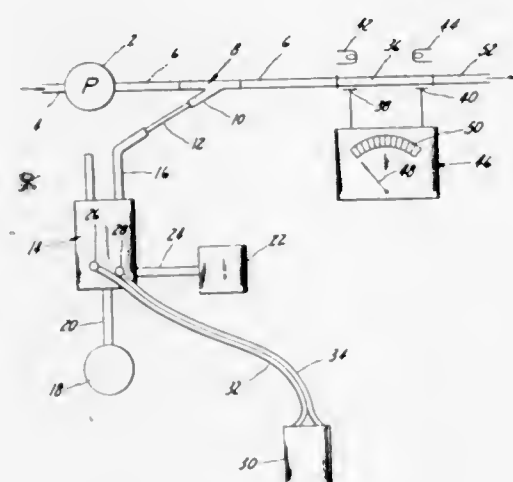
3,688,574

## FLUID FLOWMETER

Gregory Arutunian, Detroit, and David K. Wilburn, Troy, both of Mich., assignors to The United States of America as represented by the Secretary of the Army  
Filed Nov. 2, 1970, Ser. No. 86,008  
Int. Cl. G01f 3/00

U.S. Cl. 73-194 E

5 Claims



Liquid flow rate in a conduit is measured by measuring the time it takes a gas bubble to interrupt two spaced light beams passing through a flowmeter cell. The bubble is introduced upstream of the cell by a fluidic device and passes between a light and a photoelectric cell, which signals an electronic counter. As the bubble passes between a second light and photoelectric cell combination, another signal goes to the counter, which is calibrated to read in whatever units may be desired, such as gallons per minute.

3,688,575

## MAGNETIC FLOWMETER HAVING A NON-HOMOGENEOUS MAGNETIC FIELD

Wilfried Kiene, Hedemunden, Germany, assignor to Fischer & Porter Company, Warminster, Pa.

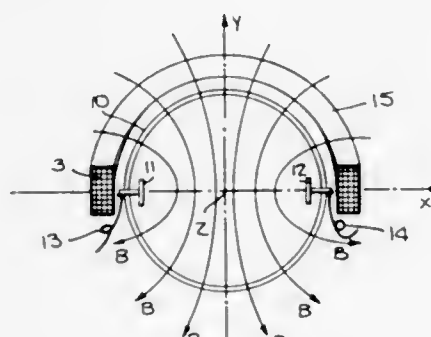
Filed Dec. 21, 1970, Ser. No. 100,160

Claims priority, application Germany, Feb. 21, 1970, P 20 08 044.8

Int. Cl. G01f 1/00; G01p 5/08

U.S. Cl. 73-194 EM

4 Claims



A magnetic flowmeter for measuring volumetric fluid flow rates, the meter including a pair of electrodes disposed at diametrically opposed points in a non-magnetic pipe section

through which the fluid to be measured is conducted. A non-homogeneous magnetic field is established in the pipe section, the magnetic field having a configuration whose magnetic lines of flux intersect the electric lines of flux extending between the electrodes substantially at right angles thereto to optimize the output signal developed at the electrodes.

3,688,576

## IMPROVED AIR VELOCITY MEASURING SYSTEM AND METHOD FOR ITS CALIBRATION

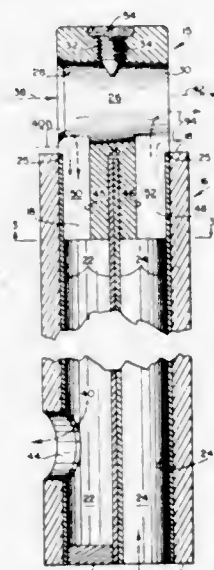
Alfred A. Obermaier, Barrington, and Martin J. Pierman, Mount Prospect, both of Ill., assignors to Alnor Instrument Company, Div. of Illinois Testing Laboratories, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 687,084, Nov. 13, 1967, abandoned. This application July 24, 1970, Ser. No. 58,075

Int. Cl. G01f 5/00

U.S. Cl. 73-202

21 Claims



A rapid response air velocity measuring system having a shunting probe adapted to be placed into a flow of air and coupled to a measuring apparatus, such as an air flow meter. A handle portion as constructed to receive the shunting probe as well as other forms of probes, such as diffuser probes, and couple the probe to the measuring apparatus. A range adjusting switch is mounted in the handle portion and places one of a plurality of resistances, in the form of one of a plurality of needle valves, into the path of the air flow through the measuring apparatus. Push button vent means also is carried in the handle portion for enabling the system to employ diffuser as well as shunting probes. The probes are fine tuned and specially calibrated to a pitot standard, then the probes, the range adjusting switch, and the measuring apparatus are calibrated to the pitot standard as a system. Once calibrated, the individual elements of the system are interchangeable with the corresponding elements of similarly pitot-calibrated, mass produced systems, without requiring subsequent recalibration of each system.

3,688,577

## INSTRUMENT FOR INDICATING LIQUID LEVELS

Frank W. Murphy, Jr.; Buddy G. Sparks, both of Tulsa; Charles H. Lawrence, Broken Arrow, and Donald R. Rickard, Tulsa, all of Okla., assignors to Frank W. Murphy Manufacturer, Inc., Tulsa, Okla.

Filed July 27, 1970, Ser. No. 58,595

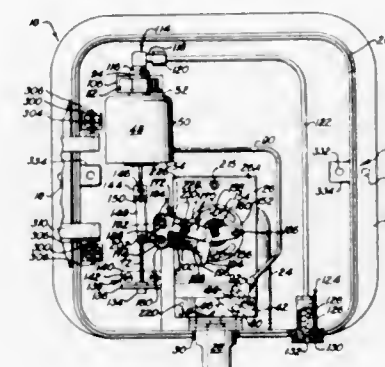
Int. Cl. G01f 23/14

U.S. Cl. 73-299

6 Claims

An instrument for indicating the level of a volatile liquid in a reservoir formed of a casing, a bellows so disposed in the casing as to provide a space between the casing and the bellows, an inlet conduit extending through a side of the casing into the

space which connects the casing with the reservoir, an outlet extending from the space through the top of the casing which



3,688,578

## LIQUID LEVEL GAUGE

Roland W. Friestad, 1640 N. Kellogg St., Galesburg, Ill.

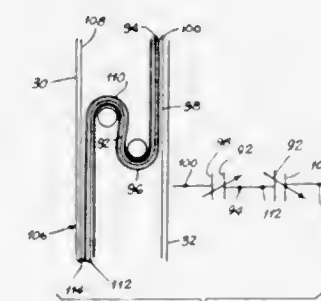
Filed Aug. 13, 1970, Ser. No. 63,421

Int. Cl. G01f 23/10

U.S. Cl. 73-313

5 Claims

U.S. Cl. 73-361



A liquid level gauge using floatable, rotatable members which are directly responsive to liquid level and operate with substantially only rolling friction. The rotatable, floatable members are held under tension by a roller band device which substantially eliminates or minimizes sliding friction. The liquid level may be read directly from the relative position of the rotatable, floatable members within a housing or through an electrical meter indicating device wherein the position of the rotatable, floatable members and the roller band varies the electrical resistivity or capacitance in a circuit leading to the meter so that the meter is directly responsive to the liquid level. The resistor and capacitor which may be made in two sections which are inversely variable utilize conductive paths on the band and guide walls and may be employed in other environments as desired.

3,688,579

## XERIC ELEMENT AND METHOD OF PREPARING THE SAME

Ralph L. Fenner, 86 Bayvista Drive, Mill Valley, Calif., and Mary F. Martin, 2762-79th Ave., Oakland, Calif.

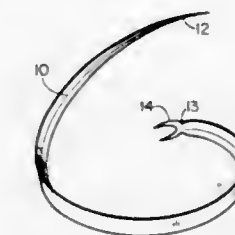
Continuation-in-part of Ser. No. 834,087, June 17, 1969, abandoned. This application June 8, 1970, Ser. No. 44,626

Int. Cl. G01n 19/10

U.S. Cl. 73-337

14 Claims

The invention relates to a xeric element comprising the spine of the throwing arm of the seed pods of plants of the genus Geranium, and the method of preparing it for use in instruments which measure or respond to relative humidity or dryness. The plants of this genus literally "throw" their seeds and the spines of the seed pod are characterized by having a substantially uniplanar movement, a rapid response to changes in relative humidity, inherent strength sufficient to avoid breakage when bridled, and its warp movement is rever-



ing in warm water, and then the woody fiber coating and beards on the ribs of the arms are removed. Also preferably, such ribs are attached at their ends only to a cradle formed of a thin strip of beryllium copper.

3,688,580

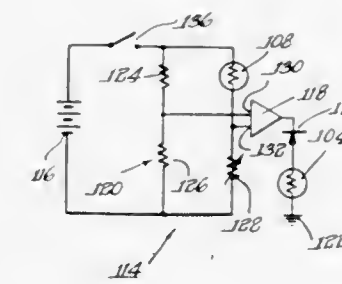
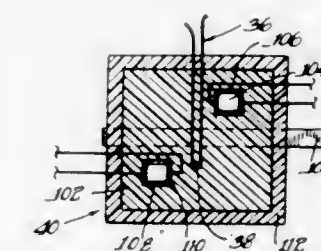
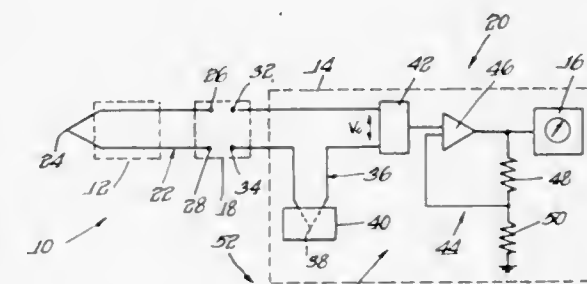
## CLINICAL THERMOMETER

William B. Jarzembski, Shorewood, Wis., assignor to Varo, Inc., Garland, Tex.

Filed July 7, 1970, Ser. No. 52,853

Int. Cl. G01k 7/12

5 Claims



A clinical thermometer for determining the temperature of a particular area of the body of a patient utilizes a disposable thermocouple for temperature sensing. A reference thermocouple is provided within a thermally regulated oven which is maintained at a predetermined temperature. The heat sensing thermocouple and the reference thermocouple cooperate to emit an electrical signal proportional to the difference in temperature between the oven and the sensed area. An indicating device is connected to the two thermocouples and is responsive to the electrical signal for driving a visual display of the temperature at the sensed area.



3,688,581

# DEVICE FOR CORRECTING THE NON-LINEAR VARIATION OF A SIGNAL AS A FUNCTION OF A MEASURED MAGNITUDE

Francis Le Quernec, Solaise, France, assignor to Rhone-Poulenc S.A., Paris, France

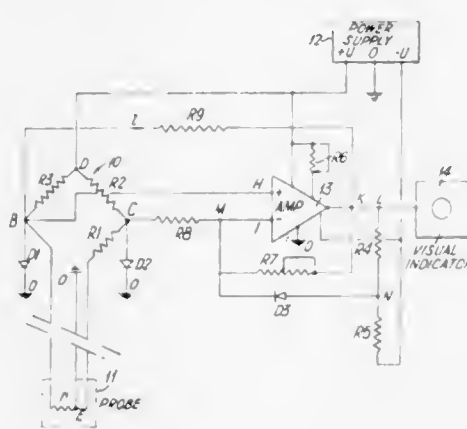
Filed June 19, 1970, Ser. No. 47,678

Claims priority, application France, June 20, 1969, 6920737

Int. Cl. G01k 7/20

U.S. Cl. 73—362 AR

7 Claims



An apparatus for correcting the error due to the non-linear variation in an output signal produced by an electrical system for measuring a physical quantity, e.g. temperature, by means of a probe, the electrical resistance of which is sensitive to the variation of the physical quantity, in which the maximum value of the error in the output signal to be corrected in the range of measurement considered is first determined. Then a correcting signal is applied as a compensating signal to one of the probe outputs, which signal is in the same ratio to said maximum error as the instantaneous output signal is to the value of the output signal which produces said maximum error. Conveniently the correcting signal is applied as a feedback signal from an output terminal of the system.

3,688,582

# THERMOMETRIC DEVICES

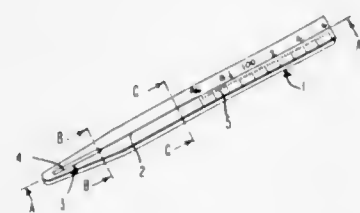
Frederick J. Gradishar, 1218 Evergreen Road, Carrcroft Crest, Wilmington, Del.

Filed Feb. 27, 1970, Ser. No. 15,148

Int. Cl. G01k 5/00, 5/22

U.S. Cl. 73—371

16 Claims



A thermometer or other device for measuring temperatures within a preselected range which utilizes, as a temperature indicating means, a solid, heat expansible substance which melts and expands continuously over the range. Preferred form is an inexpensive single-use disposable clinical thermometer with a plastic casing and a solid indicating means (e.g. a mixture of n-tricosane and n-nonadecane) which expands linearly during fusion over the temperature range of clinical interest.

3,688,583

# ADJUSTABLE FREE-PERIOD SEISMOMETER

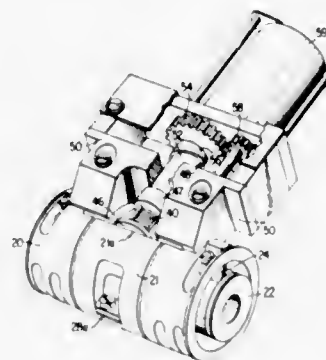
Burnard M. Kirkpatrick, Dallas, Tex., assignor to Teledyne Industries, Inc., Geotech Division,

Filed Nov. 23, 1970, Ser. No. 91,660

Int. Cl. G01v 7/12

U.S. Cl. 73—382

14 Claims



This disclosure includes a seismometer of the LaCoste long-period suspension type in which the free-period of the seismometer is made adjustable over a wide range of values by substituting a pivot having an adjustable torque characteristic for one of the seismometer's pivots and using this adjustable torque to determine the restoring force of the over-all seismometer suspension; and further includes a trilexure structure for said adjustable torque pivot which has a compensated linear adjustment characteristic suitable for control by digital equipment, for instance in automated systems.

3,688,584

# INTERFEROMETRIC GRAVITY GRADIOMETER INCORPORATING RETROREFLECTORS AND MEANS TO CORRECT FOR THEIR RELATIVE SHIFTING

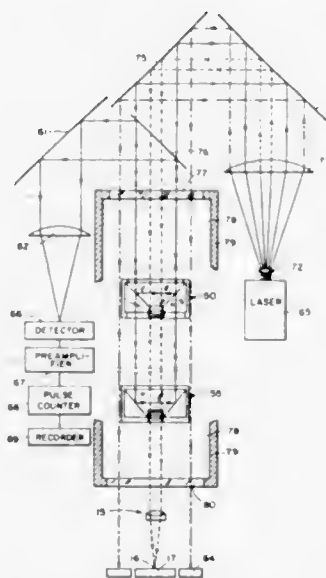
Richard S. Stone, Lexington, Mass., and Lawrence B. Lapson, Boston, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Feb. 9, 1971, Ser. No. 113,892

Int. Cl. G01v 7/04

U.S. Cl. 73—382

7 Claims



Apparatus for measuring gravity gradients directly. Two retroreflectors are caused to experience free flight, and the radiation reflected by these retroreflectors during free flight is directed to a radiation receiver which senses and measures the temporal variations of intensity of the interfering reflected radiation beams. The time rate of change of the frequency of the output signal of the receiver is directly related to the vertical gradient of gravity. The instrument of this invention has means to correct for any shifting of the retroreflectors relative to each other and to the radiation beam in planes normal to the radiation beam.

3,688,585

# FLUID PRESSURE GAUGE

Uberto Capra, Alte Ceccato, Vicenza, Italy

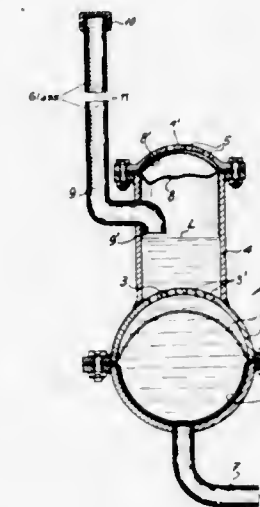
Filed Sept. 8, 1970, Ser. No. 70,123

Claims priority, application Italy, Sept. 13, 1969, 22018 A/69

Int. Cl. G01l 7/08

U.S. Cl. 73—406

10 Claims



A gauge for measuring the air pressure in vehicular tires has a lower compartment filled with a body of water and an upper compartment normally communicating with the outer atmosphere either directly or through a slack diaphragm. An upwardly closed viewing tube calibrated in units of pressure has a lower end opening into the upper chamber above the normal water level so as to be normally vented to atmospheric pressure. An inlet port in the lower compartment is connectable to the inflated tire whereupon the entering air drives the water past the entrance end of the viewing tube and thereafter closes the upper compartment against the atmosphere (by closing a hydraulic valve or deflecting the slack diaphragm against an apertured lid) so as to prevent the escape of the water therefrom and to build up a rising counter-pressure in that compartment forcing part of the water into the tube.

3,688,586

# MEASURING INSTRUMENT WITH A BOURDON SPRING

Hermann Koch, Augustenstrasse 87, 7 Stuttgart 1, Germany

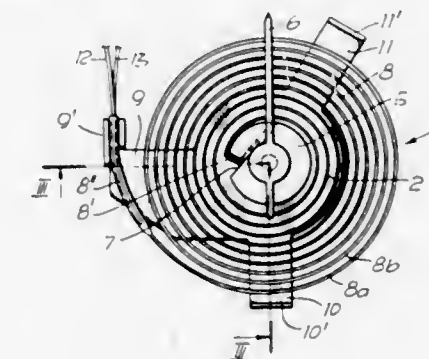
Filed Nov. 6, 1970, Ser. No. 87,506

Claims priority, application Germany, Nov. 26, 1969, P 19 59 206.4

Int. Cl. G01l 7/04

U.S. Cl. 73—418

4 Claims



A measuring instrument especially for measuring low pressures occurring, for example, in a temperature gauge, comprising a Bourdon tube which has a relatively thin wall thickness and is capable of turning the pointer on the inner end of the Bourdon tube to an angle of more than 180° from its zero setting, and at least one abutment for limiting the expansion of the outermost winding of the Bourdon tube.

3,688,587

# GRAIN DIVIDER APPARATUS

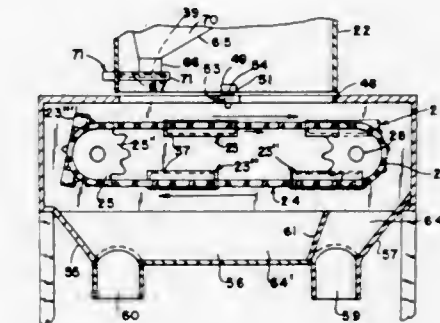
Frank J. Jirik, Fisher, Minn.

Filed March 24, 1971, Ser. No. 127,468

Int. Cl. G01n 1/02

U.S. Cl. 73—421 R

3 Claims



The invention comprises a grain divider having a rectangular housing. A plurality of trays are suspended across a set of endless chains for travel with the chains from one end of the housing toward the other end of the housing and returning. The trays are evenly spaced from one another. Each tray is smaller at one end and made gradually larger toward the other end. A drum is mounted above the housing and above the trays and has a spout at its lower end. The drum is moveably mounted for movement of the spout laterally across the trays from the smaller ends of the trays to the larger ends of the trays. The drum contains grain and the grain is fed out of a spout at the bottom of the drum. The lateral movement of the drum and its spout enables the location of the spout to be shifted from a location above the smaller ends of the tray toward a location above the larger end of the trays for varying the size of the sample divided out by the trays.

3,688,588

# APPARATUS FOR DETERMINING THE DENSITY OF A FLUID

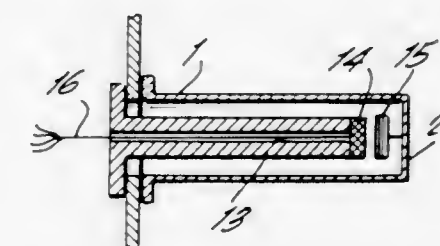
Jan Erik Hill, Stockholm, Sweden, assignor to Ingenjors C. G. Hansson AB, Tyreso, Sweden

Filed Oct. 12, 1970, Ser. No. 80,007

Claims priority, application Sweden, Oct. 14, 1969, 14058 Int. Cl. G01n 9/10

U.S. Cl. 73—451

10 Claims



An improved apparatus for determining the density of a fluid, in particular the density of a liquid at a pressure above or below ambient pressure. In a vessel containing the fluid, the density of which is to be measured, is arranged an elongated tube manufactured from a suitable material, such as steel, which is stiff as well as resilient. The tube has thin walls and a large ratio of length to cross section. This tube is rigidly attached, at one or both ends, to a fixed member, such as the wall or walls respectively of the vessel. The tube is sealed with respect to the fluid, and the interior of the tube may be hermetically sealed, or it may be in communication with the ambient atmosphere. The density of the fluid, in which the tube is completely submerged, will cause a buoyancy force to act on the tube. Due to the stiffness and resiliency of the material, and the shape, i.e. the thin walls and the comparatively great length of the tube, the tube will be elastically deflected or bent in the direction of the buoyancy force, and the deflection or bending can be shown to be a substantially linear function of



the force within wide density limits. The deflection or bending may thus be used as a direct measure of the density, provided of course, that a previous calibration has been made for fluids of known density. This deflection or bending may be measured in many different ways, but it is believed, that the most sensitive and robust way would be to use a differential capacitor arrangement, with the tube serving as the movable part and with a stiff stationary support member arranged inside the tube and carrying a split cylindrical capacitor comprising two cylindrical shells of 180° or less each, arranged diametrically with respect to each other. This has in fact proved to give excellent measuring accuracy.

3,688,589

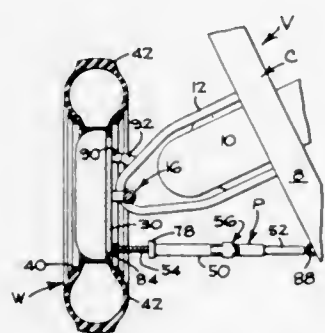
## WHEEL BALANCING PROBE

Larry A. Wilhelm, Lansing, Mich., assignor to FMC Corporation, San Jose, Calif.

Filed May 20, 1970, Ser. No. 39,792

Int. Cl. G01m 1/28

U.S. Cl. 73—457



A force sensitive probe is inserted between the vehicle frame and a portion of a steerable vehicle wheel, which portion is non-rotatable about the wheel axis, for determining the dynamic imbalance of the wheel without removing the wheel from the vehicle. A crystal in the probe generates a fluctuating signal as an unbalanced rotating wheel exerts a fluctuating force on the probe. The signal is transmitted to a read-out device to give an indication of the extent and location of the imbalance of the wheel.

## ERRATUM

For Class 74—15.63 see:  
Patent No. 3,688,560

3,688,590

## REVERSIBLE MOTOR INTERLOCK ASSEMBLY FOR VEHICLE WHEEL SPINNERS AND THE LIKE

Thomas E. Bjorn, Northbrook, and Ralph W. Morrisett, Evanston, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed April 29, 1971, Ser. No. 138,590

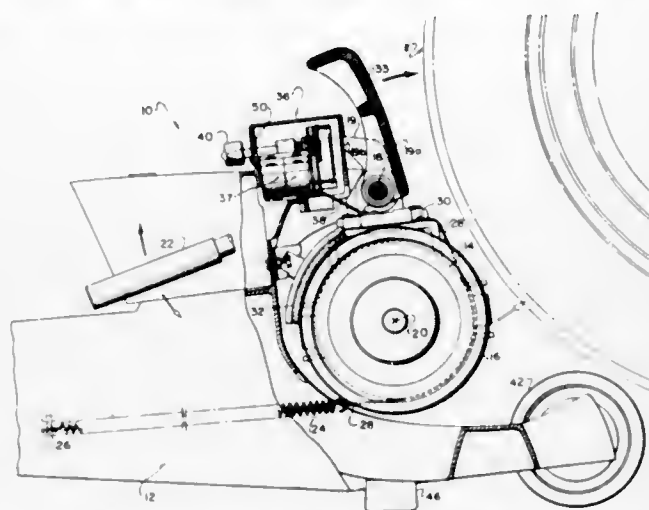
Int. Cl. F16m 11/00

U.S. Cl. 74—16

12 Claims

A control assembly for a reversible motor operating a drive wheel in a wheel spinner used for vehicle wheel balancing or the like including a power switch for actuating the motor when the drive wheel is moved into engagement position with the vehicle wheel and a reversing switch for selectively reversing the direction of rotation of the drive wheel. The control assembly includes locking structure for the two switches so that a polarity to the motor cannot be changed with the power

switch in a closed condition and the power switch cannot be closed with the reversing switch in an intermediate condition.



5 Claims A brake is also provided for the drive wheel when returned to its non-engaging position to stop the motor before the motor polarity can be reversed.

3,688,591

Patent Not Issued For This Number

3,688,592

## SPINDLE MOUNT FOR ROTARY AND AXIALLY MOVING POOL

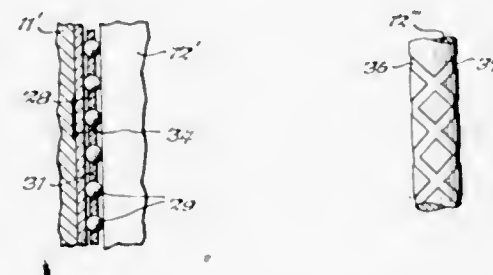
John F. Kopczynski, 1671 Sweeney St., North Tonawanda, N.Y.

Filed Dec. 15, 1970, Ser. No. 98,411

Int. Cl. F16h 21/44

U.S. Cl. 74—109

10 Claims



A construction for mounting a spindle which rotates and travels axially including a housing, a bore in the housing defining a cylindrical bearing surface, a spindle having a portion located in the bore and a ball bearing assembly interposed between the spindle and the bore and including a ball bearing retaining sleeve mounting a plurality of ball bearings extending both axially and circumferentially of the spindle, and a force relieving area associated with the ball bearings for relieving forces on the ball bearings incidental to movement of the spindle, said force relieving area comprising a groove arrangement across which the ball bearings periodically pass so as to relieve the forces to which they are subjected.

3,688,593

## APPARATUS FOR ACTUATING A LIMIT CONTROL ELEMENT

Martin D. Ustin, Pine Brook, N.J., assignor to Buchanan Electrical Products Corporation, Union, N.J.

Division of Ser. No. 567,172, July 22, 1966, Pat. No.

3,546,954. This application Sept. 29, 1970, Ser. No. 76,568

Int. Cl. F16h 21/44

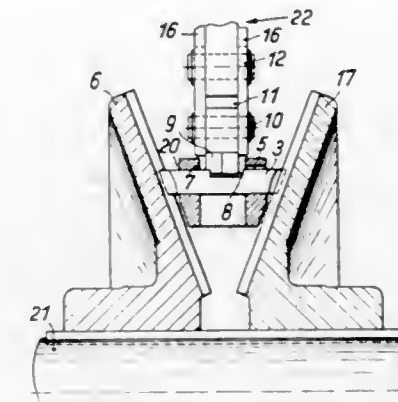
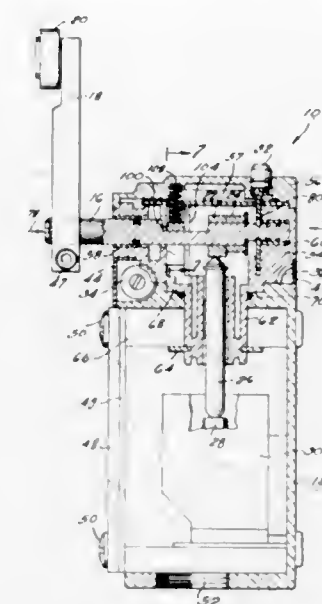
U.S. Cl. 74—107

7 Claims

A device for actuating a control element such as a limit switch. The device has an actuating arm which is rotated to ac-

tuate the switch. The arm is adjustable, without disassembling the device, to provide three modes of switch operation; one in which the switch is operated only by clockwise rotation of the

pressure directed inwardly on their tooth ends and are locked by pressure directed from other directions on the tooth ends.



This is obtained by bores which closely fit the bolt on one side and are enlarged with respect to the bolt diameter on the other side of the link.

3,688,596

## SHIFTING MECHANISM FOR MULTI-SPEED TRANSMISSION

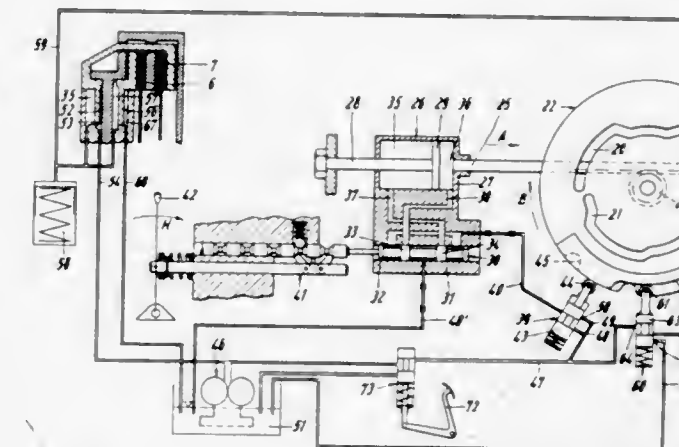
Imre Szodfridt, Solitudestrasse 8/1, Ditzingen, Germany

Filed June 17, 1969, Ser. No. 834,058

Int. Cl. F16h 5/28; F16d 67/00

U.S. Cl. 74—337.5

10 Claims



Apparatus for shifting gears of a multi-speed transmission, including a disk-shaped shift plate having shifting gates or slots provided therein for directly controlling the selective engagement of the individual gears.

3,688,597

## ROTARY RELEASER

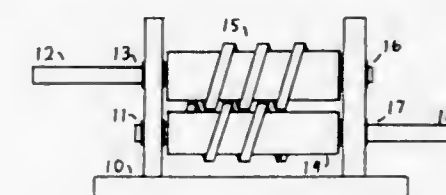
Thomas A. W. K. Watson, 2720 Goyer St., Apt. 24, Montreal, Quebec, Canada

Filed Jan. 14, 1971, Ser. No. 106,405

Int. Cl. F16h 1/18

U.S. Cl. 74—424.5

8 Claims



A rotary releaser is a mechanical device with two mechanical connections, in which rotation of one connection is only possible when the other is rotated. Rotation of one connection acts to release a rotational moment on its other connection. In one version it comprises two screws with meshing helical

arm, a second in which only counterclockwise arm rotation produces switch operation, and a third in which the switch is operated by rotation in either direction.

3,688,594

## INFINITELY VARIABLE TRANSMISSION

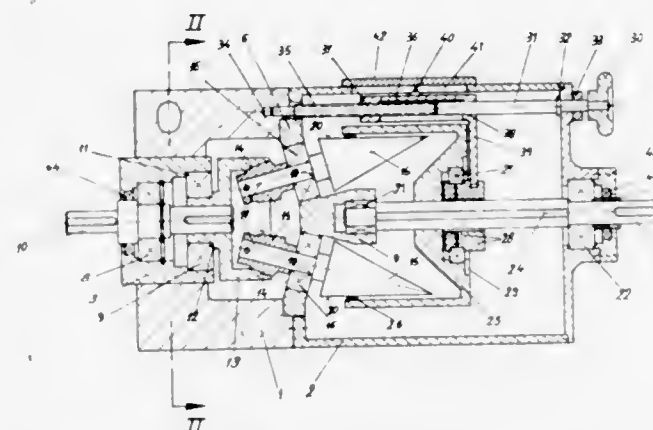
Bernhard Weber, Hirtzweiler, Saar, Germany

Filed Nov. 13, 1970, Ser. No. 89,421

Int. Cl. F16h 15/16

U.S. Cl. 74—191

7 Claims



An infinitely variable transmission comprising a drive shaft with a cup coaxially mounted thereon, a plurality of bevel gears driven by friction wheels mounted on the bevel gear shafts and contacting the side wall of the cup, the bevel gears being in an arrangement at such an angle to each other that their most outside lines are parallel to the axis of a ring contacting the bevel gears and mounted within an second cup being axially adjustable and driving the driven shaft.

3,688,595

## INFINITELY VARIABLE CHAIN-ENGAGED GEARING

Johannes Bauer, Lindenstrasse 55, 221 Itzehoe, Germany

Filed Nov. 9, 1970, Ser. No. 87,999

Claims priority, application Germany, Nov. 22, 1969, P 19 58 687.9

Int. Cl. F16h 55/52

U.S. Cl. 74—230.17 S

14 Claims

The gearing consists of two pairs of toothed bevel discs with each pair being mounted on a shaft. A link chain engages both pairs of discs for power transmission between the shafts. Two tooth bolts are transversely displaceably supported in bores provided in each link in a way that they may be displaced with



threads rotatably mounted in a frame, which resists axial thrust and shafts connected to each of said screws. Rotation of either shaft or connection of the releaser is only possible if the other shaft is rotated in the same direction. The device is completely symmetrical and any attempt to rotate one shaft only or both in opposite directions will result in axial thrust and no rotary motion.

3,688,598

**EFFORT-REGULATING MANUAL CONTROL DEVICES**  
Marcel Rolland, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt, Haute de Seine, France

Filed Nov. 24, 1970, Ser. No. 92,480

Claims priority, application France, Dec. 18, 1969, 6943919  
Int. Cl. G05g 11/00

U.S. Cl. 74-479

7 Claims



A manual control device which permits adjusting with precision the raising mechanism of farm tractor implements, comprising two braked control members, namely an approach control member and an adjustment control member, each control member being rigid with pivot means connected through a link to an end pivot point of a lever of which the central point has pivoted thereon a control arm rigid with a rotary shaft.

3,688,599

**SAFETY THROTTLE CONTROL FOR SNOWMOBILES AND OTHER VEHICLES**

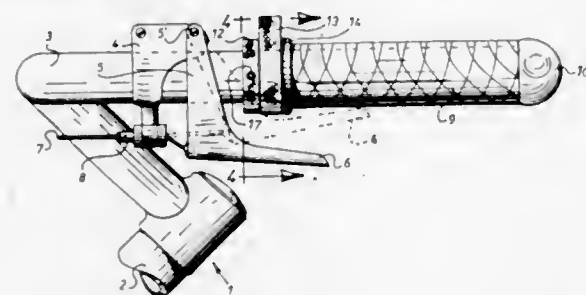
Jean St. Germain, Drummondville, Quebec, Canada, assignor to Gilbert Lapointe, Drummondville, Quebec, Canada

Filed Dec. 21, 1970, Ser. No. 99,962

Claims priority, application Canada, Oct. 16, 1970, 095821  
Int. Cl. G05g 5/04

U.S. Cl. 74-526

4 Claims



A safety throttle control for snowmobiles and other vehicles equipped with a steering handle bar and a throttle control lever mounted on the steering handle. The hand grip on the steering handle is provided with a rotatable eccentric cam with a nut to releasably lock said cam in a selected position opposite said lever, whereby the cam member selectively adjusts the maximum stroke of the lever and, consequently, the maximum speed of the engine.

3,688,600  
**INFINITELY VARIABLE OVERDRIVE TRANSMISSION MECHANISM**

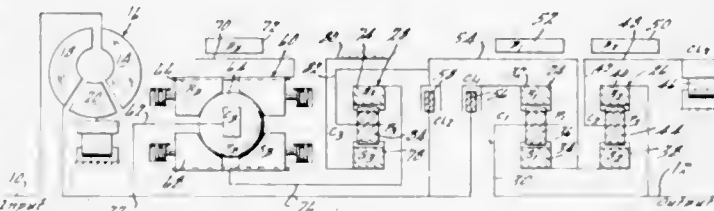
Allan S. Leonard, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed April 26, 1971, Ser. No. 137,375

Int. Cl. F16h 37/06

U.S. Cl. 74-690

4 Claims



A planetary gear mechanism having multiple ratios, at least one of which is an underdrive ratio, including an overdrive unit acting in cooperation with the gearing to provide an overdrive range wherein the overdrive unit is located at the power input side of the gearing where it is adapted to provide a torque delivery path between the torque input elements of the gearing and the power input portions of the mechanism with an infinitely variable speed ratio, the overall speed ratio of the gear system during operation in one limiting ratio in the overdrive range being close to the direct drive ratio of unity.

3,688,601

**AUTOMOTIVE TRANSMISSION WITH DUAL PLANET CARRIER**

Hansjorg Dach, Friedrichshafen, Germany, assignor to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Germany

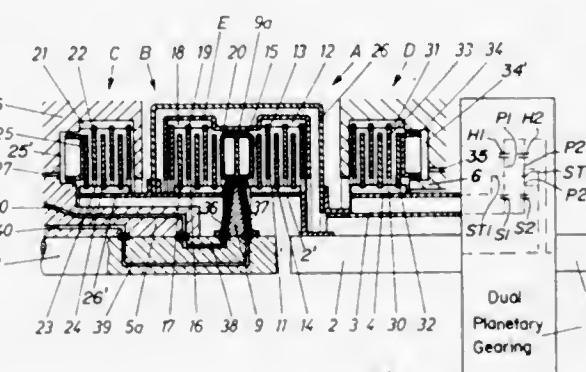
Filed April 28, 1971, Ser. No. 138,082

Claims priority, application Germany, April 28, 1970, P 20 20 634.2

Int. Cl. F16h 3/44; F16d 67/02

U.S. Cl. 74-753

10 Claims



An automotive transmission with dual planetary gearing includes an input shaft, an output shaft and three intermediate shafts coaxially disposed in a housing, the three intermediate shafts being nested on the input side of the planetary-gear assembly. The middle one of the three nested shafts is rigid with a sleeve carrying two sets of foils which form part of a first brake and a first clutch, respectively, the first brake further including a set of co-operating stationary foils carried on the housing whereas the first clutch additionally comprises a set of coating movable foils carried on an extension of the input shaft. The latter extension also carries a set of foils forming part of a second clutch further including a set of foils on the innermost nested shaft. The outermost nested shaft and another housing portion also carry interleaved sets of foils forming part of a second brake.

3,688,602

**AUTOMATIC TRANSMISSION FOR A VEHICLE**

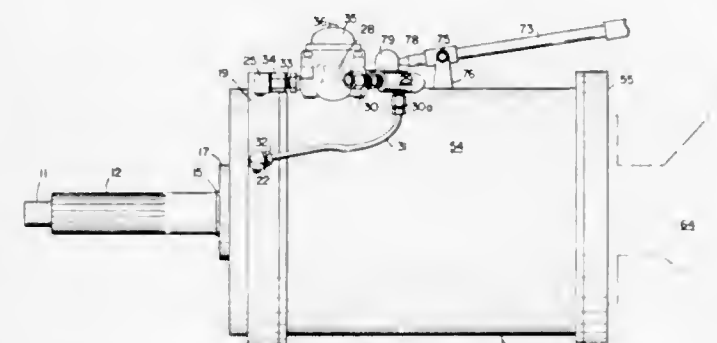
Leroy D. Jorgenson, 3827 Laguna Ave., Oakland, Calif.

Filed Sept. 8, 1970, Ser. No. 70,314

Int. Cl. F16h 3/44

U.S. Cl. 74-754

9 Claims



An automatic transmission for vehicles or the like comprising an input shaft having gears at each end and a front end plate assembly thereon. A high gear clutch drum assembly engages the front end plate assembly. The clutch drum assembly includes a clutch for providing only a low and high forward speed and is in hydraulic fluid communication with a hydraulic fluid delivery sleeve on the end plate assembly. A planetary gear assembly engages the gears on one end of the shaft and includes planetary gears for engaging gears on the clutch drum assembly. A housing encloses the shaft and all assemblies in a substantially fluid-tight relationship with the gears on the free end of the shaft adapted to be coupled to the clutch of the vehicle and a rear end plate assembly including the planetary gear assembly being coupled in driving relationship to the differential of the vehicle. In this manner, the transmission can be moved quickly through gears as required for competition racing when hydraulic fluid is selectively supplied to the clutch drum assembly.

3,688,603

Patent Not Issued For This Number

3,688,604

**REVERSING GEAR**

Gunther Schlosser, Fachingen-Saar, Germany, assignor to Walter Gutbrod; Wolfgang Gutbrod and Gutbrod-Werke G.m.b.H., Bublengen, Saar, Germany

Filed May 5, 1970, Ser. No. 34,826

Claims priority, application Germany, May 7, 1969, P 19 23 163.1

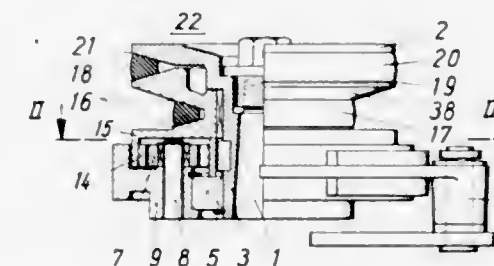
Int. Cl. F16h 57/10, 9/26

U.S. Cl. 74-792

12 Claims

U.S. Cl. 74-863

6 Claims



A transmission comprising an epicyclic gear train with a belt pulley drive which provides a speed reduction during reverse rotation, and control mechanism which operates in common with a brake jaw, which retards the rotary movement of the planetary gear carrier, and a belt engaging member which directs the motion of the epicyclic gear train.

3,688,605

**TURBINE CONTROL METHOD**

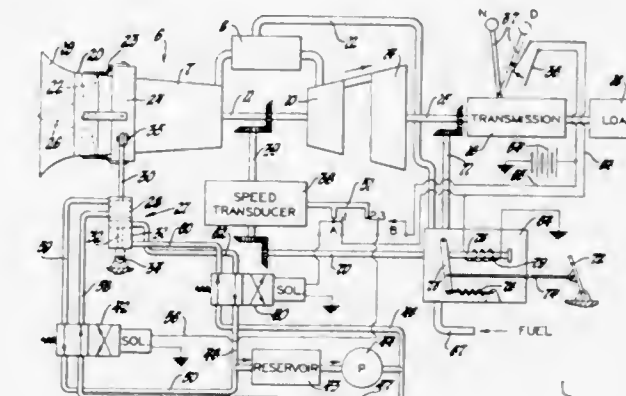
Charles A. Amann, 984 Satterlee Road, Bloomfield Hills, Mich., and Eric H. Rucins, 8749 Birkhill Drive, Sterling Heights, Mich.

Division of Ser. No. 854,651, Sept. 2, 1969. This application Nov. 1, 1971, Ser. No. 194,116

Int. Cl. F02g 3/00; B60k 2/00

U.S. Cl. 74-860

6 Claims



A vehicle turbine of the gas-coupled type propels the vehicle through a change-speed transmission. To reduce vehicle acceleration time with an acceptable penalty with respect to fuel composition, the compressor of the engine has variable inlet guide vanes which are shifted into a positive prewhirl angle at idling speeds when the transmission is shifted into a drive condition. Thus the engine gas generator has a low speed idle, with axially oriented guide vanes and normal air entrance, when the transmission is in neutral, and a high speed idle with positive prewhirl when the transmission is in drive condition. Also, the vanes are shifted at full speed of the gas generator to provide negative prewhirl and thus reduce the engine speed corresponding to maximum power output. Because of the higher idle and lower maximum speeds, the acceleration time of the gas generator, and thus of the power turbine, is reduced. Because positive prewhirl reduces compressor pressure ratio at the high speed idle, the power turbine does not have an undue tendency to cause creep of the vehicle in the high speed idle.

3,688,606

**THROTTLE VALVE ACTUATOR FOR AN AUTOMATIC VEHICLE TRANSMISSION HAVING ENGINE BACK PRESSURE COMPENSATION**

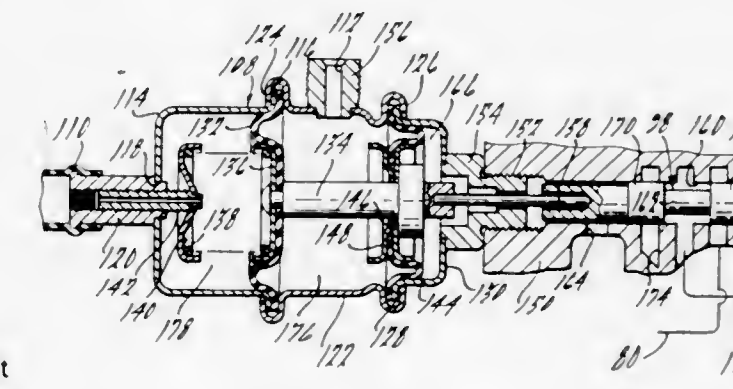
George E. Lemieux, Livonia, and Stepas Smalinskas, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed April 28, 1971, Ser. No. 138,025

Int. Cl. B60k 23/00; F16h 5/52

U.S. Cl. 74-863

6 Claims



A throttle valve actuator for a transmission throttle valve adapted to produce a pressure signal that is proportional in magnitude to the torque delivered by a transmission system in



an automotive vehicle driveline wherein provision is made for modifying the output pressure signal in the throttle valve assembly to compensate for back pressure in the exhaust manifold system of the internal combustion engine.

3,688,607

## TRANSMISSION AND CONTROL

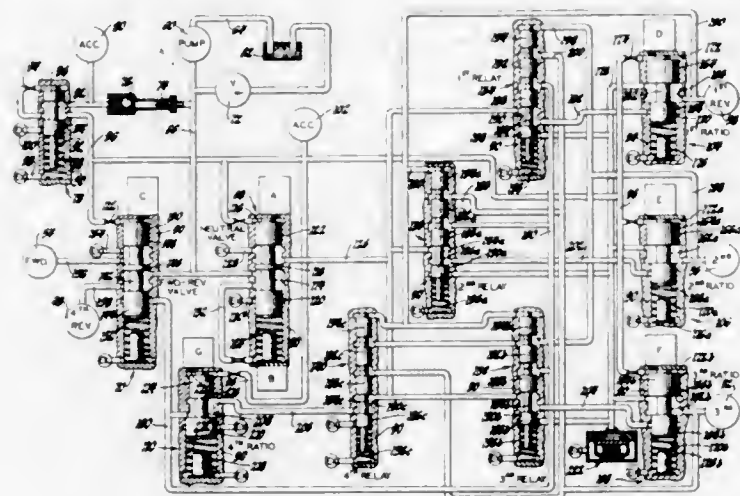
Jerry R. Marlow, Greenwood, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed May 26, 1971, Ser. No. 147,072

Int. Cl. G05g 13/04

U.S. Cl. 74-866

3 Claims



A control for a multi-ratio transmission including a plurality of shift valves each having a differential area portion responsive to engagement pressure to control the engagement of a clutch or brake and a control chamber responsive to a variable control pressure. The pressure in the control chamber is established by a variable force solenoid to cause the shift valve to upshift or downshift and to provide a bias pressure for the regulating function of the shift valve. The control also includes relay valves situated between the pressure source and the shift valves to prevent excessive overlap of the drive establishing devices in the transmission.

3,688,608

## TRANSMISSION CONTROL MECHANISM

Michael E. H. Leach, Hinxworth, England, assignor to Borg-Warner Limited, Letchworth, England

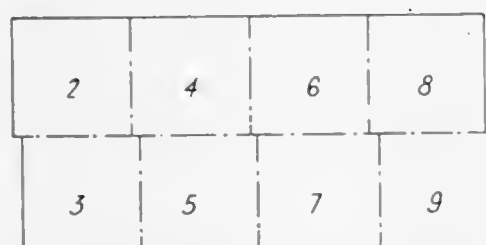
Filed April 24, 1970, Ser. No. 31,546

Claims priority, application Great Britain, April 25, 1969, 21,353/69

Int. Cl. B60k 21/00; F16h 3/44

U.S. Cl. 74-869

23 Claims



A hydraulic control system for an automatic transmission providing four forward drive ratios by selective engagement of friction-engaging devices and including a shift valve for each of the shifts between drive ratios, valve means producing a first pressure responsive to vehicle speed and valve means producing a second pressure responsive to engine load and throttle position, said pressures each influencing said shift valves to determine the shift points of the transmission, and further including an exhaust valve means for each of two friction elements, said exhaust valve means being responsive to

said pressures to control exhaust of pressure from said friction elements when the transmission is upshifted. The control system further includes timing valve means responsive to said first pressure to control the rate of engagement of said friction devices when the transmission is downshifting between ratios and accumulator means responsive to each of said pressures to further control the rate of engagement of said friction devices.

3,688,609

## OVERDRIVE ELECTRONIC CONTROL SYSTEM

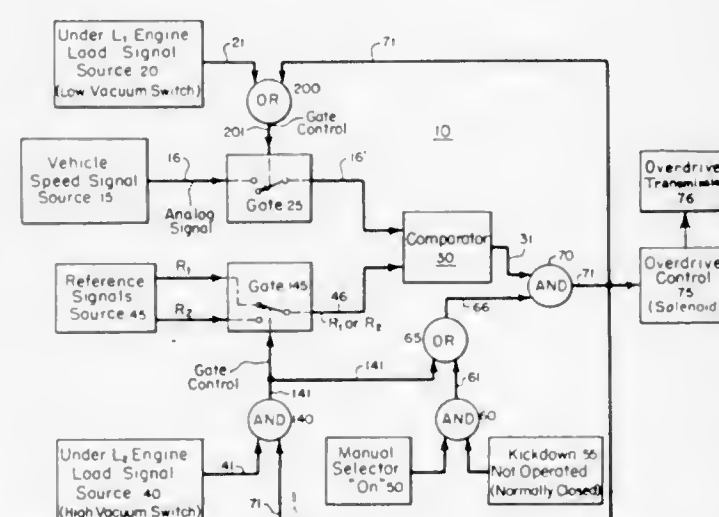
Kenneth L. Friedline, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 12, 1970, Ser. No. 88,761

Int. Cl. B60k 21/00

U.S. Cl. 74-866

8 Claims



An overdrive control system for a motor vehicle is disclosed in which a speed signal is compared with engine load signals to institute and drop out of overdrive drive ratio at different sensed speeds under different load conditions. Specifically, for example, when low engine load (coasting) conditions exist, the vehicle is kept in overdrive ratio until a low (e.g. 5 mph) vehicle speed.

3,688,610

## OVER-RUNNING CLUTCH DRIVING TOOL

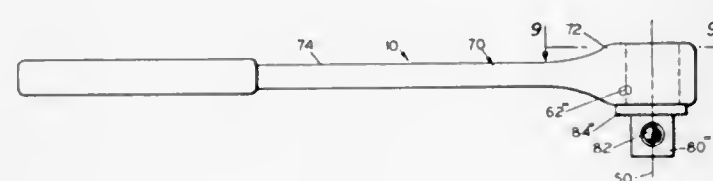
Ronald J. Vlasin, R. R. # 21, Crete, Nebr.

Filed Aug. 13, 1970, Ser. No. 63,520

Int. Cl. B25b 13/00

U.S. Cl. 81-59.1

3 Claims



A driver which can be used, for example, as a socket wrench, comprising an over-running roller clutch, a handle means surrounding and attached to the roller clutch, a rotor assembly having a rotor portion in the rotor clutch and having a tool means attached to the rotor portion and projecting to one side of the clutch.

3,688,611

## DEVICE FOR MACHINING INSIDE SPHERICAL SURFACES ESPECIALLY FOR VERTICAL LATHE

Marcel Neuman, Collonges-au-Mont-d'Or, France, assignor to Societe Cnmp-Berthiez, Paris, France

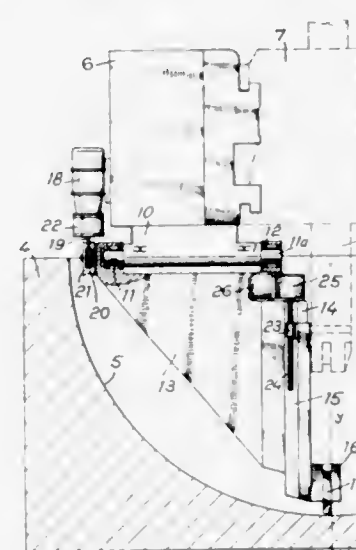
Filed Aug. 21, 1970, Ser. No. 66,024

Claims priority, application France, March 9, 1969, 6930079

Int. Cl. B23b 5/40

U.S. Cl. 82-12

6 Claims



For machining internal spherical surfaces on a vertical lathe in which the object to be machined is mounted on a rotatable platform and a tool is pivotally mounted on a plane passing through the axis of rotation of the object in such a way that the end of the tool describes a circular path around a pivotal axis perpendicular to the axis of rotation of the object, a frame is fixed below the cross-piece of the lathe and carries a pivotally mounted carriage having on its front face a movable slide which can follow an axis parallel to the axis of the lathe spindle and has at one end a movable tool carrier, the said carriage pivoting and its slide being offset laterally relative to the normal tool carrier of the lathe.

3,688,612

## MACHINE TOOL

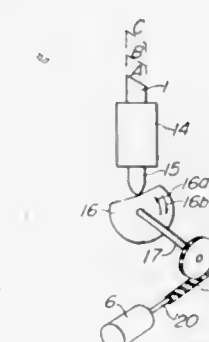
Hiroshi Haruta, Tanashi, and Katumi Ueno, Kawagoe, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed April 10, 1970, Ser. No. 27,288

Int. Cl. B23b 21/00

U.S. Cl. 82-21 B

3 Claims



A machine tool comprising means for supporting and rotating a work piece means for supporting at least one tool for cutting said work piece, tool advancing means for moving said tool toward and away from said work piece, said tool advancing means including a pulse motor, cam means adapted to be driven by said pulse motor, and cam follower means provided on said tool supporting means for co-operation with said cam means, and control means for providing operating pulses for said pulse motor.

3,688,613

Patent Not Issued For This Number

3,688,614

## MOUNTING ARRANGEMENT FOR LATHE CUTTING TOOLS

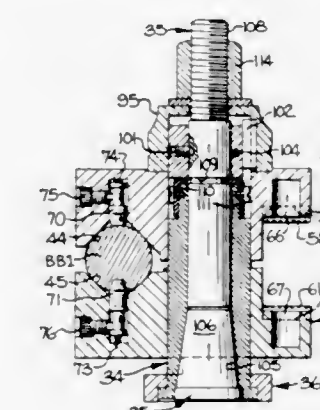
William M. Hardin, P.O. Box 73, Clyde, N.C.

Filed April 19, 1971, Ser. No. 135,130

Int. Cl. B23b 29/28

U.S. Cl. 82-37

13 Claims



A mounting arrangement for lathe cutting tools which has enhanced resistance to forces arising during cutting operations which tend to force a cutting tool away from proper operative relation with a workpiece. By particular cooperation of first and second blocks and first and second spindle elements, a variety of single cutting point tool members are accommodated for mounting in proper operative relation.

3,688,615

## PIPE CUTTING DEVICE

Josef Protze, and Max Leidl, both of Frankfurt/Main, Hanauer, Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany

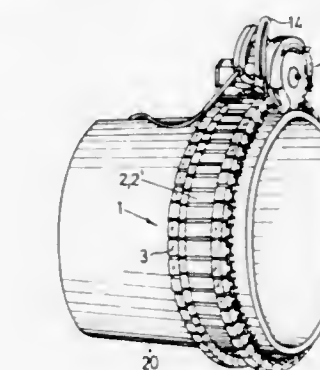
Filed Feb. 23, 1971, Ser. No. 118,116

Claims priority, application Germany, Feb. 27, 1970, P 20 09 287.9

Int. Cl. B23b 3/04, 3/22

U.S. Cl. 82-70.2

13 Claims



A pipe cutting device is characterized by a continuous link chain which is stretched tightly about the pipe with guide lugs being bilaterally provided at the face side of the links. A rolling carriage is arranged between the lugs for traveling 360° around the pipe. The carriage is provided with suitable adjustable cutting or other operating means.

3,688,616

Patent Not Issued For This Number



3,688,617

## TAPE HAVING TRANSVERSE SLITS AND METHOD OF SLITTING THE SAME

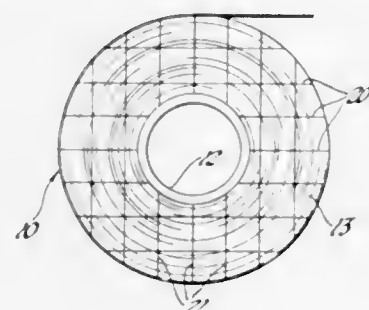
John S. Kiley, and Robert C. Jason, both of Warren, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 27, 1970, Ser. No. 93,141

Int. Cl. B26d 3/08; B65d 85/67

U.S. Cl. 83—7

2 Claims



In a preferred form, this disclosure relates to a pressure sensitive, vinyl backed roll of adhesive tape whose opposite sides or side faces are slit in a particular pattern such that when the tape is unrolled its opposite side edge portions are transversely slit at longitudinally spaced locations so as to enable the tape to be easily torn transversely thereof. This disclosure also relates to a method for slitting the tape by providing a roll of tape and then cutting the sides of the roll with a cutting means to provide a plurality of slits in a particular pattern extending transversely across the side of the roll and inwardly from the side a predetermined depth.

3,688,618

Patent Not Issued For This Number

3,688,619

## METHOD OF AND APPARATUS FOR CUTTING A METAL WEB UTILIZING AN ELECTRO-MAGNETIC INDUCTION TYPE FEEDING APPARATUS

Yukio Yabuta, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

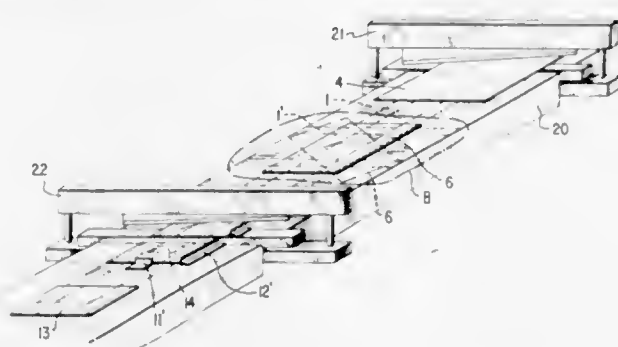
Filed March 19, 1970, Ser. No. 21,003

Claims priority, application Japan, March 24, 1969, 44/22252

Int. Cl. B26d 7/06

U.S. Cl. 83—35

5 Claims



The method and apparatus of the present invention utilize an electromagnetic induction-type feeding apparatus for advancing a metal web and pieces cut therefrom. In one embodiment, the metal web is advanced in one direction and cut into pieces of a predetermined length. The cut pieces are then advanced in a direction transverse to the one direction and are again cut to form pieces of a desired size and shape. In a second embodiment, the web and pieces cut therefrom are advanced in one direction only, and after pieces are initially cut from the web by a first cutter, the pieces are rotated in a

horizontal plane through a desired angle and are then advanced to a second cutter where they are cut to a desired size and shape.

3,688,620

## TUBE MAKER REGISTRATION CONTROL

Richard C. Harris, Jr., Middletown, Ky., assignor to Brown &amp; Williamson Tobacco Corporation, Louisville, Ky.

Filed Sept. 23, 1970, Ser. No. 74,679

Int. Cl. B26d 5/34

U.S. Cl. 83—74

16 Claims



A drive drum and a knife are rotated by a main drive shaft for advancing and cutting a cigarette tube at specified intervals. The cigarette tube has bands of simulated cork twice as wide as a cigarette filter printed thereon and spaced at intervals twice the length of a cigarette. A first sensing means senses when the knife is cutting the tube and provides a cut signal corresponding thereto. While a second sensing means senses when the center of the printed band is adjacent the rotating knife and provides a position signal corresponding thereto. A logic circuit is connected to the first and second sensing means and is responsive to the cut and position signals for providing a high speed output signal when the cut signal occurs prior to the position signal and a base speed output signal when the signal occurs after the position signal. A motor controller is connected to the logic circuit and is responsive to the output signals therefrom for providing a motor excitation voltage. A motor is connected to the motor controller and is responsive to the excitation voltage for accelerating or decelerating to a speed corresponding to the excitation voltage. A differential is interposed between the main drive shaft and the rotating knife and is connected to the motor for varying the knife rotation rate so that the knife cuts are maintained in registration with the center of the printed bands.

3,688,621

## APPARATUS FOR CROP SHEARING WITH THE USE OF FLYING SHEARS

Erasmus A. Randich, Pittsburgh, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed March 31, 1971, Ser. No. 129,825

Int. Cl. B26d 7/06

U.S. Cl. 83—80

9 Claims



Apparatus for making a front or tail crop on moving bar stock with the use of flying shears, and for disposing of the cropped portion accurately in a crop chute without encountering problems which sometimes occur with prior art systems when the cut bar fails to enter a guide tube at the exit side of the shears. This is accomplished by providing a retractable or pivotal guide tube which can be moved quickly from a position where it causes a crop to be deflected into a crop chute to a position where it will immediately receive the end of a sheared bar and convey it away from the shears. Means are in-

corporated into one embodiment of the invention for deflecting a cut length of bar material out of the normal path of travel of cut lengths in order that it can be checked for tolerances and metallurgical analysis.

3,688,622

## DIE CUTTING APPARATUS

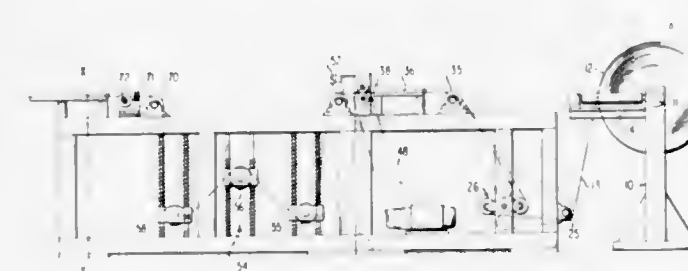
Paul Wahnschaff, Tucker, Ga., assignor to Norcross Engineering Company, Norcross, Ga.

Filed Sept. 29, 1970, Ser. No. 76,533

Int. Cl. B26d 7/06; B21f 11/00

U.S. Cl. 83—88

2 Claims



A die cutting apparatus in which a continuous web of material is fed continuously from a supply of the web, the web is decurled and aligned with a die. The web is fed to the die by an intermittent feed mechanism, and loop control means are provided to allow the transition from continuous to intermittent feeding. An outfeed device is provided to remove cut pieces very rapidly, and stack the cut pieces for subsequent removal.

3,688,623

## LAMINATED BUILDING BOARDS

Ian Thornton Owen, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

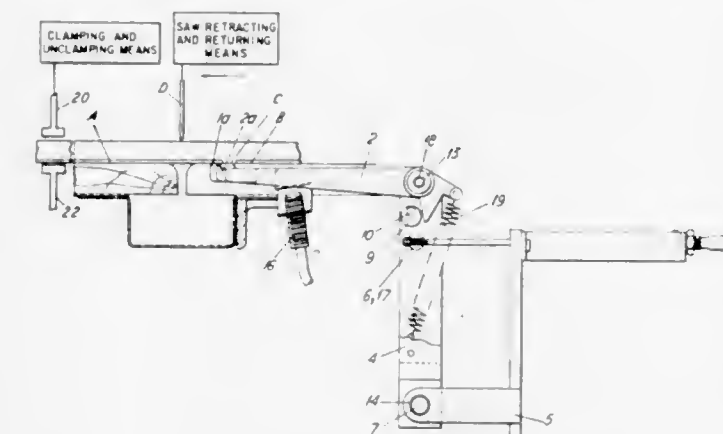
Filed April 7, 1970, Ser. No. 26,336

Claims priority, application Great Britain, April 10, 1969, 18,388/69

Int. Cl. B23d 45/20

U.S. Cl. 83—294

12 Claims



A device for sensing the foam-filled gap between successive discrete bottom facing sheets of a moving continuous foam laminate, the device comprising a long reference feeler and a short penetrating feeler spring against and monitoring the under surface of the laminate, the penetrating feeler being adapted to spring upwardly into the foam-filled gap thereby moving relatively to the reference feeler, means for detecting such relative motion and, after a predetermined delay, for actuating cross-cutting means for cutting the foam in register with the ends of the discrete bottom facing sheets.

3,688,624

## CUTTER ASSEMBLY

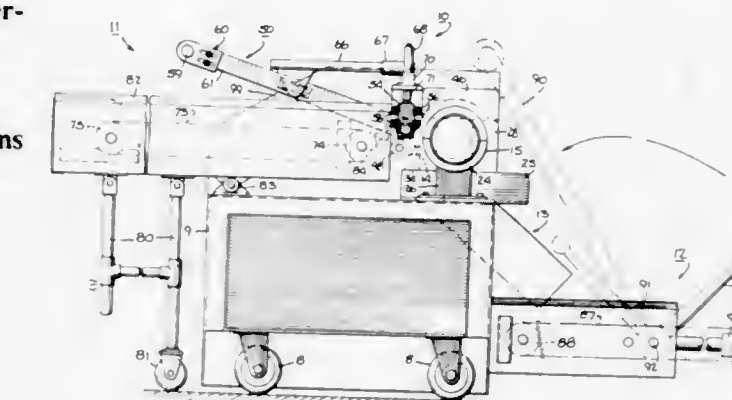
Gordon W. Covey, 11 Glendale Road, Summit, N.J.

Filed Nov. 28, 1969, Ser. No. 880,827

Int. Cl. B23d 25/00

U.S. Cl. 83—596

3 Claims



The cutter assembly utilizes a rotor having a plurality of cutting edges thereon and a bed knife which are spaced so as to provide a precision fit for cutting of various materials such as paper fed between the same. The bed knife is mounted so as to be adjustable with respect to the rotor such that a zero tolerance can be maintained. An overriding conveyor is utilized to feed the material into the space between the rotor and bed knife. The cutting edges of the rotor are disposed in an angular relationship with respect to the bed knife so as to provide a slicing effect.

3,688,625

## CARDBOARD BOX AND METHOD OF MAKING SAME

Raymond J. Thomas; William G. McDonald, and Walter B. Dunning, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

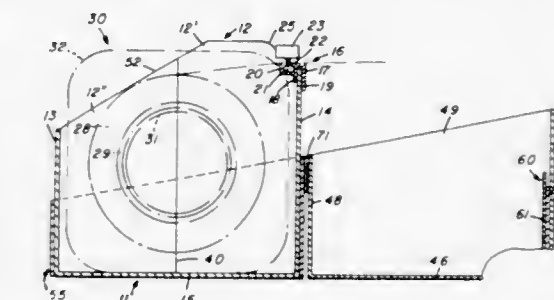
Division of Ser. No. 772,215, Oct. 31, 1968, Pat. No.

3,587,412. This application May 28, 1970, Ser. No. 50,004

Int. Cl. B26d 5/10

U.S. Cl. 83—614

6 Claims



A dispensing box for a roll of light-sensitive material wound on a core comprises an inner box having an open top in which the roll of material is rotatably supported so that it can be dispensed in incremental lengths by being pulled across a guide and cutter assembly mounted on the rear edge of the box. The open top of the inner box is covered by an outer box having an open end slid down over its open top and having a hinged cover, which when open, provides easy access to the open top of the inner box, and which when closed, cooperates with the walls of the inner box to provide a lighttight closure therefor. A novel method of making this box, or any box having a hinged cover, is to form up two open-ended boxes of complimentary shape from flat blanks of boxboard, then telescoped the open end of one box onto the open end of the other and fasten them together near the closed end of the inner box, score one wall of the outer box to provide a hinge line thereacross, then cut through the other walls of the outer box to form a continuous cut joining the two ends of said hinge line. Preferably, the scored hinge line will be made in the flaps



blank for the outer box before it is formed up and will have cemented in covering relation therewith a strip of suitable flexible material to act as a hinge for the cover.

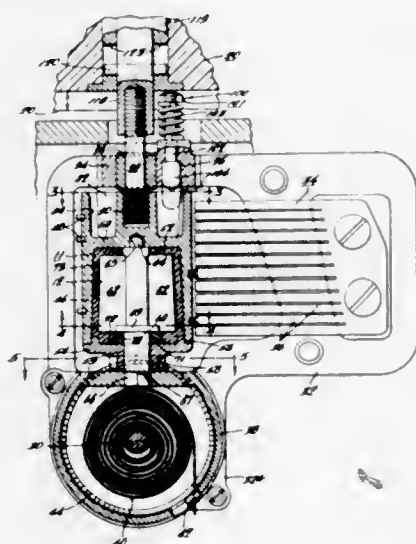
3,688,626

## VISCOUS GOVERNOR DEVICE

John Cotey, 27 West End Ave., Haddonfield, N.J.  
Filed Oct. 15, 1971, Ser. No. 189,660  
Int. Cl. G10f 1/06; F03g 1/00

U.S. Cl. 84-95

8 Claims



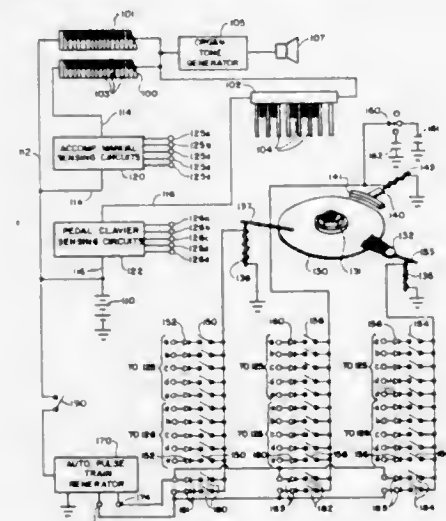
A governor device for a musical movement or the like comprising a rotatably mounted driven member, a drive system for effecting angular rotation of said driven member including a hand windable spring means, gear transmission means connecting said spring means to said driven member and damping means consisting of an enclosed chamber for a viscous damping material and a paddle assembly cooperating with said viscous material to control rotation of said driven member at a predetermined angular rate.

3,688,627

## ELECTRICALLY OPERATED RHYTHM INSTRUMENT

Richard H. Peterson, 11748 Walnut Ridge Drive, Palos Park, Ill.  
Filed May 25, 1970, Ser. No. 39,962  
Int. Cl. G10d 15/00; G10f 1/22; G10d 13/08  
U.S. Cl. 84-171

8 Claims



The rhythm instrument disclosed is primarily intended for use with a conventional electronic organ or similar instrument. A cymbal is provided with one or more striking devices and with a damping device, all of which are controlled from the playing keys (manuals) and/or the pedal keys (pedal clavier) of the organ. Sensing circuits associated with the playing keys of the various divisions provide electrical operating pul-

ses to rhythmically operate the strikers and the damper simultaneously with the production of the conventional organ sounds. An Automatic Pulse Train Generator can also operate the strikers and damper automatically, according to a predetermined rhythm pattern.

3,688,628

Patent Not Issued For This Number

3,688,629

Patent Not Issued For This Number

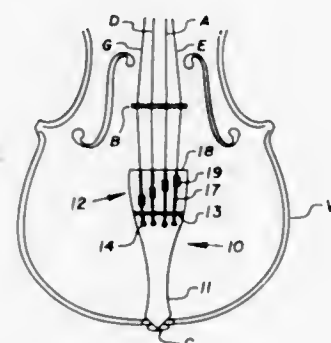
3,688,630

## TAILPIECE FOR STRINGED MUSICAL INSTRUMENTS

John Tartaglia, 4207 Pleasant Ave. S., Minneapolis, Minn.  
Filed Feb. 8, 1971, Ser. No. 113,329  
Int. Cl. G10d 3/12

U.S. Cl. 84-302

3 Claims



A tailpiece for stringed instruments, particularly violins, violas, or cellos, which will permit the tuning of the strings behind the bridge of the instrument consisting of a tailpiece which is mounted on the instrument without requiring any modification of the instrument which tailpiece is provided with a movable string contacting fret for each string such that the distance from the string bridge to the contacting fret may be tuned to the desire of the player.

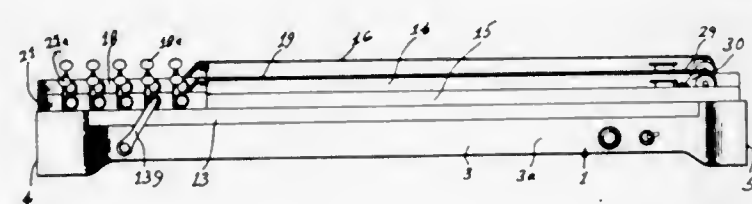
3,688,631

## PITCH-CHANGING TUNING DEVICE FOR STRING INSTRUMENTS

David H. Jackson, 102 Westchester Court, Madison, Tenn.  
Filed Dec. 27, 1968, Ser. No. 787,384  
Int. Cl. G10d 3/14

U.S. Cl. 84-312

11 Claims



Pedal-actuated means for increasing or decreasing the pitch of individual strings, from their predetermined, tuned pitch, in a guitar or the like of the type having one or more necks. Each string of each neck is attached at its head end to an ordinary tuning machine and at its tail end to a tuning member pivotable from a normal position to a pitch increasing position or a pitch decreasing position. Each tuning member may have operatively connected thereto a first pull rod for moving the tuning member to its pitch increasing position and a second pull rod for moving the tuning member to its pitch decreasing position. The guitar or like instrument has a plurality of

pedals, each capable of alternatively actuating a rocking assembly for each neck of the instrument. Each pull rod associated with each string of a neck may be attached to any one or ones of the rocking assemblies for that neck, so that each pedal may raise the pitch of certain desired strings and lower the pitch of other desired strings in any combination for each neck.

3,688,632

## STRINGED MUSICAL INSTRUMENT

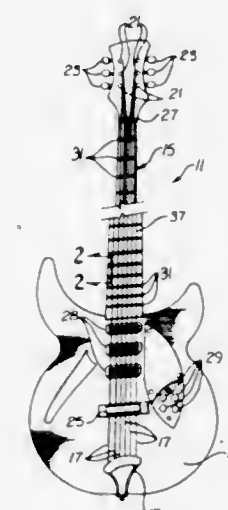
Henry C. Perez, Torrance, Calif., assignor to Francis C. Hall, Newport Beach, Calif.

Filed Feb. 22, 1971, Ser. No. 117,434

Int. Cl. G10d 3/06

U.S. Cl. 84-314

3 Claims



A stringed musical instrument comprising a sound box, an elongated fingerboard attached to the sound box, a plurality of strings mounted on the sound box and the fingerboard with the strings extending from the sound box along the fingerboard, and a plurality of frets mounted on the fingerboard with at least one fret adjacent the outer end of the sound box forming an angle of greater than 90° with the central longitudinal axis of the fingerboard as measured counterclockwise from the central axis of the fingerboard.

3,688,633

## TONE HOLE COVERING ASSEMBLY FOR A WOOD-WIND MUSICAL INSTRUMENT

Akira Nagao, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

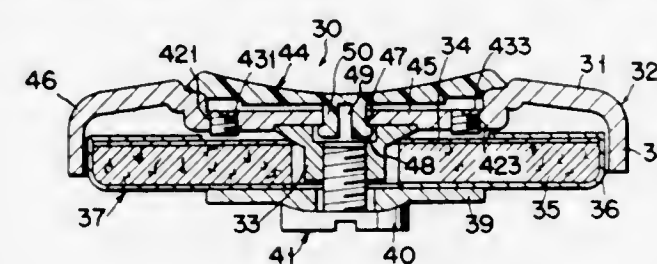
Filed June 22, 1970, Ser. No. 48,213

Claims priority, application Japan, June 23, 1969, 44/49213

Int. Cl. G10d 7/00

U.S. Cl. 84-380

10 Claims



In a wood-wind instrument having a plurality of tone holes perforated at the prescribed points along the tubular portion of an elongated cylindrical hollow body and sealed airtight by pads disposed in key cups selectively depressed during performance, that part of each key cup facing the backside of the corresponding pad is provided with a means for adjusting the angle of inclination defined by the pad with the key cup so as to facilitate said adjustment without removing the pad from the key cup.

3,688,634

## KEYFRAME SIDE PIN GUIDE FOR PIANO AND LIKE MUSICAL INSTRUMENTS

Eiji Harada, 1522-1 Kobayashi, Shizuoka-ken, Hamakita-shi, Japan

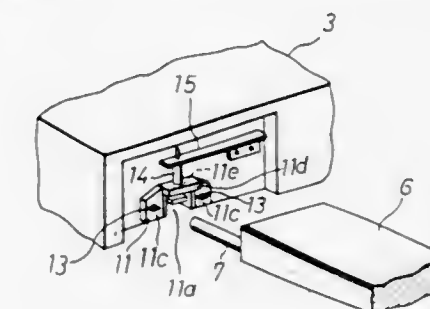
Filed May 14, 1971, Ser. No. 143,425

Claims priority, application Japan, Aug. 28, 1970, 45/85228

Int. Cl. G10c 3/12

U.S. Cl. 84-432

9 Claims



There is described an improved keyframe side pin guide for pianos and the like musical instruments wherein means are provided for preventing warp curving of the front part or front rail of the keyframe and for holding the same constantly in closely contacting relationship with the key bed on which the keyframe is supported, the means comprising a pin projecting from the keyframe, a pin-receiving member having a vertically-extending slot therein, the pin being inserted in the slot, a guide piece slidable along the slot and resting on the pin, and a resilient member exerting a constant downward pressure on the guide piece, so that the pin is firmly pressed toward the key bed owing to the downward biasing force of the resilient member.

3,688,635

## CIRCUIT BOARD SUPPORT

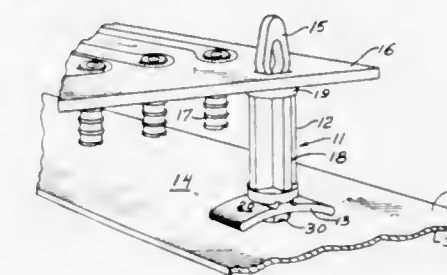
James Fegen, Chicago, Ill., assignor to Richco Plastic Company, Chicago, Ill.

Filed March 4, 1971, Ser. No. 120,830

Int. Cl. F16b 19/00; H02b 1/02

U.S. Cl. 85-5 R

9 Claims



A circuit board support of one piece dielectric insulating plastic material having locking means for securing the support to a chassis and a resilient coupling for removably securing and supporting a circuit board spaced apart from the chassis, the locking means and coupling being adequately versatile to accept chassis and circuit board thicknesses of varying dimensions.

3,688,636

## ROCKET &amp; LAUNCHER ASSEMBLY WITH THRUST ADJUSTMENT

Irwin Spiess, Pequannock, and Gabriel G. Gratkowski, Dover, both of N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed Oct. 23, 1970, Ser. No. 83,580

Int. Cl. F41f 3/04; F42b 15/18

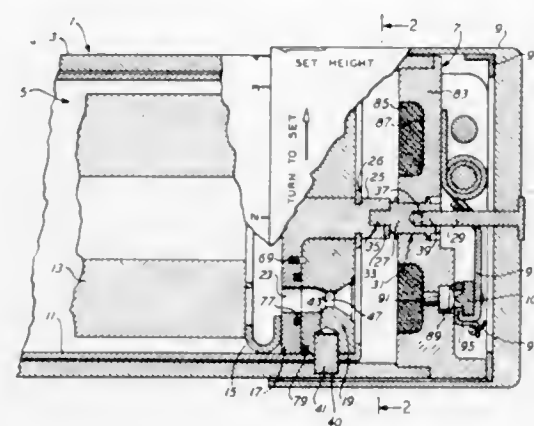
U.S. Cl. 89-1.8

7 Claims

A rocket and launcher assembly is disclosed, presettable to provide in the rocket discharged therefrom a thrust level in ac-



cordance with the height or range desired to be attained by said rocket. A rotatable sealing plate in the rocket may be manually adjusted prior to propellant ignition to direct propellant



lant gases through one or another of several nozzle groups in a nozzle plate separated from the propellant by the sealing plate. The various nozzle groups are canted or otherwise configured to provide the varying thrust from group to group.

3,688,637

## MULTIBARREL AUTOMATIC WEAPON

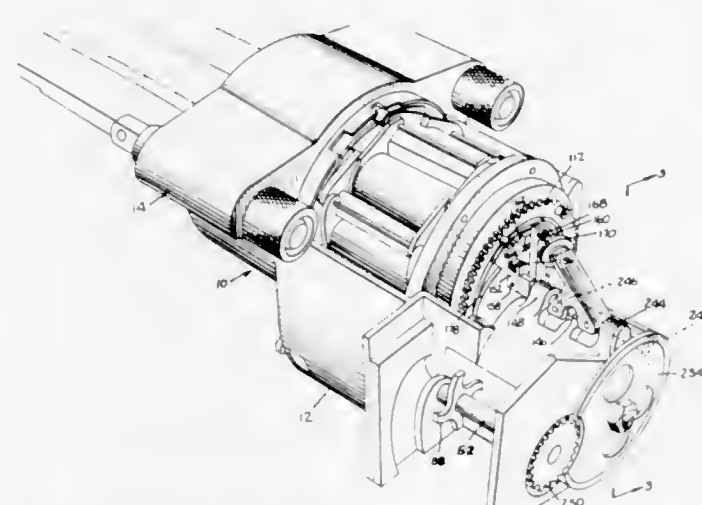
Richard M. Tan, Burlington, Vt., assignor to General Electric Company

Filed March 10, 1970, Ser. No. 18,096

Int. Cl. F41d 7/02

U.S. Cl. 89—12

5 Claims



A gun having at least a barrel, at least a chamber and means for moving said chamber transversely to said barrel between a non-coaxial feed station and a coaxial lock and fire station, means for chambering a fresh cartridge in said chamber and thereby ejecting any misfired cartridge from said chamber, and means for separating such misfired cartridge from the fresh cartridge.

3,688,638

## SIGHTING APPARATUS WHICH OVERCOMES TRUNNION TILT ERROR

Peter Duncan Morris, Knebworth, and Brian T. Trayner, Hitchin, both of England, assignors to British Aircraft Corporation Limited, London, England

Filed Dec. 31, 1969, Ser. No. 889,385

Claims priority, application Great Britain, Jan. 6, 1969, 834/69; Feb. 28, 1969, 10,904/69

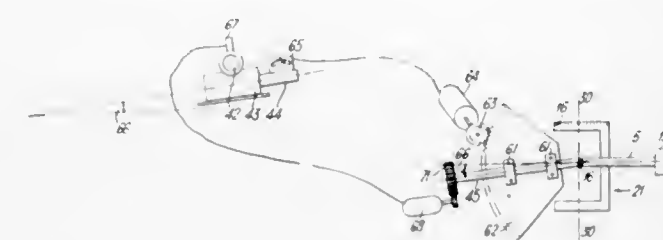
Int. Cl. F41g 3/10

U.S. Cl. 89—41 T

2 Claims

An artillery gun vehicle, comprising a gun having a barrel, and transverse trunnions which are rigidly and perpendicularly associated with the barrel and which support it for rotation about the axis of the trunnions. A sighting apparatus is

positioned substantially distant from the barrel, is rotatable about a transverse horizontal axis and comprises a shaft. An electric motor is operatively connected to the shaft to rotate it about its axis. A sensor is positioned to measure the gun eleva-



tion angle as determined by the rotation of the trunnions, and the motor is operatively associated with the angle sensor such that the shaft is rotated through the same angle as the trunnions. The shaft is connected through a knuckle joint to the horizontal axis of the sighting apparatus.

3,688,639

## AMMUNITION CANISTER

John R. Hayes, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 28, 1971, Ser. No. 110,540

Int. Cl. F41f 9/02

U.S. Cl. 89—45

7 Claims



An ammunition canister, used as a part of a gun loader system, is in the form of a cylindrical container for a round of ammunition and is provided with flexible rubber pads convoluted by spring force for gripping the round. A releasing force is used to release the spring force to permit delivery of a round into or from the container.

3,688,640

## REPEATING FIREARM WITH BOLT-OPEN LATCH

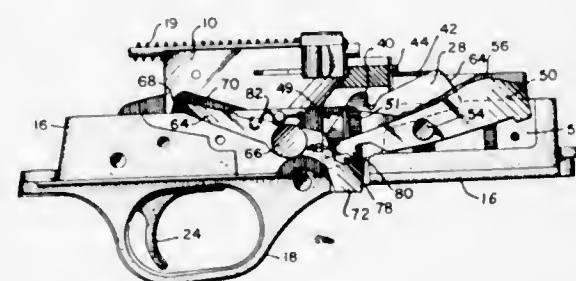
Louis W. Seecamp, New Haven, Conn., assignor to O. F. Mossberg & Sons, Incorporated, North Haven, Conn.

Filed May 15, 1970, Ser. No. 37,529

Int. Cl. F41d 9/00

U.S. Cl. 89—138

11 Claims



A bolt-open latch for a repeating firearm having a cartridge-carrier or a lifter for transferring cartridges from the magazine to the cartridge chamber. The bolt-open latch is actuated by movement of the lifter beyond its cartridge-feeding position when no cartridge is transferred by the lifter during a loading cycle, so that the breech-bolt is held in its retracted position by the bolt-open latch when the last round in the magazine has been fired.

3,688,641

## MACHINE GUN

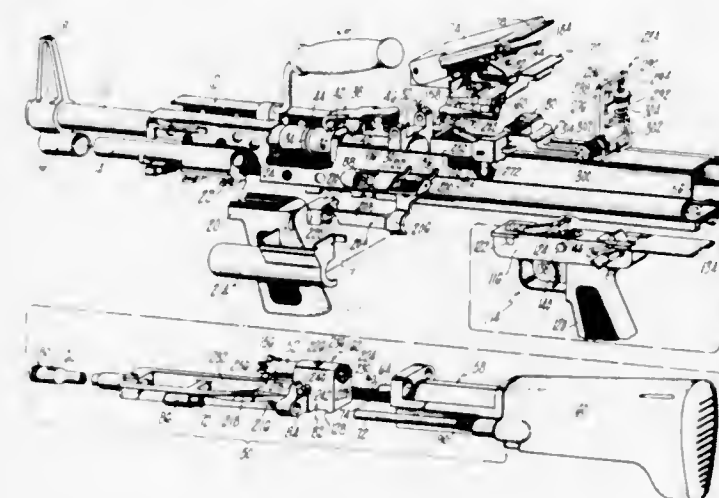
George F. Curtis, East Longmeadow, and Henry J. Tatro, Jr., Westfield, both of Mass., assignors to Colt's Inc., Hartford, Conn.

Filed Sept. 12, 1969, Ser. No. 857,479

Int. Cl. F41d 11/12

U.S. Cl. 89—189

32 Claims



The machine gun of this invention features a unitary bolt and bolt drive assembly reciprocally mounted within a receiver along three longitudinally extending bearing supports symmetrically arranged in spaced relation to the receiver; the bolt and bolt drive assembly, together with a recoil buffer constituting and integral operating group removably maintained within the receiver by a single latch mechanism; a bolt carrier of the assembly incorporating actuating means for cartridge belt advance, cartridge extraction and ejection; the bolt carrier housing not only a rotary, front-locking bolt but also a cam follower which fixes a firing pin to the carrier and moves within a contoured slot in the bolt for locking and unlocking it in battery. This machine gun also features a gas recoil system for the bolt and bolt drive assembly having anti-fouling porting means for purging gas from the system under high pressure after firing; an ejector operated by the recoiling bolt and bolt drive assembly independently of its velocity; an automatically engageable, self-aligning barrel and receiver latch construction; and a sight assembly featuring a zero backlash precision screw adjustment means.

3,688,642

## PATTERN GUIDE SYSTEM

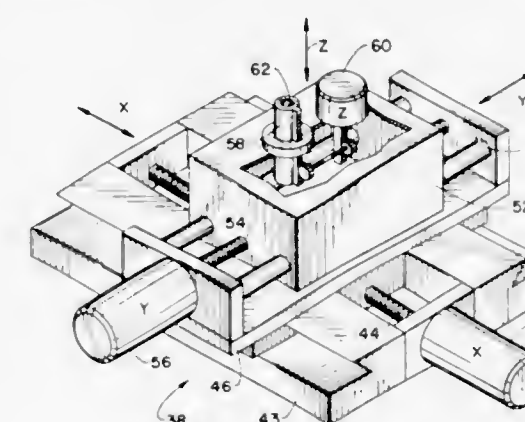
Kaiji Negoro, Montebello, Calif., assignor to Anellux Systems Corporation, El Segundo, Calif.

Filed Aug. 13, 1970, Ser. No. 63,379

Int. Cl. B23c 1/16

U.S. Cl. 90—13 C

2 Claims



A conventional type of tool control system consists of a stylus which is guided around a predetermined pattern. By suitable servo mechanisms (usually hydraulic powered) a cutting

tool is caused to follow the same path of movement as the stylus, and in so doing cuts a work piece so as to substantially duplicate the pattern.

This invention relates to a pattern guide system, and more specifically to an adapter by means of which existing tool control apparatus may be wedded to existing data tape control systems, to provide a simplified system that greatly expedites the driving of a cutting tool into a work piece.

It is also known to drive a cutting tool over a predetermined path by causing the drive motors that control the position of the tool (or more broadly that control the relative position between the tool and the work piece), to move in accordance with stored data (usually digital), in a particular manner. In this way a large number of duplicate pieces may be cut by the tool simply by running the tape over and over again and feeding its output to the tape controlled tool.

In the present invention the output from the tape is caused to drive a pattern simulator member which carries — not the tool or the work piece — but instead carries a small socket in which rests the stylus of the first system described above. Thus the socket is caused to deflect the stylus of the first system and drive the tool (or reciprocally the work piece) in the desired manner, in accordance with data stored on and read from the tape.

3,688,643

## APPARATUS FOR FORMING PILGER DIE GROOVES

Hubertus Prieur, Canfield, Ohio; Walter Vom Dorp, Rheydt, and Fritz Zeunert, Rheydt-Rheinland, both of Germany, assignors to The McKay Machine Company, Younstown, Ohio

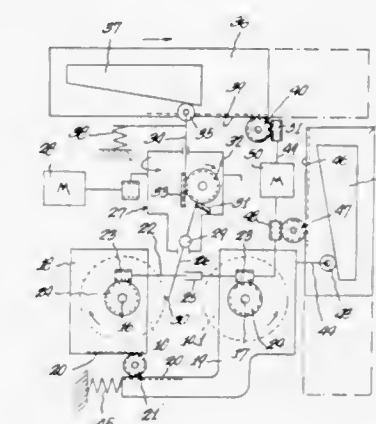
Filed Dec. 18, 1969, Ser. No. 886,095

Claims priority, application Germany, Jan. 9, 1969, P 18 13 281.5

Int. Cl. B23d 5/00

U.S. Cl. 90—24.3

6 Claims



Apparatus and method of forming pilger die grooves in die blanks in which the grooves are not only tapered longitudinally in the conventional manner but in which the grooves have a continuously variable side relief extending in a smooth circular arc from the die groove root to opposed die groove sides.

3,688,644

## FLUID OPERATED ACTUATOR FOR MOVABLE MEMBERS

John Cusveller, Moonee Ponds, Australia, assignor to Sperry Rand Australia Limited, Maribymong, Victoria, Australia

Filed Sept. 18, 1970, Ser. No. 73,508

Claims priority, application Australia, Sept. 25, 1969, 61,402/69

Int. Cl. F15b 13/042

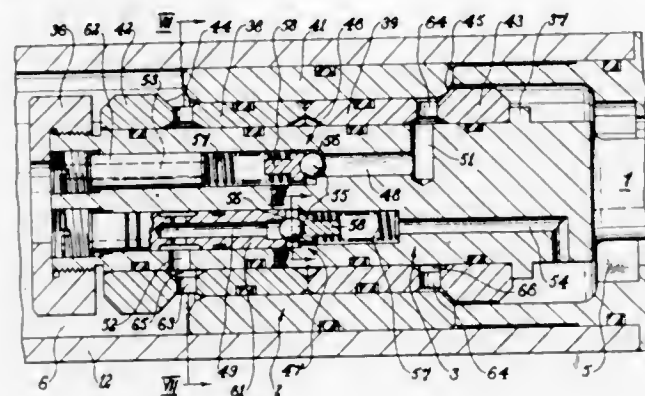
U.S. Cl. 91—420

40 Claims

A fluid operated actuator for controlling the movement of a member such as a valve and being connectable into a fluid circuit including pressure operated means for indicating extreme operative positions of the aforementioned member. The ac-



tuator including a piston-cylinder assembly, the piston of which is connectable to the aforementioned member, and pressure relief means operative to prevent the pressure acting on the piston reaching a predetermined level which is below that necessary to operate the indicating means. Cut-out means



is provided within the piston-cylinder assembly to render the relief means inoperative when the piston reaches or approaches positions corresponding to the aforementioned extreme operative positions of the associated member, so that the pressure acting on the piston is able to rise sufficiently to operate the indicating means.

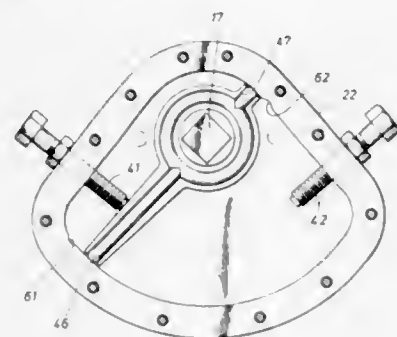
### 3,688,645 VANE-TYPE ACTUATOR

Henry V. Reaves, Houston, Tex., assignor to Matryx Corporation

Filed June 29, 1970, Ser. No. 50,623  
Int. Cl. F01c 9/00; F16k 31/143

U.S. Cl. 92—125

1 Claim



Valve control apparatus including a housing having a shaft member rotatably mounted therein. One end of the shaft member is connected to a valve stem of a valve to be controlled. The shaft member has a radially projecting vane fixed thereto which is rotatable through a predetermined arc within the housing. A unitary seal is provided to encircle the shaft member above and below the vane and to surround the periphery of the vane. A groove is formed in the periphery of the vane to support the seal. Fluid is selectively introduced into the housing to rotate the vane and shaft member in a desired direction. The unitary seal provides a continuous sealing surface which prevents fluid leakage from one side of the vane to the other and prevents fluid leakage from the inside to the outside of the housing along the shaft member.

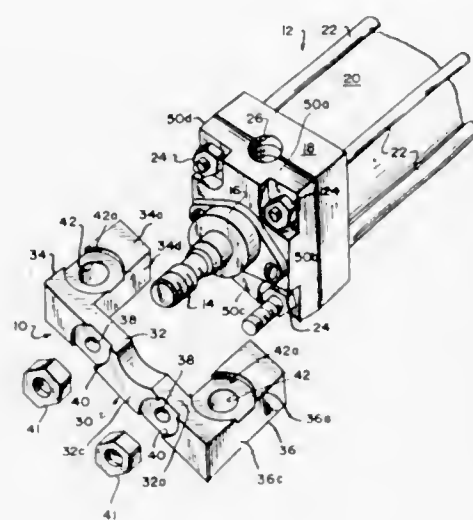
### 3,688,646 DEMOUNTABLE SIDE LUG MOUNTING FOR PRECISION PISTON AND CYLINDER DEVICES

Francis S. Flick, Oak Brook, and Russell F. Pabst, Bellwood, both of Ill., assignors to Miller Fluid Power Corporation  
Filed Aug. 3, 1971, Ser. No. 168,665  
Int. Cl. F01b 29/00

U.S. Cl. 92—161

A mounting arrangement for piston and cylinder devices comprising: a generally U-shaped bar with the mid-portion of

the "U" intended to span the end of a cylinder at the bottom thereof, and the two legs of the "U" intended to straddle the bottom portions of the side of the cylinder device, adjacent the end caps thereof. Fastener receiving openings extend through the legs of the "U" in a direction intended to be per-



pendicular to the length of the cylinder rod for fastening the cylinder to a supporting surface. In addition, fastener receiving openings extend through the mid-portion of the "U" intended to be in alignment with tie rods that hold opposite end caps of the cylinder together for fastening the mounting arrangement to the cylinder.

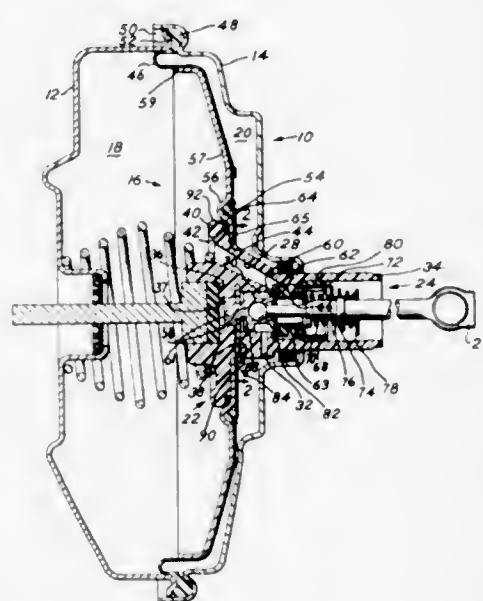
### 3,688,647 CLIP RETAINER

Oswald O. Kytta, South Bend, Ind., assignor to The Bendix Corporation

Filed Dec. 21, 1970, Ser. No. 99,795  
Int. Cl. F15b 9/10

U.S. Cl. 91—369 A

6 Claims



A clip retainer held by a resilient tab in a groove of a hub for limiting the movement of a control valve in the hub and for holding a diaphragm against the hub. Upon actuation of the control valve, fluid under pressure is permitted to flow to one side of the diaphragm. A pressure differential is created across the diaphragm causing the hub to move and transmit a force to an output member.

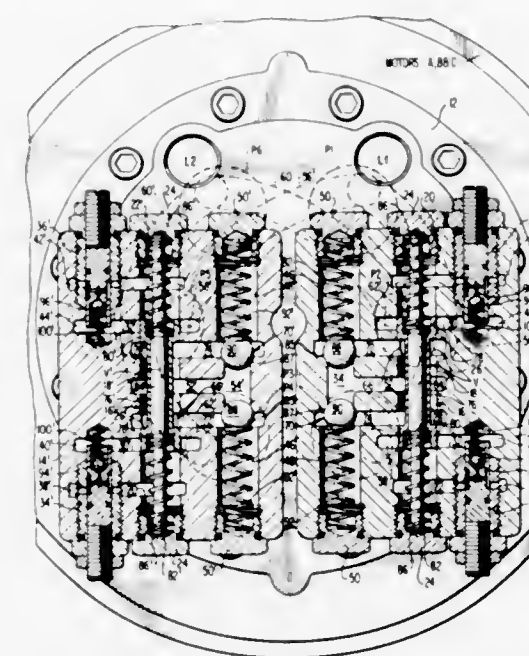
### 3,688,648 AUTOMATIC CONTROL VALVE SYSTEM FOR HYDRAULIC MOTOR

Michael A. D'Amato, Jr., 1200 E. Main St., Waukesha, Wis.  
Filed May 3, 1971, Ser. No. 139,459

Int. Cl. F15b 11/16

U.S. Cl. 91—412

10 Claims



Plural pairs of service ports are controlled by spool valves, each responsive to service port pressure, for connecting plural hydraulic motors in series-parallel, in series or in parallel depending upon loading of the motors, or upon externally controlled pilot valves.

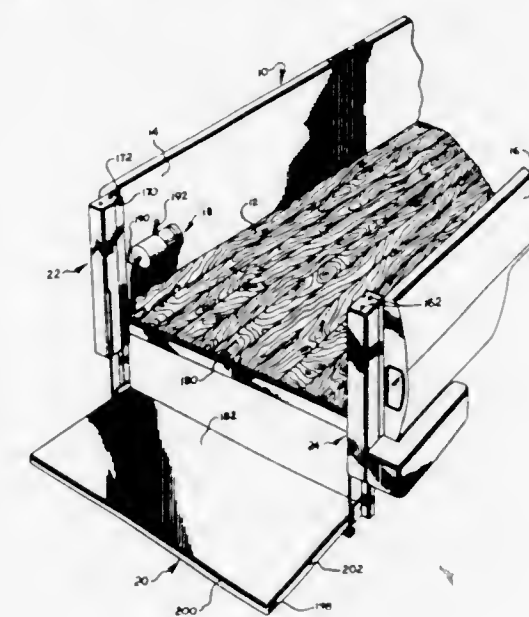
### 3,688,649 HYDRAULIC ENDGATE APPARATUS

William Lester Hostetler, 701 E. Main, Harper, Kans.  
Division of Ser. No. 684,201, Nov. 20, 1967, Pat. No. 3,520,426. This application May 18, 1970, Ser. No. 38,436

Int. Cl. F01b 31/00

U.S. Cl. 92—110

3 Claims



A hydraulically actuated lift unit wherein a vertical hydraulic cylinder is mounted for guided vertical movement relative to fixed supporting structure, the piston rod associated with the cylinder extending downwardly therefrom and resting upon the support structure. Means is provided for guiding ver-

tical movement of an elongated lift column, the latter having horizontally extending load carrying means at its lower end. A pulley is mounted on the exterior of the cylinder for rotation about a horizontal axis, and a cable is entrained over the pulley and has depending ends secured to the column and the fixed supporting structure whereby vertical movement of the column is twice that of the cylinder. The relatively fixed piston rod has a passageway therethrough whereby hydraulic fluid can be introduced into the cylinder to force upward movement of the latter. A pair of such units can be mounted on a truck bed with the load carrying means being common to both units and pivotally mounted thereon to serve as an endgate.

### ERRATA

For Classes 92—125 and 92—161 see:  
Patents Nos. 3,688,645 and 3,688,646

### 3,688,650

METHOD FOR MANUFACTURING A BLOCK BAG  
Jan Roelof Jochem de Vries, Hardenberg, Netherlands, assignor to Industriële Onderneming Wavin N.V., Zwolle, Netherlands

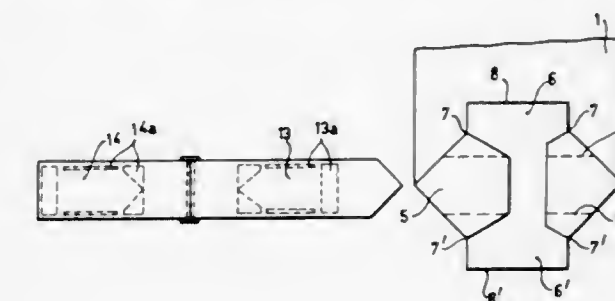
Filed Aug. 26, 1969, Ser. No. 853,624

Claims priority, application Netherlands, Aug. 26, 1968, 6812161; Oct. 10, 1968, 6814531

Int. Cl. B31b 49/04; B65d 31/14

U.S. Cl. 93—35 R

3 Claims



A method for manufacturing a block bag of thermoplastic material with at least one filling valve from a tubular foil part having bottom flaps and at least one corner flap forming the valve being longer than the bottom flaps, wherein the bottom flaps are folded around a heat isolating piece and the stack of foils forming the bottom are heatsealed together by applying heat from both sides of the stack.

The seals are obtained by spot welding, or formed as labyrinth seals. The end of the corner flap forming the valve may be stretched or subjected to a superficial incision, or creasing operation.

By incision, or removing part of the corner flap forming the valve, a valve having a V form is obtained.

### 3,688,651

Patent Not Issued For This Number

### 3,688,652

APPARATUS FOR MAKING CIGARETTE FILTERS  
Hulmuth Brodeck, Trossingen, Germany, assignor to Efka-Werke Fritz Keihn GmbH, Trossingen, Germany

Filed April 23, 1971, Ser. No. 136,734

Claims priority, application Germany, April 25, 1970, P 20 20 316.5

Int. Cl. B31c 13/00

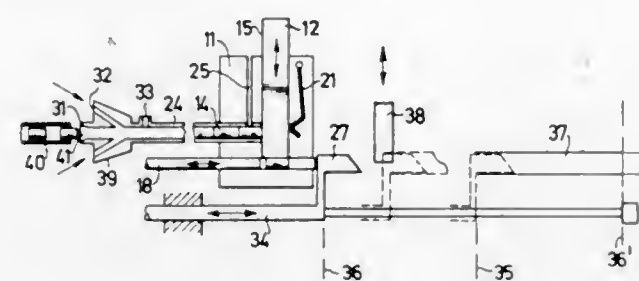
U.S. Cl. 93—77 FT

26 Claims

This invention relates to a device for making cigarette filter tubes and includes means for feeding individual filters from a



store to a filter press having a press slide to compress the filters so that they have a diameter size which is smaller than the



inner diameter of a guide tube on which a cigarette paper tube is retained and into which they are moved by an ejector.

3,688,653

## MACHINES FOR LAYING CONCRETE

Matthew McGregor, and Albert Edward Burks, both of Chesterfield, England, assignors to Robert McGregor & Sons Limited, Chesterfield, England

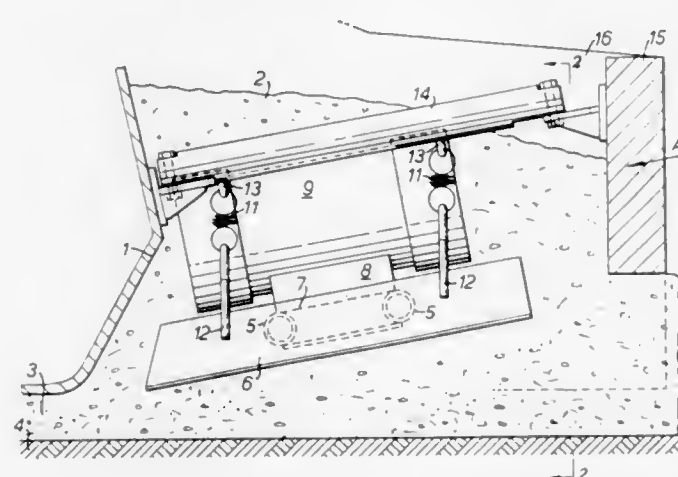
Filed Sept. 18, 1970, Ser. No. 73,504

Claims priority, application Great Britain, Nov. 13, 1969, 55,598/69

Int. Cl. E01c 19/48

U.S. Cl. 94—46 R

3 Claims



A concrete laying machine comprises a transversely disposed conforming plate which, as the machine advances, levels plastic concrete placed in advance of the machine, and vibratory means located forwardly of the conforming plate and operable to de-aerate and compact the concrete immediately prior to levelling, said vibratory means consisting of a series of laterally spaced angularly disposed plates carried by a pair of transverse members and an electric or hydraulic motor rigidly mounted on said members with its axis perpendicular thereto, the shaft of the motor carrying an eccentric weight such that upon rotation vibration is set up in the assembly.

3,688,654

## ALIGNMENT SYSTEM USEFUL IN COMPUTER OUTPUT MICROFILM RECORDERS

Asger T. Nielsen, San Diego, Calif., assignor to Compufoto, Inc., Wellesley Hills, Mass.

Filed May 19, 1970, Ser. No. 38,772

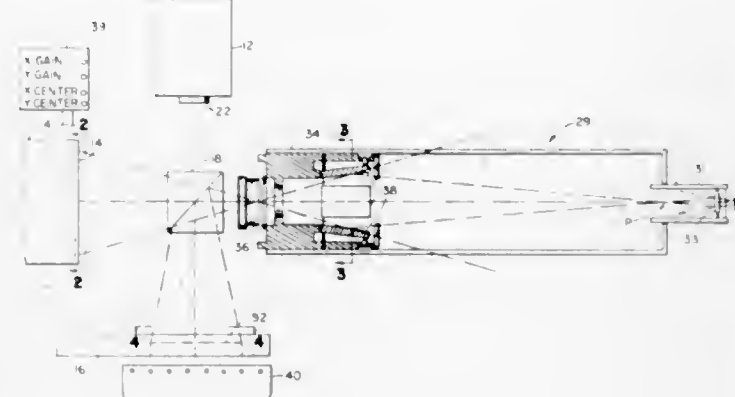
Int. Cl. G03i 17/24

U.S. Cl. 95—1.1

10 Claims

Alignment of multiple images for photographing, especially microfilming where one image is variable in centering and in width, and an assembled, magnified image of spaced indicia are view for judging the degree and nature of misalignment. A computer output microfilm device is shown employing a cathode ray tube display of alphanumeric characters superimposed on projected forms overlay or hard copy. Manipulation

of X, Y deflection and gain of the cathode ray tube is made simple by viewing a magnified, assembled image of spaced indicia carried by the cathode ray tube and the other display.



Preferably the rays of the indicia cross before reaching the eyepiece, matching the directions of viewed misalignment with the needed corrections.

3,688,655

## METHOD OF, AND APPARATUS FOR, WRITING MASK PATTERNS ON PHOTOGRAPHIC MATERIAL BY MEANS OF LIGHT

Frits Theodoor Klostermann; Andreas Petrus Theodorus Hermanus Jentjens, and Adrianus Gerardus Bouwer, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

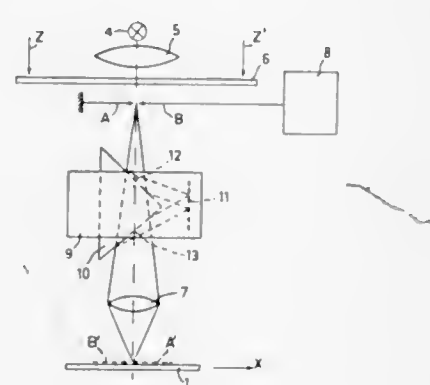
Filed Oct. 16, 1970, Ser. No. 81,276

Claims priority, application Netherlands, Oct. 18, 1969, 6915794

Int. Cl. G03b 29/00

U.S. Cl. 95—1 R

11 Claims



A method of, and an apparatus for, writing mask patterns on a photographic material by means of light are described in which a spot of light is formed from light from a source of light by means of an opening which in principle is rectangular, the said light spot being swept over the photographic material in paths which correspond to the mask patterns to be written.

It is shown that by separately controlling two boundaries which determine the length of the light spot in the direction of writing, for each infinitesimal element of a pattern element the time which elapses between the passage of the initial boundary of the light spot and the passage of the final boundary of the light spot over the infinitesimal element can be maintained constant.

3,688,656

## MICROFILM PRINTER

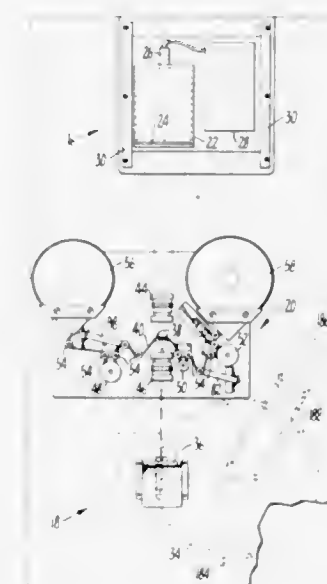
James E. Applequist; James E. Johnson; Clifford B. Akers; Donald V. Daniels; Richard N. James, all of San Jose; Daniel M. Roberts, Saratoga, and Daniel James Guzy, Menlo Park, all of Calif., assignors to Image Products Corporation, Santa Clara, Calif.

Filed Oct. 6, 1969, Ser. No. 864,036

Int. Cl. B41b 13/00

U.S. Cl. 95—4.5

5 Claims



A microfilm printer is disclosed for printing computer output data on microfilm. This film is advanced along a transport incrementally one line for each line of computer output data, and a line of data is imaged on one side of the film while the film is stopped between incremental advances. Periodically, generally much less often than the imaging of data lines, the image of a form is projected onto the film from the other side so that the film when finally developed displays the data entered in the form.

3,688,657

## AUTOMATIC EXPOSURE INDICATION APPARATUS FOR A CAMERA

Hiroshi Ueda, Nara, Japan, assignor to Minolta Camera Co., Ltd., Osaka-shi, Osaka-fu, Japan

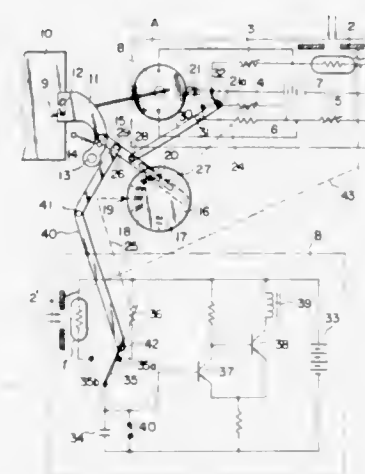
Filed Dec. 3, 1970, Ser. No. 94,886

Claims priority, application Japan, Dec. 8, 1969, 44/116917

Int. Cl. G03b 7/08, 9/62, 17/18

U.S. Cl. 95—10 CT

3 Claims



A shutter speed setting member is mechanically connected to an electrical timing circuit and an electrical control circuit wherein the movement of the setting member to either an automatic exposure controlling position or any one of a number of manual exposure setting positions actuates respective change-over switches in the timing control circuitry to adjust

the exposure and to provide an indication as to whether the exposure is proper so that the photograph will be unaffected by camera movement.

3,688,658

Patent Not Issued For This Number

3,688,659

## FLASH DEVICE WITH COMPENSATION FOR AMBIENT CONDITIONS SUCH AS TEMPERATURE

Yoshiyuki Takishima, and Yukio Mashimo, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

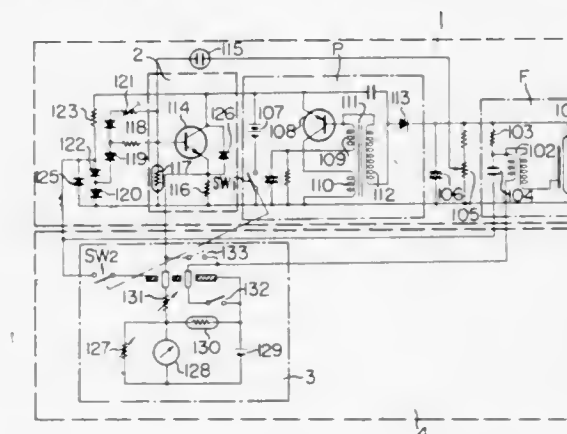
Filed Nov. 30, 1970, Ser. No. 93,595

Claims priority, application Japan, Dec. 1, 1969, 44/114200; Dec. 1, 1969, 44/114199; Oct. 2, 1970, 45/98496; Oct. 2, 1970, 45/98495

Int. Cl. G03b 15/05; H05b 41/00

U.S. Cl. 95—11 R

22 Claims



A flash device for a camera comprising a main capacitor charged by a power source, a flash circuit for illumination of a flash lamp and a detector circuit, said detector circuit being thermally compensated for thermal variation of the flash device.

3,688,660

## SAFETY OVERRIDE FOR FLASH LAMP INDEXING COMPONENTS OF AN EXPOSURE MECHANISM

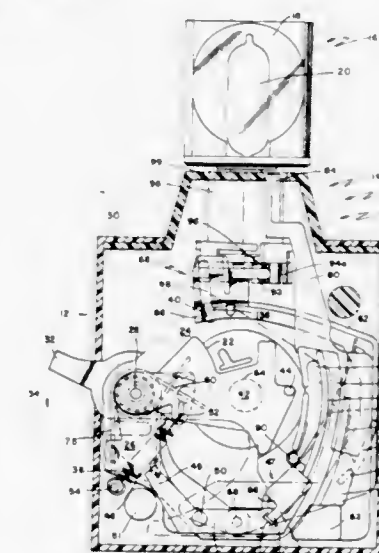
Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 8, 1970, Ser. No. 96,088

Int. Cl. G03b 15/03

U.S. Cl. 95—11 L

15 Claims



Photographic apparatus for use with a flash cube indexing mechanism incorporating safety override features. In an important embodiment, a flash cube indexing mechanism is



linked to the shutter of a camera. When the flash cube is improperly rotated in either direction from a source external to the camera, an override feature permits the improper rotation without damage to either the shutter or the indexing mechanism.

3,688,661

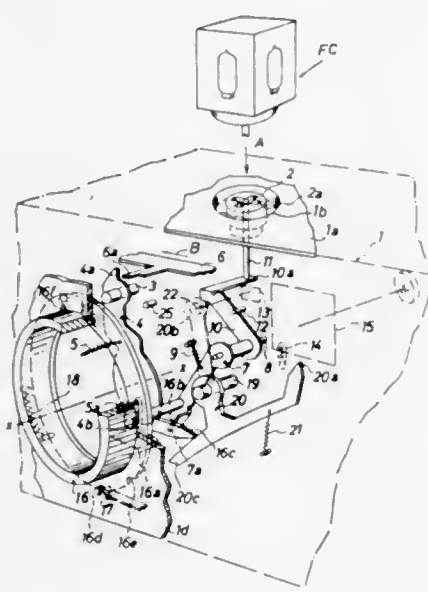
**PHOTOGRAPHIC APPARATUS WITH AUTOMATICALLY AND MANUALLY ADJUSTABLE SHUTTER MEANS**  
Dieter Engelsmann, Unterhaching; Hubert Hackenberg, and Helmut Prummer, both of Munich, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany  
Filed Feb. 18, 1971, Ser. No. 116,544

Claims priority, application Germany, March 19, 1970, G 70 10 066.2

Int. Cl. G03b 19/02

U.S. Cl. 95—11 R

9 Claims



to the optical axis of the lens is optimized for a particular camera-to-subject distance. Additional adjustment means are provided to enable the light source to be repositioned to any point on a circle of revolution defined about the optical axis of the camera lens.

3,688,663

**SHUTTER DEVICE**

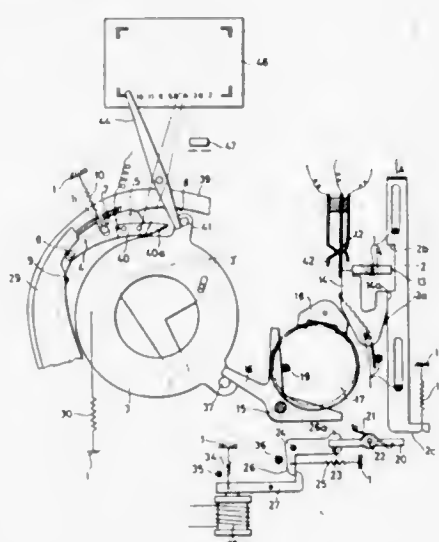
Takashi Uchiyama; Tadashi Ito, both of Yokohama, and Mutsuhide Matsuda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan  
Filed Nov. 30, 1970, Ser. No. 93,721

Claims priority, application Japan, Dec. 1, 1969, 44/96665; Dec. 12, 1969, 44/100218; Dec. 18, 1969, 44/120729; Dec. 27, 1969, 45/209

Int. Cl. G03b 15/03, 9/58

U.S. Cl. 95—11.5 R

12 Claims



A shutter device with a synchronizer contact which comprises a shifting member which shifts from its standard position with a constant shutter opening rate, and a blade for determining a blade opening in correspondence to the amount of the shifting movement; said synchronizer contact being closed by the shifting member at the time when the blade opening reaches a value determined for an appropriate artificial exposure.

3,688,662

**PHOTOFLASH MOUNTING ADAPTER FOR CLOSE-UP PHOTOGRAPHY**

Gerald H. Smith, 1433 A Ohio Ave., Fort Campbell, Ky.  
Filed March 12, 1971, Ser. No. 123,698

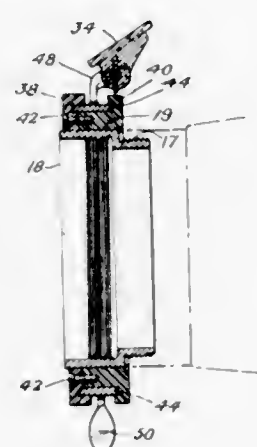
Int. Cl. G03b 19/02

U.S. Cl. 95—11 R

5 Claims

An adapter ring for mounting a light source on a camera lens tube for close-up photography. The adapter includes means to vary the angle defined by the optical axis of the camera lens and the light beam emanating from the light source, to enable a light beam of appropriate intensity to be

directed onto the subject to be photographed from a most favorable angle; alternatively, the adapter may be constructed such that the angle subtended by the light beam with respect



3,688,664

**FLASH DEVICE FOR A CAMERA**

Yukio Mashimo, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

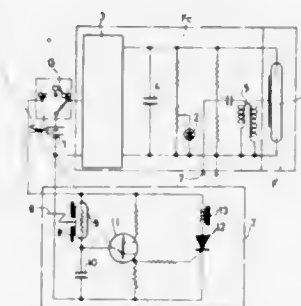
Filed Dec. 4, 1970, Ser. No. 95,290

Claims priority, application Japan, Dec. 10, 1969, 44/117914; Jan. 14, 1970, 45/4555; Feb. 18, 1970, 45/13951; Feb. 18, 1970, 45/13952; Feb. 20, 1970, 45/14628

Int. Cl. G03b 15/05; H05b 41/00

U.S. Cl. 95—11.5 R

22 Claims



A flash device for a camera comprising a flash circuit for illumination of a flash lamp, a detector circuit for detecting an output of the flash circuit, and an indicator means for indicating the state of the flash circuit under the control of the detector circuit to indicate operative condition of the camera.

3,688,665

**CAMERA IN GUN FORM**

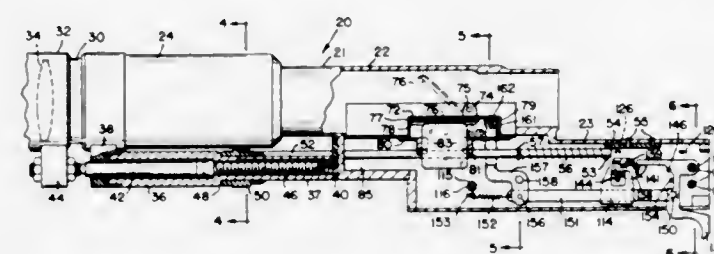
Robert B. Herden, 428 Woodland Lane, Webster, N.Y.

Filed Nov. 20, 1970, Ser. No. 91,304

Int. Cl. G03b 79/00

U.S. Cl. 95—12

18 Claims



An in-line telescopic objective and viewer with a laterally offset film holder and shutter are built as a gun camera. A trigger-operated mirror between the objective and field lenses of the viewer is pivotal between an inoperative position, where it caps the film aperture out of the line of sight in the viewer, and an operative position where it is inclined transversely across the line of sight to reflect light from the objective lens down onto a second, inclined mirror, which reflects this light laterally to the film aperture. A focal plane shutter, which reciprocates across this aperture is movable manually by a cocking bar to a cocked position, where it is releasably held by the trigger until the first-named mirror has been swung to its operative position. A beam splitter may be used in place of the pivotal mirror, in which case a reciprocable, trigger-operated capping plate is used to prevent film exposure during recocking.

3,688,666

**UNDERWATER RECONNAISSANCE SYSTEM**

Fordyce E. Tuttle, deceased, late of Palm Beach, Fla., and by Eleanor Porter Tuttle, executrix, 1017 N. Lake Way, Palm Beach, Fla.

Filed Feb. 20, 1970, Ser. No. 13,262

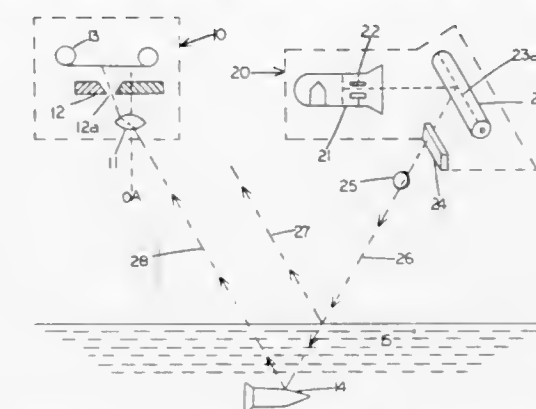
Int. Cl. G03b 29/00

U.S. Cl. 95—12.5

4 Claims

An underwater reconnaissance system having a high intensity scanning light source and an image motion compensated

camera, both mounted on a single mobile platform. The camera and the light source are so positioned with respect to each other optically on the platform and the body of water to



be photographed that the camera will receive very little specular light reflections from the water surface if photographed from the air and very little back scatter from underwater illumination if photographed from a submerged platform.

3,688,667

**FILM RETAINING APPARATUS**

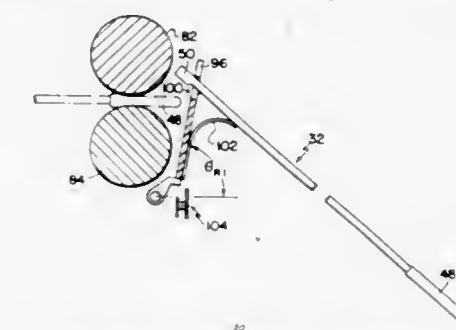
Richard Paglia, Carlisle, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 4, 1971, Ser. No. 103,391

Int. Cl. G03b 17/52

U.S. Cl. 95—13

13 Claims



A camera of the self-developing type including processing rollers for engaging and advancing a film unit along a film exit plane while distributing processing fluid contained therein over an image-forming area of the film unit. A film supporting member is mounted outboard of the rollers for engaging and releasably supporting the exposed film unit along lateral margins thereof as the film unit is advanced from the bite of the rollers.

3,688,668

**FILM TRANSPORT INDICATOR IN A CAMERA**

Wolfgang Ort, Stuttgart-Bad Cannstatt, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

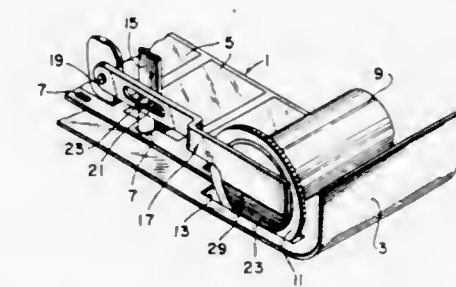
Filed Sept. 21, 1970, Ser. No. 73,829

Claims priority, application Germany, Nov. 21, 1969, G 69 45 137.2

Int. Cl. G03b 17/18

U.S. Cl. 95—31 FM

3 Claims



A film transport indicator in a camera includes a sensing finger (15) for engaging metering perforations (7) in a film-



strip. When the film is advanced by rotating wheel (11) to the next frame, the finger (15) engages a perforation (7) and pushes a tab (23) into view. This indicates to the camera user that the film has been properly advanced. Upon actuation of the shutter the finger and tab are withdrawn.

3,688,669

## CAMERA CONTROL SYSTEM

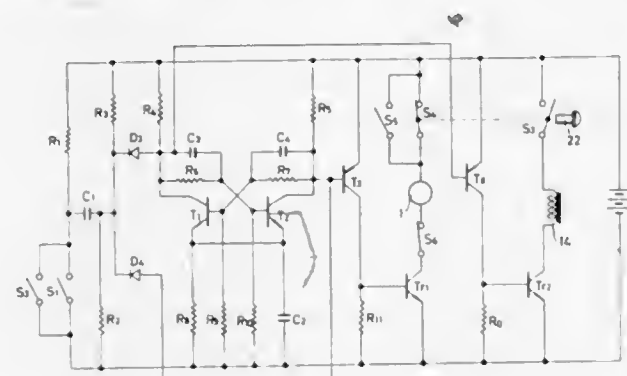
Mitsutoshi Ogiso, Kawasaki, and Hiroshi Aizawa, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1970, Ser. No. 91,927

Int. Cl. G03b 19/04

U.S. Cl. 95—31 AC

12 Claims



A film winding-up system which is characterized by a camera driving mechanism, which is so designed to give one electric signal respectively at the time the film wind-up is completed and at the time the shutter is released. A control circuit is alternatively held in a conductive state by said electric signals, and the system is so arranged that the activation of the shutter release controlling circuit is prepared at the time of completion of film winding-up and the activation of the film winding-up controlling circuit is prepared at the time of shutter release, respectively.

3,688,670

## LOCK DEVICE FOR SHUTTER BUTTON IN PHOTOGRAPHIC CAMERA

Naoyuki Uno, Oi-machi, Iruma-gun, and Fumio Urano, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

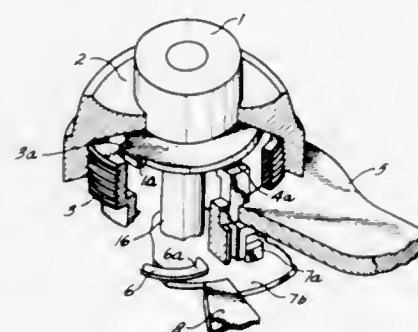
Filed July 9, 1971, Ser. No. 161,094

Claims priority, application Japan, July 16, 1970, 45/70545

Int. Cl. G03b 17/42, 19/04

U.S. Cl. 95—31 AC

5 Claims



A combined shutter button having a lock and a film transport assembly for a photographic camera. An axially movable shutter button and a rotatable member is mounted in coaxial relation to the button. A locking mechanism comprises first and second engaging members mounted, respectively, on the shutter button and rotatable member and have a first cooperating relationship wherein the first and second members engage and lock the shutter button against actual movement and a second cooperating relationship wherein the first and second members are out of engagement upon actuation of

the shutter button. A film transport mechanism comprises a film transport lever rotatable for actuation of the mechanism to thereby transport film in the camera. Means is provided for coupling the transport lever to the rotatable member for movement of the rotatable member in order to establish one or the other of the cooperating relationships upon rotation of the film transport lever.

3,688,671

## DOUBLE EXPOSURE MECHANISM FOR CAMERAS

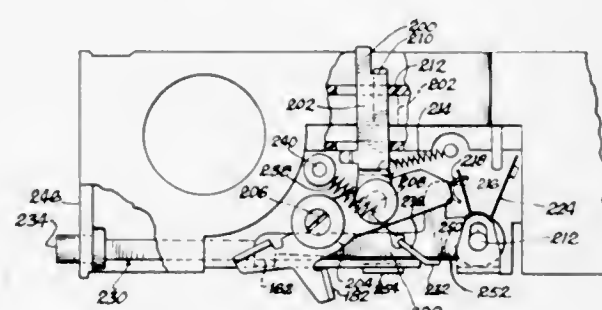
George Irwin, 1747 Elmwood Drive, Highland Park, Ill.

Filed Aug. 20, 1971, Ser. No. 173,474

Int. Cl. G03b 19/04

U.S. Cl. 95—31 FL

7 Claims



A camera construction including shutter means and holding means adapted to be moved into position for preventing operation of the shutter means each time the shutter moves thereby holding the shutter means against an additional operation until the film in the camera has been advanced to the next frame. The structure of the invention includes means for unlocking the holding means whereby a double exposure of a film frame can be accomplished. The unlocking means comprises a pressure applying arm having spring means normally urging the arm toward the holding means. The arm is retained out of engagement with the holding means until an actuating means positioned on the exterior of the camera housing is operated at which time the unlocking arm is driven against the holding means for displacing the holding means from a holding position with respect to the shutter means.

3,688,672

## KEYBOARD OPERATED PHOTOTYPESETTING DISPLAY MACHINE

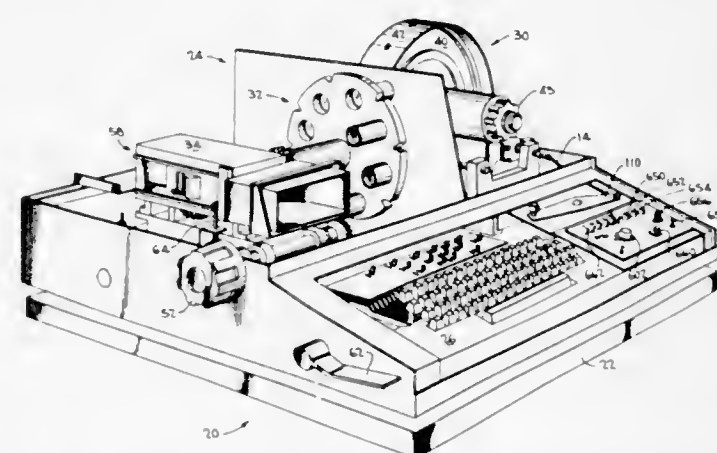
Ellis P. Hanson, Rockport, and George J. H. Sausele, Lynnfield, both of Mass., assignors to Compugraphic Corporation, Wilmington, Mass.

Filed March 25, 1970, Ser. No. 22,649

Int. Cl. B41b 15/08, 17/00

U.S. Cl. 95—4.5

5 Claims



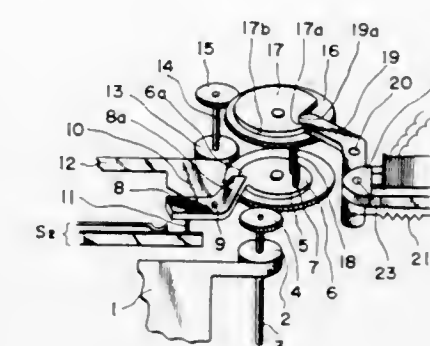
The keyboard operated phototypesetting display machine produces continuous photographic paper output copy in 15 to 72 point range sizes which is top-aligned for all point sizes. A continuous rotating drum supports a font strip containing two

rows of characters, timing slits, and coded data indicating the width of each of the characters. The selected characters are strobed to a magnifying lens and projected onto an image plane containing the photographic paper. The desired point sizes are obtained from individual lenses which are mounted on a rotatable lens turret which is located and locked to position a lens at a lens station by a point size selector knob.

The spacing of the projected images of the characters is determined by a photoconductive pick-up which senses the character width information on the font strip and also by coded signals from the keyboard. Computer and control circuitry automatically determines the correct spacing to energize a stepping motor to escape the photographic paper. Means are provided whereby the letterspace escapement may be automatically decreased in selectable increments for all point sizes.

The photographic paper is loaded at the image plane from a cassette and the output copy is received, in turn, into another cassette for easy removal from the machine. A cutter mechanism is provided to sever the paper after a "take."

energized. The locking lever is biased in a direction to contact the electromagnet and lock the rear screen. When the elec-



tromagnet is de-energized after a time period controlled by an electric circuit, the rear screen is driven against the bias of the locking lever.

3,688,673

## LIGHT RECEIVING MEANS IN AUTOMATIC FOCUSING DEVICE

Yoshihisa Katsuyama, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

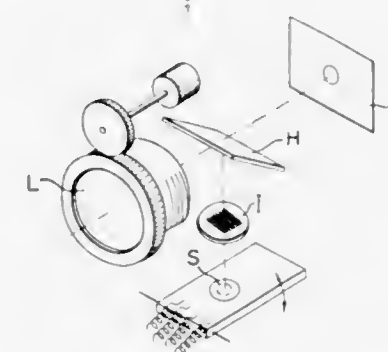
Filed Nov. 20, 1970, Ser. No. 91,454

Claims priority, application Japan, Nov. 27, 1969, 44/94623

Int. Cl. G03b 3/00

U.S. Cl. 95—44 R

4 Claims



A light receiving optical means in an automatic focusing device used in a camera includes an optical image multiplier member disposed in a light receiving path for dividing and deflecting a light beam from an object to be photographed, whereby plural images of the object are formed on a photoconductive element forming the light receiving portion of the device to thereby produce an electrical output which will ensure automatic focusing.

3,688,674

## ELECTRONIC SHUTTER DEVICE

Yoshio Kuramoto, Sakai-shi, and Toshio Kobori, Izumiotsu-shi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Minami-ku, Osaka, Japan

Filed Dec. 12, 1969, Ser. No. 884,569

Claims priority, application Japan, Dec. 25, 1968, 43/112562

Int. Cl. G03b 9/62

U.S. Cl. 95—53 E

4 Claims

A focal plane shutter includes a front screen and a rear screen, the latter being locked in a cocked position by an electromagnet through a locking lever while the electromagnet is

## SHUTTER MECHANISM IN A CAMERA

Keizo Yamashita, Junichi Yokozato, and Hideaki Yamamoto, all of Tokyo, Japan, assignors to Zenza Bronica Kogyo Kabushiki Kaisha, Tokyo, Japan

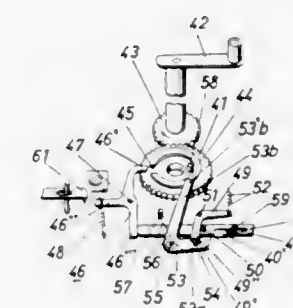
Filed Dec. 23, 1969, Ser. No. 887,664

Claims priority, application Japan, Dec. 28, 1968, 43/96097

Int. Cl. G03b 9/34

U.S. Cl. 95—57

5 Claims



A film winding and focal plane shutter cocking mechanism includes a safety gear that has an annular rib secured to one face. A cut out in the rib is engaged by an end of a lever which is moved by a sliding bar when the shutter actuating button is depressed. An interlocking mechanism which is operated by the safety gear prevents movement of the sliding bar again until the film winding and shutter cocking mechanism has been manually actuated to prevent double exposure.

3,688,676

## PHOTO RECORDING ASSEMBLY

John S. Cruickshank, "Rosemount," Kintillo Road, Bridge of Earn, Perth, Scotland

Filed June 22, 1970, Ser. No. 48,214

Claims priority, application Great Britain, June 20, 1969, 31,387/69

Int. Cl. G03b 17/56

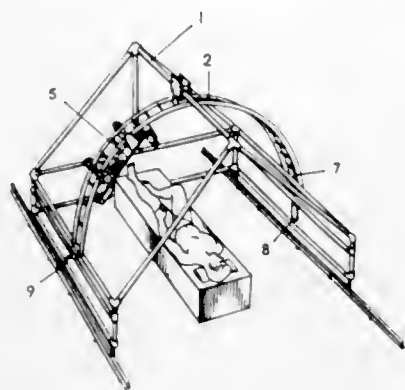
U.S. Cl. 95—86

8 Claims

The assembly makes series of photographs of an object so as to record outline changes thereof through a preselected angu-



lar and/or longitudinal distance. It has a structure including circular or partly circular guide means for guiding a trolley



carrying the camera and a light projector, so that photographs of the object, which is substantially in the center of the curvature, can be taken.

3,688,677

# APPARATUS FOR PROCESSING PHOTOGRAPHIC MATERIAL OR THE LIKE

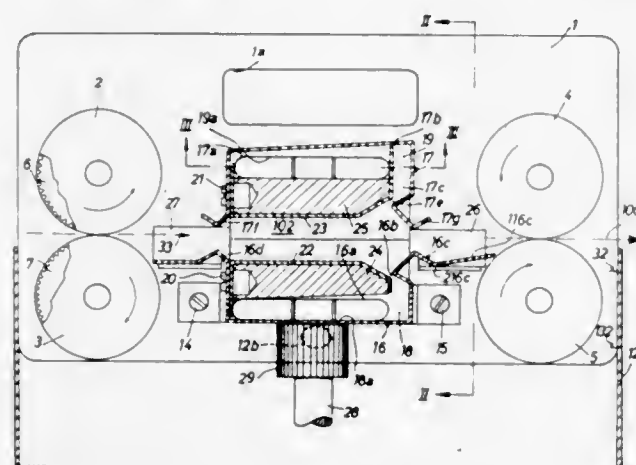
Hans-Dieter Frick; Erwin Geyken; Peter Dawidowitsch, and Helmut Schausberger, all of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany  
Filed Dec. 11, 1970, Ser. No. 97,272

Claims priority, application Germany, Dec. 12, 1969, P 19 62 422.7

Int. Cl. G03d 3/12

U.S. Cl. 95—94 R

12 Claims



Apparatus for wet treatment of photographic strips has two pairs of rollers which transport the strip in a channel between upper and lower liquid discharging chambers. The lower roller of each pair dips into a supply of processing liquid in a vessel wherein the upper surface of liquid is maintained at a constant level. A pump draws liquid from the vessel and feeds into the two chambers which are provided with orifices serving to direct streams of liquid against the upper side and the underside of the strip in the channel and counter to the direction of strip travel. The open ends of the channel are adjacent to the two pairs of rollers so that the liquid issuing from the channel flows along the lower rollers and back into the supply of liquid in the vessel with a minimum of turbulence.

3,688,678

# PHOTOGRAPHIC ROLL FILM PROCESSING APPARATUS

Merle L. Dalen, Rochester, Minn., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Jan. 4, 1971, Ser. No. 103,538

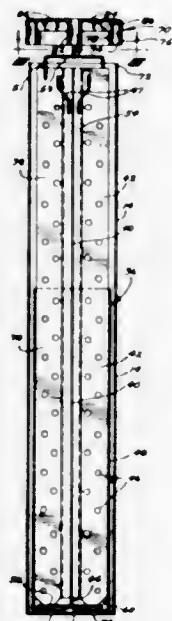
Int. Cl. G03d 13/08

U.S. Cl. 95—96

15 Claims

A series of deep tanks and a film carriage insertable therein, the carriage having a plurality of interconnected perforated

fins arranged partially within a sleeve to form a plurality of film compartments in which films are downwardly suspended during processing in the tank. A light-tight tank lid engages the carriage, and when rotated rotates the carriage, thereby agitating processing fluid in the tank. A duct extends downward between the fins of the carriage to receive a thermometer or water hose therein. An aperture in the tank lid



communicates with the duct, and a collar encircling the lid aperture on the inside of the lid slips into the duct to form a light-tight seal. A plate is affixed to the lower ends of the fins at a short distance from the lower open end of the duct, permitting water flowing down the duct and against the plate to spread upward into the film compartment without forcing the carriage from the tank.

3,688,679

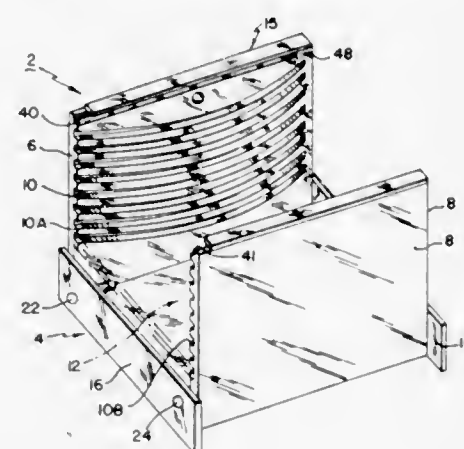
# PRINT HOLDER DEVICE

Wilbur E. Carlson, 17316 Fries Ave., Lakewood, Ohio  
Filed Aug. 20, 1970, Ser. No. 65,628

Int. Cl. G03d 3/00

U.S. Cl. 95—100

16 Claims



A print holder device for storage of film prints including a base and a pair of oppositely disposed walls projecting upwardly therefrom adapted for supporting one or more film prints thereon. Each of the walls is provided with one or more slots with the slots in one wall being aligned with and oppositely disposed with respect to the slots in the opposite wall. A support plate is provided which extends between the walls having its opposed edges disposed within the respective aligned slots being adapted to support a film print thereon to enable print coater to be applied thereto and dried thereon immediately after removing the print from a camera. The walls of the device are collapsible with one wall being adapted

to close upon the base and the other wall being adapted to close upon the first mentioned wall to form a compact unit for storage of the device.

3,688,680

# SPACED PARALLEL PANEL AIR DIFFUSER ASSEMBLY

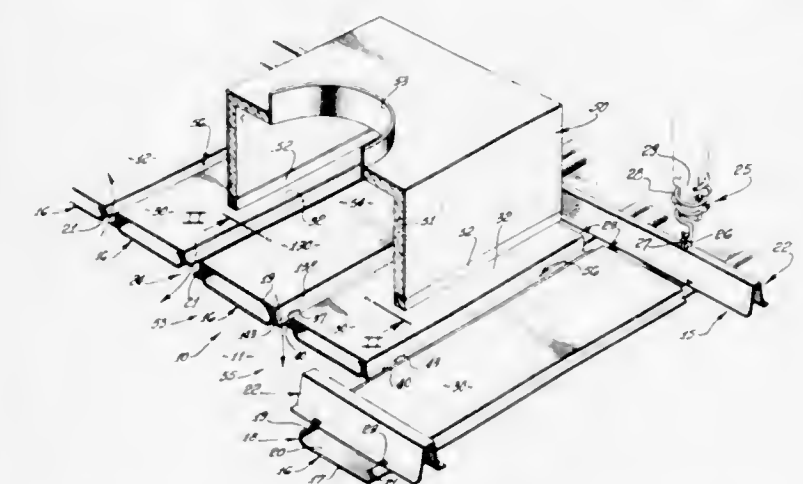
Robert R. Lambert, Glendora, Calif., assignor to Air Factors, Inc., Redlands, Calif.

Filed July 9, 1970, Ser. No. 53,449

Int. Cl. F24f 13/06

U.S. Cl. 98—40 D

14 Claims



An air diffuser assembly has a plurality of hat-shaped members which individually fit over individual parallel spaced panels of a suspended ceiling structure to locate upper and lower flange baffles of adjacent members in the spaces between the panels. The upper baffle or weir forms a throat between the free edge thereof and the vertical portion of the adjacent members to regulate the flow of air therethrough while the lower baffle acts as a vane to deflect the air flowing through the throat along the ceiling to be diffused throughout the room.

3,688,681

# VENTILATING APPARATUS

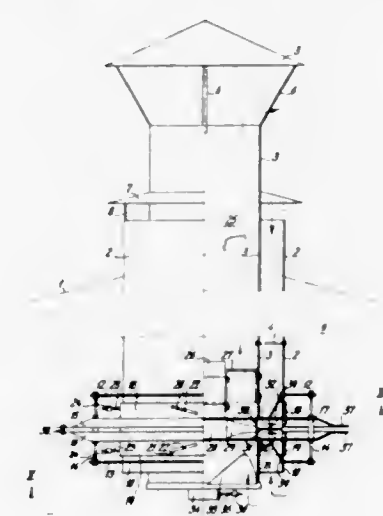
Christian Eduard Iversen, Odense, Denmark, assignor to Nordisk Ventilator Co. Aktieselskab, Naestved, Denmark  
Filed April 13, 1971, Ser. No. 133,570

Claims priority, application Denmark, April 13, 1970, 1843/70

Int. Cl. F23f 17/04

U.S. Cl. 98—62

6 Claims



A ventilating apparatus for mounting in a roof and comprising a central shaft for exhausting spent air from the ventilated room, a surrounding annular duct divided in an upper and a lower section by means of a transverse partition wall secured to the periphery of an exhaust blower wheel located in the central shaft. Separate blower vanes are secured to the upper

and lower face of the partition wall for delivering fresh air from the ambient and recirculated air from the room, respectively, to a mixing chamber surrounding the annular duct and opening into the room. Individually adjustable valve means are provided in the inlet openings from the upper and lower duct sections to the mixing chamber.

3,688,682

# MACHINE FOR FILLING LUNCHEON DOUGH INTO MOLD CANS

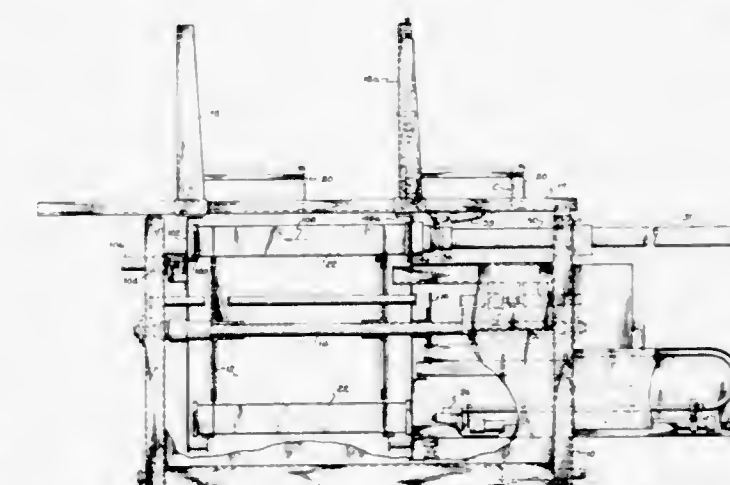
Paul F. Good, Lutherville, Md., assignor to Speedco, Inc., Baltimore, Md.

Filed May 25, 1970, Ser. No. 40,135

Int. Cl. A47j 27/00

U.S. Cl. 99—234 R

15 Claims



An apparatus for filling food products into molds by a stuffing horn that extends completely within a mold and feeds the food product into the mold as it is retracted. A close-fitting cover plate is then put on the mold while the stuffing horn holds the food product in the mold under pressure.

3,688,683

# SAFETY CONTROLS FOR DEEP FAT FRYERS

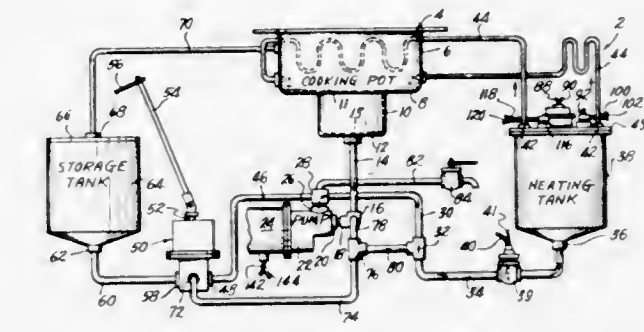
Weldon C. Boggs, 3031 Helen Ave. P.O. Box 10536, Tampa, Fla.

Filed May 28, 1970, Ser. No. 41,327

Int. Cl. A47j 37/12

U.S. Cl. 99—330

6 Claims



In a deep fat fryer having a tank for cooking oil containing an electrical heating grid, a safety thermostat switch mechanically connected with the grid by a metallic, thermal cut out clip. The clip is tightly clamped to the grid and to the housing of the thermostat switch to assure rapid heat transfer from the grid to the thermostat. The thermostat switch is connected in an electrical circuit to interrupt flow to the grid in the event that the cooking oil in the heating tank is overheated, or to quickly open the circuit to the grid in the event that no cooking oil, or insufficient cooking oil, is present in the heating tank. A further and primary safety feature consists in mounting a flow-responsive switch in a conduit leading to the heating



tank. This switch is connected in the circuit with the heating grid to cut off current in the absence of flow of cooking oil to the heating tank.

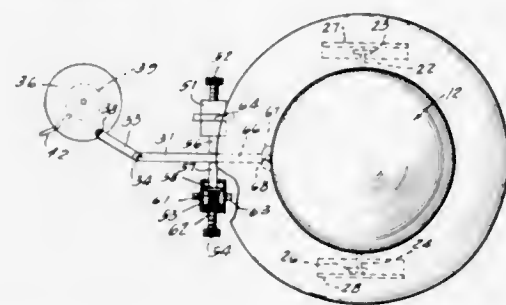
3,688,684

## OSCILLATING DEEP FRYER

Marcel M. Piedallu, 2221 Mary Jane Lane, Park Ridge, Ill.  
Filed May 24, 1971, Ser. No. 146,046  
Int. Cl. A47j 37/12

U.S. Cl. 99—409

6 Claims



An oscillating deep fryer for cooking items such as soufflé potatoes which has a deep frying container which is oscillated back and forth and also slightly up and down so as to properly cook items in the fryer. An adjusting mechanism is engageable with a linkage between the driving motor and the frying container to allow the motion of the container to be controlled. Spring-loaded plungers engage the linkage and the tension and position of the linkage may be adjusted to vary the throw and response.

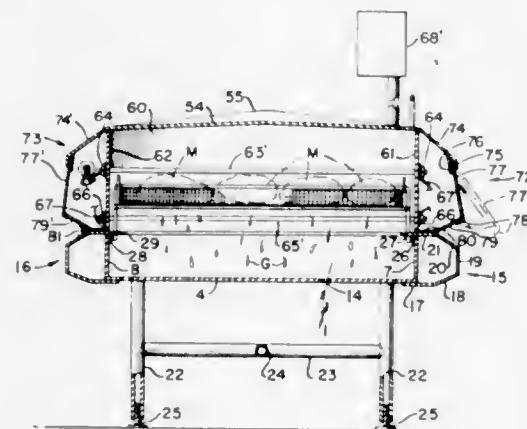
3,688,685

## ELECTRIC BROILER FOR SIMULTANEOUSLY BROILING A PLURALITY OF LARGE VIANDS

R. F. Wrench, Rte. 1, Godwin, N.C.  
Filed March 12, 1971, Ser. No. 123,656  
Int. Cl. A47j 27/12

U.S. Cl. 99—427

25 Claims

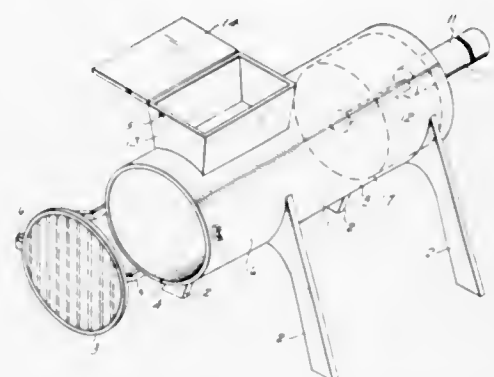


A broiler for simultaneously broiling a plurality of viands, comprising an upper, lid portion and a bottom portion movably jointed together so that the lid portion can be selectively positioned over and removed from the bottom, means carried by the bottom portion for supporting said viands thereon, and heating element means carried by the lid portion and extending above and below the viands supported by the bottom portion for cooking the viands, said heating elements being so arranged and so spaced with respect to the viands being cooked and the support thereof that drippings from the viands as they are cooked do not fall on the heating elements, thus eliminating the necessity of providing shield means on the heating elements.

3,688,686  
REFUSE COMPACTING APPARATUS  
David R. Ligh, P.O. Box 120, 193 Main St., Madison, N.J.  
Continuation-in-part of Ser. No. 884,178, Dec. 11, 1969, abandoned. This application March 13, 1970, Ser. No. 19,281  
Int. Cl. B30b 15/16

U.S. Cl. 100—52

8 Claims



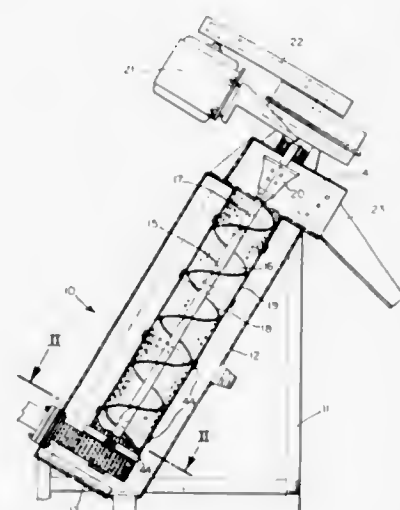
A housing is provided with an internal chamber adapted to accommodate refuse to be compacted. A plunger is mounted in the chamber and is movable from a rest position at one end of the chamber to an advanced position adjacent the other end of the chamber and in which position refuse in the chamber is compacted, and back to its retracted rest position. Operating means is provided for automatically cycling the displacement of the plunger from and to its retracted rest positions. Initiating means is associated with the operating means for initiating the operation of the same.

3,688,687  
PRESS

Sam N. Craig, Devon; Ellis R. Warner, Jr., West Chester, and Wayne T. Buckman, Pipersville, all of Pa., assignors to Wascon Systems, Inc., Hatboro, Pa.  
Filed Nov. 16, 1970, Ser. No. 89,853  
Int. Cl. B30b 9/18

U.S. Cl. 100—117

11 Claims



A press is provided, particularly adapted for the extraction of water from solids generally delivered to the press in slurry form. The slurry is delivered to the press at a lower end thereof, or in the alternative, to a pair of presses, at a lower end thereof, with the press being generally elongated, cylindrical and upstanding. A foraminous cylindrical screen is disposed within a shell, and with a delivery screw being mounted for rotation within the screen, such that the slurry is delivered through the lower end of the shell, to the screen, with flights on the screw being adapted, upon rotation of the screw, to lift the slurry upwardly, and with the screw being adapted at its upper end to promote a squeezing of the slurry carried thereby, for squeezing water therefrom, for passage

outwardly through the foraminous screen, and down through the shell, to discharge.  
Particularly novel screen retaining means, and slurry inlet means are herein provided.

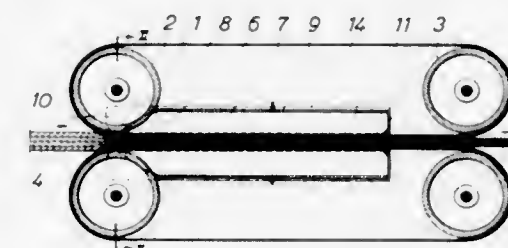
3,688,688

## CONTINUOUS ACTION BOARD PRESS

Into Isak Kerttula, Luotikatu 18 B, Helsinki 16, and Per Arno Jaatinen, Koivikkotie 12, Helsinki 63, both of Finland  
Filed April 28, 1971, Ser. No. 138,258  
Claims priority, application Finland, April 30, 1970, 1232  
Int. Cl. B30b 5/04

U.S. Cl. 100—154

4 Claims



The present invention concerns a continuous action board press in which the board material to be pressed is first subjected to pressure by a press roll and thereafter comes into a pressure chamber, in which a medium under pressure imposes a load upon the board material. According to the invention the pressure chamber extends up to the said press roll so that the press roll constitutes the front wall of the pressure chamber and that the surfaces defining the pressure chamber have been sealed against the press roll.

A board press is here understood to be a press which may be employed for pressing boards, such as plywood, chip, fiber and other boards, for laminating various kinds of boards, for providing any kinds of boards with a surfacing layer, etc. In all these instances the boards have to be subjected to pressure. The boards may be in the form of a long web or in the form of shorter pieces, which are consecutively fed into the press.

In order that the handling of the boards to be manufactured or processed might take place in a flexible manner, endeavors have been made to introduce, instead of presses operating according to the individual charge principle, continuous action presses. One such continuous action press, in which press belts and a pressure medium are used, has the drawback that the press roll and the initial end of the pressure chamber are spaced with reference to each other by a given distance. The board material to be pressed, which has been compressed by the press roll to its ultimate thickness or to a fraction thereof, tends as a result of its elasticity to return to its original thickness before it enters the pressure chamber. As a result, the board material compels the press belt to make a bend between the press roll and the initial end of the pressure chamber. The point of steepest bending is located at the front wall of the pressure chamber. This bend, or wave, has the effect that the press belt is rapidly worn out and has to be replaced.

3,688,689

## REFUSE COMPACTOR

Robert J. Flerle, East Aurora; James A. Mott, Buffalo; Herbert E. Oles, and George A. Reed, both of Williamsville, all of N.Y., assignors to American Precision Industries, Inc., Buffalo, N.Y.

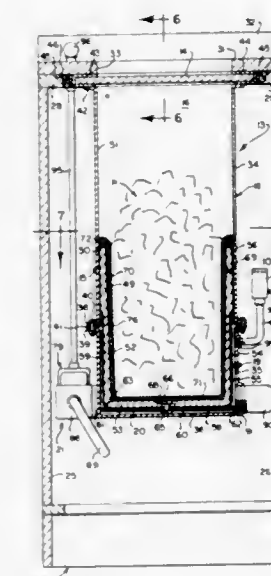
Filed Dec. 11, 1970, Ser. No. 97,138  
Int. Cl. B30b 15/32

U.S. Cl. 100—218

22 Claims

A refuse compactor preferably for use in a home and adapted to receive loose refuse such as empty cans, bottles and cartons, paper, garbage and the like, as it accumulates, can be operated to compact such refuse in order to reduce its volume. The compaction can occur cyclically in that the com-

pactor can be operated a number of times, being fed loose refuse repeatedly, until the collective compaction of the refuse has reduced its volume as desired to a fraction of its original volume. The compactor comprises two relatively movable members one of which is a receptacle which is moved by a pressurized fluid toward the other to compact the refuse interposed therebetween. Such operating fluid may be of any type, gas or liquid. Pressurized water is preferred because it is



generally available in urban and suburban regions as a domestic water supply. The operating fluid works against a flexible fluid impervious diaphragm arranged to thrust the receptacle member toward the other member, selectively operable valve means being provided to control the introduction and withdrawal of the fluid into a fluid operating chamber defined jointly by such diaphragm and a housing which surrounds the movable receptacle.

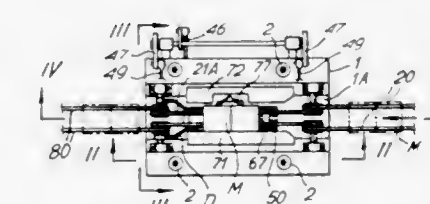
3,688,690

## HIGH PRODUCTION MACHINE FOR DECORATIVE PRINTING OF TILES OR THE LIKE

Guglielmo Gabbriellini, Viale Morgagni 11, Florence, Italy  
Filed April 9, 1971, Ser. No. 132,800  
Claims priority, application Italy, April 13, 1970, 9450 A/70  
Int. Cl. B41f 17/00

U.S. Cl. 101—35

10 Claims



A succession of tiles are fed on a conveyor towards a printing position in which a plurality of tiles are simultaneously decoratively printed. A first retractable stop arrests the first stop of the succession in the printing position and a second retractable tile engages the last of the tiles to be printed in a single operation and pushes these tiles together against the first stop. A lateral arm presses the tiles to be printed against a lateral guide and the tiles to be printed are lifted from the conveyor against a screen while a printing head presses the screen into contact with the tiles to effect the printing operation. The printed tiles are then conveyed away while the next tiles to be printed are fed to the printing position.



3,688,691

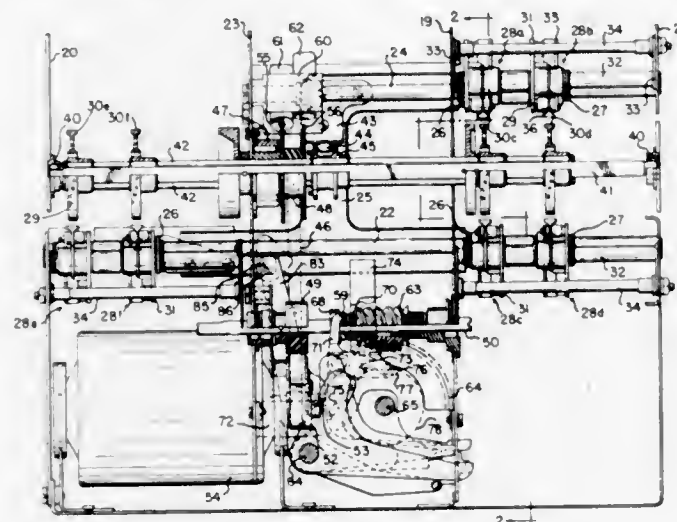
**MULTI-STATION HIGH-SPEED PRINTING MECHANISM**  
Forrest E. De Vol; George J. Eberhardt, and Louis E. Zurbuchen, all of Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Sept. 14, 1970, Ser. No. 71,936

Int. Cl. B41j 1/26

U.S. Cl. 101—93 C

5 Claims



A high-speed on-the-fly type of printing mechanism which includes three printing stations for producing three separate records of a transaction. A slidably-mounted carriage supports the printing hammer and drives the type wheels which constitute the three printing stations. The carriage is reciprocally driven by a cam-actuated drive mechanism which is motor-driven. The type wheels are mounted on a pair of rod members forming an assembly which is moved by the carriage during its reciprocal movement.

3,688,692

**INK DISTRIBUTING MEANS IN ENDLESS SCREEN PRINTING MACHINES**

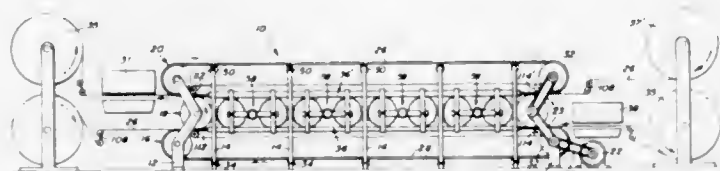
Michael Vasilantone, 147 E. 1st Ave., Roselle, N.J.

Filed May 14, 1970, Ser. No. 37,113

Int. Cl. B41m 13/08; B41f 10/26

U.S. Cl. 101—122

10 Claims



A continuous printer including a framework supporting an endless platen and means to move material onto the platen for movement therewith. Printing means comprising an endless stencil screen mounted on spaced rolls are disposed adjacent to one run of the platen for printing the material and includes ink distributing means. The ink distributing means includes a housing removably supported on the framework and defining a substantially enclosed ink cavity disposed about an applicator roller journaled in the housing. A table supports the run of the platen opposite the printing means and a friction band of a material of a lower surface friction coefficient than that of the material of the platen is disposed between the runs of the platen and has a run which extends between the platen and the table and is movable with the platen for reducing friction between the platen and the table. Toothed means are provided for movement with the platen and mesh with toothed means on the screen supporting rollers to drive the rollers and to insure continued registration between the stencil screen and the material to be printed.

3,688,693

Patent Not Issued For This Number

3,688,694

**DAMPENING DEVICE FOR A PRINTING PRESS**

Friedrich Preuss, Neu-Isenburg, and Hans Alix, Offenbach am Main, both of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG., Offenbach am Main, Germany

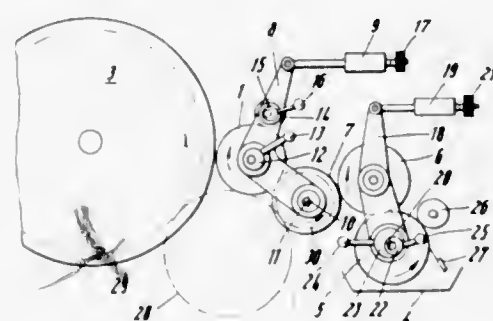
Filed July 29, 1970, Ser. No. 59,179

Claims priority, application Germany, Aug. 9, 1969, P 19 40 661.2; Oct. 15, 1969, P 19 51 976.7

Int. Cl. B41f 25/16; B41f 7/32

U.S. Cl. 101—148

13 Claims



A dampening device applies moisture to the plate cylinder of a printing press by means of a dampening roll in engagement with the cylinder. Dampening fluid is supplied to the dampening roll via a transfer chain including a transfer roll in engagement with the dampening roll and driven with the same circumferential speed as the plate cylinder, a moisture-transmitting intermediate roll in engagement with the transfer roll and a fountain roll in engagement with the intermediate roll and taking up dampening fluid from a fountain basin. The intermediate roll is positively driven with a circumferential speed different from that of the fountain roll which may be driven by the power drive of the press or an independent drive. Such speed differential between the two rolls reduces the extent of the slippage between the same and permits an accurate control of the slippage thereby improving the uniformity of the flow of dampening fluid to the dampening roll.

3,688,695

**METHOD OF OFFSET PRINTING OR DECORATING AN ARTICLE WITH THERMOPLASTIC COLOR**

David Richard James, Covertside, Hasfield, England, assignor to Murray Curvex Printing Limited, Gloucester, England

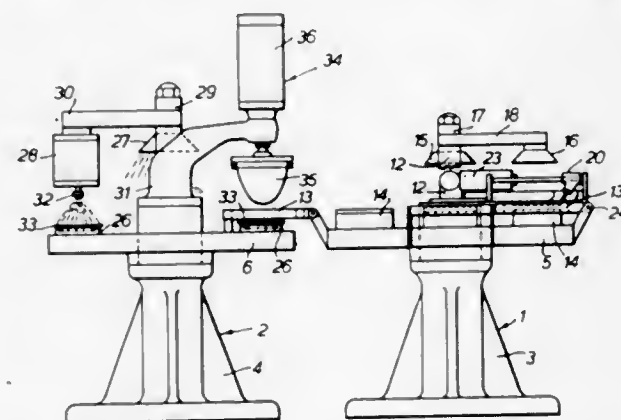
Filed Feb. 25, 1970, Ser. No. 13,887

Claims priority, application Great Britain, Feb. 25, 1969, 10,0015/69

Int. Cl. B41f 17/00; B41m 1/14

U.S. Cl. 101—211

5 Claims



Articles are printed or decorated with thermoplastic color by an offset process, by melting the thermoplastic color in a

screen, applying the melted thermoplastic color by the screen to a transfer member which is at a temperature below the melting temperature of the thermoplastic color, adhesively coating the surface of the article to be printed or decorated, and then transferring the color from the transfer member to the adhesively coated article surface.

3,688,696

**MOTORIZED DUCTOR ROLL**

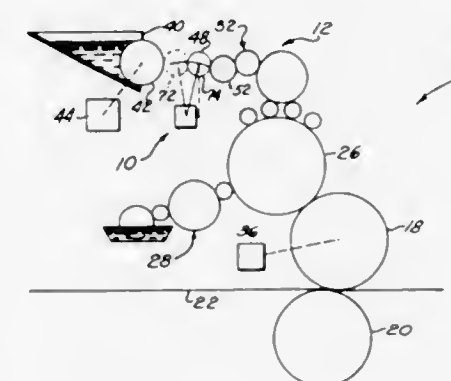
Ernest H. Treff, Mumford Cove, Groton, Conn., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed May 8, 1970, Ser. No. 35,741

Int. Cl. B41f 31/14

U.S. Cl. 101—350

23 Claims



An improved apparatus for accelerating the ductor roll of a printing press includes a motor which drives the ductor roll as the ductor roll moves between a fountain roll and an ink receiving roll. The ductor roll is pivotally mounted about the output shaft of the motor and is driven by the motor by drive means connecting the output shaft and the ductor roll. The drive means has a variable ratio such that the ductor roll may be driven at a rotational speed which may be varied with respect to the rotational speed of the motor. Sensing means is provided to sense a first position of the ductor roll and to actuate the motor so that the ductor roll is accelerated by the motor when moving between the fountain roll and the ink receiving roll. A speed sensor is provided to sense the rotational speed of the ductor roll and provides a signal to the motor to thereby control the rotational speed of the ductor roll.

3,688,697

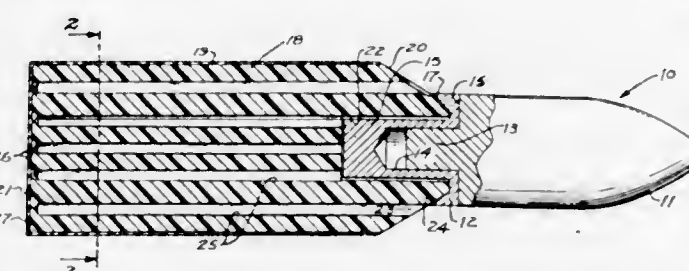
**SOLID GRAIN CASELESS AMMUNITION PROPELLANT**  
Ben E. Paul, Costa Mesa, and Ival L. Olmstead, Fountain Valley, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed July 31, 1969, Ser. No. 846,429

Int. Cl. F42b 5/18

U.S. Cl. 102—38

6 Claims



The specification discloses caseless ammunition and solid propellant grains thereof in which there are provided a plurality of separate perforations extending rearwardly from the front end of the grain and substantially parallel to its longitudinal axis, and terminating short of the rear end of the grain.

Ignition of the grain causes burning to develop through the perforations such that the projectile is propelled forwardly through the gun barrel leaving the grain in the chamber.

3,688,698

**AMMUNITION ROUND**

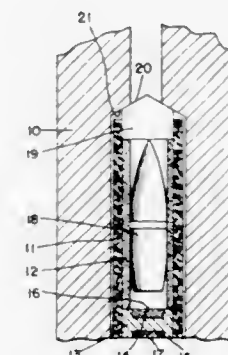
Joseph B. Quinlan, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Army

Filed Feb. 19, 1970, Ser. No. 12,658

Int. Cl. F42b 5/18

U.S. Cl. 102—38

3 Claims



A telescoped caseless cartridge of decreased length due to the projectile being contained within the caseless charge. The shorter round facilitates improved storage, reduction of packaging requirements and weapon size and weight, and easier extraction of unfired rounds from the weapon.

3,688,699

**SELF-RETAINING RELOAD CAPSULE FOR SHOTGUN SHELLS**

William B. Horn, Minneapolis; Edward E. Merritt, Anoka, and Delbert D. Schmidt, Coon Rapids, all of Minn., assignors to Federal Cartridge Corporation, Minneapolis, Minn.

Filed Jan. 12, 1970, Ser. No. 2,205

Int. Cl. F42b 7/06

U.S. Cl. 102—42 C

36 Claims



A reload capsule for shotgun shells which contains the essential interior elements of a shotgun shell and has retainer means inherent in its construction for retaining the fired capsule within the gun upon firing and for permitting ready replacement of the fired capsule with another loaded capsule.



3,688,700

## IGNITION DEVICE FOR ROCKET MOTORS

Arthur Hubert Trapp, Kidderminster, England, assignor to Imperial Metal Industries (Kynoch) Limited, Warwickshire, England

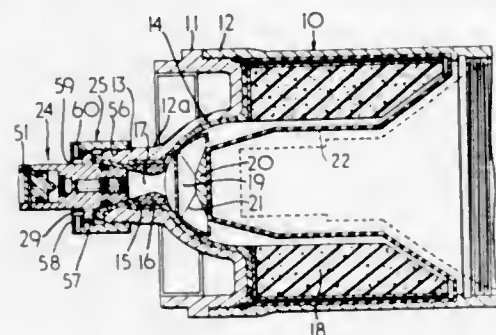
Filed Oct. 12, 1970, Ser. No. 79,770

Claims priority, application Great Britain, Oct. 28, 1969, 52,768/69

Int. Cl. F42c 19/08

U.S. Cl. 102—49.7

1 Claim



An ignition device for igniting a rocket motor comprising a striker adapted for displacement by pressure generated by the auxiliary charge, a percussion-operated priming device for impact by the striker, and an ignition charge for ignition by the priming device and for igniting the rocket motor.

3,688,701

## COMMAND FUZE

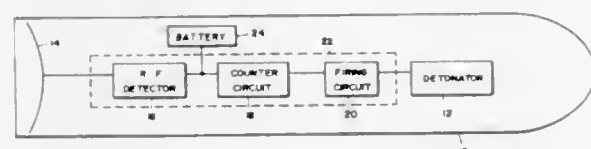
Neil C. Kern, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 2, 1970, Ser. No. 12,881

Int. Cl. F42c 13/04, 11/00, 15/40

U.S. Cl. 102—70.2 P

1 Claim



The shell includes RF detector circuitry, a pulse counter, and a firing circuit for a detonator which may be caused to explode during flight when it receives a predetermined number of radio pulses transmitted by ground command, or when, after receiving the predetermined number of pulses, the shell also receives a radio fire pulse by ground command. The fire pulse may be sent out by differential ranging system which continuously checks the distance to the shell and to the target and sends out the fire pulse when the distance is reduced to the predetermined one.

3,688,702

DETONATOR DEVICE FOR EXPLOSIVE CHARGE  
EXHIBITING DETONATING EFFECT CAPABLE OF  
BRIDGING GAP BETWEEN SPACED CHARGES

Josef Prior, Troisdorf, and Aloys Florin, Spich, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Aug. 12, 1969, Ser. No. 849,462

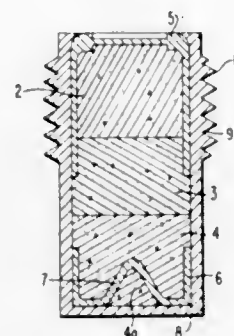
Int. Cl. F42c 19/08

U.S. Cl. 102—70

10 Claims

A detonator for explosive charges, exhibiting a detonating effect which bridges a spacing between a primer charge and a relay or propagation charge, for example, for hollow charge primer chains, including a primer charge disposed within a

case closed off at one end by a bottom member and a metallic insert disposed within the case, which insert has a configura-



tion of a hollow cylinder with a bottom recessed in a conical manner, the base of the cone thus formed facing the bottom member of the case.

3,688,703

TILT CONTROL SYSTEM RESPONSIVE TO THE  
CURVILINEAR TRAVEL OF A VEHICLE

Hans Pollinger, Munich, Germany, assignor to Knorr-Bremse GmbH, Moosacher Strasse, Germany

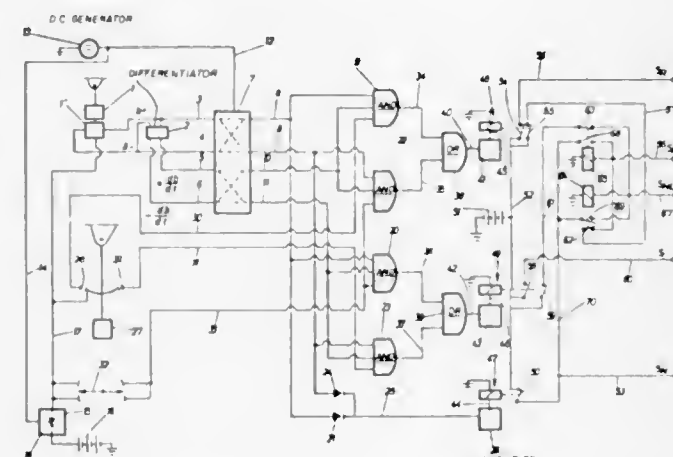
Filed Jan. 26, 1971, Ser. No. 109,896

Claims priority, application Germany, Jan. 26, 1970, P 20 03 334.5

Int. Cl. B60g 21/06

U.S. Cl. 105—453

3 Claims



A system is disclosed for controlling the air cushion suspension system of a railway vehicle so that the vehicle is tilted in the proper direction in response to following a curvilinear path. Control signals are generated in response to the magnitude and direction of deflection of a suspended mass which senses the centrifugal forces and accelerations acting transversely upon the vehicle. These control signals are differentiated and in response to both control signals and differentials thereof the direction actuating signals are generated from two pair of AND circuits connected to two OR circuits with the direction actuating signals controlling the air cushion suspension to tilt the vehicle in the proper direction when travelling a curvilinear path.

3,688,704

CURVE RESPONSIVE TILT CONTROL DEVICE

Alfred Strohmer, and Joachim Rau, both of Munich, Germany, assignors to Knorr-Bremse GmbH, Germany

Filed Jan. 26, 1971, Ser. No. 109,897

Claims priority, application Germany, Jan. 26, 1970, P 20 03 385.6

Int. Cl. B60g 21/06

U.S. Cl. 105—453

4 Claims

Control signals are generated from a gyroscope in response to the curvilinear movement of the vehicle corresponding to

3,688,706

COMBINATION BREADBOARD AND IRONING BOARD

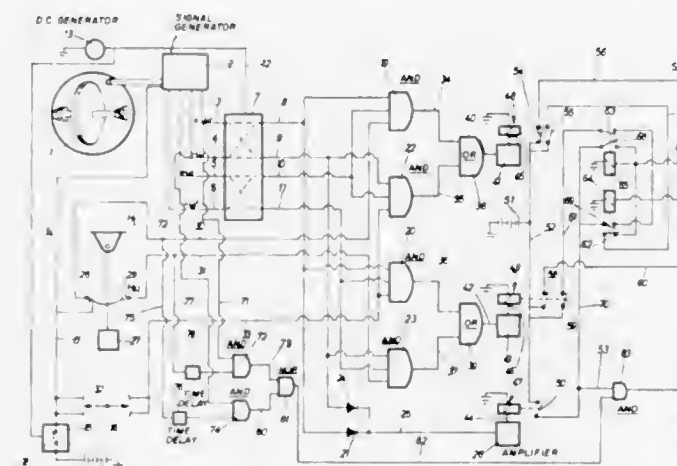
Gerald Merryweather, 3120 Crescent Rim Drive, Boise, Idaho

Filed Oct. 27, 1970, Ser. No. 84,326

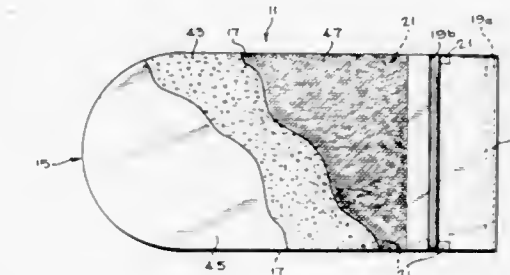
Int. Cl. A47b 5/00

U.S. Cl. 108—152

9 Claims



block the operation of the level control of the vehicle. A pendulum generates deflection signals corresponding to the direction of deflection and these deflection signals together with angular velocity signals are fed into a switching device which blocks the release of the level control blocking signals upon receiving simultaneously pendulum deflection and angular velocity signals corresponding to the same direction of curvilinear movement.



A solid, rigid board is dimensioned to mount in the breadboard slot of a kitchen cabinet and to be stored therein. It has one surface plain and the opposing surface permanently covered by a resilient pad topped by a tight cover. The plain side is for use as a breadboard, and the opposing side is for use as an ironing board. Simple attached hardware modifications adapt the board for use as a portable ironing board for mounting on other cabinet arrangements.

3,688,707

TABLE WITH TOP COMPOSED OF REMOVABLE  
PANELS

Maurice D. White, 90 Jordan Place, Palo Alto, Calif.

Filed Oct. 12, 1970, Ser. No. 79,721

Int. Cl. A47b 3/06

U.S. Cl. 108—159

12 Claims

3,688,705

CONVERTIBLE TABLE

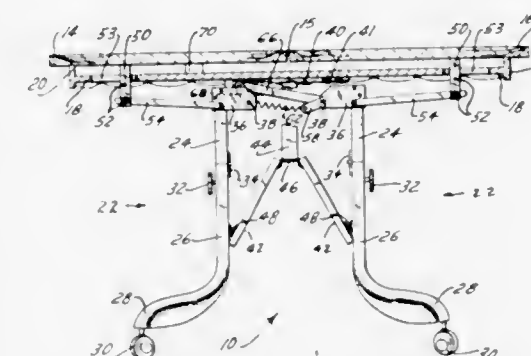
Andrew A. Barabas, Danbury, Conn., assignor to Castro Convertible Corporation, Long Island, N.Y.

Filed Nov. 10, 1970, Ser. No. 88,316

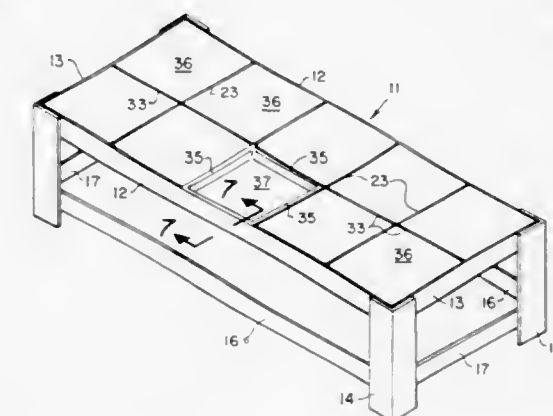
Int. Cl. A47b 85/00

U.S. Cl. 108—17

1 Claim



The table has a top which can be enlarged, and a leg structure by means of which the table can be raised and lowered, and the legs can be spread apart or brought closer together. The leg structure includes a pair of pedestals which can be folded in order to spread the pedestals apart, shorten the leg structure, and lower the table top. The table has two halves which can be folded onto one another and fitted into a tray. Thus, a low coffee table with a relatively small top is formed. When the pedestals are unfolded, a plurality of projections pushes the folded table top out of the tray where it can be unfolded and rotated and locked in position. In the latter condition, the table has a larger top with ample height to enable people to fit their chairs under the table edges and sit at the table for dining. The legs are closer together than when the table was in the coffee table form, so that the diners have ample leg-room while sitting at the table.



A table, such as a coffee table, has a top consisting of a plurality of panels of standard dimensions which are supported by a frame. The frame is formed of horizontal flanges projecting inward from the sides and ends of the top and intermediate members, preferably T-shaped in cross-section, which are supported by the ends or sides. The edge flanges and intermediates are so fabricated that the individual panels, which are preferably flat-topped, thin squares, are supported with their top surfaces level. Some of the panels may be replaced with shallow dish-like members, which are likewise square and are supported at their edges in the same manner as the flat panels. These may be used as planters or may hold art objects, in which case they may be provided with transparent covers. The same technique may be used to provide a shelf below the top. The square pattern may be interrupted by making some of the panels of fractional width, disposed in regular or random patterns.

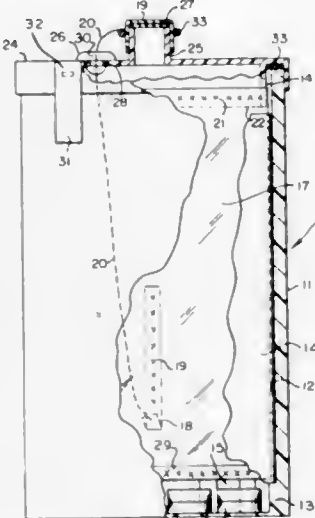


### 3,688,708 TRANSPORTER CASE

Carl H. Meyerhoefer, Huntington, N.Y., assignor to General Signal Corporation, Rochester, N.Y.  
Filed May 10, 1971, Ser. No. 141,864  
Int. Cl. E05g 3/00

U.S. Cl. 109-29

10 Claims



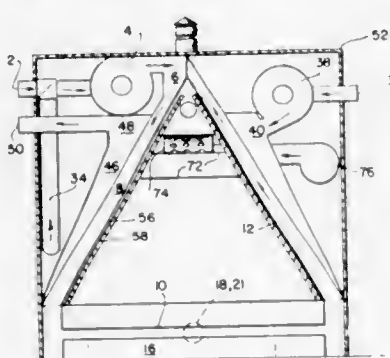
A security device has been provided for carrying papers of a confidential nature. There is a housing closed at one end for holding water soluble papers and a pouch for holding water therein. The water pouch fits into the housing and includes a tab member for tearing the pouch and releasing the water when pulled. Agitating means is provided comprising effervescent tablets for creating a turbulence in the water when the pouch is torn whereby the papers are destroyed a relatively short time after the tab is pulled.

### 3,688,709 HOLLOW GRATE INCINERATOR

Raymond A. Sheffield, Milton, Mass., assignor to Anti-Pollution Incinerators, Cambridge, Mass.  
Filed Nov. 3, 1970, Ser. No. 86,414  
Int. Cl. F23g 5/00

U.S. Cl. 110-8 R

9 Claims



A furnace structure incorporating a hollow grate wherein incoming combustion air is circulated around the combustion chamber and through the hollow grate.

### 3,688,710 CONTROL SYSTEM FOR A SEWING MACHINE

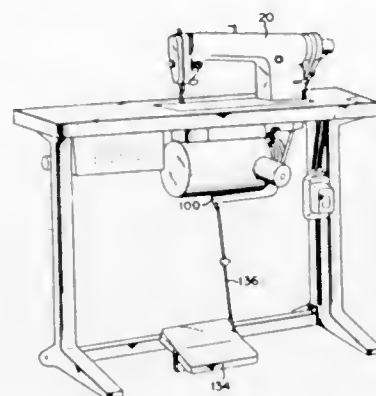
Tsutomu Makihara, Kariya, and Satoshi Yoneji, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya-shi, Japan  
Filed Sept. 1, 1970, Ser. No. 68,658  
Int. Cl. D05b 69/22

U.S. Cl. 112-219 A

4 Claims

A system comprising a sewing machine, a clutch-brake motor for driving said sewing machine at high speed, a foot treadle, and an electric circuit for controlling the machine

operation. The machine is operated by the circuit in such a manner that non-ravel seam is applied at the start and end of sewing at high speed when the foot treadle is operated and



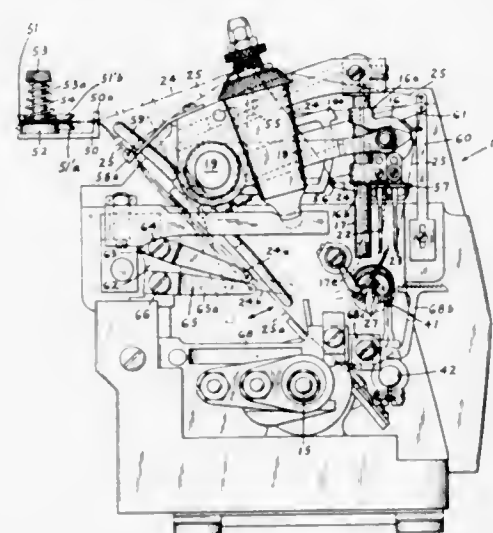
that no non-ravel seam is made when the machine needle is stopped in its lower position and then started from this position for the next continuous stitching.

3,688,711  
MACHINES STITCH FORMING AND THREAD CONTROLLING MECHANISMS FOR SEWING  
Henryk Szostak, Oak Park, and Clarence C. Smith, Chicago, both of Ill., assignors to Union Special Machine Company, Chicago, Ill.

Filed May 7, 1970, Ser. No. 35,450  
Int. Cl. D05b 1/20

U.S. Cl. 112-162

15 Claims



The machine embodying the mechanism is of low silhouette frame construction so that it reduces the weight of the machine and the space required for its use. The means for operating the needle carrier is an oscillating arm which serves to shift the needle carrier back and forth along a straight line. One end of said arm is positioned in a slideway in said needle carrier so as to be free for both rotational and translational movement relative thereto. Provision has been made for adequate lubrication of the relatively sliding surfaces, to minimize the development of high temperatures in the course of high speed sewing operations.

3,688,712  
WALKING PRESSER DEVICES FOR SEWING MACHINES  
William J. Edwards, Freehold, N.J., assignor to The Singer Company, New York, N.Y.

Filed April 14, 1971, Ser. No. 133,925  
Int. Cl. D05b 27/04

U.S. Cl. 112-212

4 Claims

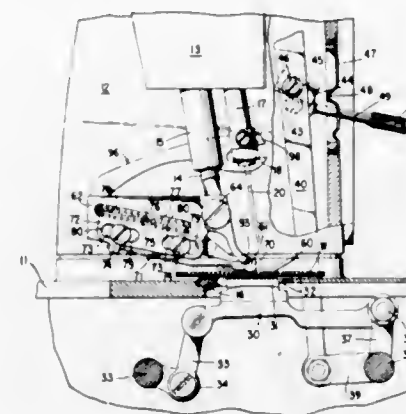
A presser device for a sewing machine which harnesses the needle reciprocatory movement alternately to shift into and

3,688,714  
CONTROL SYSTEM FOR A SEWING MACHINE  
Tsutomu Makihara, Kariya, and Satoshi Yoneji, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya-shi, Japan

Filed Aug. 12, 1970, Ser. No. 63,249  
Claims priority, application Japan, Aug. 12, 1969, 44/63976  
Int. Cl. D05b 69/22, 27/00

U.S. Cl. 112-219 A

11 Claims



feeding foot can move with the sewing machine work feeding instrumentalities in either the forward or reverse directions of stitching and will be returned to the intermediate position between successive stitches.

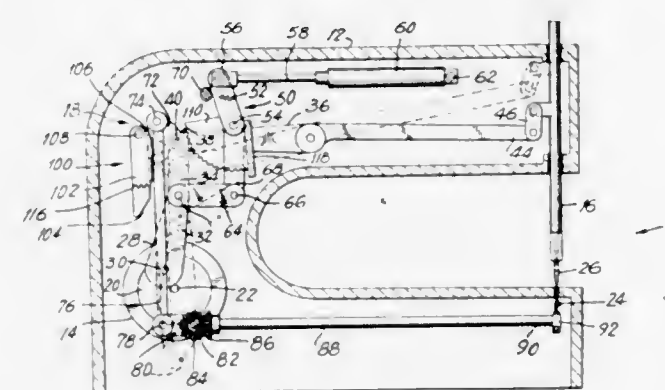
3,688,713  
RECIPROCATING MOTION CONTROL DEVICE  
Leighton R. McKeen, El Paso, Tex., assignor to Farah Manufacturing Company, Inc., El Paso, Tex.

Filed March 29, 1971, Ser. No. 128,831

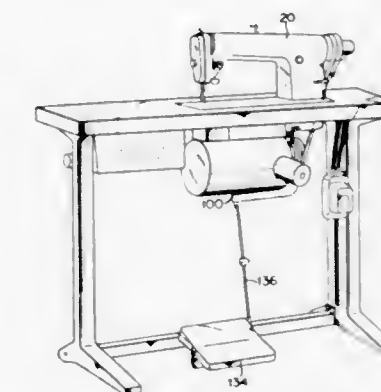
Int. Cl. D05b 69/22, 55/14

U.S. Cl. 112-219 R

8 Claims



A sewing machine having a rotary drive mechanism and a needle bar mounted for reciprocation between upper and lower positions with respect to a looper includes a transmission system operably connected between the rotary drive means and the needle bar to convert the rotary motion of the drive means to reciprocating motion of the needle bar. The transmission system includes a lever pivotally mounted intermediate its ends and pivotally connected at one end to the needle bar, a crank pivotally connected at one end to the rotary drive means, and a pitman pivotally connected between the crank and the other end of the lever to convert the rotary motion of the drive means and crank to reciprocating motion for oscillating the lever and reciprocating the needle bar. The crank is operatively connected to the looper for synchronously driving the looper with the needle bar. The transmission system also includes means for selectively maintaining the line of thrust of the pitman in a first position substantially perpendicular to the lever to transmit motion thereto from the drive means for reciprocating the needle bar and in a second position substantially in alignment with the lever whereby the pitman idles under the influence of the drive means without transmitting motion to the lever or the needle bar.



A system comprises a sewing machine, a clutch-brake motor for driving said sewing machine at high speed, a foot treadle, and an electric circuit for controlling the machine operation. The machine is operated by the circuit in such a manner that non-raveling seam is applied at the end of lock stitch seam at high speed when the foot treadle is operated.

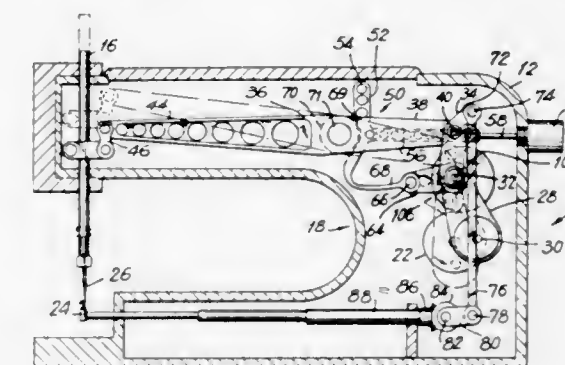
3,688,715  
RECIPROCATING MOTION CONTROL DEVICE  
Leighton R. McKeen, El Paso, Tex., assignor to Farah Manufacturing Company, Inc., El Paso, Tex.

Continuation-in-part of Ser. No. 128,831, March 29, 1971.  
This application June 29, 1971, Ser. No. 157,842

Int. Cl. D05b 69/22, 55/14

U.S. Cl. 112-219 R

6 Claims



A sewing machine having a rotary drive mechanism and a needle bar mounted for reciprocation between upper and lower positions with respect to a looper includes a transmission system operably connected between the rotary drive means and the needle bar to convert the rotary motion of the drive means to reciprocating motion of the needle bar. The transmission system includes a lever pivotally mounted in the machine and pivotally connected adjacent one end to the needle bar, a crank pivotally connected at one end to the rotary drive means, and a pitman pivotally connected between the crank and the lever to convert the rotary motion of the drive means and crank to reciprocating motion for oscillating the lever and reciprocating the needle bar. The crank is operatively connected to the looper for synchronously driving the looper with the needle bar. The transmission system also includes means for selectively maintaining the line of thrust of the pitman in a first position substantially perpendicular to the lever to transmit motion thereto from the drive means for reciprocating the needle bar and in a second position substantially in alignment with the lever whereby the pitman idles



under the influence of the drive means without transmitting motion to the lever or the needle bar. A gating mechanism prevents changing the line of thrust of the pitman until the needle bar is in its raised position.

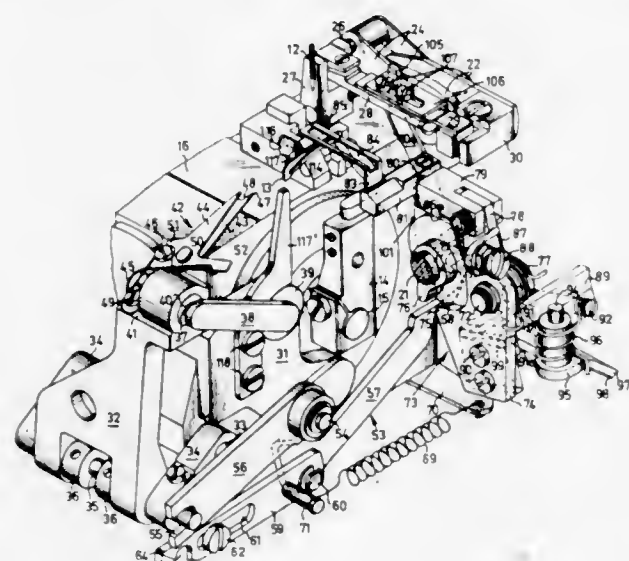
3,688,716

# RETAINING MEANS FOR INITIAL THREAD ENDS AND THREAD CUTTING DEVICE FOR DOUBLE CHAINSTITCH SEWING MACHINES

Alfred Heimann, Senne; Horst Thiele, Ubbedissee, and Horst Meyer, Schotmar, all of Germany, assignors to Kochs Adleringmaschinen Werke AG, Bielefeld, Germany  
Filed March 19, 1971, Ser. No. 125,960  
Int. Cl. D05b 65/02

U.S. Cl. 112—252

9 Claims



Simplified means for chainstitch sewing machines for retaining a relatively short initial thread end depending from the eye of the looper, and clamping means for the initial thread end of the needle thread for assuring that, after beginning of sewing, this initial thread end is positively at the bottom surface of the workpiece and has a short length.

A thread cutting device provided with said means, in connection with a double chainstitch sewing machine having a thread carrying looper which is moved along a substantially elliptical path encircling the needle and causes a cutting off of the needle thread and the looper thread below the workpiece after it is formed. When the sewing is resumed the initial thread ends are controlled in such a manner, that these also remain positively at the bottom surface of the workpiece, while in both cases the thread ends protruding from the workpiece, have a relatively short length.

Substantially, the simplified means for retaining the initial thread end consists of a small brush which cooperates with the thread carrying looper and with a thread-guarding groove located in the rear face of the looper blade in certain positions of the looper.

3,688,717

# DIAL FEED DIE ARRANGEMENT FOR FORMING COMPRESSION FITTINGS

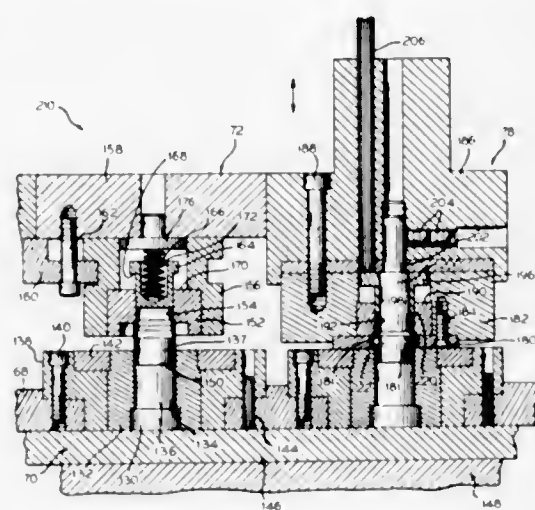
Nathan H. Rudolph, 830 W. Division St., Aurora, and Ronald G. Boyd, 405 Lakelawn Blvd., Galva, both of Ill.  
Division of Ser. No. 781,188, Dec. 4, 1968, Pat. No. 3,616,522.  
This application Sept. 14, 1970, Ser. No. 72,231  
Int. Cl. B21d 19/08

U.S. Cl. 113—1 G

2 Claims

The disclosure pertains to a compression fitting for connecting conduit to outlet boxes and the like in which the body member is made by a series of press forming operations on a tubular blank to define a central upset portion having a hex configuration, and roll formed threaded end portions of different external diameters in which the diameter of the tubular

blank is equivalent to the pitch diameter of the large end of the completed body member, and an indentation is rolled into the blank adjacent its smaller end to define the maximum throat size of the fitting and a stop for the conduit when received in the body member larger end. In making the body member, the blank is made from mild steel tubing fed through a cut off machine in which the indentation is rolled into the tubing and the blank is formed by severing same from the tubing to include the indentation located adjacent one end of



same, the ends of the blank are deburred, the said one end of the blank is necked down to approximately the indentation, the blank is upset intermediate its ends to define the hex configuration, and then the threads are rolled into the blank ends, after which the body member is suitably coated. The reduced end of the body member receives a conventional box engaging lock nut while the larger body member end is equipped with a clamp nut and cooperating gland for fixing the conduit to the fitting. Also disclosed is a special die arrangement for necking down and upsetting the fitting body member.

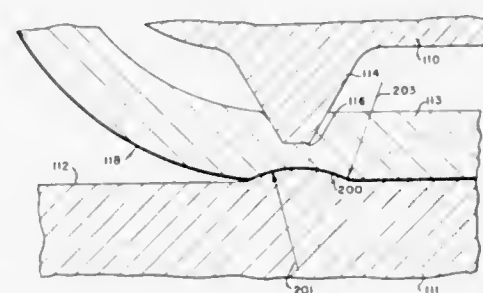
3,688,718

# METHOD AND APPARATUS FOR SCORING METAL CONTAINER ENDS

Howard D. Schrecker, Hyde Park, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.  
Filed Oct. 23, 1969, Ser. No. 868,778  
Int. Cl. B21d 51/26

U.S. Cl. 113—15 A

7 Claims



A method and apparatus for scoring a metal container end to provide a tear-out panel, wherein the scoring is accomplished with a greatly reduced tendency for any internal protective coating on said end to be damaged and for the residual metal in the score line to fracture. During the scoring operation the container end is supported on an anvil die having an arcuately domed rib thereon which, in cooperation with the advance of the scoring indenter, works the metal in the lower portion of the metal sheet and distributes the working stresses normally produced in the metal during the scoring operation.

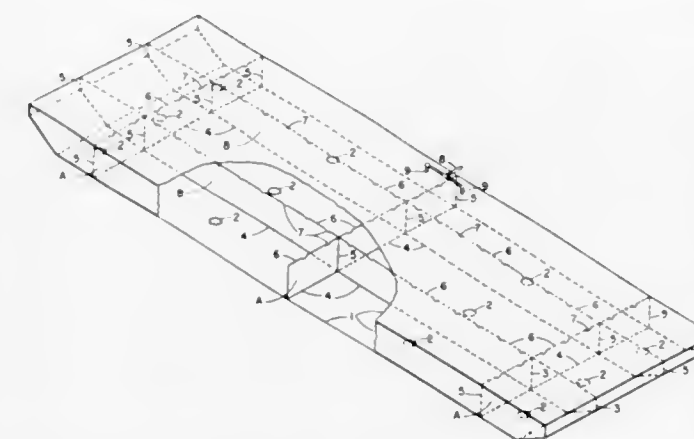
3,688,719

# LIFT PONTOON AND DOCK

Arsham Amirikian, 6526 Western Ave., Chevy Chase, Md.  
Filed Feb. 11, 1970, Ser. No. 10,436  
Int. Cl. B63b 35/42; B63c 1/06

U.S. Cl. 114—0.5 F

1 Claim



Pontoon structures, particularly a low-cost watercraft defining a plurality of isolated compartments vented at their tops with respect to each other and each compartment having an independent valve in its bottom. The isolation of the compartments assures stability or seaworthiness, while the venting of the compartments at their tops assures the use of compressed air for uniform control of water level in the compartments. The independent valve in the bottom of each compartment enables precise regulation of discharge and admission of seawater.

3,688,720

# BATHYAL UNIT

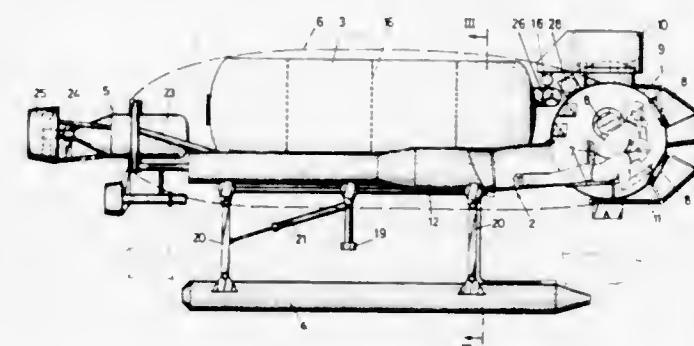
Harmannus Henderikus Lok, Ierseke, Netherlands, assignor to Nereid N.V., Ierseke, Netherlands  
Filed July 1, 1970, Ser. No. 51,420

Claims priority, application Netherlands, July 2, 1969, 6910140

Int. Cl. B63c 11/36

U.S. Cl. 114—16 E

5 Claims



A deep-sea unit having a float and ballast chamber distinct from the crew accommodation, the float and ballast chamber being adapted to be pressurized so as to subject the wall thereof to an internal pressure slightly in excess of the external pressure from the ambient water at the operating depth. This construction permits the use of relatively light material.

3,688,721

# SUBSEA TOWING VESSEL

John D. Bennett, 503 N. Central Expressway, Richardson, Tex.  
Filed Oct. 2, 1970, Ser. No. 77,482  
Int. Cl. B63g 8/00; B63h 11/00

U.S. Cl. 114—16 R

12 Claims

A subsea vessel towing submerged tankers for transporting oil under ice covered areas, is constructed so that passages are located at the front end of the vessel and extend to each side with a propeller therein to pull water through the passages for

propulsion. Vanes are used to control direction and depth, and whiskers are used to sense contact with the ice or ocean bottom. Navigation aids are placed on the ocean floor along a



pre-selected route. A telescoping escape tower with hot water jets and/or drills are used for cutting through the ice in an emergency. Jets are used near the stern of the vessel to line up the stern for connecting the tankers.

3,688,722

# HOPPER BARGE

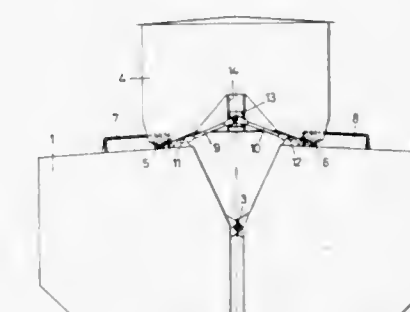
Bartele Van Der Werff, Capelle an den IJssel, Netherlands, assignor to A. Vuyk & Zonen's Scheepswerven, N.V., Capelle a/d IJssel, Netherlands  
Filed Sept. 10, 1970, Ser. No. 71,092

Claims priority, application Netherlands, Sept. 12, 1969, 69/3929

Int. Cl. B63b 35/30

U.S. Cl. 114—29

6 Claims



A bottom dump hopper barge having a platform and a pair of longitudinal, transversely hinging pontoons is provided with improved means for maintaining the platform in virtually the same position relative to the vertical longitudinal median plane between the pontoons. The means may take the form of linkage system, hydraulic piston-and-cylinder assemblies, rack-and-pinion means, or guide rods or plates rigidly connected to the platform and guided in bent zones of facing walls of the pontoons.

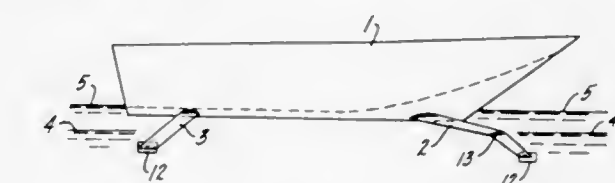
3,688,723

# HYDROFOIL SYSTEM FOR WATER CRAFT

Sture Ulvesand, Fregattvagen 8, Lidings, and Bo Bengt Urban Bonthelius, Norr Malarstrand 78, Stockholm, both of Sweden  
Filed Dec. 9, 1970, Ser. No. 96,432  
Int. Cl. B63b 1/26

U.S. Cl. 114—66.5 H

8 Claims



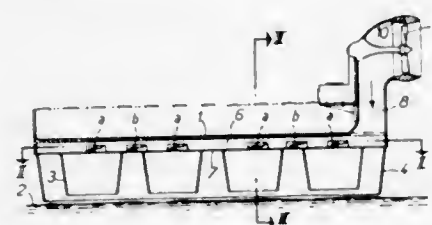
A hydrofoil system for water-craft consisting of a bow hydrofoil and a stern hydrofoil of a surface-piercing transversely stabilizing type is described which does not require adjustment or trimming means when the craft is running. Each hydrofoil is approximately V-formed in both front and top views such that the pointed ends of the two V-forms face away



from each other, pointing downward ahead and downward astern, respectively.

### 3,688,724 GROUND-EFFECT MACHINES

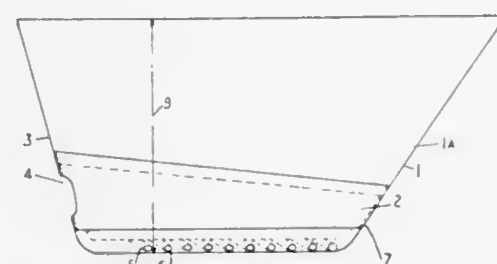
Jean Henri Bertin, Neuilly-sur-Seine, France, assignor to Bertin & Cie, Plaisir, France  
Filed June 8, 1970, Ser. No. 44,039  
Claims priority, application France, June 10, 1969, 6919183; June 10, 1969, 6919185  
Int. Cl. B63b 1/38  
U.S. Cl. 114-67 A



This invention is for improvements in or relating to ground-effect machines which are borne by land or water with the interposition of a number of cushions containing air or some other pressure fluid.

3,688,725  
Patent Not Issued For This Number

3,688,726  
STABILIZING APPARATUS FOR SHIPS  
Colin Campbell Mitchell, deceased, late of Edinburgh, Scotland (Andrew Wishart and John Patrick Pattullo, both of Edinburgh, Scotland, executors), assignor to Brown Brothers & Company Limited, Edinburgh, Scotland  
Filed Nov. 3, 1969, Ser. No. 873,435  
Claims priority, application Great Britain, Nov. 9, 1968, 53,190/68  
Int. Cl. B63b 39/06, 43/04  
U.S. Cl. 114-126

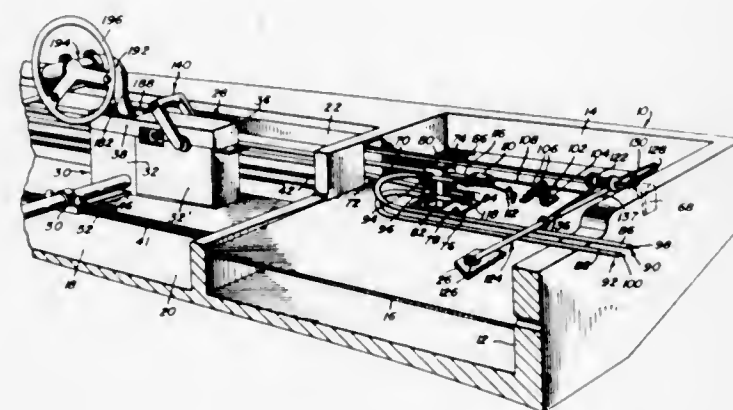


This invention relates to a stabilizing device for a ship. The device incorporates a hydrofoil formed with a chamber located close to the tip and passages leading from the chamber and debouching in the vicinity of the tip. The construction is effective to suppress cavitation.

3,688,727  
STEERING, ENGINE AND TRANSMISSION CONTROL FOR BOATS  
Fred Gerbracht, 2325 Seidenberg Ave., Key West, Fla.  
Filed June 25, 1970, Ser. No. 49,737  
Int. Cl. B63b 25/10

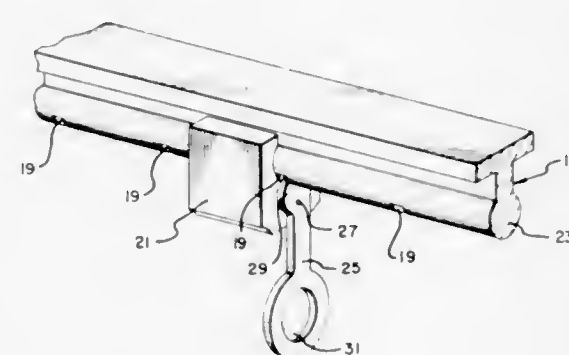
U.S. Cl. 114-144 R  
An integrated control system for motorboats consisting of a steering wheel journaled on the upper end of an upright control column supported at its lower end from an oscillatable transverse shaft on the cockpit floor of an associated motor-

boat and linked to the throttle of the boat whereby the latter can be steered and throttled simultaneously with one hand. Shift, starter and other engine control functions are grouped in a shift lever within the grasp of an operator of the boat controlling the steering wheel and the throttle whereby the steering wheel may be controlled with one hand and the shift, starter and other engine control functions may be controlled



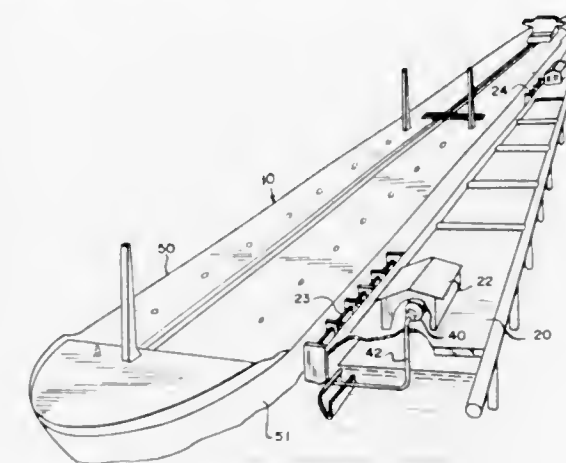
by the other hand. All controls and instruments are mounted in a low, narrow console that is adjustably positionable, with the control column, transverse shaft and steering wheel, wherever desired along the side of the motorboat cockpit, the invention being particularly well adapted for use in connection with, but not restricted to, a straight-sided boat such as that disclosed in U.S. Pat. No. 3,450,084.

3,688,728  
BUMPER ASSEMBLY FOR BOATS  
Milton Ronald Lederer, Jr., Box 63, Lititz, Pa.  
Filed April 27, 1970, Ser. No. 31,994  
Int. Cl. B63b 21/04  
U.S. Cl. 114-219



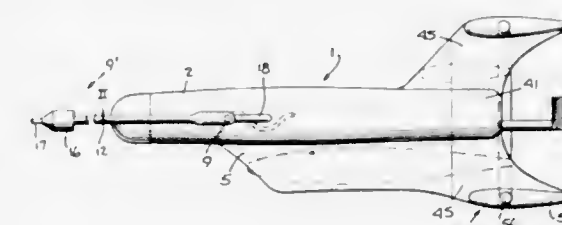
The disclosure relates to a bumper assembly for boats which is capable of easy installation and removal from a boat and which is capable of being placed at spaced and spaced points along the boat outer surface. The bumper system includes a continuous track positioned immediately below the flare of the gunwale of the boat extending from the forward section of the boat to the transome. Sliding blocks are positioned onto the track and slide therealong, the sliding blocks being locked in position by means of notches positioned in the track at space points therealong and a rotatable lever positioned in each slidable block to lock the block in position upon rotation of the lever. The block will remain locked due to the weight of the fender or bumper which is attached by means of ropes or the like to two adjacent levers.

3,688,729  
DYNAMIC FENDERING SYSTEM  
William A. Tam, Westmont, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.  
Filed Oct. 15, 1970, Ser. No. 80,842  
Int. Cl. B63b 21/00  
U.S. Cl. 114-230



This invention relates to a new and unobvious system for mooring a vessel by means of momentum transfer which induces a current and creates a pressure differential whereby the vessel is drawn toward and held to the mooring facility.

3,688,730  
TOWABLE UNDERWATER VESSEL  
Dieter Ortleb, Unteruhldingen; Joachim Thomas; Horst Stockburger, both of Immenstaad; Erich Birkhold, and Horst Kling, both of Friedrichshafen, all of Germany, assignors to Dornier System GmbH, Friedrichshafen, Germany  
Filed Feb. 24, 1970, Ser. No. 13,676  
Claims priority, application Germany, Feb. 25, 1969, P 19 09 242.3  
Int. Cl. B63b 21/00  
U.S. Cl. 114-235 B

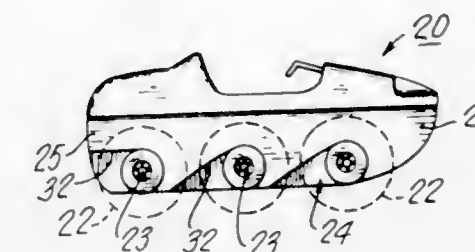


The hull is shaped as a transverse drive producing body with a small aspect ratio while depth steering equipment is mounted on the stern. The vessel has a water displacement which creates a static residual lift force should the power to the vessel be shut off for any reason. This allows the vessel to surface automatically. The depth steering equipment is controlled over a coaxial tow cable.

3,688,731  
WATER PROPELLING MEANS FOR VEHICLES  
Guy J. Houle, Dollard des Ormeaux, Quebec, Canada, assignor to Maurice E. Hebert, Dollard des Ormeaux, Quebec, Canada  
Filed July 6, 1970, Ser. No. 57,024  
Claims priority, application Canada, March 3, 1970, 076,421  
Int. Cl. B60f 3/00  
U.S. Cl. 115-1 R

A vehicle having a buoyant body and one or more driven axles for transmitting a drive to traction means for supporting

and propelling the vehicle on land. A cavity is provided on each side of the body about at least one driven axle and



cooperates with a centrifugal impeller wheel which is secured to the axle to thereby generate a propelling thrust to the vehicle when utilized on water.

3,688,732  
PROPULSION SYSTEM FOR WATER CRAFT  
Dietrich E. Singelmann, Ottobrunn, and Heinrich Hofmann, Grobenzell, both of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Germany  
Filed Dec. 12, 1969, Ser. No. 884,545  
Int. Cl. B63b 5/10

U.S. Cl. 115-37



A propulsion system for water craft and in particular for high speed propulsion such as for torpedos, hydrofoil craft, and the like, includes a power engine, particularly a gas turbine, which is connected through a reducing transmission to a shaft drive. The shaft drive permits the rotation of two ship screws independently of each other and advantageously includes one drive shaft arranged concentrically within a hollow outer drive shaft for the respective screws. One of the shafts and the associated screw is connected for driving in the lower velocity range and rotates at a relatively low speed of rotation and the other screw is connected for operation at high velocity range and rotates at higher speeds of rotation. Preferably the ship screw for high cruising speed is provided in front of the ship screw for a lower cruising speed and the forward ship screw advantageously provides a guiding blading for the rear ship screw. The ship screw for low speeds may be removed such as by blasting it off with an explosive charge after the propulsion has been taken over by the high speed screw. Instead of arranging the shafts of the screws coaxially they may be arranged one above the other such that the low speed screw is lifted up out of the water when the vessel, such as a hydrofoil vessel, reaches a planing speed.



3,688,733

**MECHANICAL ARRANGEMENT FOR TRIMMING AN OUTBOARD MOTOR**

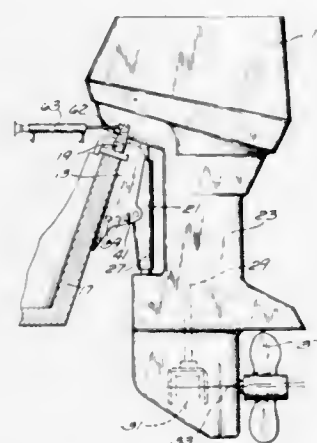
Clarence E. Blanchard, Phoenix, Ariz., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Sept. 25, 1970, Ser. No. 75,579

Int. Cl. B63h 5/12

U.S. Cl. 115—41 HT

9 Claims



Disclosed herein is a marine propulsion device including means connecting a swivel bracket and a transom bracket to provide for vertical swinging movement therebetween about a horizontal axis and to permit displacement of the horizontal axis in the fore and aft direction relative to the transom bracket, together with means for adjustably displacing the horizontal axis in the fore and aft direction, whereby to control the trim of the propulsion unit relative to the supporting boat.

3,688,734

**INVERSION OR TILT INDICATOR**

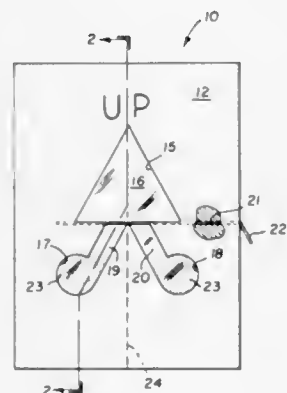
George M. Davis, 120 Maywood Ave., Rochester, N.Y., and William M. Lander, 5048 Ridge Road, Horseheads, N.Y.

Filed Jan. 14, 1972, Ser. No. 217,858

Int. Cl. G01d 21/00

U.S. Cl. 116—114 AH

5 Claims



An improved tilt or inversion indicator uses a pair of storage chambers for colored particles that are free to flow through passageways of opposite inclinations from the vertical into an indicator chamber so that one storage chamber empties into the indicator chamber for a tilt in one direction from the vertical, and the other storage chamber empties into the indicator chamber for the opposite tilt from the vertical.

**APPARATUS FOR APPLYING GLUE TO LEADING AND TRAILING EDGES OF A WRAPPER SHEET**

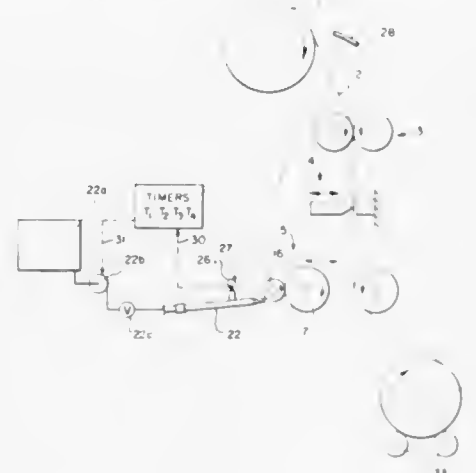
Lawrence A. Brenner, West Chester, Pa., assignor to Beloit Corporation, Beloit, Wis.

Filed March 13, 1970, Ser. No. 19,419

Int. Cl. B05c 11/10, 1/08

U.S. Cl. 118—2

5 Claims



Glue is applied to a roller by means of a glue supply head which traverses the length of the roller. The flow of glue can be initiated and terminated at predetermined times during a single traverse thus providing a layer of glue on the roller neatly and occupying a predetermined length of the roller. The layer is then transferred to the wrapper sheet. Where the glue is to be transferred to a leading edge, the glue flow is initiated and terminated at times to give a glue layer which is less in width than the width of the wrapper sheet. When the glue is to be transferred to a trailing edge, the width of the glue layer is equal to the width of the wrapper sheet. The device preferably includes photodetector means moveable with the glue supply means to initiate and terminate the glue flows a set time after the side edges of the wrapper sheet are detected by the photodetector means.

3,688,736

**GLUE APPLICATOR FOR CORRUGATED PAPER MACHINE**

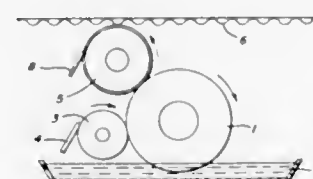
Hansludwig Beck, Bochum, and Helmut Brandenburg, Wuppertal-Elberfeld, both of Germany, assignors to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Germany

Filed June 8, 1970, Ser. No. 44,184

Int. Cl. B05c 1/08, 1/16

U.S. Cl. 118—221

6 Claims



A glue applicator for corrugated paper machines of the type in which a dip roll dips into a glue vat at one place around its periphery and engages the periphery of a glue applicator roll which rolls on the surface of a moving corrugated paper web, characterized in that the glue applicator roll is provided with a circular or spiral groove so as to apply separated spots of glue to the respective corrugations of the web.

3,688,737

**VAPOR DEPOSITION APPARATUS INCLUDING AIR MASK**

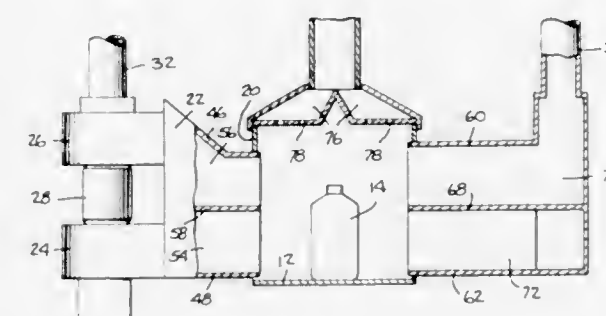
Bengt O. Augustsson, and Russell D. Southwick, both of Butler, Pa., assignors to Glass Container Manufacturers Institute, Inc., New York, N.Y.

Filed Nov. 4, 1969, Ser. No. 873,916

Int. Cl. C23c 13/08

U.S. Cl. 118—48

4 Claims



Vapor deposition means in combination with means to deliver an air stream adjacent to the vapor stream whereby to mask predetermined portions of a substrate. Separate exhaust means are opposed to the respective coating and masking streams. Means convey the substrate between the opposed delivery and exhaust means.

3,688,738

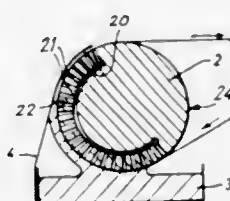
**CASTING APPARATUS WITH FLEXIBLE WIPER FILM**  
Wolfgang Eichler, Leverkusen, and Rolf Bruck, Opladen, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 15, 1969, Ser. No. 866,562

Int. Cl. B05c 11/02

U.S. Cl. 118—62

8 Claims



Band-shaped layer supports can be coated at high speeds and with liquids of high viscosity by means of an apparatus comprising elements for casting and elements for wiping off excess-casting solutions.

The layer support is deflected by a rigid or moving deflecting roller and thereby is immersed in the casting liquid. Excess casting liquid is wiped off and the thickness of the layer is controlled by a flexible wiper film which initially makes tangential contact with and is partly adapted to the curvature of the deflecting roller and which can be pressed against said roller by various means.

3,688,739

**WALL PAINTING MACHINE**

Leonid Koptelov, 619 CTH "S", Oconomowoc, Wis.

Filed May 4, 1970, Ser. No. 34,303

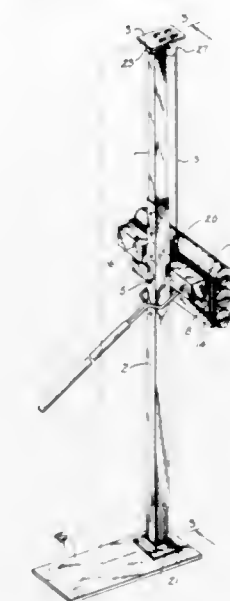
Int. Cl. B05c 1/00

U.S. Cl. 118—207

9 Claims

A light weight mobile painting machine suitable for painting or providing other treatment to vertical surfaces, such as walls. The machine includes extendible tubes which support

the machine adjacent the wall. A roller unit having a plurality of paint applying rollers and a paint reservoir is mounted on



3,688,740

**APPARATUS FOR APPLYING A NON-SLIP COATING TO AN ENAMELED BATHTUB OR THE LIKE**

Gunter Gesche, Budelsdorf, Germany, assignor to Ahlmann-Carlshutte KG, Rendsburg, Germany

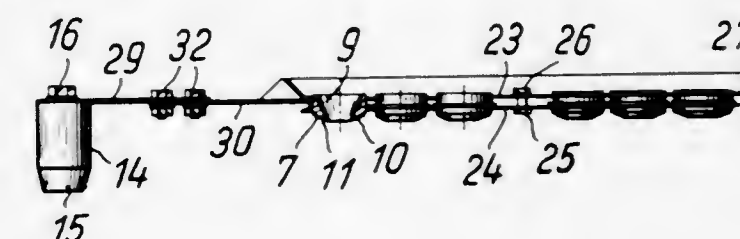
Filed Feb. 17, 1971, Ser. No. 116,076

Claims priority, application Germany, Dec. 17, 1970, P 20 62 101.6

Int. Cl. B05b 15/04

U.S. Cl. 118—504

9 Claims



Apparatus for applying a non-slip coating to the bottom of an enameled bathtub or shower tray made of steel or cast iron, by atomizing or spraying on a refractory substance heated by means of a burner approximately to liquefaction, wherein the non-slip surface is subdivided into a plurality of individual areas spaced from each other by a mask having openings each separately defined by an open-ended cup-like element made of a thermally conductive metal resistant to heat and oxidation, said cup being adapted at one end to contact the surface to be coated along a line and being of increasing internal cross section and wall thickness at least for a part of the depth of the cup from said one end toward its other end and a cup support including a lost motion means effective upon registration with said bottom.

3,688,741

**PORTABLE ANIMAL TOILET**

Sam W. Thompson, and Roy B. Hollingsworth, both of Box 329, Jefferson City, Tenn.

Filed April 6, 1970, Ser. No. 25,822

Int. Cl. A01k 29/00

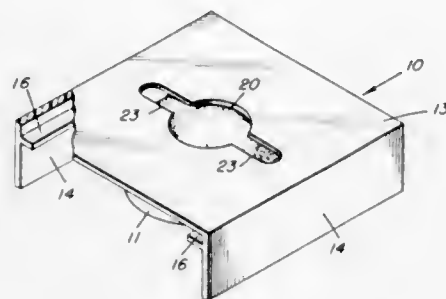
U.S. Cl. 119—1

1 Claim

A portable toilet device or commode for cats and other animals having, or capable of acquiring, tidy habits in disposing of their bodily waste material, i.e. feces and urine. The



device comprises two separable elements, the first an outer box-shaped housing, having at least one open lateral side and a centrally disposed opening in its upper face, and the second a container of less dimensions than the housing for reception within the housing. The container is open at its top, and when inserted through the open side of the housing is supported



directly beneath the opening in the upper face of the housing to receive matter discharged through the opening. The housing opening is generally circular, having at opposite sides elongated slots through which the animal may insert a paw to cover the discharge matter with absorbent material or litter previously distributed on the bottom of the container.

3,688,742

## TOILET TRAINING ASSEMBLY FOR CATS

Michael H. McGee, 1930 Harbor Ave., Long Beach, Calif.

Filed Sept. 18, 1970, Ser. No. 73,541

Int. Cl. A01k 67/00

U.S. Cl. 119-1

2 Claims



An assembly for training a cat to use a toilet commode bowl after the cat has been trained to use a sand box for toilet purposes, and a support for a cat so using a toilet bowl.

3,688,743

## DRY FEED DISPENSERS FOR FISH

Josef Rack, 8752 Kahlquelle uber, Aschaffenburg, Germany

Filed Sept. 16, 1970, Ser. No. 72,777

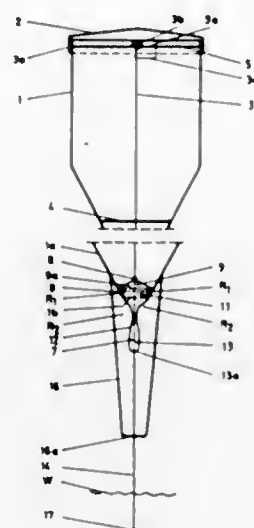
Int. Cl. A01k 5/02

U.S. Cl. 119-51 R

2 Claims

A dry feed dispenser for fish comprises a container the lower end of which is blocked by a skittle-shaped member

from which a pendulum extends downwards into the water. Displacement of the pendulum and hence of the skittle-shaped



member by a fish causes a dose of granulated feed to be released from the container and fall into the water.

3,688,744

## AUTOMATIC FISH FEEDING APPARATUS

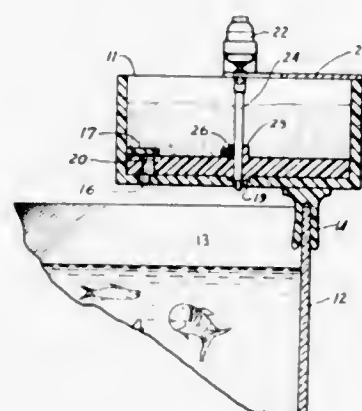
Eric S. Kaplan, 20 Beechtree Road, West Caldwell, N.J.

Filed March 10, 1971, Ser. No. 122,744

Int. Cl. A01k 5/02, 64/00

U.S. Cl. 119-51.11

5 Claims



An apparatus for automatically dispensing fish food at periodic intervals, said apparatus comprising a food reservoir having at least one discharge opening in the base thereof and a leveling block affixed to the inner wall of said reservoir directly above said discharge opening, a feed carrier plate having at least one opening thereon and being seated for rotation in said reservoir between the base thereof and the leveling block and in close tolerance therewith, said carrier plate being secured to the shaft of a motor to provide said rotation; and means for mounting the apparatus on the fish tank.

3,688,745

## ENSILAGE FEEDER

Celestinus J. Stefan, Arcade, N.Y.

Filed March 10, 1971, Ser. No. 122,921

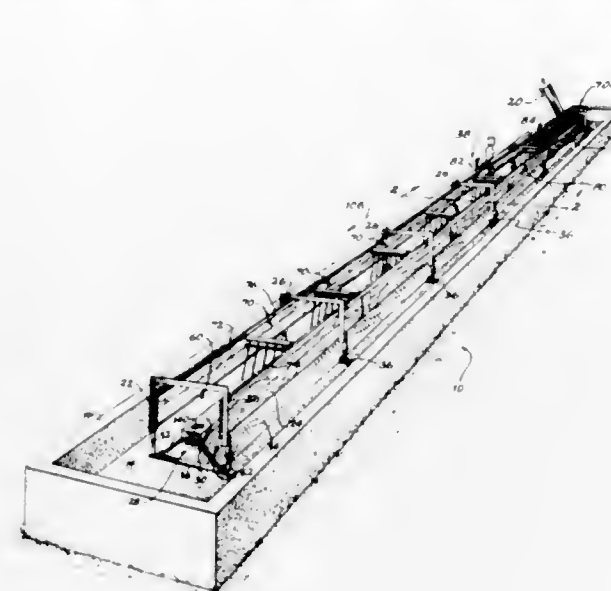
Int. Cl. A01k 05/00

U.S. Cl. 119-52 AF

10 Claims

A system for feeding and distributing ensilage or other relatively cohesive livestock food material in a substantially uniform manner along a livestock feeding area, wherein a conveyor including a plurality of pusher elements mounted for reciprocating movement is employed to form and push charges of ensilage along a horizontally elongated supporting

surface arranged intermediate a pair of vertically disposed side walls; the supporting surface cooperating with the side



walls to define a pair of downwardly opening ensilage discharge openings extending horizontally substantially throughout the feeding area.

3,688,746

## EXPANSION SEAL DEVICE

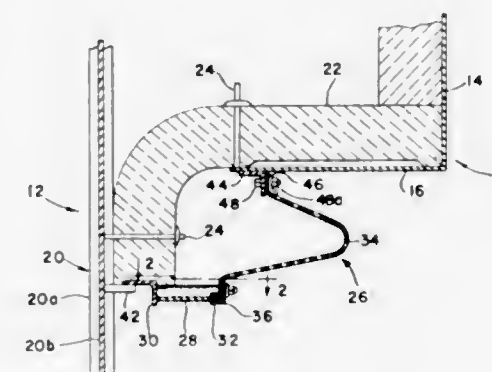
Walter F. Newitts, Berkeley Heights, N.J., and Richard C. Johnson, Dansville, N.Y., assignors to Foster Wheeler Corporation, Livingston, N.J.

Filed Nov. 13, 1970, Ser. No. 89,214

Int. Cl. F22b 37/36

U.S. Cl. 122-235 G

14 Claims



An expansion seal device for sealingly connecting two members which move relative to each other in response to temperature changes in their vicinity, wherein a heat absorption and expansion plate is fixed to one of the members and a flexible sheet connects the plate to the other member, with the plate and the sheet adapted to accommodate the relative movement.

3,688,747

## FURNACE BURNER ARRANGEMENT

John M. Connell, Mountain Lakes, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.

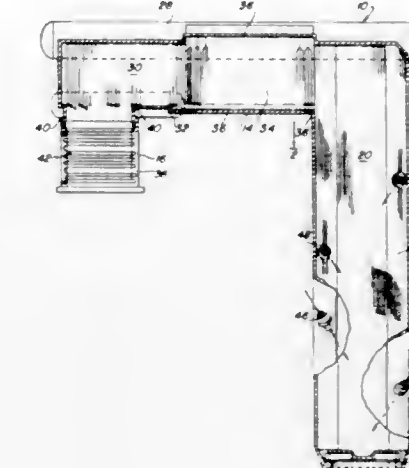
Filed Dec. 14, 1970, Ser. No. 97,754

Int. Cl. F22b 21/02

U.S. Cl. 122-333

6 Claims

In a furnace in which the combustion air, fuels and combustion products travel through a furnace section having a generally rectangular cross-section, maximum efficiency is as-



the flames extend diagonally in the furnace and tilted either upwardly or downwardly and are positioned in a spiral configuration with respect to one another.

3,688,748

## MIXTURE-COMPRESSING ROTARY PISTON INTERNAL COMBUSTION ENGINE OF TROCHOIDAL CONSTRUCTION

Heinz Lamm, Bernhardt, Esslingen-St., Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

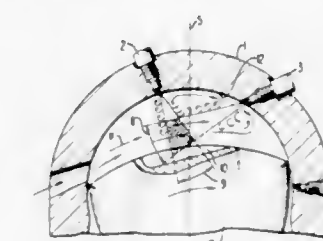
Filed Nov. 19, 1970, Ser. No. 90,999

Claims priority, application Germany, Nov. 21, 1969, P 19 58 505.8

Int. Cl. F02b 53/10

U.S. Cl. 123-8.09

16 Claims



A mixture-compressing rotary piston internal combustion engine, especially of trochoidal type of construction, with fuel injection, which comprises a housing casing provided with an inlet and an outlet channel and a piston rotating within the housing casing; the fuel is injected through two nozzles arranged one behind the other in the housing casing whereby the center longitudinal axis of the first nozzle either intersects the center longitudinal axis of the inlet channel at the inner side of the housing casing or is substantially coaxial therewith, the center longitudinal axis of the second nozzle is arranged substantially transversely to the center longitudinal axis of the first nozzle upstream of the major axis in the cold arc of the casing.

3,688,749

## SUPERCHARGED ROTARY COMBUSTION ENGINE

Felix Wankel, Lindau, Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm and Wankel G.m.b.H., Lindau, Bodensee, Germany

Filed April 21, 1971, Ser. No. 136,120

Claims priority, application Germany, April 21, 1970, P 20 19 177.9

Int. Cl. F02b 53/14; F01c 13/04

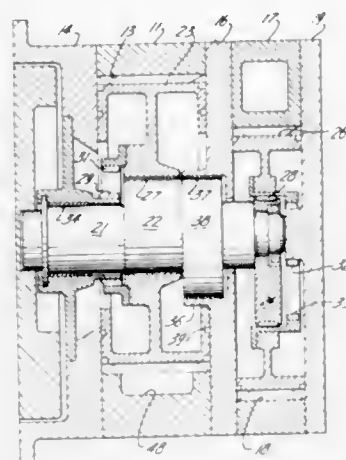
U.S. Cl. 123-8.41

9 Claims

A supercharged rotary engine having a three-lobed trochoidal housing providing an extra expansion chamber for prolonged expansion and extraction of more work from com-



bustion gases, in which during final expansion the gases are mixed with air for more complete combustion and cleaner exhaust, and having a one-lobed trochoidal compressor driven



by the engine shaft and transferring compressed air into the engine intake chamber for further compression for either diesel or hybrid operation.

3,688,750

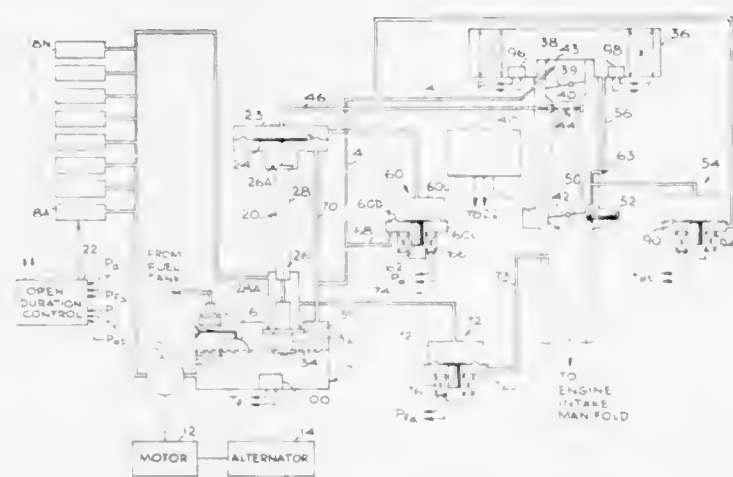
**MASS FLOW METERED FUEL INJECTION SYSTEM**  
Cormac G. O'Neill, Lafayette, Calif., assignor to Physics International Company, San Leandro, Calif.

Filed April 30, 1970, Ser. No. 33,376

Int. Cl. F02b 3/00; F02m 51/06

U.S. Cl. 123—32 EA

15 Claims



A mass flow, timed fuel injection system is provided, wherein fuel flow is maintained at all times in a predetermined relation to air mass flow actually entering the engine at any instant, and the fuel injection valve is maintained open for an interval corresponding to a constant crank angle. This interval is corrected to compensate for any error which may have occurred because of inaccuracies introduced by the venturi through which air is metered and to compensate for the variations in discharge nozzle downstream pressure that occur in the induction ports.

3,688,751

**ROTARY ENGINE CONSTRUCTION**

Edward H. Sahagian, 67 Chester St., Arlington, Mass.

Filed Nov. 12, 1970, Ser. No. 88,919

Int. Cl. F02b 57/10

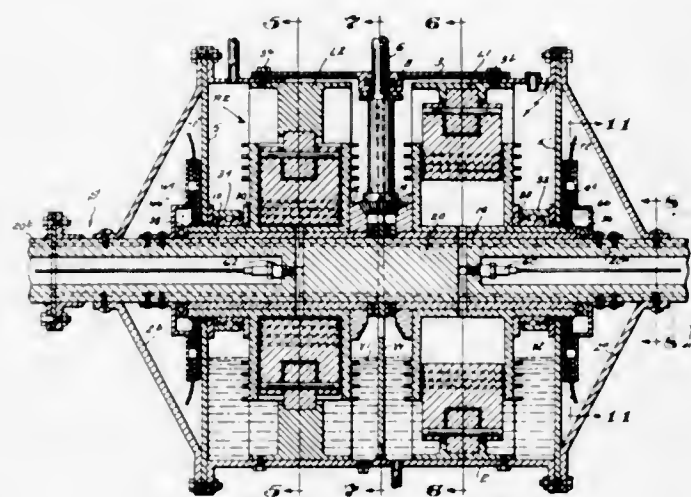
U.S. Cl. 123—44 B

9 Claims

An improved rotary engine construction includes an outer cylindrical housing formed with conically shaped end portions through which is axially disposed a stationary tubular shaft. Within the housing, a pair of cooperating rotor mechanisms are mounted around the shaft in spaced apart relationship. Each of the two rotor mechanisms includes hub portions

rotatable about the stationary shaft and supported around each of the hub portions is a set of circumferentially spaced cylinders and cam guided piston units. The stationary tubular shaft is formed with passageways communicating with the cylinders through which fuel and oxidant are introduced in timed relationship, compressed, ignited, and the products of combustion exhausted periodically during rotary travel of the cylinders.

As combustion takes place in the cylinders, respective pistons are displaced first radially outwardly and then in-



wardly by means of cam rollers attached to the outer ends of the pistons. The cam rollers are guided along sinuous cam tracks which extend continuously around the inner periphery of the cylindrical housing and which provides for moving each cylinder and piston through a 360° path of travel. Ring gears rotatably mounted around the tubular shaft and secured at inner sides of the rotor mechanisms mesh with a beveled driving gear fast on an output shaft. The output shaft extends radially outwardly through the outer cylindrical housing in suitable bearing means.

3,688,752

**DEVICE FOR REDUCING THE EMISSION OF POLLUTION RESPONSIBLE PRODUCTS BY EXTERNAL CARBURATION ENGINES DURING THE DECELERATION PERIODS**

Jean Baudry, Rueil Malmaison, France, assignor to Institut Français du Pétrole, des Carburants et Lubrifiants, Rueil Malmaison, France

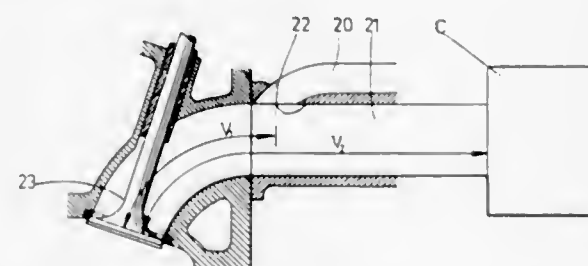
Continuation-in-part of Ser. No. 886,499, Dec. 19, 1969, abandoned. This application June 24, 1970, Ser. No. 49,225

Claims priority, application France, Dec. 24, 1968, 68180576

Int. Cl. F02d 9/00; F02m 23/00, 23/04

U.S. Cl. 123—97 B

17 Claims



A device for reducing the amount of noxious products in the exhaust gases of a car engine during deceleration periods thereof, including in combination means for completely suppressing the supply of carburetted air to the engine during the decelerations and means for introducing into each cylinder, during each deceleration period, a stream of non-carburetted air through a duct separate from the inlet pipe and which opens in the latter in the vicinity of the inlet valve head.

3,688,755

**ENGINE SPARK TIMER**

Brooks Walker, 1280 Columbus Ave., San Francisco, Calif.

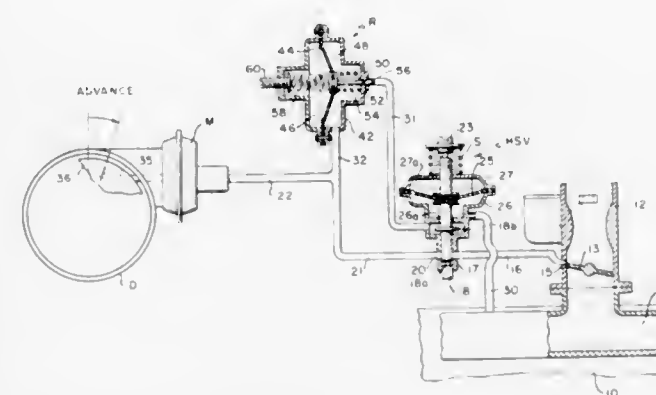
Continuation-in-part of Ser. No. 672,818, Oct. 4, 1967. This

application May 26, 1969, Ser. No. 827,505

Int. Cl. F02p 5/04

U.S. Cl. 123—117 A

3 Claims



This invention pertains to means for obtaining partial engine developed intake suction operated spark advance, and therefore a partial suction operated spark advance, during decelerations at engine idle throttle positions above a predetermined engine speed, as compared to full intake manifold suction spark advance as used in some engines today, for reduced exhaust emissions while sensing engine decelerations above said selected engine speed by the increase in intake suction above idle engine suction or cruising intake suction and reducing said intake suction acting on the suction operated spark advance motor to reduce the suction operated spark advance by a suction regulator put into the circuit to said suction operated spark advance motor when decelerating above a selected engine speed as sensed by said intake suction sensor.

3,688,754

**FUEL INJECTION SYSTEM FOR EXTERNALLY IGNITED INTERNAL COMBUSTION ENGINES**

Konrad Eckert, Stuttgart-bad Cannstatt, Germany, assignor to Robert Bosch, GmbH, Stuttgart, Germany

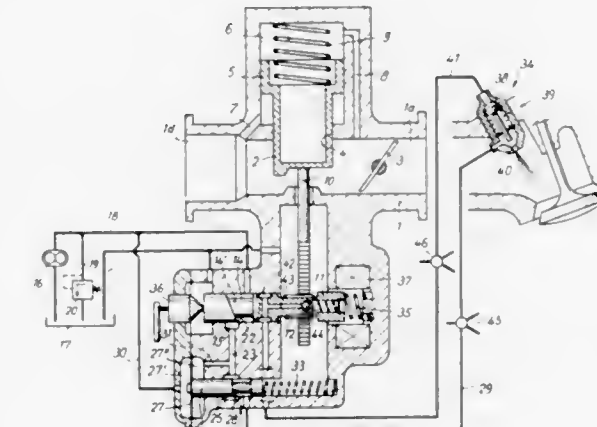
Filed July 9, 1970, Ser. No. 53,540

Claims priority, application Germany, July 9, 1969, P 19 34 703.6

Int. Cl. F02b 33/00; F02m 39/00

U.S. Cl. 123—119 R

4 Claims



In a fuel injection system, a flow rate-responsive device disposed in the suction tube of an internal combustion engine angularly displaces a control plunger which has an oblique control edge and which forms part of a fuel metering device. Depending upon the angular position of said plunger, said control edge determines a flow passage section for the fuel to control the air-fuel mixture.

3,688,755

**FUEL SUPPLY SYSTEM FOR REDUCED EXHAUST EMISSION**

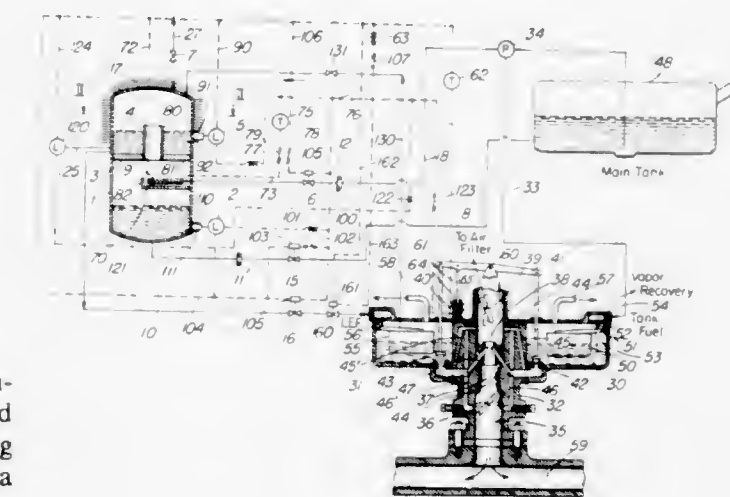
Herbert G. Grayson, Laurel Hollow, N.Y., and Edwin F. Miller, Franklin Lakes, N.J., assignors to Mobil Oil Corporation

Filed April 5, 1971, Ser. No. 131,317

Int. Cl. F02m 13/04

U.S. Cl. 123—127

10 Claims



Exhaust emissions from internal combustion engines of automotive vehicles are reduced in content of CO and unburned hydrocarbons by a modified fuel induction system. Light ends of normal motor fuel are separated by a flash distillation and stored in the vehicle for supply to the cylinders during low temperature operating conditions such as cold start and warm-up. The cut point for light ends separated is automatically adjusted in response to ambient temperature to supply fuel of greater volatility during cold start when operating under conditions of lower climatic temperature. Automatic control is also imposed on supply of the more volatile fuel to the cylinders responsive to engine temperature, e.g. responsive to a sensor of engine coolant temperature. Conventional operation on full range fuel, e.g. gasoline, is automatically established at engine temperature close to normal operating temperature, at which unburned hydrocarbon and carbon monoxide emissions are low. The evaporation of light ends to provide a volatile fuel component may be induced by reduced pressure (such as may be derived from pump suction or modified vacuum) or by heating the full range from engine coolant exhaust heat, or electric heating elements. Storage of the volatile fuel component may be as liquid condensate, absorbate on solid absorbent, or the like. Alternatively, chromatographic separation technique may be utilized.

3,688,756

**FUEL FEED DEVICES FOR INTERNAL ENGINES**

Gaston Arnaud, Paris, France, assignor to Societe Industrielle de Brevets et d'Etudes S.I.B.E., Neuilly-sur-Seine, France

Filed April 12, 1971, Ser. No. 133,009

Claims priority, application France, April 30, 1970, 7016102

Int. Cl. F02m 51/02

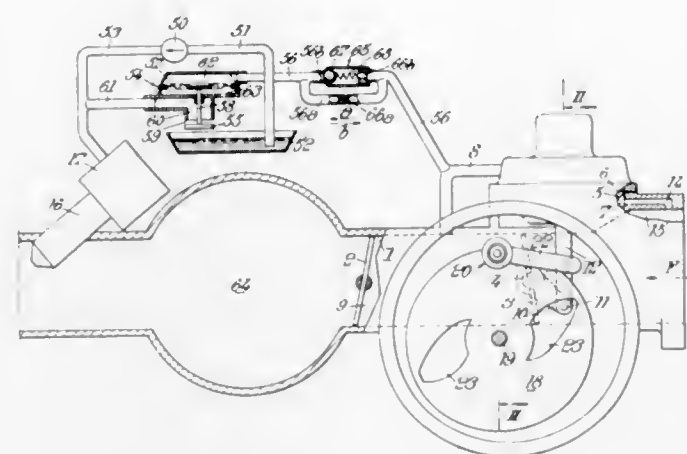
U.S. Cl. 123—139 AW

2 Claims

In the intake pipe upstream of the main throttle is an auxiliary throttle which opens automatically and proportionately to the air flow. Liquid fuel is injected downstream of the main throttle. A metering system sensitive to the auxiliary throttle at least for certain operational conditions keeps the air/fuel mixture constant, the fuel injection is controlled by an electromagnetic valve. The metering system consists of a rotating member controlling the current to the electromagnet so as to open the injector over only a fraction of each turn, this fraction varying directly as the opening of the auxiliary throttle. A



pressure regulator on the delivery pipe of the fuel pump has a discharge valve which opens under the effect of the delivery pressure and closes under the effect of suction in the intake



pipe between the two throttles. The discharge valve is coupled to a diaphragm to which the suction is transmitted by a linking channel, which has a choke to ensure smaller flow from the intake pipe to the diaphragm than in the reverse direction.

3,688,757

**COLLAPSIBLE BARBECUE GRILL**

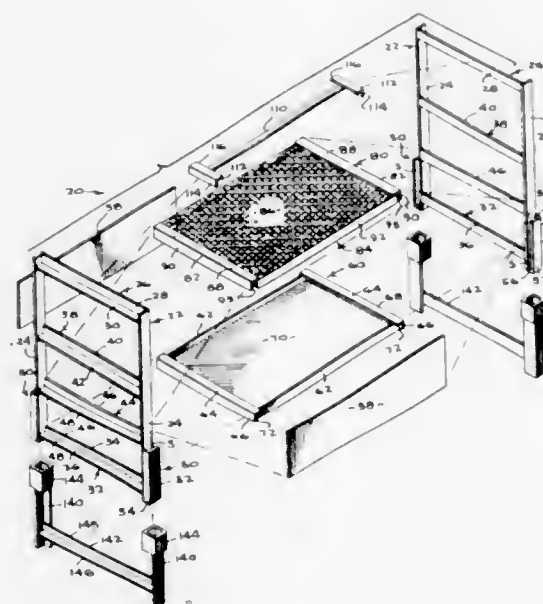
Henry F. Dusek, 101 River Oaks, San Angelo, Tex., assignor to Owen J. Gray, San Angelo, Tex.

Filed May 12, 1971, Ser. No. 142,560

Int. Cl. F24c 1/16; A47j 37/07; F24b 3/00

U.S. Cl. 126-9 R

10 Claims



A collapsible grill is disclosed having vertical leg members connected by horizontal brace members to which a heat source supporting plate, a grill and a pot supporting rod are connectable through slots on each of their ends to the horizontal brace members to prevent pivotal movement of these elements with respect to the brace members and their associated leg members; an additional feature includes the provision of alternate gas burner or electric heating element heat source means mountable on the heat source support plate with removable heat shield means being positioned adjacent the heat source support plate. The device is assembled without the need of any tools and is held in assembled condition by the weight of the components.

3,688,758

**GAS FIRED BARBECUE KETTLE**

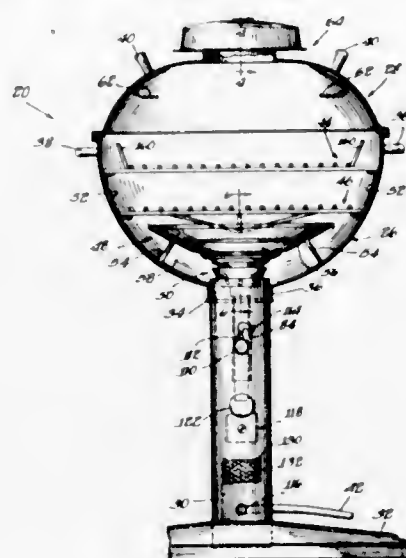
George A. Stephen, Jr., 606 S. Can-Dota, Mount Prospect, Ill.

Filed April 15, 1971, Ser. No. 134,139

Int. Cl. A47j 37/00; F24c 3/04

U.S. Cl. 126-41 R

20 Claims



Outdoor cooking apparatus comprises a cooling vessel, a support therefor and a cooperating baffle-burner system which permits of either direct or indirect firing of the cooking area.

3,688,759

**OUTER BUILDING WALL AIR HEATING DEVICE WITH A HEAT EXCHANGER**

Arnold Van Der Goot, Voorbroek 9, Terborg, Netherlands

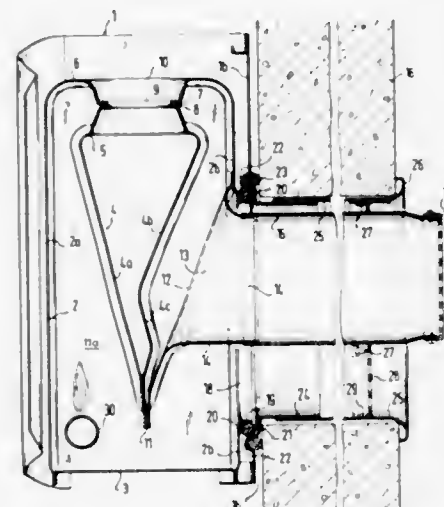
Filed Nov. 4, 1970, Ser. No. 86,717

Claims priority, application Netherlands, Nov. 14, 1969, 69/17139

Int. Cl. F23i 17/04; F24h 3/00

U.S. Cl. 126-85 B

10 Claims



The invention relates to an outer building wall heating device with a heat exchanger comprising a mainly reversed U-shaped outer wall part, closed at the bottom end, an inner wall part lying inside the outer wall part and having a mainly triangular shape with downwardly directed top lying at some distance above the bottom of the outer wall and an air inlet stud formed in the rear wall of the outer wall and an air outlet stud formed in an inclined partition having its under edge connected to the top of the inner wall and its upper edge connected to the rear wall of the outer wall of the heat exchanger and lying within the contours of the air inlet stud, all heat exchanger parts consisting of corrugated or like sheet material.

3,688,760

**RADIANT TUBE ASSEMBLY**

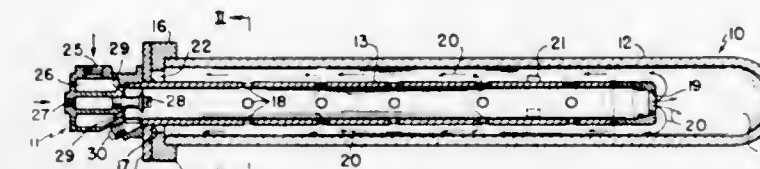
Walter Rudin, Pittsburgh, Pa., assignor to Bloom Engineering Company, Inc., Pittsburgh, Pa.

Filed Dec. 9, 1970, Ser. No. 96,443

Int. Cl. F24c 3/00

U.S. Cl. 126-91 A

7 Claims



The radiant tube assembly includes a refractory or metal outer tube having a closed end and a concentric metal inner tube spaced therefrom to define an elongated, annular chamber between the two tubes. The inner tube has a plurality of apertures substantially along the length thereof and a restricted opening at the end thereof which communicate with the annular chamber. The inner tube cooperates with a burner and the outer tube cooperates with a discharge means at the burner end of the assembly. Products of combustion only and not flame exit from the inner tube through the various apertures and opening and circulate through the annular chamber and then exit through the discharge means.

3,688,761

Patent Not Issued For This Number

3,688,762

**THERMAL CONTROL GARMENT**

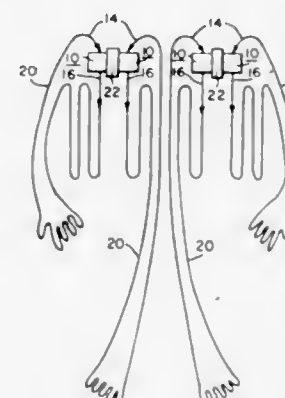
John W. H. Chi, and Robert Flaherty, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 2, 1971, Ser. No. 120,281

Int. Cl. F24j 1/00

U.S. Cl. 126-204

7 Claims



A thermal control garment is disclosed for controlling body heat losses over an extended period of time in a hostile environment. The garment utilizes a self-contained heat source which is thermally coupled to an evaporator unit having a suitable working fluid contained therein. A network of capillary tubing is interwoven throughout the garment, with the ends thereof connected to the input and output sections of the evaporator unit, respectively, so as to permit the distribution of heat from the heat-source-evaporator to the various parts of the garment; especially those parts covering the body extremities. The capillary pumped loop contains no moving parts and the life of the system is dependent solely on the life of the heat source, which can be of the exothermic chemical reaction or radioisotopic variety.

3,688,763

**DIAGNOSTIC DEVICE AND METHOD**

Raymond Cromarty, 10 Parmalee Crescent, Weston, Ontario, Canada

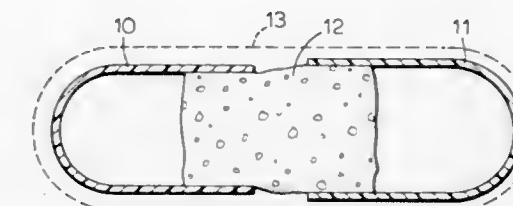
Filed July 15, 1970, Ser. No. 54,945

Claims priority, application Great Britain, July 28, 1969, 37,841/69

Int. Cl. A61b 10/00

U.S. Cl. 128-2 B

4 Claims



Cellular material is collected from the large intestine of a patient on a sponge. The patient swallows the sponge contained compressed in a gelatin casing with an enteric coating, the casing being dissolved in the large intestine to release the sponge, which is naturally evacuated by the patient and recovered for analysis.

3,688,764

**INTRACUTANEOUS INJECTION SYSTEM**

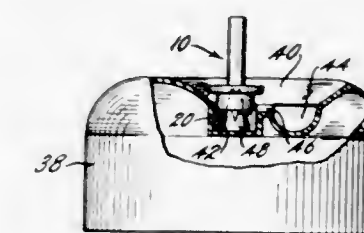
Jack Owen Reed, Englewood, N.J., assignor to Bard-Hamilton Company, Inc., West Englewood, N.J.

Filed Aug. 20, 1970, Ser. No. 65,424

Int. Cl. A61b 10/00

U.S. Cl. 128-2 R

4 Claims



The present invention is directed to an intradermal injection system adapted for multiple mass use, particularly for mass diagnostic testing such as the Heaf Multiple Puncture Tuberculin Test.

The structure includes an elongated finger grip skin puncture applicator with a set of puncture points mounted in the base face of the applicator. Associated with the applicator is a solution holder having therein an antigen well of pre-determined capacity. An escape channel leading to an overflow well removes any excess antigen from the well. Upstanding from the center of the antigen well is a centering and stop element which cooperates with a correspondingly shaped depression inside the base of the applicator so that the applicator may be centered in the antigen well with all of the applicator puncture points wetted by the antigen solution therein to a pre-determined level.

3,688,765

**HYPODERMIC INJECTION DEVICE**

Jack S. Gasaway, 2005 Barranca, Newport Beach, Calif.

Filed Oct. 3, 1969, Ser. No. 863,583

Int. Cl. A61m 05/30

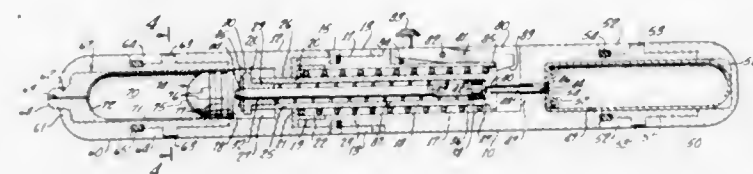
U.S. Cl. 128-173 H

17 Claims

A needleless hypodermic device including a body carrying a compressed-gas cartridge in one end and an ampul of fluid to be injected at the opposite end, the ampul having a nozzle portion projecting beyond the body and provided with an aper-



ture of predetermined size, and having a plunger movable to force the fluid from the ampul through the aperture. A cylinder in the body carries a tubular member and is spring-



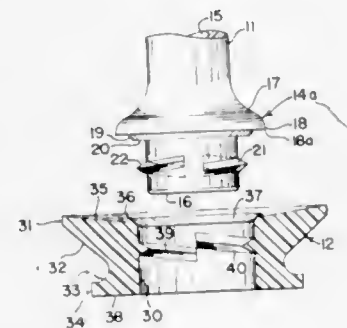
biased toward the cartridge for penetrating the cartridge and releasing the gas to drive a piston which, in turn, moves the plunger to exhaust the fluid. A trigger retains the cylinder in a cocked position until time of use.

3,688,766  
DOUCHE KIT

George P. Kempel, Akron, Ohio, assignor to Dop, Inc.  
Filed Oct. 5, 1970, Ser. No. 78,009  
Int. Cl. A61m 1/00

U.S. Cl. 128—232

3 Claims



A douche unit of the type herein contemplated is set forth in U.S. Pat. No. 2,664,893 issued Jan. 5, 1954 to George P. Kempel. The improvements over the aforesaid patent consist in a unique connecting means wherein each of the connecting components is provided with a pair of semi-circular helices, with the helices being in opposed relationship with each helix being a portion of one of the two helices that make up the double pitch interrupted thread arrangement utilized. By this arrangement, each rib that defines the helix of one component will be secured on opposed sides by the remaining ribs of the other component during the period of connection. Also, the further improvement of providing an auxiliary sealing means that includes an annular, deformable male and female type of connection that deforms into sealing relationship upon operation of the aforementioned connecting means.

3,688,767

DIAPER-HOLDERS OR NAPKIN-HOLDERS FOR BABIES  
Guy Goldstein, 2, Place de la Gare, 68 Colmar, France  
Filed June 1, 1971, Ser. No. 148,716

Claims priority, application France, Oct. 20, 1970, 7037844  
Int. Cl. A61f 13/16

U.S. Cl. 128—287

7 Claims



A diaper-holder or napkin-holder essentially comprising a sheet of plastic material with areas cut out in a wide sweep on two of its sides and possessing, on its two other sides, pockets intended to receive the respective ends of a diaper-pad for babies. The pockets are each formed by a double S-shaped folding over of the material of the sheet. The outer fold is heat-

welded over at least a portion of its length in such a way as to constitute a supporting means for the end of the diaper-pad. The inner fold is only welded along portions of its length that are situated on either side of the diaper-pad.

3,688,768

DISPOSABLE FACE RESPIRATOR AND METHOD OF MAKING SAME

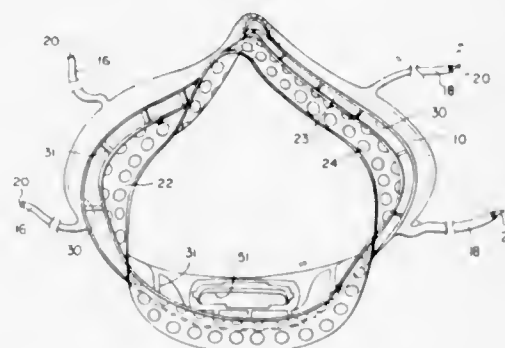
George Paul Reimschuessel, Flemington, N.J., and Jacob Matthys Prins, Sinking Spring, Pa., assignors to Johns-Manville Corporation, New York, N.Y.

Filed March 4, 1971, Ser. No. 121,086

Int. Cl. A62b 23/00

U.S. Cl. 128—146.2

7 Claims



A disposable face respirator formed of a shape retaining filter medium comprised of a plurality of fibrous layers that cover a major portion of the surface area of the mask and a flexible face piece attached to the periphery of the filter medium. An improved filter medium to face piece sealing joint is provided by incorporating an apertured lip on the face piece which is interlocked between first and second fibrous layers with the fibers in the second fibrous layer extending into and contacting fibers in the first fibrous layer. An undercut area may be provided in the apertured lip into which fibers which form the filter layer can be drawn.

A process of simultaneously forming and attaching the filter medium to the face piece is also disclosed. The process comprises depositing a first thin layer of solids from an aqueous slurry onto a foraminous suction mold having the surface contours desired for the interior of the filter medium, placing a face piece having an integrally formed apertured lip over the mold and the first layer, depositing a second thin fibrous layer of solids from an aqueous slurry on the outside surface of the first layer, on the outside surface of the apertured lip and within the apertures in the lip. In a preferred process, two fibrous backing layers are provided in this manner and a fibrous filter layer is deposited from an aqueous slurry on the outside surface of the second fibrous backing layer and within an undercut area provided in the apertured lip. An additional fibrous protecting layer is preferably deposited on the outside surface of the filter layer from an aqueous slurry.

3,688,769

Patent Not Issued For This Number

3,688,770

HIGH PRESSURE GAS PRESSURIZATION SYSTEM  
Wilbur J. O'Neill, Annapolis, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 8, 1970, Ser. No. 79,183

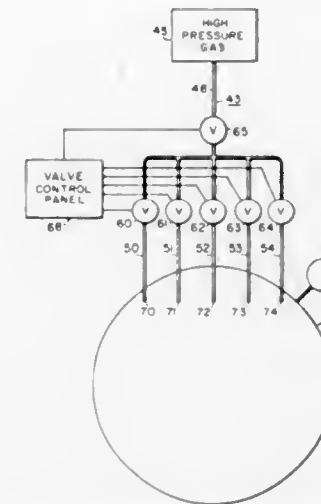
Int. Cl. A61m 16/00

U.S. Cl. 128—204

12 Claims

High pressure gas is fed into a hyperbaric chamber to be

pressurized, directly through a series of pressure reducing ori-



fices. The expansion of the high pressure gas that results, effects a cooling of the interior of the chamber.

3,688,771

SANITARY NAPKIN WITH CONVERTIBLE ATTACHMENT MEANS

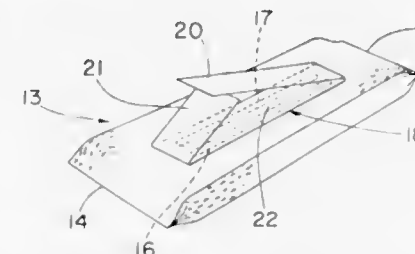
Edward E. Werner, Oshkosh, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed June 3, 1971, Ser. No. 149,441

Int. Cl. A61f 13/16

U.S. Cl. 128—290 R

8 Claims



A tabless sanitary napkin having on its lower surface a pressure-sensitive adhesive suitable for attaching the napkin to an undergarment, and a dual function protective cover removably secured to the adhesive. The cover is an elongate strip of flexible material of a length sufficient to extend beyond both ends of the napkin and thus provide free end tabs. At the option of the user, the protective cover may be retained in place and the free end tabs used as means to suspend the napkin from sanitary belts or similar suspension devices, or the cover may be stripped off and the pressure-sensitive adhesive used as means to fasten the napkin to a suitable undergarment. A method of fabricating a prefolded cover strip and attaching it to the napkin is also disclosed.

3,688,772

MENSTRUAL NAPKIN SUPPORT WAIST BELT

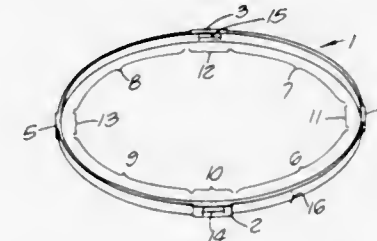
John Leslie Jones, Sr., 1070 Glen Oaks Blvd., Pasadena, Calif.

Filed April 7, 1971, Ser. No. 131,882

Int. Cl. A61f 13/16

U.S. Cl. 128—291

4 Claims



This invention teaches a simple one piece sanitary napkin support waist belt formed of elastomeric plastic film and use-

ful for supporting a menstrual napkin in a functional position on a female torso. The single support belt can fit a majority of female torso sizes with no mechanical belt size adjustments. The belt is sufficiently low cost to be discarded after using during menstrual period.

3,688,773

DEVICE FOR PERFORMING A TRACHEOSTOMY AND OTHER SURGICAL PROCEDURES

Sol Weiss, 17227 Queson Place, Encino, Calif.

Filed April 16, 1970, Ser. No. 29,064

Int. Cl. A61b 17/32, 17/34

U.S. Cl. 128—305

9 Claims



A device for aspiration, ventilation or visualization comprising:

- an expandable housing having an end portion tapered so as to form a means for puncturing,
- a plunger carrying a hollow tube,
- said tube and said plunger adapted to be inserted in said housing and movable with respect to said housing such that the depression of the plunger causes said tube to pass through and expand said tapered end portion of said housing.

3,688,774

TRACHEOTOMY CANNULA AND SUPPORTER THEREOF

Takichiro Aklyama, 404-44, Shimochiai, 1-chome, Shinjuku-ku, Tokyo-to, Japan

Filed Oct. 5, 1970, Ser. No. 77,865

Claims priority, application Japan, Oct. 6, 1969, 44/94495

Int. Cl. A61m 16/00; F16I 27/10

U.S. Cl. 128—351

8 Claims



A tracheotomy cannula and a supporter thereof. With the tracheotomy cannula comprising a combination of a relatively stiff outer tube made of a resin and a similar inner tube made of the same material adapted to be inserted into said outer tube, it is possible to remove phlegm and the like sticking to said inner tube after said inner tube is twisted and withdrawn from said outer tube. The supporter adapted to hold the tracheotomy cannula with said outer tube being inserted through larynx into trachea of a human body is made of a soft material and has a holder portion peripherally supported by thin membrane for a better fitness in use.



3,688,775

**SUN BATHING AND TANNING APPARATUS**

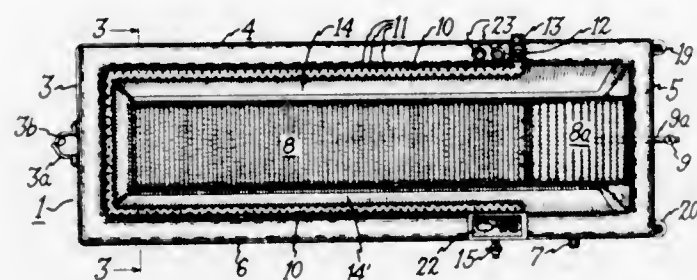
Elizabeth F. Raymann, 178 Woodlawn Ave., Pittsfield, Mass.

Filed Feb. 19, 1971, Ser. No. 116,968

Int. Cl. A61h 33/00

U.S. Cl. 128—366

11 Claims



A sun bathing apparatus which is characterized by providing the combination of a comfortable lounge means with an apertured conduit for selectively sprinkling water on a person reclining on the lounge means. The lounge means is further characterized by incorporating a plurality of convenience features that are easily accessible to a person reclining thereon. In addition, the entire combination of the lounge means, convenience accessories, and water-sprinkling conduit arrangement are collapsible into a conveniently manually portable bundle.

3,688,776

**DEMAND CARDIAC PACER WITH FAST RATE FOR INDICATING INTERFERENCE**

John Kenny, Welwyn Garden City, England, assignor to Devices Limited, Welwyn Garden City, England

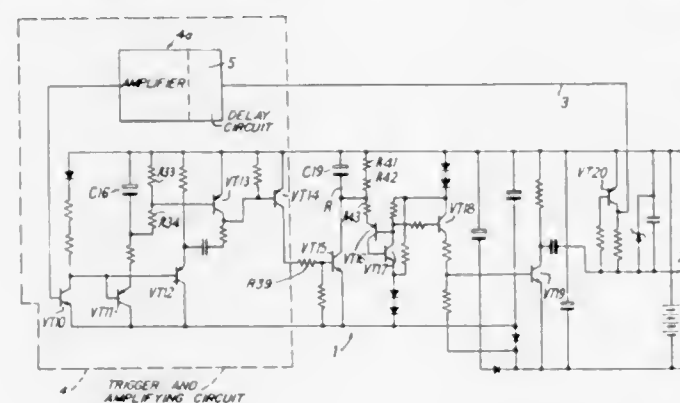
Filed Oct. 13, 1970, Ser. No. 80,414

Claims priority, application Great Britain, Oct. 13, 1969, 50,239/69

Int. Cl. A61n 1/36

U.S. Cl. 128—419 P

6 Claims



A cardiac demand device having a pulse generator with an inherent rate appreciably higher than the natural heartbeat rate and a feedback path for reducing the output rate to the natural heart-beat rate under normal conditions. An interference detector renders the feedback path inoperative to give the high inherent (warning) rate when electrical interference is present.

3,688,777

**CIGARETTE MAKING MACHINES**

Arnold Kastner, 10220 Armand Lavergne, Montral North 460, Canada

Filed Jan. 27, 1971, Ser. No. 110,077

Claims priority, application Canada, Feb. 23, 1970, 075618

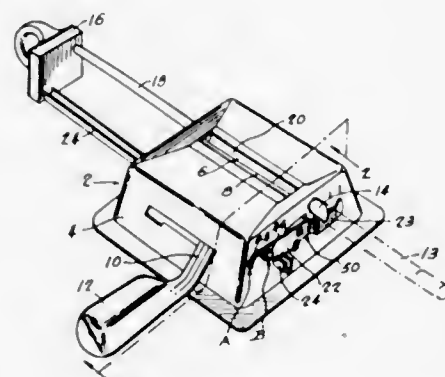
Int. Cl. A24c 05/42

U.S. Cl. 131—70

4 Claims

A cigarette making machine for do-it-yourself cigarette production and being selectively operable to produce

cigarettes of the plain-end, regular size filter-tipped, or king-size filter-tipped varieties is disclosed. The machine consists of a housing and a stationary tobacco compacting member and a movable tobacco compacting member operable by a lever and a handle, to move toward the stationary member to compact a tobacco charge therebetween. A second handle carrying a tobacco injection rod and a parallel cam rod movable to inject the tobacco charge into a cigarette tube positioned on a nipple



provided on the frame. The cam rod being operable on a tube retaining lever mounted on the frame to hold the retaining lever in contact with the nipple and the cigarette tube mounted thereon during injection of the tobacco. The improvement consisting of providing the cam rod with various cross-sections for selective movement of the retaining lever with respect to the nipple depending upon the length of the tobacco receiving recess in the cigarette tube being filled.

3,688,778

**HAIR ROD**

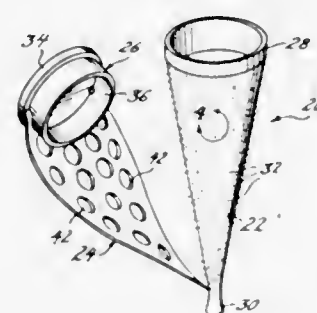
Richard R. Budman, 906 Robin Lane, Huntington Valley, Pa., and David Myer, 811 Avon Road, Philadelphia, Pa.

Filed Nov. 16, 1970, Ser. No. 89,886

Int. Cl. A45d 1/00

U.S. Cl. 132—9

11 Claims



A hair rod utilizable in the setting and permanent waving of hair. The hair rod is basically conical in shape and includes a projecting shaft at one end for rolling the hair on the rod. An elastic sheet covers the rod and follows the contour thereof. The sheet has a substantial width, and is adapted to hold the ends of the hair in place on the rod.

3,688,779

**HAIRPIECE**

Frank Greco, 5800 Arlington Ave., Riverdale, N.Y.

Filed May 28, 1970, Ser. No. 41,200

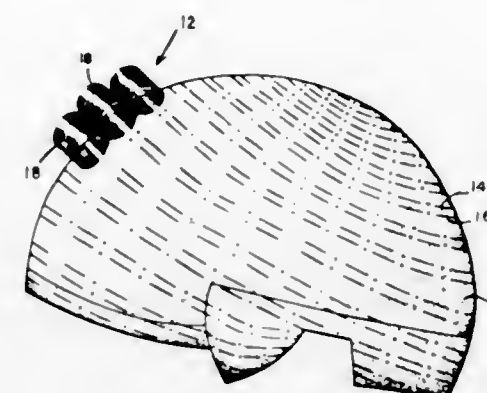
Int. Cl. A41g 3/00

U.S. Cl. 132—53

4 Claims

Wetfts of hairstrands are applied to a foundation (a cap or base). The hair strands are curled in such a manner that the

closely spaced adjacent wetfts have hair precurled in opposite solution. The spent wash solution and the dislodged contaminants are removed from said unit by a pump while the washed



directions so as to define a pair of facing concave sections forming between them a tunnel effect.

3,688,780

**AIR FILTER CLEANING METHOD**

Herbert L. Everroad, 4454 York St., Denver, Colo.

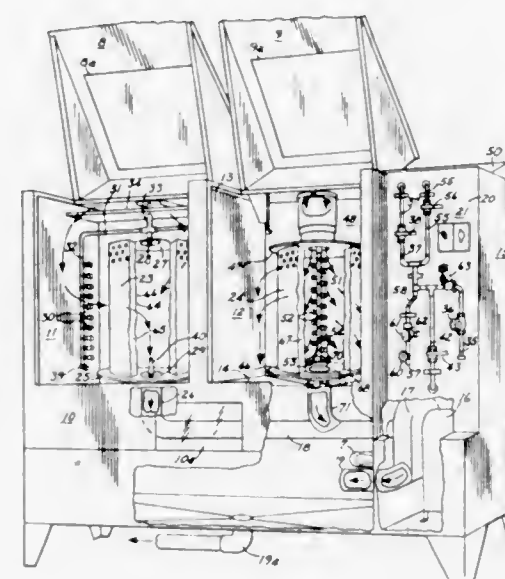
Division of Ser. No. 839,400, July 7, 1969, Pat. No. 3,620,234.

This application March 19, 1971, Ser. No. 126,171

Int. Cl. B08b 3/02, 5/02

U.S. Cl. 134—21

4 Claims



A method for cleaning air filters of the accordion folded paper type comprises spraying liquid over the filter wall on the side opposite the collected residue, concurrently passing air through the filter in the same direction, then discontinuing the flow when the discharged liquid is clear and similarly producing flows of liquid and air through the filter in the opposite direction and discontinuing when the liquid is clear.

3,688,781

**APPARATUS FOR TREATING DRILL CUTTINGS AT OFFSHORE LOCATIONS**

William A. Talley, Jr., Dallas, Tex., assignor to Mobile Oil Corporation

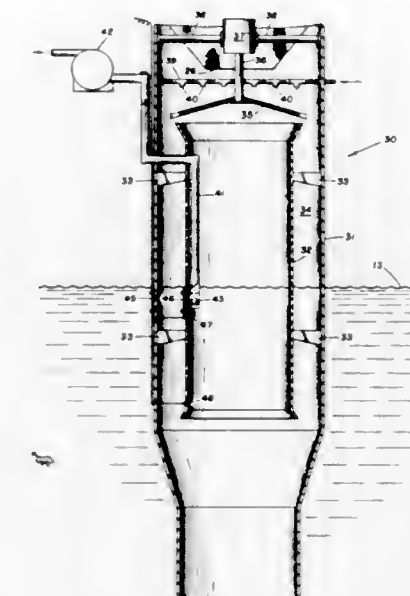
Filed July 15, 1970, Ser. No. 54,949

Int. Cl. B08b 3/02; B03b 7/00; E21b 21/00

U.S. Cl. 134—56 R

5 Claims

Apparatus for treating contaminated drill cuttings at an offshore location whereby the cutting can be returned to the water without polluting same. The cuttings pass from the shale shaker into a wash unit where they are sprayed with a wash



cuttings fall from the lower end of said unit back into the water.

3,688,782

**WASHING APPARATUS FOR HOLLOW CONTAINERS**

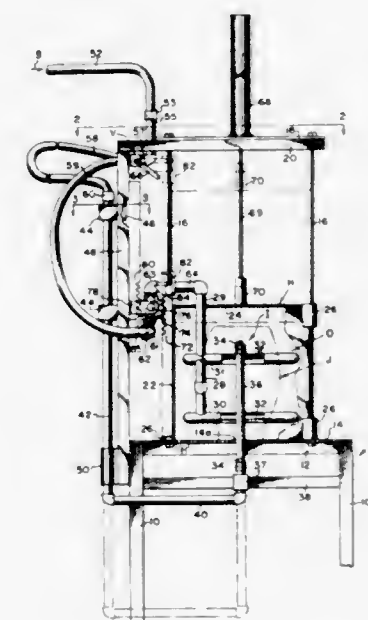
Charles E. Smith, 3215 Fisher Road, Bay City, Mich.

Filed Aug. 17, 1970, Ser. No. 64,184

Int. Cl. B08b 3/02; B67c 1/06

U.S. Cl. 134—58 R

11 Claims



Apparatus for washing a hollow container positioned on a support with the container mouth opening downwardly comprising an open bottom, cup-shaped spray hood movable from a raised position to a lowered position surrounding a container positioned on the support, a first sprayer mounted in the hood for spraying a fluid against the outer surface of the container when the housing is moved downwardly to the lowered position, and a second sprayer mounted below the support for movement upwardly through the mouth of the container to a raised position inside the container, the movements of the hood and the second sprayer being synchronized to effect simultaneous washing of the inner and outer surfaces of the container.

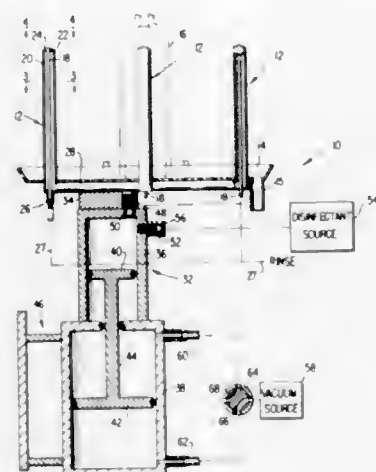


### 3,688,783 SANITIZING APPARATUS

William E. Owens, P.O. Box 219, Buffalo, Mo.  
Filed Aug. 17, 1970, Ser. No. 64,349  
Int. Cl. B08b 9/08, 3/02

U.S. Cl. 134—99

3 Claims



A method of rinsing and disinfecting a milking machine including the steps of first rinsing the internal surfaces of the teat cups of the milking machine with a liquid such as water to remove any residual milk remaining thereon from a prior milking operation and then disinfecting the teat cups by spraying a predetermined metered quantity of pressurized disinfecting solution thereon to kill any bacteria in the cups before the bacteria can be transferred to the next cow to be milked.

A novel sanitizing apparatus for performing the above operation includes a plurality of double tubed nozzles over which the teat cups are placed. Each of the nozzles has one of its tubes connected to a source of rinse liquid, while the other tube is connected to a source of disinfecting solution by way of a metering device which ensures that a predetermined metered quantity of disinfecting solution is sprayed from the nozzles into the teat cups. A drain pan collects the rinse liquid and disinfectant solution as they drain from the teat cups and directs them into the floor drain normally provided in a barn.

3,688,784

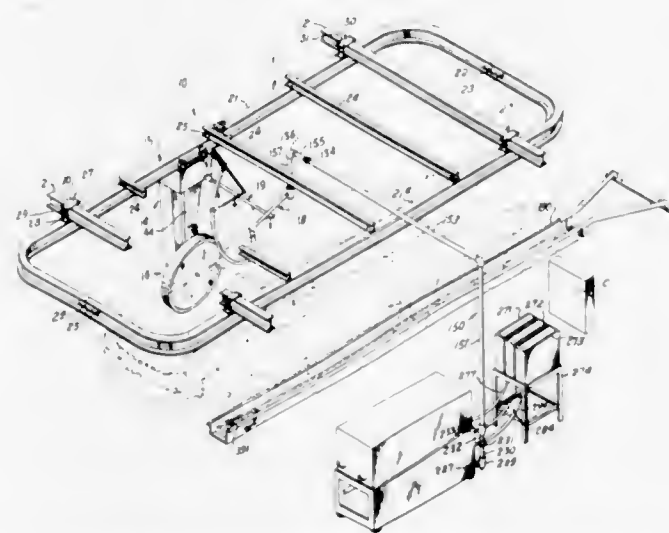
### VEHICLE WASHING APPARATUS

John L. Daum, and Ray B. Spurgin, both of Dallas, Tex., assignors to Delta Manufacturing and Engineering Corporation, Dallas, Tex.

Filed Jan. 26, 1970, Ser. No. 5,663  
Int. Cl. B08b 3/02

U.S. Cl. 134—123

1 Claim



A vehicle washing apparatus having a carriage mounted for movement about a substantially oblong track and a rotatable nozzle assembly mounted on the carriage to which water under pressure is supplied, the reaction force of the water

being sprayed by the nozzle assembly rotating the nozzle assembly, and a drive mechanism connected to said nozzle assembly and driven by the nozzle assembly for moving the carriage about the track.

3,688,785

### PAINT ROLLER CLEANER

Jackson B. Stevens, 1329 Armadale Ave., and Lewis Brown, 1335 Armadale Ave., both of Los Angeles, Calif.  
Filed Dec. 2, 1970, Ser. No. 94,256  
Int. Cl. B08b 3/02

U.S. Cl. 134—138

2 Claims



A paint roller cleaner having a tank for supporting at least one roller applicator in the central cavity therein so that it is free to rotate on its spindle. A water jet assembly is disposed within the cavity immediately adjacent the sidewall of the tank and the assembly is permitted limited rotation about a vertical axis. At least one jet is carried on a vertical conduit in the assembly that is directed to discharge a water jet stream against the periphery of the roller applicator. A connector is detachably coupled to a portion of the conduit for supplying pressurized water to the jet and an outlet pipe is connected to the bottom of the tank for removing dirty water therefrom.

3,688,786

Patent Not Issued For This Number

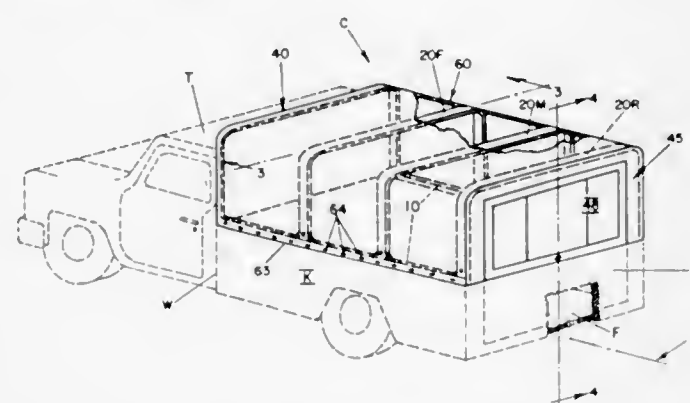
3,688,787

### LONGITUDINALLY COLLAPSIBLE CANOPY FOR PICKUP TRUCKS AND ANALOGOUS FRAMES

Clark B. Feather, 5602 N. 68th St., Omaha, Nebr.  
Filed April 29, 1970, Ser. No. 32,866  
Int. Cl. E04f 10/02

U.S. Cl. 135—7.1 A

5 Claims



There is provided a longitudinally collapsible canopy-like covering for longitudinally extending open-top frames, such as for the cargo-box of a pickup truck. The collapsible canopy

structure comprises a plurality of substantially parallel arch-like ribs, each rib including a lofty spacer-member extending transversely across the frame member longitudinal axis and a pair of upright leg-members longitudinally movably associatable along the frame member; an elongate strip of flexible crease-resistant drapeable or festoonable sheet material cover is attached at relatively-long intervals to lower portions of the several ribs and is additionally removably attachable at relatively-short intervals with respect to the underlying frame member. Desirable refinements include: rigidly upright adjustable front-panel and rear-panel; a novel resinous internal construction for the sheet-like flexible cover; and transverse alignment means for the longitudinally movable rear-most-rib.

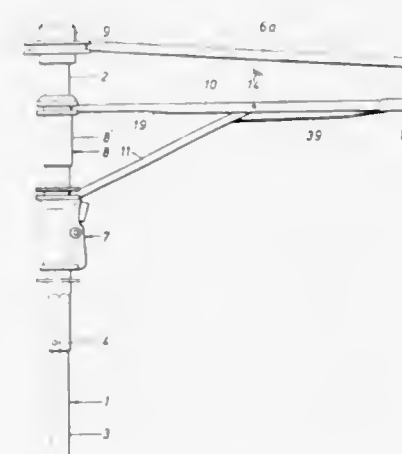
3,688,788

### ONE-PIECE RUNNER FOR COLLAPSIBLE UMBRELLAS

Heinz Weber, Dürerweg 8, 401 Hilden, Germany  
Filed July 22, 1970, Ser. No. 57,204  
Int. Cl. A45b 25/06

U.S. Cl. 135—28

3 Claims



A one-piece runner for use on a collapsible umbrella having a telescopic stick in which the stick includes a lower section telescopic into an upper tubular stick section having a lateral orientation opening for positioning the runner in a relatively fixed position on the stick; the runner including an integrally molded resilient tongue normally biased inwardly and having an upper head engageable in the opening when aligned with therewith; the head having a camming surface disposed in the path of travel of the lower telescopic stick section whereby the lower stick section will disengage the head from the opening and permit the runner to move on the stick.

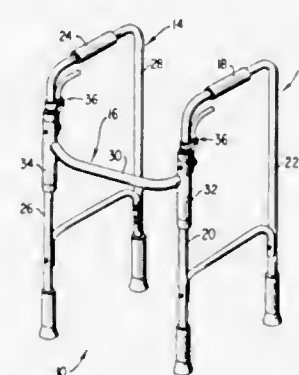
3,688,789

### FOLDABLE ARTICLE AND LATCH MECHANISM THEREFOR

Charles B. Bunch, 2502 Oak St., Chattanooga, Tenn.  
Filed Feb. 22, 1971, Ser. No. 117,387  
Int. Cl. A61h 3/00

U.S. Cl. 135—45 A

8 Claims



A latch and release assembly for a foldable article such as a walker wherein the side frame sections may be folded in-

wardly in overlapping relationship against a front cross-brace section. The cross-brace section includes a pair of vertical end sleeves through which the front legs of the side frames extend. The latching assembly includes a locking means which locks the legs within the sleeves in an unfolded set position when the walker is to be used. An easily actuated lever is provided for quickly releasing the locking means and thereby permitting the walker to be folded.

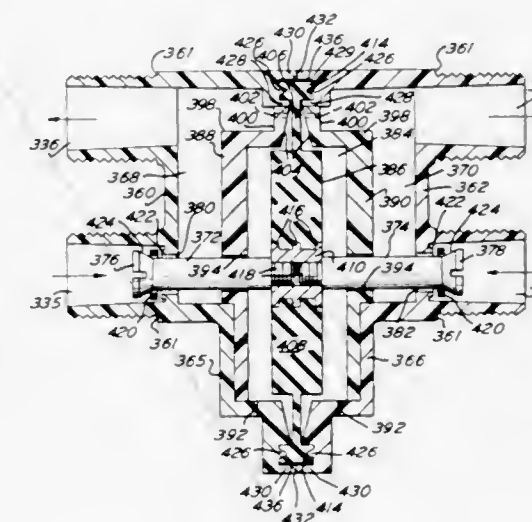
3,688,790

### PRESSURE BALANCE VALVE

Harold Esten, 73 Messenger Lane, Willingboro, N.J.  
Continuation-in-part of Ser. No. 777,976, Nov. 1, 1968, abandoned, which is a continuation-in-part of Ser. No. 447,007, April 9, 1965, abandoned. This application July 13, 1970, Ser. No. 54,542

U.S. Cl. 137—98

4 Claims



A pressure equalizing device having hot and cold inlet and outlet chambers with an interposed intermediate chamber containing a flexible diaphragm, valve stems extending through the intermediate chamber and having valve heads that move with the flexing of the diaphragm, such that a change in relative pressure in the inlet chambers affects the change in relative pressure in the outlet chambers by transmission through the diaphragm means that shift the valve head to correct the change in relative pressure.

In another embodiment of the invention there is provided a two-piece housing with means to locate the housings with respect to each other. There is also provided a means for locating the diaphragm to provide a proper squeeze on the diaphragm as well as a floating washer for sealing purposes.

3,688,791

### SIPHON SYSTEM

Philip R. McKinnon, 6224 Deveron Drive, Charlotte, N.C.  
Filed May 3, 1971, Ser. No. 139,368  
Int. Cl. E04f 10/00

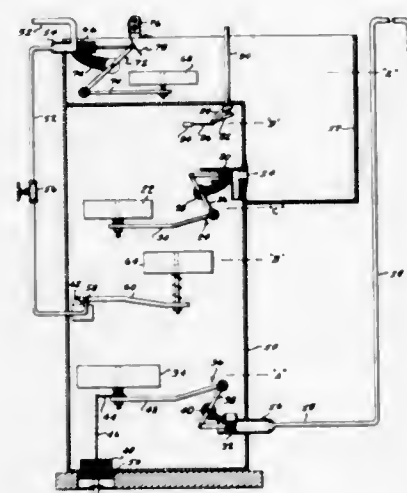
U.S. Cl. 137—135

16 Claims

An automatically primed continuously operating siphon system including a tank for collecting a liquid therein, the tank having an upper inlet and a lower outlet communicating with a siphon discharge conduit leading therefrom. The tank inlet and outlet each have associated therewith a float operated valve arranged so that during automatic priming of the system the outlet is opened and the inlet is closed to seal the upper portion of the tank in response to a rise in the level of the liquid in the tank. After the tank is sealed a pressure head is established by introducing a pressurized fluid into the sealed tank to thereby force the liquid through the outlet to establish a siphoning flow therein. As the level of the liquid falls as a result of the siphoning flow, the tank inlet is reopened to allow flow therethrough to the siphon, and the introduction of the pressurized fluid is stopped. The tank outlet will open and



close in response to the liquid level in the tank to maintain a supply of water in the siphon discharge conduit and permit periodic siphoning of the liquid as it collects in the tank. In addition, safety features may be included to break any suction



that may develop due to rapid siphon flow prior to opening of the inlet valve, to shut off the flow of pressurized fluid when the liquid level in the tank is abnormally high, to vent the tank, and to stop further flow of the liquid to the tank.

3,688,792

Patent Not Issued For This Number

3,688,793

Patent Not Issued For This Number

3,688,794

**EXHALATION VALVE FOR RESPIRATOR**

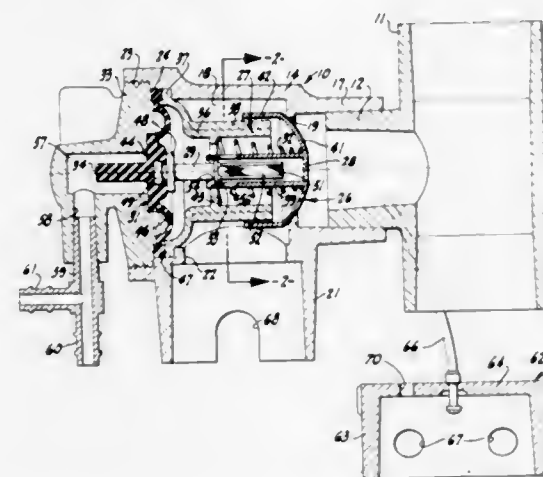
Forrest M. Bird, and Henry L. Pohndorf, both of c/o P.O. Box 817, Sandpoint, Idaho

Filed Aug. 10, 1970, Ser. No. 62,343

Int. Cl. F16k 15/18

U.S. Cl. 137—529

11 Claims



An improved exhalation valve for a mechanical respirator. The valve includes valving elements combined in a cartridge adapted for ready insertion and removal into a valve housing for convenient assembly and disassembly. A valve closure member in the cartridge occludes the exhalation flow path in a manner decreasing flow turbulence and valve flutter. The valve head on the closure member is formed by a surface of revolution generated by a curve of constant radius, and in-

cludes a cylindrical skirt adapted for axial aligning, non-binding movement with respect to longitudinal ribs formed on a central support. The closure member is operated by a plunger molded on the hub of a gas-operated diaphragm, and the plunger releaseably locks into a split intrusive ring on a hollow stem of the closure member in a lost-motion connection.

3,688,795

**LIQUID LEVEL GAUGE AND VALVE**

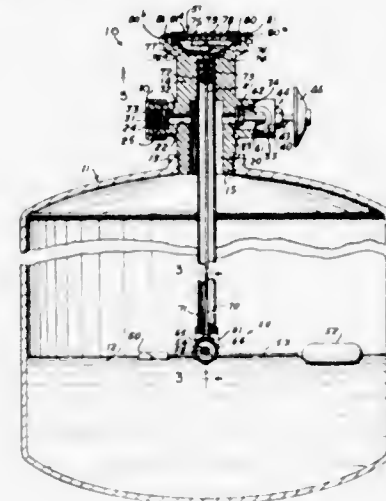
Carl C. Taylor, Garland, Tex., assignor to Rochester Gauges, Inc. of Texas, Dallas, Tex.

Filed Sept. 14, 1970, Ser. No. 71,943

Int. Cl. F16k 37/00

U.S. Cl. 137—558

4 Claims



A filling and withdrawal valve in combination with a liquid level indicator particularly adapted for tanks for liquids such as liquified petroleum gases. The level indicator includes a float coupled by a pair of bevel gears to a vertical shaft extending in a valve housing to a magnetically coupled liquid level indicator. The level indicator dial is provided in a top reading or a combined top and side reading form. Each form of the indicator is isolated from tank pressure and is removable with gas in the tank.

3,688,796

**WEIR ASSEMBLY**

Harmon A. McDougal, and Erwin C. Whitney, both of Beaumont, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

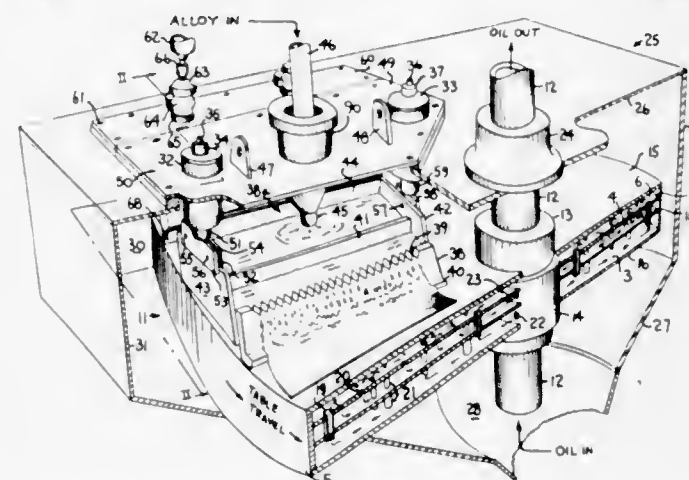
Division of Ser. No. 883,444, Dec. 9, 1969, Pat. No. 3,599,705.

This application Feb. 8, 1971, Ser. No. 113,508

Int. Cl. B22d 11/06

U.S. Cl. 137—574

12 Claims



A weir assembly suitable for use in conjunction with a rotary table is described for use in producing flakes of solid material from solutions or from molten metal baths. In particular the novel weir assembly of the instant invention is described with reference to the preparation of sodium-lead al-

loys. The assembly of the invention includes a tank, baffled to provide for the smoothing out of waves which might form during the filling of the tank with molten alloy. The weir plate is provided with a notched top portion to provide a uniform sheet of molten material flowing down the face thereof. The molten metal is contacted with the cooling table surface off the surface of a spreading means positioned at the bottom of the plate.

3,688,797

**CARTRIDGE TYPE VALVE**

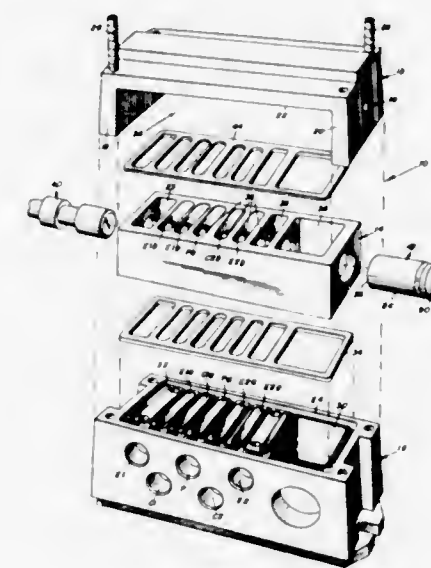
Gerald T. Sorenson, Hartland, Wis., assignor to Systems Design Company, Inc., Milwaukee, Wis.

Filed May 1, 1970, Ser. No. 33,663

Int. Cl. F16k 11/07, 31/06

U.S. Cl. 137—625.64

16 Claims



A valve assembly wherein a valve cartridge, having honed valve surfaces in which a lapped valve spool is reciprocated, is supported in a housing by means isolating these surfaces from stresses due to bolt torques and other stresses to which the assembly is subjected.

3,688,798

**VALVES**

Douglas Daniel John Nightingale, St. Albans, and Nigel Payne, Knebworth, both of England, assignors to Imperial Chemical Industries Limited, London, England

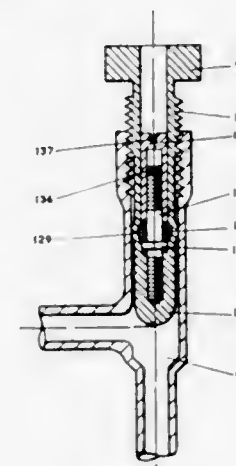
Continuation-in-part of Ser. No. 31,854, May 1, 1970, which is a continuation of Ser. No. 590,236, Oct. 28, 1966, abandoned.

This application Jan. 5, 1971, Ser. No. 103,990

Int. Cl. F16k 11/00

U.S. Cl. 137—625.47

19 Claims



There is provided a valve spindle having a closure portion for occluding a fluid passage within a valve body. The spindle has an annular portion which is deformable by application of

pressure thereto, and distending means are located within the spindle for distending the deformable portion radially outwards to contact the inner wall of the valve body and form a gland seal. The outer surfaces of the deformable portion and of the closure portion form a continuous unitary outer surface composed of a chemically inert polymer, preferably PTFE. Adjustment of the distending means may be accomplished without disturbing the effectiveness of the operating gland seal.

3,688,799

**PILOT ACTUATED FLUID CONTROL VALVE**

Alan Donald Bunyard, Burrell Road, Haywards Heath, Sussex, England

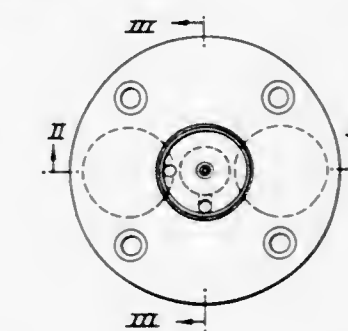
Filed June 19, 1970, Ser. No. 47,666

Claims priority, application Great Britain, June 21, 1969, 31,453/69; July 5, 1969, 33,993/69

Int. Cl. F16r 11/02

U.S. Cl. 137—625.64

12 Claims



A direction-control valve in which a poppet valve is caused to perform reciprocating movements under the influence of fluid pressure which is regulated, as regards its application to said poppet valve, by the positioning of a second valve. In one operative position of said second valve, a first exhaust port is closed by a first port closure means which moves in response to a fluid-pressure-drop thereacross in order to permit the supply of fluid under super-atmospheric pressure to one side of a double-acting cylinder, and a second exhaust port is opened by a second port closure means which moves in response to a fluid-pressure-drop thereacross in order to permit the exhaust of used pressurized fluid from the other side of said double-acting cylinder. In the other operative position of said second valve, the opening and closure of the first and second exhaust ports are reversed.

3,688,800

**FLUID FLOW RESTRICTOR**

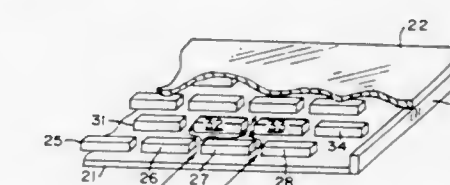
Paul F. Hayner, Lexington, Mass., and Richard J. Brockway, Amherst, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Nov. 27, 1970, Ser. No. 93,192

Int. Cl. F15d 1/02

U.S. Cl. 138—42

17 Claims



A fluid Flow Restrictor especially suitable for reducing the pressure of gases or liquids is described. The restrictor comprises a series of rows of baffles placed in the path of fluid flow, with the baffles in succeeding rows staggered with respect to those in adjacent rows so that as the fluid flows, it is constrained to change its direction repeatedly. The restrictor is preferably constructed with an increasing cross sectional area along the direction of flow. One suitable physical con-



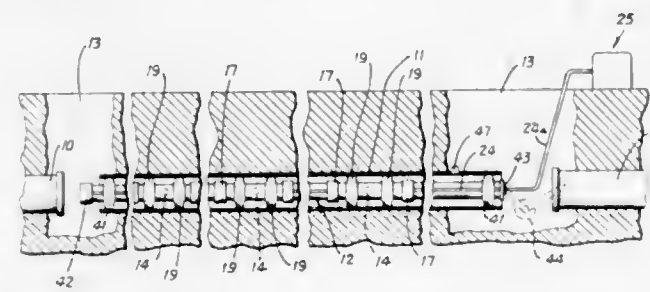
struction comprises a plurality of thin circular plates with a central bore, arranged in a stack. Each plate has a baffle pattern formed on one or both sides, for example, by etching. Fluid flow is from the central bore, between adjacent plates, to the circumference of the stack.

3,688,801

## METHOD FOR REPLACING GAS MAINS

Carl H. Rohrer, 1501 Hale Ave., Ft. Wayne, Ind.  
Filed March 9, 1971, Ser. No. 122,409  
Int. Cl. F16I 55/18

U.S. Cl. 138—97



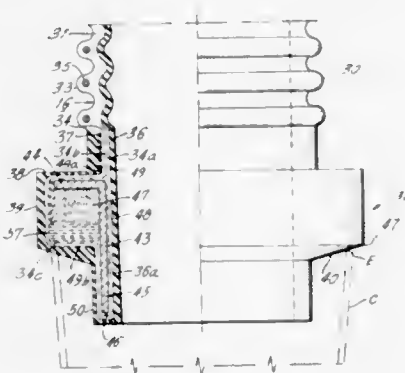
Disclosed is a method for economically and quickly replacing sections of deteriorated gas mains by isolating the section to be replaced, inserting in it a replacement section of smaller diameter which carries inflatable bag sealing means bracketing each service line connection to the deteriorated gas main section and which has a normally open, latched closed valve providing communication between the interior of the replacement section and the annular space between the old and replacement main sections and between the bracketing sealing bags. Gas may then be supplied to the replacement section and will reach the service line through the normally open valve and the annular space bracketed by the inflatable bag sealing means. Thus, unless the service line must also be replaced, no direct connection of the service line to the replacement section need be made.

3,688,802

## METHOD AND APPARATUS FOR HANDLING WASTE MATERIAL, REFUSE AND THE LIKE

Joseph F. Bauman, Trenton, and Arthur M. Elson, Hamilton Twp., Mercer, both of N.J., assignors to Acme-Hamilton Manufacturing Corporation, Trenton, N.J.  
Filed March 8, 1971, Ser. No. 121,865  
Int. Cl. F16I 9/20, 13/14

U.S. Cl. 138—109



A method and apparatus is described for the handling of waste material, refuse and the like. Such waste material is normally deposited in large sized trash cans each of which are provided with an opening located near the closed bottom end thereof. A mobile unit is provided with suction generating means coupled to a flexible elongated hose of relatively large diameter. The flexible elongated hose, preferably of a corrugated type, has an outwardly directed flange spaced inwardly from its free end and adapted to be seated upon the upper cir-

cular edge of a trash can with the marginal portion of the free end of the hose protruding slightly into the interior of the can. Energization of the suction generating means enables the contents of the refuse container to be easily and rapidly removed.

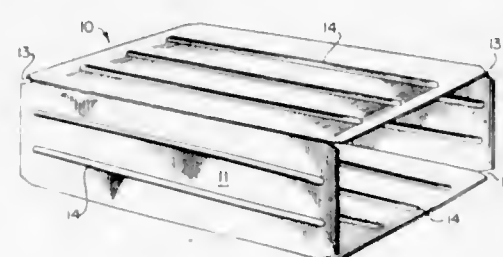
3,688,803

## DUCTING

Robert J. Pavia, 4 Colville Court, P. O. Box 75, Kanata, Ontario, Canada

Filed Dec. 11, 1969, Ser. No. 884,272  
Int. Cl. F16I 9/02

3 Claims U.S. Cl. 138—173



Sheet-metal ducting comprising a conduit section being stiffened by a plurality of integral ribs extending longitudinally, the ends of said integral ribs being spaced inwardly of the ends of said conduit section.

3,688,804

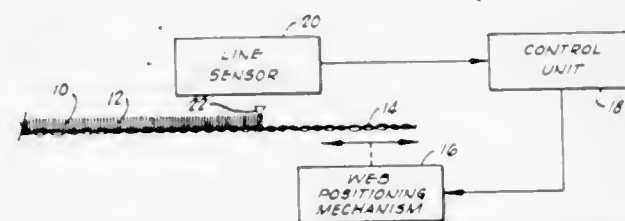
## METHOD FOR WEB GUIDING OF CARPET MATERIAL

Jerald L. Brown, Oklahoma City, Okla., and William O. Harlan, Atlanta, Ga., assignors to Fife Corporation, Oklahoma City, Okla.

Filed Feb. 2, 1970, Ser. No. 7,504  
Int. Cl. D03d 1/00, 27/00; D03i 1/08

U.S. Cl. 139—1

4 Claims



A method for guiding a moving web material such as carpet or the like which has continuous longitudinal strands woven in parallel disposition, and which utilizes an invisible dye marker which is not readily apparent to normal viewing of the material after guiding and performance through certain processing stages. The method consists in applying selected luminescent dye marking materials to a selected thread or yarns during production of the web material and then utilizing line guide illumination and sensing responsive to selected luminescence to derive positioning signals which are then utilized through suitable control means to continually maintain lateral web position of the moving web material for trimming, rolling, etc. operations.

3,688,805

## MACHINE FOR COILING FILAMENTARY MATERIAL

George B. Moertel, Conneautville, Pa., assignor to Textron Inc.

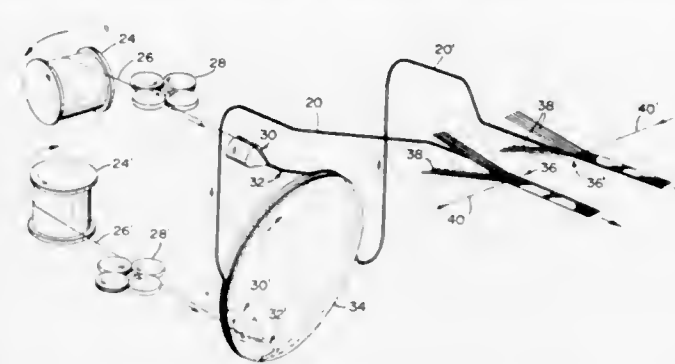
Filed Feb. 12, 1970, Ser. No. 10,835  
Int. Cl. D03d 35/00

U.S. Cl. 139—11

23 Claims

A coiling machine for forming a coiled filament for a slide fastener and for use directly with weaving apparatus including a rotatable shaft carrying a spool of continuous filamentary material at one end and having a mandrel rotatably supported in its other end, a device for tensioning the filamentary materi-

al prior to its application to the mandrel, and a roller cooperating with a curing wheel to capture the mandrel and hold it in a stationary position such that rotation of the shaft coils the filamentary material around the mandrel and the coiled filamentary material is drawn onto the curing wheel. A



pair of the coiling machines are mounted on the same frame as the weaving apparatus and a pair of coiled filaments are formed simultaneously and supplied from the curing wheel to the weaving apparatus where they are directly woven into a slide fastener tape.

3,688,806

## ARRANGEMENT OF REED TEETH ON A WAVE-TYPE LOOM

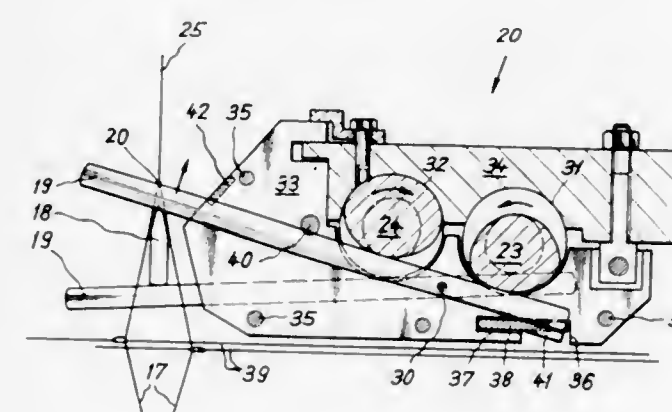
Edgar H. Strauss, Ruti, Zurich, Switzerland, assignor to Ruti Machinery Works, Ltd., Ruti, Zurich, Switzerland  
Filed March 9, 1970, Ser. No. 17,450

Claims priority, application Switzerland, March 20, 1969, 4206/69

Int. Cl. D03d 41/00, 49/60

U.S. Cl. 139—12

7 Claims



An arrangement of reed teeth for use on a wave-type loom, which comprises a plurality of reed teeth arranged side by side in a row, means for moving said teeth successively towards beat-up positions at the fabric beat-up point of the loom whereby said teeth, as a whole, execute an undulatory movement; and resilient material means positioned along the row of reed teeth so that the reed teeth strike this material before reaching their respective beat-up positions.

3,688,807

## WEFT DRAWING GRIPPER FOR LOOMS

Andrea Parolini, Gandino, Italy, assignor to Somet Societa Meccanica Tessile S.p.A., Gazzaniga (Bergamo), Italy  
Filed April 30, 1970, Ser. No. 33,286

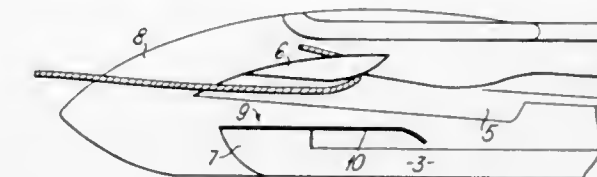
Claims priority, application Italy, April 30, 1969, 16262 A/69

Int. Cl. D03d 47/20

U.S. Cl. 139—122 N

5 Claims

In a continuous weft supply loom wherein a pair of reciprocating weft-carrying grippers—one feeding and one drawing gripper—insert the weft in the warp shed, exchanging



plied to the surface of said raised end portion of the branch, said covering extending in the shape of a cantilever lamina for a short length along and above the non-raised portion of the branch.

3,688,808

## METHOD OF PREVENTING A DENT FROM BEING DAMAGED BY A WEFT YARN DURING BEATING AND THE DEVICE FOR ACCOMPLISHING THE SAME

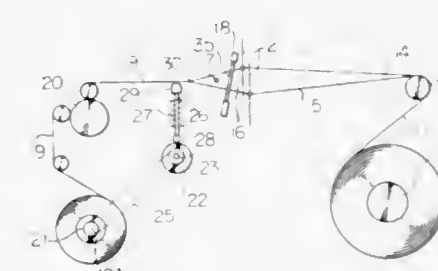
Yasunori Uehara, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 15, 1970, Ser. No. 98,417

Int. Cl. D03d 49/60

U.S. Cl. 139—190

4 Claims



A method and device for undulating a fabric sheet near the fell front so as not to cause the weft yarn to come into contact with the same portion of a dent. The device comprises a cross bar positioned below and in contact with the fabric sheet transversely to the same near the fell front. Rotation of the cloth roller causes an undulating motion of the cross bar so that the fabric sheet is undulated near the fell front, whereby the points of contact between the weft yarn and the dent during beating differs from time to time. In another embodiment, the cross bar is drivably coupled with the shaft of a friction roller by means of an angled rod in such a manner that rotation of the friction roller causes an undulating motion of the cross bar.

3,688,809

## METHOD AND APPARATUS FOR PRODUCING AND THREADING A HELIX INTO A STACK OF SHEETS

Guido Negro, Neuffen, Germany, assignor to Bielomatik Leuze & Co., 3, Neuffen, Germany  
Filed Aug. 21, 1970, Ser. No. 65,761

Claims priority, application Germany, Aug. 30, 1969, P 19 44 223.0

Int. Cl. B21f 3/02

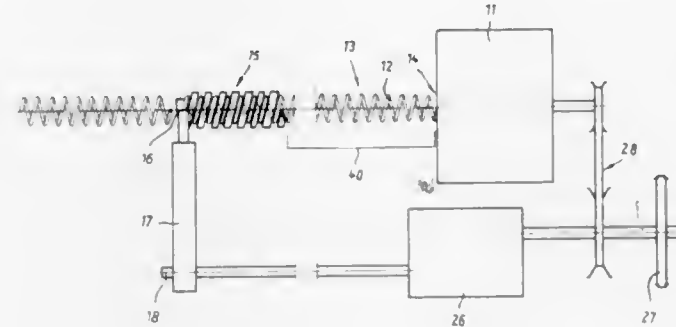
U.S. Cl. 140—92.4

13 Claims

A method and apparatus for automatically producing and threading a helix into a perforated stack of sheets to form a notebook, calendar or the like. The apparatus comprises a device for continuously winding a thread or wire into a helix, a device for repeatedly cutting the helix to a desired length and a device for threading the cut-to-length helix into a perforated stack of sheets. According to the invention, the cutting device includes a screw-shaped guide, arranged some distance away



from the winding device, for longitudinally guiding the helix which is continuously produced by the winding device. At the end of the guide there is located a recess. A movable tool, a portion of which is arranged to fit into the recess, is provided



to cut and thereafter bend over a short length of the thread of the helix. The tool is driven in dependence upon the drive of the winding device so that the helix which is continuously produced is repeatedly cut to a desired length.

3,688,810

## WIRE MESH WORKING APPARATUS

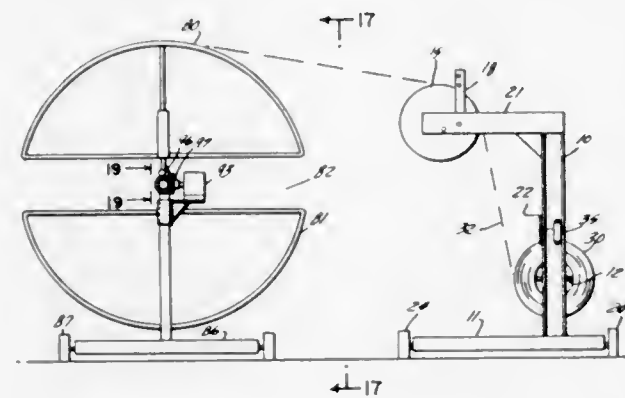
Owen C. Spencer, 138 West Story, P.O. Box 384, Winter Garden, Fla.

Filed April 6, 1970, Ser. No. 25,970

Int. Cl. B21f 33/00

U.S. Cl. 140—107

17 Claims



A reinforcing wire mesh placement apparatus is provided having a rotating spindle for placing a roll of tightly wound wire mesh for reinforcing concrete, or the like, and having a decontouring drum rotatably connected for unravelling the wire in a manner to decontour and flatten the rolled wire. A frame is provided which has lifting means for lifting the apparatus for the placement of wire mesh at various levels of a multi-levelled building during construction. A guard is also provided for flattening uneven spots in the wire mesh during the decontouring operation and the frame has several operable positions for working in different positions or for movement between locations. The frame can also be provided with wheels and can be power-actuated and may be connected to the work table for cutting and bending the wire mesh as desired. A power operated enlarged drum may also be added for holding the decontoured wire until ready for use or for re-winding the decontoured wire into an enlarged roll for ease in working therewith.

3,688,811  
METHOD OF ESTABLISHING A WARP JOINT OF A  
STRANDED WIRE AND STRANDED WIRES USED  
THEREIN

Kunimasa Moriyama, 2758-14, Iijimacho; Tomio Kogure; Kozi Sakai, both of 3514, Totsukamachi, all of Totsuka-ku, Yokohama, and Keisaku Takeuchi, 204-48, Kamisugata, Kohoku-ku, Yokohama, all of Japan

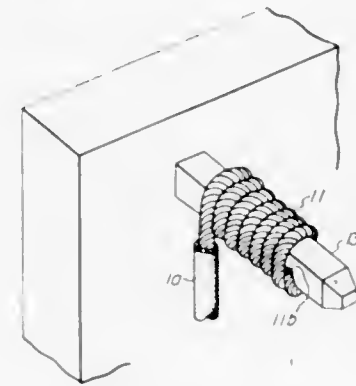
Filed March 6, 1970, Ser. No. 17,050

Claims priority, application Japan, March 12, 1969, 44/18314

Int. Cl. B21f 15/00

U.S. Cl. 140—111

2 Claims



A method of establishing a warp joint of a stranded wire consisting of a strand of a plurality of wires twisted together, wherein said stranded wire is wrapped around a terminal rod in a direction opposite to the direction of twist thereof.

A stranded wire consisting of a strand of a plurality of wires and an insulating sheath covering said strand, said strand being twisted to such an extent that it will not be untwisted in the sheath stripping operation and further coated with a conductive material as required.

3,688,812

## METHOD FOR SEALING AMPOULES

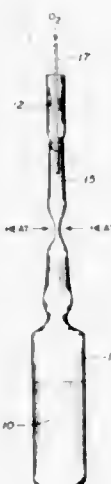
Alan D. Fredericks, College Station, Tex., assignor to Oceanography International Corporation

Filed Feb. 17, 1971, Ser. No. 116,083

Int. Cl. C03b 23/18; B67b 5/00; B65b 7/90

U.S. Cl. 141—4

2 Claims



An improvement in the method of sealing glass ampoules by melting the neck of the ampoule in the presence of an open flame to create a closure. The improvement involves supporting an elongated purge cone upon the neck of the ampoule so that the tapered end of the cone extends into the neck of the ampoule. A conduit is introduced through the purge cone to extend downwardly into the neck of the ampoule. The bottom of the conduit is located below the bottom of the purge cone but above the point in the ampoule neck at which the closure is to be made. Gas is circulated through the conduit and ex-

hausted upwardly through the purge cone and through any gaps between the tapered portion of the purge cone and the neck of the ampoule to prevent inflow of contaminants from the flame used to seal the ampoule.

3,688,813

## DISPENSING NOZZLE

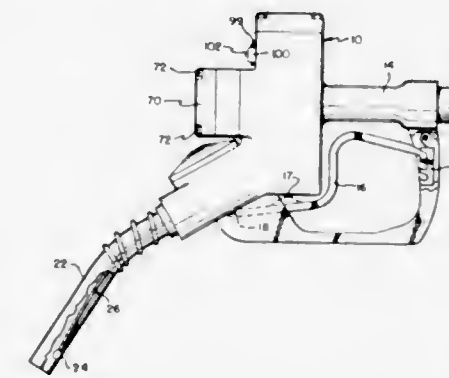
Edward A. Mayer, Newburgh, N.Y., assignor to Texaco, Inc., New York, N.Y.

Filed April 19, 1971, Ser. No. 134,992

Int. Cl. B65b 3/26; B67d 5/373

U.S. Cl. 141—128

5 Claims



An automatic fuel dispensing nozzle for filling and topping-off a tank in which the topping-off step is effected by a topping-off valve which is actuated automatically by an increase in line pressure which occurs when the initial control signal caused by the initial surge of fuel about the filler spout closes a secondary valve in the main line.

3,688,814

## MACHINE FOR USE IN THE MANUFACTURE OF GRINDING WHEELS

Robert E. Budai, and Philip R. McDowell, both of Downsview, Ontario, Canada, assignors to G & B Automated Equipment Limited, Downsview, Ontario, Canada

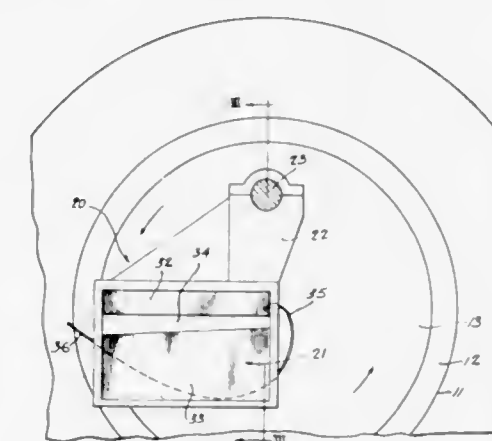
Filed April 26, 1971, Ser. No. 137,294

Claims priority, application Germany, March 26, 1971, P 21 14 641.8; March 26, 1972, G 71 11 507.6

Int. Cl. B28b 13/00

U.S. Cl. 141—280

4 Claims



A machine with a work table in which a mold cavity is formed. A shuttle hopper discharges grinding wheel mix into this cavity while rotating. A deflecting blade below the shuttle hopper distributes the mix uniformly in the cavity and smooths the upper surface level with the top of the mold edge. The blade is generally spiral in shape, the inner portion thereof expanding from the axis of rotation so as to intersect radii at 55°.

3,688,815

## RADIAL ARM SAW DEPTH GAUGE

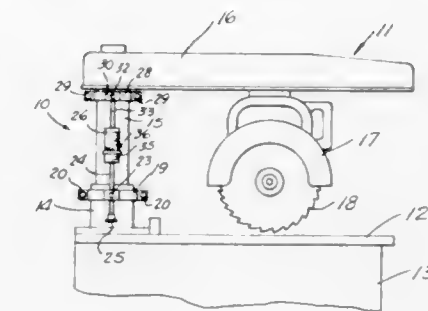
Charles A. Ridenour, 183 Pocahontas St., Buckhannon, W. Va.

Filed April 30, 1971, Ser. No. 139,048

Int. Cl. B27b 5/20

U.S. Cl. 143—6 A

5 Claims



A depth gauge for radial saws which can be adjusted to cooperate with saws of different diameters and can be further adjusted to regulate the depth of cut of the saw into the work.

A calibrated scale is provided to permit an accurate adjustment of the depth of cut.

3,688,816

## ARRANGEMENT AT TREE FELLING UNIT

Stig Olof Runeson, Alfta, Sweden, assignor to Ostbergs Fabriks AB, Akfta, Sweden

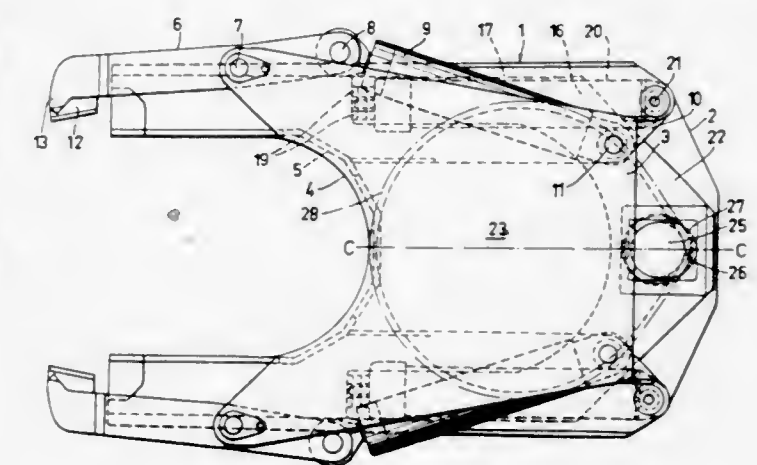
Filed June 15, 1970, Ser. No. 46,180

Claims priority, application Sweden, June 19, 1969, 8752/69

Int. Cl. B27b 17/00; A01g 23/08

U.S. Cl. 143—32 N

15 Claims



The invention relates to a tree felling unit of the type at which a frame supports arms for pressing the tree stem against a stop member on the frame, whereafter cutting is effected by means of a cutting device supported by the frame. The invention shows the improvement that the cutting device is an endless saw chain driven along a guiding edge of a disc slidable along a straight track in the frame and drivable against the tree stem with the guiding disc edge facing the stem. Hereby a unit is obtained having the advantages of the shear knife, such as compact dimensions and directed felling effect, but not its disadvantages, such as damages on the surface wood and requirements on a very high driving effect.

3,688,817

Patent Not Issued For This Number



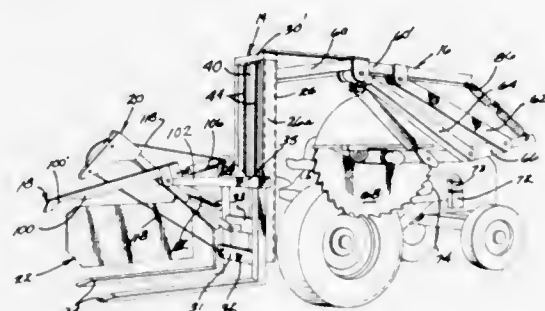
3,688,818

**PULP CUTTING AND LOADING MACHINE**

Franklin W. Domres, Rte. #1, Manistee, Mich.  
Division of Ser. No. 656,257, July 26, 1967, Pat. No.  
3,519,042. This application April 14, 1970, Ser. No. 32,506  
Int. Cl. B27b 5/10

U.S. Cl. 143—46 R

10 Claims



Field use apparatus for high production cutting of pulp poles into uniform length "sticks", and loading of the cut sticks onto a haulage vehicle, employing in combination with a vehicle, a special cooperative pole evener and measuring means, special compact and gripping means, hoisting means, and specially mounted cutoff means.

3,688,819

Patent Not Issued For This Number

3,688,820

**EDGER SAW GUIDE**

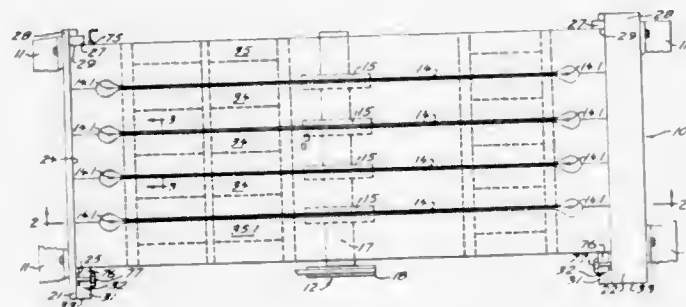
Robert E. Lundblom, S.S. 2 Elk Road, Prince George, British Columbia, Canada

Filed March 22, 1971, Ser. No. 126,479

Int. Cl. B27b 5/34

U.S. Cl. 143—160 G

6 Claims



A guide assembly for a circular saw blade slidable of an arbor, the guide assembly having a pair of supporting members adapted to be secured to a saw frame in side-by-side relationship and on opposite sides of the saw blade, the supporting members having wide end portions which engage each other beyond the saw periphery and which space narrowed central portions clear of the saw blade. The central portion of each supporting member has transversely adjustable guide blocks for slidably engaging the saw blade.

3,688,821

**FEED DEVICE**

Bruce John McColl, 520 Henry St., Whitby, Ontario, Canada  
Division of Ser. No. 572,530, Aug. 15, 1966, Pat. No.

3,533,458. This application July 30, 1970, Ser. No. 59,442

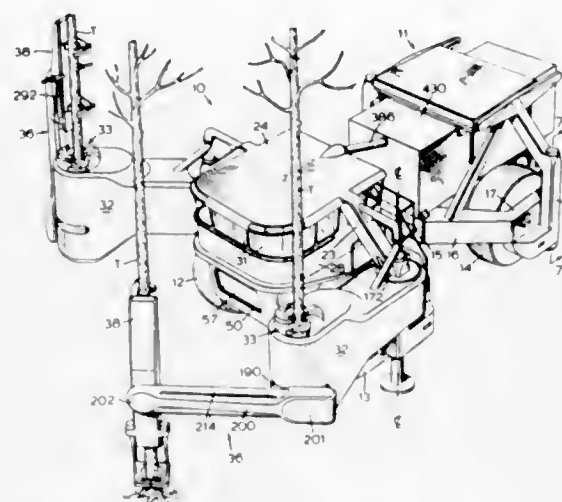
Int. Cl. A01g 23/02

U.S. Cl. 144—3 D

8 Claims

A method and apparatus for feeding a severed tree in a tree harvester and reducing the tree to chop form in which the

severed tree is supported and successively guided through a



debarking and debranching station and then a station that reduces the debarked tree to wood chips.

3,688,822

**TOPPING ATTACHMENT FOR TREE HARVESTERS**

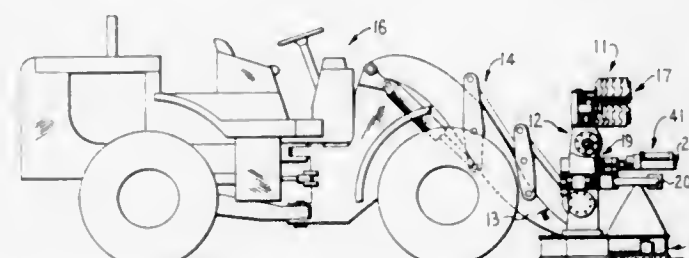
Nathan Gutman, Washington, and Dorrance Oldenburg, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 26, 1971, Ser. No. 147,012

Int. Cl. A01g 23/02

U.S. Cl. 144—3 D

5 Claims



Two embodiments of a topping mechanism for a tree harvester including a frame movably mounted on a vehicle, drive means arranged on the frame for propelling a tree along a feed path extending through the delimeter and a grapple arm movable toward and away from the frame for urging the tree into engagement with the drive means, the topping mechanism comprising two assemblies arranged respectively on the frame and the grapple arm, one of the assemblies including a pivotable blade capable of extension across the feed path and an actuator mechanism for controlling movement of the blade, the other assembly including a stop arranged for engagement with the actuator as the grapple arm approaches within a preselected distance from the frame.

3,688,823

**SUSPENSION DEVICE FOR TREE FELLING UNIT**

Stig Olov Runeson, Alfta, Sweden, assignor to Ostbergs Fabriks AB, Alfta, Sweden

Filed Dec. 7, 1970, Ser. No. 95,555

Claims priority, application Sweden, Dec. 12, 1969, 17218/69

Int. Cl. A01g 23/02

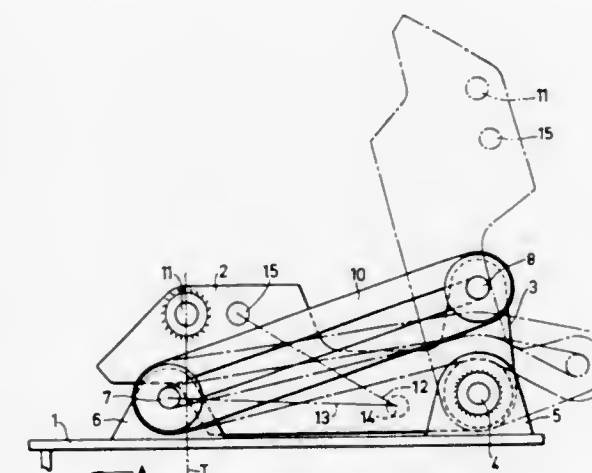
U.S. Cl. 144—34 R

6 Claims

The invention relates to a crane-supported pivotal tree felling unit of the type at which gripping arms press the tree stem against a thrust on the unit whereafter the stem is cut by a cross cut member disposed below the gripping arms. In the final phase of the cross cutting operation the jib is lifted so that the breaking of the stem is facilitated by lever action, whereby

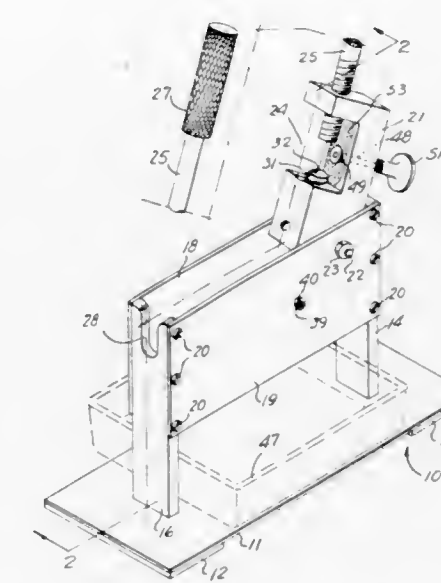
the force-actuated end of the lever corresponds to the suspension point of the unit on the jib. According to the invention said suspension point is so movably connected with the unit by a linkage that at said lifting of the jib a spring means retaining

toward the adjustable jaw to crack a nut therebetween. A plunger is mounted for transverse movement in the space



the linkage is overcome and the suspension point is moved rearwards from the tree, thereby increasing the effective length of the lever and, thus, increasing correspondingly the breaking moment acting on the tree.

between the jaws to dislodge a cracked nut which sticks in the jaws.



3,688,826

**FRUIT CUTTING AND DE-PITTING SYSTEM**

Joseph A. Amori, 1270 Pine Ave., San Jose, Calif.

Filed Dec. 7, 1970, Ser. No. 95,581

Int. Cl. A23n 3/08

U.S. Cl. 146—17 R

3 Claims

3,688,824

**SONIC TIMER BUTTING METHOD AND APPARATUS**

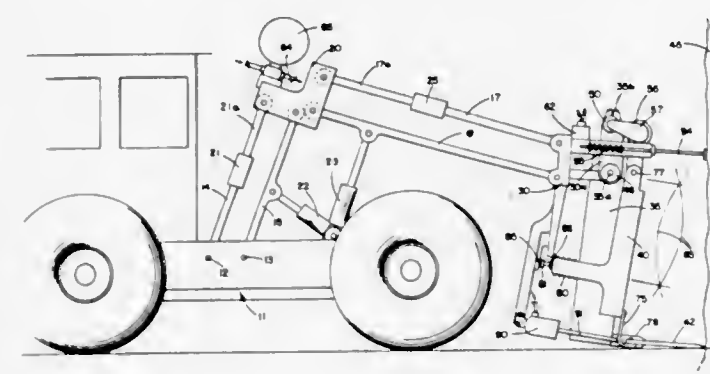
Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif.

Filed March 15, 1971, Ser. No. 124,349

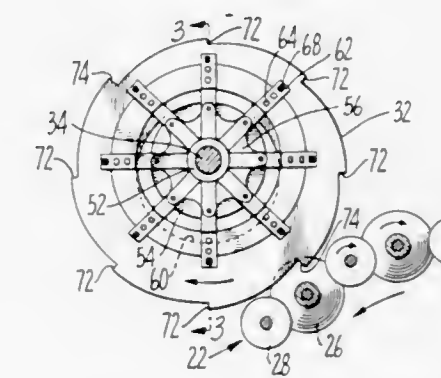
Int. Cl. A01g 23/02

U.S. Cl. 144—309 AC

21 Claims



Sonic energy is coupled from an orbiting mass oscillator to a resonator member, the frequency of oscillation of the energy being such as to set up resonant vibration of the resonator member. Unidirectional pulses of vibrational energy are coupled from the resonator through an acoustical rectifier to a cutter blade, the blade being biased against timber to be cut. The vibrational energy imparted to the cutter blade thus efficiently implements the cutting action.



3,688,825

**NUTCRACKER**

James L. Hall, Rte. 6, Box 40, Aiken, S.C.

Filed April 2, 1971, Ser. No. 130,607

Int. Cl. A23n 5/02

U.S. Cl. 146—16

7 Claims

A nutcracker having an adjustable jaw to receive nuts of different sizes with the second jaw being cam operated to move towards the first jaw to crack a nut positioned between the jaws. As the jaws are swung through an operating arc the cam operated jaw is first resiliently held against the nut by a spring pressed cam plate and then on contacting the post is forced

Apparatus for cutting and removing the pit from ovaloid fruit comprising means for transporting the fruit in a serial fashion along a predetermined path while continuously rotating the fruit in a substantially vertical plane and a freely suspended rotatable knife disposed above the predetermined path and adapted to serially engage the fruit. The knife includes a flat plate having first tooth means comprising a plurality of teeth disposed about the periphery thereof and projecting inwardly a distance sufficient to pierce the skin of the engaged fruit and cut the fruit but insufficient to normally engage the fruit pit. Also disposed about the periphery of the flat plate is second tooth means and sufficient to engage the pit and remove the pit from the fruit.

3,688,827

**FEED WAGON AUGER**

Kelly P. Ryan, c/o Blair Manufacturing Co., Inc., Blair, Nebr.

Filed March 8, 1971, Ser. No. 121,785

Int. Cl. A01f 12/40; B02c 18/00

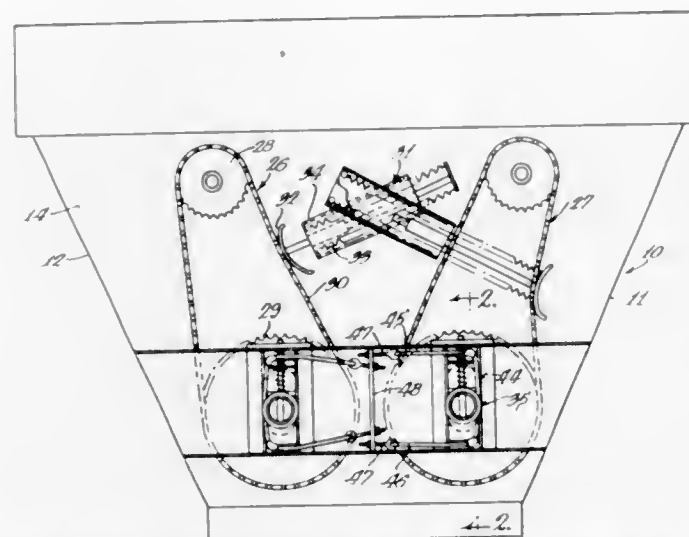
U.S. Cl. 146—106

14 Claims

A feed wagon having a feed box provided with an auger for moving feed therethrough. The auger is mounted on means for



maintaining the auger substantially horizontal while per-



mitting vertical displacement thereof. Paddle means are provided on the auger for mixing and slicing the feed.

### 3,688,828 POTATO-SEED CUTTING MACHINES

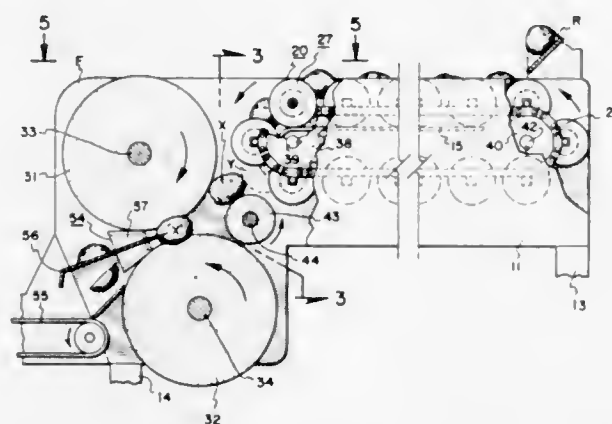
Soren E. Peterson, 1649 West 3300 South, Salt Lake City, Utah

Filed Oct. 2, 1967, Ser. No. 672,219. The portion of the term of this patent subsequent to Dec. 13, 1983, has been disclaimed.

Int. Cl. A01c 9/00

U.S. Cl. 146—164

8 Claims



The present invention provides an improved potato-seed cutting machine wherein the conveyor rollers, pressure rollers facilitating seed cutting, and "third roll" are so constructed and arranged such that the conveyor thrusts a potato to be cut into engagement with said third roll and one of said pressure roller means, whereas the latter pair serve to introduce said potato between said pressure roller means for cutting. Other improvements include positive-feed pressure rollers and third roll of improved, non-circular design.

### 3,688,829 REMOVING SCALE FROM OIL WELLS

Lloyd W. Jones, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed May 24, 1971, Ser. No. 146,500

Int. Cl. E21b 37/00, 43/27

U.S. Cl. 166—305 R

7 Claims

A workover process for removing calcium sulfate scale from oil wells includes introducing into the well and into contact with the scale an aqueous solution of sodium or potassium gluconate and sodium or potassium hydroxide. The weight ratio of gluconate to hydroxide is between about 2:1 and about 5:1 to give a direct solvent action. The concentration is between about 10 percent and about 30 percent by weight. The solvent

can be used in connection with other workover steps such as the use of string shots, bailing, use of organic solvents such as paraffin solvents, acidizing, fracturing, and use of scale inhibitors.

### 3,688,830 METHOD OF MAKING MOLDS

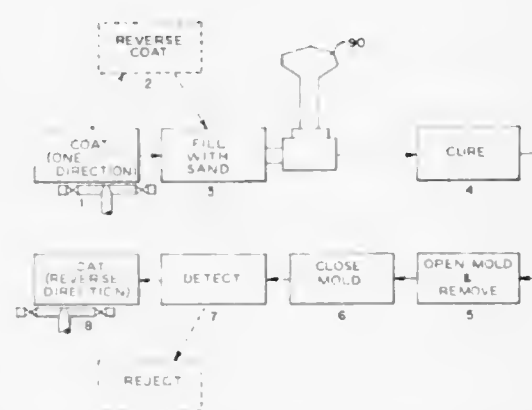
Walter H. Van Deberg, Berkley, Mich.; Earl A. Thompson, deceased, late of Bloomfield Hills, Mich.; Elizabeth F. Thompson, executrix, Bloomfield Hills, Mich.; Paul Francheth, executor, Grosse Pointe, Mich., and Michael M. Wild, executor, Royal Oak, Mich., assignors to Earl A. Thompson Manufacturing Co., Ferndale, Mich.

Filed Aug. 28, 1969, Ser. No. 853,984

Int. Cl. B22c 15/22

U.S. Cl. 164—22

6 Claims



A series of expendable shell molds is formed in a permanent pattern having a series of connected mold cavities. A passage extends from outside the pattern into each end of the series. A suspension of parting agent is blown by gas or superheated steam into the cavities through one of the passages while the other is vented through an orifice of controlled size to maintain the desired pressure. To coat evenly the parting agent may then be blown in the opposite direction through the cavities. Thereafter molding sand is blown into the pattern through one or both of the passages. Imperfect closing of the separable pattern is detected by blowing air into a third passage which ends at the parting plane. The air is supplied from a constant pressure source through an orifice of predetermined size and the pressure is measured on the downstream side of the orifice. A blow box connected to a sand hopper is pivoted to be swung toward and away from the pattern. A sand valve and a vent valve cooperate to dump sand from the hopper rapidly into the blow box. Gas under pressure is distributed throughout the sand from below to fluidize the sand and simultaneously force is applied above the sand to flow the mass into the pattern.

### 3,688,831 KILLED STEEL AND METHOD OF MAKING SAME

Thomas W. Daws, Bethlehem, and Albert L. Lehman, Center Valley, both of Pa., assignors to Bethlehem Steel Corporation

Filed July 18, 1969, Ser. No. 843,228

Int. Cl. B22d 7/10, 27/04, 27/16

U.S. Cl. 164—65

3 Claims

A process for producing very large killed steel forging blanks and the product thereby produced. The process consists of teeming a melt of killed steel into an ingot mold containing a sinkhead reservoir, and insulating the solidified top surface of the sinkhead with an inert material. The forged blank is characterized by the absence of ultrasonic indications of non-metallic inclusions and internal discontinuities.

### 3,688,832 REFRACTORY CORES

Robert A. Horton, Chesterland, Ohio, assignor to Precision Metalsmiths, Inc.

Filed Feb. 22, 1971, Ser. No. 117,751

Int. Cl. B22c 3/00

U.S. Cl. 164—72

6 Claims

Refractory cores, preferably used in investment casting, are hardened and strengthened by impregnating them with a melt of at least one organic compound characterized by (1) a melting point of at least 170° F., (2) the capability of being melted to a liquid and of being resolidified upon cooling, (3) the capability of being volatilized when heated to a temperature above the melting point, and (4) a preferred density of at least one gram per milliliter. The organic materials used for impregnation are selected from the classes consisting of non-cyclic or open-chain hydroxyl containing compounds and cyclic compounds, i.e., cyclic aliphatic and substituted or unsubstituted aromatic compounds including arenes. Molds which contain the impregnated cores are heated prior to being cast with metal to a temperature sufficient to volatilize the compound.

### 3,688,833 SECONDARY COOLING SYSTEM FOR CONTINUOUS CASTING PLANTS

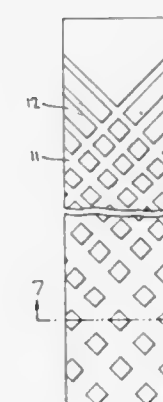
Vladimir Alexandrovich Bykov, ul. Khmeleva, 12, kv. 24, Sverdlovsk; Alexei Ivanovich Varazin, ul. Dybenko, 22 korp. 5, kv. 374, Moscow; Evgeny Jukhimovich Gelfenbein, ul. 40 let Oktyabrya, 28, kv. 51, Sverdlovsk; Stanislav Evgenievich Karlinsky, ul. Kultury, 4, kv. 22, Sverdlovsk; Vitaly Maximovich Niskovskikh, ul. Festivalnaya, 21, kv. 60, Sverdlovsk; Boris Nikolaevich Polyakov, ul. Khmeleva, 10, kv. 23, Sverdlovsk; Oleg Petrovich Sokolovsky, ul. Kultury, 16, kv. 69, Sverdlovsk, and Georgy Lukich Khimich, ul. Lenina, 53, kv. 92, Sverdlovsk, all of U.S.S.R.

Continuation-in-part of Ser. No. 37,404, May 11, 1970, abandoned, Continuation of Ser. No. 619,816, March 1, 1967, abandoned. This application Nov. 3, 1970, Ser. No. 86,557

Int. Cl. B22d 11/12

U.S. Cl. 164—283

7 Claims



In a secondary cooling system for continuous casting plants longitudinally extending bars are used for contacting the ingot to cool same, to prevent bulges from occurring due to the ferrostatic pressure, and to guide the ingot along a predetermined path. These longitudinal bars are cooled with a coolant, and in the instant invention these bars have replaceable planks, which planks have the coolant passages in them and the working surface of the plank is contoured so as to have a different square area ingot contacting surface at any point along the longitudinal axis of the bar. The ingot contacting surface decreases in the direction of ingot travel which necessarily decreases the rate of cooling of the ingot.

### 3,688,834 SEMI-CONTINUOUS VERTICAL CASTING MOULD FOR INGOTS

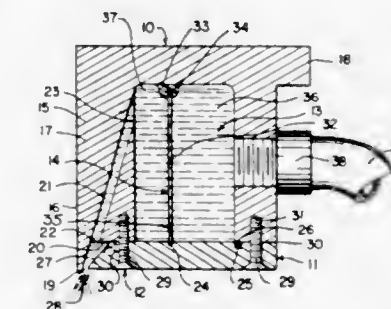
Frank E. Wagstaff; William G. Wagstaff, and Paul H. May, all of P.O. Box 186, Spokane, Wash.

Filed Dec. 20, 1971, Ser. No. 209,728

Int. Cl. B22d 11/12

U.S. Cl. 164—283

4 Claims



An improved peripheral mould for the semi-continuous vertical casting of ingots, providing a compound disassemblable structure with internal fluid cooling. The mould constitutes an improvement over known art by providing a thickened casting surface to prevent thermal warpage and to allow steeply angled coolant dispersal holes which tend to provide more efficient and uniform cooling and combined with a particular input system maintain water in the mould structure upon failure of the coolant supply to prevent mould damage.

### 3,688,835 HEAT EXCHANGER WITH ROTARY HEAT ACCUMULATOR

Shunzo Yamaguchi, and Eizi Tanaka, both of Kariya, Japan, assignors to Nippondenso Kabushiki Kaisha, Aichi-ken, Japan

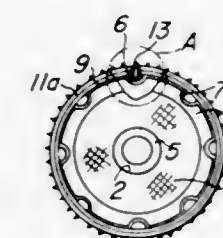
Filed Nov. 24, 1970, Ser. No. 92,473

Claims priority, application Japan, Dec. 10, 1969, 44/99236

Int. Cl. F28d 19/04

U.S. Cl. 165—8

3 Claims



A heat exchanger with rotary heat accumulator, comprising a disc-shaped honeycomb heat accumulator element having a protective ring or rim mounted around the periphery thereof, a sprocket splittable into a plurality of sections and mounted around the periphery of said protective ring with a gasket and a plurality of keys interposed therebetween, and non-expansion steel rings fitted over the rim or flange of said sprocket from both sides thereof in shrinkage fit engagement therewith to securely hold said gasket and said keys on said sprocket, said non-expansion steel rings and said keys being secured to each other by means of pins.

### 3,688,836 ROTATING HEAT EXCHANGER WITH FLOW TRANSMISSION

Nikolaus Laing, Hofener Weg 35-37, 7141 Aldingen near Stuttgart, Germany

Filed April 28, 1970, Ser. No. 32,628

Claims priority, application Austria, April 28, 1969, A 4083/69

Int. Cl. F28d 11/00; F01d 17/00

U.S. Cl. 165—86

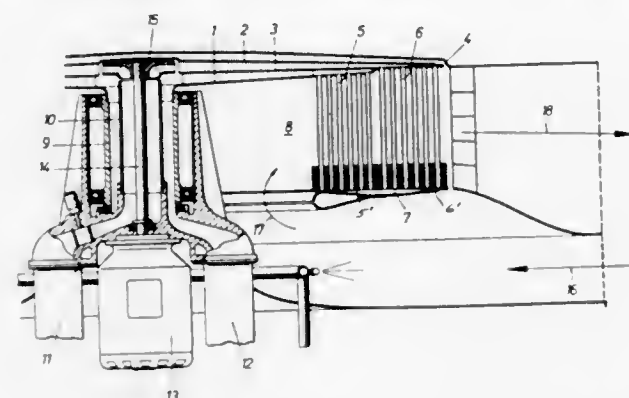
7 Claims

A rotating heat exchanger, biased with a liquid and a gaseous heat carrier, in which the pump for the liquid heat carrier



is combined with the heat exchanger into an integral unit and in which the flow ducts for the liquid between the impeller discs are provided with turbine blading so that pump and turbine represent a torque converter and the liquid heat carrier drives the rotating heat exchanger.

The rotating heat exchanger comprises ducts, through



which the liquid heat carrier flows and which are disposed near the periphery of the rotor. The motor of the heat exchanger is coupled to a coaxially disposed pump and the hollow impeller disc, subdivided into outwardly and inwardly extending flow ducts, is provided in its interior with turbine blading.

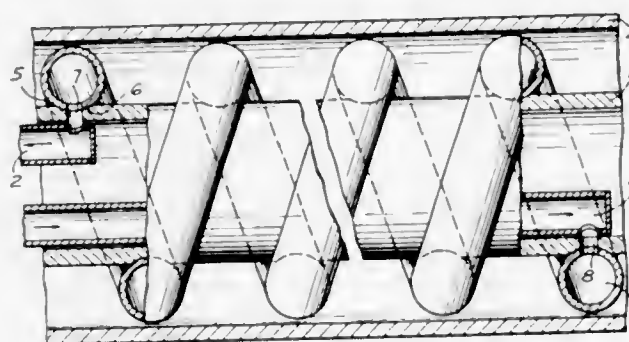
3,688,837

## SCREW-TYPE HEAT EXCHANGER

Herbert Ocker, Leonberg, Germany, assignor to Werner & Pfleiderer, Stuttgart-Feuerbach, Germany  
Filed July 9, 1970, Ser. No. 53,476  
Int. Cl. F28f 5/06

U.S. Cl. 165-87

7 Claims



A screw-type heat exchanger has a shaft rotatably mounted within the drum of the heat exchanger. The screw turns of the screw of the exchanger are formed by a seamless tubular member spirally wound about the shaft and secured thereto. Several such screws may be rotatably mounted in the drum, parallel to each other and with the screw turns in mesh.

There is also disclosed a method of producing a screw as described for use in the heat exchanger.

3,688,838

## HEAT TUBE

Carl-Heinz Sturm, Eberbach, and Willi Weber, Michelstadt, both of Germany, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland  
Filed Aug. 24, 1970, Ser. No. 66,415

Claims priority, application Germany, Aug. 25, 1969, P 19 43 122.2

Int. Cl. F28d 15/00

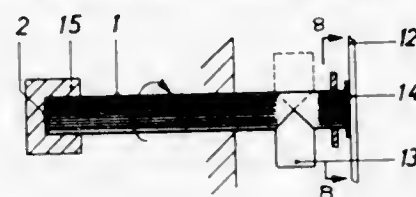
U.S. Cl. 165-96

4 Claims

A heat tube includes a first section adjacent one end which absorbs heat from a heat source, the absorbed heat being transferred to and effecting vaporization of a working fluid within the tube. The vapor is transported through the tube to a second tube section adjacent the other end and which is at a

lower temperature thus causing the vapor to condense, giving up its heat at this cold end to the lower temperature surrounding medium and the condensate is then returned to the opposite hot end by way of a capillary structure lining the inside of the tube for re-cycling.

In order to enable the heat tube to be switched over from a heat-conducting state to a heat-nonconducting state the present invention provides for controlling the condensate ac-



cumulated at the cold end of the tube such that it can be maintained either out of contact with the capillary structure, in which case the condensate is retained at the cold end and circulation of the working fluid is thus cut off, or alternatively placed in contact with the capillary structure, in which case the condensate continues to flow back through the capillary structure to the hot end and circulation of the working fluid is thus rendered continuous.

3,688,839

## WATER HEATING AND STORAGE SYSTEM

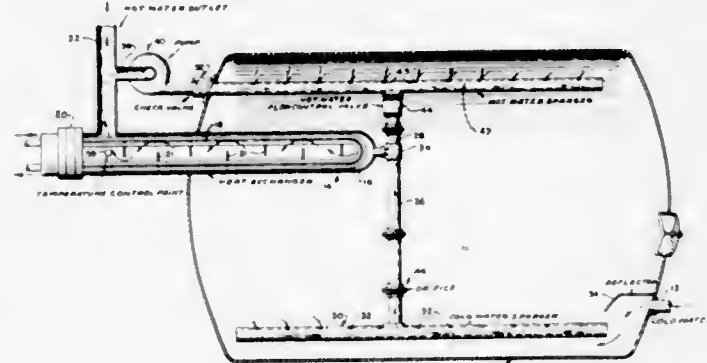
Robert F. Kirschner, Lakeville, Mass.; Lemuel J. Morgan, Stroudsburg, and John A. Clark, Jr., East Stroudsburg, both of Pa., assignors to The Patterson-Kelley Co., Inc., East Stroudsburg, Pa.

Filed Nov. 27, 1970, Ser. No. 93,342

Int. Cl. F24h 01/18

U.S. Cl. 165-108

22 Claims



A dual mode operative water heating and storage system including a hot water storage tank having a cold water supply inlet for replenishing water withdrawn from the tank, a conduit system for normally circulating water from a lower to an upper level of the tank and including means for heating the circulated water, means connected into the system for withdrawing heated water up to a given rate of flow which is in excess of the rate at which water is normally circulated through the conduit system, and means for connecting the upper level of the tank in flow communication with the withdrawal means whenever the withdrawal rate exceeds the normal circulation rate.

3,688,840

## METHOD AND APPARATUS FOR USE IN DRILLING A WELL

Wayne C. Curington; Edmund A. Fisher, and William M. Taylor, all of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Feb. 16, 1971, Ser. No. 115,414

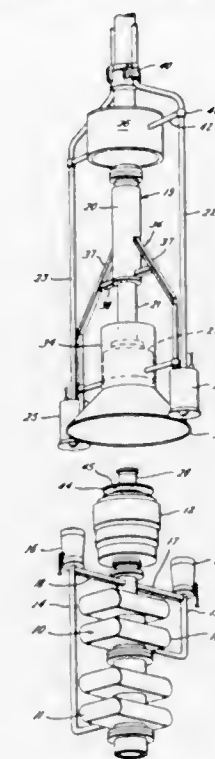
Int. Cl. E21b 43/01

U.S. Cl. 166-6

24 Claims

A method and apparatus in which upper service lines are lowered with a riser pipe for connection with lower service

lines each fixedly mounted to one side of a wellhead member to which the riser pipe is to be connected. Upon connection of the riser pipe to the wellhead member, the upper service lines



are rotated about the axis of the pipe into approximate alignment with the lower service lines and then lowered into fluid connection therewith.

3,688,841

## ORIENTING TUBING HANGER APPARATUS

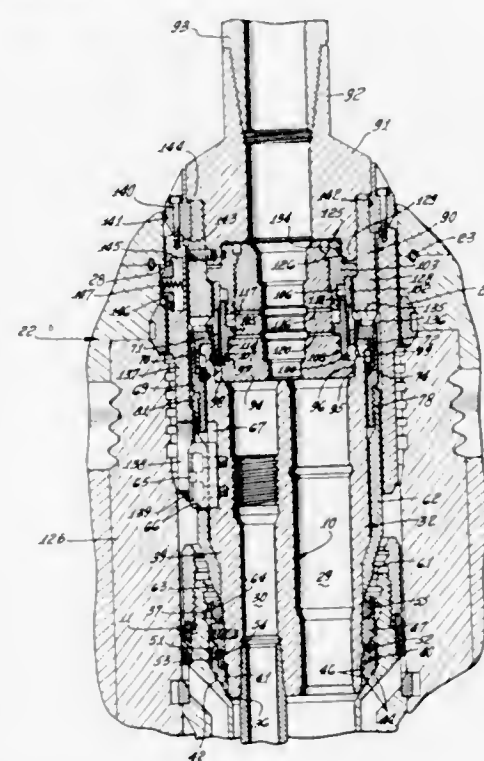
Benton F. Baugh, Houston, Tex., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed March 15, 1971, Ser. No. 124,236

Int. Cl. E21b 33/03

U.S. Cl. 166-85

23 Claims



A tubing hanger for suspending multiple tubing strings is seated in a subsea wellhead or casing hanger, being properly oriented with respect to a running tool by means of which the tubing hanger is lowered from a drilling vessel to seat in the casing hanger. The running tool is properly oriented relative to a blowout preventer stack previously oriented with respect to a guidance system as a reference point, the guidance system extending from the subsea floor to the drilling vessel, resulting

in the multiple string tubing hanger being properly oriented with respect to the guidance system for subsequent appropriate connection with a Christmas tree, or other apparatus, to be lowered down the guidance system, which it also uses as a reference point, thereby properly relating the Christmas tree to the multiplicity of passages in the tubing hanger. The tubing hanger is releasably secured to the wellhead or casing hanger through mechanical manipulation of the running tool after the tubing hanger has been oriented with respect to the blowout preventer and guidance system, the running tool being released from the tubing hanger for elevation to the drilling vessel. Thereafter, when desired, the running tool can be relowered and reconnected to the tubing hanger to release it from the casing hanger and elevate it to the drilling vessel.

3,688,842

Patent Not Issued For This Number

3,688,843

## NUCLEAR EXPLOSIVE METHOD FOR STIMULATING HYDROCARBON PRODUCTION FROM PETROLIFEROUS FORMATIONS

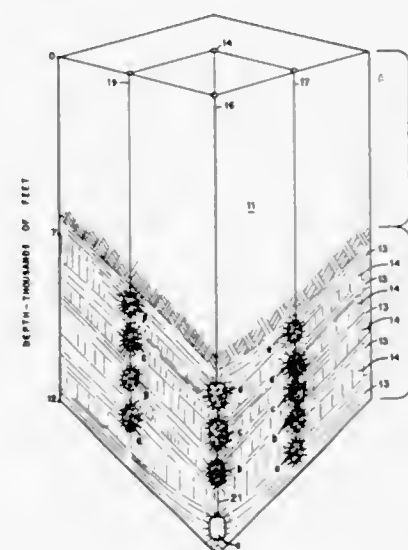
Milo D. Nordyke, Livermore, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 16, 1970, Ser. No. 89,889

Int. Cl. E21b 43/26

U.S. Cl. 166-247

7 Claims



Multiple nuclear explosive devices are emplaced and detonated sequentially at spaced locations in a borehole in a petroliferous formation. The explosive size, relation spacings, depths of burial and sequential timing are selected and arranged to minimize and limit seismic surface effects as well as to optimize fracturing of the formation with consequent more economical stimulation of petroleum hydrocarbon especially in low-permeability reservoirs.

3,688,844

## OIL RECOVERY PROCESS USING MICELLAR DISPERSIONS CONTAINING A METAL PHOSPHATE

Wayne O. Roszelle, 6204 S. Prescott, Littleton, Colo.

Filed March 29, 1971, Ser. No. 129,213

Int. Cl. E21b 43/22

U.S. Cl. 166-274

12 Claims

Improved oil recoveries are obtained in an oil-bearing subterranean reservoir having an interstitial water with a relatively high hardness by flooding the reservoir with a micellar dispersion which contains about 1 percent metal phosphate.



3,688,845

**WELL CEMENTING METHOD EMPLOYING AN OIL BASE PREFLUSH**

Joseph U. Messenger, Dallas, Tex., assignor to Mobil Oil Corporation

Filed March 8, 1971, Ser. No. 122,123

Int. Cl. E21b 21/00, 33/14

U.S. Cl. 166—291

12 Claims

This specification discloses a method of cementing casing in a well having an oil base drilling mud therein. A preflush solution comprised of an oil and a dispersant, which preflush solution has a lower viscosity and a lower gel strength than the drilling mud in the well, is flowed through the annular space between casing positioned in the well and the well of the well. Thereafter, a cement slurry is flowed into the annular space and allowed to set.

**ERRATUM**

For Class 166—305 R see:  
Patent No. 3,688,829

3,688,846

**FIRE SUPPRESSION SYSTEM FOR HEAVY MOBILE MACHINES**

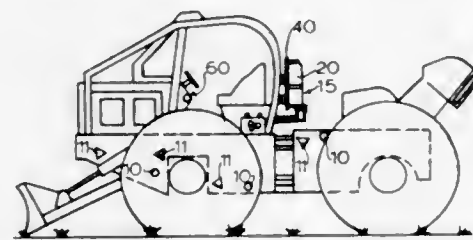
William D. Lease, 3516 Chaucer Place, Raleigh, N.C.

Filed July 6, 1971, Ser. No. 159,717

Int. Cl. A62c 3/00

U.S. Cl. 169—2 A

9 Claims



An automatic and essentially shock proof fire suppression system for a heavy mobile machine such as a log skidder, tractor, street sweeper or the like incorporates a set of spray nozzles piped to a tank of extinguishing fluid. A self contained battery circuit includes a plurality of thermostatic switch heat sensors and in the presence of fire a sensor closes, actuates a solenoid valve and allows CO<sub>2</sub> gas from a CO<sub>2</sub> capsule to flow and operate a piston device which in turn punctures a CO<sub>2</sub> cartridge, gas from the cartridge flows and pressurizes the extinguishing tank thereby causing the extinguishing fluid to be discharged from the nozzles.

3,688,847

**MOUNTING FRAME ASSEMBLY FOR ALL TERRAIN VEHICLE**

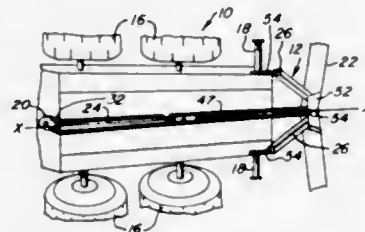
Paul E. Deeter, Box 117, Cooperstown, Pa.

Filed Feb. 3, 1971, Ser. No. 112,317

Int. Cl. E02f 3/76; E01h 5/06

U.S. Cl. 172—804

10 Claims



A mounting frame assembly for an All Terrain Vehicle and more particularly a mounting frame assembly for mounting an implement such as a plow assembly or lawn mower adjacent the forward end of an All Terrain Vehicle.

All Terrain Vehicles, hereinafter referred to as ATV's are relatively new means of transportation and have found public acceptance in recent years because of the capability thereof to travel over swamps, mud, water, sand, snow and extremely rough terrain. The ATV's are water tight and are driven by a plurality of soft low air pressure tires or a pair of endless crawler treads. The tires or treads provide the ATV's with excellent traction and additionally provide means for maneuvering the ATV by a skid steer method; that is, by braking on one side and applying power to the opposite side of the ATV.

The traction capacities of the ATV's coupled with the above described steering arrangement thereof would appear to provide excellent possibilities for such vehicles in the areas of snow clearance, lawn mowing, lawn rolling, and the like; however, all thoughts in such areas were soon discounted because the ATV's, out of necessity of water tightness, efficiency and economy, have the main body portions thereof constructed of plastic, fiberglass or other light material. Pushing a snow plow or lawn mower assembly from the forward end of the body would result in damage to the body.

3,688,848

**AIR SPRING BLEED ASSEMBLY**

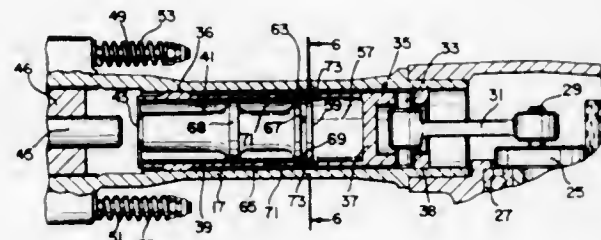
Stephen L. Vick, Towson, and Weldon H. Clark, Jr., Baltimore, both of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed March 15, 1971, Ser. No. 124,376

Int. Cl. E25b 15/00, 17/00

U.S. Cl. 173—116

15 Claims



A portable electric hammer comprising a housing having an electric motor disposed therein. A hollow piston is slideably supported in a barrel and is reciprocated by the motor acting through a drive train. A ram is slideably disposed within the piston and is moved by the piston through alternate suction and compression generated in an air spring between the piston and ram, whereby the ram delivers longitudinal impact blows to a tool bit supported in the front end of the barrel. Improved means is provided to automatically bleed air into the air spring cavity between the ram and the piston to maintain efficient hammer operation, and to automatically de-activate the ram when the tool bit is out of contact with a workpiece.

3,688,849

**METHOD AND APPARATUS FOR RELEASING A PERFORATION AND SEALING TOOL FROM A WELL BORE**

George E. Briggs, Jr., Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Feb. 20, 1970, Ser. No. 12,955

Int. Cl. E21b 43/116; E21c 19/00

U.S. Cl. 175—4.52

12 Claims

A method and an apparatus are provided for releasing a fluid tight seal formed about a well bore perforation by a perforating and sealing tool. A pressure differential across the sealing means urges the fluid tight seal into engagement with a well casing adjacent a perforation. To release this seal and remove the perforating and sealing tool from the well bore, the pressure differential acting on the seal is eliminated by equalizing the pressures acting on the two faces of the seal. The equalization may be effected by bleeding high pressure fluid through the seal from the high pressure side to the low pressure side to a central aperture formed therethrough dur-

ing the formation perforation step.

Alternatively, the high pressure fluid may be carried to the central aperture of the seal through the perforating and sealing tool itself, which high pressure fluid may be metered into the tool through plug orifices. Each plug orifice may be opened by the explosive charge of the perforating tool. This



charge would knock off the plug of the plug orifice and establish fluid communication between the high pressure fluid and the interior of the tool. Alternatively, the plug portion of the plug orifice may consist of material such as magnesium which will dissolve in surrounding liquid after a predetermined period of time so as to establish fluid communication between annular fluids about the tool and the interior of the tool.

3,688,850

**AIR CUSHION VEHICLE**

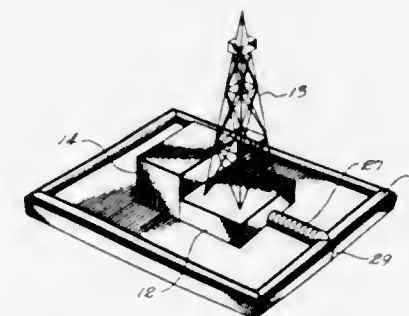
Gordon Dayton Knorr, Westlake Village, Calif., assignor to Global Marine Inc., Los Angeles, Calif.

Filed Aug. 31, 1970, Ser. No. 68,162

Int. Cl. E21c 19/00; B60v 1/16

U.S. Cl. 175—5

15 Claims



An air cushion vehicle in the form of a body having a flexible skirt therearound and means for pressurizing the region within the skirt is employed for transporting a well drilling rig or the like. A vertically extending slot is provided in the flexible skirt, comprising first and second flexible sheets on opposite sides of the slot in face to face abutment for sealing together. One side of each of the sheets is in fluid communication with the inside of the skirt and the two sheets are free to move relative to each other over a principal portion of their extent for passing an object therebetween. An oil well Christmas tree or the like having a streamlined sheath can be passed through the slot in order to move the air cushion vehicle off of or onto a wellhead.

3,688,851

**TREATING SUBSURFACE FORMATIONS**

Martin E. Chenevert, Houston, Tex., assignor to Esso Production Research Company

Continuation-in-part of Ser. No. 726,693, May 6, 1968, abandoned, which is a continuation-in-part of Ser. Nos.

675,490, Oct. 16, 1967, abandoned, and Ser. No. 699,255,

Jan. 19, 1968, abandoned. This application March 16, 1970,

Ser. No. 19,574

Int. Cl. E21b 21/04

U.S. Cl. 175—50

35 Claims

Shaley earth formations are drilled or otherwise treated with reduced difficulty through the use of water-in-oil invert emulsion fluids wherein the aqueous phases of the emulsions possess particular water vapor pressures relative to the formations which they contact. The aqueous vapor pressure of an oil-base fluid containing dispersed water is controlled to prevent damage to water-sensitive shale formations by monitoring the vapor pressure of the aqueous phase of the fluid and maintaining a vapor pressure depressant in the aqueous phase in a concentration sufficient to substantially prevent the migration of water from the fluid to the formations. The aqueous vapor pressure of an earth formation is determined. A method and apparatus are disclosed for determining the compatibility of a well fluid with a water-sensitive subsurface formation wherein a substantially unaltered sample of the formation is immersed in the fluid and the direction and extent of water migration between the well fluid and the sample are logged. Improved water-in-oil invert emulsion fluid compositions for drilling and other oil field uses are obtained wherein the aqueous phases of the emulsions possess particular water vapor pressures relative to the formations which they contact.

3,688,852

**SPIRAL COIL NOZZLE HOLDER**

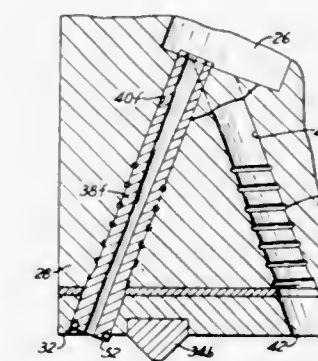
Eber W. Gaylord, Pittsburgh, and Robert J. Goodwin, Oakmont, both of Pa., assignors to Gulf Research &amp; Development Company, Pittsburgh, Pa.

Filed Aug. 24, 1970, Ser. No. 66,389

Int. Cl. E21c 15/00

U.S. Cl. 175—393

7 Claims



Nozzles of tungsten carbide alloy for drill bits used in hydraulic jet drilling of wells are mounted in openings extending downwardly from a central chamber in a drill bit body through the bottom of the bit by screwing the nozzle into the opening from the bottom of the bit. A helical groove is cut in the outer surface of the nozzle and in the wall of the opening. A helical coil placed in the groove on the nozzle acts as threads engaging the groove in the wall of the opening as the nozzle is screwed into place. A backslash plate on the lower surface of the bit has holes of larger diameter than the openings in the bottom of the bit in alignment with those openings. A shoulder on the lower end of the nozzles fills the holes in the backslash plate to restrain upward movement of the nozzles and protect the helical coil from erosion.

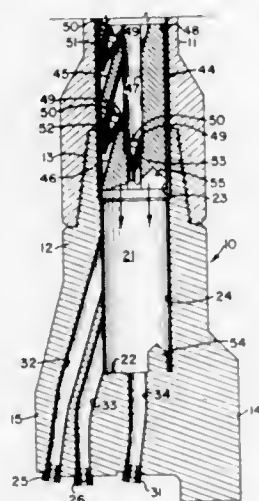


### 3,688,853 METHOD AND APPARATUS FOR REPLACING NOZZLES IN EROSION BITS

William C. Maurer, 7703 Highmeadow, Houston, Tex.;  
Everett H. Lock, 11322 Oak Spring, Houston, Tex., and  
Robert L. Graham, 14326 Kellywood Lane, Houston, Tex.  
Filed March 1, 1971, Ser. No. 119,762  
Int. Cl. E21b 41/00

U.S. Cl. 175-422

14 Claims



Worn nozzles of an erosion bit are replaced without removing the drill string from the borehole by passing a holder provided with replacement nozzles through the drill string and orientably lodging the holder in the bit. The replacement nozzles are then transferred from the holder to the bit and thrust into abutting engagement with the bit nozzles. Each of the replacement nozzles is faced with viscoelastic material which upon deforming establishes a pressure seal between the contacting surfaces of the abutting nozzles.

### 3,688,854 BALANCE WITH ELECTROMAGNETIC COMPENSATION

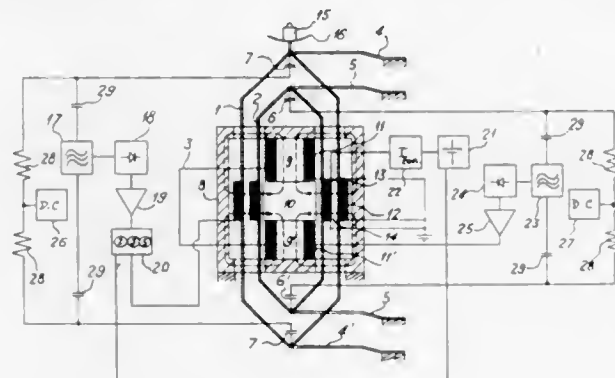
Felix Strobel, Greifensee, Switzerland, assignor to Mettler Instruments AG, Zurich, Switzerland  
Filed Nov. 9, 1971, Ser. No. 196,886

Claims priority, application Switzerland, March 1, 1971, 2975/71

Int. Cl. G01g 7/04, 23/16

U.S. Cl. 177-164

10 Claims



Electromagnetically compensated weighing apparatus of the type including a load member connected with a frame for movement in a stationary magnetic field upon the application thereto of a load to be measured, and load compensating means including a compensating coil connected with said load member for producing a load magnetic force that reacts with said magnetic field to return the load member to its original neutral position, characterized by the provision of novel correction means for varying the strength of said magnetic field to eliminate the deleterious effects of external factors such as elevation, inclination, temperature and magnet aging. In the

preferred embodiment, a correcting coil is mounted on a ferromagnetic portion of the magnetic means that establishes the magnetic field, the current flowing through said correcting coil being varied as a function of the deviation of a reference member from an initial equilibrium position relative to the frame.

### 3,688,855 TAPE SUSPENDED BALANCE

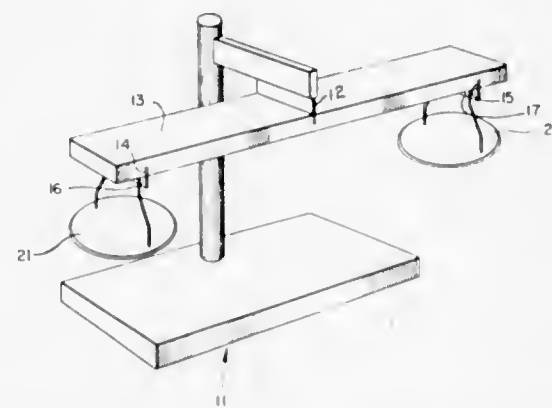
John Walters, Lexington, Mass., assignor to American Science & Engineering Inc., Cambridge, Mass.

Filed Dec. 11, 1970, Ser. No. 97,170

Int. Cl. G01g 1/20, 3/08, 3/10

U.S. Cl. 177-196

2 Claims



A balance comprises a beam centered about and suspended from a flexible tape, the tape being flexible in a direction along the length of the beam but being much less flexible in a direction at right angles to the length of the beam.

### 3,688,856 DUAL PURPOSE SNOWMOBILE HOOD

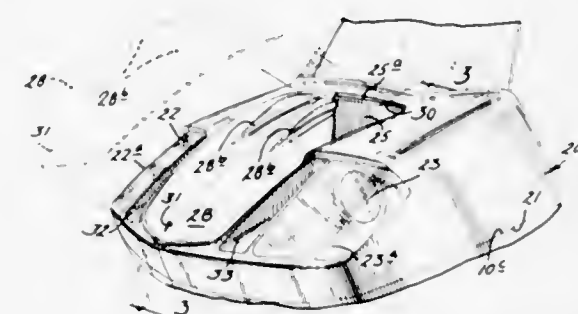
Kurt B. Boehm, Lake Bluff, Ill.; Leslie W. Foster, Wayzata, and Ole E. Tweet, Roseau, both of Minn., assignors to Textron Inc., Providence, R.I.

Filed Dec. 14, 1970, Ser. No. 97,610

Int. Cl. B62m 27/00

U.S. Cl. 180-5

2 Claims



A snowmobile is shown having a forward compartment in which an engine is mounted. A protective and decorative hood is provided for the compartment. An open access door is formed in a top wall of the hood above the engine to provide cooling air flow to the engine when open. A fitted access panel is removably secured in the access door to protect and cover the engine when closed.

### 3,688,857 SELF-MOUNTING POWER UNIT FOR WHEEL CHAIRS

Michael J. Miller, 411 Delaware, Huntington Beach, Calif.

Filed Aug. 17, 1970, Ser. No. 64,551

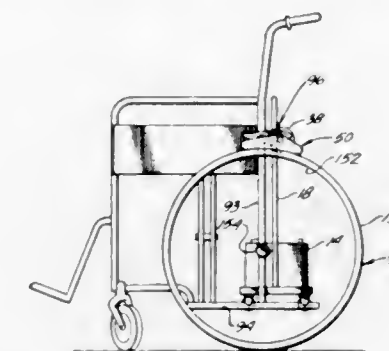
Int. Cl. B60k 1/04

U.S. Cl. 180-6.5

17 Claims

A wheel chair has a pair of main wheels and an associated detachable power unit for driving them. The power unit in-

cludes traction means for advancing upwardly along the main wheels until the power unit releasably engages in means car-



ried by the chair adjacent the main wheels. Thereafter, the traction means are used to drive the chair main wheels.

### 3,688,858 ALL-TERRAIN VEHICLE

Herbert A. Jespersen, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.

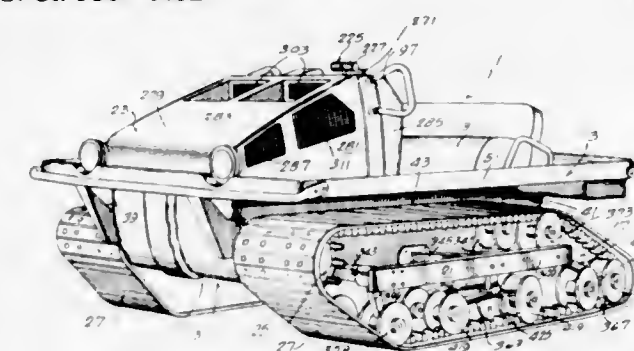
Continuation of Ser. No. 857,494, Sept. 12, 1969, abandoned.

This application Aug. 26, 1971, Ser. No. 175,376

Int. Cl. B62d 55/00

U.S. Cl. 180-9.62

8 Claims



Disclosed herein is an all-terrain vehicle including a body, a power generating and transmission group, and a track suspension group, each of which can be separately initially fabricated and subsequently assembled. After assembly of the power generating and transmission group and the track suspension group to the body, a motor hood, drive sprocket, and tracks may additionally be assembled to complete the vehicle.

Also disclosed herein is a track suspension system affording both transverse and lateral resiliently flexible support to an endless track and a releasably locked and pivotally mounted rear bogie wheel assembly which, when pivoted from its normal operating position, affords assembly of or removal of the endless track relative to the sprocket and bogie wheels.

Also disclosed herein is a track sprocket affording maximum open area for the escape of mud, snow, ice and the like.

Also disclosed herein is a hydrostatic transmission including a control having a reverse lock-out preventing accidental movement of the control into position effecting reverse operation.

Still further, there is disclosed herein a hydraulic oil circulating system which utilizes the gear box as a sump for the circulating system and which is in heat exchanging relation with an air circulating system.

### 3,688,859 VEHICULAR AIR COMPRESSION SYSTEM

Steve A. Hudspeth, and John B. Lunsford, both of Springfield, Oreg., assignors to FMA, Inc., Eugene, Oreg.

Filed Oct. 8, 1970, Ser. No. 79,125

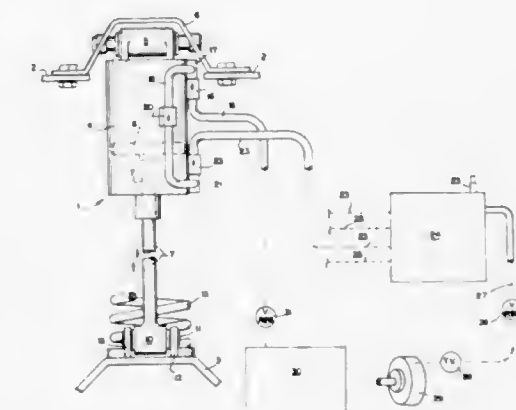
Int. Cl. B60k 25/10

U.S. Cl. 180-66 B

3 Claims

A cylinder having a piston and piston rod assembly reciprocated by a wheel suspension member of the vehicle for

the transfer of a fluid to a pressure storage tank. A fluid motor downstream from the tank is operated by a valve regulated flow of air for the controlled operation of various powered systems of the vehicle. An air flow circuit is completed back to



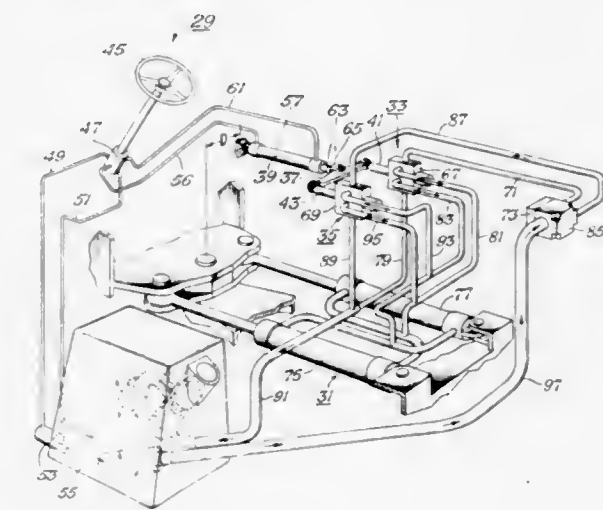
the cylinder via a second tank constituting a source of low pressure air. The cylinder is simultaneously charged with a quantity of air on one side of the piston while air is exhausted, under pressure, on the opposite side of the piston.

### 3,688,860 TWO SPEED STEERING SYSTEM

Lloyd A. Molby, 1900 Franklin Drive, Longview, Tex.  
Filed April 27, 1971, Ser. No. 137,836  
Int. Cl. B62d 5/08

U.S. Cl. 180-79.2 B

13 Claims



A two speed steering system for use with articulated vehicles, characterized by a steering wheel; a power steering servo; primary and secondary controls carried by one section of the articulated vehicle for controlling the speed with which the power steering servo steers; a double bar link that is pivotally connected with the primary and secondary controls and with an interconnection link between it and the other section of the vehicle; the interconnection link being disposed laterally from the pivot connection so that it tends to restore the double bar link in response to actual steer imparted to the sections of the articulated vehicle. The primary control has a weak spring that permits its movement, within its limits, before movement of the secondary control, with its stronger spring, is effected. Thus, a first speed of steering is effected by the primary control, but if a greater magnitude is signaled than the primary control is adapted to effect, the secondary control is brought into play to speed up the steering. Also disclosed are specific and preferred embodiments of apparatus.



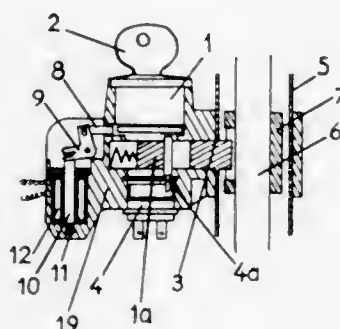
3,688,861

## ANTI-THEFT DEVICES

Paul Lipschultz, and Jean-Pierre Leroy, both of Berteaux, Croissy-sur-Seine, France, assignors to Societe D'Exploitation des Brevets Neiman S.A., Neuilly, France  
Filed June 19, 1970, Ser. No. 47,706  
Int. Cl. B60r 25/02

U.S. Cl. 180-114

2 Claims



In a lock having a bolt adapted to engage a control element of a motor vehicle, the lock including key operated means having a first position in which the bolt is engaged with the control element and a second position in which the bolt is disengaged from the control element, the improvement comprising means for blocking movement of the key operated means between the two positions, the blocking means including an electromagnet adapted to be placed in an electrical circuit carrying the operating current for the motor vehicle and to respond to a closed condition of the circuit to cause the blocking means to block movement of the key operated means between the two positions and to respond to an open condition of the circuit to cause the blocking means to permit movement of the key operated means.

3,688,862

Patent Not Issued For This Number

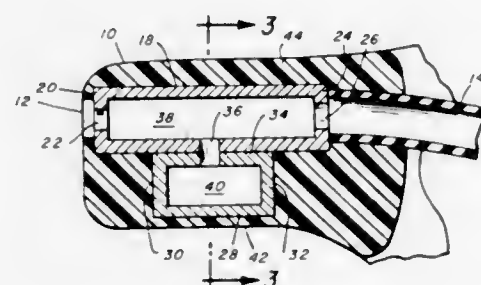
3,688,863

## ACOUSTIC EAR MOLD FOR HEARING AID

Rubel V. Johnson, 2432 Court St., Muskogee, Okla.  
Filed Oct. 8, 1971, Ser. No. 187,652  
Int. Cl. G02k 13/00; H04r 25/00

U.S. Cl. 181-23

8 Claims



An acoustic ear mold insertable into the ear of an individual with impaired hearing, and used in conjunction with a hearing aid amplifier and transducer, incorporates therein reflection chambers. Amplified sound wave energy conducted to the ear mold proceeds to the hearing part of the brain over two separate routes, one route being by way of the tympanic membrane and the second route being by bone conduction through the mastoid process.

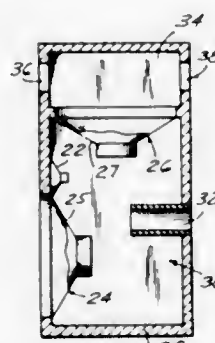
3,688,864

## INFINITE DYNAMIC DAMPING LOUDSPEAKER SYSTEMS

Reuben Guss, New York, N.Y., assignor to Talbot American Corporation, New York, N.Y.  
Filed April 16, 1970, Ser. No. 29,084  
Int. Cl. G10k 13/00; H04r 1/28

U.S. Cl. 181-31 B

5 Claims



An infinite dynamic damping loudspeaker system includes at least two similar loudspeakers which radiate from an enclosure in response to the simultaneous receipt of the same signals. The diaphragms of the loudspeakers are acoustically coupled by an air chamber and a tuning duct connects the air chamber to the atmosphere. The diaphragms vibrate in a phase such that they produce the same phase of pressure changes on the air in the chamber to provide mutual damping.

3,688,865

## JET ENGINE NOISE SUPPRESSOR

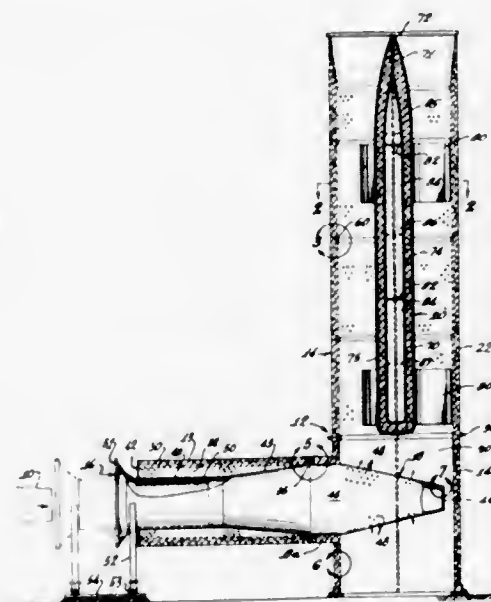
Cloyd D. Smith, 14928 La Cumbre Drive, Pacific Palisades, Calif.

Filed Nov. 17, 1970, Ser. No. 90,387

Int. Cl. B64d 33/06; F01n 7/18, 1/10

U.S. Cl. 181-33 H

13 Claims



A sonic jet engine noise suppressor having a relatively short horizontally disposed conduit for reception of exhaust gases from the tail pipe of a jet engine, and for conveying these gases into the side of a tall stack via a perforated conical diffuser. The side walls of the conduit and stack are acoustically treated for sound absorption, and the stack contains a vertical core which is also acoustically treated for sound absorption. The core also contains resonator chambers for attenuation of selected frequency bands. The stack is of a special structure having a perforated tubular liner, sub-divided into a vertical stack of interfitting sections, and provided with flexural supports at the joints of these sections so as to facilitate expansion and contraction with large changes in temperature.

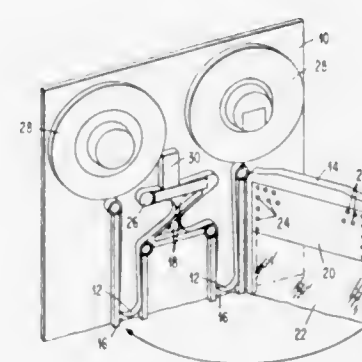
3,688,866

## NOISE MUFFLER FOR MAGNETIC TAPE VACUUM COLUMN

Ning Kong, Boulder, Colo., assignor to International Business Machine Corporation, Armonk, N.Y.  
Filed Aug. 30, 1971, Ser. No. 176,081  
Int. Cl. F01n 1/02; G11b 1/00, 5/10

U.S. Cl. 181-33 K

9 Claims



Noise in the frequency range of 60 to 3,000 Hz generated by movement of magnetic tape in a vacuum column is muffled by use of Helmholtz cavities. The connecting ports to the cavities are placed near the top of the vacuum column close to the source of the noise and also where they provide an impedance mismatch barrier to sound waves trying to exit from the top of the vacuum column. The size of the ports and location of the ports in the vacuum columns are predetermined so that the ports will not inhibit the loading of the tape loop into the vacuum column.

3,688,867

## ACOUSTICALLY IMPROVED BLOWER PACKAGE

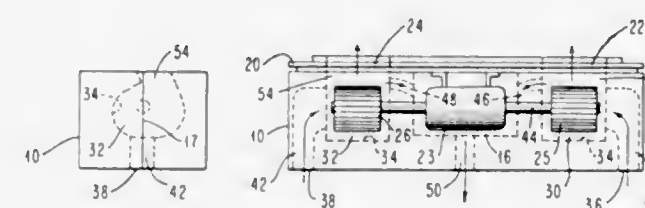
Vincent W. Antonetti; George C. Maling, Jr.; Albert L. Pascuzzo, and Russell E. Wise, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,325

Int. Cl. F04b 39/12; F01n 1/10, 7/18

U.S. Cl. 181-33 K

11 Claims



A housing is formed of a block of sound absorbing material of sufficient density to retain its form. A scroll-shaped chamber is formed in the block of sound absorbing material for locating a blower. A passage is formed in the housing which extends from an outer surface thereof to the scroll chamber. The passage forms a built-in muffler in the block of material. A diffuser is formed in the block of material which leads from the scroll chamber to an outer surface of the housing. A thin material coating is applied to the inner surfaces of the sound absorbing material block to prevent the material from eroding and to present a low friction surface to air passing thereover. A stiff outer shell surrounds the housing and has a good sound reflective characteristic. The shell has openings therein corresponding to the inlet opening of the muffler passage and the outlet opening of the diffuser.

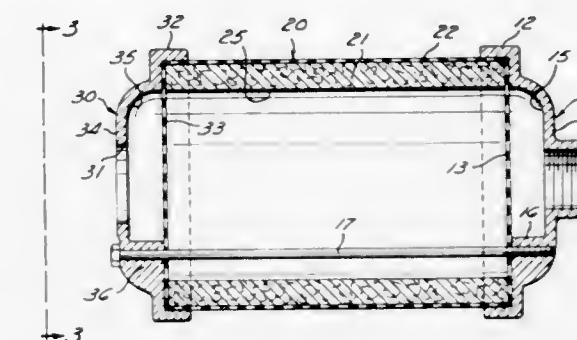
3,688,868

## EXPANSION CHAMBERED, FAIL-SAFE MUFFLER

Stephen J. Gibel, 5846 Edgerton Road, North Royalton, Ohio  
Continuation-in-part of Ser. No. 162,785, July 15, 1971. This application Aug. 26, 1971, Ser. No. 175,175  
Int. Cl. F01n 1/10, 7/18

U.S. Cl. 181-36 A

7 Claims



Muffler for air-exhausts of pneumatically operated equipment in which sound is muffled by passage of the air from a relatively unrestricted first domed expansion chamber through a first disseminator into a silencing chamber and thence diffused through porous side of the silencing chamber. The end of the silencing chamber opposite the first disseminator is partly closed by a second disseminator opening into a second domed expansion chamber having an opening to the atmosphere.

3,688,869

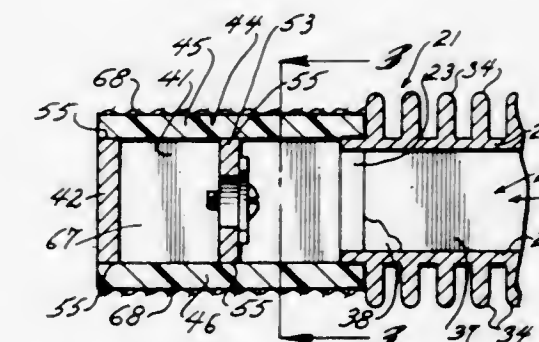
## MUFFLER WITH RESILIENT EXTERIOR

Milo E. Murphy, Long Beach, Calif., assignor to Murphy Mufflers, Los Angeles, Calif.

Continuation-in-part of Ser. No. 25,438, April 3, 1970, Pat. No. 3,590,945. This application July 6, 1971, Ser. No. 160,033  
Int. Cl. F01n 1/08, 1/22, 7/10

U.S. Cl. 181-40

19 Claims



A muffler for high velocity gases has intake and exit ports at the ends of a container. The container is defined by a flexible or resilient sheath forming exterior walls between the ports. A frame of metal or other rigid material supports the sheath and baffles divide the container volume. An edge of each baffle is in contact with the inner surface of the sheath. Gas passes from one divided volume to another across the baffle edges, displacing the sheath at that area and losing energy. Each frame has attachments to secure the container to the source or consumer of the gas.

3,688,870

## THROUGH-FLOW ASPIRATOR MUFFLER

Stephen J. Gibel, 5846 Edgerton Road, North Royalton, Ohio  
Filed Aug. 26, 1971, Ser. No. 175,174  
Int. Cl. F01n 1/10, 7/18

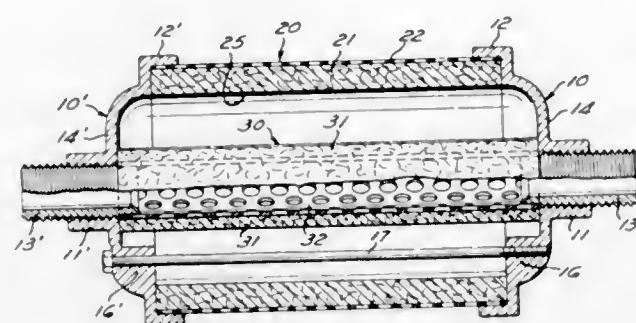
U.S. Cl. 181-55

5 Claims

Muffler for silencing output of aspirator. End caps support spaced concentric tubes of porous acoustical material, inner



tube lined and outer tube covered with foraminous metal.



Connections through caps to bore of inner tube permit through-flow output of aspirator and material carried thereby.

3,688,871

### OIL PAN FOR A MULTI-CYLINDER RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE

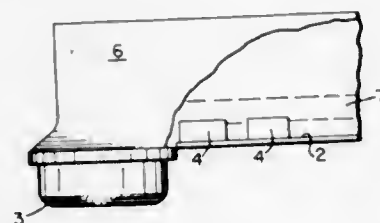
Rudolf Krestan, Stuttgart-Rotenberg, and Kurt Kennigott, Stuttgart-Feuerbach, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany  
Filed July 7, 1970, Ser. No. 52,831

Claims priority, application Germany, July 18, 1970, P 19 36 572.1

Int. Cl. F01m 11/00

U.S. Cl. 184—6.5

12 Claims



An oil pan for a multi-cylinder reciprocating piston internal combustion engine which includes a bottom part disposed near the drive mechanism of the engine and a relatively deep part for the oil sump at one end and in which the bottom part is provided with ribs guiding the lubricating oil into the oil sump.

3,688,872

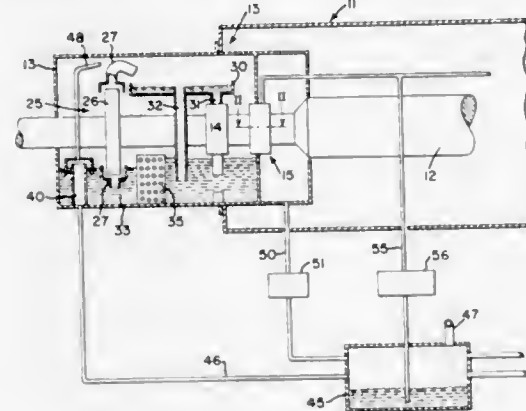
### COMBINED BEARING LUBRICATION-HYDROGEN SEAL SYSTEM FOR GENERATOR

James B. Wagner, Lynn, Mass., assignor to General Electric Company

Filed Feb. 11, 1971, Ser. No. 114,546  
Int. Cl. F16n 7/36

U.S. Cl. 184—6.28

5 Claims



A combined bearing lubrication-hydrogen seal system for a generator which utilizes a unitized lubrication system in cooperation with a hydrogen-cooled generator. A liquid lubricant, under pressure, is pumped to the hydrogen seal about

the generator shaft to prevent hydrogen leakage. As the lubricant passes through the seal portion, it may be distributed into an end-shield which houses a unitized lubrication system for cooling the generator shaft end bearing. Thereafter, the liquid lubricant is fed to a receiver tank where it is recirculated to the hydrogen seal.

3,688,873

### DEVICE FOR SELF-SERVICE STORES

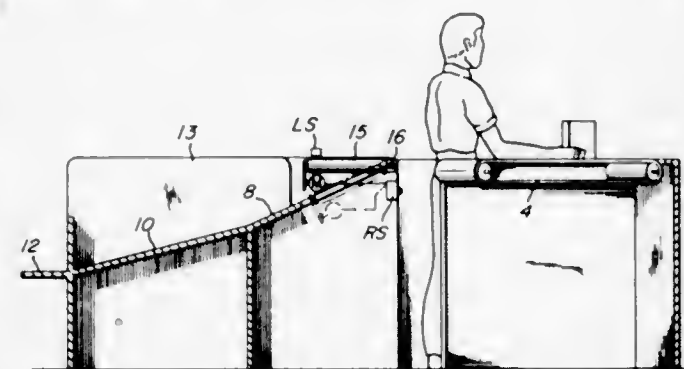
Werner Potrafke, Hufelsenstr. 6, 432 Hattingen, Germany  
Filed Dec. 28, 1970, Ser. No. 101,527

Claims priority, application Germany, Dec. 29, 1969, P 19 65 332.8

Int. Cl. E04h 3/04

U.S. Cl. 186—1 A

4 Claims



An apparatus for self-serving stores, for use in connection with shopping baskets and shopping carts, in which at the upper end of an inclined surface in front of the central withdrawal compartment there is provided an endless conveyor belt extending over the entire width of said central compartment while conveying means extending transverse to the longitudinal axis of the apparatus is adapted to be folded upwardly or to be turned.

3,688,874

### ELEVATOR MOTOR CONTROL SYSTEM EMPLOYING POWER AMPLIFIER WITH OUTPUT CURRENT LIMITING ARRANGEMENT

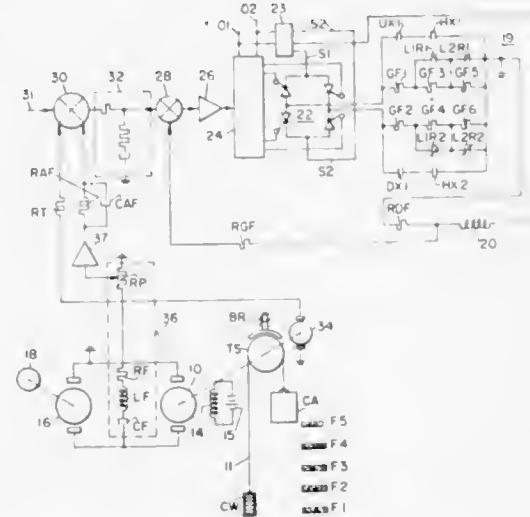
John Lusti, River Vale, and William Paul Reid, Westwood, both of N.J., assignors to Otis Elevator Company, New York, N.Y.

Filed Aug. 9, 1971, Ser. No. 170,072

Int. Cl. B66b 1/28

U.S. Cl. 187—29 R

5 Claims



An arrangement for an elevator control system employing a power amplifier for supplying excitation current to a dynamo winding for controlling the speed of the elevator car wherein the magnitude of the current of both polarities which the amplifier is capable of supplying is limited in response to the approach of the car to a predetermined distance of a landing at

which it is stopping and wherein only the limitation for one polarity is removed in response to the generation of a signal to start in a direction corresponding to that one polarity.

3,688,875

### DISC BRAKE CALIPER WITH INTEGRAL PARKING BRAKE

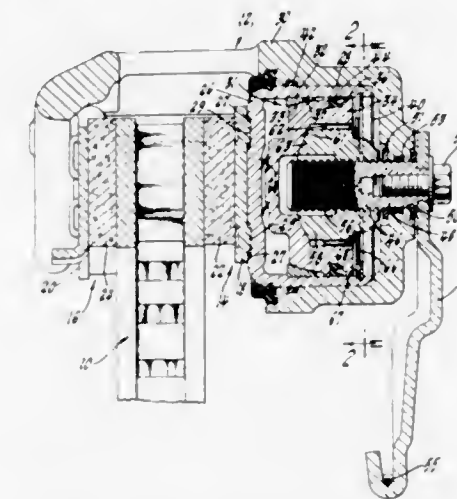
Edward J. De Hoff, Dayton, and Ernest D. Schaefer, Kettering, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed April 7, 1971, Ser. No. 131,936

Int. Cl. F16d 65/56

U.S. Cl. 188—71.9

3 Claims



A disc brake caliper includes a hollow piston slidable in the caliper housing, a second piston slidable in the hollow piston and normally positioned relative thereto so that mating frusto-conical surfaces formed on the pistons are engaged to prevent relative rotation therebetween and an adjuster nut which is splined to the second piston and which normally engages the second piston to hold it and the first piston in close relationship to the disc. The adjuster nut threadedly engages a screw which is rotatably journaled in the housing so that rotation of the screw imparts axial brake actuating movement to the rotationally stationary adjuster nut, second piston, and hollow piston. The spline connection permits the pistons to move unitarily toward the disc upon introduction of hydraulic fluid into the housing. If lining wear occurs, the hollow piston is returned into the caliper housing short of its preactuation position, a spring acting between the pistons moves the second piston away from the first to disengage the frusto-conical surfaces and then a second spring rotates the adjuster nut and the second piston splined thereto thus moving the second piston axially to re-engage the frusto-conical surfaces and hold the hollow piston in closer wear adjusting relationship to the disc.

3,688,876

### DISC BRAKE OF THE FLOATING TYPE

Akiyoshi Hirai, Toyota-shi; Kaname Doi, Ibaragi-shi, and Takeshi Noguchi, Nishinomiyashi, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Toyota Jidosha Kogyo Kabushiki, Toyota-shi, Japan

Filed Sept. 25, 1972, Ser. No. 860,963

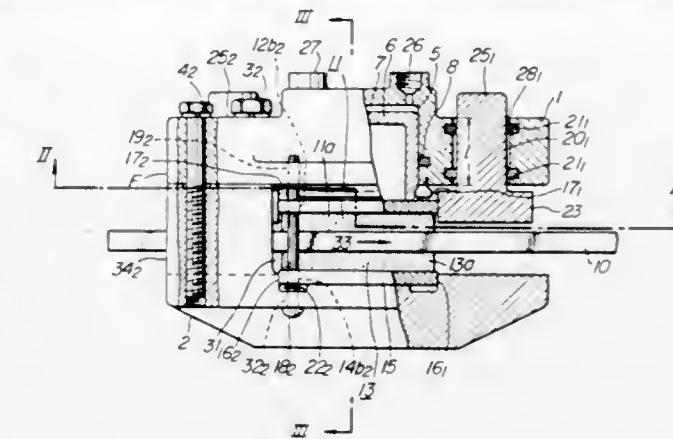
Claims priority, application Japan, Oct. 1, 1968, 43/71581

U.S. Cl. 188—73.3

6 Claims

This is a disc brake of the floating type particularly adapted for use with motor vehicles. The brake has a fixed member disposed on one side of a rotating disc and having two outwardly extending circumferentially spaced arms, each arm having a pin extending away from the disc in the direction of the axis of rotation of the disc. A floating member straddles the disc, and includes a pair of mutually opposed friction members for engaging the disc and an actuator therefor. The floating member further has a pair of bores for engaging the pins such that the floating member is slidable on the pins. The fixed member is provided with a shoulder engaging one of the

friction members for receiving the braking torque therefrom, and the braking torque from the other of the friction members is received by the floating member and is passed to the fixed



member through one of the pins. There is a predetermined clearance between each of the bores and its associated pin, and the pin that receives the torque from such other friction member has less clearance with its bore than the other pin.

3,688,877

### DEVICE FOR RELEASING A SPRING URGED BRAKE

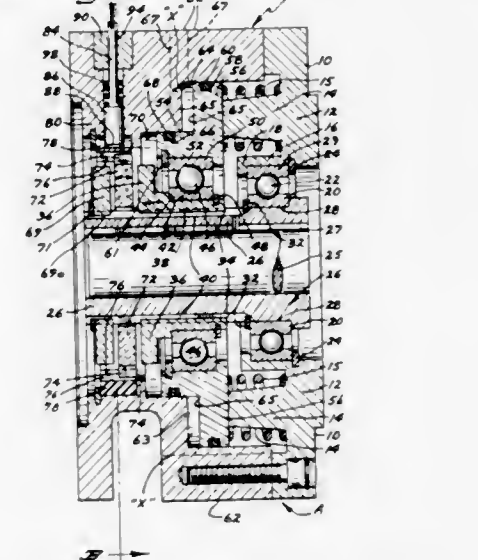
Michael D. Day, Minneapolis, Minn., assignor to Horton Manufacturing Company, Inc., Minneapolis, Minn.

Filed Nov. 4, 1970, Ser. No. 86,862

Int. Cl. B60t 13/104; F16d 65/24

U.S. Cl. 188—166

7 Claims



A brake including a braking member slidable within a fixed housing and on a support member secured to a shaft and engageable with a friction member connected to the housing, the friction member engageable with a stop member fixed to the support member for braking the shaft, the improvement in the connection of the friction member with the housing including a ring carried by the housing with spline means connecting the ring to the friction member and a pin carried by the housing for releasable engagement with a notch in the ring to allow braking or prevent braking of the braking member relative to the shaft.

3,688,878

### MULTIPLE DISK FAILSAFE BRAKE FOR ROTARY HYDRAULIC MOTORS

Edmund E. Barmasse, Depew, N.Y., assignor to Houdaille Industries Inc., Buffalo, N.Y.

Filed April 10, 1970, Ser. No. 27,301

Int. Cl. F16d 65/24

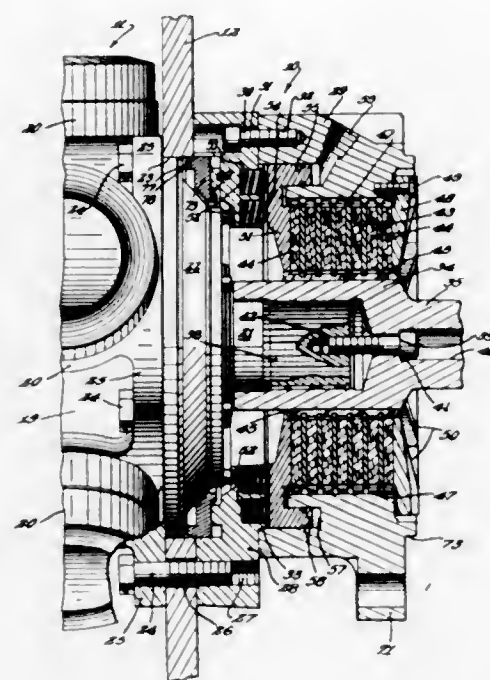
U.S. Cl. 188—170

15 Claims

A multiple disk failsafe brake for rotary hydraulic motors has stator brake disks interleaved with rotor brake disks nor-



mally frictionally interlocked by a spring biased piston which is releasable by the hydraulic pressure which drives its associated motor. The brake rotor is corotatively coupled with



the motor shaft and may provide an extension of such shaft. Versatile mounting of the brake relative to the motor is provided for.

3,688,879

## AUXILIARY BRAKE SYSTEM

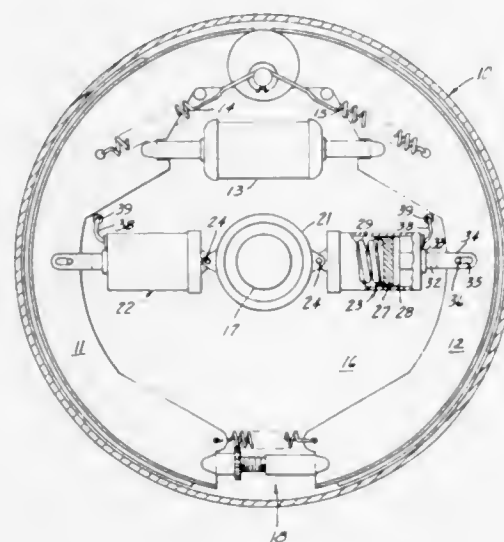
Arnold A. Buletti, 1295 Petaluma Blvd. N., Petaluma, Calif.

Filed July 7, 1970, Ser. No. 52,973

Int. Cl. B60t 7/10

U.S. Cl. 188—353

3 Claims



An emergency brake system which effects an automatic engagement of the wheel brakes of a vehicle upon failure of the main brake system. The auxiliary brake system also provides for the engagement of the brakes when the engine is shut off as in parking. The auxiliary brake cylinders act radially on the brake shoes thus simplifying the construction over the prior art. The source of fluid pressure for the auxiliary brake system is conveniently mounted on the master cylinder of the conventional system thus lending the invention to a simple installation.

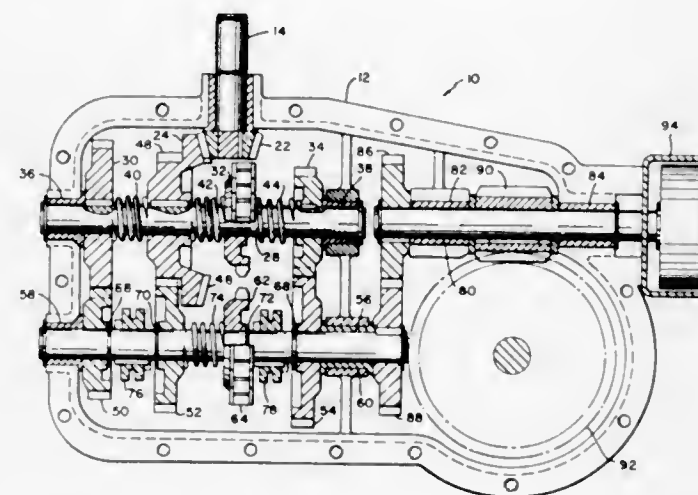
3,688,880  
SHIFTING MECHANISM FOR MULTIPLE SPEED  
STRUCTURE  
George E. Lewis, Hialeah, Fla., assignor to Power Flo Products  
Incorporated, Hialeah, Fla.

Filed Oct. 12, 1970, Ser. No. 79,877

Int. Cl. F16d 67/02; F16h 5/06

U.S. Cl. 192—4

9 Claims



Transaxle structure including three forward speeds and one reverse speed having a vertical drive and a braked driving shaft in which shifting between the three forward speeds and reverse speed is accomplished by clutch structures engaged with shifting forks which forks are moved in accordance with the angular position of a rotary camming disk and which camming disk is angularly positioned by a shifting lever secured to a shifting link coupled to the camming disk by a pin and slot lost motion connection.

In another modification shifting a four speed gearbox is accomplished by means of shifting forks engaging clutch structures, which shifting forks are positioned in accordance with a sliding cam member actuated on pivotal movement of a shifting lever connected thereto by a sliding connection. The camming slide may have an external camming surface or may have an internal camming slot in which case the shifting forks may be connected thereto by pin structures.

3,688,881

## MECHANICAL CLUTCH-BRAKE

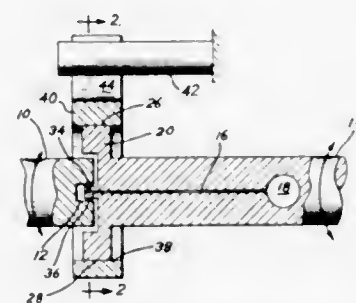
John F. Kinney, South Bend, Ind., assignor to The Bendix Corporation

Filed Sept. 30, 1970, Ser. No. 76,888

Int. Cl. F16d 67/00

U.S. Cl. 192—8 R

8 Claims



A rotatable driven member having a bifurcated end portion defining spaced apart radially inwardly flexible end portions provided with friction surfaces engageable with a friction surface of a fixed member. A rotatable driving member is provided with an end portion which meshes with the spaced apart end portions of the driven member. The driven member is held fixed by the fixed member until a predetermined torque load is applied by the driving member against the space apart end portions of the driven member which flexes radially in-

wardly to reduce or release the frictional force holding the friction surfaces thereof against the fixed friction surface depending upon the output torque imposed on the driven member.

3,688,882

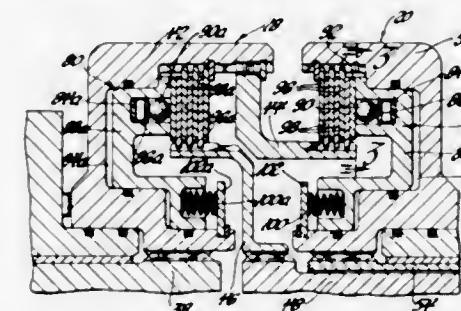
FLUID OPERATED CLUTCH WITH ONE WAY ENGAGER  
John J. O'Malley, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 16, 1971, Ser. No. 171,939

Int. Cl. F16d 25/00

U.S. Cl. 192—85 AA

2 Claims



A self-energizing clutch having a pair of leaf springs forming a ramp for a ball between the clutch pack and the engaging piston. One spring applies a light force to the ball which starts the ball up the ramp when the output of the clutch overdrives the input. The other spring is then deflected to provide a higher force to complete the engagement of the clutch.

3,688,883

## SYNCHRONIZING RING

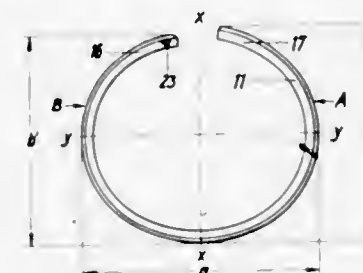
Jorg Austen, Weinsberg, Germany, assignor to Firma Dr.-Ing. h.c.F. Porsche K.G., Stuttgart-Zuffenhausen, Germany

Filed April 26, 1971, Ser. No. 137,468

Int. Cl. F16d 23/02

U.S. Cl. 192—53 C

7 Claims



A synchronization installation for change-speed transmissions, especially for motor vehicles, which contains a slotted and springy synchronizing ring, which is oval in shape in the unstressed condition, whereby its larger dimension is disposed in a plane perpendicular to the plane of the ring ends; the ring areas on both sides of the plane extending through the ring ends of the synchronizing ring thereby possess diameters that differ from one another.

3,688,884

VISCOSITY COUPLING, ESPECIALLY FOR COUPLING A  
FAN TO ITS DRIVE IN AN INTERNAL COMBUSTION  
ENGINE

Gunter Perrin, Stuttgart, and Gerhard Pabinger, Stetten, Remstal, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Dec. 4, 1970, Ser. No. 95,089

Claims priority, application Germany, Dec. 5, 1969, P 19 61 107.5

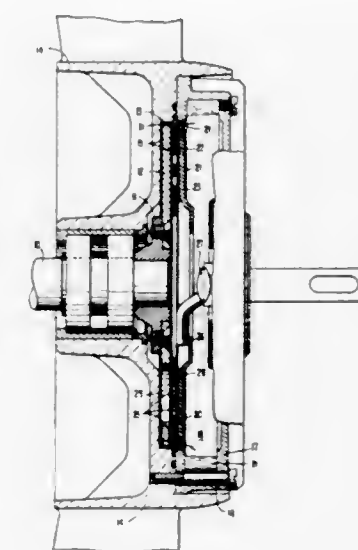
Int. Cl. F16d 35/00

U.S. Cl. 192—58 B

37 Claims

A viscosity coupling, particularly for the coupling of a fan with its drive in an internal combustion engine, which has a

working space that includes entrainment surfaces which are disposed opposite one another at slight distances and are provided at the two parts to be coupled with one another; the working space is connected by way of one or several openings with a reservoir space for the viscosity liquid, from which the liquid is fed to the working space as a function of an adjusting



magnitude; an intermediate chamber is arranged between the working space and the reservoir space, in which terminates the feed line from the reservoir space whereby the intermediate chamber is so connected with the working space that the viscosity liquid flows from the intermediate chamber into the working space no further inwardly than the inner circumference of the liquid ring present in the working space.

3,688,885

## MULTIPLE CLUTCHES FOR A TV TUNER

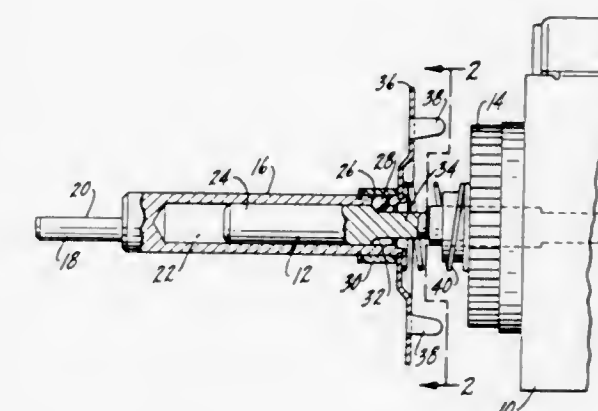
John G. Cummings, Cary, Ill., assignor to Oak Electro/Netics Corp., Crystal Lake, Ill.

Filed Dec. 7, 1970, Ser. No. 95,759

Int. Cl. F16d 21/06

U.S. Cl. 192—95

2 Claims



A control mechanism for a TV tuner permitting both channel selection and fine tuning by operation of a single shaft. The channel selector shaft reciprocally and concentrically mounts an actuator shaft having a conventional manual control knob. There is a coupling between the actuator shaft and the channel selector shaft providing for unitary rotation of the two shafts in the normal position of the actuator shaft. Inward movement of the actuator shaft releases the coupling with the channel selector shaft and engages a portion of the actuator shaft with the fine tuning control.



3,688,886

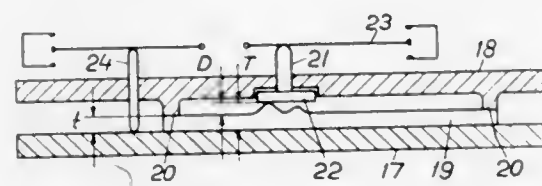
## BILL INDICATOR AND THE LIKE

Sture Siby, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden  
 Filed Nov. 12, 1970, Ser. No. 88,862  
 Claims priority, application Sweden, Nov. 18, 1969, 15794/69

Int. Cl. G07d 7/00

U.S. Cl. 194-4 R

5 Claims



A device for determining the genuineness of documents, such as paper bills. The bill is clamped between two planes. One plane has spacing ridges which abut against the paper thickness outside the printed surface pattern, and a plunger abuts against the top of the printed surface pattern at some selected portion thereof to measure the height of the printed surface at that portion above the thickness of the paper.

3,688,887

Patent Not Issued For This Number

3,688,888

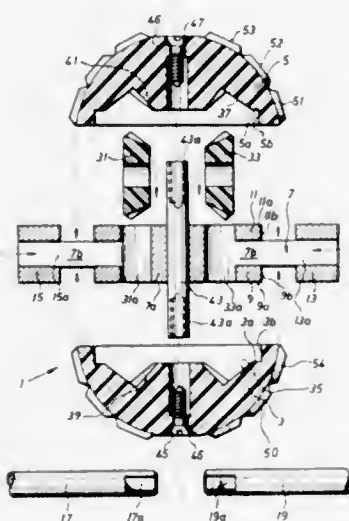
## TYPE HEAD SETTING MECHANISM

Chien van der Werff, Carolinensiel, Germany, assignor to Olympia Werke A.G., Wilhelmshaven, Germany  
 Filed Feb. 25, 1971, Ser. No. 118,811  
 Claims priority, application Germany, March 5, 1970, P 20 10 272.1

Int. Cl. B41j 1/60

U.S. Cl. 197-52

12 Claims



Two hemispherical type head halves with integral first bevel gears, are mounted on a carrier shaft for rotation about a first polar axis. The carrier shaft extends perpendicularly to, and is fixed to, an equatorial carrier plate in which independently driven second bevel gears, meshing with the first bevel gears are supported for rotation about a second axis perpendicular to the first axis so that one of the types on the hemispherical type head halves, can be selected for printing by turning the second bevel gears independently of each other by key controlled setting means.

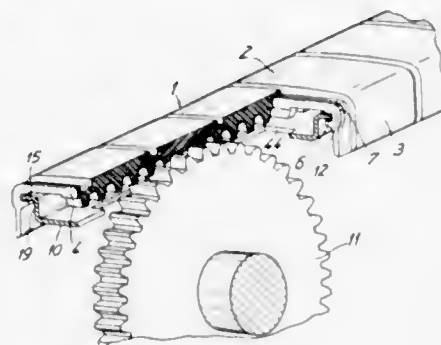
3,688,889

## DRIVEN HANDRAIL SYSTEM

Ernst Koch, Unterbrunnen 7203, Trimmis, and Hans Bachmann, Guggitabring 5, Zug, both of Switzerland  
 Continuation-in-part of Ser. No. 788,233, Dec. 31, 1968, abandoned. This application Aug. 14, 1970, Ser. No. 63,672  
 Int. Cl. B66b 9/12

U.S. Cl. 198-16

25 Claims



A movable handrail comprising interfitting links secured so as to prevent undesirable lateral movement but to ensure longitudinal expansion without undue checking of the handrail and having depending teeth and guide channels. The handrail is driven by toothed gears along a guiding frame so as to travel with reduced friction, noise, maintenance, and power consumption.

3,688,890

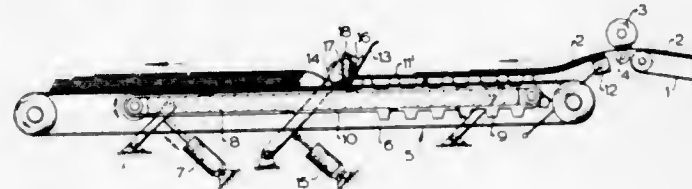
## APPARATUS FOR PILING TUBE PORTIONS FOR THE MANUFACTURE OF BAGS OR SACKS

Friedrich Franz Brockmüller, Westphalia, Germany, assignor to Windmoller & Holscher, Westphalia, Germany  
 Filed June 18, 1970, Ser. No. 47,306  
 Claims priority, application Germany, Aug. 2, 1969, P 19 39 486.6

Int. Cl. B65g 57/00

U.S. Cl. 198-35

5 Claims



An apparatus piling tube portions for the manufacture of bags or sacks comprises a rotatable endless belt means, a suction beam upstream of the belt means for retaining the upstream end of the bottom tube portion of a pile. A movable stop plate is disposed transversely to the belt means to define the downstream edge of a pile. Means are associated with the stop plate to exert a generally downward pressure on a completed pile when in use the stop plate is lifted to permit the completed pile to be conveyed away by the belt means. These means are pivotably arranged in the direction in which the completed piles are conveyed away.

3,688,891

## CONVEYOR

Arthur H. Long, Pittsburgh, Pa., and Edward M. Lyden, Youngstown, Ohio, assignors to Wm. K. Stamets Company, Columbiana, Ohio  
 Filed March 19, 1970, Ser. No. 20,922  
 Int. Cl. B65g 17/46

U.S. Cl. 198-41

3 Claims

A conveyor having an upper level where articles are engaged and carried from the bottom thereof, a lower level where articles are engaged and moved from the top thereof and a transition section for moving articles between the two levels. The conveyor has a magnetic rail extending along the

lower level and transition section for holding the articles on the conveyor. Selective ejection of articles from the lower level at certain unloading positions therealong is provided by

3,688,893

## MATERIALS HANDLING MACHINE

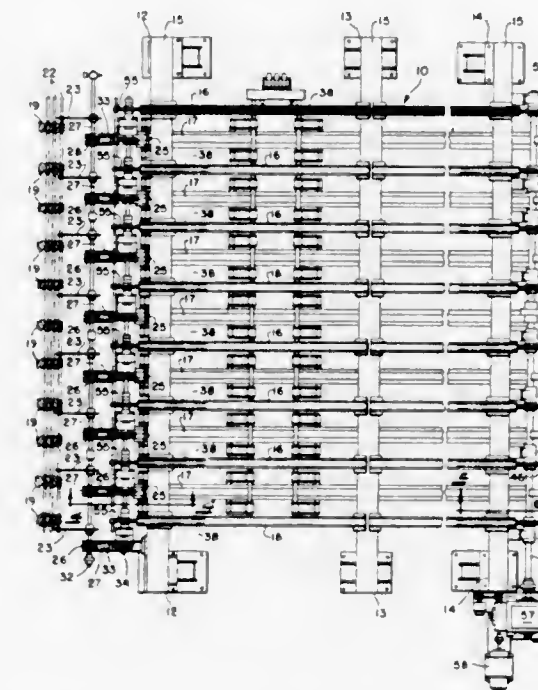
Walter J. Wallace, Jr., Batavia, Ill., assignor to W. J. Wallace Systems, Inc., Batavia, Ill.

Filed Feb. 26, 1970, Ser. No. 14,356

Int. Cl. B65g 15/00

U.S. Cl. 198-93

26 Claims



removing the articles from the effective magnetic field of the magnetic rail. Suitable controls are provided for unloading articles at a plurality of unloading positions.

3,688,892

## DOUGH CONVEYOR

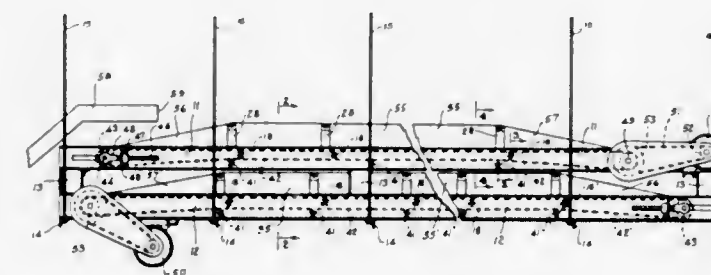
Clarence A. Kieffaber, Overland Park, Kans., assignor to Marion Corporation

Filed Sept. 24, 1970, Ser. No. 75,169

Int. Cl. B65g 37/00

U.S. Cl. 198-84

8 Claims



A dough conveyor used as a fermentation conveyor. Dough is fed onto it from mixing apparatus by a conveyor operating at higher speed than the fermentation conveyor. The fermentation conveyor has an upper and a lower section moving in opposite directions. Each section has an upper run which has a driven roller at one end and a take-up roller at the other end. The major portion of the upper run of each conveyor has horizontal rollers supporting the middle portion of a neoprene belt and diverging inclined rollers supporting the side portions of the belt to form a trough-like portion. The inclined rollers are mounted on brackets made of flat bar stock and have lower horizontal portions, vertical portions, and parallel upwardly inclined portions at the ends of the horizontally and vertically extending portions between which the inclined rollers are mounted. The rollers are mounted on bars that carry anti-friction bearings pressed into the ends of hollow body portions of the rollers and bolts extend endwise into the ends of each bar to hold them from endwise movement relative to their mountings.

3,688,894

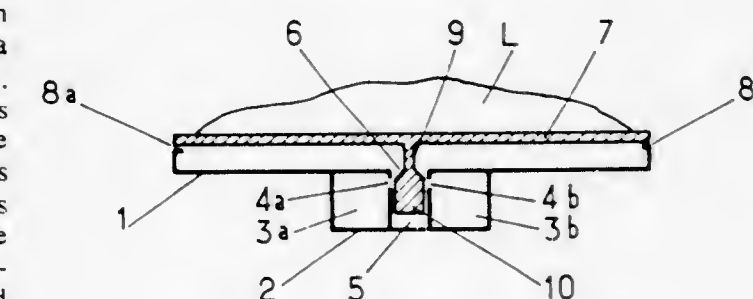
## FLUID SUPPORTED CONVEYOR

Roland Joug, Nohanent, and Bernard Ragout, Clermont, both of France, assignors to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes, Colombes, France and Ateliers Mecaniques du Douais, Douai, France  
 Filed Feb. 16, 1971, Ser. No. 115,626

Int. Cl. B65g 15/28

U.S. Cl. 198-184

9 Claims



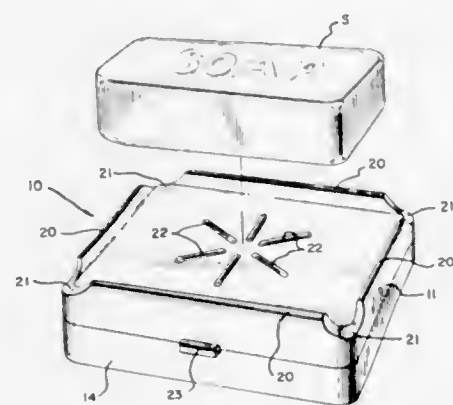
In a conveyor in which the conveyor belt is supported above a duct by an air cushion, a projection fixed to the belt travels in a channel for supplying air to the duct. When the load is normal the projection attached to the belt partially obstructs



the orifices through which the air passes into the duct, but leaves them completely open in the case of an increase load.

**3,688,895**  
**COMBINED SOAP CAKE DISH AND CONTAINER**  
Henry Allen Wilson, General Delivery, Palm Beach, Fla.  
Filed Nov. 30, 1970, Ser. No. 93,703  
Int. Cl. A45c 11/00; B65d 1/34  
U.S. Cl. 206—37 R

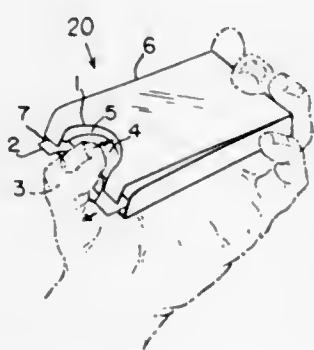
2 Claims



A box-type container in which the integral hinged closure is a wet soap cake draining and supporting dish when the box is closed, the closed box also serving as a container for the soap cake in which it may be safely carried.

**3,688,896**  
**CARD CASE**  
Strohm Newell, 2256 Albatross St., San Diego, Calif.  
Filed April 15, 1970, Ser. No. 28,693  
Int. Cl. A45c 11/18  
U.S. Cl. 206—39

6 Claims

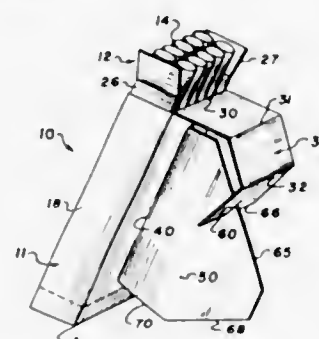


A case for carrying popular credit cards and the like provided with means for retaining the lid in an open position if a card is missing from the case. The case has a top portion and a bottom portion which form a case that may be opened and closed. At least one receiving means for holding a card within the case is movably mounted between a fully retracted position and an extended position with respect to the case. Biasing means is disposed in the case to cause the receiving means to move to an extended position so that a portion of the receiving means projects outside of the card case when the case is open and the card is removed therefrom. In an embodiment of the invention, the card carrying assembly includes a projecting means movably mounted in a case between a fully retracted position and an extended position. The projecting means is biased outwardly so that when the case is opened and a card is removed, the projecting means will extend outwardly with respect to the case and prevent the case from being closed. The projecting means in this embodiment is actuatable to the fully retracted position by the card when the card is returned to the case, thereby allowing the case to be closed. Various other more specific embodiments are disclosed hereinbelow.

**3,688,897**  
**DISPLAY PACKAGE**  
Charles R. Judd, 2628 St. George St., Port Moody, British Columbia, Canada  
Filed Oct. 26, 1970, Ser. No. 83,905  
Claims priority, application Canada, Nov. 20, 1969, 067,925

Int. Cl. B65d 5/52  
U.S. Cl. 206—45.26

5 Claims



A package having a flap formed on a panel thereof and being foldable outwardly to support the package on a base as a display. The package has a cover flap which can be extended over and locked to an outwardly folded prop flap to secure the latter flap against inward collapse.

**3,688,898**  
**PHONOGRAPH RECORD ENVELOPE WITH FOAM STRIP**  
David Christopher Stanton, Banbury, England, assignor to Plastic Innovations Limited, London, England  
Filed Oct. 15, 1970, Ser. No. 80,922  
Claims priority, application Great Britain, Oct. 23, 1969, 51,129/69; Oct. 23, 1969, 51,949/69  
Int. Cl. B65d 85/30  
U.S. Cl. 206—62 P

12 Claims



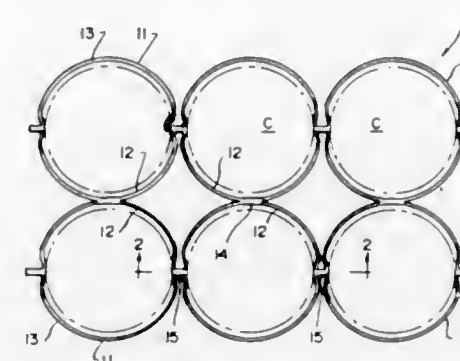
An improved gramophone record sleeve or other container for a flat article uses the minimum of expensive material of the cardboard variety, with plastics sheet materials, and consists of a cover formed of two relatively hingeable portions, preferably of cardboard, at least one of the cover portions having secured to its inner face a portion of polymeric material (which may constitute a transparent plastics sleeve) for holding the record or other flat article within the cover; preferably, an edge of the sleeve which is left open for inserting and withdrawing the record is lined with one or more strips of resilient foam plastics material.

**3,688,899**  
**ARTICLE GROUP CARRIER**  
Richard T. Walter, Norristown, Pa., assignor to Container Corporation of America, Chicago, Ill.  
Filed March 10, 1971, Ser. No. 122,730  
Int. Cl. B65d 71/00; B66f 19/00  
U.S. Cl. 206—65 C

3 Claims

An article group carrier for a group of articles, such as chimed cans, the carrier being comprised of tube-like elements formed of conjugately connected webs defining article engaging loops. The article carrier is arranged to support the cans in a pair of side-by-side rows, and at the points of conjugacy between the rows and between articles of a row the loops are joined along areas to enable the webs of the loops to firmly engage the article sides at the points of conjugacy and also in

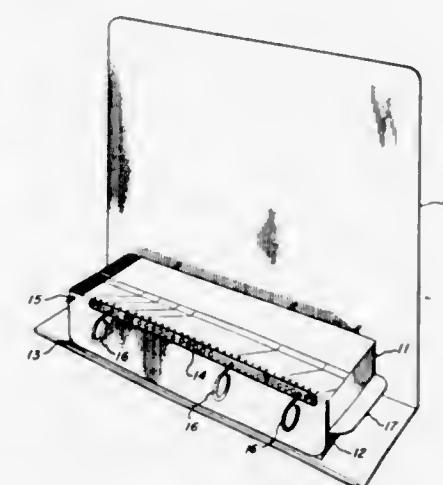
the annular grooves adjacent the chimers. The areas where the webs are joined are defined by generally elongated portions



below the annular grooves adjacent the chimers, and by a wider area portion constrained into such annular grooves.

**3,688,900**  
**APPARATUS FOR SORTING AND RETRIEVING CARDS**  
Wayne L. Wanous, 34 12th Ave. N., Hopkins, Minn.  
Filed May 10, 1971, Ser. No. 141,641  
Int. Cl. B07c 5/34  
U.S. Cl. 209—110.5

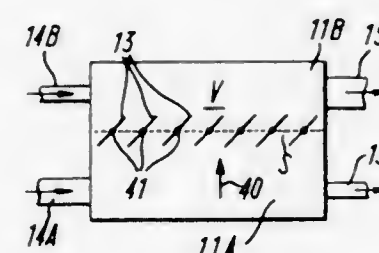
6 Claims



Apparatus for sorting and retrieving information printed on cards is disclosed, where the information is classified into predetermined categories and the classifications are arranged to correlate with edge-punched holes and notches, and the entire apparatus is compactly structured for use on a desk or table top.

**3,688,901**  
**METHOD OF AND APPARATUS FOR SORTING CRYSTALS ACCORDING TO SIZE**  
Francis Laurenty, Le Touquet, France, assignor to C.O.C.E.I. SA, Paris, France, a part interest  
Filed Nov. 10, 1969, Ser. No. 875,096  
Claims priority, application France, Nov. 15, 1968, 173,845  
Int. Cl. B03b 3/30  
U.S. Cl. 209—157

8 Claims

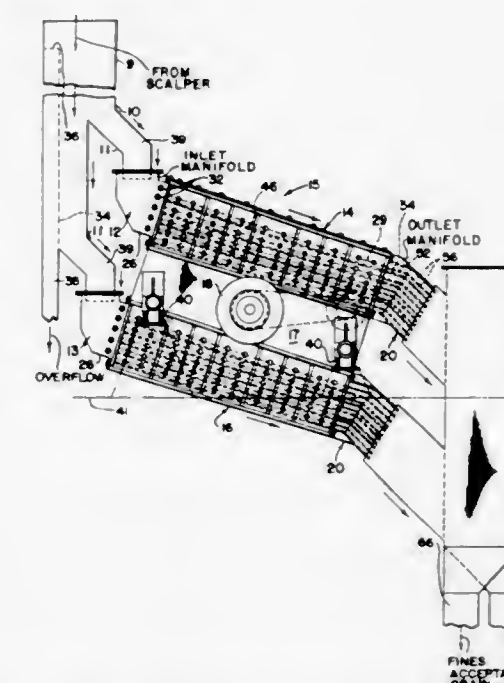


A device for sorting crystals according to their size comprises a separation chamber divided into two parts; a fluid car-

rying the crystals to be sorted passes into a first of these parts while a separate driving fluid is passed into the second, the flow-rate of fluid passing out of the second part being less than the flow-rate of driving fluid which passes into the second part, while the flow-rate of fluid passing out of the first part is higher than the flow-rate of carrier fluid passing into the first part, whereby at least a portion of the driving fluid passes across an interface separating the two parts, in counter-flow to the largest crystals to be sorted; the crystals to be sorted tend to flow from the first part to the second but the upward speed of the driving fluid in the separation chamber prevents such flow except for the crystals having the desired diameter, regulated by the speed of the fluid.

**3,688,902**  
**GRAIN CLEANER**  
Louis E. Hubach, Aurora, Ohio, assignor to W. S. Tyler Incorporated  
Continuation-in-part of Ser. No. 792,260, Jan. 30, 1969. This application April 1, 1971, Ser. No. 130,311  
Int. Cl. B07b 1/00  
U.S. Cl. 209—240

16 Claims



A grain cleaner including, in series, feeder chutes, an inlet manifold, vibrating apparatus, an outlet manifold and vertically extending outlet chutes. The feeder chutes are designed to have a specific minimum cross-sectional area ratio and they serve as conduits between grain elevators or scalpers and the inlet manifolds. The inlet manifold includes both an opening at the top for receiving a mixture of grain and foreign matter and side walls converging downwardly toward outlets. The outlets are located at one side of the inlet manifold near the lower end, each one being constructed to feed a stream of the mixture to one of a plurality of superposed screening decks. The mixture flowing through the outlets may be individually regulated by gates disposed therein to give uniform flows to each deck. Each deck includes a screen superposed over a pan. Whole grains are retained above the screen; fines, consisting of foreign matter, broken grains, and undersized grains, fall through the pores of the screen onto the pan. A vibrator is operatively assembled to shake the box and its contents at an acceleration of at least 3.4 times that of gravity and to exert a throw on the fines which is adequate to cause them to strike the underside of the screen and dislodge any material blinding any of the openings. The outlet manifold includes two outlets from each deck. One outlet is disposed to receive the grain which is retained on the screen. The other outlet is disposed to receive the fines on the pan. A passage in the outlet manifold adjoins each of the outlets and baffles are provided therein to horizontally deflect the grain or fines into different vertically extending outlet chutes. Below the outlet manifold, the outlet



chutes are structured to laterally deflect the grain in one direction and the fines in another direction whereby all the grain will empty into a single duct and the fines will empty into another single duct.

3,688,903

Patent Not Issued For This Number

3,688,904

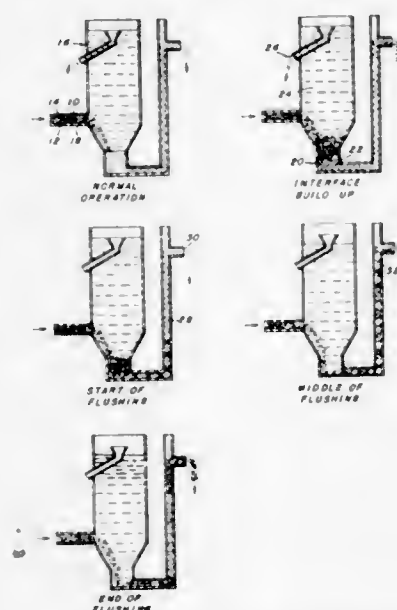
# FLUSHING OF THIRD-PHASE CONTAMINANT FROM THREE-PHASE DISPERSION

James E. Knepp, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 28, 1970, Ser. No. 101,627  
Int. Cl. B01d 21/24

U.S. Cl. 210-83

5 Claims



Use of a vertical separating tank-hydraulic leg arrangement to continuously separate the light and heavy phases of a gravity-separable three-phase dispersion containing third-phase contaminants and to flush the contaminants at intervals.

3,688,905

# PURIFICATION ASSEMBLY

Carl Sigvard Nordgard, Nacka, Sweden, assignor to Svenska Interpur AB, Nacka, Sweden

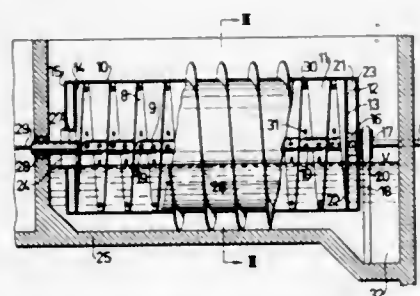
Filed April 17, 1970, Ser. No. 29,581

Claims priority, application Sweden, April 22, 1969, 5732/69

Int. Cl. B01d 21/18

U.S. Cl. 210-151

5 Claims

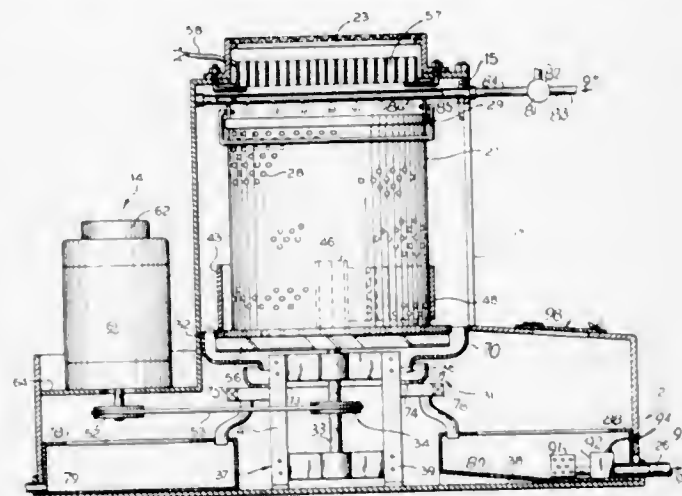


A water purifier comprises a helical screw of sheet material carrying biologically active microorganisms. The helix is fitted around a horizontal, rotating shaft, and the outer periphery of the helix is tightly fitted within a cylindrical casing. End walls close off the casing, and a water inlet is provided in one end wall and a water outlet in the other, opposite end wall. Water traveling through the casing must traverse the helix surfaces and thus be subject to purification action, and cannot pass between the outer edges of the helix and the casing.

3,688,906  
CENTRIFUGAL DRYERS  
Achille K. Ferrara, 1030 Kendall Trail, Addison, Ill.  
Filed Nov. 23, 1970, Ser. No. 91,798  
Int. Cl. F26b 17/30

U.S. Cl. 210-152

10 Claims



A centrifugal dryer for drying small machine parts. The dryer features means such as an access door and a biased ramp leading thereto to facilitate the loading and unloading of a basket containing the parts into and out of the dryer. In addition, the drying process is expedited by utilization of heated air driven directly from a heater above the basket bearing the part through to the bottom of the work basket thereby minimizing duct work.

3,688,907  
AUTOMATICALLY SELF-CLEANING SELF-AERATING  
TROPICAL FISHAQUARIUM

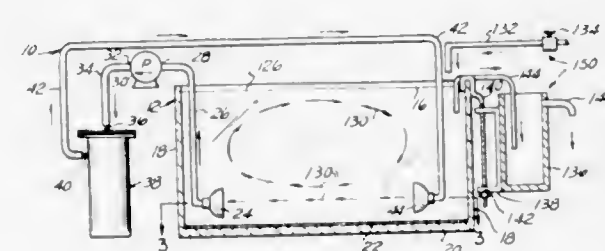
August J. Oravec, 15496 Gilchrist, Detroit, Mich.

Continuation-in-part of Ser. No. 794,616, Jan. 28, 1969, abandoned. This application Dec. 11, 1970, Ser. No. 97,177

Int. Cl. E04h 3/20

U.S. Cl. 210-169

1 Claim



A contaminated-water intake or suction fitting is mounted near the bottom of the aquarium tank adjacent one end thereof and connected by a pump intake pipe to the suction port of a water pump. The discharge port of the pump is connected by a pump discharge pipe to the top of a multi-media pressure filter containing superimposed layers of filtering materials which filter the contaminated water from the aquarium tank. From a chamber at the bottom of the filter, a filter-water discharge pipe returns the filter water to a water discharge nozzle located adjacent the opposite end of the aquarium tank at the bottom thereof in aligned spaced relationship to the suction fitting. The current of water thus forced along the bottom of the aquarium toward the suction fitting sweeps sediment and other impurities along with it to the suction fitting whence the pump delivers the thus-contaminated water back to the pressure filter. Meanwhile, the current of water flows upward from adjacent the suction fitting in an orbital path along the surface of the water in the tank, thence back toward the water discharge nozzle, thereby aerating the water.

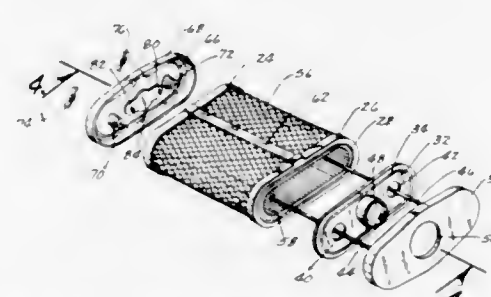
3,688,908  
FILTER DEVICE FOR A SUBMERGIBLE SWIMMING  
POOL CLEANER

Robert R. Myers, deceased, late of Boca Raton, Fla. (by Helen T. Myers, executrix, 904 N.E. 2nd St., Boca Raton, Florida, 33432), and Fay A. Hayes, 144 N. W. 7th St., Boca Raton, Fla.

Filed Jan. 28, 1971, Ser. No. 110,390  
Int. Cl. E04h 3/20

U.S. Cl. 210-169

5 Claims



A filter device for a submersible swimming pool cleaner apparatus including first and second spaced apart end members detachably secured together and having a filter positioned therebetween. A central compartment area is provided within the filter which is in communication with an intake opening at one of the end members. The intake opening is in fluid communication with the water discharge conduit of the cleaner apparatus and has a check valve means mounted therein. An expanded metal frame extends around the exterior surface of the filter to maintain the filter in place and to permit the flow of water from the filter outwardly therethrough. A valve means is provided at the other end member for permitting the escape of air from the compartment area when the swimming pool cleaner is lowered into the pool.

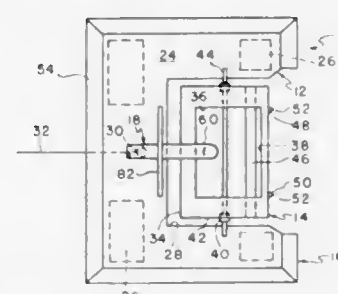
3,688,909  
FLOATING SELF ADJUSTING SKIMMER

Paul E. Titus, Houston, Tex., and James R. Hanson, Martinez, Calif., assignors to Shell Oil Company, New York, N.Y.

Filed June 4, 1970, Ser. No. 43,461  
Int. Cl. C02b 9/02

U.S. Cl. 210-242

9 Claims



There is disclosed a skimming mechanism for removing all or part of a first liquid from the surface of a second liquid. A pivoted receptacle having a weir is buoyed to position the weir adjacent the interface of the liquids. Liquids accumulating in the receptacle are withdrawn for disposal. A stabilizing member extends around a substantial portion of the periphery of the skimmer to prevent submergence of the weir due to wave or current movement of the liquids.

3,688,910  
HAND PUMP  
Fielding G. Johnson, Santa Ana, and James A. Green, Costa Mesa, both of Calif., assignors to Hydrodata, Inc., Costa Mesa, Orange, Calif.

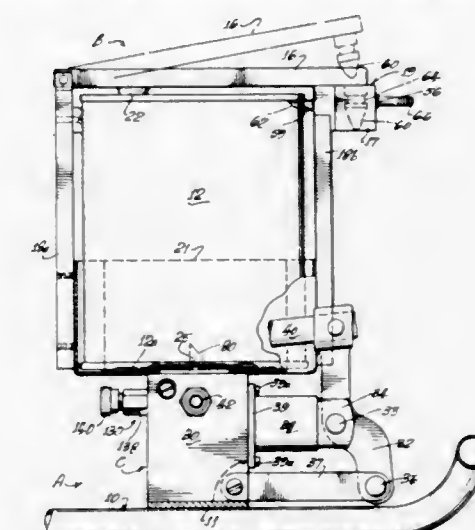
Filed March 27, 1970, Ser. No. 23,319  
Int. Cl. B01d 35/02

U.S. Cl. 210-233

7 Claims

A fluid pumping device having a fluid containing container; a container frame; means for puncturing the container to

allow air to enter and means for puncturing the base of the container to remove fluid therefrom. The container is mounted on a pumping assembly; the pumping assembly com-

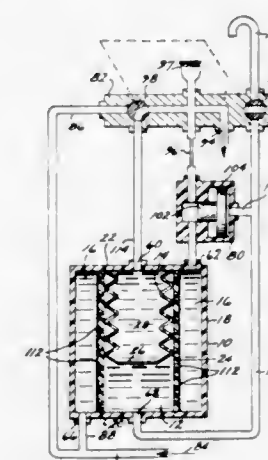


prises an inlet port, an outlet port, filter means and piston means for pumping fluid from the container through the filter to a fluid delivery means.

3,688,911  
WATER TREATMENT APPARATUS  
William Baerg, 1992 Lemnos Drive, Costa Mesa, Calif.  
Filed Dec. 20, 1968, Ser. No. 785,573  
Int. Cl. B01d 13/00

U.S. Cl. 210-321

9 Claims



This invention relates to improvements in methods of treating, storing and dispensing water and to improvements in systems for treating and storing and dispensing water. The method includes the steps of storing a quantity of treated water under near atmospheric pressure and adding to that quantity by forcing untreated water through a selected filter at higher pressure and by dispensing a portion of that quantity of treated water by increasing the pressure to substantially said higher pressure. An apparatus is described by which to treat, to store and to dispense water by that and other methods. The apparatus includes a composite container structure which defines three separate containers some of which share common walls. The container is associated with valving and fluid flow circuitry by which raw water is treated until a selected quantity of it has been stored and by which treated water may be dispensed at raw water pressure and at selected rate by operation of a single control.

3,688,912  
TACK AND SADDLE RACK  
Frankie W. Wilmoth, Rte. 4, Box 303, Yakima, Wash.  
Filed June 18, 1970, Ser. No. 47,179  
Int. Cl. A47f 7/00

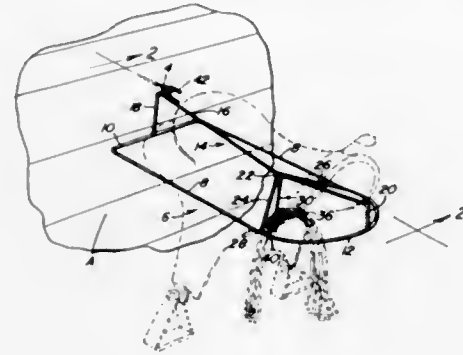
U.S. Cl. 211-13

4 Claims

A rack for a readily applicable and removable saddle. It comprises a frame which is centrally arched over by an in-



verted U-shaped prop. The bight portion of the the prop elevates and suspends the saddle and the side members of the frame seat and balance the slanting skirt portions. Outwardly and downwardly inclined braces stabilize the prop and frame.



The prop has a hook releasably connectible with an eye bolt on a tack room wall. An L-shaped hanger bracket is equipped with an arcuately shaped clip whereby to permit the tack to be hung from an accessible easy-to-reach position.

3,688,913

Patent Not Issued For This Number

3,688,914

DISPLAY DEVICE

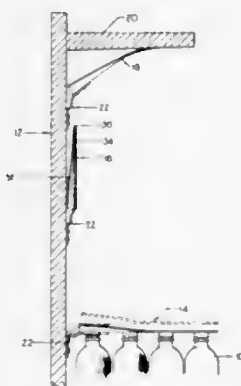
Russell E. Taber, 501 Dogwood Valley Drive, N.E., Atlanta, Ga.

Filed Dec. 16, 1970, Ser. No. 98,633

Int. Cl. A47I 7/00

U.S. Cl. 211—49 S

11 Claims



Hinge and separator structure for accommodating vertically stacked layers of merchandise adjacent a back panel. The hinge is a flat spring element having a transverse bend and secured to the back panel and the separator in such a way that it is movable to a horizontal position between vertical layers, and to a position exposing the lower layer when the upper layer of merchandise is removed. The separator may include a hinged portion and means for increasing the longitudinal rigidity of the rear portion only.

3,688,915

COMBINED SHELF EDGE AND HANGER SUPPORT

Joe B. Ramsey, Walnut, Calif., assignor to Acme General Corporation, Monrovia, Calif.

Filed Dec. 21, 1970, Ser. No. 100,101

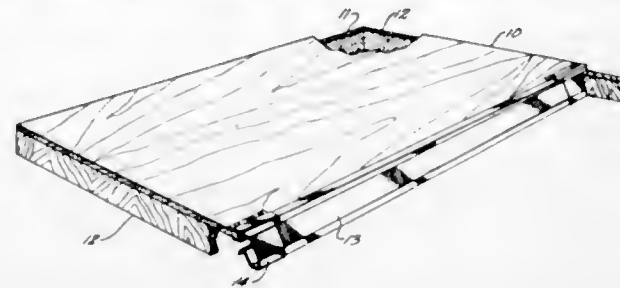
Int. Cl. A47h 1/00

U.S. Cl. 211—123

10 Claims

A metal strip that fits along the front edge of a shelf for reinforcing the shelf edge and also providing a place to hang conventional coat hangers is roll formed from sheet metal. A generally T-shaped end clip at each end is fittable over the

edge bar for holding it in place and also for length adjustment. The end clip has a fastener receiving aperture on the cross bar



of the T for accommodating a nail, screw or the like into the shelf end nailing strip.

3,688,916

TEXTILE PRODUCT DISPLAY FIXTURE

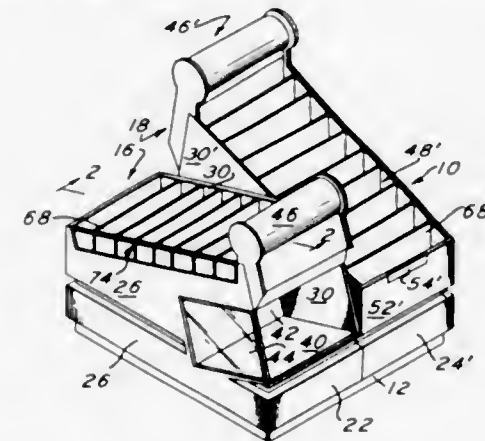
Paul Spielvogel, Commack; William R. Sagel, Brooklyn Heights, both of N.Y., and Jay H. Miller, Long Branch, N.J., assignors to S. Klein Department Stores, Inc., New York, N.Y.

Filed Jan. 21, 1971, Ser. No. 108,469

Int. Cl. A47I 3/14

U.S. Cl. 211—126

8 Claims



A display fixture for textile products such as bedspreads is disclosed. The fixture has the top a sloping display rack divided by removable partitions. At one end the fixture has a sloping display bin with a drawer provided at the other end. Two or more such fixtures may be provided on a common base.

3,688,917

MERCHANDISE DISPLAY APPARATUS

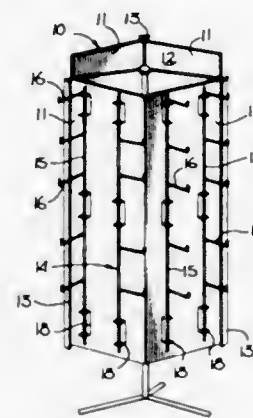
Melvin J. David, 16221 Quemada Road, Encino, Calif.

Filed Feb. 3, 1971, Ser. No. 112,299

Int. Cl. A47I 5/12

U.S. Cl. 211—174

8 Claims



A merchandise display apparatus. Two or more modular sections adapted to be cooperatively engaged to each other in an enclosing manner and mounted in a vertical fashion are provided with coupling sections and flanges at the end thereof

for facilitating joining the members. The modular sections are adapted to receive a supporting structure which is secured thereto within the enclosure formed by the modular sections. Merchandise display members are vertically secured to the exterior of the modular sections, the display members being secured thereto by spring loaded, pivotal locking supports.

3,688,918

STACKING DEVICE FOR COIL SPRINGS

Walter O. Spuhl, St. Gallen, Switzerland, assignor to Spuhl AG, St. Gallen, Switzerland

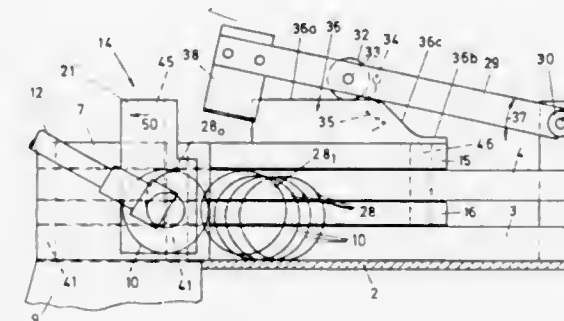
Filed July 1, 1970, Ser. No. 51,455

Claims priority, application Germany, Jan. 17, 1970, P 20 02 006.8

Int. Cl. B65g 57/00

U.S. Cl. 214—6 R

7 Claims



A stacking device for helical coil springs which have a final coil at each end that terminates in a knot. The stacking devices is of the type having a frame with side walls and a floor defining a guide channel to which the coil springs are supplied by a transfer arm and within which the coil springs are advanced forwardly for stacking. The coil spring is received by rigid converging guide flaps which slightly compress the coil spring. Slide bars are provided which are reciprocally movable on the frame longitudinally of the guide channel. A pair of advancing plates are carried on the slide bars and are spaced inwardly of the guide channel side walls for receiving the coil spring in slightly compressed condition from the guide flaps. The slide bars are operative following reception of the coil spring by the advancing plates to move the advancing plates rearwardly causing the coil spring to slide off the advancing plates and expand axially for engagement with the guide channel side walls whereupon the slide bars are operative to move the advancing plates forwardly so that each of said advancing plates engages the knot in the final coil at the associated end of the coil spring to simultaneously partially rotate and advance the coil spring into stacking relationship with the preceding coil spring. Alignment means are provided including a normally raised striking element operative when the coil spring has been advanced into stacking relationship with the preceding coil spring to move downwardly against the coil spring urging the coil spring into contact with the floor of the guide channel.

3,688,919

HAY BALE VEHICLE

George P. Snider, Brewster, Wash., assignor to Hydraslip, Inc., Twisp, Wash.

Filed March 9, 1971, Ser. No. 122,309

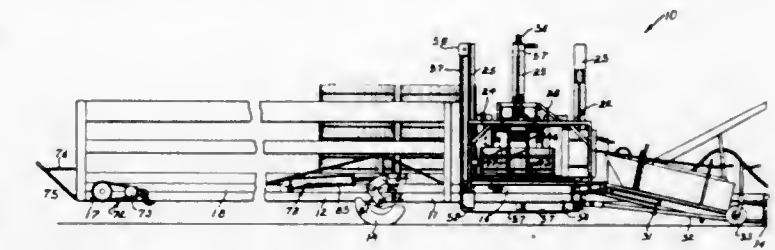
Int. Cl. B65g 57/32, 59/12

U.S. Cl. 214—6 B

4 Claims

A hay bale vehicle is described having the capability of picking up hay bales from a field one at a time and stacking

the hay bales on a bed. The vehicle further has the capability of unloading the stacked hay bales as a stack or unstacking the



hay bales and discharging the bales one at a time from the vehicle.

3,688,920

PALLETIZING APPARATUS

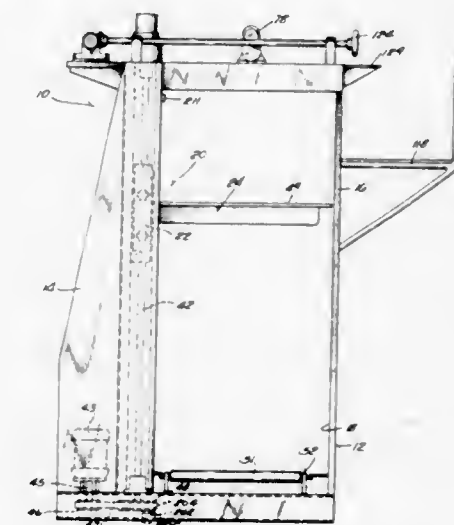
William G. Frish, 302 North Ave., Watertown, Wis.

Filed June 1, 1971, Ser. No. 148,525

Int. Cl. B65g 57/06

U.S. Cl. 214—6 H

13 Claims



Palletizing apparatus includes a pallet loading chamber with a pallet lift or elevator having a trunnion mounted ball nut assembly which receives a drive screw driven by an electric motor. The pallet lift and ball nut are confined against rotational motion by spaced opposed guide tracks which engage guide rollers on the lift. The drive screw motor is controlled by a digital pulse counter which is coupled to a sensor which senses screw revolutions. The pulse counter can be programmed to move the lift upward or downward a pre-selected distance such as the height of the layer of cartons. The apparatus also includes a retractable apron which is movable between an advanced position over the pallet loading chamber and a retracted position free of the loading bin by a motor driven screw and a ball nut assembly on the apron. A pallet magazine for supplying pallets to the pallet loading chamber has cam operated elevating fingers for separating the lower pallet from a vertical pallet stack and a sweep bar for moving the lower pallet into the loading chamber. The apparatus also includes a conveyor assembly with a pivoted conveyor extension and a cross conveyor at the end of the extension to afford positioning of two loaded pallets for access by fork lift trucks.

3,688,921

METHOD AND APPARATUS FOR AUTOMATIC STORAGE AND RETRIEVAL OF AUTOMOBILES

Abe Zaha, 1355 N.W. 92nd Ave., Portland, Ore.

Filed June 15, 1970, Ser. No. 46,218

Int. Cl. E04b 6/06

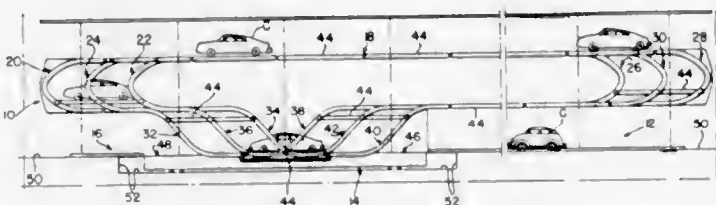
U.S. Cl. 214—16.1 B

16 Claims

Method and apparatus involving a continuous, chain-driven, palletized automatic storage and retrieval system. Storage of the vehicles is accomplished above or below



ground level so that the ground or grade level is free to be used for receiving, loading and unloading, and discharging. For above ground installation the lower run of the conveyor has a dip-down section to the loading and unloading area at grade level and for the underground installation the system has a rise-up section. Pusher mechanisms in the receiving area engage the vehicle wheels and move it from the entrance of the parking system toward the loading and unloading area. A pallet is brought down or up and into loading position from the conveyor and a vehicle is automatically moved onto a loader-unloaded lateral transfer platform by a pusher mechanism.



The loader then moves transversely to align the vehicle with the selected position on the pallet and pusher mechanisms on the loader automatically transfer the vehicle onto the pallet. When cars are to be retrieved the pallet is brought down or up into loading-unloading position and the vehicle is automatically pushed off the pallet onto the unload section of the transfer platform. Tire or wheel pusher mechanisms on the unloader part of the transfer platform push the vehicle into the parking discharge area where it is retrieved and driven away by the customer. The invention utilizes a "time in" system to identify vehicles and spaces for storage and retrieval.

3,688,922

## GARAGE FOR THE STORAGE OF VEHICLES

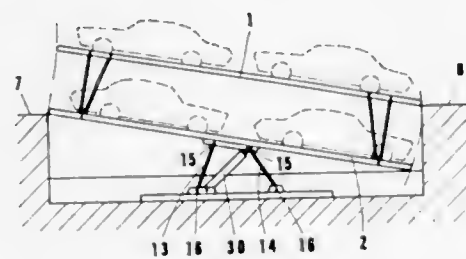
Kaspar Klaus, Schlachthofstrasse 46, 894 Memmingen/Bavaria, Germany

Filed Dec. 10, 1969, Ser. No. 883,903

Int. Cl. E04h 6/06

U.S. Cl. 214—16.1 ED

1 Claim



The garage comprises at least two tilting platforms, each capable of accommodating at least two vehicles end-to-end, superposed in spaced relation and linked for tilting in unison to place one end of one platform and the other end of the other platform in communication with fixed run-in and run-off areas of the garage, in one tilted position, and vice versa in the other tilted position. Provision is also made for raising and lowering the interlinked platform structure where there are more than two platforms in a stack.

3,688,923

Patent Not Issued For This Number

3,688,924

## SELF PROPELLED SEWAGE SLUDGE EXCAVATOR

Paul B. Martin, Jr., Walkertown, and Gilbert W. Spencer, Winston-Salem, both of N.C., assignors to R. J. Reynolds Tobacco Company, Forsyth, N.C.

Filed June 24, 1971, Ser. No. 156,358

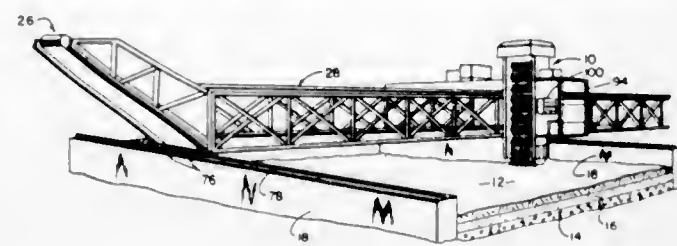
Int. Cl. B65g 65/38

U.S. Cl. 214—17 DB

10 Claims

Apparatus for removing dried sludge from the upper surface of a drying bed in a sewage treatment plant including an ex-

cavator which has a plurality of double tined conveyor scoops which travel in an endless path to remove caked sludge from the drying bed and deposit it onto a conveyor. The excavator is positioned for reciprocation above the bed in parallel rows



with the double tined scoops enabling excavation in both directions of movement of the excavator along the parallel rows. The trailing edge of the scoops is prevented from cutting into the sand as the scoops commence their upward movement after being charged with the sludge.

3,688,925

## PLANT FOR PROCESSING BULKY MASSES, ESPECIALLY PELLETIZED MATERIALS IN AUTOCLAVES

John Erik Edward Oldberg, Sala, Sweden, assignor to Sala Maskinfabriks Aktiebolag, Sala, Sweden

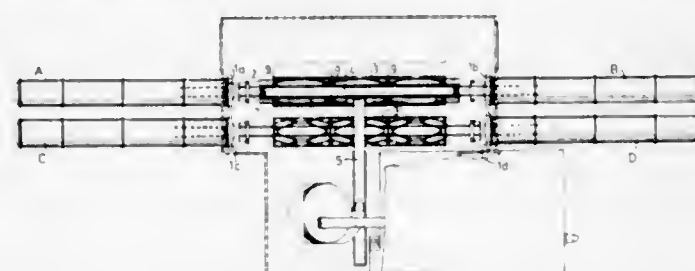
Filed Nov. 23, 1970, Ser. No. 91,634

Claims priority, application Sweden, Dec. 3, 1969, 16,665

Int. Cl. F27d 3/00

U.S. Cl. 214—18 R

6 Claims



A plant for processing bulky masses in autoclaves including two or more autoclaves in which the autoclaves are arranged in pairs in which the autoclaves of the same pair are arranged with their charging openings, which can be closed, facing each other and spaced from each other by a distance leaving sufficient space for a charging container to be inserted into either of the two autoclaves of the pair considered, so that after filling the charging container with bulky mass and inserting it into the one autoclave, a further container can be placed into said space for filling and subsequent insertion into the other autoclave.

3,688,926

## CARGO HANDLING SYSTEM

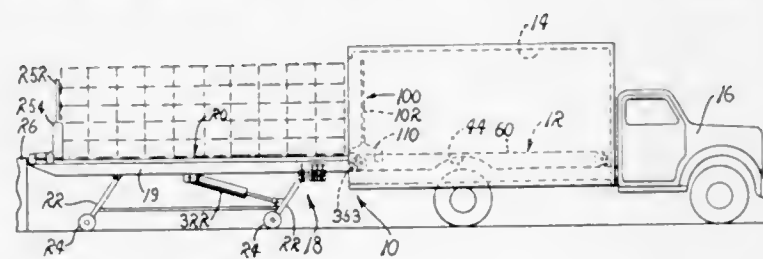
William L. Stefanelli, 1945 W. Yale, Fresno, Calif.

Filed May 18, 1970, Ser. No. 38,155

Int. Cl. B65g 17/46

U.S. Cl. 214—38 BA

8 Claims



A cargo-handling system particularly suited for use in loading and unloading cargo carriers, characterized by a cargo conveyor for positioning cargo at selected locations within a carrier, and a cargo delivery transport including a delivery

conveyor for delivering cargo to and from the cargo positioning conveyor, whereby cargo handling operations employed in loading and unloading cargo carriers are expedited while related costs are minimized.

3,688,927

Patent Not Issued For This Number

3,688,928

## VERTICAL PACKER ASSEMBLY AND GUIDE FRAME THEREOF FOR REFUSE CARRIER

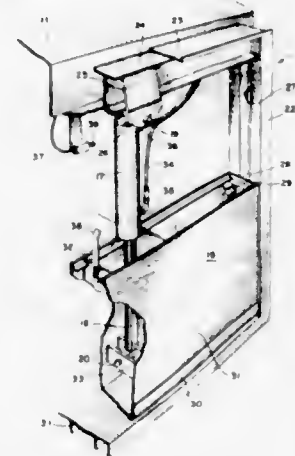
Harvie C. Partridge, Port Credit, Ontario, Canada, assignor to Smithpac Canada Ltd., Toronto, Ontario, Canada

Filed April 10, 1970, Ser. No. 27,222

Int. Cl. B65f 3/00

U.S. Cl. 214—83.3

2 Claims



A refuse-carrying apparatus of the type having a refuse holding container pivotally mounted behind a refuse-receiving box which is mounted adjacent an aperture in one end of the container in order that refuse received into the box may be pushed into the container. The improvement herein of constructing guide means in the frame of the aperture to receive a second ram to plunge vertically against the refuse entering the container through the aperture, and of constructing the ram of a form to enclose its drive mechanism when in its retracted position thereby to protect the mechanism from the refuse being pushed into the container from the refuse-receiving box.

3,688,929

## LIFT TRUCK WITH ROTATABLE CARRIAGE

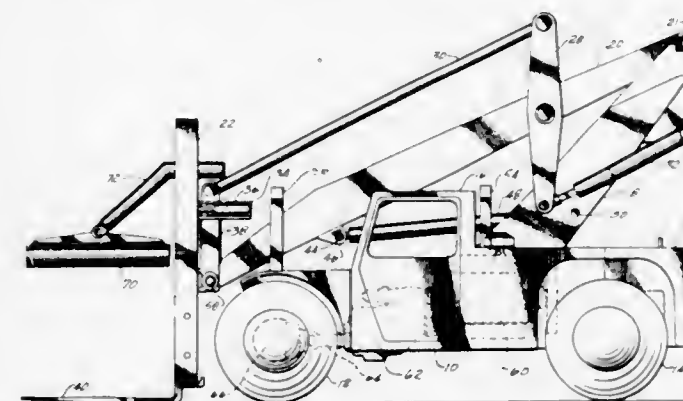
Maurice J. McIntyre, Stanwood, Wash., assignor to Skagit Corporation, Sedro Woolley, Wash.

Filed Sept. 30, 1970, Ser. No. 76,838

Int. Cl. B60p 1/48

U.S. Cl. 214—78

9 Claims



The lift truck described herein includes a front-mounted fork lift carriage supported by a pivot member positioned to one side of its center. To the pivot member is attached a large lift arm supported at its opposite end on a mast at the right

rear of the truck chassis, which arm is moved upwardly by means of a hydraulic motor carried on the truck chassis. The operator's cab is located on the left side of the centerline of the truck, and the engine, transmission and differential are essentially centered in the chassis. A linkage carried on the lift arm permits the carriage to be kept level or tilted as needed during raising or lowering of the load. When elevated, the carriage and load may be rotated around the pivot member to place the load in a laterally facing position above the operator's cab. When so rotated, the center of gravity of the load is carried well within the maximum width of the vehicle, and no portion of the carriage or lift mechanism extends significantly beyond the maximum tread width as defined by the outside edges of the tires, although the load may extend beyond the tread width.

3,688,930

## EXTENSIBLE DIPPER STICK FOR BACKHOE

John F. Shumaker, 802 Sheaffer Drive, Mount Pleasant, Iowa

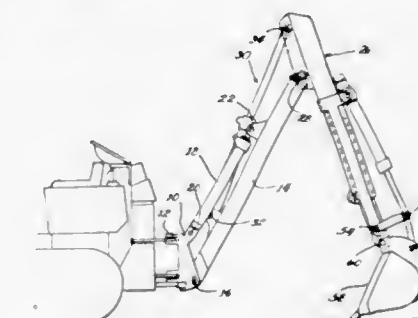
Continuation-in-part of Ser. No. 19,161, March 13, 1970. This

application April 5, 1971, Ser. No. 130,888

Int. Cl. E02f 3/74

U.S. Cl. 214—141

17 Claims



A telescoping backhoe dipper stick assembly comprising inner and outer tubular members having a fluid ram interconnecting the members for lengthening and shortening the dipper stick. The outer tubular member is connected to a backhoe boom while the bucket is connected to the free end of the inner tubular member. A support bracket encircles the outer tubular member and is fixedly secured to the inner tubular member adjacent the free end, with the support bracket defining a fixed pivot for one end of a fluid motor and the opposite end of the fluid motor cooperating with the bucket. The support bracket has hose guide means extending rearwardly to prevent the flexible hoses from becoming caught during extension and retraction of the tubular member. The support bracket thus moves with the inner tubular member to maintain the fixed pivot a predetermined distance from the pivot point between the bucket and the inner tubular member.

3,688,931

## STRADDLE TRUCK FOR CONTAINERS

Hans Tax, Potsdamer Strasse 3, 8000 Munich 23, and Rudiger Franke, Munich, both of Germany, assignors to said Tax, by said Franke

Filed Oct. 5, 1970, Ser. No. 77,975

Claims priority, application Germany, Oct. 15, 1969, P-19 52 038.8

Int. Cl. B60p 3/00

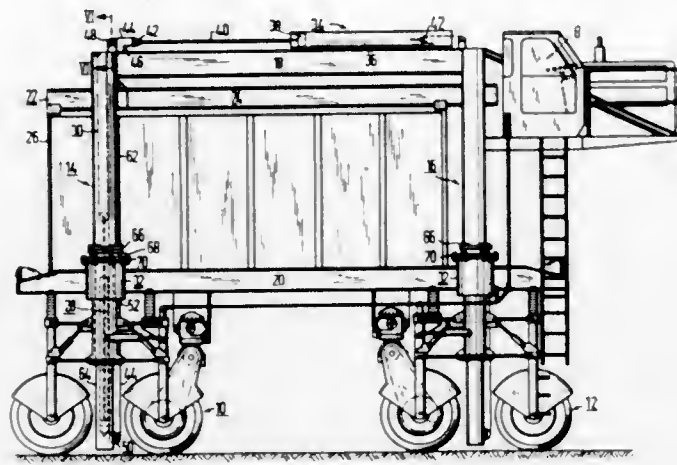
U.S. Cl. 214—394

11 Claims

A straddle truck for containers has two upright lateral frames mounted on respective sets of wheels and held together by transverse beams fixedly connecting the tops of the columns at the front and rear ends of the frames. The columns are vertically extendable to increase the clearance under the transverse beams to more than the combined height of three standard containers, the transverse beams clearing two superimposed containers in the retracted condition of the columns. A lifting frame suspended from the tops of the columns carries standard couplings for engagement with the



four top corners of a container. The truck permits containers to be stacked three high without the use of a separate crane, allows the effective reach of the fork lift truck to be extended. Embodiments are described for use in lifting standardized load



yet it can pass under bridge cranes and the like having a vertical clearance sufficient only for conventional straddle trucks.

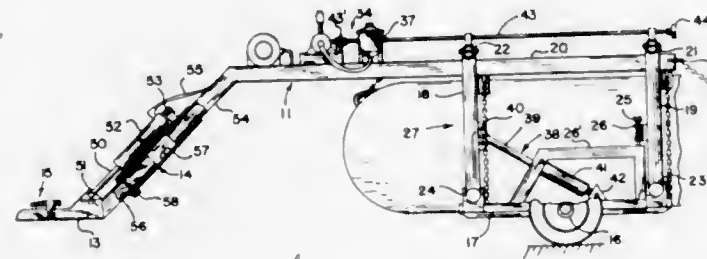
3,688,932

**VERTICALLY ADJUSTABLE STRADDLE TYPE CART**  
Marvin V. Carter, Rte. 1, Troy, Ala.

Filed May 14, 1971, Ser. No. 143,385  
Int. Cl. B60p 1/64

U.S. Cl. 214—394

9 Claims



A straddle type cart for transporting a container or the like, wherein the cart is attached to a prime mover and driven into overlying relationship with respect to the container to be transported. The chassis of the cart is in the form of a polygon and includes spaced apart downwardly depending strut members, a frame, and power means associated therewith which is adapted to change the configuration of the chassis from a square to a parallelogram in order to move a main upper beam of the chassis in a vertical direction, thereby enabling a load attached to the cart to be vertically lifted or lowered by the pivotal action of the structure of the cart.

Latch means affix adjacent sides of the polygon to each other in a manner to maintain the cart in affixed elevated upright position. The power means is located between and affixed to adjacent sides of the polygon and control the relative angles thereof, to thereby bring about the before recited lifting action.

3,688,933

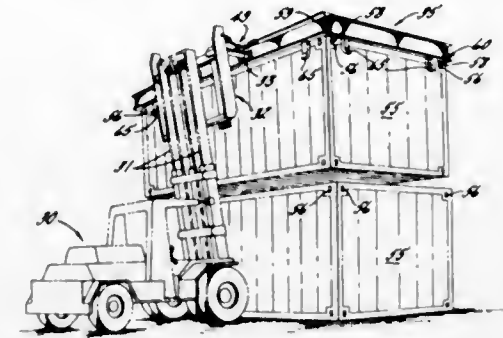
**LIFTING ATTACHMENT FOR FORK LIFT TRUCKS AND THE LIKE**

James A. Rumell, 1955 Wilson, Calumet City, Ill.  
Filed Dec. 7, 1970, Ser. No. 95,500  
Int. Cl. B66f 9/12

U.S. Cl. 214—621

5 Claims

An article lifting attachment for a fork lift truck or similar hoisting system is provided. The attachment includes a frame equipped with oversize tine-engaging channels and tensile link members for allowing limited longitudinal and lateral movement of the frame upon the fork lift truck tines. Such longitudinal and lateral movement allows the lifting attachment to be centered over the load to be lifted and further



containers, loose elongated articles, or spooled articles having axial recesses.

3,688,934

**PLASTIC CONTAINER AND METHOD OF MANUFACTURING THE SAME**

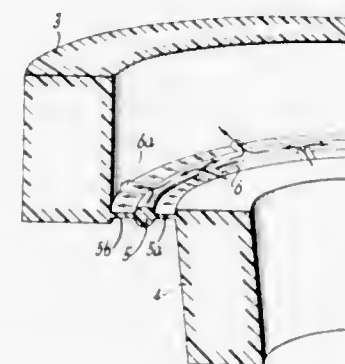
Fritz Linder, Skarhamn, Sweden

Filed March 27, 1970, Ser. No. 23,250

Claims priority, application Sweden, April 1, 1969, 4645/69  
Int. Cl. B65d 1/00, 17/08

U.S. Cl. 215—32

1 Claim



A hermetically sealable plastic container is provided for storing purposes having at least one indication of fracture with a molecule orientation deviating from that of the rest of the container, so that the container may be opened extremely easily along said indication of fracture.

3,688,935

**ONE-PIECE CONTAINER CARRIER**

Ronald C. Owen, Hardwood Heights, and Ernest R. Cunningham, Libertyville, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed July 13, 1970, Ser. No. 54,418

Int. Cl. B65d 2/12; B16c 1/00

U.S. Cl. 215—100 A

2 Claims



A one-piece container carrier is integrally formed from a flattened tube and comprises an endless band having a ring portion adapted to engage a complementary container and a bail portion which is situated above and transversely arranged

relative to the ring portion engaging a complementary container.

3,688,936

**POURING VESSEL**

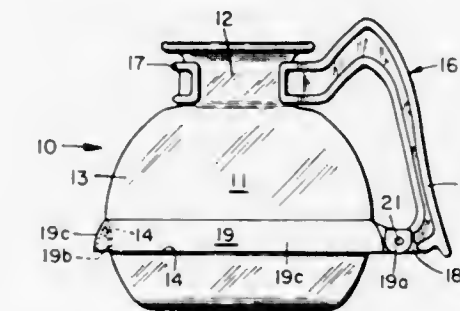
Daniel L. Killigrew, Jr., Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed April 26, 1971, Ser. No. 137,257

Int. Cl. B65d 23/10; A47j 45/07

U.S. Cl. 215—100 A

12 Claims



A pouring vessel, carafe or beverage decanter including a container or vessel having a neck portion, a body portion having a peripheral groove or channel adjacent a region of the largest circumference of the vessel, a resilient annular band fitting circumferentially relatively snugly in the peripheral groove or channel of the vessel and having an outer wall extending outwardly beyond the largest circumference of the vessel, and a handle assembly having a resilient band snugly encompassing at least a semicircular part of the neck portion of the vessel and a handle having a lower end juxtaposed the annular band and pivotally connected thereto.

3,688,937

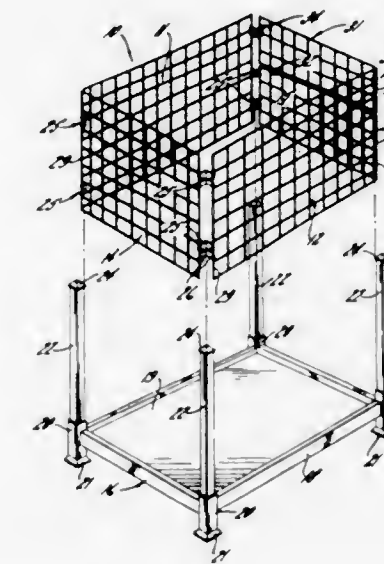
**CONTAINER INSERT FOR PORTABLE TIERING RACK**  
Herbert E. Ellison, Michigan City, Ind., assignor to The Paltier Corporation, Michigan City, Ind.

Filed May 7, 1971, Ser. No. 141,108

Int. Cl. B65d 7/26

U.S. Cl. 220—7

5 Claims



A container insert is provided for a portable tiering pallet rack having a base frame and a plurality of vertical corner posts. The insert comprises side panels of wire mesh or the like hinged together and defining a collapsible polygonal structure which is confined between the corner posts and the base frame. Abutment brackets which engage the inner faces of the corner posts to lock the insert in place also permit it to be folded flat for transport.

3,688,938

**HEAT INSULATING WALL STRUCTURE FOR A LOW TEMPERATURE LIQUEFIED GAS TANK OF THE MEMBRANE TYPE**

Katsuro Yamamoto, Tokyo; Kuniyoshi Obeta, Kawasaki, and Shinji Nakagawa, Yokohama, all of Japan, assignors to Bridgestone Liquefied Gas Company, Ltd., Tokyo, Japan

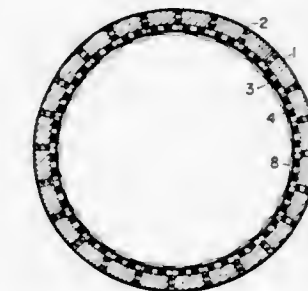
Filed Dec. 21, 1970, Ser. No. 100,121

Claims priority, application Japan, June 16, 1970, 45/3877

Int. Cl. B65d 25/18

U.S. Cl. 220—9 LG

8 Claims



A heat insulating structure for a low temperature liquefied gas tank of the membrane type comprising an outer rigid shell wall, an inner wall of a membrane for containing liquefied gases, and an intermediate layer for supporting the membrane against the outer wall, wherein the intermediate layer is composed of an assembled structure of concrete blocks such as first concrete blocks arranged substantially vertically to the outer wall and second concrete blocks arranged substantially in parallel with said outer wall and supported by said first concrete blocks, at least said first blocks being of heat insulating characteristic, and free spaces within said intermediate layer are filled with heat insulating materials in a powdered and/or granular form.

3,688,939

**CONTAINER**

Hans Beckers, Viersen, Germany, assignor to Hamac-Hansella GmbH, Viersen, Germany

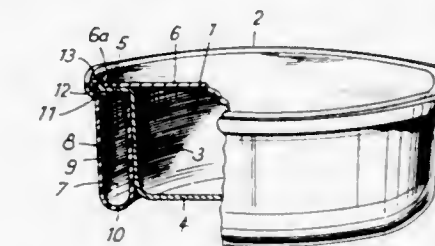
Filed Sept. 30, 1969, Ser. No. 862,190

Claims priority, application Germany, Oct. 1, 1968, P 18 00 010.2

Int. Cl. B65d 25/18

U.S. Cl. 220—9 R

1 Claim



A cup-shaped member having an open side and a circumferential wall with an outwardly extending flange portion bounding the open side. An annular support surrounds the circumferential wall in supporting engagement with the flange portion thereof.

3,688,940

**HEAT-TRANSFER FERMENTING AND AGING VESSEL**  
William Roy Knight, and Richard William Delamere, both of Peterborough, Ontario, Canada, assignors to DeLaval Company Limited, Peterborough, Ontario, Canada

Filed Dec. 8, 1970, Ser. No. 96,142

Claims priority, application Canada, Dec. 16, 1969, 070017  
Int. Cl. A47j 27/10

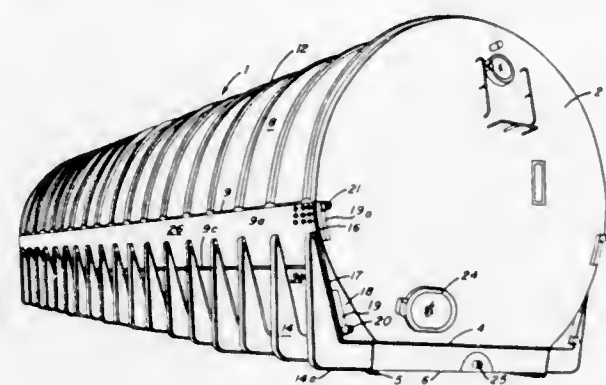
U.S. Cl. 220—13

9 Claims

A heat-transfer vessel or tank for use in fermenting and aging beer, and like products, is near-cylindrical in configura-



tion and cross-section, the near-cylindrical body being closed at either end by a dished head member in order to form a closed tank. Each side wall of the tank includes a cooling jacket. The tank is mounted on a frame of metal beams, and



reinforcing cantilever members are rigidly connected to the frame and are secured to and embrace the cooling jacket. The cooling jacket is preferably of dimpled construction, and each dished head member is in the form of a torisphere.

3,688,941

# ARRANGEMENT FOR PRODUCING A SEAL BETWEEN A CONTAINER AND A LID

Christian Bildsten, Angered, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

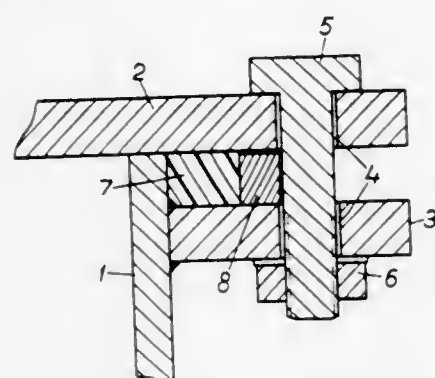
Filed Nov. 25, 1970, Ser. No. 92,731

Claims priority, application Sweden, Dec. 1, 1969, 16489

Int. Cl. B65d 53/00

U.S. Cl. 220-46 R

2 Claims



A container is provided with a lid which projects outwardly beyond the walls of the container and with a flange secured on the outside of the container slightly below its top. Bolts are provided passing through the projecting portion of the lid and the flange for drawing the two towards each other. Immediately outside the wall of the container is an annular washer of plastic material arranged in the space between the lid and the flange. A resilient support strip which is slightly less in height than the distance between the flange and the lid is positioned in the space between the washer and the bolts and abuts with one edge against the outside of the washer and with the other edge against the bolts.

3,688,942

# CONTAINER AND CLOSURE COMBINATION

Robert M. Mitchell, Norwalk, Conn., and Frederick D. Oberkircher, Jr., Fairview, Pa., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Nov. 20, 1970, Ser. No. 91,367

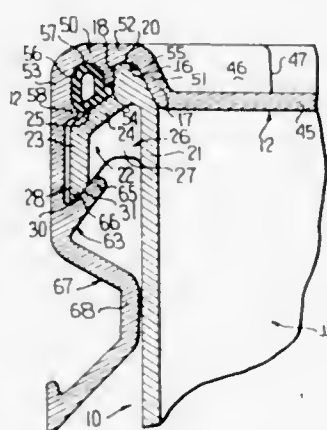
Int. Cl. B65d 43/10

U.S. Cl. 220-60 R

15 Claims

This disclosure relates to a novel container and closure combination in which a body of the container at its open end includes a radially outwardly and downwardly directed peripheral skirt portion having a terminal edge defining cam

means for facilitating the latching of the closure upon the container, the closure likewise including a peripheral skirt portion having joined thereto by integral flexible hinge walls a plurality of latch members which have cam follower means for automatically drawing the closure downwardly into seated relationship upon the container body as the cam follower means move along the cam means during hinging motion of the latch member in a direction toward the container body. A periphery



of the closure includes two downwardly opening annular channels, an innermost one of which conformably receives an end portion of the container body and an outermost one of which receives a compressible seal with means being provided to limit the compressive forces applied to the seal during a latching operation. The container body further includes a peripheral skirt between axially opposite ends thereof defining a finger-grip lifting and bail attaching area.

3,688,943

# RIM PROTECTOR AND PAINTING IMPLEMENT CONTAINER FOR PAINT CANS

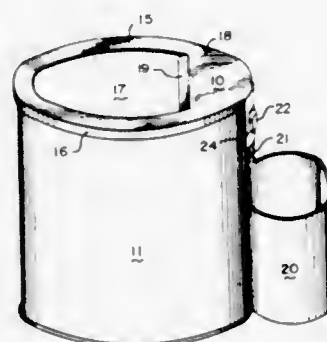
Dwight C. Brown, 414 N. Granada St., Arlington, Va.

Filed April 9, 1970, Ser. No. 26,824

Int. Cl. B65d 25/00

U.S. Cl. 220-90

8 Claims



A plastic ring is provided at its outer edge with a flange or other clamping means to fit over and to attach securely to the circular rim of an open paint can. The clamping means serves to hold the ring securely in place by tightly engaging the exterior side wall of the paint can at the rim, and yet allows the ring to be readily removed from the can. The open center of the ring is of sufficient dimensions to permit the dipping of a brush into the paint in the can while the ring is attached. At least a portion of the inner edge of the ring defining this open center provides a scraping edge for removing excess paint from the brush. A small container for holding the brush in upright position is retained against the exterior side wall of the can by an arm secured to the clamping means. A screen is mounted in and at least slightly above the bottom wall of the container to act as a resting surface for the tip of the brush while in use, to allow excess paint to drip free thereof.

3,688,944

# LOAD EJECTION PLATE FOR CONTAINER

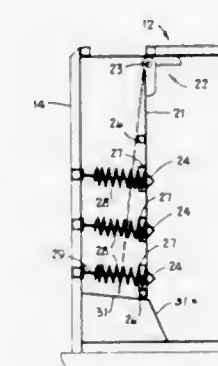
Charles T. Gagel, Louisville, Ky., assignor to Industrial Services of America, Inc., Louisville, Ky.

Filed May 14, 1971, Ser. No. 143,308

Int. Cl. B65t 1/12

U.S. Cl. 220-93

3 Claims



Disclosed is a container adapted to accommodate a compacted load, the container having a spring biased ejector plate which is engaged by the load as it is compacted in the container, and gives the load an initial impetus in load ejecting direction when the container is unloaded.

3,688,945

# RECORDING TABLET DISPENSER

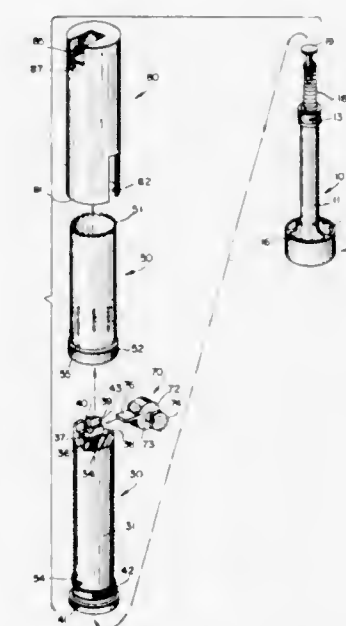
Arlington Raymond Harman, Jr., Manlius, and Alphonse Peter Granatek, Baldwinsville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Oct. 12, 1970, Ser. No. 80,026

Int. Cl. B65d 83/04

U.S. Cl. 221-8

17 Claims



A disposable tablet dispenser which is also capable of indicating the time at which a tablet was dispensed, is provided. The dispenser is formed of at least two concentrically aligned cylinders. The innermost cylinder is provided with a means for dispensing a tablet therefrom into a tablet receptacle. The tablet receptacle is located in a dispensing means, which means when moved to a position from which a tablet may be dispensed, simultaneously moves the outermost cylinder about the innermost cylinder. By providing the outermost cylinder with spaced printing, such as the days of the week, the time at which a tablet was dispensed is indicated when the dispenser means moves the printed time to a designated location.

3,688,946

# APPARATUS FOR FEEDING CAN ENDS

William John Graham, Lurgan, Northern Ireland, assignor to Linear Machine Company Limited, Lurgan, Northern Ireland

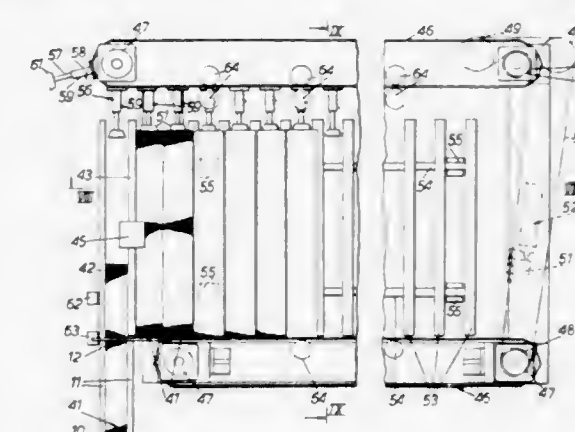
Filed Oct. 5, 1970, Ser. No. 77,812

Claims priority, application Great Britain, Oct. 3, 1969, 48,617/69

Int. Cl. B65g 59/06; G07f 11/12

U.S. Cl. 221-11

10 Claims



This invention relates to apparatus for feeding upright stacks of can ends to an upright column from the leading end of which column, can ends are fed one at a time in succession to, for example, a can seaming machine. The apparatus includes column-holding means for location of said upright column, conveyor means for carrying a supply of upright stacks of can ends for replenishing said column, said column-holding means being located below the level of said conveyor means, positioning means for positioning each stack in turn on top of the diminished column of can ends, and control means responsive to the height of the column for operating the conveyor means to feed a stack of can ends towards the column holding means to enable the positioning means to locate the said stack on the column and so replenish said column.

3,688,947

# LIQUID DISPENSER AND RECORDER MEANS

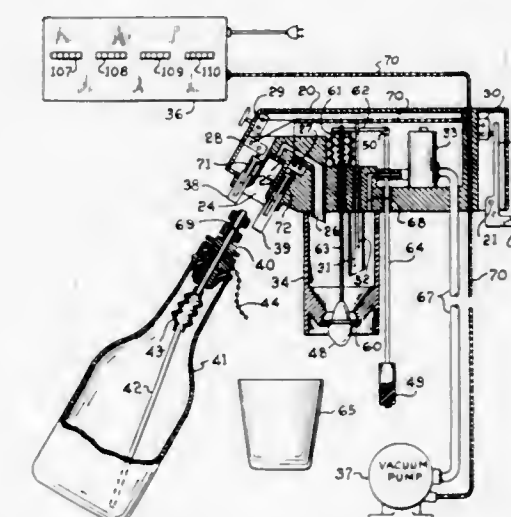
Arthur M. Reichenberger, Phoenix, Ariz., assignor to McCann's Engineering and Manufacturing Company, Inc., Glendale, Calif.

Continuation-in-part of Ser. No. 858,234, Aug. 7, 1969, Pat. No. 3,599,833. This application May 3, 1971, Ser. No. 139,741

Int. Cl. B67d 5/08

U.S. Cl. 222-27

9 Claims



A liquor dispenser and recorder means particularly adapted for use in dispensing liquors in public barrooms, wherein a plurality of containers holding various priced liquors are provided with outlet fixtures cooperable with a stationary fixture engaging means, such that each outlet fixture of each con-



tainer is physically distinctively cooperable with the engaging fixture so as to energize means for dispensing liquor from the respective container and energize an individual counter with respect to the value of the liquor in the respective container. In various embodiments, the manner in which each outlet fixture is physically distinctively cooperable with the engaging fixture may take the form of a variable length which functions to actuate none or one or more switches associated with the fixture to provide the necessary digital information to select the appropriate counter, or circumferential grooves may be provided in the outlet fixtures to cooperate with reoriented switches such that the grooves and the lands or ridges between the grooves effect the actuation or non-actuation of the switches, or a circumferential groove configuration may be utilized in conjunction with light sources and a plurality of photo cells whereby light impinges on the photo cells in combinations providing the desired information. As a variant of the last described encoding means, the grooves may be replaced with reflective circumferential bands about the outlet fixtures positioned to reflect the light from the sources onto only certain of the photo cells to provide the desired information.

Means are also provided for securing semi-permanent storage on magnetic or paper tape of the activity of a dispensing station, and, where a plurality of stations are utilized, scanning means are provided for integrating information from each station with additional, but related, digital information entered from a cash register to achieve a semi-permanent record of the complete activity of each station in conjunction with the encoded information from the variously configured outlet fixtures. The semipermanent record may then be processed by a general purpose computer on a scheduled basis to withdraw performance, inventory, cost, etc., information as may be desirable. A more extensive installation in which a plurality of stations and cash registers remote from one another, such as encountered in a large hotel with multiple bars, utilizes direct communication with a general purpose computer to obviate the necessity for preparing the intermediate semi-permanent record.

3,688,948

**A GARMENT PACKAGE WITH SUPPORTING BOARD**  
Luigi Roda, Viganello-Lugano, Switzerland, assignor to Fratelli Roda S.A., Viganello-Lugano, Switzerland

Continuation of Ser. No. 884,615, Dec. 12, 1969, abandoned.

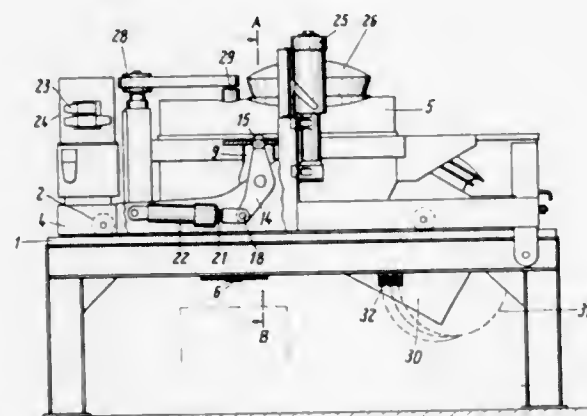
This application Aug. 26, 1971, Ser. No. 175,365

Claims priority, application Switzerland, Dec. 23, 1968, 19500/68

Int. Cl. A41h 5/00; B65d 85/18

U.S. Cl. 223-71

2 Claims



In a package, a garment such as a shirt has its side portions and tail portion folded on an elongated supporting board which is superposed on the back of the garment. A neck piece at one end of the board is inserted in the garment collar while the other end of the board abuts the fold of the garment tail portion. The board with the garment thereon is then folded

upon itself, which causes the garment to be tensioned and firmly supported in a smooth and flat form.

3,688,949

Patent Not Issued For This Number

3,688,950

**ADAPTER FOR A WATER COOLER**

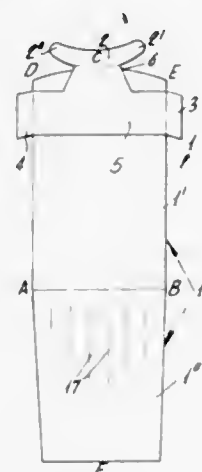
Laurence P. Parish, R.D. #2, Gettysburg, Pa.

Filed March 22, 1971, Ser. No. 126,719

Int. Cl. B67d 5/62

U.S. Cl. 222-146 R

4 Claims



An adapter for connecting conventionally designed water coolers for use with flexible bag, paper box-type containers by means of closing the bottle-receiving opening with a plug-like, support member and providing means for communicating the bag with the opening.

3,688,951

**HEATED CASTING LADLE SUPPORT ARRANGEMENT**  
Horst Gillhaus, Dortmund-Loh, and Emil Simons, Lunen-Brambauer, both of Germany, assignors to Brown, Boveri & Cie, Aktiengesellschaft, Mannheim-Käfertal, Germany

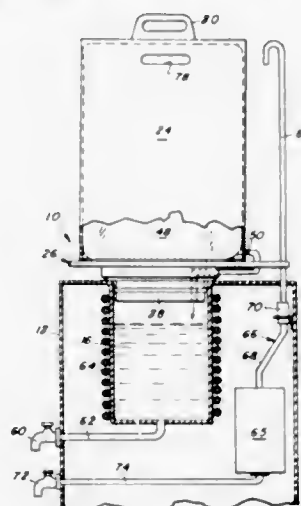
Filed Sept. 15, 1970, Ser. No. 72,365

Claims priority, application Germany, Sept. 20, 1969, P 19 47 711.3

Int. Cl. B67d 5/64

U.S. Cl. 222-166

8 Claims



A support arrangement for a tiltable heated casting ladle includes a frame movably supported by flanged wheels riding on rails and containing support means for the ladle. The support means comprises an open bearing support on one side of the frame and a horizontally disposed bolt positioned on a bearing pedestal on the opposite side of the frame. A horizontally extending pin is secured to one side of the ladle and is supported

in the open bearing support and a vertically extending downwardly directed fork is attached to the other side of the ladle and has recesses in its lower end which sit on the bolt mounted on the bearing pedestal. Alternatively, a downwardly directed fork can be fitted on each of two opposed sides of the ladle and supported on bolts mounted on bearing pedestals on each side of the frame.

3,688,952  
SPREADER

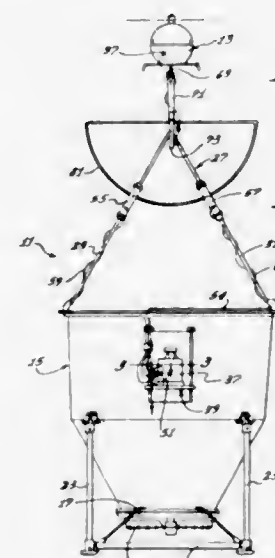
Conrad R. Barlow, Redondo Beach, and Alexander H. B. Ferguson, Rialto, both of Calif., assignors to Transland Aircraft, Inc., Harbor City, Calif.

Filed March 20, 1970, Ser. No. 21,365

Int. Cl. B64d 1/18

U.S. Cl. 222-333

7 Claims



An apparatus for spreading flowable material and attachable to a hovering airborne vehicle including a container for containing the material and first means for controlling the flow of material from the container. First and second connector members are carried by the airborne vehicle and the container, respectively, to releasably connect the container to the airborne vehicle. An electrical control circuit controls the first means with a first portion of the control circuit being carried by the airborne vehicle and a second portion of the control circuit being carried by the container. The portions of the control circuit are automatically electrically connected to thereby permit the operator of the airborne vehicle to control the operation of the spreader.

## ERRATUM

For Class 223-71 see:  
Patent No. 3,688,948

3,688,953

HOLSTER

John E. Bianchi, c/o John E. Wagner, Attorney at Law 1041 E. st Green St., Suite 202, Pasadena, Calif.

Filed July 22, 1971, Ser. No. 165,257

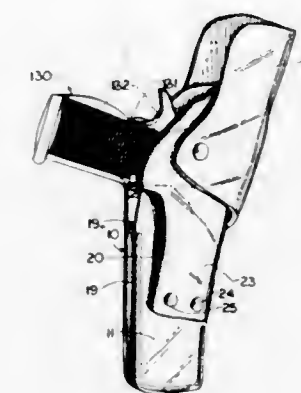
Int. Cl. F41c 33/02

U.S. Cl. 224-2 B

10 Claims

A holster designed for military or law enforcement use, particularly to be worn on either a wide or narrow web or leather belt. The holster includes dual belt loops on both sides of the body whereby the holster may be worn on the left or right side of the user in either a straight or crossed draw configuration. The flap is secured by removable and swivelable fasteners on both sides of the holster whereby the flap may be opened from either the left or right side in conventional flap release manner

and also the holster may be opened by pivoting or swiveling the flap forward about both the swivel fasteners.



3,688,954

SPARE TIRE HOLDER

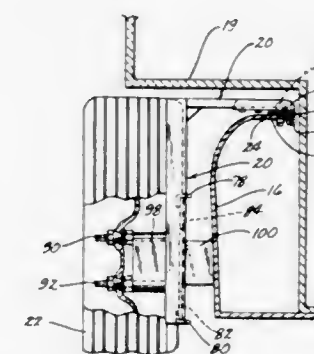
Owen H. Neal, 9 Bonneville Drive, Council Bluffs, Iowa

Filed April 30, 1970, Ser. No. 33,334

Int. Cl. B60r 27/00

U.S. Cl. 224-42.24

6 Claims



A spare tire holder for use with a pick-up camper to permit the spare tire to be removably mounted at either side of the pick-up. The holder comprises a frame means having an upper end which extends over the upper end of the pick-up bed and which is secured thereto. The frame means also includes a frame portion which extends downwardly from the upper end of the frame means along the outside surface of the bed side wall. A plurality of bolt members extend outwardly from the frame portion for supporting the spare tire thereon. A pad means is positioned between the frame means and the bed to prevent the frame means from damaging the pick-up.

3,688,955

**CHARACTER-READING APPARATUS INCORPORATING ELECTRONIC SCANNING CIRCUITRY**

Jacques L'Huilier, Longjumeau, France, assignor to Compagnie Generale D'Automatisme, Paris, France

Filed Sept. 17, 1970, Ser. No. 73,050

Claims priority, application France, Nov. 24, 1969, 6940396

Int. Cl. G06k 7/14, 19/06, 9/13

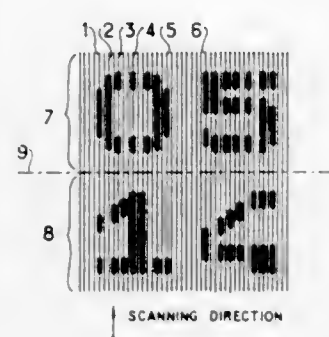
U.S. Cl. 235-61.11 F

10 Claims

Device for scanning coded characters composed of elements such as dashes, points, etc., arranged along parallel lines, which device uses an electronic camera tube whose scanning direction coincides with the direction of the said



parallel lines. The information supplied by the said electronic tube is decoded and stored in logic circuits. The said device is the device is sucked into the gun, catching the filament or yarn with the device so that the latter drags the filament or yarn



also capable of scanning magnetic-type information and is in particular designed for the automatic identification of objects.

3,688,956

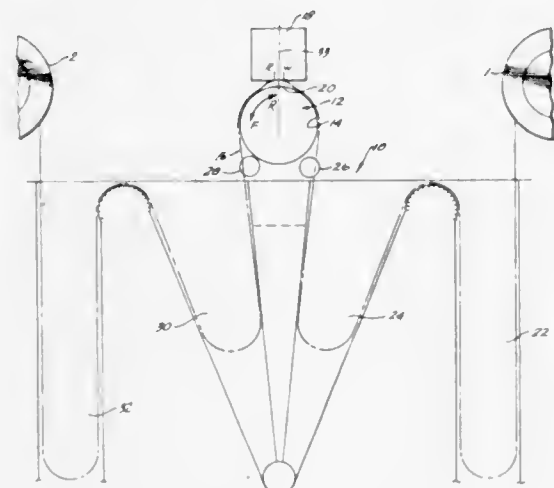
**MAGNETIC TAPE TRANSPORT WITH CAPSTAN DRIVE**  
Magne J. Kjos, Lake Lindero, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 23, 1970, Ser. No. 74,696

Int. Cl. B65h 17/32

U.S. Cl. 226—7

20 Claims



In a magnetic tape transport, an electromagnetic transducer assembly is positioned adjacent a capstan tape drive. Magnetic tape wraps around the capstan and the capstan moves the tape past the transducer. Fluid pressure applies a force on the tape at a position in between the transducer assembly and capstan which forces the tape away from the capstan toward the transducer assembly.

3,688,957

**ENTRAINMENT MEANS**

Brian Beddoe, and David Charles Hackling, both of Pontypool, England, assignors to Imperial Chemical Industries, Limited, London, England

Filed Oct. 28, 1970, Ser. No. 84,569

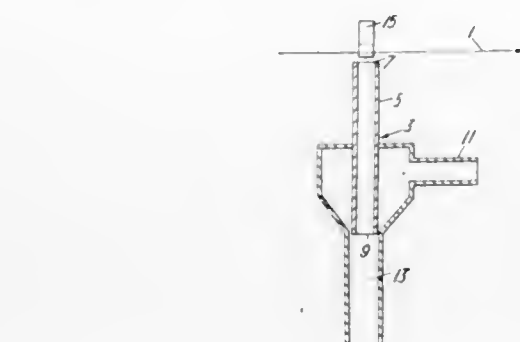
Claims priority, application Great Britain, Nov. 3, 1969, 53,696/69

Int. Cl. B65h 25/06

U.S. Cl. 226—7

8 Claims

A process for entraining a filament or yarn passing across the induction end of a suction gun comprising mechanically introducing a device into the induction end of the gun so that



into the gun, and passing the device and the filament or yarn through and out of the gun to a filament or yarn collecting location.

3,688,958

**DEVICE FOR SENSING THREAD PASSAGE TO CONTROL MACHINE OPERATION**

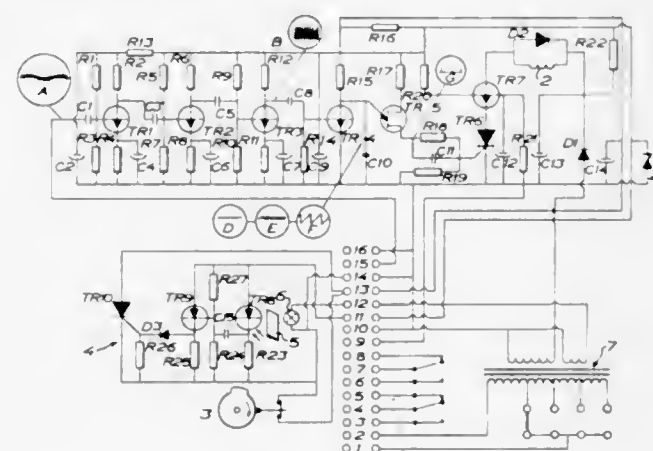
Sten-Ake Olaus Rydborn, Almhult, Sweden

Continuation-in-part of Ser. No. 882,766, Dec. 18, 1969, abandoned, which is a continuation of Ser. No. 665,791, Sept. 6, 1967, abandoned. This application Nov. 16, 1970, Ser. No. 89,811

Int. Cl. B65h 25/32

U.S. Cl. 226—11

13 Claims



A thread supervising device preferably for use in a shuttleless looms having a sensing element for producing an electric signal in accordance with an intermittent withdrawal of a thread from a thread supply, the signal in turn being supervised at least during a predetermined period of the withdrawal of the thread by an electronic device for filtering and amplifying and for rendering a thread withdrawing means inoperative upon breakage of the thread, the supervising period being determined by electrical switch means.

3,688,959

**PIN BELT MECHANISM FOR MOVEMENT OF A CONTINUOUS STRIP**

Robert W. Staneck, Warren County, and George R. Spaleny, Dayton, both of Ohio, assignors to The Standard Register Company, Dayton, Ohio

Filed Sept. 14, 1970, Ser. No. 71,727

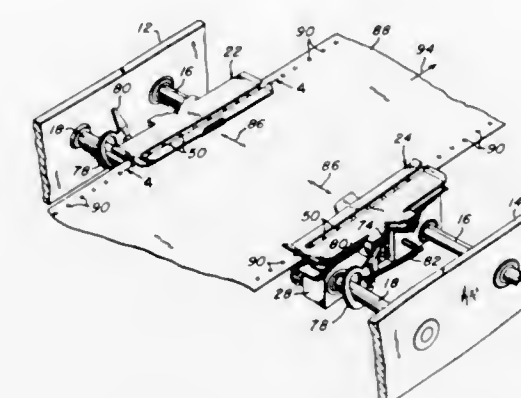
Int. Cl. B65h 17/38

U.S. Cl. 226—75

6 Claims

Pin belt mechanism for movement of a continuous strip or web which has pin feed holes. The belt is annular and the pins are attached thereto along the central portion thereof. The pins are easily and readily attached to the belt and removed

therefrom. The belt during at least a portion of its movement engages a ramp which correctly directs each pin into a hole in



the web for movement of the web. Each pin moves laterally in a substantially straight line as it assists in movement of the strip and is then removed from the hole.

3,688,960

**CONTROL DEVICE FOR PROJECTOR FILM STRIPPING AND THREADING MECHANISM**

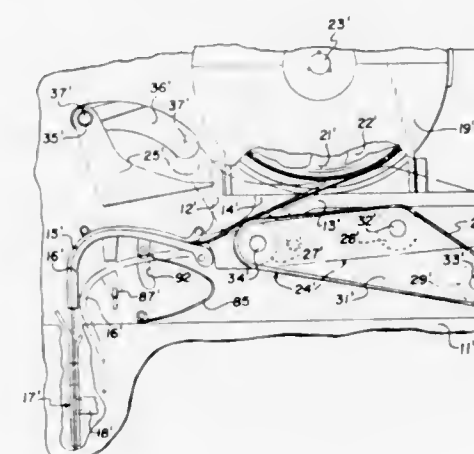
Leslie J. Bunting, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1971, Ser. No. 139,530

Int. Cl. G03b 1/58

U.S. Cl. 226—91

6 Claims



A self-threading motion picture projector includes a control device which, upon manually depressing a control lever, latches a film stripping and threading mechanism of the projector in its active position wherein it is effective to feed film from a roll of film supported by the projector. When the leading end of the film has entered a film gate of the projector and has been engaged by a film-advancing member (which advances the film at a rate faster than the film feeding mechanism), the control device is unlatched in response to the resulting tension of the film between the gate and the supply reel, thereby causing the stripping and threading mechanism to return to its inactive position so that the film can be projected. In the event that the control lever is momentarily depressed by the operator and then released before the control device has latched the film stripping and threading mechanism in its active position, means are provided for holding the control lever depressed until the mechanism is latched to prevent the mechanism's return to its inactive position before the film is fed from a supported roll.

3,688,961  
**WRAPPER SELECTOR AND DISPENSER**

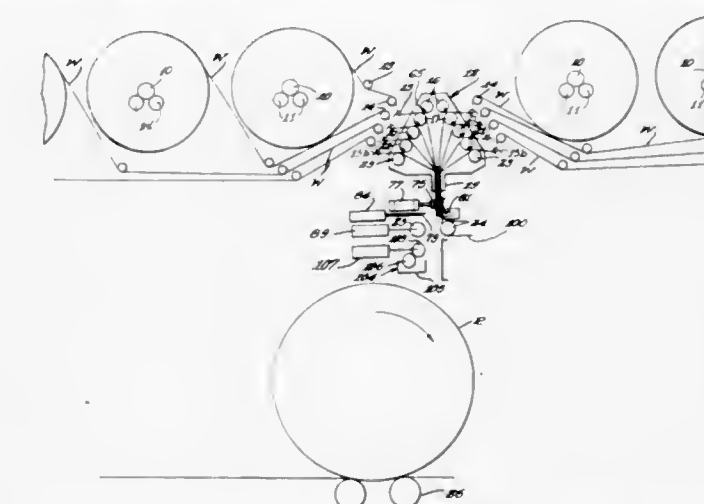
James F. Becker, Wilmington, Del., assignor to Downingtown Division, Beloit Corporation, Downingtown, Pa.

Filed Feb. 4, 1971, Ser. No. 112,686

Int. Cl. B65h 29/10

U.S. Cl. 226—92

17 Claims



Wrapper selector and dispenser enabling the selection of any one of a plurality of widths or grades of wrapper sheets to be wrapped about a roll of paper. The selector is in the form of a carriage guided for vertical movement relative to a pair of feed rolls. The carriage is provided with guides guiding the wrapper sheets toward a common throat at the bottom of the carriage, and a gripper associated with each guide, to advance a selected sheet of paper to the feed rolls upon lowering movement of the carriage. A sheet holder which may be energized to engage all of the wrapper sheets projecting beneath the throat of the carriage is provided to hold the sheets upon return movement of the carriage, to maintain the wrapper sheets under tension and prevent disturbance of the wrapper sheets as the carriage moves in a return direction. The selector further includes a cut-off knife operable to cut the wrapper sheets to length, and sheet take up devices to retract the wrapper sheets from the knife after cutting, and a pressure nip between the take up devices and sheets to prevent the sheets from feeding back to the unwind stands by their own weight.

3,688,962

**FEEDING DEVICE FOR COLD PILGER MILLS**

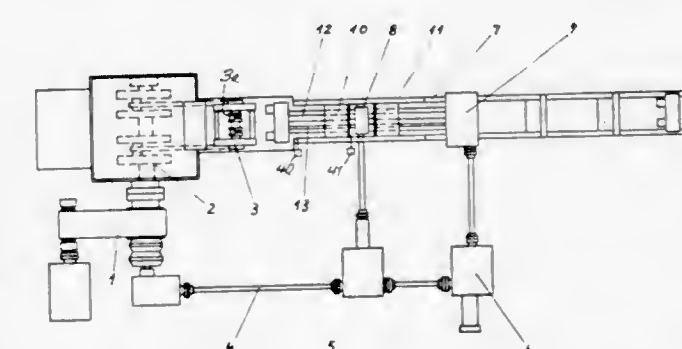
Paul Schmitt; Manfred Hien, both of Saarbruecken, and Karl-Heinz Kemmerling, Moenchengladbach, all of Germany, assignors to Wean Industries, Inc., Youngstown, Ohio

Filed Dec. 8, 1970, Ser. No. 96,042

Int. Cl. B65h 17/36

U.S. Cl. 226—141

9 Claims



Feeding means for feeding stock to the dies of a cold pilger mill and the like, comprising a pair of feed carriages having the usual stock clamps, and means for moving the carriages in opposite directions on the machine bed in line with the dies. The clamps on the carriage moving toward the dies are engaged with the stock to feed the same, while the clamps of the other carriage are disengaged.



carriage moving away from the stock are disengaged from the latter. Means are provided to move the carriages in increments, including a novel drive coordinated with crank shaft movement to feed the stock within a planned and predetermined crank range and variably adaptable to suit the quality and degree of deformation of the stock.

3,688,963

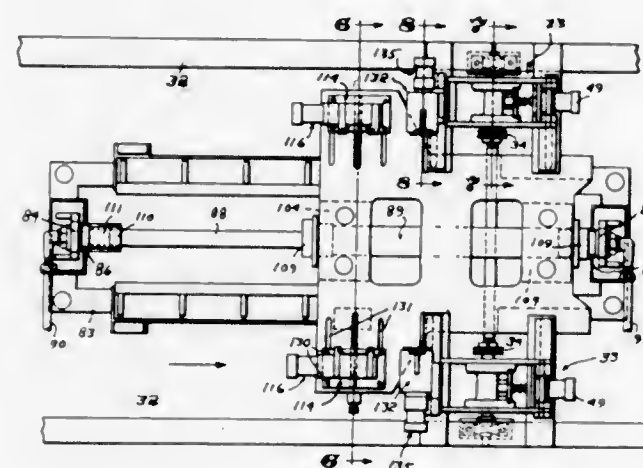
## INDEXING MEANS AND CONVEYORS FOR USE THEREWITH

Gerald A. Snow, 5 Pine Ridge Road, Cumberland Foreside, Maine; Harold A. Doughty, Eastman Road, Cape Elizabeth, Maine; Charles E. Allard, 12 Forest Ave., Old Orchard Beach, Maine, and Charles B. Noonan, R.F.D. 1, Hollis Center, Maine

Filed Aug. 19, 1970, Ser. No. 64,979  
Int. Cl. B65h 17/26

U.S. Cl. 226-162

21 Claims



Indexing means are disclosed that have a support reciprocable by power operated means lengthwise of a conveyor between two limits and provided with conveyor grabbing means. Means are also provided to lock the conveyor against movement during dwells. Control means provide that on movement of the support in one direction the grabbing means are operated to cause the conveyor to be pulled thereby to complete a step and then to render the locking means operative for a predetermined interval during which the support is returned for another step. The travel of the support is adjustable and is controlled to provide for its acceleration and deceleration at the beginning and end of each step. The conveyor is shown as including both hold-down and supporting conveyors, each including two transversely spaced pairs of endless chains with the chain grabbing means including devices at each side of the conveyor, each receiving the outer chains of the proximate courses and operable to clamp them together. The proximate course of the inner chains of the hold-down conveyor are yieldably urged into material gripping relationship with the corresponding chains of the proximate course of the supporting conveyor.

3,688,964

## FASTENER DRIVE TOOL FOR CASELESS LOADS

Charles J. De Caro, Rockford, Ill., assignor to Speed Fastener, Inc., St. Louis, Mo.

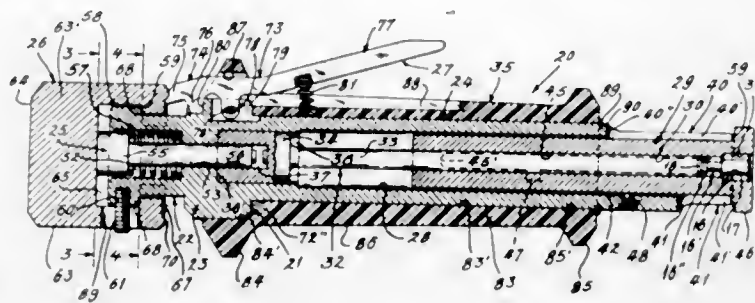
Filed Sept. 1, 1970, Ser. No. 68,623  
Int. Cl. B25c 1/14

U.S. Cl. 227-10

28 Claims

A powder actuated tool utilizing caseless powder loads and having a hammer anvil in driving relationship with a firing pin and a safety lever normally preventing anvil movement from its non-firing position; and a fastener driving ram with an ignition chamber for a caseless powder load cooperable with the

firing pin and being engaged with a fastener carried by a ram guide member slidable in the tool housing. The ram and its



guide member forming fastener drive means extendable from the muzzle end and being non-axially movable into reloading and disconnecting positions.

3,688,965

## MACHINE FOR FABRICATING WALLS

Raymond M. Kellner, 4505 N. Brawley, Fresno, Calif., and Minor E. Gee, 1231 Hawley, Sanger, Calif.

Filed Oct. 13, 1969, Ser. No. 865,742  
Int. Cl. B27f 7/02

U.S. Cl. 227-45

13 Claims



A machine for fabricating walls from wood framing materials, particularly suited for use in fabricating walls of a type normally employed in constructing frame structures and the like, characterized by an employment of a series of sequentially actuated machine systems electrically interconnected for selecting and feeding components and for selectively assembling the components into walls having adjustably regulated dimensions and selectively controlled spaced and dimensioned openings defining doors, windows and the like, a particular feature of the invention being a combination of an electrical control system interconnected with a series of operative systems for driving the machine through a predetermined sequence of machine events, in redundant or non-redundant modes, for fabricating a series of walls to be erected into frame structures.

3,688,966

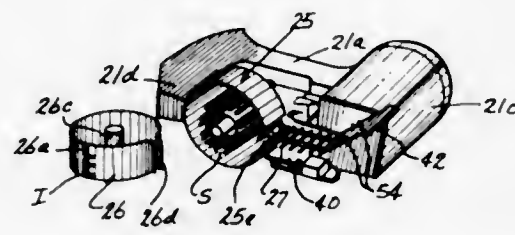
## MAGAZINE AND FEED ASSEMBLY FOR A FASTENER-DRIVING TOOL

Garry R. Perkins, and James K. Goode, both of Cary, Ill., assignors to Spotnails, Inc., Rolling Meadows, Ill.

Filed Nov. 10, 1969, Ser. No. 875,466  
Int. Cl. B25c 1/04

U.S. Cl. 227-127

14 Claims



A magazine and feed assembly for a fastener-driving tool is provided wherein the magazine is formed of a pair of complementary sections which are adapted to assume a plurality of selected positions of assembly and form a chamber in which a plurality of collated fasteners are accommodated. An outlet

port is formed by the sections and a guide extends outwardly from said port and terminated at a fastener firing station. Cooperating with the guide is a power-actuated feed means which is adapted to intermittently move the fasteners along the guide to the firing station.

3,688,967

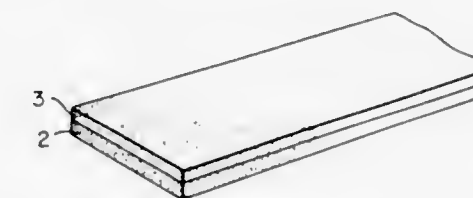
## SOLID COMPOSITE BACKING STRUCTURE FOR SINGLE WELDING

Masayasu Arikawa, Fujisawa-shi, and Hitosi Sioyama, Kamakura-shi, both of Japan, assignors to Kobe Steel Ltd., Kobe-shi, Japan

Filed April 24, 1967, Ser. No. 633,122  
Claims priority, application Japan, May 9, 1966, 41/29503  
Int. Cl. B23k 5/22

U.S. Cl. 228-50

3 Claims



A backing material, for use in butt or fillet welding, adapted to be placed and retained under or behind a joint to improve the quality of the weld at the root, the structure being composed of layers of different granular fluxes solidified into a rigid formation.

3,688,968

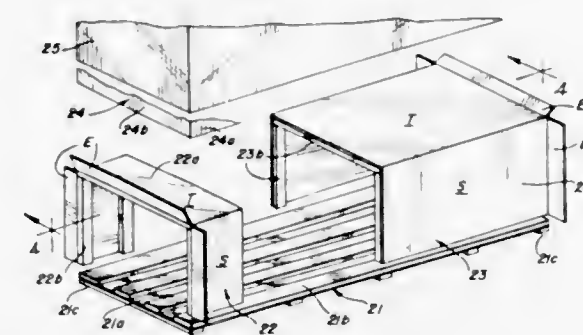
## COMPOSITE PACKAGE

Norman L. Rathfon, III, Minneapolis, Minn., assignor to Packaging Corporation of America, Evanston, Ill.

Filed June 24, 1971, Ser. No. 156,361  
Int. Cl. B65d 19/06

U.S. Cl. 229-23 C

8 Claims



A composite package is provided for accommodating bulky, heavy products such as garden tractors, snowmobiles, etc. The package includes a bottom member subtending the product, bracing members overlying the product and supported by the margin of the bottom member, and a film of moisture-resistant material enveloping in shrink fit relation the bottom and bracing members.

3,688,969

## CARRIER CARTON

Mario Gabarez, Beauvais, France, assignor to Lever Brothers Company, New York, N.Y.

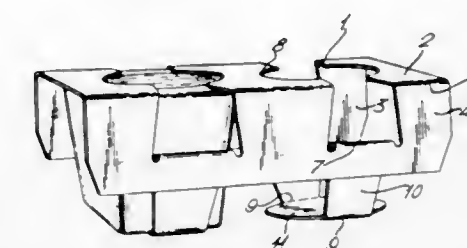
Filed Nov. 23, 1970, Ser. No. 91,765  
Claims priority, application France, Nov. 21, 1969, 6940183  
Int. Cl. B65d 5/48

U.S. Cl. 229-28 R

2 Claims

A carrier carton for a plurality of containers such as tubs or pots in which the containers are arranged in a row. The carton is formed from a blank in which container stations are defined

by pairs of transverse incisions so that portions of the blank between the incisions are foldable away from the blank to sup-



port the bases of the containers and the tops of the containers engage below a remaining portion of the blank.

3,688,970

Patent Not Issued For This Number

3,688,971

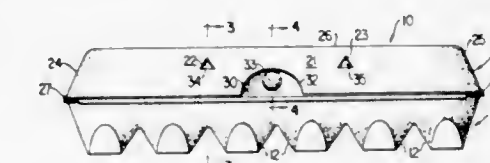
## EGG CARTON LATCHING DESIGN

Robert James Phillips, 3712 Colony Park, Tyler, Tex.; Robert L. Reasor, 1610 Osage, and Donald F. Wiley, 2308 Lynn, both of Big Spring, Tex.

Filed Oct. 16, 1970, Ser. No. 81,242  
Int. Cl. B65d 85/32

U.S. Cl. 229-44 R

7 Claims



An egg carton incorporating an easy-open latching feature comprising an outwardly extending protuberance on the carton locking flap which extends into a cutout section at the bottom edge of the cover front wall. By depressing the protuberance, the carton latching mechanism is disengaged permitting convenient, one-handed opening of the carton. There is also provided an improved latching mechanism wherein the bottom surface of each locking lug is planar and horizontally oriented when the carton is closed.

3,688,972

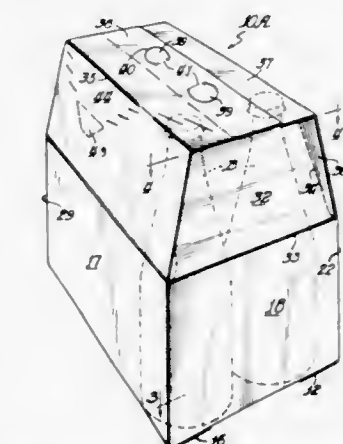
## OPENING FEATURE FOR BOTTLE CARRIER

John V. Mahon, Lansdale, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Oct. 26, 1970, Ser. No. 83,792  
Int. Cl. B65d 5/54, 5/02

U.S. Cl. 229-51 TS

4 Claims



A carrier for a plurality of similar articles such as bottles is formed from a unitary blank of foldable paperboard to pro-



vide a carton sleeve having opposed side walls and opposed end walls, the side walls extending over the tops of the articles and being joined to define a top wall. The end walls have indented upper portions maintained in position by gusset elements flanking the inner sides of upper portions of the side walls. A line of weakness extends from each edge of the top panel in convergent directions to intersect at a pull tab in one of the side walls, thereby defining a tear panel which when removed exposes the tops of the bottles for easy removal from the carrier.

3,688,973

## CARRYING AND CLOSING DEVICE FOR BAGS AND SACKS

Salomo Lillkvist, Pietarsaari, Finland, assignor to Oy With Schauman AB, Pietarsaari, Finland

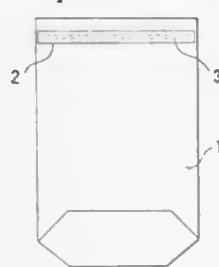
Filed April 1, 1970, Ser. No. 24,548

Claims priority, application Finland, April 3, 1969, 992/69

Int. Cl. B65d 33/06, 33/02

U.S. Cl. 229—54 R

2 Claims



A carrying and closure device for sizable paper sacks comprises a bar which extends adjacent to the open mouth of the sack over the entire width thereof and consists of a non-elastically flexible material so that said bar forms a carrying handle upon turning down the mouth portion of the sack at least one complete turn around the bar, which handle may be secured in position by bending the corner portions of the folded-down mouth portion including the bar inwardly.

3,688,974

## HANDLE HOLE CARRIER BAGS

Max Gennerich, Munsterstrasse 45; Siegfried Wagner, Bahnhofstrasse 53a, and August Schwarzkopf, Heinestrasse all of 454 Lengerich of Westphalia, Germany

Filed June 3, 1970, Ser. No. 42,981

Claims priority, application Germany, June 18, 1969, P 19 30 788.1

Int. Cl. B65d 31/00

U.S. Cl. 229—54 R

2 Claims



A handle hole carrier bag comprises a plastic film, wherein one wall of the bag is longer than the other wall. The shorter wall has one handle hole while the longer wall has two handle holes substantially symmetrically positioned relative to the edge of the shorter wall. The longer wall is reinforced at least in the region which projects above the shorter wall. The shorter wall is reinforced at least in the region of the handle hole. Each said reinforcement is formed by at least one further plastic ply which extends over the entire width of the edge.

3,688,975

Patent Not Issued For This Number

3,688,976

Patent Not Issued For This Number

3,688,977

Patent Not Issued For This Number

3,688,978

## COOKING COMPUTER MEANS

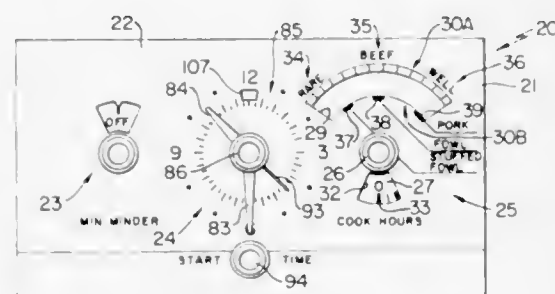
Carl J. Goodhouse, Litchfield, and Robert Strachan, New Haven, both of Conn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Feb. 3, 1971, Ser. No. 112,132

Int. Cl. G07c 1/00

U.S. Cl. 235—61 A

20 Claims



A cooking computer for determining the cooking operation of a cooking apparatus, the computer having a stationary input means indicating selectable variables other than the weight of a meat item. The computer has a manually settable weight input means for indicating a single selected indicated weight applicable to all meat items and corresponding to the weight of a particular meat item to be cooked, the weight input means being settable in relation to a selected variable of the stationary input means. The computer has a time period output means operatively associated with the input means to provide as an output a cooking time period for the particular meat item computed as a function from the selection of both of the input means according to a cooking formula.

3,688,979

## CONTROL DEVICE FOR A REGISTERING BUSINESS MACHINE

Gunter Kleffmann, Bielefeld, Germany, assignor to Anker-Werke Aktiengesellschaft, Bielefeld, Germany

Filed Dec. 21, 1970, Ser. No. 100,088

Claims priority, application Germany, Dec. 19, 1969, P 19 63 636.3

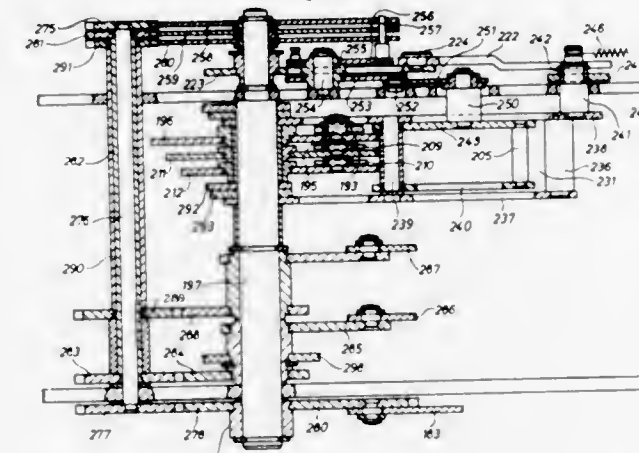
Int. Cl. G06c 23/00

U.S. Cl. 235—62 F

11 Claims

Control device for a registering business machine having mechanically adjustable mode-of-operation and computing mechanism selector means controllable by control mechanism and computer mechanism selector keys for respective banks of keys as well as by automatic control means, the mode-of-operation and computing mechanism selector means being actuable through clutch devices connected thereto for effecting selection of controlling modes of operation and computing mechanisms, the banks of the control mechanism and computer mechanism selector keys having a differential control

mechanism coordinated therewith, respectively, including adjustable control disc means in one of the differential control mechanisms for selecting machine modes of operation and computing mechanisms, the computing mechanisms being mounted on a plurality of control shafts, respectively, sensing members coordinated with the control shafts of the computing



mechanisms and being operatively connected to the computing mechanisms, clutch means connected to the sensing members for transferring cam-controlled drive movements to the control shafts for timely swinging the selected computing mechanisms into and out of operation with valve transfer members in accordance with a selected mode of operation.

3,688,980

## CALCULATING RULE

Bernard Progin, Avenue Henri-Galay, 12c, Geneva, Switzerland

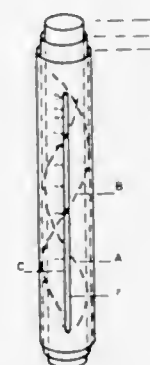
Filed Nov. 18, 1970, Ser. No. 90,569

Claims priority, application Switzerland, Dec. 1, 1969, 17884/69

Int. Cl. G06g 1/00

U.S. Cl. 235—79.5

6 Claims



A calculating rule comprises three coaxial cylindrical elements displaceable relative to one another by rotation. The outer cylinder has at least one transparent window and the intermediate cylinder is transparent. Each cylinder carries an index line serving as a reference line or carrying graduations. At least one of the index lines is helicoidal so that one index line intersects the two others at an angle different to 90°. Preferably, rotation of the intermediate cylinder relative to

the outer one causes automatic rotation of the inner cylinder, but not vice versa. At least one of the elements can be planar.

## ERRATUM

For Class 235—61.11 F see:  
Patent No. 3,688,955

3,688,981

## MANIFOLD GAS VALVE

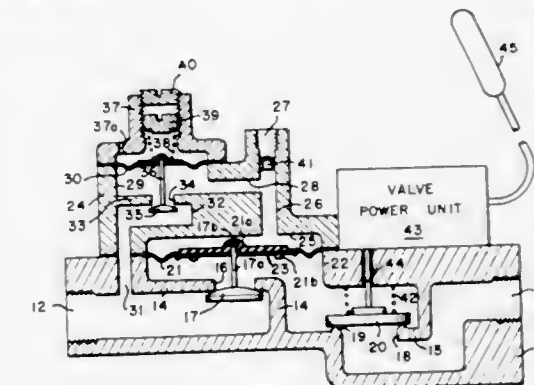
Nickolas J. Sidoris, Cypress, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 17, 1970, Ser. No. 64,430

Int. Cl. G05d 23/275

U.S. Cl. 236—80

10 Claims



A manifold gas valve having a diaphragm valve and an on-off valve controlling gas flow therethrough to a main burner and a pressure regulator valve therein controlling gas flow to a pilot burner. The outlet from the pressure regulator valve communicates with one side of the diaphragm of the diaphragm valve for biasing it open while the other side of the diaphragm responds to main gas outlet pressure to bias the valve closed, whereby a single adjustment of the pilot burner pressure regulator valve provides gas pressure adjustment for both the pilot burner gas and the main burner gas, both of which are controlled by the manifold valve. A modification of the invention provides step-opening of the diaphragm valve means controlling gas flow to the main burner.

3,688,982

## HYDRAULIC TRANSMISSION INCLUDING TEMPERATURE CONTROLLED ORIFICE

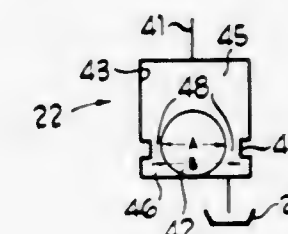
Herbert A. McAninch, P.O. Box 367, Brandon Road, Auburn, Ind., and Herbert N. Underwood, 5322 N. McVicker Ave., Chicago, Ill.

Division of Ser. No. 778,566, Nov. 25, 1968, Pat. No. 3,583,183. This application July 9, 1970, Ser. No. 53,610

Int. Cl. G05d 23/02

U.S. Cl. 236—93

7 Claims



A hydraulic transmission for use in a fabric-treating machine incorporating a temperature sensitive valve in communication with the outlet of a hydraulic pump, the valve defining a variable size flow passage which decreases in size as the temperature of the hydraulic fluid increases thereby compensating for the increase of pump leakage with rising fluid



temperatures and resulting in maintaining a constant speed of the output member driven by the hydraulic pump despite varying fluid temperatures.

3,688,983

# MODULAR STEEL BUILDING WITH INTERNAL AIR FLOW PASSAGES

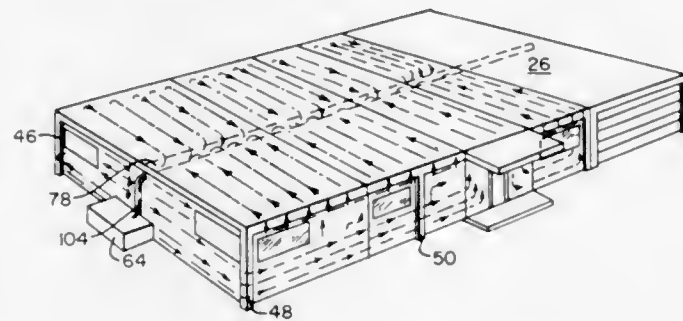
Walter C. Erickson, 240 E. 108th St., Chicago, Ill., and Harry Pon, P.O. Box 1191, Burns, Oreg.

Filed Dec. 29, 1970, Ser. No. 102,395

Int. Cl. F24d 5/10

U.S. Cl. 237—50

12 Claims



An all steel building comprised of prefabricated modules that are welded together in series to form a building of the desired shape and dimensions. Each module includes an inner steel wall, an outer steel wall, and a plurality of separator bars spacing the inner wall from the outer wall so as to (1) form laterally extending passages between the walls and (2) to minimize undesirable heat transfer through the walls. The roof is constructed in a similar manner with longitudinally extending passages and a central return air duct. An air blower forces air to circulate through the passages in the walls and between the roof and ceiling after being heated or cooled to the temperature desired within the building. A suction pump draws the air, after circulation through the building, back into a return duct in the central partition wall.

3,688,984

# ELASTICALLY YIELDABLE INSULATING RAIL FASTENING DEVICE

Roger Paul Sonnevill, Saint-Cloud, France, assignor to Societe d'Etudes Ferroviaires, Paris, France

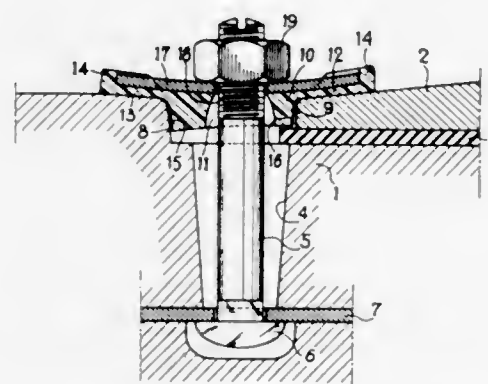
Continuation-in-part of Ser. No. 802,952, Feb. 27, 1969, abandoned. This application Feb. 10, 1971, Ser. No. 114,123

Claims priority, application France, Feb. 16, 1970, 7005419

Int. Cl. E01b 9/34

U.S. Cl. 238—349

19 Claims



Elastically yieldable and electrically insulating fastening device for fastening a rail on a sleeper. The device comprises a clip of insulating plastics material having a body and two branches extending from the upper part of the body. A metal strip bears on the upper face of the body and branches. A tightening-down bolt adapted to be anchored in the sleeper extends through apertures in the strip and clip body.

An improved device is also described having an additional

metal strip bearing on the aforementioned strip so as to modify the performance of the device, in particular for high-speed railway tracks.

3,688,985

# PLASTIC ARTICLE OF MANUFACTURE IMPREGNATED WITH VOLATILE MATTER

Walter H. Engel, 87 Southport Woods Drive, Fairfield, Conn.

Filed Dec. 9, 1970, Ser. No. 96,354

Int. Cl. A61l 9/04; A24l 25/00; A01n 17/12

U.S. Cl. 239—54

11 Claims

This disclosure is directed to an article of manufacture comprising of preformed synthetic water insoluble resins which may be either soluble or insoluble in an organic solvent that is subsequently impregnated with a volatile substance by contact with an aqueous emulsion of an essential oil and a surfactant wherein the impregnated resin article with gradually yield the volatile substance in a chemically unchanged, dry state to the surrounding atmosphere over a considerable period of time. The impregnated volatile substance may be either a fragrance, a flavor, or a combination of both, a sanitizing agent, or a medicinal agent.

3,688,986

# INJECTOR FOR FUEL

Yves Guegan, Lille, and Maurice Tacquet, Marcq en Baroeul, both of France, assignors to Crepelle and Cie, Lille, France

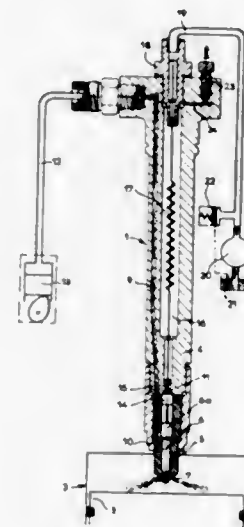
Filed Sept. 8, 1970, Ser. No. 70,448

Claims priority, application France, Sept. 15, 1969, 6931320

Int. Cl. F02m 45/10

U.S. Cl. 239—94

6 Claims



A fuel injector comprises a body having a jet at one extremity thereof, which jet has an orifice for the discharge of a fuel from the jet. A needle is slidable within the jet for controlling the flow of fuel from the orifice. One end of the needle is acted upon by a fluid under pressure contained in a chamber connected to a pressure source. The fluid biases the needle towards a seating for closing the orifice. When an engine, to which the fuel injector is mounted, is started, fuel under pressure engages a face of the needle such that the needle is raised from its seating against the biasing effect of the liquid under pressure so that fuel escapes through the orifice.

3,688,987

# CONTROLLING SPRAY GUNS

Howard Richard James Knight, Hampton, England, assignor to Carrier Engineering Company Limited, London, England

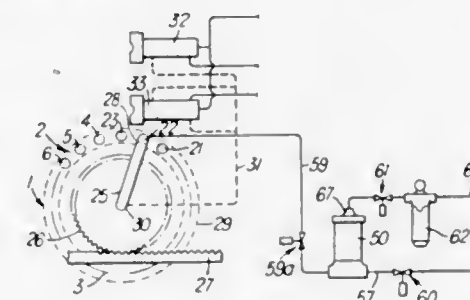
Filed July 26, 1971, Ser. No. 165,993

Claims priority, application Great Britain, July 29, 1970, 36,783/70

Int. Cl. B05b 15/02; F23d 11/34

U.S. Cl. 239—112

10 Claims



A solvent pressure controlling device is included in the solvent delivery line to a solvent delivery port arranged to be connected with a spray gun through a single hose during disconnection of the hose from one paint delivery port preparatory to connection with another paint delivery port. Said device is operable while the hose connects the gun with the solvent delivery port to maintain the rate of emission from the gun of residual paint in the hose at a pressure substantially the same as that at which paint is emitted from the gun when the hose connects the gun to a paint delivery port.

3,688,988

# DISPOSABLE ROCKET MOTOR NOZZLE

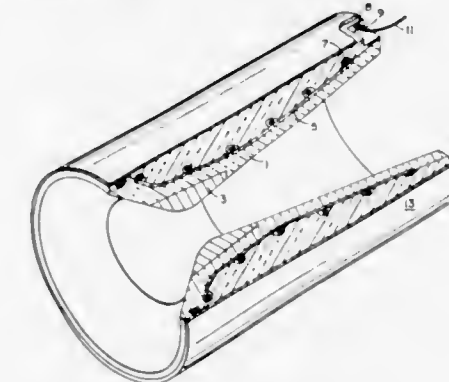
James F. Howison, Huntsville, Ala., and Chester A. Friend, Jr., Ridgely, W. Va., assignors to The United States of America as represented by the Secretary of the Army

Filed Dec. 14, 1970, Ser. No. 97,643

Int. Cl. B64d 33/04

U.S. Cl. 239—265.15

8 Claims



A disposable rocket motor nozzle that has a converging diverging throat portion with a shaped charge wound about the throat portion to be ignited by conventional igniter means to cause the throat portion to be broken up into small pieces when it is desired to destroy the nozzle.

3,688,989

# THRUST REVERSERS FOR AIRCRAFT

David Roberts McMurtry, 21, Stoney Stile Road, Alveston near Bristol, England

Filed March 5, 1971, Ser. No. 121,512

Claims priority, application Great Britain, March 14, 1970, 12,354/70

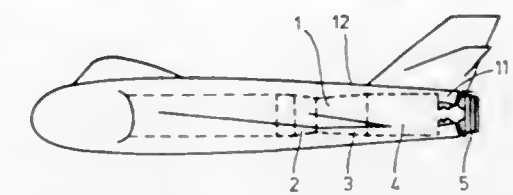
Int. Cl. B64c 15/06; B64b 1/24

U.S. Cl. 239—265.29

6 Claims

A thrust reverser linkage in which two main arms are pivoted together at a point between their ends in the manner

of a pair of scissors. One end of one arm is connected to a thrust reverser bucket the other end being connected to air-



craft structure. One end of the second arm is connected via a pivoted link with a thrust reverser bucket and the other end being movable by an actuating mechanism.

3,688,990

# SPRAY GUN

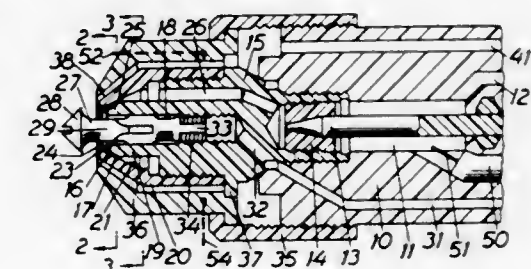
Kurt Herman Liedberg, Skara, Sweden, assignor to Atlas Copco Aktiebolag, Nacka

Filed Aug. 4, 1971, Ser. No. 168,855

Int. Cl. B05b 1/26

U.S. Cl. 239—524

7 Claims



An optionally electrostatic spray gun is of the type wherein a carrier pressure fluid is supplied to an axial passage having its mouth at the tip portion of the gun, a deflecting head is provided centrally in front of the mouth for deflecting the carrier fluid flow annularly outwardly in transverse relation to the passage when emerging therefrom, and spraying material is atomized and entrained by the carrier flow as it sweeps past an orifice in the gun supplied with spraying material. In such a gun the orifice is arranged circumferentially around the mouth and emits the spraying material as an annular film into the carrier fluid flow substantially in counter-direction to the resultant deflection thereof.

3,688,991

# JET AND ANVIL COMMINUTING APPARATUS, AND METHOD

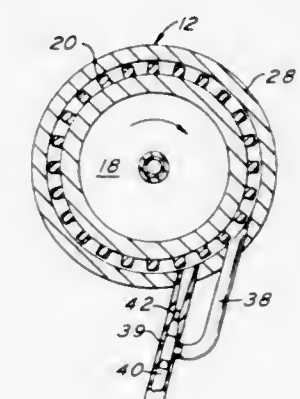
Norwood H. Andrews, P.O. Box 68, Moorestown, N.J.

Filed July 30, 1970, Ser. No. 59,387

Int. Cl. B02c 19/06

U.S. Cl. 241—5

17 Claims



Dry grinding of the jet and anvil type is improved by removing partially ground material from the grinding chamber and then re-injecting it into the chamber against a plurality of



rotating anvils. The grinding procedure is further enhanced by removing a portion of the gas carrying the material so as to reduce the load which must be accelerated by the jet.

3,688,992

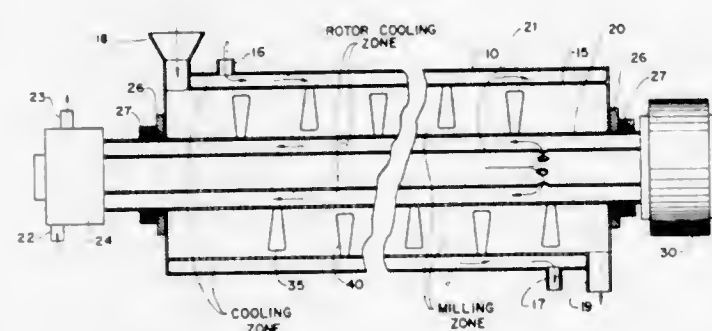
# PROCESS AND APPARATUS FOR THE ACTIVATION OF CATALYSTS

Alvin Schallis, Irvington, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Filed April 15, 1970, Ser. No. 28,902  
Int. Cl. B02c 17/16

U.S. Cl. 241—23

12 Claims



Co-crystals of partially reduced transition metal halides are activated by stirring the co-crystals with a plurality of grinding media in an oxygen free milling zone while maintaining the temperature within said zone below 80° C.

3,688,993

# WASTE DISPOSAL APPARATUS

Alan Howard Church, Sewrys Croft, Church Road, West Whittering, England

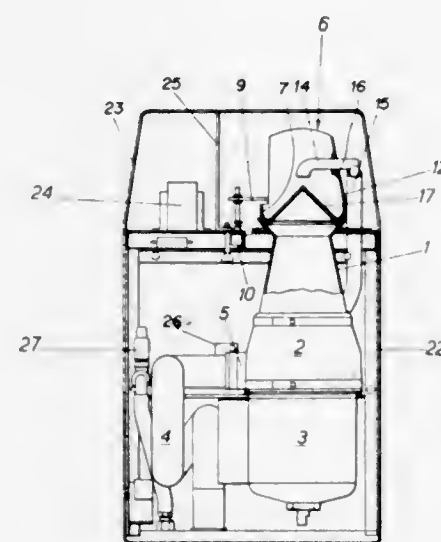
Filed Dec. 14, 1970, Ser. No. 97,535

Claims priority, application Great Britain, Dec. 23, 1969, 62,510/69

Int. Cl. B02c 18/40

U.S. Cl. 241—36

7 Claims



In waste disposal apparatus the top of the chute leading to the grinder is provided with a hinged cover which carries a water outlet directed onto the apex of a conical sealing member fitted to the cover and adapted to seal with the mouth of the chute, the sealing member having slots set in from its periphery.

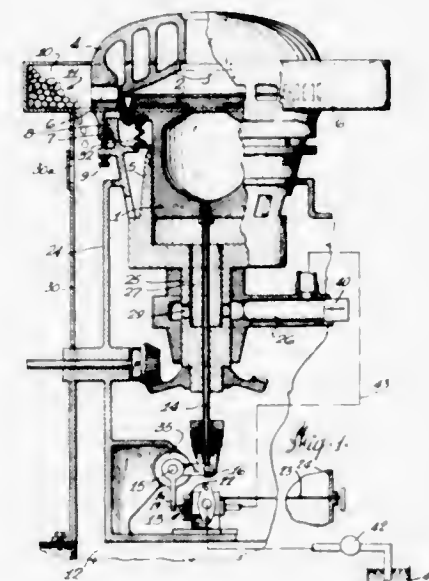
# 3,688,994 CENTRIFUGAL JAW CRUSHERS

Kenneth Gaudie, 2 Gibson Ave., Toronto 185, Ontario, Canada

Filed June 1, 1970, Ser. No. 42,184  
Int. Cl. B02c 2/00

U.S. Cl. 241—205

3 Claims



Centrifugal jaw crusher for stone and the like, in which one jaw reciprocates relative to the other and in which both jaws are maintained in rotation about a common axis and between which crushed material moves outwardly centrifugally during back strokes of the reciprocating jaw.

3,688,995

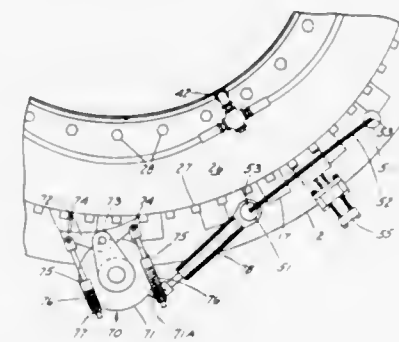
# GYRATORY CRUSHER ADJUSTING MECHANISMS

Don Kueneman, 6224 Estates Drive, and Cyril P. Kenville, 10 Wood Court, both of Oakland, Calif.

Division of Ser. No. 657,473, July 27, 1967, Pat. No. 3,539,118. This application Aug. 14, 1970, Ser. No. 63,934  
Int. Cl. B02c 2/00

U.S. Cl. 241—207

8 Claims



Gyratory crushers, sometimes referred to as cone type crushers, often have a threaded connection between the bowl and the main crusher frame for adjusting the crushing zone by rotation of the bowl relative to the frame. This invention includes a bowl rotating device for such a crusher in which a swingable arm mounted adjacent to the bowl structure is oscillated by an actuator and a double ended pawl pivoted on the end of the swingable arm is utilized to rotate the bowl in either direction depending on which end of the pawl is employed. A spring arrangement is employed to bias the pawl against the bowl structure and a reversing plate connected to the pawl through the spring arrangement sets the pawl for the desired direction of rotation.

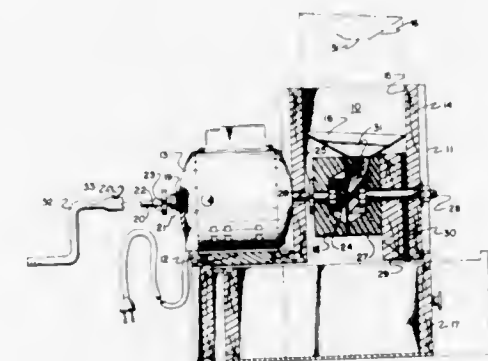
3,688,996

# FLOUR MILL

Johnnie Kuest, P.O. Box 1254, Twin Falls, Idaho  
Filed Jan. 25, 1971, Ser. No. 109,272  
Int. Cl. B02c 7/18

U.S. Cl. 241—239

3 Claims



The present invention comprises an upstanding box-like housing including a substantially cylindrical abrasive grinding wheel having a multiplicity of spirally disposed tooth-like breaks suitably fastened to one of the sidewalls of the housing, a substantially similar grinding wheel oppositely mounted and journaled for rotation in the sidewall opposite the fixed grinding wheel, and means for driving the rotating grinding wheel. The fixed grinding wheel is provided with an entranceway in one of its walls, a downwardly sloping hopper-like bottom portion is supported by the fixed wheel in the housing and includes an exitway coincident with the entranceway of the fixed wheel. The wheels are selectively spaced apart with respect to each other to grind grain into flour or cereals. Means for adjusting the spacing between the respective wheels is provided in the apparatus here disclosed.

3,688,997

# GRINDER FOR WOOD PIECES, PARTICULARLY STICKS

Klaus Ullner, Braunschweig, Germany, assignor to Miag Muehlenbau und Industrie GmbH, Braunschweig, Germany

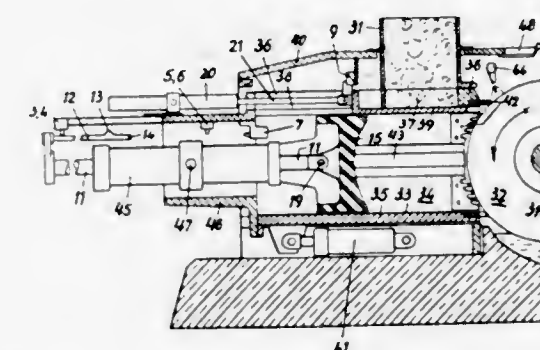
Filed Aug. 19, 1970, Ser. No. 64,948

Claims priority, application Germany, Aug. 23, 1969, P 19 42 939.1

Int. Cl. B02c 19/00

U.S. Cl. 241—282

4 Claims



A grinder for wood pieces, such as sticks, which is provided with two press boxes arranged opposite a grinding stone and also provided with two grinding pistons operated by hydraulic presses is provided in accordance with the present invention with an intermediary switch arranged between two limit switches which controls the operation of one of the two grinding pistons. This intermediary switch causes a reversal of the other grinding piston by energizing an electromagnet which operates a hydraulic valve.

3,688,998

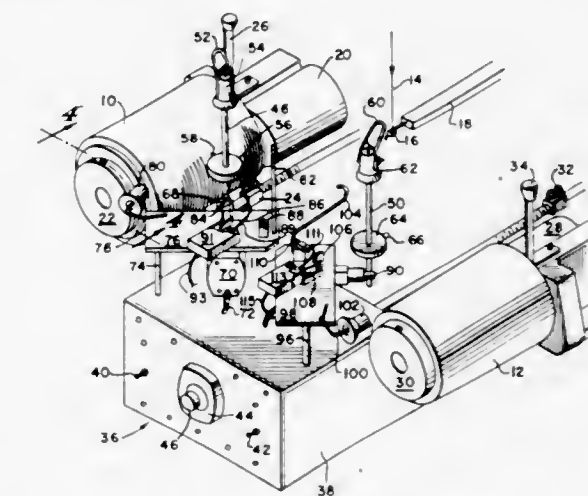
# AUTOMATIC WASTELESS TRANSFER WINDING APPARATUS

Robert D. Carr; Fred W. Lenoir, both of Hopewell, and Ora Lee Reedy, Richmond, all of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed June 19, 1969, Ser. No. 834,697  
Int. Cl. B65h 54/02

U.S. Cl. 242—18 A

2 Claims



Salient structural features employed within such winding apparatus include, inter alia, a pair of rotatably mounted chucks with pirns retained thereon, a pair of pivotally mounted transfer arms for transferring yarn between said pirns, a guide assembly with fixed and movable components for feeding the yarn alternately to the first or the second pirn, cutting means for automatically severing the yarn, hook means on the chucks for grabbing the leading segment of the yarn, power means for rotating the chucks and oscillating the transfer arms, and control means, including programming circuitry means and microswitches, for energizing said power means in properly timed sequence.

3,688,999

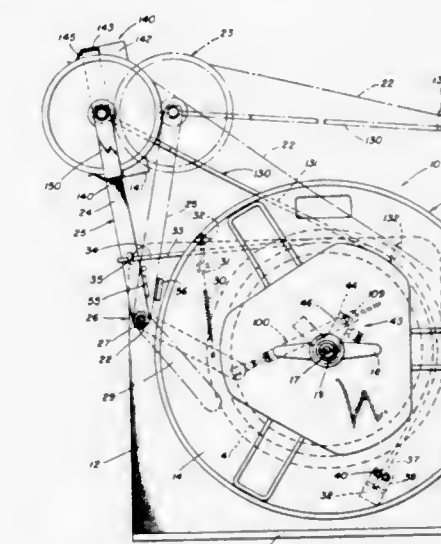
# UNREELER

Robert F. Plattner, Chicago Heights, and Bestor P. Coleman, Willow Springs, both of Ill., assignors to Interlake, Inc., Chicago, Ill.

Filed July 8, 1970, Ser. No. 53,191  
Int. Cl. B65h 25/22

U.S. Cl. 242—75.43

2 Claims



A coil unreeler for dispensing strapping in response to the application of a withdrawing force to a withdrawn portion of the strapping having braking means for braking the reel, means for accelerating the reel from a stand-still to facilitate initiation of a dispensing operation and means for receiving



and storing the withdrawing force and gradually transmitting the force to the accelerating means to gradually accelerate the coil.

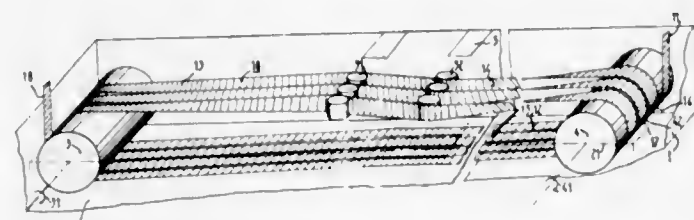
3,689,000

**APPARATUS FOR CONTINUOUSLY DISPLACING A FLEXIBLE STRIP IN A TREATMENT INSTALLATION**  
Marcel A. P. Giros, Ancerville, France, assignor to Societe Meusienne de Constructions Mecaniques, Ancerville, France

Filed March 23, 1970, Ser. No. 21,982  
Int. Cl. B65h 17/18

U.S. Cl. 242—55.01

5 Claims



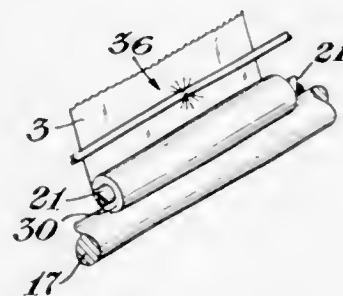
A method and mechanism for advancing and guiding an endless flat web of flexible, non-stretchable material, e.g. metal, through a treatment station, where the web is looped around two opposite drums in several consecutive loops arranged side by side, the upper strands of the loops being twisted into an upended position in which they can be shifted laterally by bedding them over a pair of guide rollers, which thus create a parallel offset in the strands.

3,689,001

**FILM FOLDING MECHANISM FOR A FILM REWINDER**  
Ronald L. Ramsey, 1806 Burlington, Midland, Mich.  
Filed Oct. 21, 1970, Ser. No. 82,577  
Int. Cl. B65h 19/20, 19/26

U.S. Cl. 242—56 A

3 Claims



Smooth rolls of high ciling plastic films, such as polyethylene or vinyl chloride/vinylidene chloride copolymer films, are provided with an easily started leading end by directing a timed air blast against the trailing end of plastic web being wound on a core as the trailing end passes from a supporting roll on a film rewind machine to the core. The air blast is directed to a point at the center or at the edges of the web whereby the trailing end of the web is caused to fold in such a manner to provide a leading end on a wound roll whereby unwinding can be easily started.

3,689,002

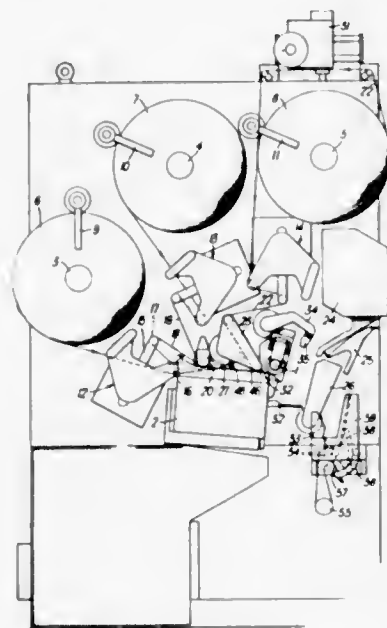
**CAPACITOR WINDING APPARATUS**

Peter Harvey; David James Greene, and Edward Zbigniew Kaczmarek, all of London, England, assignors to British Insulated Callender's Cables Limited, London, England  
Filed Sept. 1, 1970, Ser. No. 68,647

Claims priority, application Great Britain, Sept. 4, 1969, 43,773/69

Int. Cl. B65h 39/16; H01g 13/02  
U.S. Cl. 242—56.1

14 Claims



An automatic machine for producing wound capacitor elements includes essentially a drive for a mandrel, which may or may not carry a tubular former for the element; an automatic timing device for starting and stopping rotation of the mandrel; a device for folding the leading end of an assembly of conducting and dielectric strips around the mandrel; a tension sensing device for sensing the tension in the length of the assembled strips between the mandrel and a temporary clamp for the strips; and a device for starting up the automatic timing device when, upon rotation of the mandrel, an increase in tension in the length of assembled strips operates the sensing device as an indication that the leading end has been successfully folded around the mandrel and trapped, so that winding can commence.

3,689,003

**CORE SUPPORTING AND LOCKING MEANS**

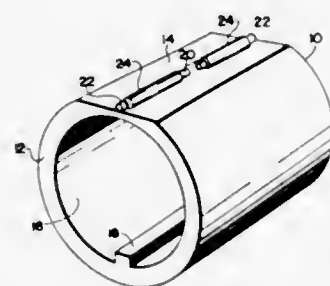
Edward J. Cholski, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 18, 1970, Ser. No. 90,708

Int. Cl. B65b 17/02

U.S. Cl. 242—68

3 Claims



A substantially cylindrical mandrel for supporting a core upon which a roll of web material is to be wound has a flat portion over part of its peripheral surface. A plurality of locking members are pivotally mounted on the flat portion so that

pivotal movement of these members transversely of the flattened area effects a locking relationship between the core and the mandrel.

3,689,004

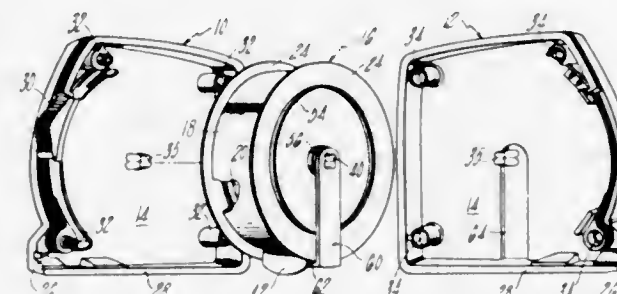
**REPLACEMENT CARTRIDGE FOR A COILABLE RULE**  
Martin M. Brown, Canton, and Carl C. Stoutenberg, Hartford, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed May 12, 1971, Ser. No. 142,509

Int. Cl. G01b 3/10; B65h 75/48

U.S. Cl. 242—107 R

5 Claims



A replacement cartridge for a coilable rule wherein a form-sustaining spool mounts a coiled measuring blade and a recoil spring. The hub of the rule is separable from the spool and the recoil spring is attached thereto. The hub has an integral keeper which overlies the coiled measuring tape and is engaged by the hook at the end of the blade for maintaining the integrity of the replacement cartridge until it is inserted in the casing for the tape.

3,689,006

Patent Not Issued For This Number

3,689,007

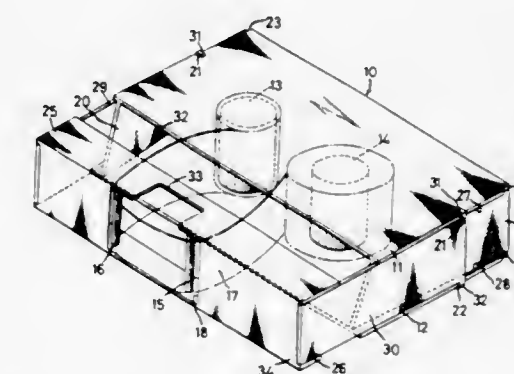
**CASSETTE HAVING MEANS THEREON TO VARY ITS SIZE**

Nobutoshi Kihara, and Yotaro Miura, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan  
Filed Aug. 5, 1970, Ser. No. 61,188

Claims priority, application Japan, Jan. 24, 1970, 45/6476  
Int. Cl. G11b 23/10

U.S. Cl. 242—199

8 Claims



A tape cassette for use with tape recorders and players in which one of the walls forming the cassette is movable to selectively vary the size of the cassette whereby it can be used with non-standard size cassette holders.

3,689,005

**PACKAGE OF FLEXIBLE MATERIAL WITH TWISTLESS PAYOUT**

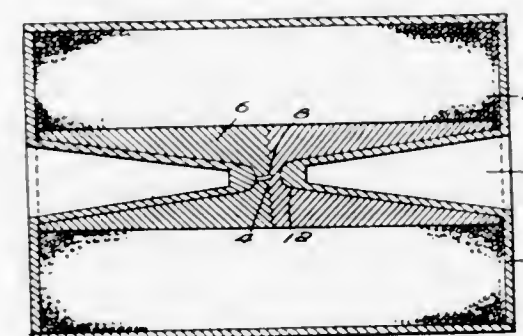
James W. Newman, Scarsdale, N.Y., assignor to Windings, Inc., Yonkers, N.Y.

Continuation-in-part of Ser. No. 819,777, April 28, 1969, abandoned, which is a continuation-in-part of Ser. No. 810,990, March 27, 1969, abandoned. This application Feb. 8, 1971, Ser. No. 113,319

Int. Cl. B65h 55/02

U.S. Cl. 242—163

15 Claims



A package of flexible material formed by a plurality of layers each composed of a series of figure-8's has a radial opening thereinto through which the inner end of the material is led out of the package. Generally conical members with

3,689,008

**DEVICE FOR ADJUSTING A WEB-ADVANCING MECHANISM**

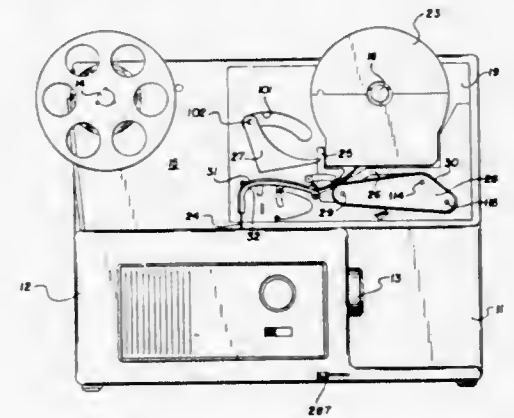
Leslie J. Bunting, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1971, Ser. No. 139,529

Int. Cl. G03b 1/04; G11b 15/32

U.S. Cl. 242—192

4 Claims



A self-threading motion picture projector including a film-feeding mechanism for feeding film from a supply roll supported on the projector to a film threading path through the



projector mechanism. A film-advancing mechanism is adjustable to a forward projection mode for intermittently moving the film along the threading path away from the supply roll and to a still projection mode in which a single film frame may be projected as long as desired. When the film-feeding mechanism is adjusted to its active condition for feeding the leading end of the film from the supply roll, the film-advancing mechanism is automatically adjusted to its forward projection mode so that the film will be engaged by that mechanism and thereby moved away from rather than toward the supply roll.

3,689,009

# **PNEUMATIC TUBE SYSTEM SUBSTATION TERMINAL BOX CONSTRUCTION**

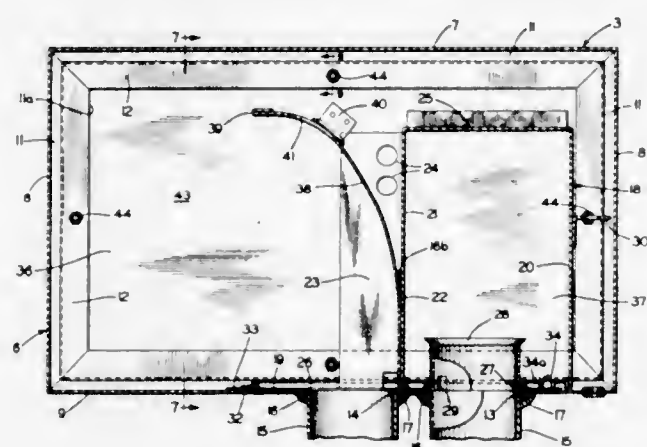
William H. Terrell, Akron, Ohio, assignor to Diebold Incorporated, Canton, Ohio

Filed July 28, 1970, Ser. No. 58,835

Int. Cl. B65g 51/30

U.S. Cl. 243—24

2 Claims



A terminal box construction for pneumatic tube systems having a box-like housing which is formed with at least one open side and is divided into send and receive chambers by an insert partition. Send and receive pneumatic tube openings are formed in the housing and communicate with the respective chambers. A door is pivotally mounted on the open side of the housing to provide access into both chambers. A curved carrier directing member is located within the receive chamber communicating with the receive tube opening for deflecting a carrier upon entering the chamber.

3,689,010

# **LOADING AND UNLOADING STATION OF PLANT FOR THE PNEUMATIC TRANSPORTATION OF GOODS IN CONTAINERS ALONG A TUBE**

Adolf Moritsovich Alexandrov, Moscow; Ippolit Davidovich Suladze, Tbilisi; Vladimir Efimovich Aglitsky, Moscow; Avtandil Semenovitch Kakhniashvili, Tbilisi; Jury Abramovich Tsimbler, Moscow; Ilia Solomonovich Kantor, Moscow; Alexandr Alexandrovich Lachinov, Moscow; Vazna Venediktovich Dzhaneldze, Tbilisi; Jury Arnoldovich Topoliansky, Moscow; Alexandr Dmitrievich Kolbechenkov, Moscow; and Vladimir Maiorovich Chizhikov, Moscow, all of U.S.S.R., assignors to Spetsialnoe Konstruktorskoe Bjuro Transneftovmatika, Moscow, U.S.S.R.

Filed Feb. 17, 1971, Ser. No. 116,039

Claims priority, application U.S.S.R., Feb. 17, 1970, 1401629

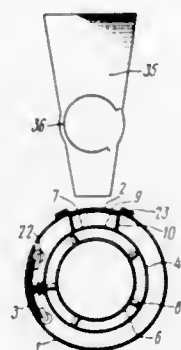
Int. Cl. B65g 51/04

U.S. Cl. 243—38

2 Claims

A loading and unloading station of a plant for the pneumatic transportation of goods in containers along a tube in which a

chamber, provided with a charging port, is cylindrical and is installed, which the section of the tube passing therethrough is and provided with a charging port and is rotatable relative to



its geometrical axis, with a lid closing the chamber charging port being arranged on the inner side of the chamber and secured so as to be capable of radial movement on the rotatable section of the tube.

3,689,011

# **AIRCRAFT**

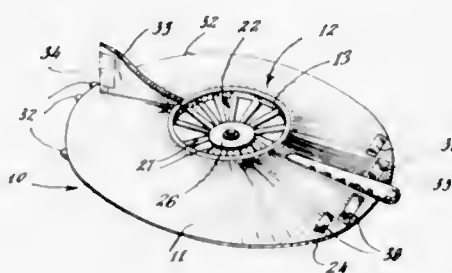
Dorant Torelli, 28 Park Place, Branford, Conn.

Filed July 11, 1969, Ser. No. 840,959

Int. Cl. B64c 29/00

U.S. Cl. 244—12 C

1 Claim



A heavier than air aircraft having an elongated oval shaped single wing of a substantial thickness at its center to enclose a hub portion concentric with the vertical axis of the aircraft, the wing tapering toward its periphery from the thickness at the hub.

The aircraft has a power driven rotor having driving blades to propel the aircraft in a vertical direction and jet engines mounted in the wing for propelling the aircraft along its horizontal course.

The surfaces of the wing are so contoured as to assist the aerodynamic forces in stabilizing and guiding the aircraft while under power or in a gliding state.

3,689,012

# **AERIAL CAMERA HOUSING FOR HIGH WING AIRCRAFT**

Balmer Scott Liston, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed March 3, 1971, Ser. No. 120,611

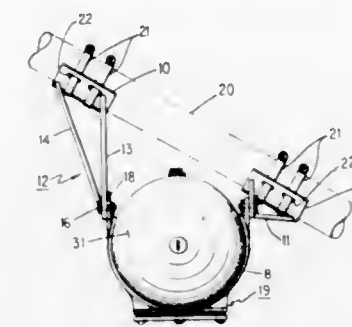
Int. Cl. B64d 11/00

U.S. Cl. 244—118

7 Claims

An aerial camera housing for mounting on the wing-strut of a high-wing aircraft has an aerodynamically shaped outer casing having one end open and is attached to an inner and outer bracket to permit mounting to the wing-strut. The outer bracket is attached to the housing by an adjustable suspension assembly for the purpose of providing proper camera align-

ment with the axis of the plane's flight. The camera is held in a similarly shaped inner casing having an outer diameter slightly



less than the inner diameter of the outer casing so as to permit the inner casing to be slidably inserted into the outer casing to form the assembled aerial camera housing.

3,689,013

# **MEANS FOR MOUNTING AN INSTRUMENT ON A PANEL**

Gerhard Neugebauer, Alexander-Wiegand-Str.37, 8761

Trennfurt Main, Germany

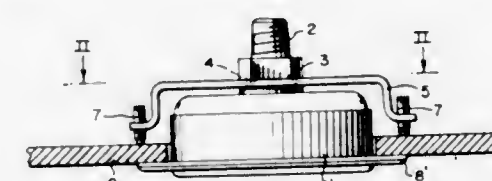
Filed June 1, 1971, Ser. No. 148,626

Claims priority, application Germany, June 25, 1970, G 70 23 877.6

Int. Cl. G12b 9/10

U.S. Cl. 248—27

8 Claims



An instrument, which has a connecting socket with a polygonal portion and an axially adjacent neck portion, is mounted in an aperture of a panel by means of a stirrup which has a like polygonal bore capable of receiving the polygonal socket portion. The stirrup bore engages the neck portion and is angularly displaced in respect of the socket portion. Clamping bolts fix the stirrup to the instrument panel.

3,689,014

# **CAMMING STRAIN RELIEF BUSHING**

Richard R. Fink, 31 Kinnan Way, Basking Ridge, N.J.

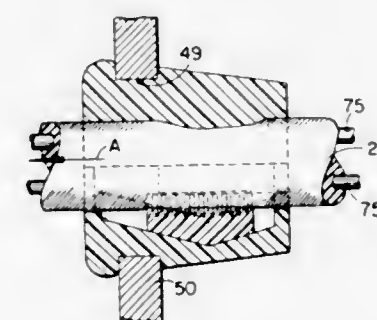
Continuation-in-part of Ser. No. 15,674, March 3, 1970,

abandoned. This application June 18, 1971, Ser. No. 154,350

Int. Cl. F16l 5/00; H02g 3/22

U.S. Cl. 248—56

46 Claims



An aperture locking strain relief bushing is provided with available pre-locking shank sections. Strain relief is obtained by the interaction of a cammed grip block moveably emplaced within the closed parts of the bushing.

# **3,689,015 ADJUSTABLE CABLE RACK AND CONNECTION MEANS THEREFOR**

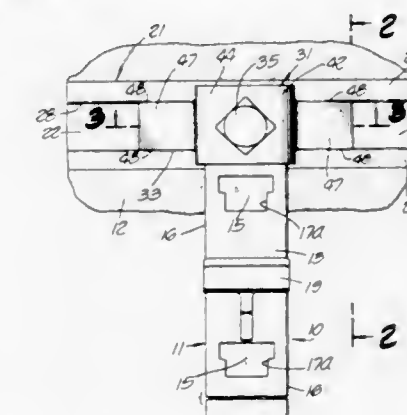
Roy E. Johnson, 12308 Aegean St., Norwalk, Calif.

Filed Dec. 14, 1970, Ser. No. 97,740

Int. Cl. F16l 3/20, 3/22

U.S. Cl. 248—70

11 Claims



An adjustable cable rack includes an elongated bracket adapted to support one or more rack arms at various levels and a connector adapted to rigidly secure the bracket to a continuous channel shaped support. The connector has a brace member which prevents pivotal movement of the bracket about the support and screw threaded holding means inter-connecting the brace, bracket and support which permits adjustment of the cable rack.

3,689,016

# **CYLINDER SUPPORT**

George L. Hammon, 32 Ross Circle, Oakland, Calif.

Division of Ser. No. 825,479, April 1, 1969, Pat. No.

3,576,341. This application Jan. 13, 1971, Ser. No. 106,059

Int. Cl. A47f 5/00

U.S. Cl. 248—309

7 Claims



A support for a cylinder, said support including spaced coil members having extending arms carrying fastening members, said arms adapted to slide into a tube for preventing the rotation of the coil members about the fastening members.

3,689,017

# **PROPS**

Ronald William Stanley Harvey, Welwyn, England, assignor to A.R.I. Propafloor Limited, London, England

Filed Dec. 14, 1970, Ser. No. 97,901

Claims priority, application Great Britain, Dec. 18, 1969, 61,816/69

Int. Cl. F16m 11/02

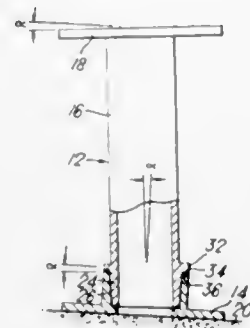
U.S. Cl. 248—354 S

6 Claims

A prop for supporting floor panels comprising a base plate from which upstands a shank carrying at its upper end a head



plate to receive the load. The shank and the base plate have a spigot and socket connection such that by turning the vertical



axis of the base plate, the head plate is caused to gyrate and the plane of its load bearing surface to take up any desired inclination to the horizontal.

3,689,018

## FORMWORK ASSEMBLY

Jozsef Pelle, Vecsei Volgy, and Laszlo Varga, Lakotelep, both of Hungary, assignors to Heves Megyei Beruhazasi Vallalat, Eger, Hungary

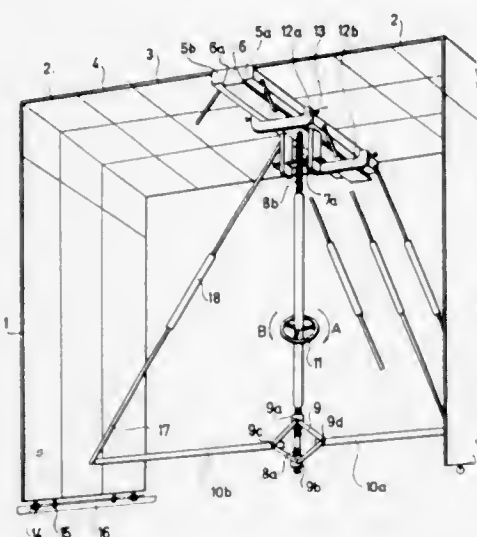
Filed Aug. 4, 1970, Ser. No. 60,901

Claims priority, application Hungary, Aug. 15, 1969, HE-547

Int. Cl. B28b 7/30; F04g 11/02

U.S. Cl. 249-13

7 Claims



The disclosure relates to a formwork assembly, more particularly for the construction of system-type concrete building units, comprising a set of shuttering elements comprising side and deck formwork panels, wheels for moving the forms by rolling, and support elements. The set of shuttering elements consists of wall shuttering panels, corner shuttering elements, deck shuttering panels, and where appropriate, formwork panel inserts. The deck shuttering portion comprises clamping means linked to the split formwork elements which serves to position the deck shuttering section and is made up of sections. The formwork assembly has an upper movement mechanism, arranged between the sections of the clamping means that is suitable for moving apart and drawing together these sections, and a lower movement mechanism which by means of connecting elements, suitably rods, is capable of moving apart and drawing together the two side panel parts of the shuttering portion. The formwork assembly contains further a control element connecting the upper and lower movement mechanism and operating these in synchronism.

### 3,689,019 APPARATUS FOR SHUTTERING POURED CONCRETE STRUCTURES

Joseph W. Ferenc, 175 E. 62nd St., New York, N.Y.

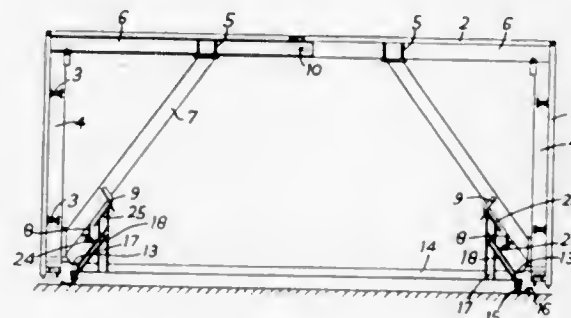
Filed July 29, 1968, Ser. No. 748,278

Claims priority, application Great Britain, Nov. 28, 1967, 54,038/67

Int. Cl. B28b 7/22

U.S. Cl. 249-13

4 Claims



Apparatus for forming a poured concrete structure includes an inverted U-shaped shuttering member movably supported on a carriage. While supporting the shuttering member, the carriage can be moved over rails for placing the shuttering member in the location where it is to form the structure. When it is properly located, the carriage can displace the shuttering member laterally and vertically into the exact position for forming the poured concrete structure. Means are incorporated into the shuttering member for holding it in position to pour the structure so that the carriage can be removed from its position supporting the shuttering member.

3,689,020

### DEVICE USEFUL IN FORMING CONCRETE STRUCTURAL SLABS

Sidney L. Martin, 6520 S.W. 79th Court, Miami, Fla.

Continuation-in-part of Ser. No. 784,289, Dec. 10, 1968,

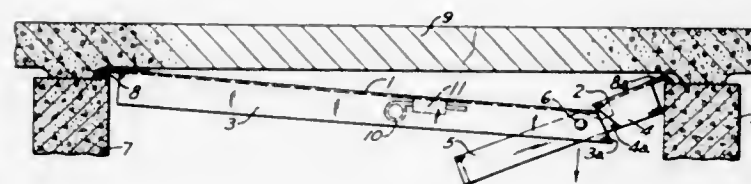
abandoned. This application March 25, 1971, Ser. No.

128,053

Int. Cl. E04g 11/36

U.S. Cl. 249-25

2 Claims



An apparatus for placing and removing temporary decks or forms on which concrete is poured to form a structural slab, such as a roof or floor, is constructed of a panel formed of two portions and provided at its opposite ends with curved, turned-down end extensions which rest at their turned-down ends on preformed supports such as joists or beams. The curved end extensions are coextensive in width with each portion of the panel to which they are attached. Adjacent one of the curved end extensions the panel portions are hinged. During pouring of the concrete, the portions of the panel are prevented from hinging by a suitable latch. After the concrete has hardened, release of the latch permits downward hinging of the panel and falling away and removal of the entire form assembly from the concrete without binding thereto.

3,689,021

### APPARATUS FOR CONCRETE WALL CONSTRUCTION

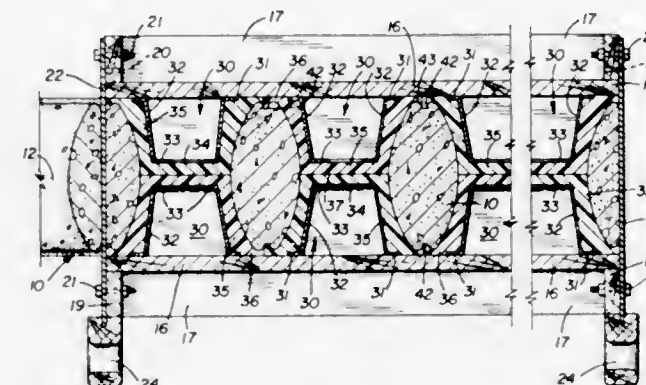
Arvin F. Liester, 2515 La Salle St., Colo. Springs, Colo.

Filed March 19, 1971, Ser. No. 126,005

Int. Cl. E04g 15/06

U.S. Cl. 249-35

12 Claims



Apparatus for concrete wall construction of either the "see through" or solid type simulating block-laid walls comprising sets of two form holder boards spaced apart transversely in selected positions, a plurality of form holders arranged in a horizontal row on each form holder board with the holders of one row opposite those of the other row, and a flexible open cell foam-like material form supported without fastening means, on each form holder, each form being provided with peripheral edge ribs which cooperate with an adjacent form to make grooves simulating mortar grooves in concrete poured around the forms arranged in back to back abutment for producing a "see through" wall or spaced for producing a solid wall. The form material is water absorbent and compressible which protects the concrete while becoming set and prevents cracking.

3,689,022

### APPARATUS FOR THE PRODUCTION OF CASE POLYMER SHEETS

Carlo Rossetti, c/o Rostero S.A., Acacias, 12, Av. Industrielle, Geneva, Switzerland

Division of Ser. No. 55,184, July 15, 1970, Continuation-in-

part of Ser. No. 880,500, Dec. 11, 1969, Pat. No. 3,551,541,

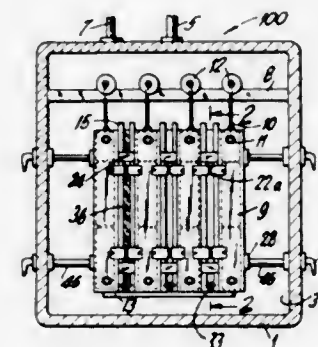
Continuation-in-part of Ser. No. 534,525, March 15, 1966,

abandoned. This application Nov. 1, 1971, Ser. No. 194,464

Int. Cl. B29d 7/08, 7/02

U.S. Cl. 249-81

2 Claims



Hollow metal plates, each formed with an interior flow passageway for circulating a fluid heat transfer medium, are used in apparatus for producing cast polymer sheets which includes a casting chamber. The plates are made of iron or preferably of a light metal, such as aluminum and aluminum alloys, and are constructed of a frame, plates and dividers secured together by epoxy resin to form a sealed flow passageway. Means are arranged to equalize the pressure in the flow passageway and the pressure in the casting chamber of the apparatus.

3,689,023

### MOLD WITH TIE ROD ASSEMBLY FOR SLOTTED BLOCK

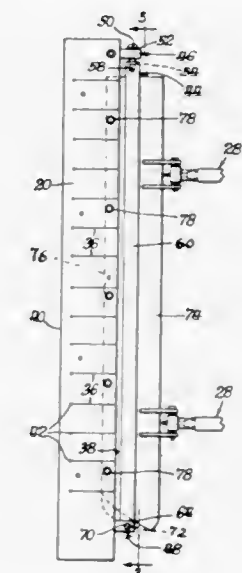
Richard Otis Peck, c/o Amsted Research Laboratory, 340 County Line Road, Bensenville, Ill.

Filed April 13, 1971, Ser. No. 133,604

Int. Cl. B22d 7/00

U.S. Cl. 249-82

7 Claims



In conjunction with a slab mold having spaced side blocks and a top, a bottom and end blocks engaged between the side blocks to define a casting cavity, an improved metallic end block is provided with a plurality of spaced, transverse slits. The end block is held in position relative to the other blocks by a supporting structure. A tie rod arrangement is secured to the upper and lower rearward portion of the end block to prevent vertical warping of the end block during the casting of a slab.

3,689,024

### FORMS FOR CASTING CONCRETE

Gerhard Notzel, Alpenblickstr. 9, 7993 Kressbronn, Germany

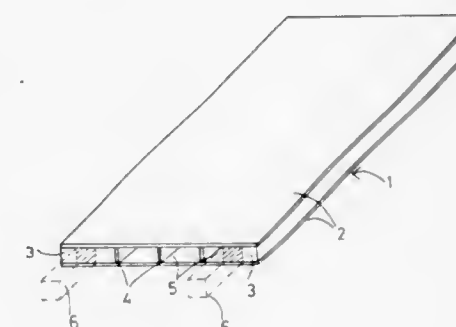
Filed Feb. 16, 1970, Ser. No. 11,645

Claims priority, application Germany, Feb. 25, 1969, P 19 09 457.6

Int. Cl. E04g 11/00

U.S. Cl. 249-189

7 Claims



A form for casting concrete comprising a pair of flat skin faces supported by an internal framework formed of at least a supporting rib along each of its longitudinal edges and an intermediate parallel strip establishing therewith at least one longitudinally extending through-channel. A movable bolt member located in each channel and extending substantially the length of the form, movable outward thereof to simultaneously serve as a supporting brace for the form and for any bridging member associated with it.

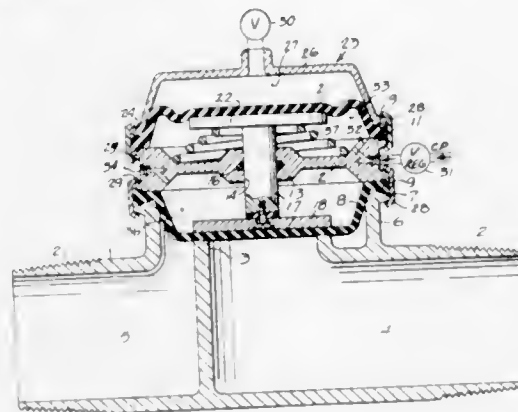


### 3,689,025 AIR LOADED VALVE

Elmer P. Kiser, P.O. Box 883, 1531 Main St., Napa, Calif.  
Filed July 30, 1970, Ser. No. 59,617  
Int. Cl. F16k 7/17

U.S. Cl. 251—25

1 Claim



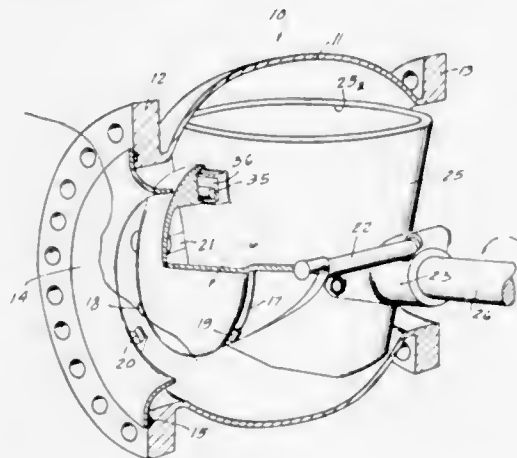
In a casing is a cell filled with predetermined air pressure constantly, one wall of the cell is a rubber diaphragm which is pressed by the air pressure in the cell against a valve stem, the valve on which bears against a second diaphragm for closing the opening of the valve seat of a conduit. The space between the rubber diaphragms is divided by a separator disk. A regulator valve controls the introduction of air pressure to the chamber between the separator disk and the first diaphragm so that when the pressure is increased so as to balance and overcome the action of the constant air pressure above the diaphragm, the water pressure lifts the valve. When the air pressure between the disk and the first diaphragm is again reduced, the constant pressure above the first diaphragm closes the valve.

### 3,689,026 PLUG VALVE

Richard E. Self, 3221 Brimhall Drive, Los Alamitos, Calif.  
Filed May 27, 1971, Ser. No. 147,429  
Int. Cl. F16k 25/00

U.S. Cl. 251—160

14 Claims



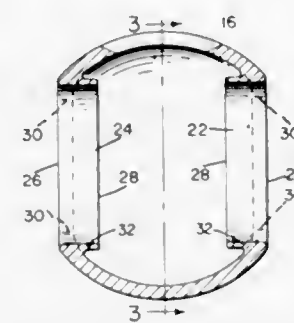
A valve structure capable of isolating substantial fluid pressure including a valve seat, a pair of grooved lugs which cooperate with a plug element supported on a pair of flexible arms such that the arms bring the plug element into camming engagement with first one and then the other of the grooved lugs to thrust the plug element securely against the valve seat, and a flow tube which carries an abutment to further thrust the plug element against the valve seat. In the open position of the valve, a flow tube is provided which communicates with the valve seat to provide an unimpeded flow path between inlet and outlet, the arrangement being such that access is provided through the entire valve body in the open position of the valve.

### 3,689,027 BALL FOR BALL VALVE

Wilfred J. Grenier, Rutland, Mass., assignor to General Industries, Inc., Worcester, Mass.  
Filed Oct. 8, 1970, Ser. No. 79,060  
Int. Cl. F16k 5/06

U.S. Cl. 251—315

7 Claims

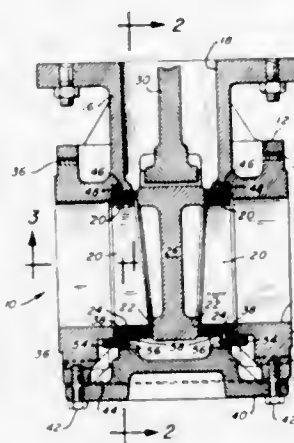


A hollow ball for a ball valve having opposite flow ports and an inwardly directed flange or lip located about the edges of each flow port, said lips or flanges being spaced by extending in a direction toward each other.

**3,689,028  
VALVE HAVING IMPROVED MEANS OF REMOVING AND REPLACING SEAT ELEMENTS**  
Harvard G. Dickenson, 649 N. Waco, Tulsa, Okla., and Dean L. DeVore, 5338 E. 22nd St., Tulsa, Okla.  
Filed Nov. 10, 1970, Ser. No. 88,386  
Int. Cl. F16k 3/12

U.S. Cl. 251—328

6 Claims



A valve having improved means of removing and replacing the seat element without having to disconnect the valve from piping or other apparatus, including a valve body having an opening in the lower portion, a seat element removably supported in the valve body having an annular body seating surface surrounding a flow passageway through the valve body, a gate member vertically positionable in the valve body between opened and closed positions, the gate member contacting the seating element seating surface when in closed position, and a removable lower cover plate sealably closing the lower opening in the valve body and permitting, when the cover plate is removed, the removal and insertion of the seating element.

**3,689,029  
RATCHET-TYPE LIFT JACK UNIT AND LIFT METHOD FOR CAMPER BODIES AND THE LIKE**  
Dale L. Bargman, Jr., Broomfield, Colo., assignor to Colorado Leisure Products, Inc., Broomfield, Colo.  
Filed March 29, 1971, Ser. No. 129,035  
Int. Cl. B66f 7/26

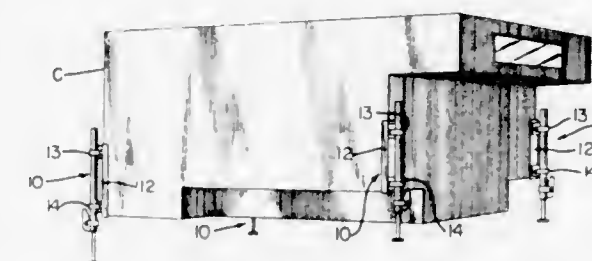
U.S. Cl. 254—45

8 Claims

A free-dropping, self-locking, ratchet-type lift jack unit is adapted for attachment to the sides or corners of a camper

body or the like, and each unit has outer and inner telescoping leg sections with the relative axial movement of the leg sections being controlled by a releasable lock arranged to permit a free-dropping movement of the inner leg section. The inner leg section is automatically locked against further movement at the end of its drop and upon the application of a load to the leg sections. Each unit is further characterized by a novel

and comprises a first opening closely conforming to the cross-sectional configuration of the cordage pull line, and a second opening closely conforming to the cross-sectional configuration of the tape pull line. In one disclosed embodiment, the two openings are spaced, and provision is made for selectively

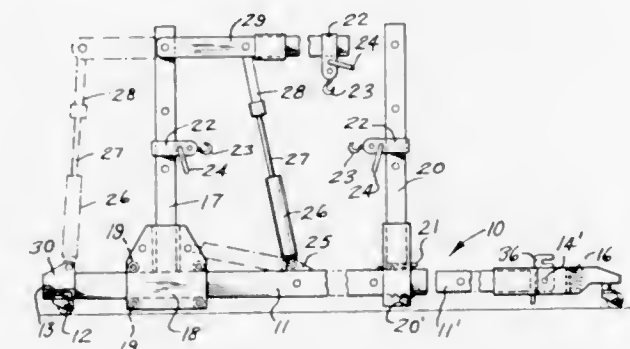


demountable handle assembly independent of the releasable lock for effecting relative axial movement between the leg sections. For raising the camper body a pair of the ratchet-type jack units mounted on the camper body will automatically extend and lock as the camper body is raised by similar or other lift means oppositely disposed from said pair of type lift jack units.

**3,689,030  
FRAME STRAIGHTENING MACHINE FOR VEHICLES AND THE LIKE**  
Charles Henry Backus, 700 Shady Glen #19, Vacaville, Calif.  
Filed March 25, 1971, Ser. No. 127,971  
Int. Cl. B66f 3/24, 3/00

U.S. Cl. 254—93 R

5 Claims



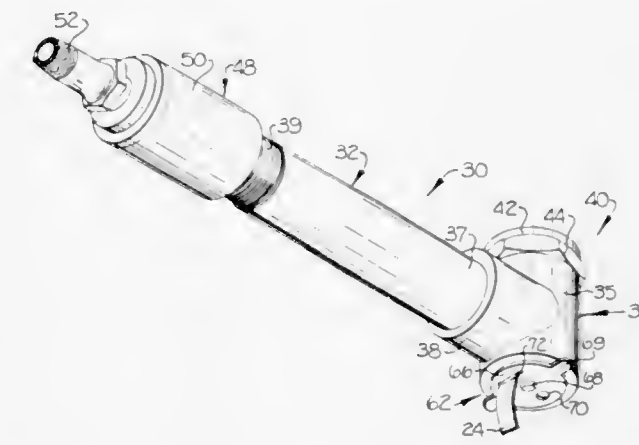
A device for straightening frames and bodies of automotive vehicles. The device includes a telescoping main frame having a hydraulically moveable upright beam and various attachments for applying pushing, pulling and other forces.

**3,689,031  
APPARATUS FOR INSTALLING PULL LINES IN CONDUITS**  
Howard G. Ruddick, and Kenneth H. Long, both of Charlotte, N.C., assignors to Jet Line Products, Inc., Matthews, N.C.  
Filed Jan. 14, 1971, Ser. No. 106,486  
Int. Cl. E21c 29/16

U.S. Cl. 254—134.4

12 Claims

An apparatus for selectively passing either a cordage pull line or ribbon-like tape pull line secured to a carrier plug through a conduit in response to a fluid pressure differential therein. The apparatus comprises a tubular conduit adapter having a wall defining a passageway for transmitting a fluid pressure therethrough, with one end of the adapter being positionable at the entrance end of the conduit and the other end of the adapter being attachable to a source of fluid pressure. A pull line entrance extends through the wall of the adapter for selective introduction into the passageway of either the cordage or tape pull line without undue loss of fluid therethrough,



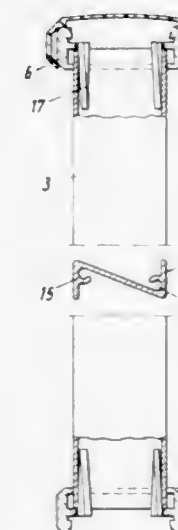
covering either one or both of the openings. In a second embodiment, the two openings have portions thereof coinciding such that the total area of the two openings is less than the sum of their individual areas. The second embodiment also includes a cover hingedly mounted adjacent the two openings to selectively close the same.

**3,689,032  
RAILING**  
Ernst Von Wedel, Senne, and Siegfried Rodefeld, Grossdornberg, both of Germany, assignors to Heinz Schurmann & Co., Bielefeld, Germany  
Filed Feb. 18, 1970, Ser. No. 12,414  
Claims priority, application Germany, Feb. 22, 1969, P 19 09 049.4

Int. Cl. E04h 17/16

U.S. Cl. 256—22

16 Claims



Upper and lower rails are spaced from one another and each comprises at least one major longitudinal surface with openings provided in the major surfaces. At least one upright rail support member interconnects the upper and lower rails and connecting portions of this support member extend at least in part into the openings and are wedgedly connected to the respective rails. Anchoring members for anchoring the thus assembled rail are provided at longitudinally spaced locations of the rails.



3,689,033

**MAGNETIC STIRRER DEVICE**

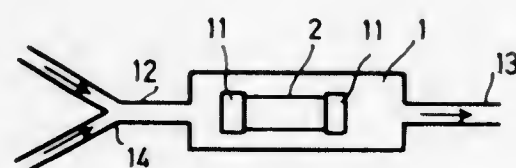
Ola Ragnar Holmstrom, Stockholm, and Kurt Ake Lundin, Kallhall, both of Sweden, assignors to LKB-Produkter AB, Bromma, Sweden

Filed Aug. 10, 1970, Ser. No. 62,478

Int. Cl. B01f 13/08

U.S. Cl. 259—5

6 Claims



A magnetic stirrer device comprising a transversally magnetized rod disposed in a mixing chamber and means for generating an alternating transversal magnetic field within the chamber so as to obtain a rotation of the rod and a stirring of the fluids in the chamber.

3,689,034

Patent Not Issued For This Number

3,689,035

**MULTIPLE-SPINDLE MIXING KNEADER APPARATUS**

Heinz List, St. Jakobstrasse 43, Pratteln, Switzerland

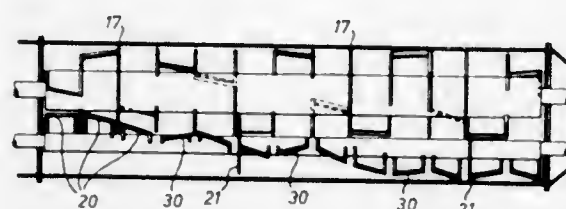
Filed May 17, 1971, Ser. No. 144,048

Claims priority, application Switzerland, May 20, 1970, 7660/70

Int. Cl. B01f 7/00

U.S. Cl. 259—104

5 Claims



A multiple-spindle mixing kneader, especially for carrying out thermal processes in liquid, pasty and solid phases, which is of the type comprising a stationary, generally horizontally disposed housing in the form of a drum member having a substantially centrally arranged stirrer shaft member upon which there are mounted radially extending members, typically discs or disc segments. Kneading bar members are arranged between the disc members or segments, also between the latter and the stirrer or agitator arms which move past the end walls of the housing, these kneader bar members wiping the inner surfaces of such housing. Further, a second stirrer shaft member is arranged parallel to the first stirrer shaft member in a further housing disposed parallel to the first housing. This second shaft member possesses stirrer arm members which, on the one hand, clean the inner surfaces of the aforementioned further housing and, on the other hand, also clean the shaft member and the lateral disc surfaces of the first stirrer shaft member. The invention specifically contemplates the provision of deflecting means for the material undergoing treatment in order to deflect such material from one cylindrical housing portion into the other, such deflecting means comprising deflecting discs mounted at the stirrer shaft members at a predetermined axial spacing from one another.

3,689,036

**AIR-FUEL MIXTURE ENRICHING DEVICE FOR CONSTANT VACUUM TYPE CARBURETORS**

Kunio Kikuchi, and Yuzuru Yanaka, both of Odawara, Japan, assignors to Mikuni Kogyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 868,187, Oct. 21, 1969, abandoned.

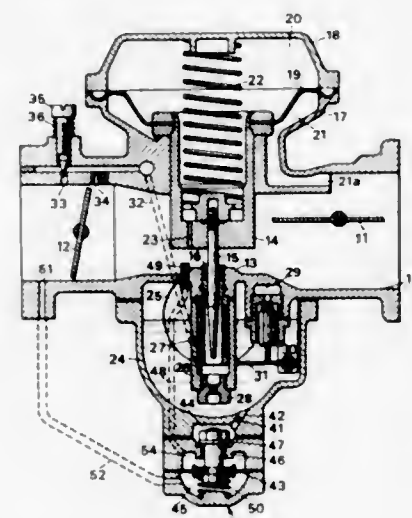
This application Jan. 10, 1972, Ser. No. 216,720

Claims priority, application Japan, Oct. 22, 1968, 43/92031

Int. Cl. F02m 9/06

U.S. Cl. 261—34 A

4 Claims



An air-fuel mixture enriching device for constant vacuum type carburetors adapted to be rendered operative by responding to a negative pressure produced in the manifold of the engine or the movement of a throttle valve when the opening of the throttle valve exceeds a predetermined level. The device includes a secondary fuel outlet port which is provided separately and independently of the main nozzle disposed below the bottom of the vacuum piston and which opens into the induction passage in a suitable position between the main nozzle and throttle valve.

3,689,037

**HUMIDIFIER UNIT FOR WARM AIR HEATING SYSTEMS**

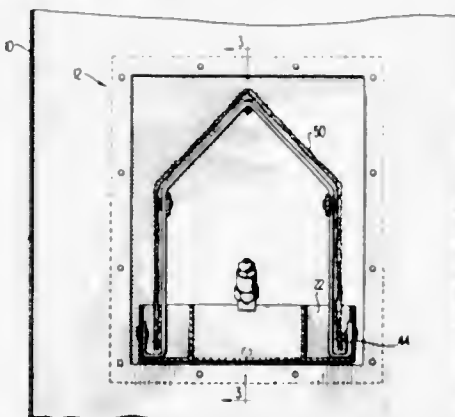
Francis M. Payne, Annandale, Va., assignor to The Spra-Kleen Company, Inc., Washington, D.C.

Filed Sept. 14, 1970, Ser. No. 71,879

Int. Cl. B01f 3/04

U.S. Cl. 261—105

13 Claims



The humidifier includes a generally rectangular drainage pan having a channel-shaped frame surrounding a central opening. The drainage pan carries an end plate which mounts the humidifier in a vertical air duct in a warm air heating system. The framework above the drainage pan supports a hood formed of pervious material which hood, in conjunction with the end plate and drainage pan, forms an enclosure. A water spray nozzle is located within the enclosure in position to spray a water mist towards the pervious material and into the flow of air passing vertically through the opening in the drainage pan and through the pervious material.

3,689,038

**DYNAMIC GAS FLOW APPARATUS**

Aaron J. Martin, Kennett Square, Pa., assignor to Mariabs, Inc.

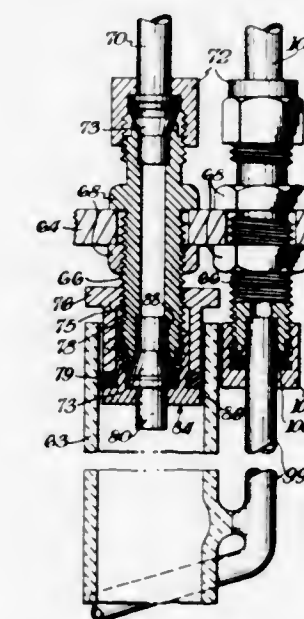
Division of Ser. No. 855,641, Sept. 5, 1969, Pat. No.

3,618,911. This application April 13, 1971, Ser. No. 133,669

Int. Cl. F27b 3/00

U.S. Cl. 263—2

4 Claims



Various gas mixing apparatus including permeation tubes, diffusion tubes, and permeation wafers and their associated housing are adapted to be housed in an oven. The oven has a cover in which are mounted a pair of annularly disposed sleeves, one being flanged, to retain a sealing O-ring. The sleeves are adapted to fit within a mixing tube in which the permeation or diffusion tubes are positioned. The two sleeves can be counter rotated to compress the O-ring and effect a seal with the inner wall of the mixing tubes. This renders the mixing tube easy to remove and replace.

3,689,039

**METHOD OF HEATING OXYGEN-CONTAINING GASES**

Arnold W. Kilgren, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

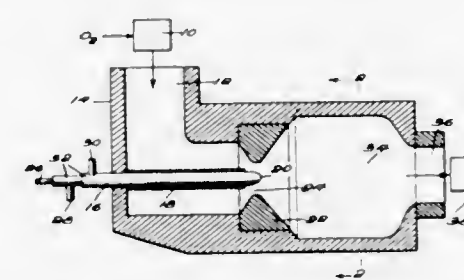
Division of Ser. No. 816,962, April 17, 1969, Pat. No.

3,632,313. This application Nov. 25, 1970, Ser. No. 92,903

Int. Cl. F231 15/00

U.S. Cl. 263—52

4 Claims



An oxygen-containing gas is heated to a temperature between 1,200° and 1,800° C. to be used in oxidizing titanium chloride to titanium dioxide. The oxygen containing gas is first preheated by known means above the ignition temperature of a fuel used in a burner apparatus having a fuel nozzle. The oxygen-containing gas is then passed rectilinearly around the nozzle between 350 and 1,000 feet per second thereby preventing flame eddies. The oxygen-containing gas is commingled with fuel distribution by the nozzle in a combustion zone resulting in an elevation of the gas temperature and is then transferred to a reaction zone where the oxidation process takes place.

3,689,040

**PORTABLE SPACE HEATER AND GAS BURNER FOR THE SAME**

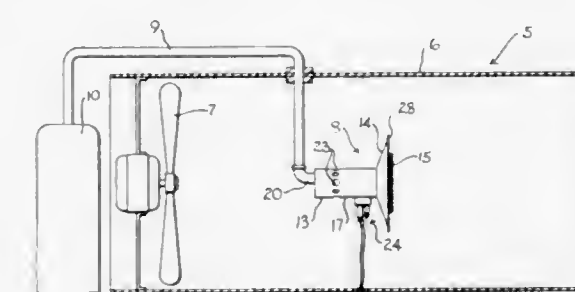
Douglas R. Reich, Menomonee Falls, Wis., assignor to Commercial Propane Corp., Milwaukee, Wis.

Filed Nov. 30, 1970, Ser. No. 93,765

Int. Cl. F231 9/04

U.S. Cl. 263—19 A

5 Claims



A gas burner to be swept by a high velocity air stream has a cup-shaped primary combustion chamber opening forwardly to a coaxial, annular, radially outwardly opening secondary combustion chamber. The primary combustion chamber has a gas inlet in its closed rear end and air inlets in its cylindrical side wall. The secondary combustion chamber is defined by a large annular flange on the front of the primary combustion chamber and a smaller coaxial baffle disc spaced forwardly of the flange.

3,689,041

**METHOD OF HEATING STEEL INGOTS SOAKING PITS AND COMBUSTION SYSTEM FOR PERFORMING SAID METHOD**

Carlo Pere, 2, Via Mura del Prato, and Fulvio Tornich, 18, Via Bottini, both of Genoa, Italy

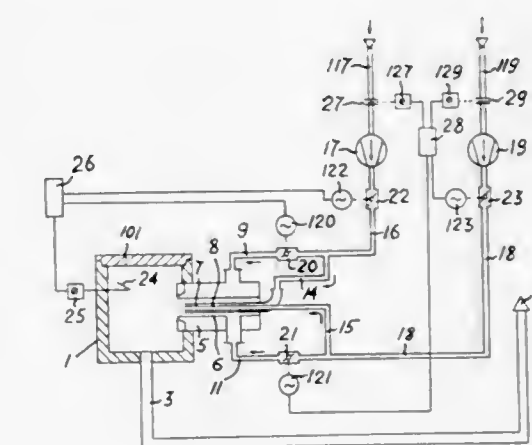
Filed Nov. 10, 1970, Ser. No. 88,281

Claims priority, application Italy, Nov. 15, 1969, 7448 A/69

Int. Cl. F27b 3/02

U.S. Cl. 263—40 R

10 Claims



In a soaking furnace for heating metal parts, a burner works at full power during a heating-up period and at reduced power during a soaking period. Combustion gases are fed into the furnace with such velocity that the resulting turbulence causes uniform temperature distribution. When the burner is operated at reduced power, the total amount of fuel and air supplied is reduced but the speed of admission to the furnace is increased to maintain turbulence and uniform temperature distribution. The burner includes two concentric parts connected separately to common fuel air manifolds so that one part may be switched off thereby causing higher rate of flow to the other burner part.



3,689,042

## AUTOMATIC CONTROL APPARATUS FOR SOAKING PIT FURNACES

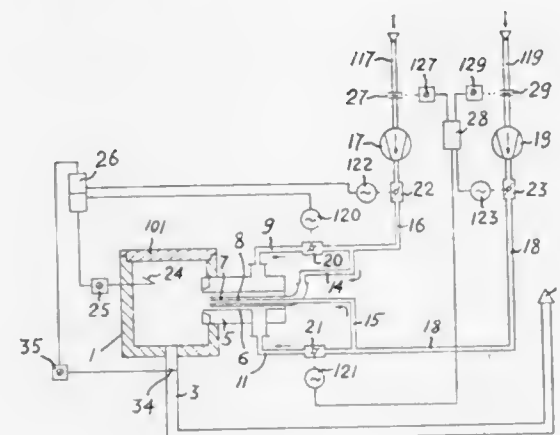
Carlo Pere, 2, Via Mura del Prato; Fulvio Tornich, 18, Via Bottini, and Tranquillo Macor, 22, Via Piaggio, all of Genoa, Italy

Filed Nov. 10, 1970, Ser. No. 88,325

Claims priority, application Italy, Nov. 17, 1969, 7451 A/69  
Int. Cl. F27b 3/02

U.S. Cl. 263—40 R

1 Claim



An automatic regulating device for a pit furnace for heating metal ingots includes two temperature sensors for controlling the power of the pit burner. One sensor detects the temperature of the furnace walls and controls the burner in a heating-up period of the furnace. A second sensor detects the temperature of the combustion gases and controls the burner during the soaking period. The second sensor is located in the outlet passage of the furnace for combustion gases.

3,689,043

Patent Not Issued For This Number

3,689,044

## METHOD OF OPERATING A CEMENT KILN

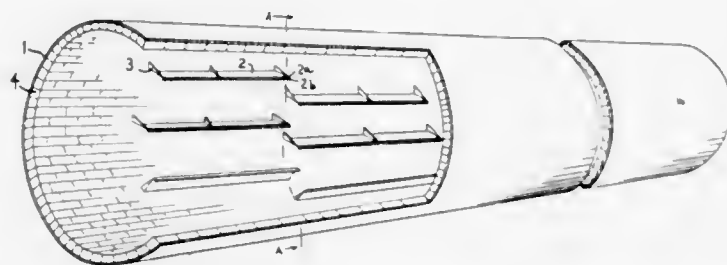
Richard P. Kistler, Zanesville, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 21, 1970, Ser. No. 99,811

Int. Cl. C04b 7/44

U.S. Cl. 263—53 R

4 Claims



A new cement kiln and method of heating cement kiln feed is described which involves providing a plurality of circumferential, elongated, lifting vanes near the gas exit end of the kiln. The edge of the last row of lifters is within three feet of the end of the kiln chain system and the double rows of lifters occupy an area representing the upper 2 to 10 percent of the total kiln length. The lifters drop kiln feed through the kiln gases as the gases pass from the lower to the upper end of the kiln and heat is transferred from the gases to the solids. A considerable reduction in the kiln exit gas temperature is accomplished using this method of imparting heat to kiln feed and a reduction in the quantity of fuel needed to supply heat to the kiln is also realized.

3,689,045  
PULVERIZED FUEL DELIVERY SYSTEM FOR A BLAST FURNACE

Earl E. Coulter, 1680 Orchard Drive, Akron, Ohio; Fritz L. Hemker, Road 3, Box 212, Wadsworth, Ohio, and Elias A. Kazmierski, 685 Center Road, Akron, Ohio

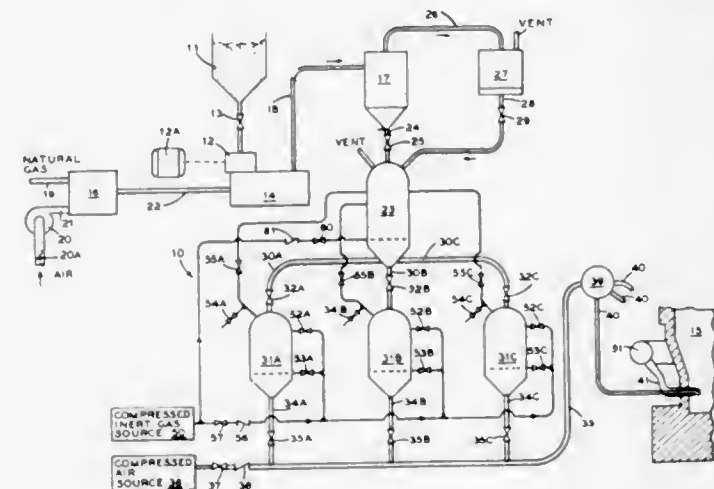
Continuation of Ser. No. 799,773, Feb. 17, 1969, abandoned.

This application June 3, 1971, Ser. No. 149,794

Int. Cl. F27b 1/20

U.S. Cl. 266—28

5 Claims



A pulverized fuel delivery system for a blast furnace in which pulverized coal is delivered in dense phase fluidized form into the blast furnace from gas pressurized tanks that are placed in communication, one at a time, in cyclical sequence with a pneumatic transport means. The tank gas pressure is regulated in accordance with the blast furnace wind rate to control the weight flow rate of pulverized coal into the furnace and the transport gas flow rate is regulated in accordance with the fuel weight flow rate to maintain a prescribed transport gas flow rate per pound of coal delivered to the furnace.

3,689,046

## APPARATUS FOR PURIFYING METALLIC MELTS IN A VACUUM

Edouard De Bie; Boris Tougarinoff, both of Antwerp, Belgium; Franz Sperner, and Justus Moll, both of 645 Hanau/Main, Germany, assignors to Leybold-Heraeus Verwaltung GmbH, Cologne-Bayental, Germany, and Metallurgie Hoboken, S. A., Belgium

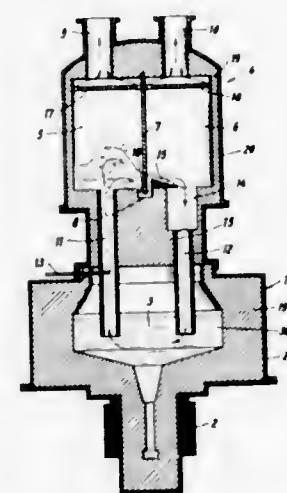
Filed March 13, 1970, Ser. No. 19,331

Claims priority, application Germany, March 14, 1969, P 19 12 936.3

Int. Cl. C21c 7/10

U.S. Cl. 266—34 V

6 Claims



Apparatus for purifying and degassing molten metals in vacuo, and continuously recycling the molten metal by means of barometric intake pipe and a barometric discharge pipe.

3,689,047

## EXPANSIBLE PRESSURE-SEALING DEVICE

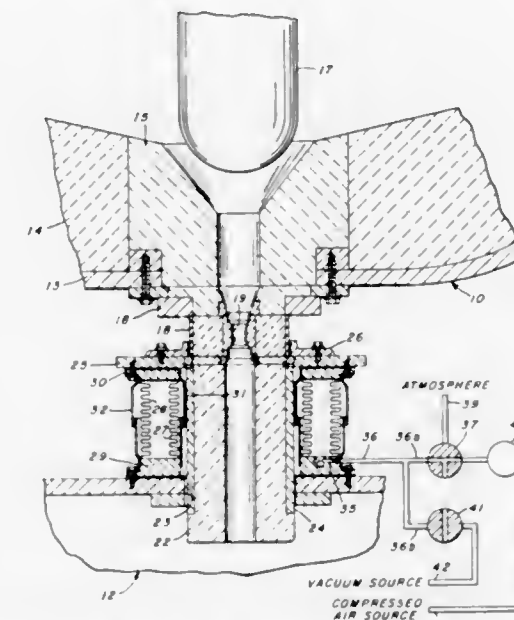
John A. Grosko, West Mifflin, Pa., assignor to United States Steel Corporation

Filed Dec. 7, 1970, Ser. No. 95,665

Int. Cl. C21c 7/10

U.S. Cl. 266—34 V

1 Claim



An expansible pressure sealing device for enclosing a stream of liquid from contact with the atmosphere as the stream is poured into a chamber. Intended particularly for enclosing a stream of metal as it is poured from a ladle into a vacuum degassing chamber. Device includes an axially movable tube positioned in the inlet of the chamber, and inner and outer spaced-apart concentric bellows around the tube. Pressure can be applied to the space between the two bellows for expanding them and thus uniformly moving a flange at the top of the tube into sealing engagement with the pouring vessel.

3,689,048

## TREATMENT OF MOLTEN METAL BY INJECTION OF GAS

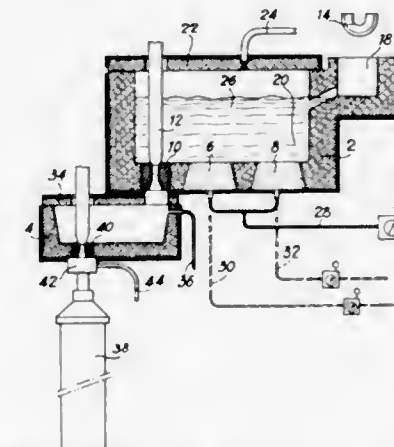
Jean Foulard, Ablon, and Jean Galey, Saint Maur Des Fosses, both of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude

Division of Ser. No. 774,139, Nov. 7, 1968, abandoned. This application March 5, 1971, Ser. No. 121,501

Int. Cl. C22b 9/00

U.S. Cl. 266—34 T

7 Claims



Molten metal is treated by flowing gas through it. The container for the treatment is provided with a fore hearth, with a cover and with means for blowing the gas in fine bubbles into the metal. From the container the treated metal flows into a hopper provided with a cover having means for flushing the hopper with an inert gas.

3,689,049

## METHOD AND APPARATUS FOR SEPARATING METAL FROM DROSS

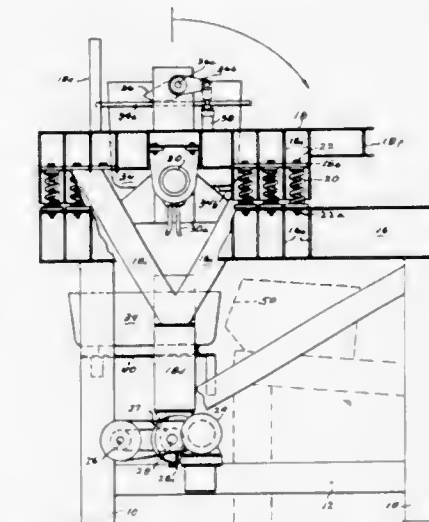
Thomas H. Brumagin; John M. Dickson; Harley E. Northrop, all of Westfield, N.Y.; Stanley H. Brown, Newark, Ohio; Lynn W. Campbell, Newark, Ohio, and Elmo W. Friesz, Newark, Ohio, assignors to the Ajax-Newark, Inc., Westfield, N.Y.

Filed April 4, 1969, Ser. No. 813,645

Int. Cl. C22c 21/00

U.S. Cl. 266—37

13 Claims



A pot for receiving molten metal and slag, which may be aluminum and dross is spring supported on a frame which is provided with variable frequency means to vibrate it. The frame which supports the pot includes a sub-frame that holds the pot which is pivotally mounted in the spring supported frame with means for tilting the pot while it is being vibrated. The pot is vibrated in the upright and tilted position. The bottom of the pot is provided with a tap hole, from which the molten metal may be drained into a mold. It may also be tilted far enough to discharge the dross or slag from out of the top of the pot onto a comminutor and cooler. The removal of the molten metal enhances the subsequent cooling.

3,689,050

## APPARATUS FOR CONTROLLING DISPENSING OF MOLTEN METAL

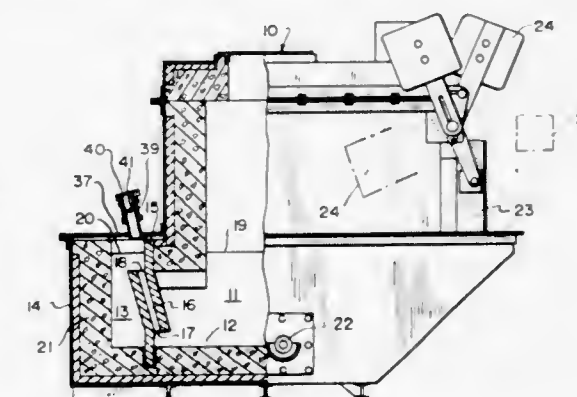
John N. Acker, Hoffman Estates, and Carl H. Ulbrich, Northbrook, both of Ill., assignors to O. H. Warwick Company

Filed Nov. 24, 1970, Ser. No. 92,433

Int. Cl. C21b 7/14

U.S. Cl. 266—38

6 Claims



An apparatus for dispensing molten metal including means for transferring metal from a charging reservoir which may be part of a metal melting furnace to a dispensing chamber by fluid pressure such as compressed air, a supply passage means



through which the molten metal is transferred from the charging reservoir to the dispensing chamber and dispensing passage means for transferring molten metal from the dispensing chamber, with both passage means being made of heat conducting material resistant to the molten metal and in thermal contact therewith. The heat conducting supply passage means is in thermal contact with the molten metal in both the reservoir and chamber.

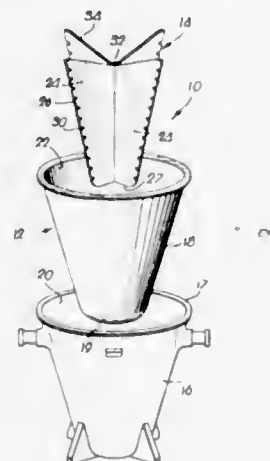
3,689,051

# LINER AND DIVIDER STRUCTURE FOR SLAG POTS OR THE LIKE

Alfred W. Miller, 509 Donnelly, Kansas City, Mo.  
Filed Nov. 23, 1970, Ser. No. 91,944  
Int. Cl. B28b 7/08

U.S. Cl. 266—39

4 Claims



An expendable, pre-molded, heat-resistant liner and divider assembly for use with a slag pot or the like adapted to receive molten materials for facilitating the removal and recovery of said materials from the pot after solidification of said materials and the manipulation and transportation of the latter when free of the pot. The liner employs a one-piece cup-like unit adapted to be inserted into the pot and to complementally engage the inner surface of the pot. The divider may employ a one-piece unit having a plurality of intersecting partition elements having outer surfaces complementally engaging the inner surface of the liner or of the pot when no liner is used or a multiple piece unit having a plurality of partition elements which may be coupled together during installation to present a similar divider configuration.

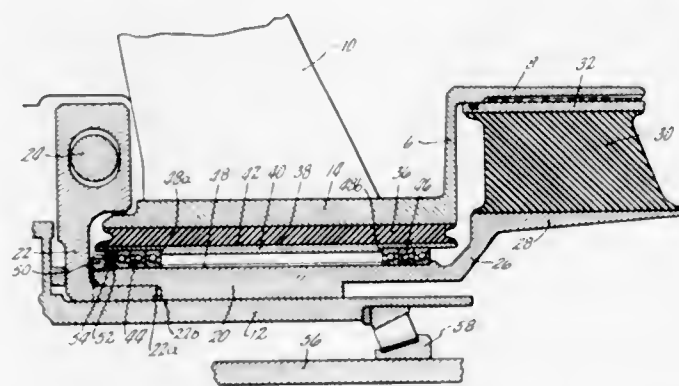
3,689,052

# TORSION BUSHING

Brian Leyland Carnell, Milford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.  
Filed Sept. 15, 1970, Ser. No. 72,476  
Int. Cl. F16f 1/16

U.S. Cl. 267—57.1

9 Claims



A support arm for the car body of a railway vehicle has a hub provided with an annular resilient mounting on a bolster

shaft which includes a bush for carrying radial loads and absorbing radial vibrations that is bonded to an outer housing forming the hub of the arm and is also bonded to an inner sleeve. The sleeve is supported by antifriction bearings on an inner housing which is adjustably secured to the shaft. The inner and outer housings have annular extensions of increased diameter to which a torsion bush of increased radial thickness is attached. The torsion bush is made of softer rubber than the radial bush and provides optimum performance in resisting torsion loads.

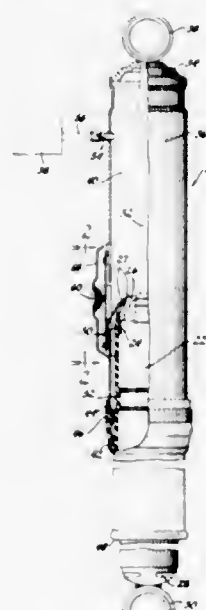
3,689,053

# VEHICLE LEVELING UNIT WITH INTEGRAL CONTROL VALVE

Joseph W. Wanner, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.  
Filed Oct. 5, 1970, Ser. No. 77,829  
Int. Cl. F65 5/00

U.S. Cl. 267—65

8 Claims



In preferred form, a combination shock absorber and air spring unit of the type including an outer cylindrical member located in telescoping relationship with an outer cylindrical member of the shock absorber which has a piston rod directed therefrom connected to the outer member. One of the telescoping members carries a sealing element that movably seats against the other member to define a sealed variable volume, inflatable chamber having an inlet thereto. A resilient valve seat element on the outer member defines an exhaust path for fluid flow from the chamber. A movable spring valve member is carried on the outer member in spaced relationship to the valve seat element for controlling exhaust flow therethrough. The spring valve member is operated by an actuating arm to move away from and to close against the resilient valve seat for controlling the pressure level in the chamber.

3,689,054

# COMBINED VEHICLE CHASSIS AND AIR SUSPENSION SYSTEM

Rene Goulrand, New York, N.Y., assignor to Mercadante, Greenwich, Conn.

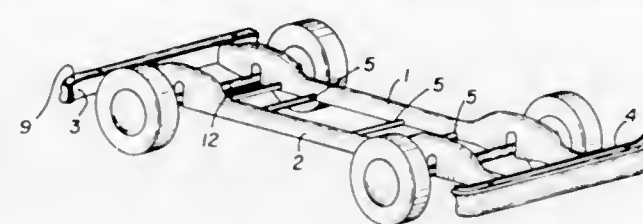
Filed Jan. 28, 1971, Ser. No. 110,703  
Int. Cl. B60r 19/00

U.S. Cl. 267—68

9 Claims

A combined vehicle chassis and air suspension wherein elongated air bags having a substantially circular cross-section are physically located within and supported by inverted, U-shaped chassis members. Under no load conditions, the air bags contact the chassis members on only a portion of the circumference and as the load increases, the contact surface between the air bag and the chassis members increases,

thereby increasing spring stiffness. The side portions of the inverted U-shaped chassis members are spaced from the sides of the air bags under no load conditions. Under heavy load and when the car turns around a curve, the side portions of the U-shaped members prevent side-sway of the vehicle. Air-



bumpers are provided which are coupled to the air system of the suspension system. The air in the air-bumpers acts as an additional reservoir for the air bags of the suspension system to effectively soften the ride of the vehicle and additionally, absorb vehicle impacts.

3,689,055

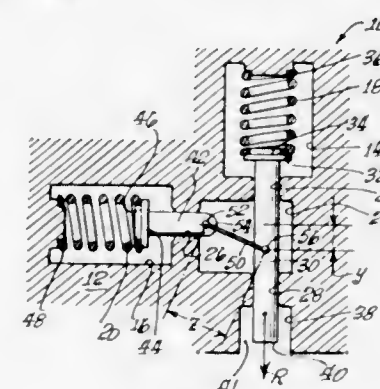
# LINEAR RATE SPRING MECHANISM

Joseph J. Gende, Moline, Ill., assignor to Whittaker Corporation

Filed Nov. 16, 1970, Ser. No. 89,577  
Int. Cl. F16f 13/00

U.S. Cl. 267—150

5 Claims



A device which may take the form of a pressure regulator comprising (1) a spring-biased main shaft slidably positioned within a housing for reciprocal movement along its longitudinal axis and (2) one or more auxiliary springs disposed within the housing at substantially right angles to the main shaft and pivotally connected to the latter through slidable auxiliary shafts and links so that extensive and contractive movement of the auxiliary springs is axial and at right angles to the main shaft thereby providing the latter with a linear (including constant) output.

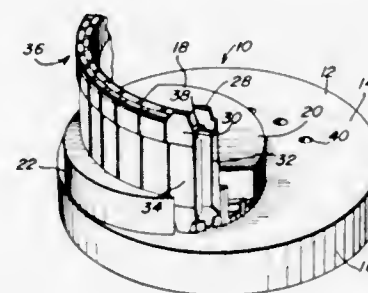
3,689,056

# JIG FOR WORKING ON WATCHBANDS

Ervin J. Wiltgen, P.O. Box 554, Algona, Iowa  
Filed Aug. 17, 1970, Ser. No. 64,437  
Int. Cl. B25b 1/20; B23p 19/04; B23q 3/18

U.S. Cl. 269—10

2 Claims



A workpiece support including a generally horizontal upper surface. The support includes an integral vertically short cylindrical projection which extends above the upper surface and

the projection has a pair of side-by-side wide and narrow upwardly opening slots or grooves formed therein with the opposite ends of the slots opening outwardly through opposite side portions of the cylindrical projection and the bottom wall surfaces of the slots coplanar with or spaced at least slightly above the upper surface of the support from which the projection extends. In addition, the bottom wall of each slot includes a vertically short upwardly projecting central rib which extends at least substantially the full length of the corresponding slot.

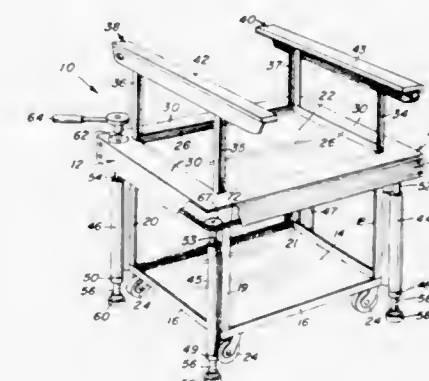
3,689,057

# AUTOMOBILE BODY WORKTABLE

Burton E. Webster, 6 Thorpe Ave, St. Albans, Vt.  
Filed Sept. 11, 1970, Ser. No. 71,496  
Int. Cl. B23q 37/00, 3/18; B25h 5/00

U.S. Cl. 269—17

1 Claim



This disclosure relates to a worktable for use in supporting damaged automobile body parts while they are being repaired in an automobile body shop. The worktable includes parallel workpiece support arms which are disposed above a frame having horizontal upper and lower platforms separated by vertical spacing members. Various automobile body parts may be clamped to the support arms, thereby permitting a workman access to the entire workpiece. The frame is mounted on caster means which permit the worktable to be moved about the body shop. In order to provide a rigid workbench, the frame member has adjustable legs and a ratchet mechanism to selectively raise and lower the worktable frame so that the castor means can be disengaged from the shop floor when desired.

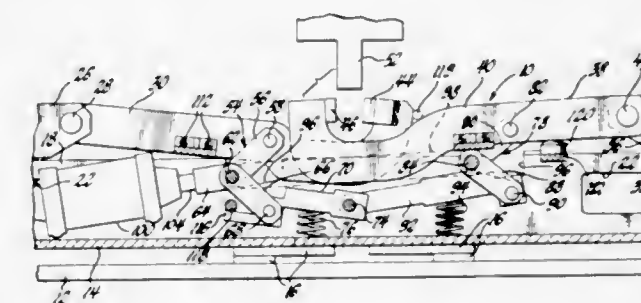
3,689,058

# TOGGLE CLAMP

Josef F. Schraner, Mount Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.  
Filed Nov. 19, 1970, Ser. No. 90,949  
Int. Cl. B25b 1/04, 1/14

U.S. Cl. 269—34

3 Claims

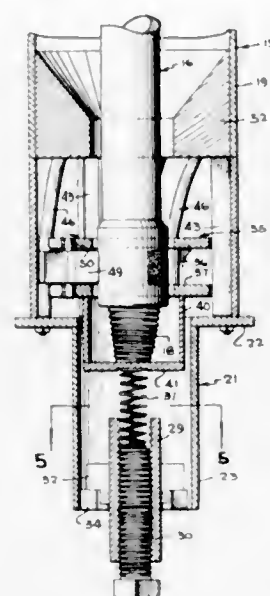


A toggle clamp includes a base that pivotally supports a pair of jaws which have respective overlapping portions that sup-



port respective clamping portions. Movement of the jaws between an unclamped position and any one of a plurality of clamped positions, in which the clamping portions cooperate in a variably spaced clamping relationship, is controlled by a pair of toggle linkages respective to the jaws. Each linkage includes first and second links which are coaxially pivoted to each other at respective ends thereof and to common connecting links that extend between the linkages to coordinate the movements thereof. The other ends of the first links are pivoted to the respective jaws and the other ends of the second links are pivoted to respective ends of respective support links. The other ends of the support links are coaxially pivoted to the base and a pair of helical springs extends between the base and the support links to selectively and alternately bias the linkages overcenter to either folded released positions or generally unfolded unreleased positions. With the linkages in the released positions, the jaws are positioned in the unclamped position. Actuation of an air cylinder bodily shifts the linkages overcenter from the released positions to the unreleased positions in which the jaws are positioned in the clamped position providing the required spaced clamping relationship.

and be moved by such article to close gripping jaws or the like against the article. Resilient means is provided to disengage



3,689,059

## LAUNDRY FOLDING ACCESSORY

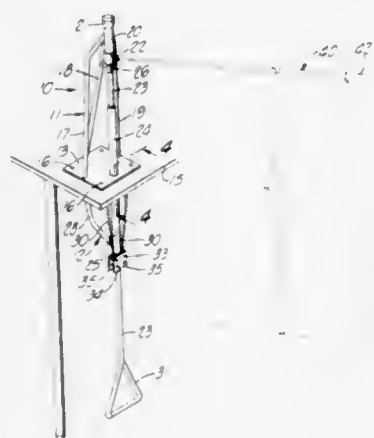
Henry W. Gross, 314 W. Chartres, Anaheim, Calif.

Filed Aug. 5, 1970, Ser. No. 61,274

Int. Cl. B25b 1/02; B23q 3/02; B25b 1/04

U.S. Cl. 269—100

1 Claim



A laundry folding accessory having normally closed laundry clamping jaw means mountable in an upright position and including foot manipulatable means for operating the clamping jaw while the hands are engaged in folding manipulations. The accessory comprises a unitary assembly readily securable to a table top or a wall-mounted bracket.

3,689,060

## RETAINER DEVICE

William Burton Hensley, Jr., 7016 Asher St., Metairie, La.

Continuation-in-part of Ser. No. 527,400, Jan. 3, 1966,

abandoned. This application Aug. 19, 1970, Ser. No. 65,253

Int. Cl. B25b 5/08; B23p 19/00; E21b 19/16

U.S. Cl. 269—217

29 Claims

A clutch-like device for gripping an article such as the end of a section of drill pipe, including a plate or similar movable means positioned to receive a part of the article to be gripped

the gripping jaws when the pressure of the article against the plate or other movable means is removed.

3,689,061

## SYSTEM FOR FOLDING NAPKINS

Ernst Daniel Nystrand, Green Bay, Wis., assignor to Paper

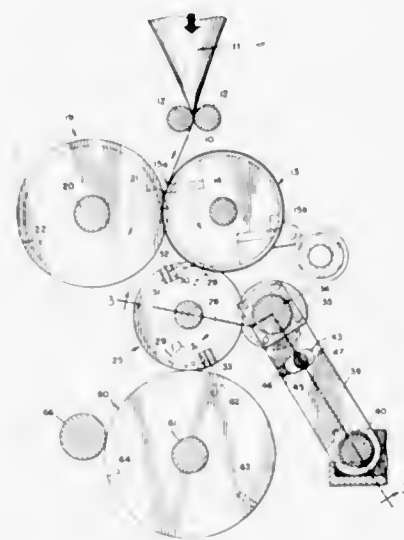
Converting Machine Company, Inc., Green Bay, Wis.

Filed July 2, 1970, Ser. No. 51,810

Int. Cl. B65h 45/22

U.S. Cl. 270—66

9 Claims



A system for folding napkins feeds a continuous web over a folding board for producing a longitudinal fold in the web, the web is then severed transversely to form discrete segments which are transversely folded and creased by a first vacuum folding roll, the crease occurring transversely at a location intermediate the first transverse fold and the opposite edge of the segment. A second vacuum folding roll rotating adjacent the first then lifts the creased segment from the first folding roll at a location adjacent the crease to fold the segment along the crease line and thereby form an eight-ply napkin.

3,689,062

## SHEET FEED DEVICE FOR PRINTING MACHINES AND THE LIKE

Minoru Suzuki, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

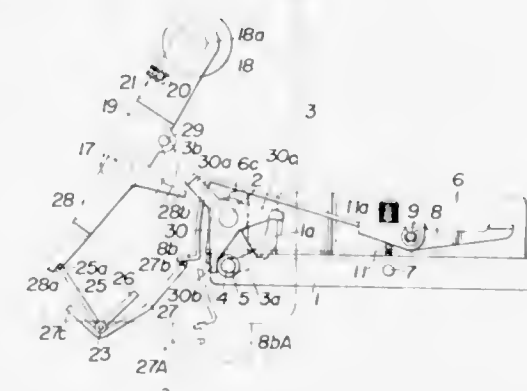
Filed Nov. 3, 1970, Ser. No. 86,424

Claims priority, application Japan, Nov. 15, 1969, 44/92012; Nov. 15, 1969, 44/109140

Int. Cl. B65h 3/56

U.S. Cl. 271—36

10 Claims



A pair of sheet hold-down members, provided with respective sheet-engaging pawls, are moved upward simultaneously upon actuation of a lifting member automatically held in its operative position by holding means. The holding means are released, to permit movement of the lifting member to an inoperative position, responsive to movement of a sheet feed roller from a lifted inoperative position downwardly into engagement with a stack of sheets. If the sheet feed device has a retractable sheet feed tray, the holding means for the lifting member is released responsive to movement of the tray to its retracted position, for movement of the lifting member to its inoperative position.

3,689,063

## FILM SHEET ADVANCEMENT APPARATUS

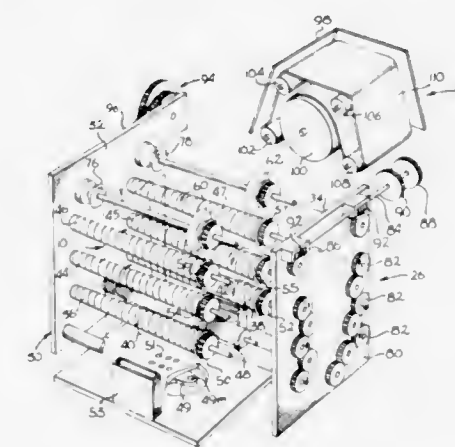
Gunter Schmidt, Malibu, Calif., assignor to Productron, Incorporated, Los Angeles, Calif.

Filed April 19, 1971, Ser. No. 135,102

Int. Cl. B65h 5/06

U.S. Cl. 271—51

13 Claims



Apparatus for developing a film chip, including transport units for advancing a chip through tanks of processing chemicals and transfer units for receiving a film chip rising out of one transport unit and moving it over and down into the next transport unit in the next tank. Each transport unit includes several pairs of laterally spaced screws for engaging opposite edges of the film chip, so that as the screws rotate, the chip is slowly advanced along the tank. A raising wheel is positioned at one end of each screw to engage an edge of the film chip, the wheels rotating in directions to move the chip upwardly out of the tank. Each transfer unit includes a roller and a flat

belt that moves in an endless path over the roller, so that a film chip is received between the roller and belt and is moved in an arc to the next tank.

3,689,064

## PAPER FEED ARRANGEMENT

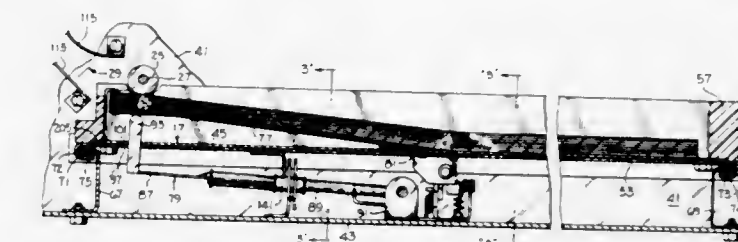
Henry R. Kuksa, Chicago, Ill., assignor to SCM Corporation, New York, N.Y.

Filed May 5, 1969, Ser. No. 821,763

Int. Cl. B65h 1/04, 1/12

U.S. Cl. 271—62 A

5 Claims



A photocopying machine is provided with a paper feed arrangement wherein a stack of sheets is supported on a floor of a paper feed tray located on a shelf at an operating station beneath paper feed rollers for advancing the sheets from the tray. The forward end of the stack is supported by a plate hingedly connected to the floor, and an upwardly biased lifting member extends upwardly through openings in the shelf and the floor of the tray to lift the forward end of the stack into engagement with the feed rollers at a feeding position. The tray is provided with corner separators to separate an advancing topmost sheet from the remainder of the stack, and the stack is confined between side walls of the tray which guide the sheets being advanced by the feed rollers. The paper feed tray is movable from the operating station to a loading station outside the photocopying machine to facilitate loading another stack of sheets into the tray. To enable sheets of different widths to be used in the photocopying machine, the paper feed arrangement is provided with locating means for enabling paper feed trays accommodating sheets of different widths to be interchangeably placed on the shelf and properly positioned thereon for operation at the operating station.

3,689,065

## TICKET READER

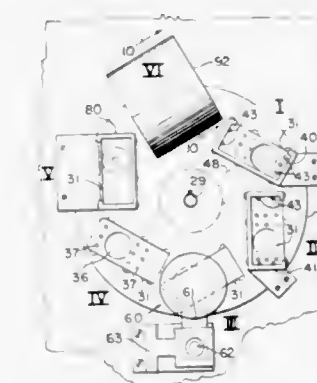
Pierre G. Foret, Sudbury, and John W. Donohoe, Natick, both of Mass., assignors to P. G. Foret Inc., Sudbury, Mass.

Filed July 20, 1970, Ser. No. 56,281

Int. Cl. B65h 5/22, 29/24, 29/32

U.S. Cl. 271—74

6 Claims



A ticket reader which has a rotatable turret and a vacuum system for moving tickets between different stations, one or more of the stations being adapted to provide tickets, one of the stations including a reader for reading the tickets, and a plurality of the stations adapted to receive the tickets after they have been read and interpreted.



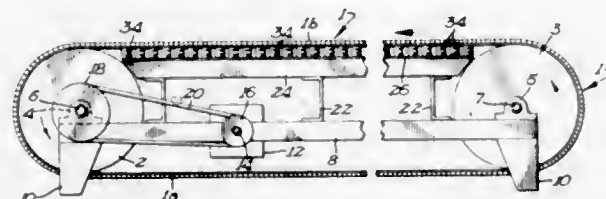
3,689,066

**TREADMILL EXERCISING DEVICE WITH YIELDABLE BELT SUPPORT**

Oscar M Hagen, 116 S. 23rd St., La Crosse, Wis.  
Filed Sept. 4, 1970, Ser. No. 69,574  
Int. Cl. A63b 23/06

U.S. Cl. 272-69

4 Claims



A treadmill exercising machine having an endless belt suspended around horizontally spaced rollers is provided with a resilient and yieldable supporting structure in the form of a plurality of downwardly compressible air cells underlying the upper belt section of the endless belt in supporting relation thereto. A low friction contact sheet disposed between the air cells and upper belt section transmits the weight load of a person walking or running on the upper belt section of the endless belt to the air cells, thereby causing the cells and the air therein to be compressed as the upper belt section is deflected downwardly. The compressed air limits the downward deflection of the belt, and controlled leakage of compressed air between the low friction contact sheet and the upper belt section provides an air bearing effect which reduces the frictional drag of the upper belt section on the contact sheet.

3,689,067

**TENNIS NET AND METHOD OF MAKING**

Anthony Bramley, Gosford House, Gosford, Kidlington, England

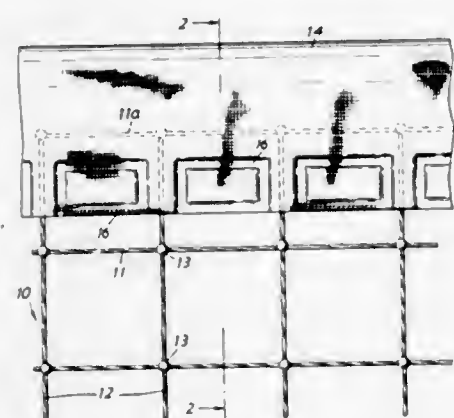
Filed July 9, 1970, Ser. No. 53,504

Claims priority, application Great Britain, July 14, 1969, 35,381/69

Int. Cl. A63b 61/00

U.S. Cl. 273-29 B

7 Claims



The suspended nets of this invention may be used for sports purposes, for example in lawn tennis, or for other purposes, for example as conveyor netting in drying agricultural produce. The nets are formed from a length of netting with rectilinear mesh and have at least one edge an edge band containing an organic thermoplastic, the band being folded upon itself and welded to itself within the mesh openings along the edge of the net. The looped portion of the band can receive a cord for suspending the net. Similar bands can be applied along other edges for protection or suspension of the net.

3,689,068

Patent Not Issued For This Number

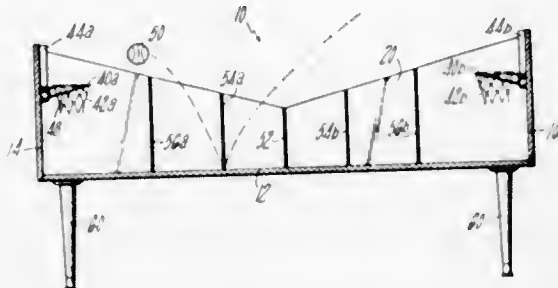
3,689,069

**AMUSEMENT DEVICE**

Benjamin W. Rogers, 43 Walkley Road, West Hartford, Conn.  
Filed Oct. 21, 1970, Ser. No. 82,754  
Int. Cl. A63f 7/06

U.S. Cl. 273-85 R

9 Claims



An amusement device for providing entertainment and testing one's skill in tossing a ball through a basket. The device has a smooth, hard, playing board with markings resembling a miniature basketball court and baskets are provided at each end of the court. The playing board is surrounded on all sides by walls which slope downwardly from each end of the playing board to a minimum height at the middle of the playing board so that a player standing outside the walls and executing a toss from behind selected limit marks which marks entered over the top edges of the walls, may toss the ball for the basket and bounce the ball at prescribed areas on the playing board and through the basket. The ball remains on the playing board if the player has exercised the necessary skill.

3,689,070

Patent Not Issued For This Number

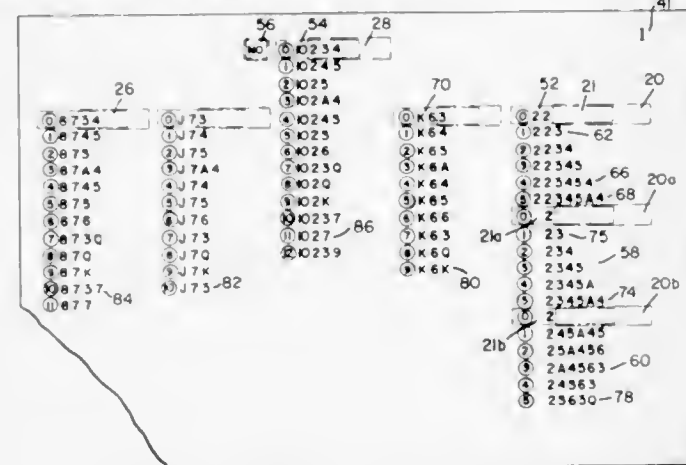
3,689,071

**BLACKJACK OR 21 GAME SIMULATOR**

George F. Kucera, 3048 Greer Road, Palo Alto, Calif.  
Filed June 28, 1971, Ser. No. 157,238  
Int. Cl. A63f 3/00

U.S. Cl. 273-130 R

8 Claims



A longitudinal indicia bearing scroll having an arbitrarily determined sequence of cards distributed in rows and columns. Opaque sliders are provided so that cards indicated in any row can be revealed sequentially. Slide assemblies are provided to reveal a subsequent or prior row of cards in a column without disturbing any adjacent column. The scroll is mounted on a mechanism which supports the scroll and permits movement of the scroll in the longitudinal direction for positioning of the rows. One or more columns are provided for betting positions, while one column is provided for the dealing position, called the dealer. Each playing position may be played by a different player, or a single player to receive cards as desired until he has a sufficiency or he exceeds 21 for each

playing position, and allows the result achieved by each playing position to be compared with the proper dealer's result. The first playing position or column provides the most convenient organization of indicia which permits the splitting of a pair of identically valued cards, although the pair splitting organization may be provided for any playing position. Player or players may "insure," "split," "double-down," "draw," or "stand," making actual bets or wagers as allowed by the rules of blackjack and as any player desires at the appropriate times for such bets. Instructional or teaching organization and material is provided, on a real-time basis or after-the-fact, as desired and as needed for players of varying levels of proficiency.

3,689,072

**BINGO MARKING BOARD**

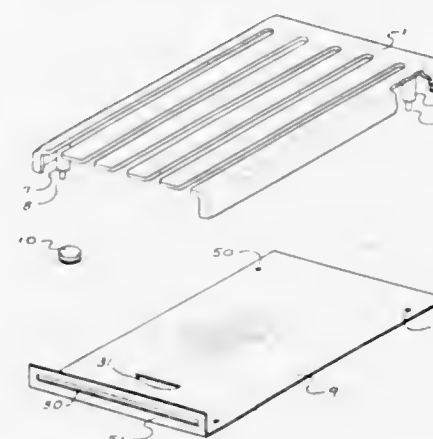
Beverly W. Taylor, Hermann, Mo.

Filed July 22, 1970, Ser. No. 57,147

Int. Cl. A63f 3/06

U.S. Cl. 273-135 BC

4 Claims



A bingo card has self contained marking means. The board has a series of slots that hold the markers and allow movement thereof. The slot ends are closed and the markers are stored on either side of the playing surface when not in use. The board is a two-piece construction and is adapted to prevent loss of the markers. Means are provided for displaying a game design along a surface of the board. One embodiment of the invention has a transparent plastic top and a card having the game design displayed on it removably insertable between the top and bottom.

3,689,073

Patent Not Issued For This Number

3,689,074

**MARBLE LABYRINTH PUZZLE**

Richard Benton, Santa Rosa, and Michael Gonzeles, Sebastopol, both of Calif., assignors to Leland Dibble, Jr., Santa Rosa, Calif.

Filed March 1, 1971, Ser. No. 119,694

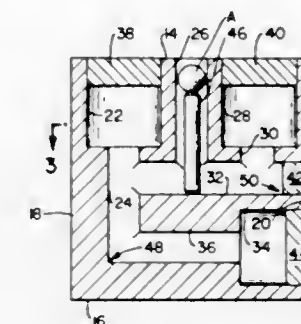
Int. Cl. A63f 7/04

U.S. Cl. 273-153 R

11 Claims

A labyrinth puzzle provided with a single inlet designed to receive and retain a marble. The labyrinth includes at least one T-shaped passage formed by first and second channels, the second channel intercepting the first channel immediately. The first channel forms the arms of the T, one arm being provided with a throwing station and the other arm having a trap at its end. The second channel or leg portion of the T defines at its end the marble destination. The marble in the labyrinth is thrown from the throwing station to the destination to release the marble from the labyrinth. In a preferred embodiment, two T-shaped passages are overlapped, a common channel functioning as the leg portion of the first T-

shaped passage and the arms of the second T-shaped passage. In this manner, the destination of the first T-shaped passage



becomes the throwing station of the second T-shaped passage, thereby requiring two successive throws of the marble to release it from the labyrinth.

3,689,075

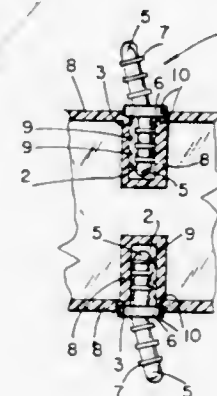
**THREE-DIMENSIONAL PUZZLES**

Louis Adelsohn, 4211 Sea Gate Ave., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 690,322, Dec. 13, 1967, Pat. No. 3,523,384. This application July 31, 1970, Ser. No. 60,034  
Int. Cl. A63f 9/12; A63h 33/10

U.S. Cl. 273-157 R

12 Claims



An educational device in the form of a three-dimensional puzzle comprises a plurality of interconnectable members. Each of the members is provided with a respective face adapted for opposing a respective face of another of said members. A resilient element is provided for interposition between respective opposing faces of the members and is operatively associated with the opposing faces for interconnecting the members therebetween.

3,689,076

**COMBINED TAPE LIFTING AND CAPSTAN DRIVE ENGAGEMENT MECHANISM**

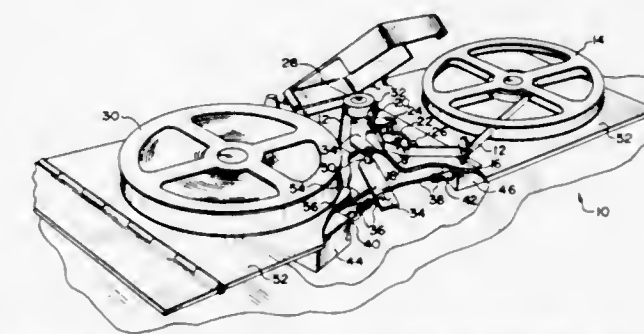
John C. McAlvay, Racine, Wis., assignor to Webster Electric Company, Inc., Racine, Wis.

Filed May 20, 1970, Ser. No. 38,965

Int. Cl. G11b 15/29

U.S. Cl. 274-4 D

7 Claims



In a tape recording and/or reproducing mechanism, the tape is wrapped a sufficient distance around a capstan idler wheel



so that for high speed operations the tape is lifted fully from the tape heads by movement of the idler wheel away from the capstan drive shaft. The tape heads are positioned between the supply and takeup reels facing the takeup reel. Convenient remote control is possible as a first solenoid is energized to bring the idler wheel against the capstan drive shaft, and a second solenoid is energized to pull the idler wheel away from the capstan drive shaft and tape away from the tape heads. A spring biases the idler wheel lightly towards the capstan drive shaft so that the tape rests against the tape heads when neither solenoid is energized.

3,689,077

# OPERATION DEVICE FOR CASSETTE TYPE TAPE RECORDER

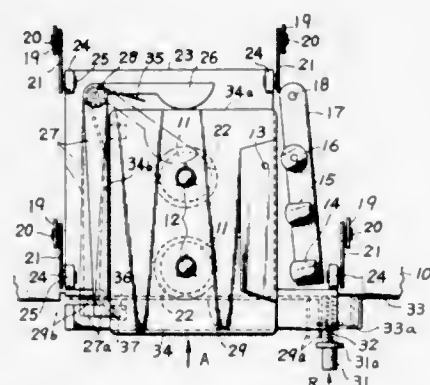
Tsunehisa Ohira, Sagami-hara, Japan, assignor to Victor Company of Japan, Limited, Yokohama-City, Japan  
Filed Sept. 24, 1969, Ser. No. 860,595

Claims priority, application Japan, Sept. 26, 1968, 43/69158; Oct. 25, 1968, 43/92606

Int. Cl. G11b 23/38, 15/04

U.S. Cl. 274-4 E

5 Claims



In a tape recorder of a cassette loading type, an operation device comprising a first lever having a projection for engaging with a notch for the reproducing operation on the side of the cassette and a second lever sliding in engagement with said first lever to prevent the erroneous operation of a recording push button in the reproducing mode of the tape recorder.

3,689,078

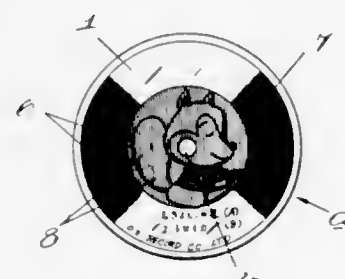
# COLORED RECORDING DISCS

Yasujiro Ban, Tasaka Mansion, 2-12, 6-chome, Honkomagome, Bunkyo-ku, Tokyo, Japan  
Filed June 30, 1969, Ser. No. 837,635

Int. Cl. G11b 3/84

U.S. Cl. 274-42 P

1 Claim



A colored recording disc comprising a transparent plastic sheet having recording grooves on the front face and color printing applied directly or indirectly to the rear face of said plastic sheet, so that the printing which may include a picture, photograph, design or the name of subject, the name of sponsor and other necessary matters can be seen through the transparent plastic sheet.

## 3,689,079 PHONOGRAPH UTILIZING A ROTATIONAL ANGLE DETECTOR FOR SOUND TRACK SELECTION

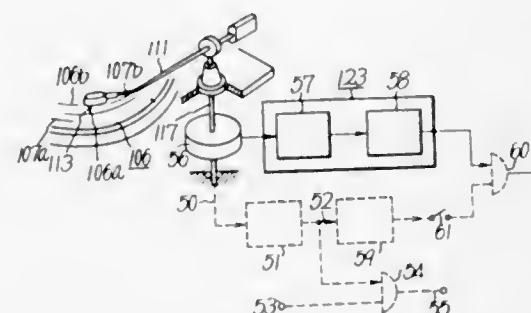
Hitoshi Matsuda; Hideaki Hayashi; Tetsuro Araki, and Shinichi Koga, all of Tokyo, Japan, assignors to Nippon Columbia Kabushikikaisha (Nippon Columbia Co., Ltd.), Tokyo, Japan

Filed Dec. 24, 1968, Ser. No. 786,552

Claims priority, application Japan, Dec. 30, 1967, 42/85204  
Int. Cl. G11b 3/06

U.S. Cl. 274-9 RA

21 Claims



A sound track selection phonograph comprises a pick-up arm rotational angle detector mounted on a rotary shaft of the pick-up arm. The output signal of the detector is divided into a plurality of signals during one turn of a record, and those divided signals are memorized and compared to a plurality of divided output signals obtained by the rotational angle detector in the next succeeding turn of the record, thereby to ascertain the difference between the signals to produce a detecting signal.

3,689,080

# SPINDLE ADAPTOR FOR AUTOMATIC RECORD CHANGERS

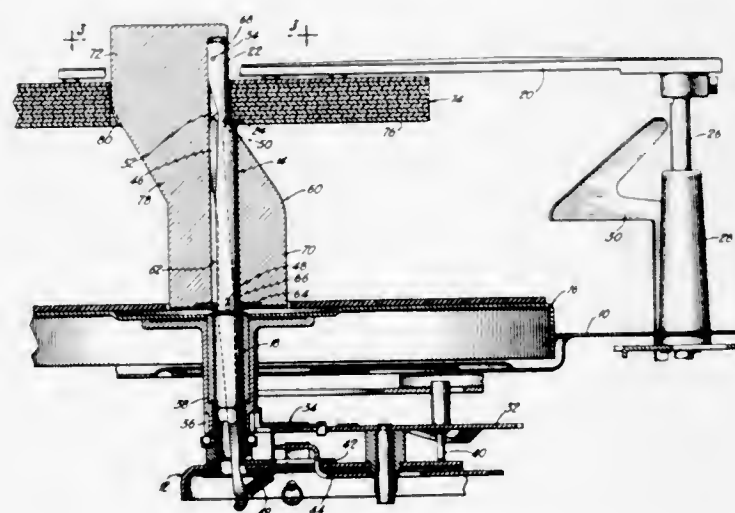
James T. Dennis, 812 American National Bldg., Oklahoma City, Okla.

Continuation-in-part of Ser. No. 365,061, May 5, 1964, abandoned. This application July 11, 1969, Ser. No. 841,025

Int. Cl. G11b 17/18

U.S. Cl. 274-10 S

5 Claims



An adaptor for a stack of large hole records is provided which is positionable at the center of the turntable and has an interference shoulder thereon. The stack of large hole records is supported on a shelf with the bottom record at the level of

the interference shoulder and means are provided for moving the bottom record off of the shelf by overcoming the resistance to movement of said bottom record caused by engagement with said interference shoulder.

3,689,081

# SEALS

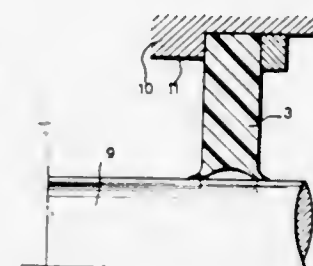
Ragnar Kinberg, Strada Val San Martino Inferiore 135/50, Turin, Italy

Continuation-in-part of Ser. No. 799,170, Feb. 14, 1969, abandoned. This application Dec. 8, 1970, Ser. No. 96,230

Int. Cl. F16c 9/00

U.S. Cl. 277-1

3 Claims



A seal is formed between two relatively rotatable parts by mounting a plastic sealing member such as an annular plate between the parts so that a tapered lip or lips at one periphery of the member contacts and is resiliently deformed by a relatively rotatable surface of one of the parts. Upon initial relative rotation of the parts, frictional heating causes permanent deformation and melting of each lip to form a seal having a small annular clearance or play at said surface.

3,689,082

# INFLATABLE SEAL

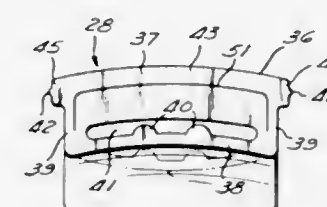
James Glenn Satterthwaite, 5001 Dogwood Trail, Portsmouth, Va., and James B. Macy, Jr., 107 Holly Lane, Morehead City, N.C.

Filed Feb. 3, 1970, Ser. No. 8,278

Int. Cl. F16l 33/16; F16j 15/46

U.S. Cl. 277-34

20 Claims



There is provided an inflatable peripheral seal which is characterized by a closed loop gas-imperious body of an elastomeric material formed from an extruded section and joined at its ends and having oppositely disposed inner and outer peripheral sealing surfaces. The loop contains at least one interiorly disposed continuous chamber defined in part by a flexible wall which is movable between a first position and a second position in response to fluid pressure. The wall is stable in the first position when the pressure differential across the wall is below a predetermined value. The joint between the ends of the extruded section is free of tensile stresses both when the seal is inflated and deflated. Further, the joint can be made after the seal is positioned around a shaft so that the seal can be installed without moving the seal over the ends of such shaft.

## 3,689,083 SEALING RING RETENTION DEVICE

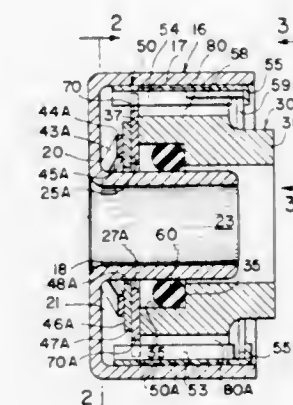
Robert Gordon Greenawalt, Barrington, R.I., assignor to Sealol, Inc., Warwick, R.I.

Filed April 28, 1971, Ser. No. 138,080

Int. Cl. F16j 15/40, 15/54

U.S. Cl. 277-40

4 Claims



A sealing ring retention device for use in rotary mechanical fluid seals subjected to high fluid pressure and/or high temperature environments and including a vibration damping disk and anti-rotational structural features.

3,689,084

# AUXILIARY OIL SEAL

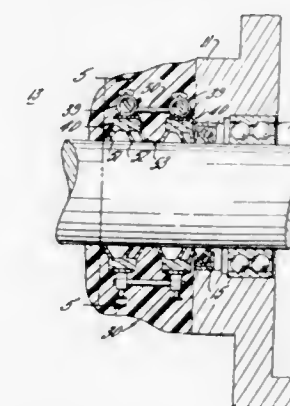
Richard W. Smedley, 1008 Alann Drive, Joliet, Ill.

Continuation-in-part of Ser. No. 846,368, July 31, 1969, Pat. No. 3,560,002. This application Oct. 5, 1970, Ser. No. 77,894

Int. Cl. F16j 15/32

U.S. Cl. 277-147

7 Claims



An auxiliary seal is provided, for installation upon a gear box and associated shaft or similar apparatus which has developed a fluid leak through a previously installed seal. A flexible seal member is installed around the rotatable shaft adjacent the stationary gear box wall. The seal member is then secured to the stationary wall using a binder or other means. If desired, a circumferential clamp may be secured around the outside of the seal member, to further force the sealing member fingers into sealing engagement with the shaft. Clamping members may be secured about the depending seal fingers to further urge the seal fingers into sealing contact with the shaft.

3,689,085

Patent Not Issued For This Number



3,689,086

Patent Not Issued For This Number

3,689,087

## ACTUATOR ASSEMBLIES

Alexander Flett, London, England, assignor to Molins Machine Company Limited, London, England

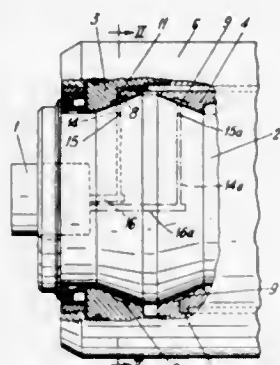
Filed May 11, 1970, Ser. No. 36,114

Claims priority, application Great Britain, May 14, 1969, 24632/69

Int. Cl. B23b 31/00

U.S. Cl. 279-4

8 Claims



A hydraulically operated actuator, such as an hydraulic chuck in a machine tool, is supplied with hydraulic fluid through the spindle on which it is carried and from a hydrostatic bearing mounting the spindle.

3,689,088

## WORK HOLDING DEVICE FOR MACHINE TOOL

Julius Harman, Baginton, and Michael Eric Norman, Hinckley, both of England, assignors to Alfred Herbert Limited, Coventry, England

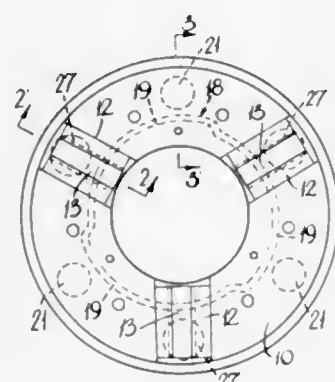
Filed Oct. 15, 1970, Ser. No. 81,012

Claims priority, application Great Britain, Oct. 15, 1969, 50,583/69

Int. Cl. B23b 5/22

U.S. Cl. 279-110

10 Claims



A work holding device for a machine tool includes means for axial location on a machine tool spindle and coupling means urging the device into said coaxial location. The coupling means is operated by actuating means driven by a member extending from the machine tool. Work holding means on the device may also be driven by the same member on the machine tool.

3,689,089

Patent Not Issued For This Number

3,689,090

## EXCAVATOR

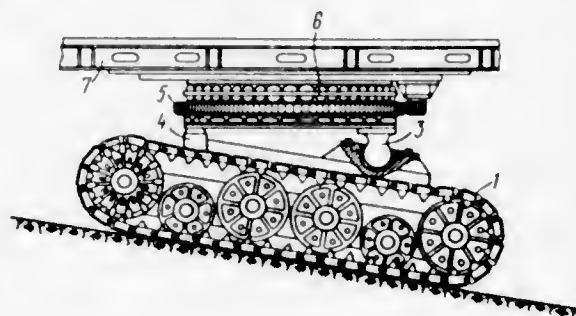
July Nekhemievich Dunaevsky, prospekt imeni Lenina, 45/3, Alexandria Kirovogradskoi Oblasti; Boris Nusimovich Tarkovsky, Naberezhnaya ulitsa, 1, kv. 144, Dnepropetrovsk; Nikolai Arsentievich Zhukov, poselok Dimitrovo, pereulok Stroltelei, 4, Alexandria Kirovogradskoi Oblasti, and Viktor Viktorovich Potapenko, ulitsa Chkalova, 37, kv. 9, Zhukovskiy Moskovskoi Oblasti, all of U.S.S.R.

Filed March 18, 1970, Ser. No. 20,541

Int. Cl. B60g 17/00

U.S. Cl. 280-6.1

2 Claims



An excavator wherein its machinery deck rests on the undercarriage frame so that said machinery deck retains a horizontal position regardless of the inclination angle of the undercarriage.

3,689,091

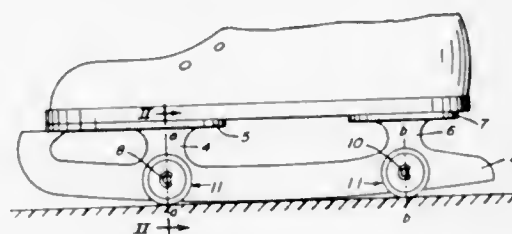
SKATE FOR USE ON PLASTIC SKATING SURFACE  
Harry S. Nagin, Decker Apartments, 191 Presidential Blvd., Bala Cynwyd, Pa.

Filed Aug. 5, 1970, Ser. No. 61,288

Int. Cl. A63c 1/00

U.S. Cl. 280-11.12

5 Claims



A skate for use on a plastic skating surface has a rocker-shaped blade with wheels ahead of and to the rear of the central portion of the blade, the rollers having a resilient rim of such diameter that it is compressed under the weight of the skater, assuring that the blade glides on the skating surface when the skate is sliding in the direction of its length but prevents it from side slip. When the skate is tilted, the wheels provide thrust or braking friction as needed.

3,689,092

## SNOW AND WATER SKIMMING DEVICE

Gary F. Lake, 487 Short Street, Bishop, Calif.

Filed Oct. 1, 1970, Ser. No. 77,293

Int. Cl. A63c 5/00

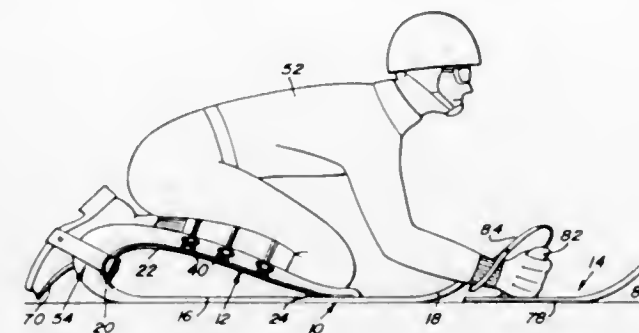
U.S. Cl. 280-11.13 R

17 Claims

A planing assembly adapted for use on snow or water and including a pair of elongated ski-like members including means for attachment to the lower leg portions of the user of the planing assembly. When attached to the lower legs of the user the ski-like members include upwardly curved forward ends which project beyond the knees of the user and the assembly is adapted to be used with the wearer in a head forward kneeling position with the upper portions of his legs closely overlying and resting upon the lower portions of his legs to

which the elongated ski-like members are attached. The planing assembly further includes a pair of hand supported planing

movable transversely to the longitudinal direction of the ski to a release position in response to an excessive torque. At least one sole-supporting member is provided, which is disposed near the torque-responsive soleholder and mounted to be movable relative to the surface of the ski. The sole-supporting member consists of a flexible hollow body and is filled with a



members to be disposed forward of the leg attached ski-like members and utilized by the user to assist in maintaining his balance and to steer himself.

3,689,093

## FOLDING SKI

John M. Meland, 7108 Riverdale Road, Brooklyn Center, Minn.

Filed Dec. 11, 1970, Ser. No. 97,090

Int. Cl. A63c 5/02

U.S. Cl. 280-11.13 K

2 Claims



A folding ski consists of first and second front and rear ski members held in associated relation to each other by a spring loaded cable. Abutting end portions of each of these ski members are provided with embedded matching, mating first and second end plates. Each of these plates has a horizontal portion embedded in its ski member and a face portion extending across the end of its ski member in non-perpendicular relation to its horizontal portion to be in abutting supportive relation to the face portion of the other end plate when the ski is in assembled condition. A pair of support bars are permanently mounted in the first ski member and extend longitudinally of the ski outwardly through its associated first end plate to extend through provided support slots in the second end plate and into a clearance cavity in the second ski member when the ski is assembled. Integral hooks on outer ends of these bars then will each engage a main support pin which is permanently supported on and in the second ski member in transverse relationship to that member. A channel member is permanently fixed to the second ski member and extends longitudinally outwardly of the second member to be in surrounding relation to the first ski member when the ski is in assembled condition. Readily releasable fastening means hold the channel in contact with the first ski member to maintain the ski in assembled relation.

3,689,095

## SKI BOOT FIXATION DEVICE

Georges P. J. Salomon, 34 avenue de Loverchy, Annecy, France

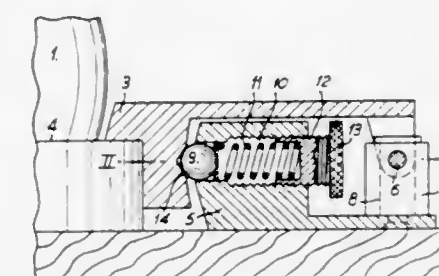
Filed June 12, 1970, Ser. No. 45,783

Claims priority, application Switzerland, July 14, 1969, 10727/69

Int. Cl. A63c 9/00

U.S. Cl. 280-11.35 T

19 Claims



A ski boot fixation device comprises a lever pivotally mounted on a support about horizontal and vertical axes in relation to the plane of a ski. Boot holding means on one end of the lever can be releasably held in operative position by a pair of cooperating pieces on the lever and the support which are urged together by a spring. The lateral stress required to free the lever from operative position is made constant, i.e. independent of vertical displacement of the lever, by means compensating for the change in the pressure of the spring due to vertical displacement of the lever.

3,689,096

## SAFETY SKI BINDING

Guido Ribi, Genova, Italy, assignor to Cober Fabbrica Articoli Sportivi, Opera Milan, Italy

Filed March 1, 1971, Ser. No. 119,719

Claims priority, application Italy, March 2, 1970, 12513 A/70

Int. Cl. A63c 9/086

U.S. Cl. 280-11.35 D

12 Claims

Fore and heel clamp portions of a ski binding respectively designed to release the tip of the boot and the heel from the ski in response to twisting moments about vertical and horizontal axes are built into recesses in the heel and tip of the boot sole. Each clamp portion has resiliently biased sliding

3,689,094

## SAFETY SKI BINDING

Hannes Marker, Hauptstrasse 51-53, and Peter Biermann, Torlenstrasse 43, both of Garmisch-Partenkirchen, Germany

Filed March 31, 1970, Ser. No. 24,142

Claims priority, application Germany, April 3, 1969, P 17 425.5

Int. Cl. A63c 9/00

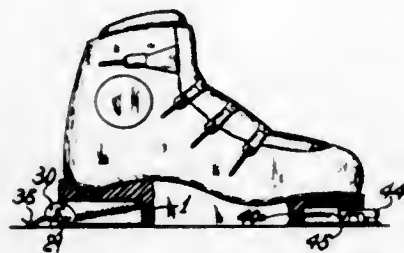
U.S. Cl. 280-11.35 C

10 Claims

A ski binding comprises a toe soleholder and a heel soleholder for the sole of the boot. One of the soleholders is



elements which normally clamp the boot to the ski by engaging fastening elements mounted on the ski, the bias being so set that the clamping elements will be released from the



fastening elements when the force of the twisting moment exceeds the force of the bias.

### 3,689,097 SKI BINDING

Thomas G. Smolka, Speisinger Strasse 244, 1238 Wien-Mauer, and Johann Zelinka, Troststrasse 8, 1100 Wien, both of Austria

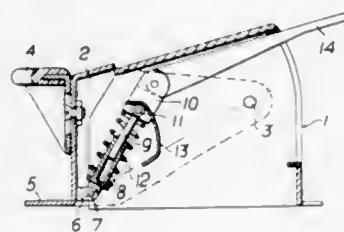
Filed Dec. 16, 1968, Ser. No. 783,891

Claims priority, application Austria, Dec. 14, 1967, A 11285/67

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35

10 Claims



A releasable ski binding utilizing a toggle structure wherein one toggle arm constitutes engaging means for the ski boot and the other toggle arm provides resilient resistance for the over-center action. Same can be utilized for either a toe binding or a heel binding.

### 3,689,098

MERCHANDISE DELIVERY CART WITH MEANS FOR COMPACTLY STORING DEMOUNTABLE LIKE CARTS

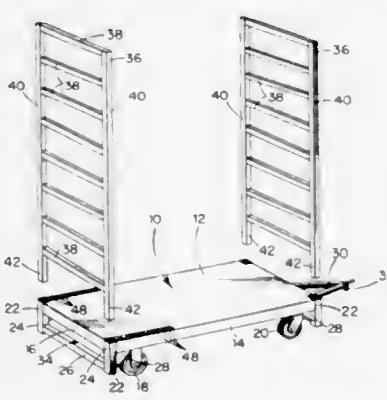
Richard J. Rubin, 39 Dolphin Road, Newton, Mass.

Continuation-in-part of Ser. No. 858,342, Sept. 16, 1969, Pat. No. 3,608,920. This application May 20, 1971, Ser. No. 145,350

Int. Cl. B62d 39/00; B60d 1/00

U.S. Cl. 280—33.99 T

17 Claims



A merchandise delivery cart having a horizontal wheeled platform and detachable vertical end members. Mounting means is provided on the platform for detachably supporting in a vertical position approximately eight additional end members for storage purposes. Also, approximately four additional platforms are stood vertically on end on the platform for storage purposes.

### 3,689,099

#### BABY STROLLERS

David D. Patterson, Seward, Nebr., assignor to Herschal F. Garhan, Rising City, Nebr.

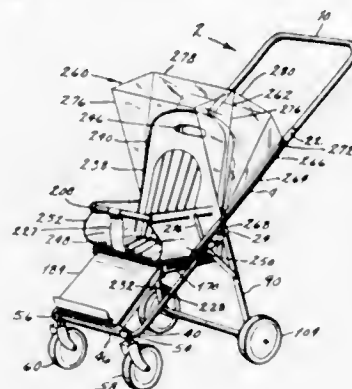
Division of Ser. No. 599,128, Dec. 5, 1966, Pat. No. 3,421,774.

This application Dec. 4, 1968, Ser. No. 810,052

Int. Cl. B62d 21/14

U.S. Cl. 280—38

3 Claims



1. A collapsible baby stroller comprising a plurality of frames including an upper frame, a front frame and a rear frame, a hinge means for swingably connecting the upper ends of the front and rear frame to the upper frame in close proximity to one another in such a manner that the frames can be optionally folded from an erected position wherein the frames are disposed at predetermined angles with respect to one another to a collapsed position wherein the frames are presented in side-by-side relation, frame locking means for holding the frames in the erected position, a backrest hingedly mounted with respect to the frames, a backrest locking means for releasably holding the backrest at a predetermined angle with respect to the frames, a seat, a support means for holding the seat substantially horizontal when the frames are in the erected position, connecting links interconnecting the front and rear frame in spaced relation to the hinge means, means for hingedly connecting the backrest at its lower end to said connecting links, said backrest locking means releasably engaging the upper frame for holding the backrest in a substantially upstanding position.

### 3,689,100

#### STEERING LINKAGE FOR MOTOR VEHICLES

Leopold F. Schmid, Pischekstrasse 49, 7000 Stuttgart-0, Germany

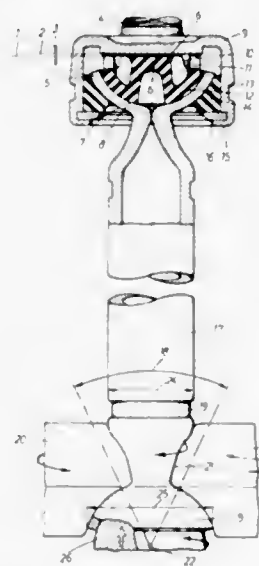
Filed March 30, 1970, Ser. No. 23,881

Claims priority, application Germany, April 1, 1969, P 19 16 578.7

Int. Cl. B62d 7/20

U.S. Cl. 280—95 R

1 Claim



A steering linkage for motor vehicles, in which the tie bar has both ends thereof provided with hinge pins extending in

axial direction of the tie bar while said hinge pin means include cup-shaped portions for jouralling in the joint housing, each of said cup-shaped portions having an inner concave and an outer convex spherical surface.

### 3,689,101

SWIVELLING WHEEL SUSPENSION FOR VEHICLE

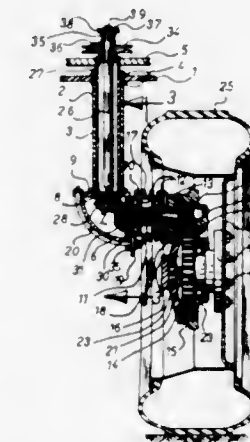
William George Spence, 2372 Wilson Ave. Apt. 8, Montreal 260, Quebec, Canada

Filed Sept. 1, 1970, Ser. No. 68,618

Int. Cl. B60g 3/00

U.S. Cl. 280—96.2 R

5 Claims



A wheel suspension arranged to support a driven wheel for swivelling movement in a horizontal plane and in a vertical plane whereby a vehicle may be mounted on a number of wheels to provide independent driving, steering and suspension of the wheels. A swivelling wheel suspension comprising a pivot member arranged to be pivotally mounted in an upright position to provide swivelling in a horizontal plane, a spring-biased lever arm pivotally mounted relative to the pivot member to provide swivelling in a vertical plane of a wheel carried in upright position by the lever arm, driving shafts and gears for the associated wheel, and steering means to swivel the pivot member.

### 3,689,102

#### VEHICLE SUSPENSION

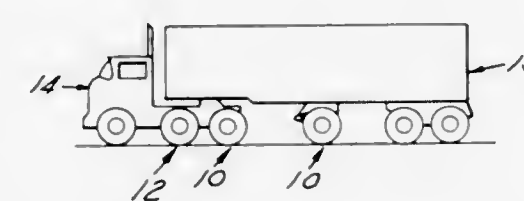
Ole Granning, Detroit, Mich., assignor to Granning Suspensions, Inc., Dearborn, Mich.

Filed June 12, 1970, Ser. No. 45,613

Int. Cl. B60g 9/02

U.S. Cl. 280—112 R

6 Claims



The vehicle suspension provides an axle assembly which may be mounted either on a truck-tractor or a truck-trailer to provide an additional axle. The suspension includes an axle which is suspended from the vehicle frame by means of a pair of elastomeric springs. A drawbar extends forwardly from the axle. The drawbar is connected, at its forward end, to structure depending from the vehicle frame. The connection includes resilient fastening means which permit some pivoting of the forward end of the drawbar about an axis transverse to the longitudinal axis of the drawbar and generally parallel to the axis of the axle. Lifting means are provided to raise the axle and associated wheels off the ground when desired.

### 3,689,103

#### VARIABLE HEIGHT VEHICLE SUSPENSION

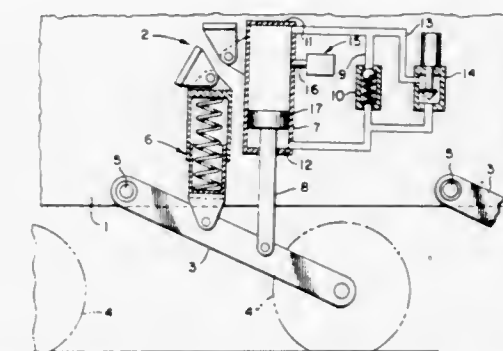
John w. Meulendyk, Kalamazoo, Mich., assignor to Pneumo Dynamics Corporation, Cleveland, Ohio

Filed Nov. 27, 1970, Ser. No. 93,262

Int. Cl. B60g 17/04

U.S. Cl. 280—124 F

19 Claims



Variable height vehicle suspension system comprises a plurality of damper cylinders from which fluid is displaced from one end to the other for lowering the vehicle frame relative to the ground. The vehicle frame is ordinarily maintained at normal vertical height by mechanical springs which may be overpowered by pitching the vehicle frame to a lower elevation where it may be retained either by fluid entrapment within the damper cylinders or by a releasable mechanical lock or a combination thereof.

### 3,689,104

#### VEHICLE OCCUPANT SAFETY BARRIER

Phillip Graham, 2825 Glenmore Ave., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 709,999, March 4, 1968, Pat. No. 3,545,789, which is a continuation-in-part of Ser. No. 549,835, May 13, 1966, Pat. No. 3,392,989, which is a

continuation-in-part of Ser. No. 462,993, June 10, 1965, Pat. No. 3,262,716, which is a continuation-in-part of Ser. No. 355,568, March 30, 1964, abandoned, which is a division of

Ser. No. 97,658, March 22, 1961, Pat. No. 3,129,017, which is a continuation-in-part of Ser. No. 662,770, May 31, 1957, Pat. No. 2,977,135, Ser. No. 709,999 is a continuation-in-part of Ser. No. 549,835; Ser. No. 549,835 is a continuation-in-part of

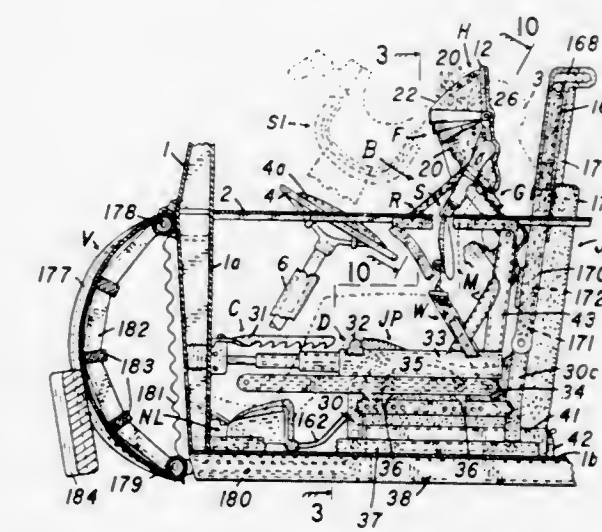
Ser. No. 462,993; Ser. No. 462,735, is a continuation-in-part of Ser. No. 355, 568; Ser. No. 355,568 is a division of Ser. No. 97,658 and Ser. No. 97,658 is a continuation-in-part of Ser. No. 662,770. This application Aug. 20, 1970, Ser. No. 65,526

662,770. This application Aug. 20, 1970, Ser. No. 65,526

Int. Cl. B60r 21/10

U.S. Cl. 280—150 B

20 Claims



This invention pertains to a cushioning barrier that has shielding mounted closely in front of an operator or a passenger of an automobile or the like, to furnish a high degree of cushioning to the occupant when momentum forces him



against the barrier during an accident. The barrier has upper shielding that includes head and torso or chest shields that can easily and rapidly be folded and be moved laterally, then be moved downwardly to inconspicuous positions against a door, so they cannot obscure or obstruct the occupant while they are retracted. Controls that are simple to operate allow the shields to be retracted with motor power operated means or by means to amplify manual force. The head and chest shields can be triggered to cause power means to quickly move them into protective positions in front of the occupant when a dangerous highway condition develops. The present invention does not have the objectionable characteristics of having retraction means that are difficult to retract, and require much time and manual strength to retract, as does the barrier of my U.S. Pat. No. 3,545,789.

3,689,105

**INFLATABLE VEHICULAR SAFETY DEVICE**

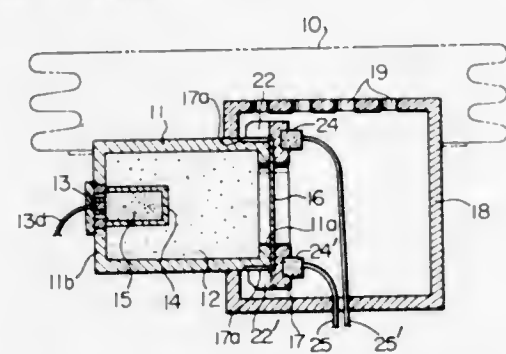
Shunji Matsui, 3065-12, Tameoka-cho, Kanazawa-ku, Yokohama; Yosikazu Hayakawa, 68-1, 3-chome, Oppama-igasaki-cho, Yokosuka, and Kenzo Hirashima, 714, Nishiteras, Kanagawa-ku, Yokohama, all of Japan  
Filed June 24, 1971, Ser. No. 156,356

Claims priority, application Japan, July 7, 1970, 45/67807; March 1, 1971, 46/12266

Int. Cl. B60r 21/06

U.S. Cl. 280—150 AB

4 Claims



A vehicular safety device for protecting a vehicle occupant from injury during a collision of the vehicle with an obstruction, including a normally contracted, expandable confinement and a container storing a liquefied gas to be converted into pressurized gas by the firing of an igniting means as soon as the collision is encountered by the vehicle, the storing device being normally isolated from the confinement by a sealing plate which is detachable attached to the container by a holder. The holder is broken into two halves by the firing of a burstable means which is actuated simultaneously as the igniting means is fired, whereby the pressurized gas in the container is passed into the confinement for expansion at a moment when the liquefied gas is expanded.

3,689,106

**BAGGAGE CART**

Richard S. Young, Frankenmuth, Mich., assignor to Saginaw Products Corporation, Saginaw, Mich.

Filed Dec. 3, 1970, Ser. No. 94,892

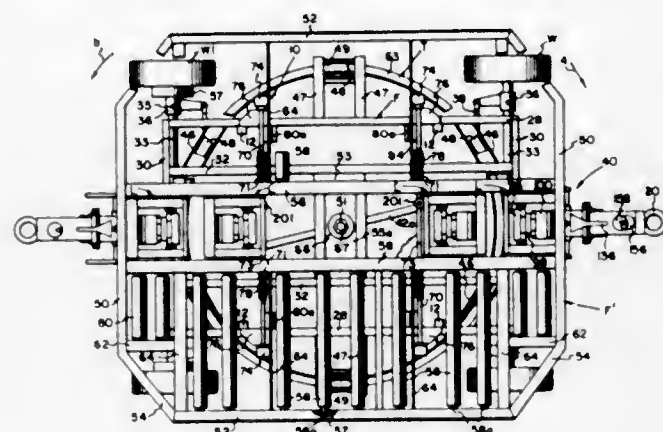
Int. Cl. B65j 1/22; B60p 7/08

U.S. Cl. 280—179 R

20 Claims

A cart for supporting baggage containers and the like, including a frame supported on surface engaging wheels, a conveying platform rotatably mounted on the frame, apparatus on the frame and the platform cooperating to selectively lock the platform in various predetermined positions relative to the frame, latch assemblies at opposite ends of the conveying platform for securing opposite ends of a baggage container supported thereon, a steering tongue connected to each of the front and rear sets of wheels and pivotally coupled to a tow bar provided at each end, a releasable lock for selectively preventing relative movement of the steering tongue and the tow bar at either end of the cart to provide for selective locking and

steering at either end so that when in train, the carts may be readily conditioned to steer from either end, and apparatus for



3,689,107

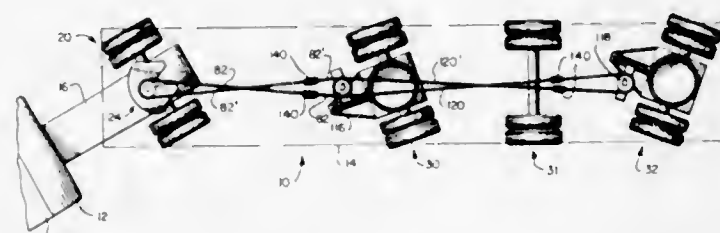
**STEERING ASSEMBLY FOR TRAILERS**

Carl E. Humes, 907 Franklin Ave., Steubenville, Ohio  
Continuation-in-part of Ser. No. 93,685, Nov. 30, 1970. This application April 19, 1971, Ser. No. 135,243

Int. Cl. B62d 53/06

U.S. Cl. 280—426

10 Claims



An improved steering mechanism for a tractor driven plural wheeled extendable trailer wherein the motive force for steering the trailer positively extends from the fifth wheel of the tractor in the form of tie members which are changeable in length to one or more turntables supporting assemblies structurally associated with one or several steerable axle assemblies supporting the trailer with means being provided for varying and limiting the degree of turning movement of each turntable assembly to maintain all of the steerable axle assemblies in proper steering relation to the tractor substantially regardless of the operating length of the trailer. Further means are provided on at least one of the turntables which prevents the turntable from turning or if turned causes the turntable to return to the straight tracking position. Mechanism associated with such further means may be actuated upon actuation of the trailer and/or tractor brakes.

3,689,108

**BODY TILTING MECHANISM**

James A. Blonar, Route 2, Box 249A, Barrington, Ill.

Filed July 23, 1970, Ser. No. 57,506

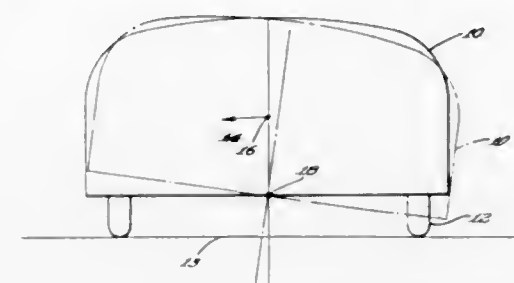
Int. Cl. B62d 9/02; B60g 25/00

U.S. Cl. 280—438 A

8 Claims

External forces acting upon a vehicle during movement along a curve or turn are counteracted and provide body banking by a body tilting or banking mechanism comprising a means for counteracting the external tipping forces which means may include an inclined plane, or matching inclined plane members having a common axis so that movement of one with respect to the other will cause a tilt of the vehicle in the direction opposite that caused by the external tilting force. This means may be conveniently positioned and, for example, connected with the steering control of a vehicle or in a hinged vehicle such as a semi-trailer, it may be made a part of the in-

terchange coupling between tractor and trailer. The means may include an inclined plane bearing against a movable axle



means and may take the form of a hydraulic means operated off of a master cylinder.

3,689,109

**TRACTOR-TRAILER COMBINATION CONNECTED FOR MANEUVERABILITY AS A UNIT ASSEMBLY**

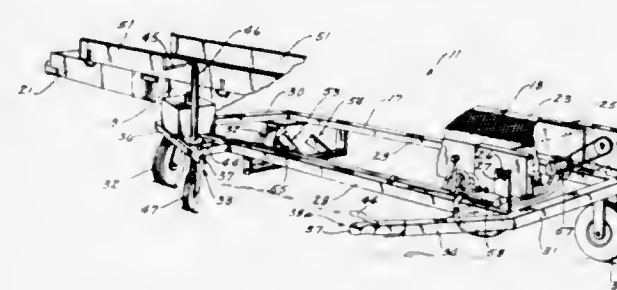
Alfred Chantland, and Kermit C. Chantland, both of Homboldt, Iowa, assignors to Douglas & Lomason Company, Detroit, Mich.

Filed Dec. 14, 1970, Ser. No. 97,871

Int. Cl. B62d 53/00

U.S. Cl. 280—473

5 Claims



The invention includes a tractor and a trailer wherein the tractor is provided with front and rear hitch members and the trailer with corresponding front and rear tongue members relatively arranged so that when releasably connected together the tractor and trailer are held in a parallel side by side relation against relative movement. The trailer has a pair of front caster wheels and a rear wheel so as to be movable as a unit with the tractor.

**ERRATUM**

For Class 280—146 see:  
Patent No. 3,689,116

3,689,110

**FLUID LINE COUPLING**

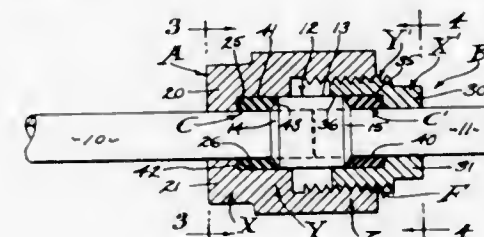
William B. Ferguson, 8405 Oso Street, Canoga Park, Calif.

Filed Aug. 5, 1970, Ser. No. 61,180

Int. Cl. F16l 55/18

U.S. Cl. 285—15

21 Claims



A coupling adapted to be assembled over a tubular fluid conducting member, either to connect to a section thereof or to repair a leak therein, and comprised of a body providing a

protective enclosure, a sleeve positioned to the body, and a plastic seal confined by the body and/or sleeve and forceably engaged thereby to flow directly into engagement with the said member. The body and sleeve are each an assembly of laterally interlocked longitudinally split segments adapted to be assembled and disassembled laterally over said member and seal. The seal is a longitudinally split ring of plastic material adapted to flow into encompassing embracement over said member. The sleeve has two forms, one an interlocked assembly and the other a laterally separable assembly, when in working positioning over the tubular fluid conducting member. A feature of the coupling is the capability of lateral assembly and disassembly, eliminating the passing of long lengths of tubular members through a coupling and/or eliminating the requirement of disassembly of tubular member installations in order to refit or to repair leakage therein.

3,689,111

**TUBING CONNECTION HAVING MEANS FOR DISTRIBUTING AXIALLY APPLIED FORCES**

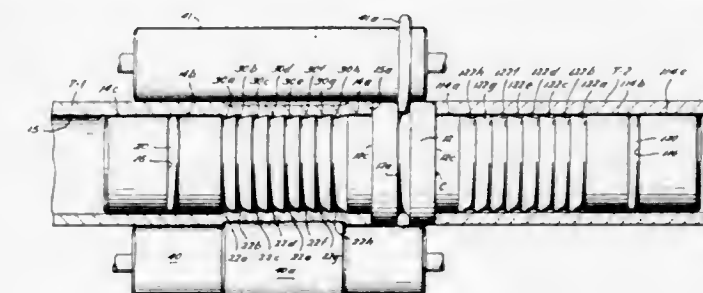
Dean W. Osmun, and Damon T. Slator, both of Houston, Tex., assignors to Bowen Tools, Inc.

Filed Oct. 27, 1970, Ser. No. 84,398

Int. Cl. F16l 13/14

U.S. Cl. 285—39

6 Claims



Tubing connection and method of making same, wherein an end of a tube or tubing is joined to a connector by a series of annular crimps which are formed at a tapered portion of the connector to substantially uniformly distribute pulling loads on the tube or tubing to all of such crimps. The ends of two tubes are preferably joined to a common connector to splice the tubes together.

3,689,112

**TUBING CONNECTION HAVING MEANS FOR DISTRIBUTING AXIALLY APPLIED PULLING FORCES**

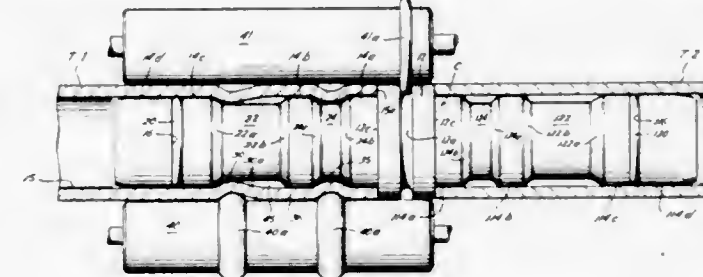
Damon T. Slator; Thomas R. Bishop, and Archie W. Pell, all of Houston, Tex., assignors to Bowen Tools, Inc.,

Filed Oct. 27, 1970, Ser. No. 84,439

Int. Cl. F16l 13/14

U.S. Cl. 285—39

6 Claims



Tubing connection and method of making same, wherein an end of a tube or tubing is joined to a connector by annular crimped portions or indentations at longitudinally spaced areas, forming a beam therebetween, and engaged with the connector for distributing longitudinal pulling forces on the tube to both of the areas of the crimped portions. The ends of two tubes are preferably similarly joined to a common connector.



3,689,113

## COUPLING FOR PIPES

Kurt Blaschke, Dudweiler, Germany, assignor to Elisabeth Hochstrasser, geb. Wack, Kobenhuttenweg, Saarbrücken, Germany; Jürgen Hochstrasser, Kobenhuttenweg, Saarbrücken, Germany and Firma Stahl-und Apparatebau Hans Leffer G.m.b.H., Dudweiler/Saar, Germany

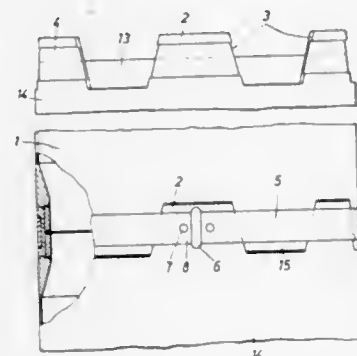
Filed Feb. 27, 1970, Ser. No. 14,996

Claims priority, application Germany, March 3, 1969, P 19 11 697.3

Int. Cl. F16I 15/00

U.S. Cl. 285—90

10 Claims



This relates to couplings for pipes, especially boring pipes, where there is a requirement for a coupling which can be easily released yet provides for one pipe to be locked so as not to be able to rotate with respect to the other and also where the coupling is provided with a sealed joint, the coupling is made by intermeshing teeth or cogs on the ends of the pipes, the teeth being trapezoidally shaped so as to provide improved locking between the adjacent pipes; annular sealing rings may be provided on the inside of the teeth, the rings may have a seal between each other or between a ring and next of the adjacent pipe; an annular fastening ring is provided to fit in a recess formed circumferentially around the teeth.

3,689,114

## SLEEVE FOR COUPLING TWO SECTIONS OF DUCT OR CONDUIT

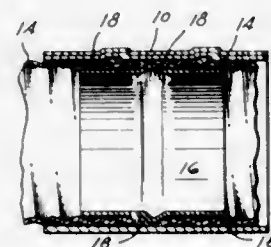
Robert H. Meserole, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

Filed Nov. 9, 1970, Ser. No. 87,812

Int. Cl. F16I 21/06

U.S. Cl. 285—373

6 Claims



A sheet metal sleeve formed to a cylindrical shape and having a lap joint thereby permitting expansion of the sleeve to be received over adjacent ends of two ducts in hugging embrace therewith for coupling the duct sections in axial communication. The inside of the sleeve is provided with a heat melting adhesive adapted for fixedly securing the sleeve on the ends and sealing the joint between the duct and sleeve.

3,689,115

## QUICK-MOUNTING HARDWARE

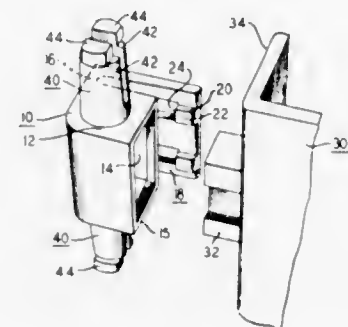
John Andreini, Irvington, N.J.; Edwin Harley Borchard; Karl-Heinz Pohl, both of Boudler, Colo., and Joseph Anthony Pucio, East Brunswick, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Aug. 28, 1970, Ser. No. 67,903

Int. Cl. E05c 19/06

U.S. Cl. 292—87

1 Claim



Snap-on hardware mounted on a structural component having a boss and a lip adjacent to the boss, and including a support portion having a cavity essentially the same size as the boss. A flexible cantilevered arm extends alongside of the support portion, and the free end of the arm includes a catch for snapping over the lip when the support portion is positioned over the boss. A functional portion extends from the support portion.

3,689,116

## REMOTE CONTROL FOR OPERATING VEHICLE DOOR LATCHES

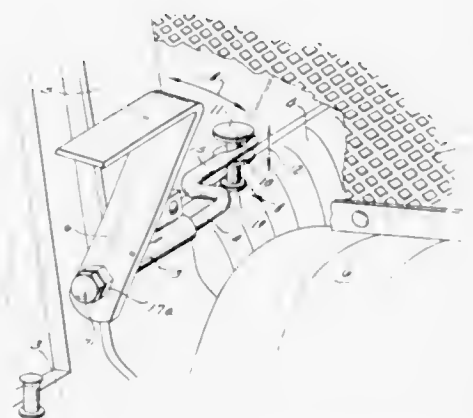
Pedro Baez Sosa, New York, N.Y., assignor to Efficient Instruments Corporation, Long Island City, N.Y.

Filed March 29, 1971, Ser. No. 128,929

Int. Cl. B60J 5/04

U.S. Cl. 296—146

10 Claims



An automobile has a body the passenger compartment of which is provided with a front seat and a rear seat. At least one front door and one back are provided affording access to the front and rear seat, respectively. A partition is located intermediate and separates the front seat from the rear seat. Latch means is located rearwardly of the partition movable between a first and second position in which it respectively locks and unlocks the rear door. Remote control means is provided including one portion which engages the latch means and another portion which is located forwardly of the partition and which cooperates with the one portion, being engageable by a person in the front seat so that the latch means for the rear door can be moved between its first and second positions by remote control from the front seat.

3,689,117

## METHOD FOR MAKING A NEUTRALIZING DEVICE

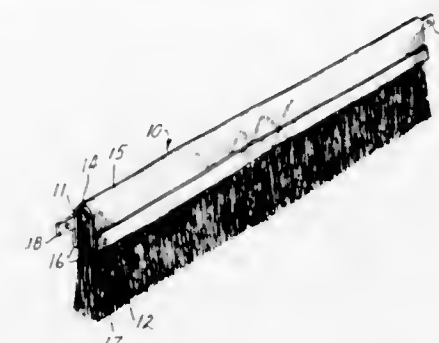
Conrad G. Hules, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 17, 1970, Ser. No. 55,826

Int. Cl. A46b ; A46d

U.S. Cl. 300—21

6 Claims



A method for manufacturing a brush like device for neutralizing static electrical charges from resilient, supple conductive filaments of minute diameter. The method includes positioning two support rods in spaced parallel relationship, winding the filaments spirally about the pair of rods with successive windings being in side by side relationship, attaching the contacting section of the filaments to the rods, and severing the filaments extending between the two rods to produce two devices.

3,689,118

## METHOD OF BRUSH BRISTLE MANUFACTURE

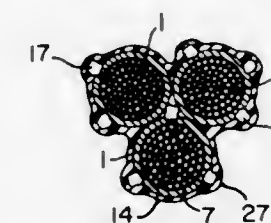
Vernon K. Charvat, Bay Village, and Robert E. Jarvi, Willoughby, both of Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio

Division of Ser. No. 740,848, June 27, 1968, Pat. No. 3,577,839. This application Jan. 6, 1971, Ser. No. 104,363

Int. Cl. A46d 1/04

U.S. Cl. 300—21

2 Claims



Brush material and brushes utilizing the same, particularly power driven rotary brushes, in which the brush bristles have a central core and a thin outer plastic coating, with granular abrasive preferably secured to such core beneath such coating.

3,689,119

## APPARATUS FOR THE UNIFORM DISTRIBUTION OF MATERIAL ISSUING FROM BLAST PIPE LINES

Ernst Welchel, Bahnhofstrasse 1, 7326 Heiningen, Germany

Filed June 12, 1970, Ser. No. 45,864

Claims priority, application Germany, June 14, 1969, P 19 30 318.5

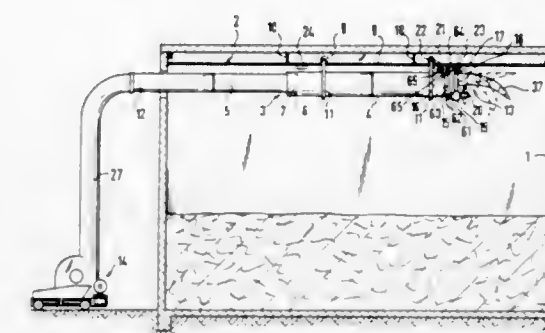
Int. Cl. B65g 53/40

U.S. Cl. 302—61

7 Claims

Apparatus for the uniform distribution of material issuing from blast pipe lines has a terminal distributor arranged directly on the discharge end of a horizontal or slightly rising conveyor pipe line, with the distributor including a drivable and swingable discharge trough. The discharge trough is mounted for oscillation, in a predetermined adjustable range, about the axis of the conveyor pipe to direct the material at an angle to the axis either laterally or downwardly. The conveyor

pipe includes an intermediate section and a terminal section having a diameter larger than that of the intermediate section. A guide rail extends above the material receiving area and mounts the terminal section for reciprocation parallel to its axis with the major part of its length being telescopic over



the intermediate section. The terminal section may be designed as an elongated hood with a detachable bottom wall which is detached from the hood as the terminal section is retracted and which is attached to the hood as the terminal section is extended.

3,689,120

## ANTI-SKID BRAKING SYSTEMS

Masaharu Sumiyoshi, 2-48, Ima-cho, Toyota-shi, Aichi-ken; Akira Suzuki, 2-5, Rokujizo, Noda, Kariya-shi; Minoru Kawabata, 2-125, Yashiki, Ogawa, Higashiura-cho, Chita-gun, and Shizuki Sakurai, 1-18, Mitsurugi-cho, Mizubo-ku, Nagoya-shi, all of Japan

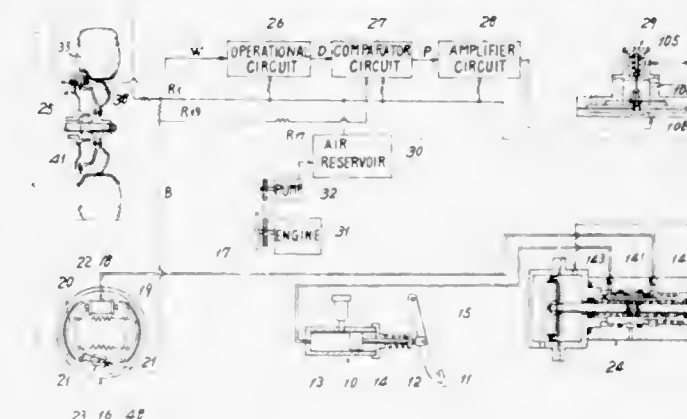
Filed July 28, 1970, Ser. No. 58,958

Claims priority, application Japan, Aug. 12, 1969, 44/64086

Int. Cl. B60t 8/12

U.S. Cl. 303—21 A

34 Claims



An anti-skid braking system which serves to modulate the pressure in the wheel brake cylinders of a vehicle to prevent the vehicle wheels from being locked when the normal proportional relationship between brake torque and wheel deceleration is no longer present. In order to modulate the pressure in the wheel brake cylinders, a pressure modulating valve is provided between the master cylinder and each wheel brake cylinder, the pressure modulating valve being responsive to a signal derived from a comparator circuit. The comparator circuit compares a signal responsive to brake torque and derived from a brake torque sensor, with a signal responsive to wheel deceleration and derived from a wheel deceleration operational circuit, to derive the first-named signal. The wheel deceleration operational circuit is adapted to convert a signal responsive to wheel speed and derived from a wheel speed sensor into said wheel deceleration-responsive signal. Preferably, both the comparator circuit and the wheel deceleration operational circuit are composed of fluid amplifier devices.



3,689,121

**APPARATUS FOR CONTROLLING BRAKING FORCE IN A WHEEL BRAKE SYSTEM ON A POWERED VEHICLE**

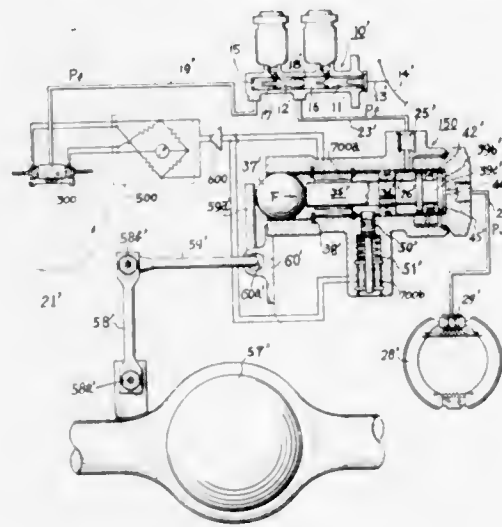
Tsuneo Kawabe; Kouichi Suzuki, and Hirotsuka Miyake, all of c/o Aisin Seiki Kabushiki Kaisha 1, Asahi-machi 2-chome, Kariya, Japan

Filed Aug. 25, 1970, Ser. No. 66,775

Claims priority, application Japan, Aug. 26, 1969, 44/67413  
Int. Cl. B60t 8/22, 8/26

U.S. Cl. 303—21 CH

7 Claims



An improved process and apparatus for controlling the hydraulic brake pressure for actuating the front and rear wheel brakes of an automotive vehicle to prevent simultaneous locking thereof upon sudden application of the vehicle brake actuating pedal by providing a hydraulic pressure limiter in the hydraulic conduit between the brake master cylinder and a selected pair of vehicle wheels, with the hydraulic pressure limiter, in turn, being connected with a brake pressure signal generating device attached to the remaining vehicle wheel pair for controlling the brake applied pressure of the selected wheel pair in response to the braking effort of the other wheel pair. The hydraulic pressure limiter unit is also operatively connected with a member of the vehicle chassis and responsive to the relative movement of the chassis member resulting from the braking action to vary the pressure applied to the selected wheel pair to prevent simultaneous locking of the front and rear vehicle wheels.

3,689,122

**ROAD WHEEL FOR CRAWLER TRACTOR**

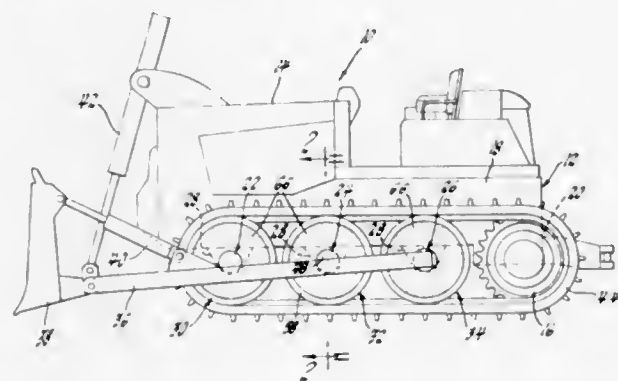
Janis Mazzarins, Macedonia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 18, 1970, Ser. No. 90,625

Int. Cl. B62d 55/16

U.S. Cl. 305—27

2 Claims



A road wheel for a crawler tractor having a hub member encircled by a rim member and attached thereto by a ring of resilient material. A cooperating tongue and groove arrangement integrally formed with the hub and rim members interconnects the latter for preventing the rim member from mov-

ing laterally relative to the hub member while permitting the rim member to move radially relative to the hub member so as to compress and expand the ring of resilient material when the tractor is traversing uneven terrain.

3,689,123

**TRACK LAYING ATTACHMENT FOR A VEHICLE**

Louis C. Barbieri, 520 South Idaho St., Dillon, Mont.

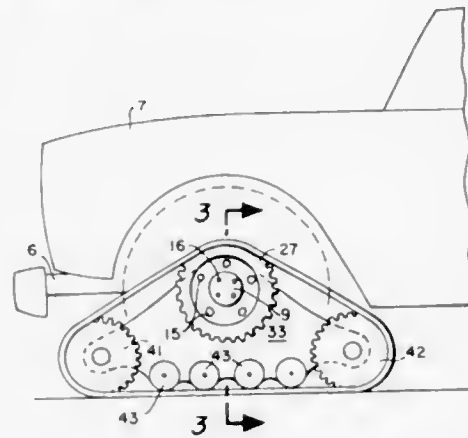
Continuation of Ser. No. 33,840, May 1, 1970, abandoned.

This application Sept. 10, 1970, Ser. No. 71,062

Int. Cl. B62d 55/04

U.S. Cl. 305—29

9 Claims



A track laying attachment is designed for application to a vehicle having a wheel hub rotatable about an axis and having a driving plate from which a plurality of studs project axially outward, the studs being arranged in a circle of predetermined diameter. The attachment has a coaxial drum with a circular cylindrical wall having an interior diameter greater than said predetermined diameter. At the inboard end of the drum is a driving wall with apertures receiving said studs and an inboard driving sprocket larger than the outside of said drum wall. At the outboard end of the drum is a ring having a central opening larger in diameter than said predetermined diameter and an outboard driving sprocket larger than the outside of the drum wall. A track laying frame structure has axially spaced bearings engaging the outside of the drum between the inboard and outboard sprockets. A track belt engages the track laying frame structure and the inboard and outboard sprockets.

3,689,124

**LINEAR MOTION ANTI-FRICTION BEARING AND METHOD OF MANUFACTURING**

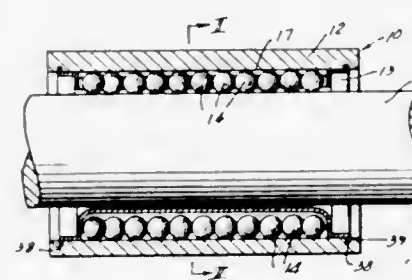
Arthur S. Irwin, Bemus Point, N.Y., assignor to TRW Inc., Cleveland, Ohio

Filed Sept. 11, 1970, Ser. No. 71,523

Int. Cl. F16c 19/02

U.S. Cl. 308—6 C

9 Claims



An anti-friction bearing for linear motion which has a cylindrical housing receiving a split cylindrical ball retainer, the inner diameter of the housing having a varying radius to provide ball loading and ball return paths and end portions of the split retainer being undulated to conform with the varying radius of the housing whereby the ball retainer is locked against rotational movement.

3,689,125

Patent Not Issued For This Number

3,689,126

**INTEGRAL BEARING MOUNTING AND DISMOUNTING APPARATUS**

Masahiro Hayashi; Koichi Seki, and Hiroshi Chinbe, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

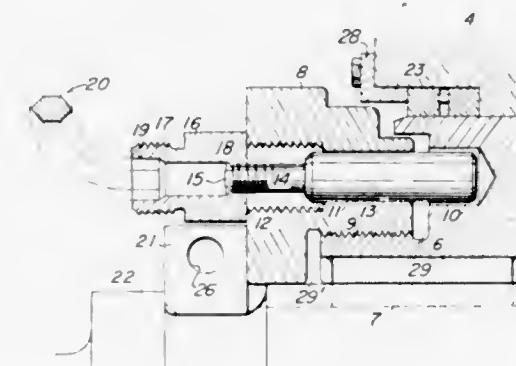
Filed April 13, 1971, Ser. No. 133,515

Claims priority, application Japan, April 17, 1970, 45/32343

Int. Cl. F16c 35/06

U.S. Cl. 308—207

8 Claims



A retainer which retains a bearing for supporting a roll neck in a predetermined position and a lock nut are engaged with each other by means of a rod member without use of screw engagement, whereby the bearing is firmly fixed at right position and the mounting and dismounting thereof is easily facilitated.

3,689,127

**ROLLER BEARING**

Wilhelm Hampp, and Stig Sandstrom, both of Schweinfurt, Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

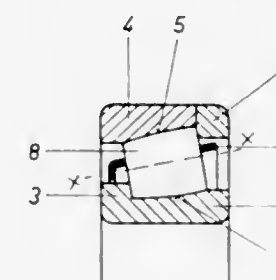
Filed April 30, 1970, Ser. No. 33,404

Claims priority, application Germany, May 2, 1969, G 69 17 771.5

Int. Cl. F16c 33/00

U.S. Cl. 308—214

7 Claims



A roller bearing having inner and outer rings each having races of a curved shape axially of the bearing. A plurality of rollers are arranged between the rings, the rollers having a surface conforming to curvature of the races and axes sloping toward the axis of the bearing. At least one of the rings having a separate retaining rim.

3,689,128

**CABINET UNIT EMPLOYING A FRAME WHICH CAN BE MOVED OUT OF A STATIONARY FRAME**

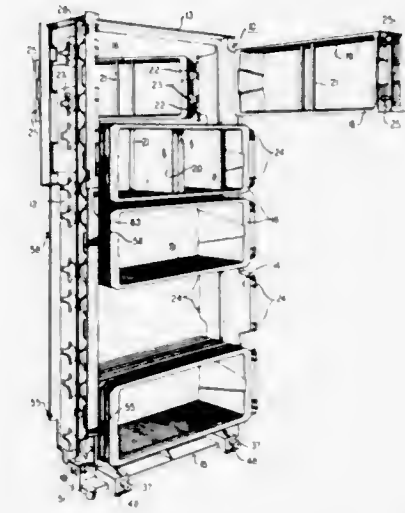
John Andreini, Irvington, N.J.; Edwin Harley Borchard; Karl-Heinz Pohl, both of Boulder, Colo., and Joseph Anthony Pucio, East Brunswick, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed April 21, 1971, Ser. No. 135,937

Int. Cl. A47b 88/00

U.S. Cl. 312—320

10 Claims



The cabinet unit comprises a movable frame that nests within a stationary frame comprising a head plate and a base plate extending forwardly from an upright plate. A door is pivotally secured to the forward end of the base plate so as to be movable between an upright and a prone position, and the door, the head plate, and the base plate all include means for guiding the displacement of the movable frame. In the upright position, the door serves to partially enclose the movable frame, and in the prone position, the door lies in the same plane as the base plate and serves as a platform onto which the movable frame is displaceable. Carriers for banks of electrical components are mounted on the movable frame, and with the movable frame positioned on the door, the entire perimeter of the frame is accessible for installation and service of the components supported by the carriers.

3,689,129

**HIGH RESOLUTION, REDUNDANT COHERENT WAVE IMAGING APPARATUS EMPLOYING PINHOLE ARRAY**

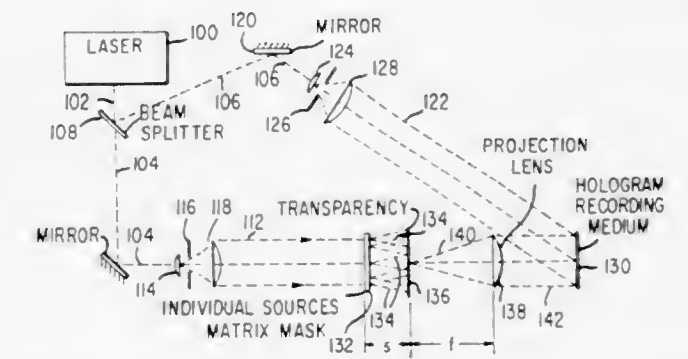
Michael Jay Lurie, 27-Salem Road, East Brunswick, N.J.

Filed April 14, 1971, Ser. No. 133,807

Int. Cl. G02b 27/22

U.S. Cl. 350—3.5

18 Claims



By properly selecting the distance between a non-scattering object and a matrix of point sources through which the object is illuminated with coherent wave energy, a pinhole array which in itself is capable of providing high redundancy only with low resolution may be made to provide both high redundancy and high resolution. Such apparatus is particularly suitable for recording holograms from transparencies.



3,689,130

Patent Not Issued For This Number

3,689,131

## LIQUID CRYSTAL DISPLAY DEVICE

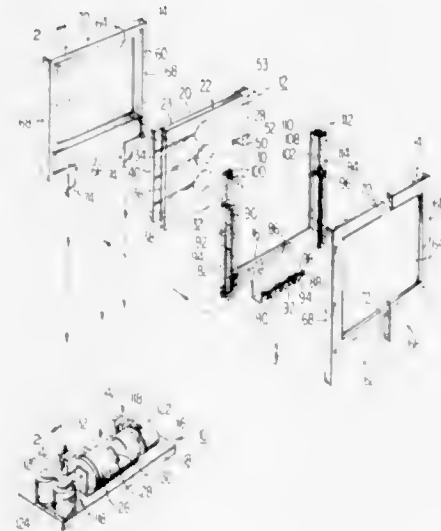
Richard I. Klein, Edison; Sandor Caplan, Trenton, and Ralph T. Hansen, Murray Hill, all of N.J., assignors to RCA Corporation

Filed June 29, 1970, Ser. No. 50,788

Int. Cl. G02f 1/34; G08b 23/00

U.S. Cl. 350—160

3 Claims



A liquid crystal cell comprises a pair of oppositely disposed substrates and electrode connectors extending to an exposed edge of one of the substrates. A printed circuit board having elongated arms is registered with the exposed edge of the substrate, conductive strips of the board being electrically connected to ends of the electrode connectors and extending to a commutator portion of the board. The cell and board are mounted on a frame which disposes the board commutator in registry with and against a programmer rotating cylinder, whereby voltages are sequentially applied to the cell electrodes.

3,689,132

## PANORAMIC OPTICAL SYSTEM

James G. Baker, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

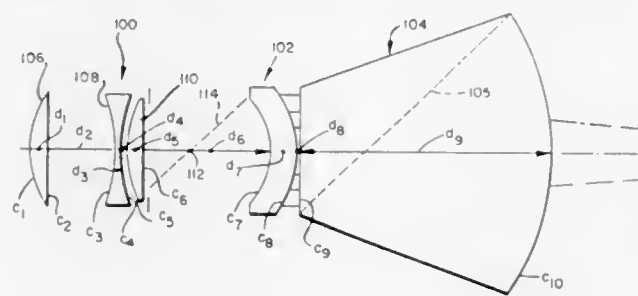
Division of Ser. No. 731,558, May 23, 1968, Pat. No.

3,605,592. This application June 29, 1970, Ser. No. 60,184

Int. Cl. G02b 3/04, 9/34, 9/60

U.S. Cl. 350—189

13 Claims



A corrected optical system is provided for a shallow camera that is characterized by an extremely short dimension between the forward position of the first refracting surface and the rearward position of the final image surface. In the compact hand-held camera illustrated herein as an example, the optical system is panoramic in operation, comprising: a pivotal scanning mirror (at one end of the camera); a slit (at the other end of the camera), past which the photosensitive film is moved at a rate, with which the scanning mirror rate is

synchronized in order to synthesize a complete image from a continuous sequence of increments; and a lens array, including a stationary shell and an objective array that, in one form, is pivoted at a rate, with which the scanning mirror rate is synchronized, in order to impart to the complete image a high state of correction. The objective array, which is characterized by an unusually short distance between front and rear refracting surfaces, is useful in other applications.

3,689,133

## OPTICAL SYSTEM HAVING LENS AND TWO MOVABLE MIRRORS

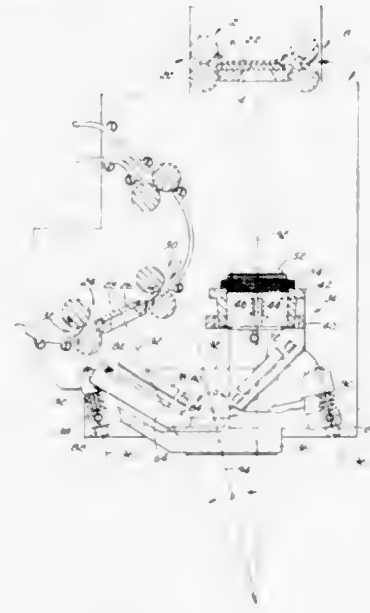
Richard W. Germuska, Cleveland, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed May 18, 1970, Ser. No. 38,028

Int. Cl. G02b 7/18, 17/00

U.S. Cl. 350—202

6 Claims



An optical system for photocopiers to project an image from an object plane to an image plane is provided. The optical system includes a lens system and a two-mirror reflecting system embodying two mirrors preset to a given angle. This mirror system is so mounted as to head the light path into a direction perpendicular to the image plane. The lens system is mounted with its optical axis perpendicular with the object plane. The mounting of the two mirrors is such to permit the mirror system to move as a unit on a path bisecting the angle formed by the intersection of the perpendiculars to the object plane and image plane. This allows a presetting of the mirrors outside the machine and a focusing of the system in the machine by changing the length of the optical path without changing the angle and location of the optical axis with respect to the image plane. Also, the lens system is movable along the optical axis to adjust size ratio of the projected image to the subject matter on the object plane. With this arrangement it is discovered that image size determination and refined focusing can be achieved by simple translatable adjustments of the lens and of the two-mirror system, without shifting the image location in the process.

3,689,134

## TWO-PARTITE OPTICAL COMPONENTS WITH AIR SPACE

Franz X. Leitmeir, Winterstrasse 2, 8031 Maisach-Munich, and Franz John Saller, Thuisstrasse 2, Neuaußing B. Munich, both of Germany

Filed May 11, 1970, Ser. No. 36,290

Claims priority, application Germany, May 10, 1969, P 19 24 017.6

Int. Cl. G02b 7/02

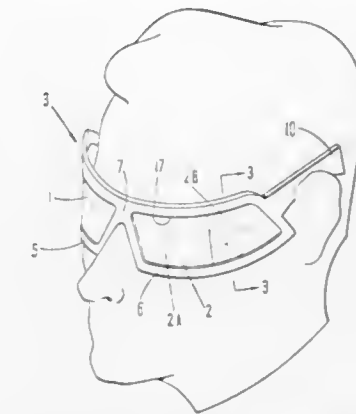
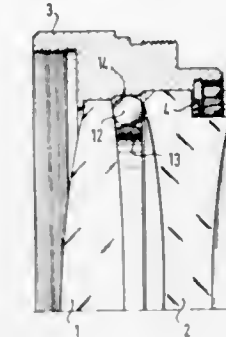
U.S. Cl. 350—252

24 Claims

A multiple lens combination with an air space in which at least three similar spacer bodies of the type which are com-

mercially available in large quantities with relatively small tolerances, such as steel balls, are held in abutment against an internal bore of the lens mounting by a cage ring whereby the

adapted to selectively support the lenses in one of two relatively inverted positions with either of the zones directly in



front of the wearer's eyes and the other of the zones at the side adjacent the temple of the frame.

quotient of the permissive tolerance of the air space between the mutually facing lens surfaces and the diameter tolerance of the internal bore is at least approximately equal to the tangent of the wedge angle of the air space at its edge.

3,689,135

## METHOD FOR MONITORING MOVEMENT OF A SUBJECT'S EYES

Laurence R. Young, 141 Grant Ave., Newton, Mass., and Joel S. Newman, 18 Laurie Lane, Framingham, Mass.

Continuation of Ser. No. 829,836, April 4, 1969, abandoned,

which is a division of Ser. No. 634,344, April 27, 1967, Pat.

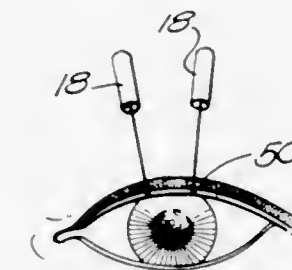
No. 3,473,868. This application Jan. 26, 1971, Ser. No.

109,966

Int. Cl. A61b 3/00

U.S. Cl. 351—39

6 Claims



An eye measuring instrument employing a modulated invisible light source which illuminates the eye and a pair of photocells directed to the interface of portions of the eye with different light reflecting properties. The interfaces selected move in response to eye movement or pupil area change, and the changes in the photocell outputs are a measure of the eye movement or pupil area change.

3,689,136

## SUNGLASSES WITH REVERSIBLE SHADE PORTIONS

Zaven Atamian, 4103-Saugus Ave., Sherman Oaks, Calif.

Filed Sept. 9, 1970, Ser. No. 70,844

Int. Cl. G02c 7/10

U.S. Cl. 351—44

9 Claims

Sunglasses having a pair of removable lenses. Each lens has side-by-side zones of different light-transmitting characteristics. The frame is arranged with lens-supporting means

3,689,137  
FILM REWIND DEVICE FOR COMPACT CINECAMERAS  
Iida Yozo, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

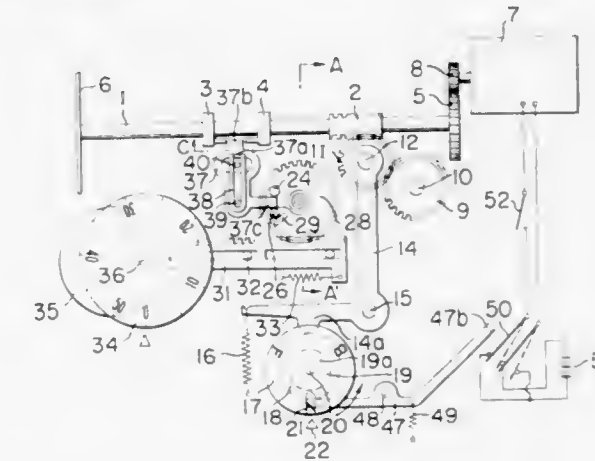
Filed Nov. 23, 1970, Ser. No. 91,997

Claims priority, application Japan, Nov. 28, 1969, 44/95167

Int. Cl. G03b 21/36

U.S. Cl. 352—91

6 Claims



A film rewind device for compact cinecameras of the type using a film cartridge having no supply spool shaft operable from the exterior thereof but provided with detent means attached to a take-up core, and in which the length of film to be loosely supplied to the take-up chamber of the cartridge can be varied in proportion to the film roll diameter in the supply chamber of the cartridge by the utmost utilization of the fact that the space in each of the supply and take-up chambers varies in proportion to the length of film photographed, and the length of film to be loosely supplied into the take-up chamber can be selected as desired within a predetermined range and that length of film can be rewound exactly.

3,689,138

## MOTION PICTURE PROJECTION APPARATUS

Fred N. Woodhouse, Rochester, and Craig E. Smith, York, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed March 10, 1971, Ser. No. 122,849

Int. Cl. G03b 21/50

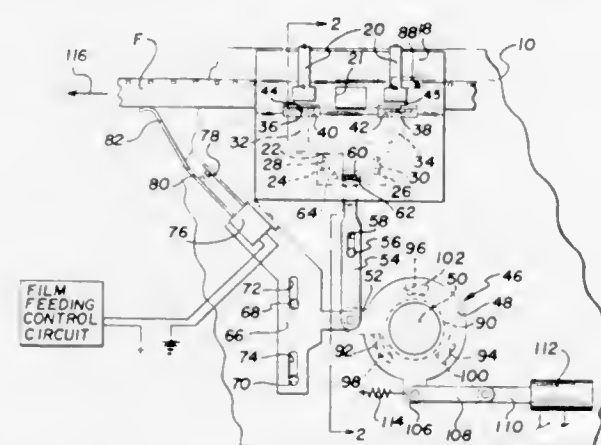
U.S. Cl. 352—92

3 Claims

A motion picture projector includes a housing, a movable pressure pad on the housing biased toward an aperture plate to define a film channel therebetween for receiving a strip of film. An edge guide is mounted on the housing for movement from a position adjacent one edge of a received strip of film to a position spaced from said strip of film, and a film advancing member is mounted on the housing for movement into and



along the film channel so as to intermittently advance a received strip of film along the channel. An actuator is rotatably mounted on the housing and is connected to the pressure pad and the edge guide so that rotation of the actuator in one direction opens the film channel by moving the pressure pad away from the aperture plate and moving the edge guide to its position spaced from the film strip. Cam means are provided for moving the actuator along its axis of rotation upon rotation of the actuator in a channel-opening direction, the actuator being interconnected to the film ad-

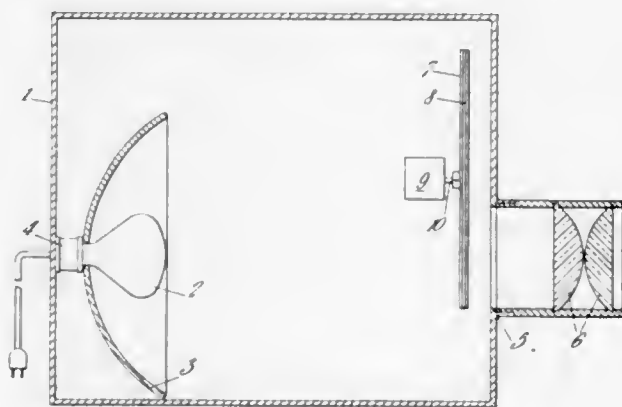


vancing member to block movement of the film advancing member into the film channel upon such axial movement of the actuator. A film detecting member is mounted on the housing for movement between a first position in which a portion of the detecting member extends into the path of a strip of film in the region of the channel and a second position in which that portion of the detecting member is spaced from the film path. The detecting member is connected to the actuator whereby rotation of the actuator in a channel opening direction moves the member to its second position.

### 3,689,139 OPTICAL PROJECTOR

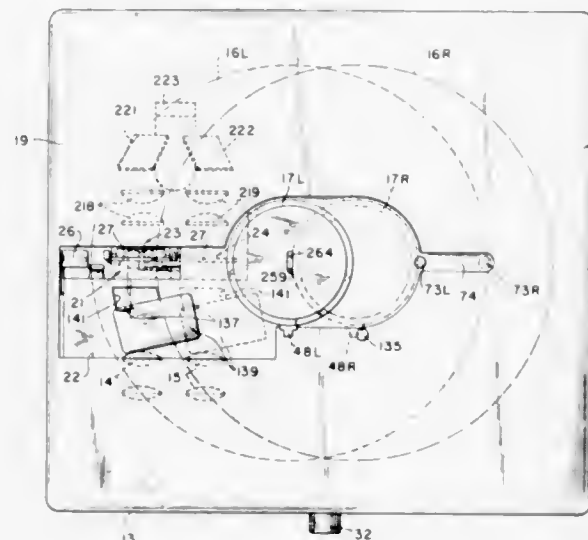
Alexander Gross, and Ilene Astrahan Gross, both of 18, Redcliffe Square, S.W. 10, London, England  
Filed Sept. 22, 1969, Ser. No. 859,741  
Claims priority, application Great Britain, Oct. 3, 1968, 46,986/68

Int. Cl. G03b 21/14  
U.S. Cl. 353—84 4 Claims



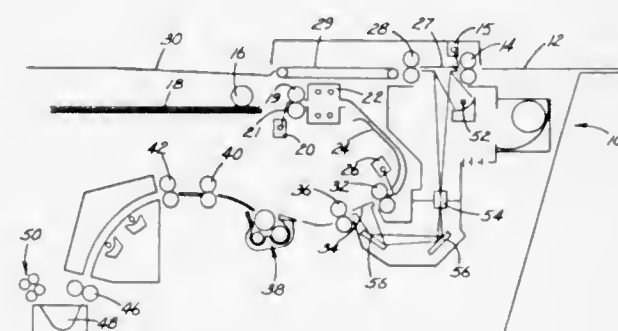
An optical projector in which the light beam is projected from a light source through a lens system and a slide onto a screen, the slide having two light-transmitting walls containing two or more immiscible fluids, at least one fluid being colored and at least one of the walls of the slide being flexible so that interplay between flexible wall and the fluids causes relative motion between the fluids, this slide being supported in a slide carrier means which are arranged to be moved, either rotated around an axis or reciprocated, by movable means so that the light beam projects different parts of the slide into the screen to give changing colored images.

3,689,140  
LAP DISSOLVE SLIDE PROJECTOR  
Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.  
Filed May 14, 1970, Ser. No. 37,227  
Int. Cl. G03b 21/14, 21/26, 23/02  
U.S. Cl. 353—90 10 Claims



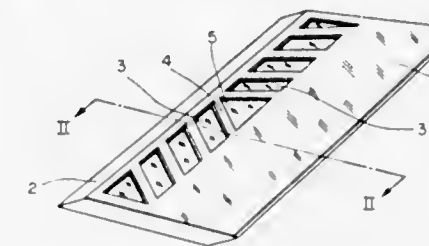
A lap dissolve slide projector alternately displays slides supported in two laterally adjacent stationary slide gates provided with corresponding separate objective lens systems. A single multiple compartment slide tray moves laterally into alternate alignment with one gate and then the other, and also advances and retracts automatically so that the slides are fed into the projector and displayed in the sequence in which they are initially arranged in the tray and are returned to the tray in the same sequence.

3,689,141  
ELECTROSTATIC EXPOSURE TIME CONTROL  
Donald R. Gray, Chesterland, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio  
Filed May 19, 1970, Ser. No. 38,850  
Int. Cl. G03g 15/00; G03b 27/76  
U.S. Cl. 355—3 3 Claims



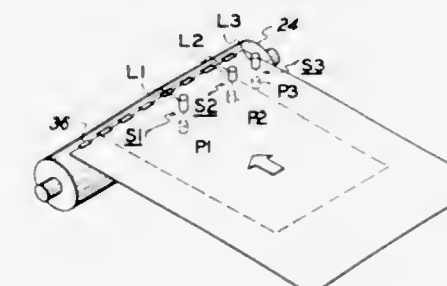
A copy sheet is driven from a supply stack through an electrostatic charging unit, and moved a substantial distance in a path to an exposure station. Mechanical detecting switches projecting into that path are avoided by using a solid state timing circuit which is activated with the charging unit to turn the exposure light on and off at the proper exposure time, and thus avoid the need for the light to be operating for excessively long periods of time.

3,689,142  
EXPOSURE WINDOW OF AN ELECTROSTATIC  
COPYING MACHINE  
Yorio Yamanai, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan  
Filed Dec. 2, 1970, Ser. No. 94,359  
Claims priority, application Japan, Dec. 2, 1969, 44/114474  
Int. Cl. G03g 15/04  
U.S. Cl. 355—3 8 Claims



An exposure window in an electrostatic copying machine for preventing electrostatic adherence of the advancing copy paper is formed of a flat transparent plate having deep wells in its rear face including a medial equilateral triangular well with its apex toward the plate trailing edge and a group of parallelogram wells on each side of the triangular wells, the wells being separated by thin partitions with parallel walls. The peripheral faces of the wells are perpendicular to the plate faces and the bases of the wells are parallel to the plate faces. The window plate has a guide slope formed on one edge for guiding the entry of a copy paper onto the plate for exposure.

3,689,143  
REPRODUCING MACHINE  
Raymond D. Case, Rochester; Thomas O. Maloney, Webster, and Larry H. Warren, East Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.  
Filed Dec. 28, 1970, Ser. No. 101,788  
Int. Cl. G03g 15/00  
U.S. Cl. 355—3 5 Claims

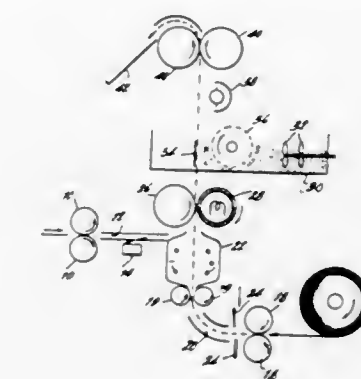


An improved continuous and automatic xerographic reproducing machine that is adapted to create copy on sheet material of one of several sizes. The machine has a plurality of sensing devices positioned to detect the size of the document to be reproduced as it is inserted and moved into the machine prior to the initial imaging cycle. This information is translated into machine logic that selects a particular optical magnification of the image projection means, a related document speed, and a proper support tray for copy sheet size.

3,689,144  
ELECTROSTATIC COPYING APPARATUS EMPLOYING  
DEVELOPMENT ON SIDE OF THE IMAGING SHEET  
OPPOSITE THE PHOTOCONDUCTIVE COATING  
Arthur L. Kaufman, 26 High Point Road, Westport, Conn.  
Division of Ser. No. 17,810, March 9, 1970, Pat. No. 3,594,159. This application Jan. 28, 1971, Ser. No. 110,511  
Int. Cl. G03g 15/06  
U.S. Cl. 355—3 6 Claims

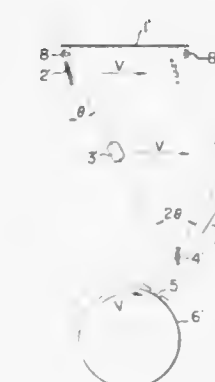
Apparatus for electrostatic reproduction of indicia, wherein a sheet of record material having an insulating substrate and a

coating of photoconductive material on one side thereof is electrically charged, the photoconductive side is then exposed to light coming from the indicia to form a latent image, an electrical connection is established between the exposed



photoconductive coating and a body of electrostatically attractive toner, the toner is applied to the substrate on the side opposite the photoconductive coating to render the latent image visible.

3,689,145  
SLIT EXPOSURE TYPE COPYING  
Kazuo Kawakubo, Kawasaki, and Akira Kurahashi, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan  
Filed April 6, 1970, Ser. No. 25,653  
Claims priority, application Japan, April 8, 1969, 44/27453  
Int. Cl. G03g 15/04  
U.S. Cl. 355—8 25 Claims



A copying device comprising an original table mounted in a housing to accept an original to be copied; an illuminating means for illuminating an original mounted on said original table; a first mirror mounted to move horizontally relative to said original table; a projection lens mounted in the direction of the reflection of the light image coming from the direction of the normal line to the original by said first mirror, and mounted to move horizontally relative to said original table at the same speed as the first mirror; a second mirror mounted perpendicularly to said original table to reflect the light image that is passed by said first mirror and said projection lens; means to drive said first mirror, projection lens, and said second mirror synchronously in order to scan and expose sequentially the original on said original table; a photosensitive member which moves at a predetermined speed relative to first mirror, said projection lens, and said second mirror, and means to drive the photosensitive member.



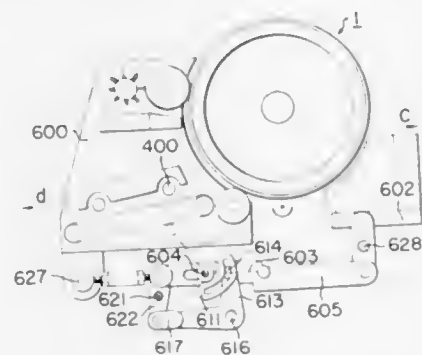
3,689,146

**ELECTROPHOTOGRAPHIC COPYING MACHINE**  
Yoshio Ito, Tokyo; Hajime Katayama, Kawasaki, and Masaru Yamaguchi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan  
Filed April 30, 1970, Ser. No. 33,219  
Claims priority, application Japan, May 2, 1969, 44/34714; Aug. 12, 1969, 44/63653

Int. Cl. G03g 15/00

U.S. Cl. 355—8

11 Claims



An electrophotographic copier comprises a photosensitive drum including a photoconductive layer and an outer insulative layer. Apparatus for forming and developing an image of an original on the drum surface is selectively supported peripherally thereof as is apparatus for feeding copy material to the drum surface, for transferring developed images to the copy paper and for cleaning the drum surface. The developing, image transfer, fixing, cleaning, and copy separating devices are supported on a single unitary support member which is manually movable into and out of the operative position adjacent to the drum surface. A carrier for supporting the original is arranged for reciprocating movement with respect to the drum. Preferred embodiments of such peripherally supported apparatus are also disclosed.

3,689,147

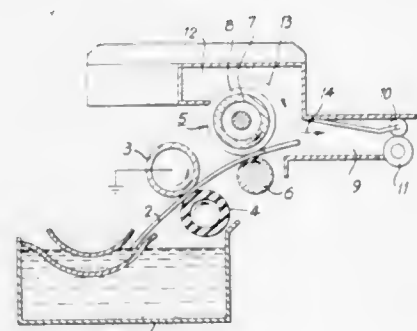
**LIQUID-DEVELOPMENT TYPE ELECTROPHOTOGRAPHIC APPARATUS INCLUDING PAPER DRIER MEANS**

Shigeru Suzuki, 440-Marooka-cho, Kohoku-ku, Kanagawa-ken, Yokohama-shi, Japan  
Continuation-in-part of Ser. No. 783,550, Dec. 13, 1968, abandoned. This application July 30, 1971, Ser. No. 167,745  
Claims priority, application Japan, Dec. 20, 1967, 42/81182

Int. Cl. G03g 15/10

U.S. Cl. 355—10

9 Claims



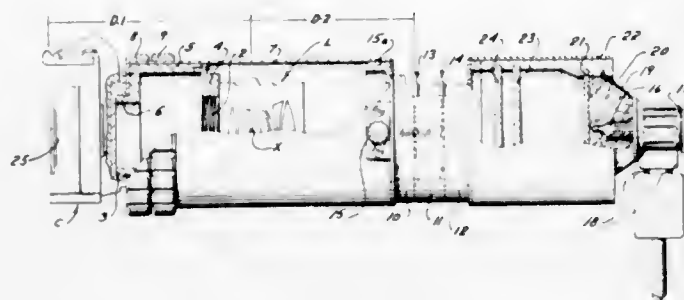
A drier for drying copying paper in a liquid development type electrophotography apparatus includes a pair of squeegee rollers, and a pair of drier rollers provided next to the squeegee rollers. The peripheral surface of at least one of the drier rollers consists of a liquid-absorbing material. Air is evacuated from within a perforated endless belt to suck paper thereagainst for purposes of transportation. This air is moved past an exposure lamp where the air is heated and dried. The air is then blown against the liquid absorbing material and against copying paper passing therethrough.

3,689,148

**TRANSPARENCY COPYING ATTACHMENT**  
Robert B. Black, 2925 Denner St., Corpus Christi, Tex.  
Filed Aug. 27, 1970, Ser. No. 67,491  
Int. Cl. G03b 27/32

U.S. Cl. 355—18

10 Claims



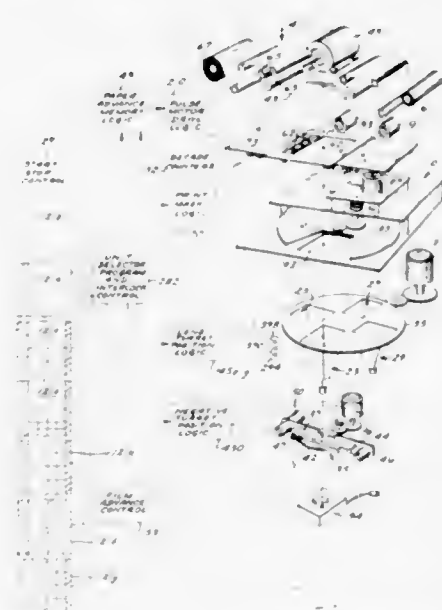
A tubular structure having at one end a bayonet or screw mounting device is proportioned to interfit with a complementary lens mounting device on a single lens reflex camera, so that by removal of the camera lens from the camera the device may be connected with the camera. The camera lens may be mounted within the device and thereby utilized as the optical system of the conversion device. The tubular structure further has a light inlet or light source associated with its end remote from the camera end, and the tubular structure is slotted intermediate the light source end and the position of the lens when mounted in the device so that a slide or transparent element having a photographic image thereon may be inserted in the slot and may be directly converted by operation of the camera. Provision is also made for insertion of a correction filter.

3,689,149

**PHOTOGRAPHIC PRINTING APPARATUS HAVING VARIABLE LENGTH PRINT PAPER**  
James S. Livingood, Reseda, Calif., assignor to Drewry Photocolor Corporation, Burbank, Calif.  
Filed Nov. 12, 1970, Ser. No. 88,680  
Int. Cl. G03b 27/44

U.S. Cl. 355—46

13 Claims



A photographic printing apparatus for printing a series of patterns of prints and including a film carrier for positioning film to have light projected through the frames thereof and along an optical axis for projecting images on printing paper positioned on a printing paper support. First and second lens sets are provided for selective movement into the optical axis for projecting respective first and second patterns of images onto the printing paper, such patterns occupying respective first and second lengths of such paper. Printing paper advance

means is connected with the printing paper support and the first and second lens sets and is responsive to the first lens set being moved into such optical axis to advance the printing paper the first length and is responsive to the second lens set being moved into the optical axis to advance the paper such second length whereby the respective first and second patterns of prints may be printed on the printing paper at immediately adjacent locations.

3,689,150

**AUTOMATIC ROLL FILM CAMERA**  
Gerhard A. Nothmann, Wilmette; Charles P. Sippel, Jr., Villa Park, and Walter Scott Bartky, Chicago, all of Ill., assignors to Robertson Photo-Mechanix, Inc., Des Plaines, Ill.  
Filed Aug. 31, 1970, Ser. No. 68,183

Int. Cl. G03l 27/60

U.S. Cl. 355—64

17 Claims



A process camera includes a plurality of mandrels for supporting separate rolls of normally different film in continuous web form and is automatically controlled to thread a selected film web through the rear case of the camera, restrict the area of film to be exposed to a selected length, introduce and remove selected contact screens when needed, expose the restricted area selectively, advance the film, measure the amount of film web advanced, cut the film web between exposed areas at a location downstream of an optical axis of the camera to form cut sheets of exposed film and convey the cut sheets to a subsequent processing station at a speed compatible with the speed of operation of the processing station. Once an operator has programmed the necessary variable control parameters into the camera control means, the camera components are operated throughout one camera cycle in a predetermined series of steps following the program sequence without requiring further attention by the operator.

3,689,151

**MICROFILM FLOW TYPE APPARATUS**  
Wilfried Hofmann, Munich, and Josef Pfeifer, Unterhaching, both of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Leverkusen, Germany  
Filed April 15, 1970, Ser. No. 28,611

Claims priority, application Germany, April 4, 1969, P 19 013.7

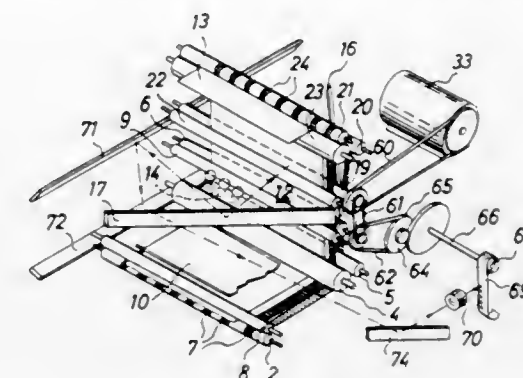
Int. Cl. G03b 27/32

U.S. Cl. 355—64

6 Claims

An apparatus for scanning a succession of sheets which are transported through a scanning station; the scanning apparatus is useful, for example, in the reproduction of the material on such sheets on microfilm. A first driven transport means conducts the sheets to the scanning station; a second driven transport means conducts them away from such station. The two transport means are driven by a common motor

which is under the control of a novel circuit means which stops the motor if a sheet, having been grasped and conveyed by the first transport means, fails to reach the second transport



3,689,152

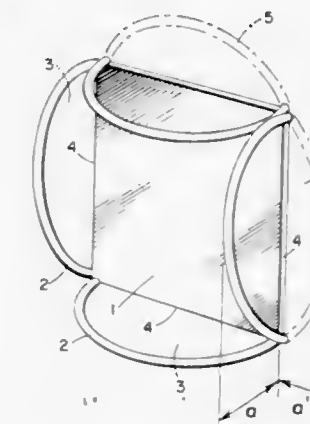
**REPRODUCING CAMERA**  
Gerhard Grimm, Munich, Germany, assignor to Fritz Geisenberger, Munich, Germany  
Filed April 30, 1970, Ser. No. 933,473

Claims priority, application Germany, April 30, 1969, P 19 22 188.6

Int. Cl. G03b 27/54

U.S. Cl. 355—70

7 Claims



An illuminating device for use in photography to provide uniform illumination of a flat item to be photographically copied has light sources disposed along the four linear sides of a planar rectangular carrier for the item, the light sources being arranged so that at least two opposite sides of the carrier the distance of the light sources from the associated side is greater in the middle of the side than at its ends.

3,689,153

**MULTISURFACE CONTINUOUS PRINTING APPARATUS**  
Eiichi Suzuki, Niiza, Japan, assignor to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1971, Ser. No. 115,526  
Claims priority, application Japan, Feb. 19, 1970, 45/14301

Int. Cl. G03b 27/04

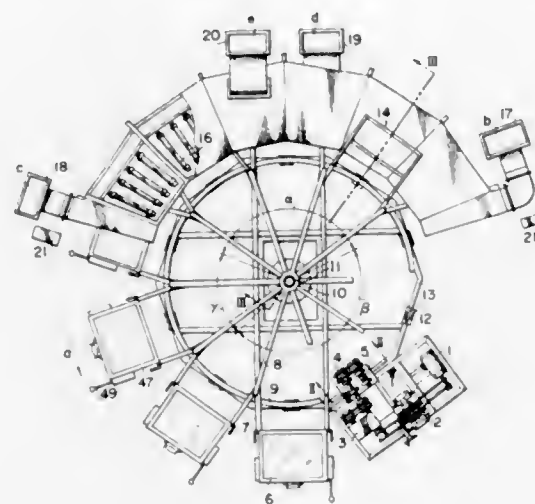
U.S. Cl. 355—89

5 Claims

A multisurface continuous printing apparatus comprising a plurality of vacuum printing frames disposed horizontally on the circumference of the end portions of rotatable main arms and capable of simultaneously exposing photographic patterns on both surfaces of thin sheet materials applied with photosensitive resin; a light source or an exposure tunnel disposed on a part of said circumference to carry out exposure from both surfaces of said frame simultaneously; a rotary joint of vacuum



pipings provided on a rotary shaft to carry out vacuum suction of each vacuum printing frame; a rail fixed to said main arm in the form of a circle and supporting said vacuum printing



frames with a plurality of rollers; and a driving means attached to the mount, the torque of which being transmitted through transmission devices and said rollers.

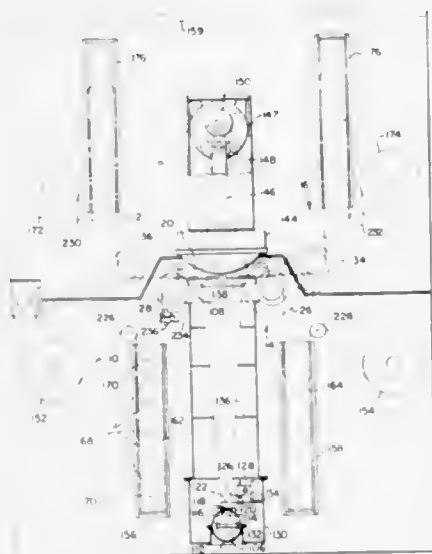
3,689,154

# WEB TRANSPORT SYSTEM PARTICULARLY FOR HIGH RESOLUTION PHOTOGRAPHIC PRINTING

James Bert Swain, Weston, and David Jeffries, Wilton, both of Mass., assignors to Baird-Atomic, Inc., Bedford, Mass.  
Filed Dec. 28, 1970, Ser. No. 101,460  
Int. Cl. G03b 27/04

U.S. Cl. 355—97

12 Claims



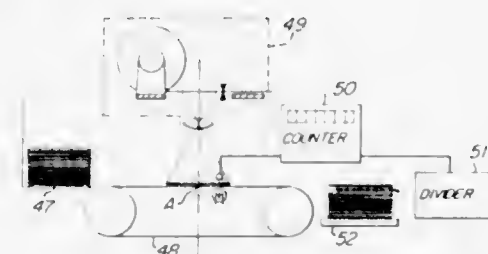
A web transport system particularly adapted for use in high resolution photographic printing comprises precise servo systems for feeding, advancing, and taking up negative and copy film and a photographic subsystem for making exposures. A precise feed servo subsystem includes idler air bearings, drive capstans, and digital to analog encoders for advancing negative and copy films. A reel servo subsystem includes feed and take-up spools for supplying and collecting negative and copy films and vacuum wells for maintaining constant tension on the films.

3,689,155  
MAIL PROCESSING APPARATUS  
Akira Nishiyama, Neyagawa; Tooru Fukui, Suita; Satoshi Takahashi, Hirakata; Yuji Takashima, Neyagawa; Masaaki Nakano, Osaka; Yoshiteru Izura, and Masaaki Tanaka, both of Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed July 13, 1970, Ser. No. 54,555  
Claims priority, application Japan, July 18, 1969, 44/58140; July 14, 1969, 44/56663; July 14, 1969, 44/56665; July 18, 1969, 44/58135; July 18, 1969, 44/58139  
Int. Cl. G03b 27/14

U.S. Cl. 355—133

1 Claim



An automatic mail processing apparatus having means for postmarking a registered mail matter, means for applying information such as the accepting post office designation, serial number and date to the mail matter, a keyboard for generating numerical signals representative of the postal charge, compensation money and weight, and means for supplying a sheet of paper for recording the information and the numerical signals on the sheet, so as thereby to reduce the processing period of time and preventing errors due to manual handling.

3,689,156

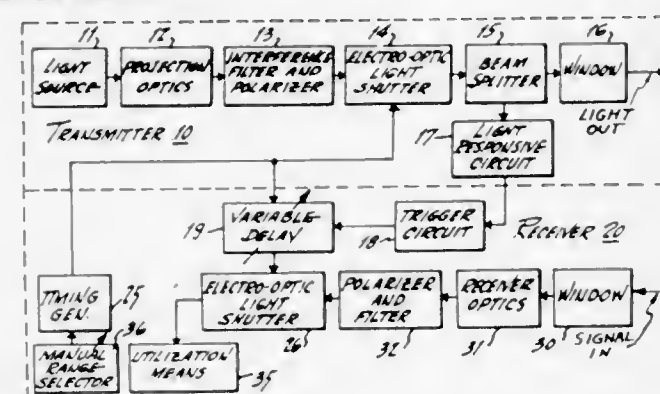
# RANGE GATED IMAGE SYSTEMS USING PULSED ILLUMINATORS

Michael Kerpchar, Livingston, N.J., assignor to Ocean Metrics, Inc., Fairfield, N.J.

Filed Nov. 12, 1969, Ser. No. 875,862  
Int. Cl. G01c 3/08; G02c 7/12

U.S. Cl. 356—5

8 Claims



A range gated imaging system uses a pulsed illuminator to light a target and to receive reflected light from the target without disturbances caused by backscatter from undesired sources.

The illuminator comprises a non-coherent light source which is polarized prior to application of the light beam to an electro-optic cell. A timing generator provides a pulse train, each pulse of which has a selectable duration, selected in accordance with the distance of the illuminator from the target. The pulse train is applied to the cell to provide an output of light pulses. A light sensitive device, such as a photo diode, detects the transmitted light pulses and provides an output pulse coincident with the trailing edge of the light pulse. This pulse is applied through a selectable variable delay circuit to activate another electro-optic cell in a receiver. Upon activation the receiver cell is caused to pass light to utilization means, when the transmitted light pulse as reflected from the desired target arrives at the receiver.

3,689,157  
DEVICE FOR MEASURING THE RELATIVE MOVEMENT BETWEEN AN OBJECT AND THE ENVIRONMENT OF THE OBJECT

Ingvar Andermo, Taby, Sweden, assignor to Institutet For Mikrovagsteknik, Stockholm, Sweden

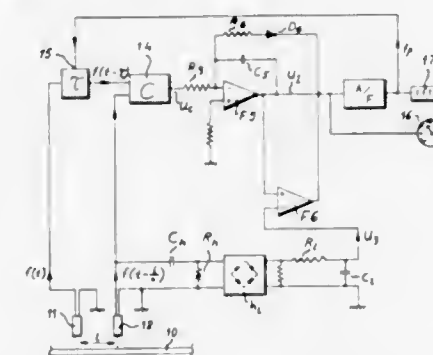
Filed Nov. 26, 1969, Ser. No. 880,293

Claims priority, application Sweden, Dec. 10, 1968, 16843/68

Int. Cl. G01p 3/36

U.S. Cl. 356—28

5 Claims



A device for measuring the relative movement between an object and the environment of the object comprises a signal source, two scanning devices, arranged to generate two signals derived from a signal from the signal source, a delay device and a comparison circuit connected to the two scanning devices, one through the delay device on the input side and to a control circuit on the output side. The control circuit is arranged to control some part of the device with a control signal so that the two signals tend to coincide. Further the device has a correction circuit, the input side of which is connected to speed sensing means, which is independent of the control circuit, and the output side of which is connected to the control circuit. The correction circuit is arranged to influence the control circuit so that the control signal, at least at velocities near zero, has a limited variation range around a value corresponding to the speed indicated by the independent speed sensing means.

3,689,158

# ATOMIC ABSORPTION ANALYZER COMPENSATED FOR BACKGROUND ABSORPTION

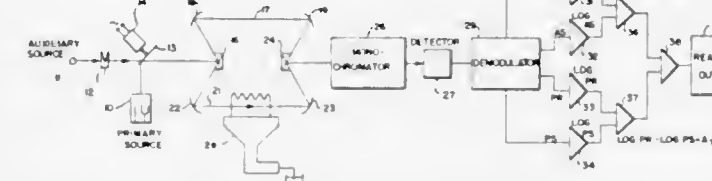
Norman Shifrin, Brea, Calif., assignor to Beckman Instruments, Inc.

Filed Feb. 16, 1971, Ser. No. 115,311

Int. Cl. G01j 3/30, 3/42

U.S. Cl. 356—87

5 Claims



There is disclosed an atomic absorption analyzer which provides automatic background absorption compensation. Pulses of radiant energy from a continuous radiant energy source and a resonant frequency source are both directed alternately along sample and reference beam paths. The detector signal is sorted and handled to provide a signal which is  $(\log PR - \log PS) - (\log AR - \log AS)$  where PR is proportional to the resonant radiation passing the reference path, PS is proportional to the resonant radiation passing the sample path, AR is proportional to the auxiliary radiation passing the reference path, and AS is proportional to the auxiliary radiation passing the sample path. The function  $\log PR - \log PS$  is a function of the total absorbance in the sample path while  $\log AR - \log AS$  is a function of the background absorbance in the sample path.

The resulting signal is therefore proportional only to the free atom absorbance of the element of interest.

3,689,159

# LASER PROCESSING APPARATUS

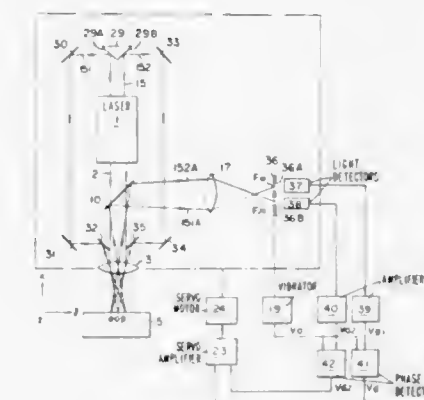
Ichiro Taniguchi, Itam, and Shigeru Ando, Osaka, both of Japan, assignors to Mitsubishi Electric Corporation, Tokyo, Japan

Filed June 22, 1970, Ser. No. 48,208

Int. Cl. B23k 9/00

U.S. Cl. 356—123

8 Claims



A laser shaping apparatus for automatically shaping a workpiece with a laser and for providing automatic control so that the focal point of the laser light which is focused by a lens always corresponds with the point on the workpiece which is being shaped.

3,689,160

# ANGLE-READING DEVICE

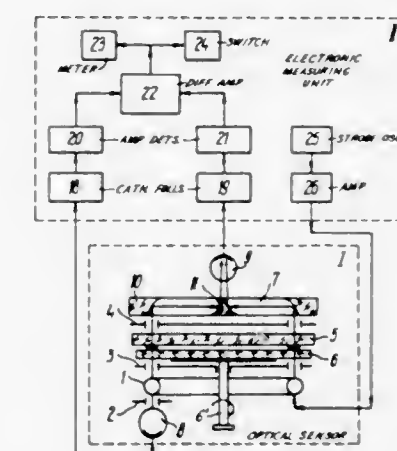
Juozas Juozas Shimulenis, ulitsa Yan-Kupaly, 19/21, kv. 7, and Petr-Vikenty Martynovich Shulsky, ulitsa Mintes, 30, kv. 45, both of Vilnius, U.S.S.R.

Filed Jan. 22, 1970, Ser. No. 4,956

Int. Cl. G01b 1/26

U.S. Cl. 356—152

8 Claims



An angle-reading device comprising a reflector, light source, circular scales, photo-multiplier tubes, and an electronic measuring unit with a meter, the reflector being a system of two mirrors one of which is circular and the other of which is conical and is placed inside the circular one. The light source is a toroidal strobe lamp to modulate the reference signal and the signal corresponding to the value of the angle of each scale step being read, which signals are applied to the electronic measuring unit comprising a differential circuit which compares the two signals.



3,689,161

## OPTICAL UNIT FOR WHEEL ALIGNER

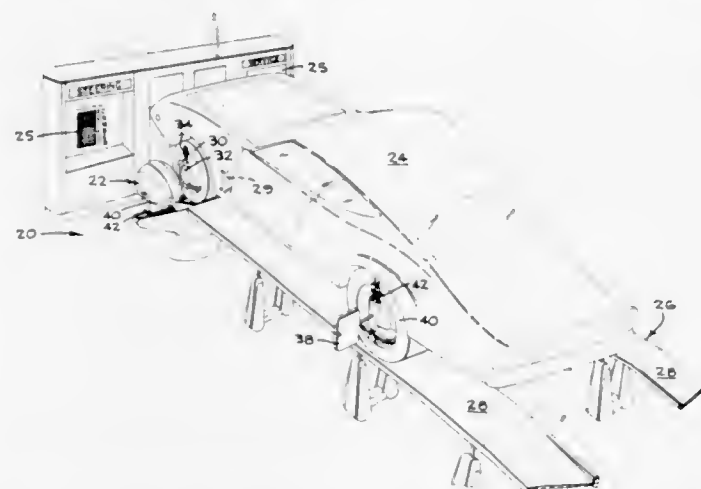
Melvin H. Lill, Okemos, and Edward P. Graham, Lansing, both of Mich., assignors to FMC Corporation, San Jose, Calif.

Filed Dec. 10, 1970, Ser. No. 96,793

Int. Cl. G01b 11/26

U.S. Cl. 356—155

11 Claims



A high intensity optical unit for projecting sharp images of a lantern slide scale and a pointer onto a screen which images are easily visible during daylight hours. The optical unit cooperates with and is positioned a predetermined distance from a mirror which is mounted on a wheel being tested in a plane substantially normal to the axis of the wheel. A single low intensity lamp is used to project a cross hair target light beam and a locator light beam at different angles against the wheel mounted mirror and other mirrors in the optical unit for reflection onto the screen such that when the optical unit is moved to a position wherein the target and locator images lie in a common vertical plane on the screen the optical unit is properly spaced from the wheel mounted mirror. Stop means preset the lowermost positions of the lantern slide and the pointer such that the zero line of a lantern slide camber scale image, the pointer image, and the target image will all lie on the same horizontal line when projected on the screen and when the target image has been reflected off the surface of a wheel mounted mirror that is perfectly normal to the axis of rotation of the wheel. The lantern slide and pointer may be adjusted vertically and reset to compensate for wheel run out due to imperfect wheels and mirror mounting errors, and the reset pointer image will retain the corrected camber zero allowing movement of the lantern slide to make other tests between the initial and final camber tests.

3,689,162

## APPARATUS FOR THE RELATIVE POSITIONING OF TWO OBJECTS BY MEANS OF A BEAM OF RADIATION

Eric Tapley Ferguson, Emmssingel, Netherlands  
Continuation of Ser. No. 811,177, March 27, 1969,  
abandoned. This application Jan. 25, 1971, Ser. No. 109,573  
Claims priority, application Netherlands, March 30, 1968,  
6804512

Int. Cl. G01g 11/04

U.S. Cl. 356—169

4 Claims



A displacement sensing device using superimposed dissimilar circular moire patterns. Groups of circles in one of the patterns alternately have a greater and a smaller pitch than those of the other pattern.

3,689,163

## PRECISION REFERENCE POINT DETECTOR

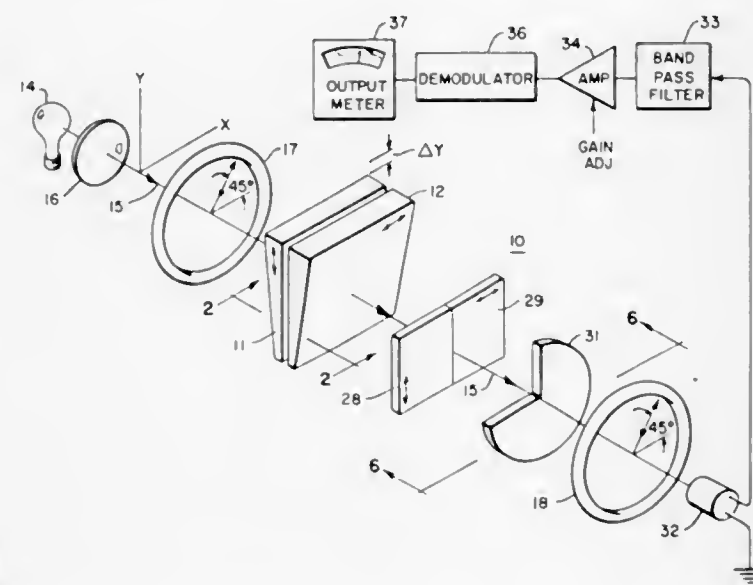
Charels A. Glorioso, Skokie, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Dec. 28, 1970, Ser. No. 101,695

Int. Cl. G01b 11/26

U.S. Cl. 356—172

12 Claims



A precision reference point detector includes a pair of relatively displaceable, wedge-shaped, birefringent prisms juxtaposed with their respective optic axes in orthometric relationship and having their thick sides and thin sides correspondingly oriented. Polarized light rays are passed through the prisms, a pair of coplanar quarter-wave plates and an analyzer onto a photoreceptor where they are converted into electrical signals. A rotatable light chopper, interposed in the light path between the quarter-wave plates and the analyzer, selectively blocks the light emerging from alternate quarter-wave plates such that the light impinging on the photoreceptor is alternately advanced and retarded 90° in phase. When a relative displacement at right angles to the light path is imparted to the prisms, detector circuitry coupled to the photoreceptor receives and demodulates a symmetrical amplitude modulated signal having a carrier at the chopping frequency and an envelope having diminishing intensity peaks with sharply defined nulls therebetween. A reference position for the quartz prisms may be defined by the null between the two highest peaks as observed on a measuring instrument at the detector output. By affixing one of the prisms to a movable instrumentality or workstage while the remainder of the apparatus, including the other prism, remains fixed in space, the null may be utilized to define a reference position for the instrumentality.

3,689,164

## APPARATUS INCLUDING A MULTIPLE CONDUIT PATH SYSTEM FOR HANDLING LIQUIDS TO BE TESTED

Clifford Riley, Burgess Hill, England, assignor to Vickers Limited, London, England

Filed Dec. 22, 1970, Ser. No. 100,751

Claims priority, application Great Britain, Dec. 24, 1969,  
62,948/69

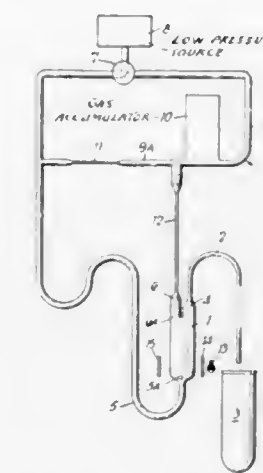
Int. Cl. G01n 1/10, 21/26

U.S. Cl. 356—246

3 Claims

Apparatus for testing samples of liquids comprising a test chamber and conduit or tube means providing fluid flow paths extending from the chamber, the fluid flow paths offering different resistance to fluid flow whereby, with the conduit means or tubes providing flow paths connected to evacuation

equipment and the chamber connected to a source of liquid, liquid is drawn into the chamber and into one path and



thereafter gas is drawn out of the chamber through another path.

3,689,165

## TEMPLATE CONTROLLED BOWLING BALL DRILLING MACHINE

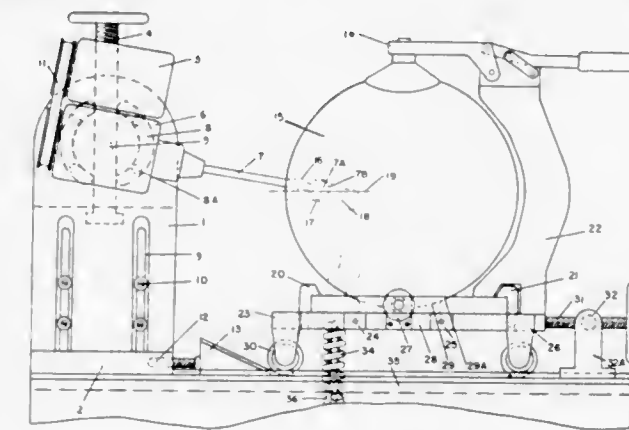
Edward E. Small, 8862 Mays Ave., Garden Grove, Calif.

Filed July 16, 1970, Ser. No. 55,357

Int. Cl. B23b 41/00, 49/02

U.S. Cl. 408—3

8 Claims



A finger hole in a bowling ball is contour-drilled by mounting a bowling ball on a carriage and moving the carriage along rails toward the drill which has a larger cutting head than shank. After the first portion of the bore is completed, carriage motion causes it to engage a template which moves it on a second path to further drill the hole in another direction. The drill can be angularly positioned to provide shank clearance and can be positioned so that the drilling is other than radial of the ball.

3,689,166

## MACHINE TOOL SPINDLE AND CONTROL THEREFOR

Harry J. Jacob, Jr., South Russell, Ohio, assignor to The Warner & Wasey Company, Cleveland, Ohio

Filed Sept. 29, 1969, Ser. No. 861,589

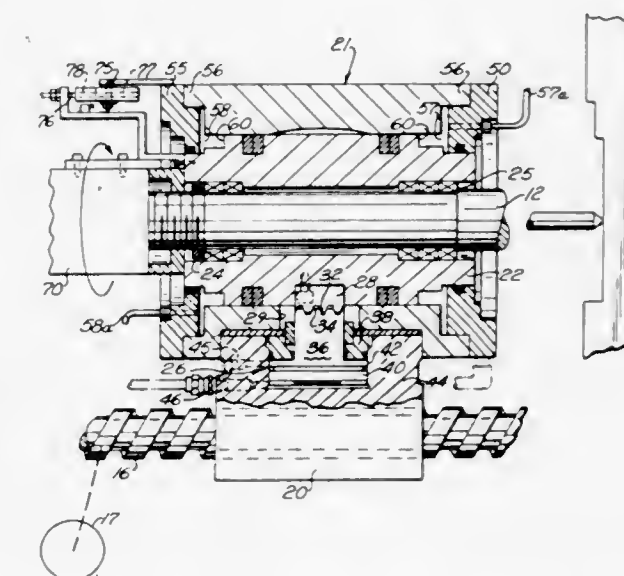
Int. Cl. B23b 47/18

U.S. Cl. 408—11

15 Claims

A machine tool having a rotatable machine tool spindle for performing drilling and tapping operations. The spindle has limited axial movement relative to the spindle carrier. Fluid pressure means may be operated to displace the spindle in opposite directions for a predetermined position in the spindle carrier and to apply a force yieldably opposing return of the spindle to the predetermined position. The position of the spindle in its carrier is sensed by control means and the spindle carrier is translatable toward or away from the workpiece in response to the direction of displacement of the spindle from

its predetermined position. The spindle is displaced forwardly to effect translation of the spindle carrier and spindle to engage a tool with a workpiece and the return of the spindle to the predetermined position upon the engagement of the tool with the workpiece is utilized to initiate control means for automatically controlling the depth of drilling or tapping as measured from the surface of the workpiece and the return of the spindle to an automatic repeat position or to a home position.



The spindle is allowed to float while a tapping tool is in engagement with the workpiece and the feed and return of the spindle carrier is controlled during this period by sensing the position of the spindle in the carrier. During drilling the spindle is locked against axial movement relative to the carrier while the tool is in engagement with the workpiece. The locking means is engageable over the range of axial movement of the spindle relative to the carrier to locate the spindle in a predetermined position relative to the carrier.

3,689,167

## ADJUSTABLY POSITIONED PAPER DRILL AND PUNCH

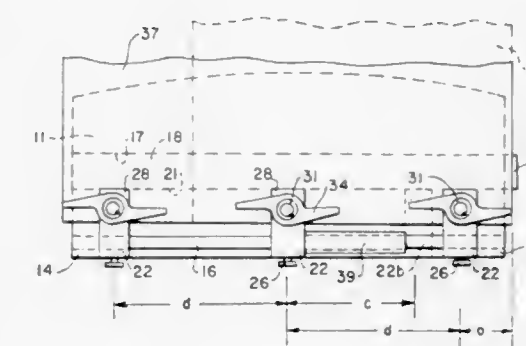
Douglas M. Homs, c/o 1538 Industrial Way, Belmont, Calif.

Filed Aug. 24, 1970, Ser. No. 66,532

Int. Cl. B23b 39/16; B26d 5/10

U.S. Cl. 408—53

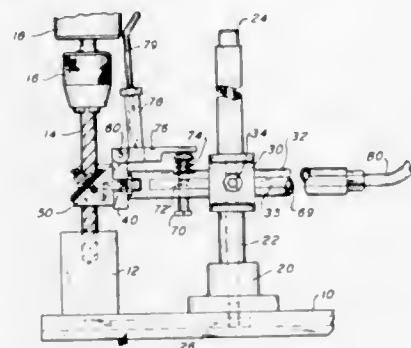
6 Claims



For drilling two holes or three holes with substantially conventional spacing between the centers of the holes using a single, adjustably positioned drill or punch, the base of the machine is provided with a rod on which at least one of the punch pedestals slides between a two hole and three hole position. Stops limit outward and inward positions of the movable pedestal so that the user need not use great care and attention in adjusting the positions of the punch. The punch comprises a sharpened tubular insert of tool steel in the end of a hollow screw which rotates in each pedestal.



**3,689,168**  
**MOUNTABLE CHIP BREAKER AND FLUTE CLEANER**  
**FOR ROTATING TWIST DRILLS**  
 Henry Persson, 224 Glenwood Ave., Bloomfield, N.J.  
 Filed Dec. 30, 1971, Ser. No. 213,961  
 Int. Cl. B23b 47/34, 51/08  
 U.S. Cl. 408—61



A chip breaker and flute cleaner for twist drills is adapted for attachment to the worktable or column of a drill press or radial drill or the like. A base member carries an adjustable arm which carries a pair of block supports which is movable to a determined position in guides provided on the end of the arm. Each block support carries a rotatable disc of hardened steel which is disposed at an angle of about 45° to the axis of the drill. The arm and discs are positioned so that the discs are brought adjacent the drill with only a few thousandths of an inch clearance with the edge of the flutes of the drill and preferably at a point where the upwardly moving stringy chips tend to leave the flutes of the rotating drill. As the stringy chip is brought between the rotatable disc and cutting edge of the drill flute the chip is cut to "break" the chip into short lengths. A spray coolant applicator may be used in combination with the chip breaker and flute cleaner so that long stringy chips flow easily up the flutes to be broken between the discs and cutting edges of the flutes. The discs also act as a cleaner for the flute edges as they pass upwardly by the rotatable discs.

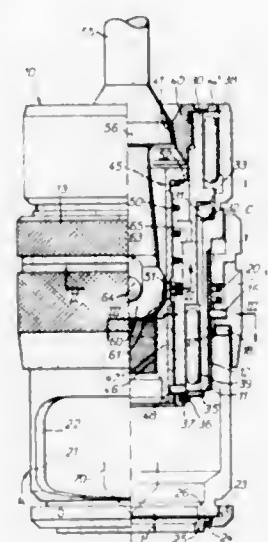
**3,689,169**  
**ADJUSTABLE TOOL BLOCK ASSEMBLY**  
 Richard C. Gersch, 27401 Red Leaf Lane, Southfield, Mich.  
 Filed Aug. 28, 1970, Ser. No. 67,856  
 Int. Cl. B23b 29/034  
 U.S. Cl. 408—150



A tool assembly for a boring, turning, facing machine or the like in which a tool holding bar is pivotally supported upon a supporting bar for radial adjustment relative to a work surface. The tool holding bar is supported for radial movement on the supporting bar by means of an eccentric rotatable sleeve disposed in an aperture formed in the holding bar around a bushing secured to the supporting bar. The sleeve is actuated for adjustment of the cutting tool with respect to the workpiece by a hydraulic cylinder operating a gear arrangement through a sprag clutch to rotate the sleeve. When the eccentric sleeve is rotated, the cutting tool is adjusted toward the workpiece to compensate for wear of the tool.

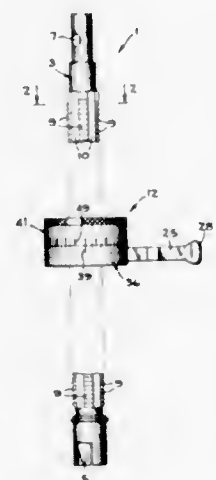
**3,689,170**  
 Patent Not Issued For This Number

**3,689,171**  
**TOOL-CARRIER WITH ADJUSTABLE PRE-DETERMINED AXIAL TRAVEL**  
 Lucien Bouzounie, Pontault-Combault, France, assignor to Etablissements Recoules & Fils Industrielle, France  
 Filed Aug. 10, 1970, Ser. No. 62,514  
 Int. Cl. B23b 29/03  
 U.S. Cl. 408—112



The invention is concerned with tool-carrier devices having a variable pre-determined axial travel, of the type currently employed in the aeronautical industry in particular, for milling housings in metal sheets to a pre-determined axial depth, for receiving rivet heads for example. In one of the improvements of the invention, between the body and the sheath of the tool-carrier is interposed an intermediate sleeve which is keyed axially on the body and rotatable with respect thereto, the sheath being movable axially with respect to the sleeve but being keyed angularly on the sleeve. This definite separation of the movements of translation and rotation reduces wear in the moving parts and improves the precision. In a further improvement, the thrust-bearing is provided with a freely rotatable annular supporting ring mounted on and projecting from the free extremity of the bearing, thus eliminating contact of the tool-carrier with the surface to be machined and protecting this surface from damage by the tool-carrier.

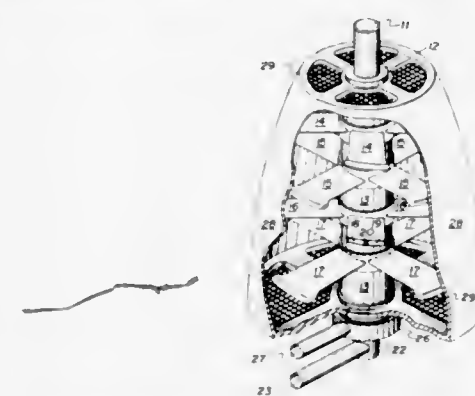
**3,689,172**  
**PRECISION MACHINE TOOL STOP**  
 William E. Stites, 4201 Fair Oaks, Menlo Park, Calif.  
 Filed Nov. 25, 1970, Ser. No. 92,599  
 Int. Cl. B23b 49/00  
 U.S. Cl. 408—241



A precision machine tool stop mechanism to control the amount of movement of a machine tool. The mechanism comprises a main shaft member with individual engagement increments formed thereon at predetermined intervals, a detachable

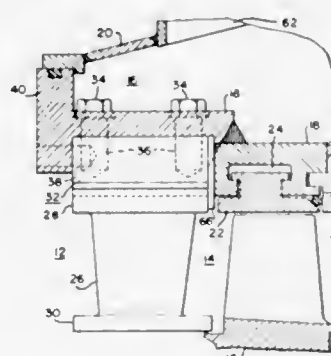
ble housing body movable longitudinally along the shaft, controllable pawl members within the housing adapted to engage and disengage the shaft member at select increments, a pawl actuating collar extending to the pawl members within the housing and adapted to control actuation of the pawl members in and out of engagement with the shaft member such that when in engagement the pawls and shaft member are locked to form a unitary structure and when out of engagement the housing is allowed to move freely along the main shaft to any select increment position. A fine adjustment sleeve may be carried by the housing and movable in fine increments in a direction parallel to the axis of the main shaft member.

**3,689,173**  
**JET PROPELLED MOTOR**  
 Randolph J. Morton, 9575 Single Oaks, Lakeside, Calif.  
 Filed Dec. 8, 1970, Ser. No. 96,160  
 Int. Cl. F01d 1/18  
 U.S. Cl. 415—82



A jet propelled motor in which a plurality of rotating blades is attached to a common shaft and terminates at one end in a drive shaft and at another end in a drive pressure inlet and a brake pressure inlet; the drive pressure inlet being coupled through the rotating shaft and a channel in each of the blades to a spring-biased ball valve which releases after a predetermined pressure and allows the pressure to exit through a jet drive exhaust on the end of the blade; the plurality of blades being disposed in a plurality of planes and progressively reducing in length; a valve seat in the blades in at least one of the planes for shutting off the jet exhaust to that plane of blades after the shaft has reached a predetermined rotational speed and a braking pressured input coupled through the shaft to an opposite edge of the blades for braking the rotation of the shaft when desired.

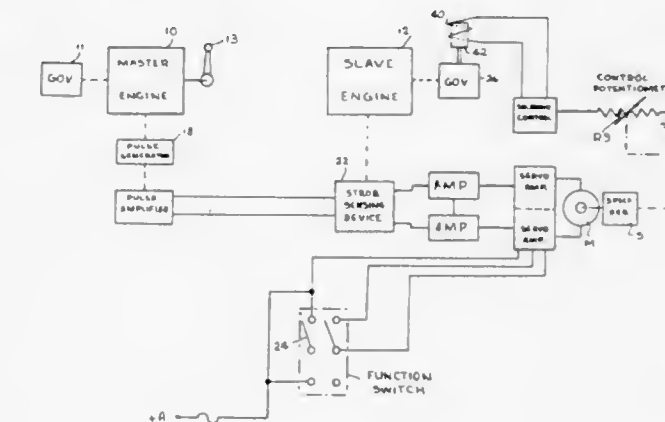
**3,689,174**  
**AXIAL FLOW TURBINE STRUCTURE**  
 Thomas J. Rahaim, Claymont, Del., and George M. Mierley, Sr., Lake Worth, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.  
 Filed Jan. 11, 1971, Ser. No. 105,551  
 Int. Cl. F01d 25/12, 9/00  
 U.S. Cl. 415—115



In the manufacturing of stator vanes for the first stage of a multi-stage axial flow gas turbine, casting difficulty and cast-

ing cost are reduced by making a separate casting for each vane instead of making segmental groups of vanes which are costly due to a high casting rejection rate. The vanes are supported by grooved holding blocks attached to the blade ring of the turbine, and they are readily assembled or removed. An improved cooling system is provided for the vanes which are of a hollow construction.

**3,689,175**  
**APPARATUS FOR CONTROLLING THE SPEED AND PHASE OF ENGINES**  
 James R. Hartzell, Troy, and Arley J. Reas, Piqua, both of Ohio, assignors to Piqua Aircraft Co. (Inc.), Piqua, Ohio  
 Filed Aug. 11, 1970, Ser. No. 62,859  
 Int. Cl. B64c 11/50  
 U.S. Cl. 416—34



The specification discloses an arrangement for synchronizing the speeds of and controlling the phase of engines and, in particular, the engines of twin engine airplanes. In the arrangement, one engine is a master engine and the other is a slave engine, and the speeds and phase of the engines are compared and signals are provided in conformity with the results of the comparison to speed up or slow down the slave engine to bring the speed and phase thereof into conformity with that of the master engine if it differs therefrom.

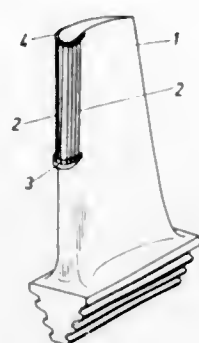
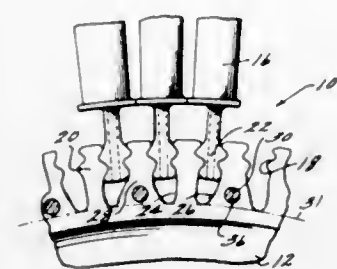
In a preferred embodiment of the invention, one of the engines drives a disc having an opaque sector therein and on one side of the disc are photosensitive elements and on the other side are lamps actuated by the other engine in a stroboscopic manner. When the engine speeds and phase match, the opaque sector of the disc prevents the photosensitive elements from being illuminated. The speed of the slave engine is controlled by adjustment of the pitch of a propeller driven thereby and the propeller pitch is, in turn, under the control of a spring loaded engine driven governor. The governor has a further load in the form of a solenoid exerting a magnetic pull thereon and current through the solenoid is under the control of a control system which is sensitive to the illumination of the aforesaid photosensitive elements when the speed of the slave engine, or the phase thereof, departs from that of the master engine.

**3,689,176**  
**TURBOMACHINERY ROTOR CONSTRUCTION**  
 Thomas G. Howell, West Chester, and Bernard L. Koff, Cincinnati, both of Ohio, assignors to General Electric Company  
 Filed April 2, 1971, Ser. No. 130,680  
 Int. Cl. F01d 5/18  
 U.S. Cl. 416—96

A turbomachinery rotor construction includes a disk having alternately offset fluid passage slots radially inwardly of each blade locking slot and fastener apertures disposed between the slots for use in connecting the disk to an annular rotor portion. The innermost portion of each aperture is located on a radius



not less than that described by the innermost portion of the fluid passage slots so as to enhance the low cycle fatigue characteristics of the disk while reducing the disk rim dead load.



characteristics of the disk while reducing the disk rim dead load.

thereof into smaller drops which are simultaneously decelerated as a result of flexation of the baffles.

3,689,177

**BLADE CONSTRAINING STRUCTURE**

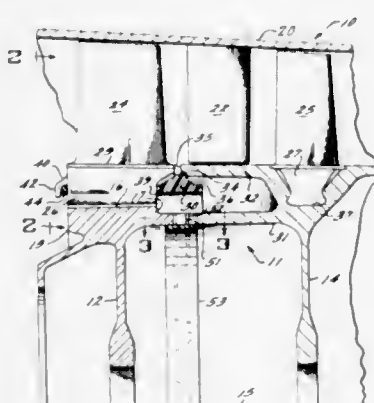
David Dubble Klassen, Reading, Mass., assignor to General Electric Company

Filed April 19, 1971, Ser. No. 135,310

Int. Cl. F01d 5/06, 5/32

U.S. Cl. 416—198

8 Claims



In an axial flow apparatus including stator and rotor elements, means are included for constraining axial movement of individual blade members relative to the rotor axis when the rotor is subjected to high centrifugal loading. The constraining means include a ring which is circumferentially expandable under centrifugal loading. Part of the outward radial force causing the expansion of the ring is directed axially against the blade members to provide an axially constraining force which is proportional to the centrifugal loading on the rotor. The invention herein described was made in the course of or under a contract or subcontract thereunder, (or grant) with the Department of the Army.

3,689,178

**APPARATUS FOR PROTECTION OF ROTOR VANES AGAINST SURFACE EROSION CAUSED BY IMPINGEMENT OF HIGH SPEED LIQUID DROPS**

Guy Faber, Oberrohrdorf, and Carlo Maggi, Baden, both of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Nov. 23, 1970, Ser. No. 91,869

Claims priority, application Switzerland, Dec. 23, 1969, 19070/69

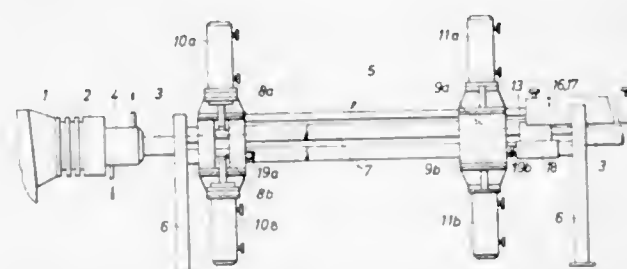
Int. Cl. F01d 5/28

U.S. Cl. 416—224

4 Claims

The surface of a structural part such as for example the leading edge portion of a turbine vane or airplane wing is protected against erosion which would otherwise be caused by impingement of high speed liquid drops thereon by positioning an array of flexible baffles in front of the surface. These baffles

which are slightly spaced from the surface of the vane or wing serve to intercept the liquid drops resulting in a division thereof into smaller drops which are simultaneously decelerated as a result of flexation of the baffles.



Shaped elements of accurate dimension are produced from synthetic plastics materials by pressing them through a shaping tool and are finished immediately after solidification by a cutting tool, wherein the cutting forces are kept remote from the forces which occur by the extrusion operation by means of a withdrawal mechanism.

3,689,181

**METHOD AND APPARATUS FOR MIXING AND EXTRUDING VISCO-ELASTIC MATERIALS**

Bryce Maxwell, Princeton, N.J., assignor to USM Corporation, Boston, Mass.

Filed Jan. 22, 1970, Ser. No. 4,876

Int. Cl. B29f 3/012, 1/022

U.S. Cl. 425—207

3 Claims

Mixing characteristics of an elastic melt extruder are improved by providing, in the opposing, spaced-apart walls of a

**ERRATA**

For Classes 417—18 and 417—363 see: Patents Nos. 3,689,197 thru 3,689,207

For Class 418—147 see: Patent No. 3,689,208

3,689,179

Patent Not Issued For This Number

3,689,180

**APPARATUS FOR CONTINUOUSLY PRODUCING SHAPED ELEMENTS OF ACCURATE DIMENSIONS FROM SYNTHETIC PLASTICS MATERIALS**

Walter Damsky, Siegfried Joisten, both of Krefeld, and Johannes Otto Sajben, Krefeld-Gartenstadt, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 22, 1970, Ser. No. 4,961

Claims priority, application Germany, Feb. 7, 1969, P 19 06 012.9

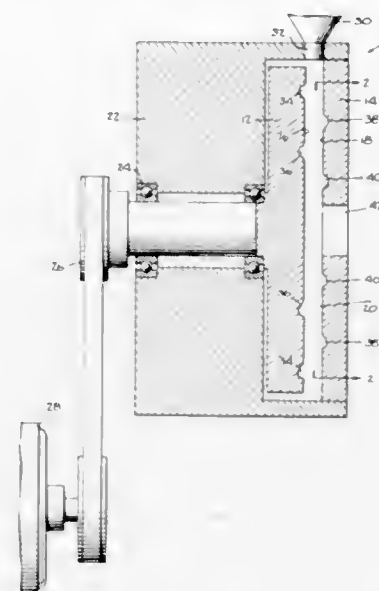
Int. Cl. B29f 3/01

U.S. Cl. 425—161

1 Claim

rotor and a stator, shaped recesses arranged annularly about the axis of rotation. During processing, the visco-elastic material, generally travelling radially inward between the wall

recover heat-softened material. Removal and recovery of the heat-softened material may be initiated in response to the coincidence of an interruption of distribution of the heat-soft-



surfaces of the rotor and the stator, is accelerated into the recesses and mixed together before it is caused to move in toward the center of the gap and continue its radial inward movement with the mass of material.

3,689,182

**EXTRUDER PROVIDING RADIAL AND AXIAL MELT REMOVAL**

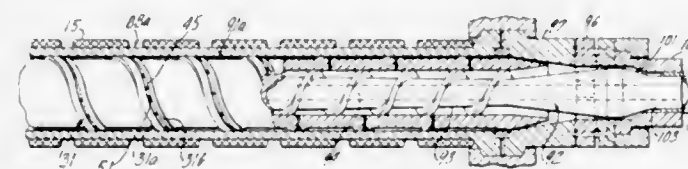
Lloyd Kovacs, Somerset, N.J., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed March 27, 1970, Ser. No. 23,200

Int. Cl. B29f 3/02

U.S. Cl. 425—208

5 Claims



Apparatus utilizing a screw type extruder for reducing a solid thermoplastic material to a fluid by maintaining a spiral body of continuous width of the material in continuous contact with the barrel of the extruder and separating the melted fluid from the solid body as rapidly as formed by conducting it through radial passageways into a low pressure axially extending region of the extruder screw.

3,689,183

**AUTOMATED RETRACTABLE CONVEYOR**

Carl E. Denlinger, Maumee, Ohio, assignor to Owens-Illinois, Inc.

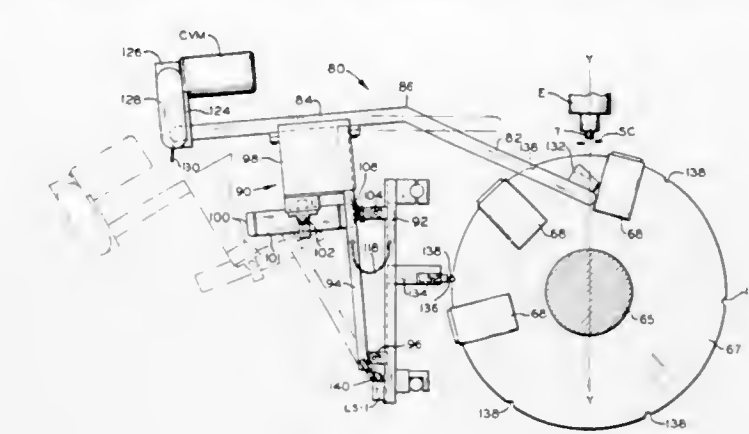
Filed Feb. 19, 1971, Ser. No. 116,887

Int. Cl. B29c 29/00

U.S. Cl. 425—217

19 Claims

Apparatus for molding objects from heat-softenable material which may include a plurality of molds, means for continuously supplying heat-softened material for the molds, and means for distributing heat-softened material from the supplying means to each of the plurality of molds. The heat-softened material supplied is removed for recovery, when the distribution of the heat-softened material is interrupted, by extendable-retractable means normally retracted to prevent interference with the distribution of the heat-softened material to the molds. The distributing means is positioned in a predetermined disposition with respect to the supplying means before the extendable-retractable means is extended to receive and



tened material and to the location of the distributing means in the predetermined disposition with respect to the supplying means.

3,689,184

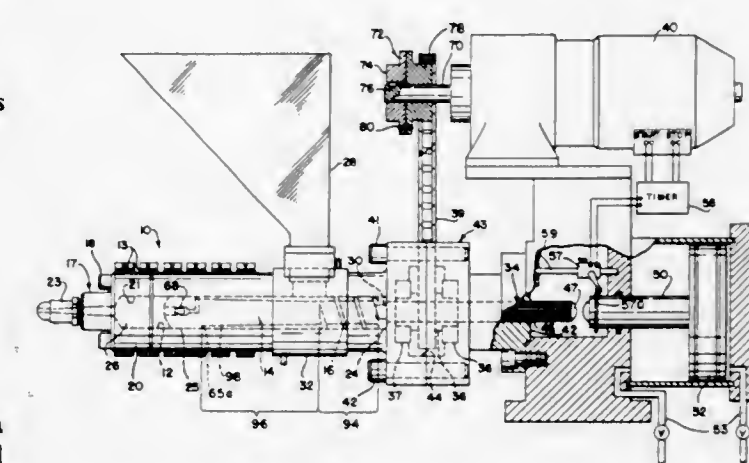
**INJECTION MOLDING DEVICE**

Albert R. Morse, 21709 Chagrin Blvd., Beachwood, Ohio  
Continuation-in-part of Ser. No. 845,980, July 30, 1969, abandoned. This application May 11, 1970, Ser. No. 16,976

Int. Cl. B28b 1/00

U.S. Cl. 425—245

17 Claims



Apparatus for the injection molding of plastic materials comprising an elongated cylindrical housing and a screw-ram supported within a bore in the housing. Heating means are provided near the discharge end of the housing to heat and melt plastic material therein. Flights project radially from the screw-ram and extend for only part of its length, the screw-ram being mounted for rotary and reciprocatory movement within the bore. The screw-ram includes supporting bearing means for centering itself within the bore. Passage means which extend through the bearing means provides communication from behind the bearing to its front. Drive means serve to impart a rotary movement of the screw-ram and also to intermittently transmit axial movement to it in the direction of the discharge opening. The flights support the screw-ram within the bore in a feed zone remote from the discharge opening. A melting zone is provided in an annular space between the screw-ram and the bore wall extending from near the discharge opening toward the feed zone, the flights being disposed in said feed zone and terminating short of the melting zone. Dry, unplasticized granular pellets of plastic material are fed to the feed zone through an opening in the bore wall and are urged forward along a tortuous path through the flights and toward the bearing means into a heated zone where heat is applied to melt the plastic for injection into a mold.



3,689,185

## MACHINE FOR CUTTING AND HEADING

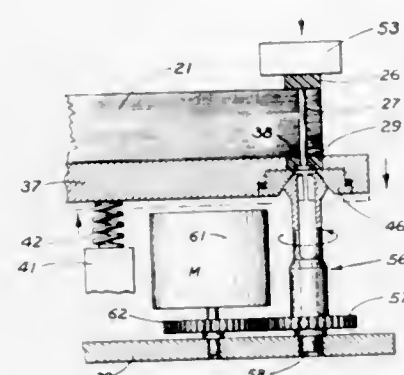
Heiko T. Deman, Alameda, Calif., assignor to Abildgaard Laboratories, Mountain View, Calif.

Filed Feb. 11, 1971, Ser. No. 114,557

Int. Cl. B29c 17/10

U.S. Cl. 425—289

7 Claims



To cut and form heads on a plastic stud or rod, particularly in binding papers together, a rotating tool of special construction is forced against a conical concave cam surface. The tool has a hollow shank with at least one flexible arm extending therefrom, said arm formed with a head, the arm being normally outwardly slanted so that the head is spaced outward of the axis of rotation. Each head has an inward projecting blade at its distal end. The space between the axis and the inner edge of the blade in normal position is sufficient to permit longitudinal movement of the stud inward of the head. The exterior of the distal end of the head is conical, convex and complementary to the cam. As the tool head is brought toward the cam, the head is forced inward causing the blade to sever the stud. Simultaneously the distal end of the head as it spins plays the severed end of the stud, forming a rivet head, which holds the papers in place. In a preferred embodiment there are two cooperating heads on the tool.

3,689,186

## APPARATUS FOR MANUFACTURING BLOCKS OR THE LIKE

Ernst Jakob Winter, Birsfelden, and Franz Stelzmüller, Oensingen, both of Switzerland, assignors to Von Roll AG, Gerlafingen, Switzerland

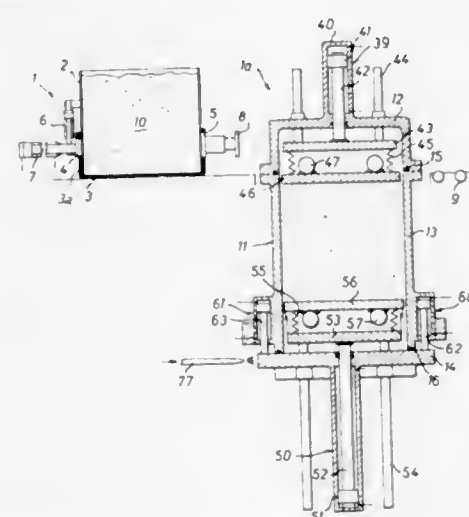
Filed June 8, 1970, Ser. No. 44,092

Claims priority, application Switzerland, June 16, 1969, 9179/69

Int. Cl. B28b 7/00

U.S. Cl. 425—352

9 Claims



An apparatus for the fabrication of blocks, especially the block anodes of furnaces, formed of compacted granular material or the like, wherein a compartment is charged with a dosed quantity of material, a vacuum is generated in such

compartment and the material is subjected to compaction by vibration.

3,689,187

## BELT-MOLD FORMING APPARATUS GRINDING WHEELS

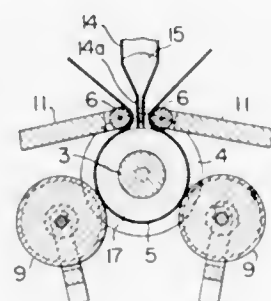
Norio Hirosawa, Hiroshima, Japan, assignor to Kuretoishi Kabushiki Kaisha, Hiroshima-Ken, Japan

Filed April 28, 1971, Ser. No. 138,171

Int. Cl. B30b 5/00, 9/28

U.S. Cl. 425—363

0 Claims



An abrasive molding material in granular form is drawn as a thin strip between a rotating core and an endless belt moving therearound and is thereby wound to be deposited as successive layers each of a thickness of from 0.5 to 3 mm on and around the core thereby to form a progressively molded and expanding grinding wheel, compression pressure being applied by rollers acting on the belt to this wheel. A desired density distribution in the wheel in the radial direction or in the axial direction can be obtained by varying the compression pressure progressively as the molding proceeds or by applying the compression pressure to a strip of a certain cross section by means of rollers of circular cylindrical shape of constant diameter.

3,689,188

## POWER OPERATED EXTRUSION PRESS FOR EXTRUDING A MASS CAPABLE OF ABRUPTLY RELEASING GAS THROUGH A DIE

Eugen Kopp, Stuttgart, Germany, assignor to Werner &amp; Pfleiderer, Stuttgart-Feuerbach, Germany

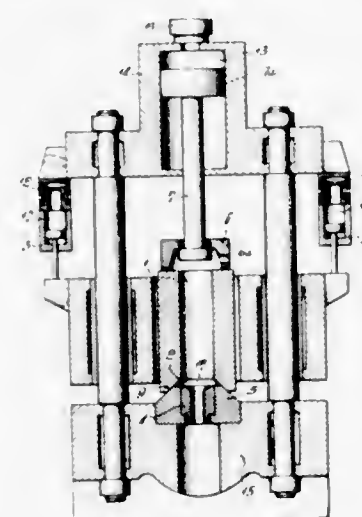
Filed July 29, 1970, Ser. No. 59,087

Claims priority, application Germany, Aug. 16, 1969, P 19 41 829.2

Int. Cl. B29c 21/00

U.S. Cl. 425—376

3 Claims



A power-operated extrusion press for extruding a mass capable of abruptly releasing a large volume of gas in which the mass is placed in a pressure pot and held in pressure engagement with a sealing surface on the die and pressed out of the pot through the die, is protected against damage due to

such abrupt release of gas by providing in the path of pressure as generated by gas release a pressure surface dimensioned so that:

$$P_1 F_1 > p_a$$

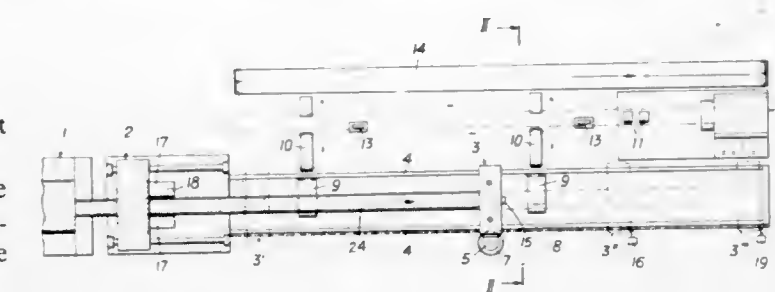
wherein  $F_1$  is the area of the pressure surface;

$p_a$  the pressure with which the container is pressed against the sealing surface of the die and

$p_1$  the pressure of released gas acting in opposition to the direction of the pressure  $p_a$ , the magnitude of  $p_a$  being in excess of a selected pressure magnitude  $p$  presumed to act in the same direction as pressure  $p_a$ .

By suitably selecting the area of pressure surface  $F_1$  occurrence of an excessive and thus dangerous gas pressure  $p_1$  causes rapid lifting of the pot from the die against the action of sealing pressure  $p_a$  thereby permitting rapid dissipation of a dangerous build-up in the pressure pot.

drive mechanism to longitudinally separate the severed tube from the extruding slab. The severed tube is now transferred



automatically to a socket forming station where the preheated end is thrust into a socket forming device.

3,689,191

## MOULDING APPARATUS

Aubrey Joseph Westbrook, Kilwinning, and Ian David MacKnight Thomson, Irvine, both of Scotland, assignors to Plastic Rotational Moulding Limited, London, England

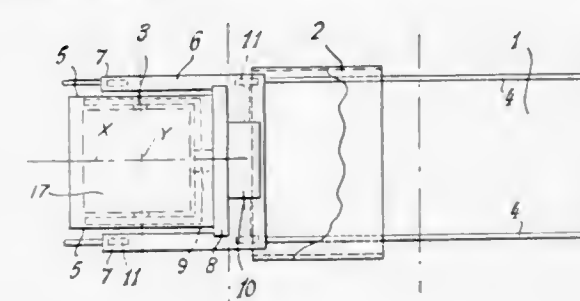
Filed Nov. 19, 1970, Ser. No. 90,995

Claims priority, application Great Britain, Nov. 26, 1969, 57,828/69

Int. Cl. B29f 5/00

U.S. Cl. 425—425

4 Claims



A rotational moulding apparatus which comprises a heating station and a cooling station disposed end to end each within an inverted U-shaped structure defined by a roof and two side walls, a carriage having an upstanding panel and supporting a mould rotating means for rotating a hollow mould about two axes, means for moving the carriage so that a mould on the mould support means is located in a heating position at the heating station and in a cooling position at the cooling station, means to spray a liquid heating medium into the heating station and a cooling liquid into the cooling station is characterized in that, each side wall of the heating station, at least at its lower end, extends to a position which is between two vertical planes, each of which is parallel to and passes through a different one of two spaced-apart tracks on which the carriage moves.

3,689,190

## APPARATUS FOR FORMING A TUBE SOCKET ON A TUBE CONSISTING OF THERMOPLASTIC SYNTHETIC MATERIAL

Roman Breilfuss, Krems, Austria, assignor to Inteco Establishment, Vaduz, Liechtenstein

Filed July 17, 1970, Ser. No. 55,738

Claims priority, application Australia, Aug. 7, 1969, A 7616/69

Int. Cl. B28b 11/08

U.S. Cl. 425—392

11 Claims

A tube of thermoplastic synthetic material is formed in automatically continual operations. The leading end of a tubular slab of such material being extruded from an extrusion unit projects into a movably mounted preheater which is pushed thereby at extrusion speed. After the preheater has moved a predetermined distance, the extruded slab is severed and the speed of the preheater is accelerated by connecting it to a

3,689,192

## MANUFACTURE OF FILM FROM THERMOPLASTIC MATERIAL THAT IS BLOWN BY A BLOWHEAD

Hartmut Upmeyer, Tecklenburg, Germany, assignor to Windmoller &amp; Holscher, Westphalia, Germany

Filed Feb. 23, 1971, Ser. No. 118,035

Claims priority, application Germany, March 3, 1970, P 20 09 914.3

Int. Cl. B29d 23/04

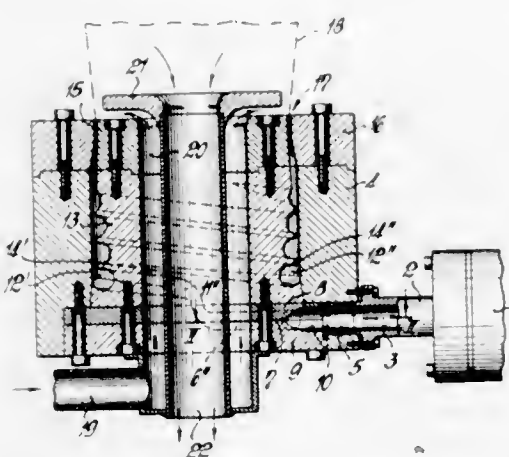
U.S. Cl. 425—467

3 Claims

A blowhead for making tubular plastics film in which a housing including an outer part and an inner part having a large central opening for accommodating equipment that is to project into the tubular film is fitted with a nozzle at one end at which the film is blown. Convoluted distributing passages leading to the nozzle are defined between the outer and inner parts of the housing. A lateral supply passage leads molten



plastics material to the convoluted distributing passages and includes a cleavage dividing the supply passage into branch passages. The convoluted distributing passages in the direction of the nozzle gradually decrease in depth. Gaps connect adjacent convolutions of the convoluted distributing passages and these gaps in the direction of the nozzle increase



in width so that the plastics material as it flows towards the nozzle is gradually led from a convoluted flow path to an axial flow path. Upon introduction the plastics material is distributed as part-streams into the branch passages substantially in a plane which is radial of the blowhead axis and one of the branch passages merges with the associated convoluted distributing passage over a substantially U-shaped bend.

#### ERRATA

For Classes 425—79 and 425—123 see:  
Patents Nos. 3,689,209 and 3,689,310

3,689,193

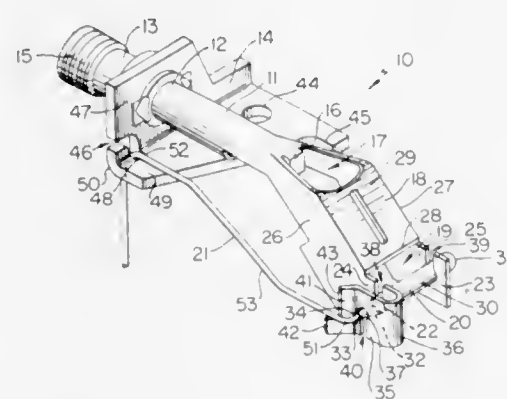
#### MOUNTING MEANS FOR A CONDITION RESPONSIVE MEANS AND METHOD OF MOUNTING THE SAME

Fred Riehl, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed April 13, 1971, Ser. No. 133,521  
Int. Cl. F23q 9/12

U.S. Cl. 431—42

21 Claims

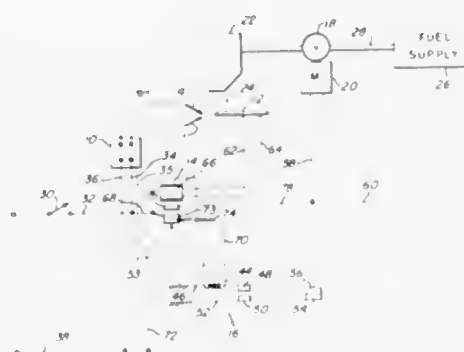


A frame, such as a flame shield of a pilot burner means, having openings therein. A condition sensing bulb disposed in the openings and having a portion thereof disposed in abutting relation with the frame to locate the bulb relative to the frame with the bulb being adapted to be disassembled from the frame in a direction to pull and maintain the portion of the bulb into its abutting relation against the frame whereby the bulb is assembled to the frame solely by the bent part of the conduit thereof.

3,689,194  
**DIRECT BURNER IGNITION SYSTEM**  
Nalini R. Das, Bethlehem, and Edwin H. Strain, Allentown, both of Pa., assignors to Caloric Corporation, Tipton, Pa.  
Filed Dec. 16, 1970, Ser. No. 98,495  
Int. Cl. F23n 5/10

U.S. Cl. 431—80

9 Claims



An ignition system for burners, such as gas- or oil-fueled, which includes a novel switch device, an ignitor, a magnetic relay, and a thermocouple, with circuit means being provided which assures fail safe operation or discontinuance of the system in the event of malfunction of any one of various components of the system, thereby preventing possibly dangerous accumulation of fuel without proper ignition.

3,689,195  
**GLOW PLUG**

Otto Beesch, Stuttgart; Karl Wolf, Giengen, and Bodo Ziegler, Stuttgart, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

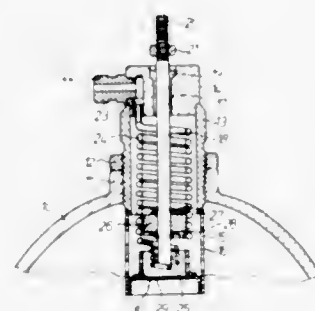
Filed May 3, 1971, Ser. No. 139,613

Claims priority, application Germany, June 26, 1970, P 20 31 607.8

Int. Cl. F23d 11/44

U.S. Cl. 431—208

12 Claims



A tubular casing is provided with two spaced ends and an electrode extends through the casing from one towards the other of these ends. A helically convoluted electrically conductive tubular member extends through the casing also and either surrounds the electrode or is located outwardly adjacent thereto. The tubular member has an inlet in the region of one end of the casing and at least one outlet in the region of the other end. A supply conduit supplies combustible fuel fluid to the inlet so that the fluid travels through the tubular member to the outlet thereof. An electrical heating wire is provided adjacent the outlet and conductively connected with the tubular member so that, when electricity is supplied to the heating wire and thus to the tubular member, the tubular member will become heated whereby the fluid will issue from the outlet as fuel vapor, to be ignited by the igniting means. The resistance wire can also be replaced by constituting the electrode as a glow pin.

3,689,196

Patent Not Issued For This Number

3,689,197

#### CONTROL DEVICE FOR A MOTOR-COMPRESSOR

Axel Gunnar Berle, Antwerp; Lars Gunnar Nilsson, and Han Kristoffer Olofsson, both of Wilrijk, all of Belgium, assignors to Atlas Capco Aktiebolag, Mäcka, Sweden

Filed July 7, 1970, Ser. No. 52,942

Claims priority, application Sweden, July 17, 1969, 10110/69

Int. Cl. F04b 49/02, 49/08

U.S. Cl. 417—18

9 Claims



A control device for motor-compressors in which the working medium is compressed in more than one stage and the power transmitted to the compressor is changed in dependence of the change of the pressure on the delivery side of the compressor above a certain value. The power adjusting mechanism for the motor is actuated in response to a pressure prevailing between two compressor stages to increase the power and in opposite direction for reducing the power by spring means and a control pressure bias on the adjusting mechanism responsive to a pressure change at the delivery side of the compressor so that an increased pressure change reduces the power supply.

3,689,198

#### SHOCK PLASMA HYDROLIC RAM

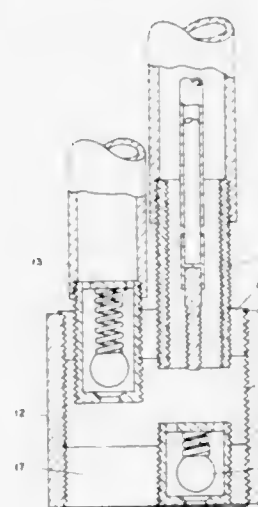
Louis Richard O'Hare, 2700 Indiana N.E., Albuquerque, N. Mex.

Filed May 26, 1970, Ser. No. 40,242

Int. Cl. F04b 19/24; F04f 1/18

U.S. Cl. 417—207

4 Claims



Explosive force is generated in a fluid such as water enclosed in a strong steel cylinder by suddenly raising some of

the fluid between concentrically placed and closely spaced electrode elements to the plasma state by means of a high voltage condenser bank with its power supply and a highly insulated electric switch in series electric circuitry with the condenser bank and the electrode elements. Means are employed to close switch contacts automatically when the power supply in parallel electric circuitry with the condenser bank has charged the condenser bank to an adjustable voltage value consistent with the explosive force required for a particular pumping need.

One way check valves allow the explosive force to cause the ramming action on the fluid in one direction and entrance of new fluid into the cylinder to take place from another port from which exit is prevented thereby providing a one direction ramming action.

3,689,199

#### AIR PRESSURE INTENSIFIER

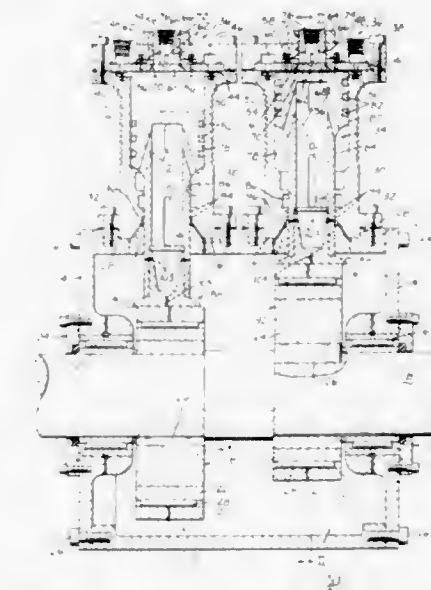
Ross Bassinger, 115 Saddletree, San Antonio, Tex.

Filed Jan. 8, 1971, Ser. No. 105,026

Int. Cl. F04b 1/04, 27/04, 21/02, 39/10; F01b 31/14

U.S. Cl. 417—273

7 Claims



The specification discloses an air pressure intensifier adapted to be supplied with air at a certain lower pressure and operable to increase the pressure of the air to a predetermined higher pressure. The device has reciprocating pistons driven by eccentrics and employs a cooling medium for cooling the pistons as the device operates. In one modification, the air pressure intensifier is connected in circuit with a source of air under pressure and only operates when the source drops to a certain lower level and turns off when the pressures reaches a predetermined amount.

3,689,200

#### FUEL TEMPERATURE COMPENSATOR FOR FUEL INJECTION PUMPS

Leon A. Galis, Ludlow, and Donald E. Valentin, Westfield, both of Mass., assignors to AMBAC Industries, Inc., Springfield, Mass.

Filed April 19, 1971, Ser. No. 135,035

Int. Cl. F04b 49/00; F02m 39/00

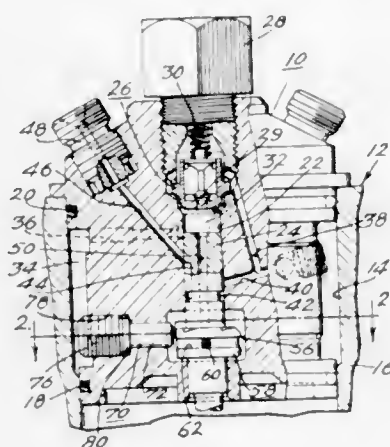
U.S. Cl. 417—292

8 Claims

A device for single plunger distributor type fuel injection pumps having metering sleeve fuel control for automatically compensating for changes in fuel temperature. The fuel control surface of the metering sleeve is provided with a plurality of saw-tooth shaped grooves which cooperate with the plunger spill ports to control injection duration depending upon the rotational disposition of the sleeve. Sleeve rotation is produced by the expansion or contraction with fuel temperature change of a temperature compensating element bearing against the sleeve. With injection cutoff being determined by the relation of the spill ports with inclined surfaces of the



sleeve grooves, the rotation of the sleeve upon increased fuel temperature in a direction opposite to the direction of plunger



rotation will delay the opening of the spill ports and hence effect a longer injection interval to compensate for the reduced viscosity and heat content of the fuel.

3,689,201

Patent Not Issued For This Number

3,689,202

## ABSORPTION REFRIGERATION SYSTEM

William W. Bell, Jr., East Hill Road, Marcellus, N.Y.

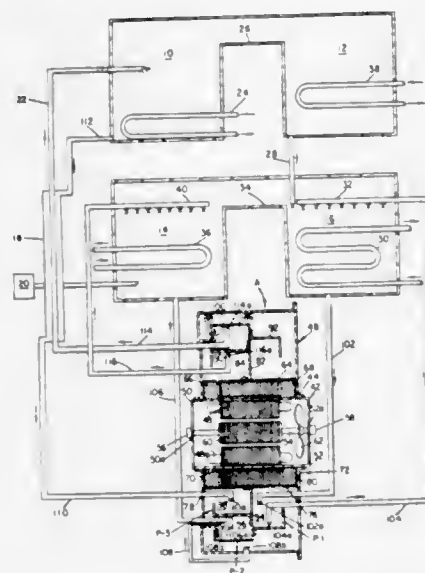
Division of Ser. No. 20,768, March 18, 1970, Pat. No.

3,608,329. This application March 24, 1971, Ser. No. 127,451

Int. Cl. F04d 13/02, 1/14; H02k 7/00

U.S. Cl. 417-353

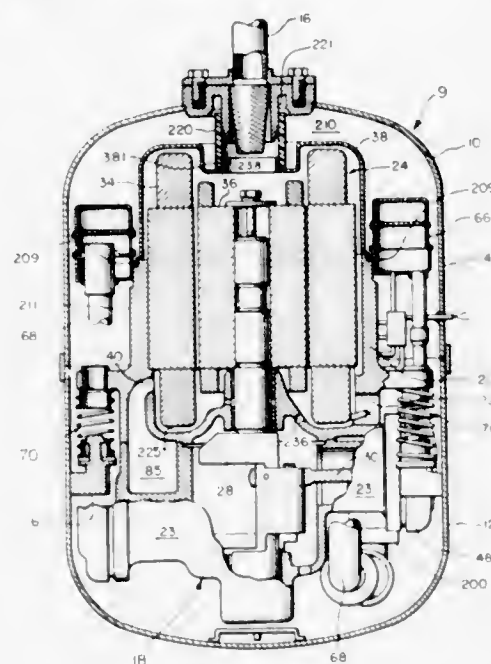
4 Claims



An absorption refrigeration system wherein there is provided fluid transfer apparatus comprising a stationary hermetic housing having a cylindrical nonferromagnetic wall enclosing annular rotor means within the housing about which a rotatable scoop pump pan is connected for rotation therewith for circulating absorbent solution through the system. The rotor is supported in magnetically inductive relation through the nonferromagnetic housing wall with an annular stator located exteriorly of the hermetic housing. A second rotor is provided within the cylindrical stator for driving a fan for cooling the stator. The scoop pump includes sections for pumping strong solution to the absorber, weak solution to the generator, and refrigerant to the evaporator.

3,689,203  
HERMETIC REFRIGERATION COMPRESSOR  
Robert S. Vaughn, Spring Garden Twp., Pa., assignor to Borg-Warner Corporation, Chicago, Ill.  
Filed Sept. 30, 1970, Ser. No. 76,939  
Int. Cl. F04b 17/00, 35/00, 39/02  
U.S. Cl. 417-371

6 Claims



A hermetic refrigeration compressor wherein flow guiding means are provided to direct suction gas and oil mixture onto and through the electric motor prior to introducing the gas into the compressing cylinders is disclosed wherein the oil may be better separated and separately returned to its sump, the electric motor cooled and the gas is better vaporized. A spring mounted vertical disposed compressor is disclosed of the same type of that of U.S. application Ser. No. 889,104 wherein a conduit, comprising a shroud and flexible sleeve, guides the input suction gases from the inlet connection to the motor. The flexible sleeve also aids in the mounting of the unit and serves to dampen vibration.

3,689,204  
LAMINATED LIQUID PUMP AND METHOD OF MAKING SAME

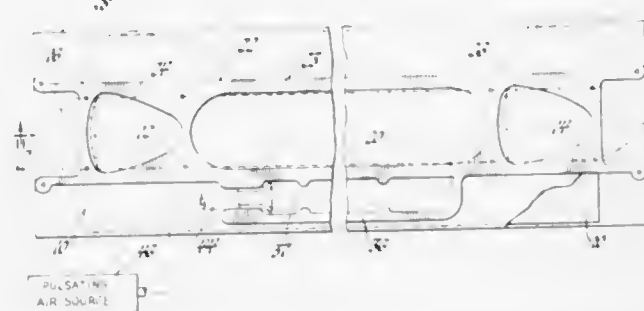
Bert C. Prisk, Grosse Pointe Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 18, 1970, Ser. No. 38,353

Int. Cl. F04b 43/10, 45/00, 43/00

U.S. Cl. 417-394

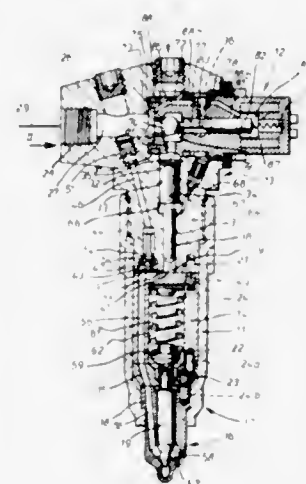
2 Claims



A liquid pump is formed by superposing several sheets of thin flexible material which may be fused together, for example, polyvinyl chloride. The flexible sheets form a displacement chamber, an air pressure operated pumping chamber inlet and outlet passages and check valve flaps in the passages. The valve flaps are formed from the flexible sheets by slitting in appropriate places or are provided by separate flexible sheets. The several sheets are laminated by applying heat and pressure in a predetermined pattern to provide the essential pump elements. The pumping air chamber may be omitted.

3,689,205  
PUMP-AND-NOZZLE ASSEMBLY FOR INJECTING FUEL INTO INTERNAL COMBUSTION ENGINES  
Heinz Links, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany  
Filed Feb. 19, 1971, Ser. No. 116,804  
Claims priority, application Germany, March 14, 1970, P 20 12 202.5  
Int. Cl. F04b 17/00, 35/00; F02n 39/00  
U.S. Cl. 417-401

5 Claims



A pump - and - nozzle assembly for injecting fuel into internal combustion engines includes a servo piston which operates a smaller pump piston in response to pressurized fuel periodically admitted to and removed from said servo piston by virtue of a respective first and second position of a solenoid valve also forming part of said assembly. In said first position the fuel injection is triggered, while in said second position the return stroke of the servo piston is initiated and the injection is rapidly terminated. For the latter purpose a continuous communication exists between the work chamber of the pump piston and the injection nozzle.

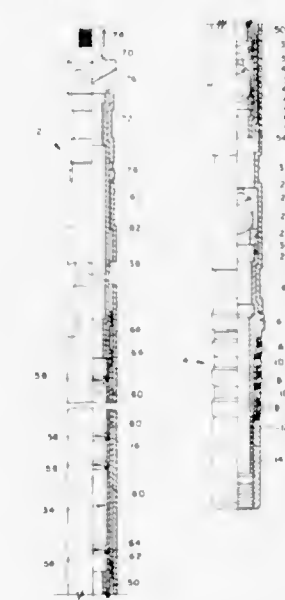
3,689,206  
OIL WELL PUMP WITH PERMANENT CONNECTIONS AND A PLUNGER THEREFOR  
Robert B. Meripol, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 2, 1970, Ser. No. 86,211

Int. Cl. F04b 21/04, 39/10; F16l 13/14, 19/04

U.S. Cl. 417-547

4 Claims

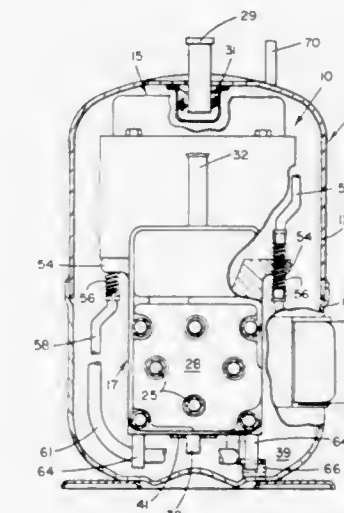


A sucker rod pump for use in oil wells is disclosed which has its component parts permanently joined together by means of swaged joints. There is also disclosed a plunger for use in a sucker rod pump which includes a mandrel with plunger sec-

tions resiliently mounted thereon whereby eccentricities between the mandrel, the sections, and the barrel may be compensated for by relative radial motion between the sections and the mandrel.

3,689,207  
MOTOR COMPRESSOR UNIT  
Richard S. Abell, Cazenovia, and George T. Privon, Camillus, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.  
Filed Dec. 10, 1970, Ser. No. 96,825  
Int. Cl. F04b 17/00, 35/00  
U.S. Cl. 417-363

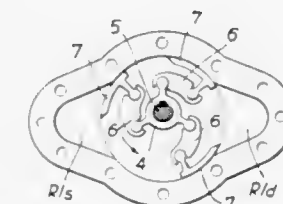
1 Claim



A hermetically sealed motor-compressor unit for a mechanical refrigeration system wherein said unit is suspended within an outer shell. A plurality of pins are spaced about the interior of the shell. The pins engage a portion of the motor-compressor unit when the unit has moved vertically upward a maximum desired amount; the pins prevent any further upward movement. A plurality of feet extend vertically from the lower portion of the unit to prevent the unit from moving excessively in a vertically downward direction within the shell. A cup-shaped member, connected to the interior of the lower portion of the shell has one of the vertically extending feet movably positioned therein to prevent excessive movement of the unit in a diagonal plane within the shell.

3,689,208  
ROTARY PISTON MACHINE  
Franz P. Nebel, Muhlberg 11, A5132 Geretsberg, Austria  
Filed May 19, 1970, Ser. No. 38,845  
Claims priority, application Germany, May 23, 1969, P 19 26 316.2  
Int. Cl. F01c 19/00; F04c 15/00; F03c 3/00  
U.S. Cl. 418-147

2 Claims



A rotary piston is eccentrically mounted in a housing and comprises chamber-defining means, which define a plurality of fluid-handling chambers with said housing. The chamber-defining means comprise sealing means in sealing surface contact with said housing to seal said fluid-handling chambers from each other. The sealing means are arranged to derive from the pressure of fluid in said fluid-handling chambers and from the centrifugal force which is due to the rotation of said rotary piston a first force urging said sealing means against



said housing. The chamber-defining means further comprise force-deriving means for deriving from said pressure of fluid in said fluid-handling chambers a second force which throughout the revolution of said rotary piston is smaller than and opposes said first force. The housing is formed with first and second fluid ports, which are peripherally spaced apart and each of which is adapted to connect each of said fluid-handling chambers to the outside of said housing once during each revolution of said piston.

3,689,209

# APPARATUS FOR MANUFACTURING ROLLED PRODUCTS FROM POWDERY MATERIALS

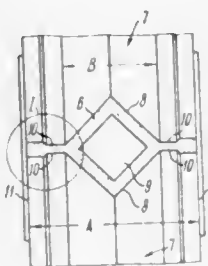
Gleb Andreevich Vinogradov, Brest-Litovsk Prospekt, 10, kv. 303; Oleg Alexandrovich Katrus, ulitsa Kapitanovskaya, 2, kv. 17, and Anatoly Ilich Otkov, ulitsa Novo-Okrughnaya, 3a, kv. 59, all of Kiev, U.S.S.R.

Filed July 27, 1970, Ser. No. 58,615

Int. Cl. B22f 3/18

U.S. Cl. 425-79

4 Claims



Opposed rolls for manufacturing rolled products from powdery material are provided with lateral collars which shape the

edges of the product being rolled and form a receptacle for the powdery material in which lateral forces are developed and applied to the product in the course of rolling. The space between the collars has a height between 0.1 and 0.9 times the average spacing between the rolls (average thickness of the product) and a width between 0.2 and 3 times the average spacing between the rolls.

3,689,210

# APPARATUS FOR PRODUCING A MAGNETIC RETURN STRUCTURE

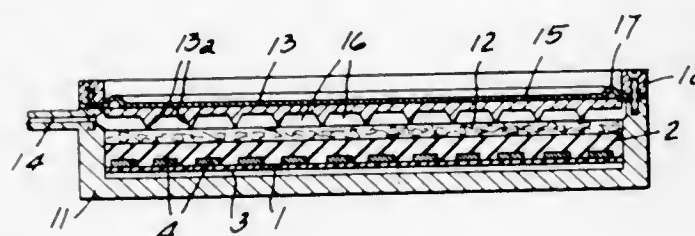
Karl-Ulrich Stein, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Division of Ser. No. 818,884, April 24, 1969, abandoned. This application Feb. 16, 1971, Ser. No. 115,676

Int. Cl. B29d 3/00; B29c 27/14

U.S. Cl. 425-123

2 Claims



A magnetic return structure having a system of control lines for use in a magnetic storer and apparatus for producing the same. A parallel series of conductors are applied to both sides of a foil of insulating material and a keeper composition is applied to the exposed foil and conductors in a manner that eliminates any air gaps therebetween without producing undesirable mechanical disruptions of the system.

## CHEMICAL

3,689,211

# DRY CLEANING METHOD

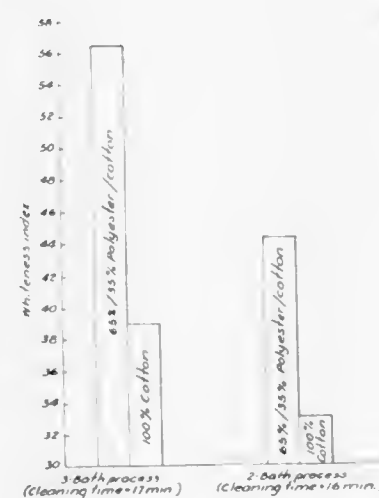
John J. Giampalmi, Jr., Midland, Mich., Istvan K. Telegdy, London, England, and Manfred Wirth, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of abandoned application Ser. No. 818,892, Apr. 24, 1969. This application Mar. 5, 1970, Ser. No. 16,759

Int. Cl. D06f 1/00

U.S. Cl. 8-142

13 Claims



An improved method for dry cleaning fabrics, e.g., cot-

ton, cotton-synthetic blends, rayon, nylon, wool, worsted, etc., which comprises a three-step process:

- (a) contacting the fabric with a dry cleaning solvent containing from 0.005 to 25 volume percent of  $H_2O$  and 0.01 to 5 volume percent of a detergent for from one to 20 minutes; and then, in any order,
- (b) contacting the fabric with a dry cleaning solvent containing 0.01 to 15 volume percent of a detergent for from one to 20 minutes; and
- (c) contacting the fabric with a dry cleaning solvent containing 0.01 to 5 volume percent of a detergent for from one to 20 minutes.

3,689,212

# METHOD OF PURIFYING GASEOUS MIXTURES

Roland Petit, Denain, Jean Louise, Villejuif, Jean-Claude Parent, La Garenne, and Leon Hay, Paris, France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude, Paris, France

Filed Dec. 22, 1969, Ser. No. 887,240

Claims priority, application France, Dec. 27, 1968, 180,879

Int. Cl. B01d 53/16, 53/34

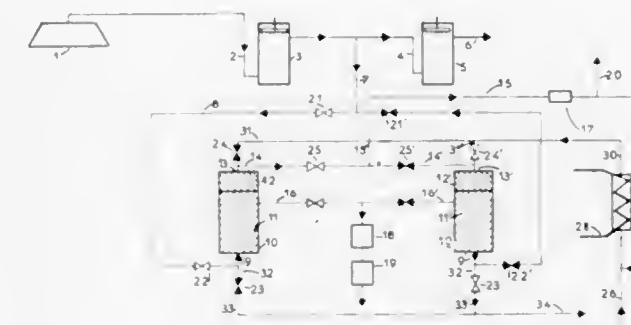
U.S. Cl. 423-239

18 Claims

Process for purifying  $N_2O$ , containing various impurities, such as  $NO$ ,  $NO_2$ ,  $N_2O_4$ ,  $NH_3$ ,  $H_2O$ , etc. wherein the gas mixture undergoes at least one preliminary treatment with a view to eliminating the impurities, such as  $NO_2$ ,  $N_2O_4$ ,  $NH_3$ ,  $H_2O$ , etc. and then it is purified, partic-

ularly to remove traces of residual  $NO$ , by means of an adsorbent mass which is formed of a molecular sieve such

250 and 500° C., separating the unreacted dichromate from the reaction mixture, washing and drying the trichromate containing residue.



3,689,215

# METHOD FOR REMOVING COLOR FORMING IMPURITIES FROM HYDROCYANIC ACID

Robert B. Green, Athens, Ohio, and Raymond A. Newsum and Gene L. Tromblee, Dickinson, Tex., assignors to Monsanto Company, St. Louis, Mo.

No Drawing, Filed Nov. 24, 1970, Ser. No. 92,506

Int. Cl. C01c 3/04, 3/06, 121/30

U.S. Cl. 423-379

6 Claims

Adding at least about 0.005 percent by weight of sulfuric acid to impure hydrocyanic acid, mixing said sulfuric acid and said impure hydrocyanic acid together and separating from said mixture water-white hydrocyanic acid results in water-white hydrocyanic acid even when stabilized with sulfuric acid to prevent polymer formation. The method is especially useful for removing color-forming impurities from hydrocyanic acid made as a by-product of the manufacture of unsaturated nitriles by oxidative synthesis from an olefin and ammonia.

# PROCESS FOR TREATING FLUE GASES

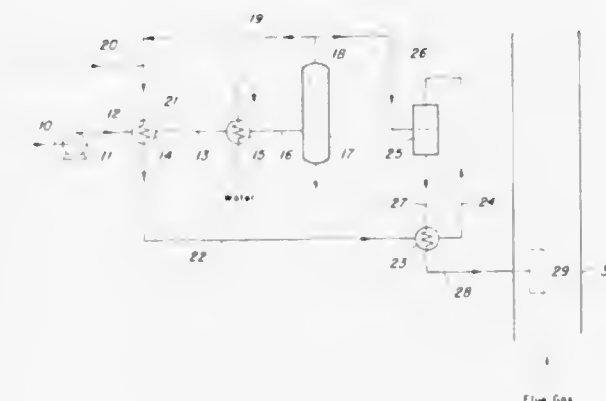
Salvatore A. Guerrieri, 19 Steepletop Road, Rowayton, Conn. 06853

Filed Feb. 19, 1970, Ser. No. 12,761

Int. Cl. B01d 53/34; B03c 3/01

U.S. Cl. 55-5

2 Claims



Liquid sulfur dioxide is vaporized and admixed with an excess of compressed and dehumidified oxygen-containing gas. The mixture is introduced into a converter wherein the sulfur dioxide is converted to sulfur trioxide. The gaseous products from the converter are introduced into a flue gas, produced by the combustion of a low sulfur, solid fossil fuel, prior to the passage thereof through electrostatic precipitator means.

3,689,214

# PROCESS FOR THE PREPARATION OF ALKALI METAL TRICHROMATES $Me^1Cr_2O_8$

Henning Erfurth and Manfred Mansmann, Krefeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing, Filed Oct. 19, 1970, Ser. No. 82,085  
Claims priority, application Germany, Nov. 6, 1969, P 19 55 895.3

Int. Cl. C01g 37/14

U.S. Cl. 423-596

6 Claims

Production of alkali metal trichromate  $Me^1Cr_2O_8$  by reacting a melt of at least one alkali metal dichromate with a proton donor compound at a temperature of between

3,689,216

# PRODUCTION OF HYDROGEN FLUORIDE FROM FLUOSILICIC ACID

Russell A. Brown, Idaho Falls, Idaho, assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing, Filed Apr. 26, 1971, Ser. No. 137,618

Int. Cl. C01b 7/22, 7/00

U.S. Cl. 423-483

15 Claims

A process for producing gaseous anhydrous hydrogen fluoride from fluosilicic-containing solutions by forming an alkali metal fluosilicate and reacting said fluosilicate with excess  $H_2SO_4$  at temperatures between 20° and 100° C. to produce gaseous silicon tetrafluoride and a fluoride-containing by-product and heating said by-product to a temperature between 80° to 300° C. to obtain the hydrogen fluoride product.

3,689,217

# PROCESS FOR FREEING 55-85% SULPHURIC ACID FROM ITS IMPURITIES DUE TO METALS AND/OR SEMI-METALS

Marcel Capaul, Bonaduz, and Hermann Sauter, Domat (Ems), Switzerland, assignors to Inventa AG, Zurich, Switzerland

No Drawing, Filed June 15, 1970, Ser. No. 46,539

Int. Cl. C01b 17/90

U.S. Cl. 423-531

20 Claims

Process for removing metal impurities such as iron from 55-85% by weight sulphuric acid. The sulphuric acid is treated with a molar excess of a halide to form a complex with the impurity. The acid is then passed through an anion exchanger to purify and remove the impurities from the acid.

3,689,218

# PRODUCTION OF ACTIVE MAGNESIA

James Kelly Hodges, St. Louis, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

No Drawing, Filed July 24, 1970, Ser. No. 58,168

Int. Cl. C01f 5/22

U.S. Cl. 423-155

6 Claims

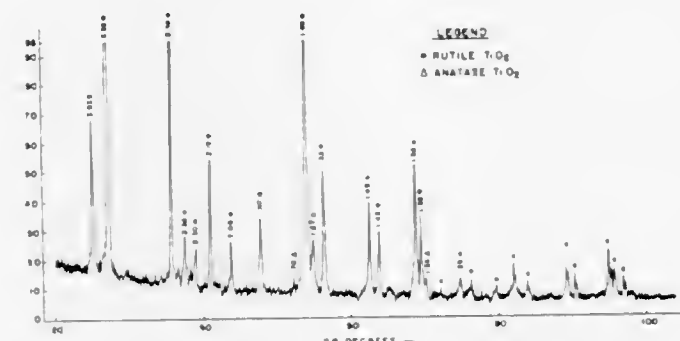
A process is disclosed for treating inland brines or other suitable sources of magnesium with an alkali metal hydroxide, such as sodium hydroxide, prior to calcining for increasing the iodine number; that is, increasing the surface area and therefore the activity; and for providing a more uniform iodine number from batch to batch.



3,689,219

**PROCESS OF PRECIPITATING  $H_2TiO_3$** 

William L. Craig, Westport, Conn., assignor to R. T. Vanderbilt Company Inc., New York, N.Y.  
Division of application Ser. No. 447,116, Mar. 29, 1965, now Patent No. 3,528,836, Sept. 15, 1970, and a continuation of application Ser. No. 850,282, June 11, 1969. This application May 24, 1971, Ser. No. 146,507  
Int. Cl. C01g 23/00, 23/06, 23/08  
U.S. Cl. 23—202 R 7 Claims



This application discloses the precipitation of  $H_2TiO_3$  from an acid solution of titanyl sulfate by mixing said solution with an alkaline solution under conditions of high shear, removing said  $H_2TiO_3$  and drying same.

3,689,220

**PROCESS FOR CARBONIZING FIBROUS CELLULOSIC MATERIAL**

Paul A. Smudski, Grand Island, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.  
Filed June 30, 1971, Ser. No. 158,355  
Int. Cl. C01b 31/09

U.S. Cl. 423—447

11 Claims

Cellulosic material in fibrous form (for example, rayon cloth) is converted to carbon by subjecting the cellulosic material to a silicon compound, such as silicon tetrachloride; subsequently, subjecting the silicon compound treated cellulosic material to a nitrogen compound, such as ammonia; and finally subjecting the silicon compound treated, nitrogen compound treated cellulosic material to thermal degradation in a nonoxidizing atmosphere. This process can be utilized to yield carbon in fibrous form of quality comparable to that produced by other processes, to increase the yield of carbon produced from the cellulosic material, and most significantly to substantially reduce the time required for thermal degradation of the cellulosic material. The material being processed possesses sufficient strength at all stages of processing to be self-supporting, permitting processing to occur in a semi-continuous fashion, with each step of processing being accomplished by passing the material to be processed from one roll through the processing apparatus, and onto a second roll.

3,689,221

**FLUOROMETRIC ASSAY OF PRIMARY AMINES**

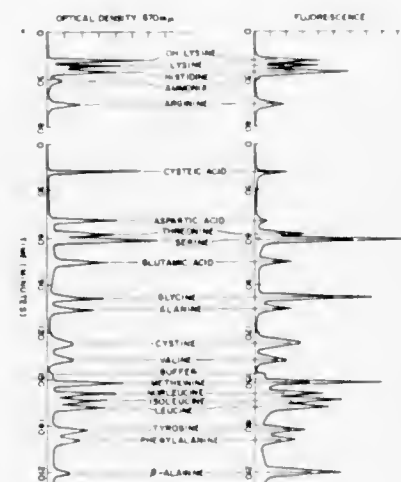
Sidney Udenfriend, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.  
Filed Oct. 21, 1970, Ser. No. 82,596  
Int. Cl. G01n 31/22, 33/16

U.S. Cl. 23—230 R

29 Claims

A highly sensitive assay technique for primary amine-containing compounds utilizes fluorescence produced by the interaction of the primary amine compound with ninhydrin and an aryl alkyl aldehyde. A preferred aryl alkyl aldehyde for the assay technique is phenylacetalde-

hyde. The assay is useful for the qualitative and quantitative determination of amino acids, peptides, proteins



and any other organic compounds containing a primary amino moiety.

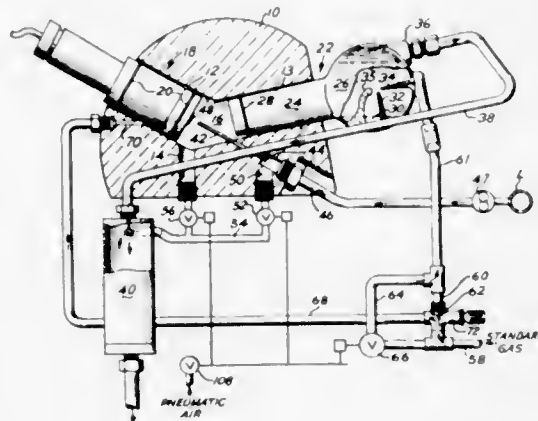
3,689,222

**CARBON DIOXIDE MONITOR**

Otho K. McFarland, Glencoe, George M. Illich, Jr., Lake Forest, and Wilfred C. Ling, Lake Bluff, Ill., assignors to Abbott Laboratories  
Filed Sept. 24, 1969, Ser. No. 860,756  
Int. Cl. B01k 3/00; G01n 33/16

U.S. Cl. 23—230 R

14 Claims



A monitor for continuously measuring the partial pressure of  $CO_2$  in a stream of intravenous liquid includes an ion sensitive electrode having a bicarbonate buffer solution. The electrode is positioned in a sampling cavity which is maintained continuously full of the intravenous liquid which is to be monitored and the buffer solution is separated from the cavity by a semipermeable Teflon membrane. A sampling stream of the liquid is directed into the body of liquid in the cavity and against the membrane and at least a portion of the  $CO_2$  in the stream passes through the membrane to vary the pH of the buffer solution as a function of the partial pressure of the  $CO_2$  in the sample stream. The change in pH is measured to provide an indication of the partial pressure in the sample. Calibration of the monitor is effected by draining the chamber and exposing the membrane to a nebulized gaseous mixture of the liquid and a standard  $CO_2$  of a known partial pressure.

3,689,223

**DETECTION METHOD**

Edward J. Poziomek, Bel Air, and Ethel B. Hackley, Joppa, Md., Daniel J. Hoy, Wauwatosa, Wis., and Harry George Friedman, Jr., Champaign, Ill., assignors to the United States of America as represented by the Secretary of the Army  
No Drawing, Filed May 18, 1970, Ser. No. 38,569  
Int. Cl. G01n 21/08, 31/22

U.S. Cl. 23—230 R

7 Claims

A method for indicating the presence of non-volatile compounds comprising reacting a solution containing non-volatile nucleophiles and reducing agents, and a detecting solution comprising hexamminecobalt (III) perchlorate and a fluid selected from the group consisting of a borate buffer and dimethylsulfoxide, producing ammonia as the indicator for the presence of the non-volatile compounds.

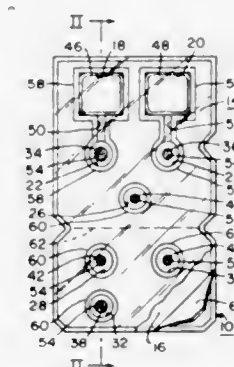
3,689,224

**CHEMICAL CONTAMINANT DETECTION SAMPLER**

Frank R. Agnew, Penn Hills Township, Pittsburgh, Francis P. Byrne, Franklin Township, Murrysville, Thomas D. Kaczmarek, Penn Hills Township, Pittsburgh, Owen H. Kriege, Franklin Township, Export, Gordon C. Gainer, Penn Hills Township, Pittsburgh, and Russell M. Luck, Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.  
Filed Apr. 13, 1966, Ser. No. 542,365  
Int. Cl. G01n 31/00, 33/00

U.S. Cl. 23—253 TP

12 Claims



A disposable sampler for testing for the presence of chemical contaminants in fluids comprising a relatively flat laminated package including a base sheet, a retainer sheet, and a cover sheet, the sheets being composed of relatively impermeable materials, at least one of the base and retainer sheets being formed to provide at least one pocket and at least one recess and to provide an open channel extending between the recess and the one pocket, a sorptive pad disposed in the recess, a rupturable sack filled with a liquid reagent disposed in the pocket, and the retainer sheet covering the pocket and channel and recess and having an aperture registered with and above the sorptive pad so as to enable a liquid to be tested to contact the sorptive pad, and the cover sheet sealed over the retainer sheet to seal the opening therein until the cover sheet is removed for conducting a test.

3,689,225

**ANALYTICAL INSTRUMENT**

John U. White, Contentment Island Road, Darien, Conn. 06820

Continuation-in-part of application Ser. No. 775,985, Oct. 9, 1968. This application June 14, 1971, Ser. No. 152,552

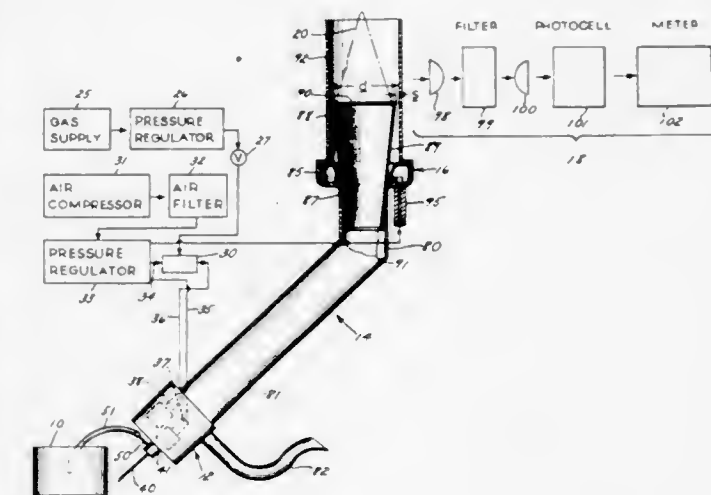
Int. Cl. G01j 3/48; G01n 21/58, 31/12

U.S. Cl. 23—253 P C

18 Claims

An analytical instrument including an atomizer-burner and a detection system for the qualitative and quantitative emission or absorption analysis of a sample. The sample

is introduced through an inlet conduit into a housing and is atomized and mixed with an appropriate fuel gas. The mixture is led through an angularly disposed burner barrel and a fluid discharge opening to a grid for holding the flame. A chimney is supported in spaced relationship with the discharge opening such that the spacing between the chimney and the wall which forms the opening preferably is not less than about six percent and not greater than



about twelve percent of the inside diameter of the chimney. To clean the portion of the inlet conduit which extends into the atomizing housing, a wire and tube assembly is movably positioned with respect to the housing, such that the wire may be inserted within the conduit portion while the tube surrounds the conduit to provide support. In some embodiments this cleaning is accomplished automatically in response to the changing of the sample.

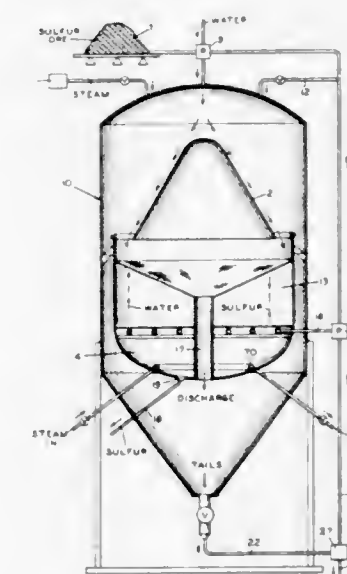
3,689,226

**SULFUR EXTRACTION APPARATUS**

Xerxes T. Stoddard, Rosenberg, Tex., assignor to Allied Chemical Corporation, New York, N.Y.  
Filed Mar. 3, 1971, Ser. No. 120,414  
Int. Cl. C01b 17/02, 17/08, 23/00

U.S. Cl. 23—280

4 Claims

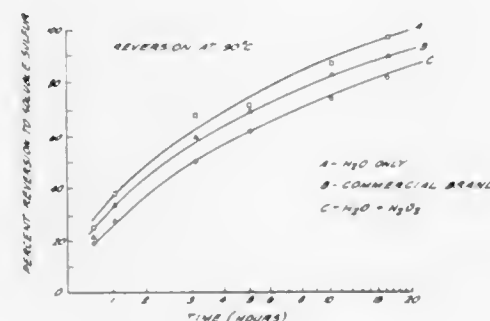


An apparatus for the extraction of sulfur from ore at or near ground level in which the molten sulfur is passed through a filtering bed in opposing direction to the flow of hot water.



3,689,227

**METHOD FOR PRODUCING INSOLUBLE SULFUR**  
Michael J. Block, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.  
Filed Nov. 12, 1971, Ser. No. 198,129  
Int. Cl. C01b 17/12; C01d 9/00; B01d 11/02  
U.S. Cl. 23—293 10 Claims



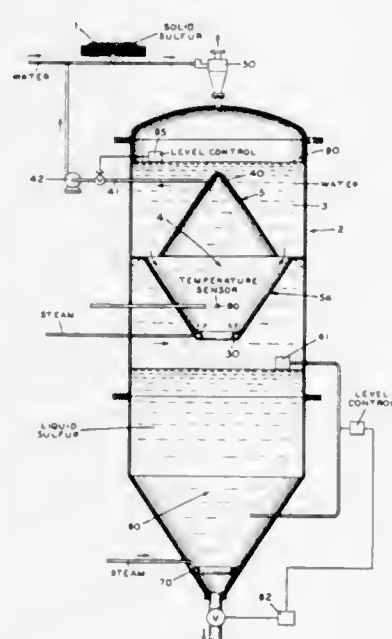
A process for producing insoluble sulfur is disclosed and includes the steps of melting and heating sulfur to a temperature of from 400 to 800° F. and thereafter quickly quenching the molten sulfur within an aqueous solution containing hydrogen peroxide.

3,689,228

Patent Not Issued For This Number

3,689,229

**HOT WATER SULPHUR MELTER**  
Robert E. Lane, Houston, and Xerxes T. Stoddard, Rosenberg, Tex., assignors to Allied Chemical Corporation, New York, N.Y.  
Filed Mar. 9, 1971, Ser. No. 122,404  
Int. Cl. C01b 17/02, 17/08  
U.S. Cl. 23—308 S 5 Claims



A method of melting sulphur in which solid sulphur is introduced into a pressure vessel containing hot water of a temperature in the range of about 280° to 320° in the sulphur melting zone and liquid sulphur is removed from the zone after melting.

3,689,230

Patent Not Issued For This Number

3,689,231

Patent Not Issued For This Number

3,689,232

# JOINTING MATERIALS FOR STEEL AND ALUMINUM

Nobuyoshi Baba, Makoto Adachi, and Hideo Nagata, Shigaken, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan  
No Drawing. Filed July 9, 1971, Ser. No. 161,915  
Int. Cl. B32b 15/00

U.S. Cl. 29—196 7 Claims  
Jointing materials for steel with aluminum which do not require so severe carefulness in jointing and withstand a higher temperature can be produced by jointing layers of steel, titanium and aluminum by explosive welding and they are used by placing between to-be-jointed steel and aluminum and welding the aluminum part thereof with the to-be-jointed aluminum and the steel part thereof with the to-be-jointed steel.

3,689,233

# PROCESS FOR THE MANUFACTURE OF HARD ASHLESS CHARCOAL BRIQUETTES

Alberto E. Veloso, Quezon City, Philippines, assignor to Internationale Erfinder- und Patentanstalt, Vaduz, Liechtenstein  
No Drawing. Filed Oct. 20, 1970, Ser. No. 82,549  
Int. Cl. C10I 5/00

U.S. Cl. 44—10 C 11 Claims  
A process for the preparation of hard, ashless charcoal briquettes is described, in which a finely divided carbonaceous raw material is charged into an electrolytic cell containing an electrolyte with sulfuric acid added, the raw material being held in porous containers electrically connected to an electrode of the cell, whereby the raw material is converted to substantially pure carbon by the removal of inorganic impurities in the raw material. The carbon produced in the electrolytic cell may be removed and washed to remove soluble impurities, dried and compressed into briquettes at a pressure of at least 200 tons per square inch and cured in the presence of an inert gas at a pressure of at least 100 ton/in.<sup>2</sup>. Preferably the above steps are preceded by a step of converting a vegetable carbon source to a finely divided carbonaceous raw material, by dehydration in the presence of 50–100 percent sulfuric acid.

3,689,234

# INSTANTANEOUSLY IGNITABLE SOLID FUEL

Tatsugoro Onozawa, 16-7 Akabane-kita 1-chome, Kita-ku, Tokyo, Japan  
No Drawing. Continuation-in-part of application Ser. No. 809,938, Mar. 24, 1969. This application Nov. 12, 1970, Ser. No. 89,055  
Claims priority, application Japan, Jan. 25, 1969, 44/5,557  
Int. Cl. C10I 5/02

U.S. Cl. 44—17 3 Claims  
An instantaneously ignitable solid fuel composition comprising a perchlorate, a combustion supporting substance such as rice bran, oil meal, powdered bamboo and sodium oxalate, an adhesive such as dextrin, a combustion buffer substance such as clay, calcium hydroxide, and granular foyaite, and a carbonaceous substance such as powdered charcoal, powdered anthracite coal and a powdered coke having about 10–15% by weight of volatile matters.

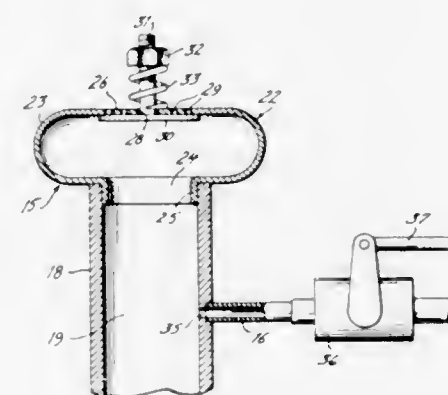
3,689,235

Patent Not Issued For This Number

3,689,236

# CARBURETOR FOR GASEOUS FUEL

Albert A. Mannino, 300 Chester Ave., and Charles N. Wolbert, 210 Moore St., both of Moorestown, N.J. 08057  
Filed Jan. 13, 1971, Ser. No. 106,142  
Int. Cl. F02m 7/24, 17/00  
U.S. Cl. 48—180 P 6 Claims

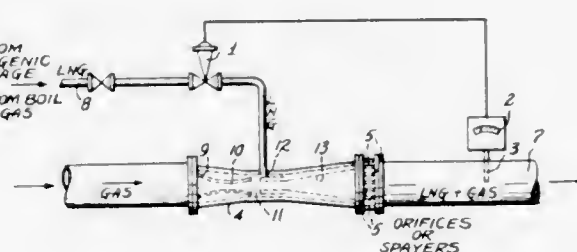


A tubular body having a side fuel port and an inlet air valve resiliently biased toward a closed position and operative under intake vacuum to maintain satisfactory fuel-air mixtures throughout a wide range of engine speed.

3,689,237

# FUEL GAS PIPELINE SYSTEM

Virgil Stark, New York, N.Y., Arthur E. Wastie, Westfield, N.J., and Jacques Sliosberg, New York, N.Y., assignors to North American Utility Construction Corporation, New York, N.Y.  
Continuation-in-part of application Ser. No. 838,566, July 2, 1969. This application Feb. 19, 1970, Ser. No. 12,586  
Int. Cl. B01d 9/04; B05b 7/00; F17d 1/04  
U.S. Cl. 48—190 10 Claims



A method of and apparatus for increasing the gas load of the fuel gas pipeline by controlled injection of a cryogenic liquefied gas or hydrocarbons in liquid or vapor form directly into the gas line, in case of liquid injection to use the heat of the gas stream to supply the latent heat of vaporization to vaporize the liquid injected and to increase the quantity of gas in the line at a given time, which may have means to accelerate the heating of the mixture of cryogenic and fuel gas in the pipeline to prevent frost.

3,689,238

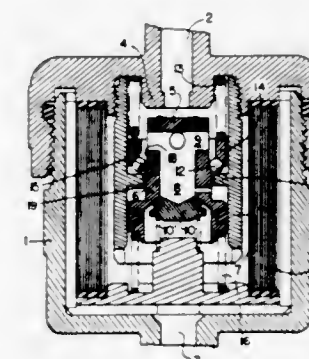
# INHIBITOR INJECTION

Russell F. Stedman, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.  
No Drawing. Filed Oct. 16, 1970, Ser. No. 81,511  
Int. Cl. C23f 11/02; F17d 1/02  
U.S. Cl. 48—190 7 Claims  
Injecting an inhibitor into a vapor stream by dissolving the inhibitor in a liquefied petroleum gas and thereafter dispersing the same as an aerosol into the vapor stream.

3,689,239

# FLASH-BACK ARRESTOR

Erik Torvald Eriksson, Lidingo, Sweden, assignor to Aga Aktiebolag, Lidingo, Sweden  
Filed Mar. 15, 1971, Ser. No. 124,264  
Claims priority, application Sweden, Mar. 19, 1970, 3,682/70  
Int. Cl. A62c 3/04; F17c 13/12  
U.S. Cl. 48—192 5 Claims



A flash-back arrestor comprising a housing with an inlet and an outlet channel and including a flame arrestor, a pressure wave arrestor and a non-return valve. The pressure wave arrestor consists of a movable piston with a central passageway. The piston is arrestable in a closed position to close the inlet channel. The central passageway of the piston includes a valve seat for a non-return valve which closes for back flow. The piston is movably arranged in a cylinder member with a flange inwardly directed towards the piston periphery. A number of spring-loaded balls forming the arresting means rest on said flange, and the spring-load is transferred via one or more wedge-shaped bodies. Said bodies can move upwards and downwards in the cylinder member and they are arranged to press the balls against the periphery of the piston, said periphery being provided with a cone-shaped shoulder between its upper part and its lower part in order to keep the piston in position by means of the balls when the piston is in the opened position.

3,689,240

# PRODUCTION OF METHANE RICH GASES

Clyde L. Aldridge and David Buben, Baton Rouge, La., assignors to Esso Research and Engineering Company  
No Drawing. Filed Mar. 18, 1971, Ser. No. 125,820  
Int. Cl. C10j 3/00, 3/46

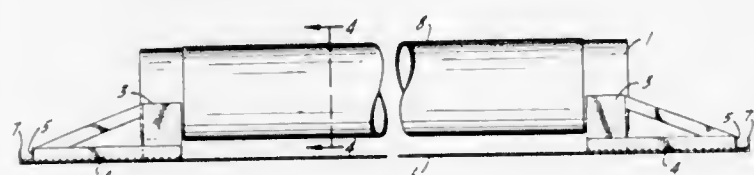
U.S. Cl. 48—202 6 Claims  
A process for producing a methane-rich gas wherein carbonaceous material is steam gasified at temperatures between 1100 and 1400° F. and at pressures between 200 and 2000 p.s.i.g. with steam rates between 0.1 and 1.0 wt. H<sub>2</sub>O/wt. carbon/hr. in the presence of an alkali metal salt catalyst composition.



**3,689,241**  
**METHOD OF ABRASIVE APPLICATION TO STRAIGHT SLEEVES**  
 Adna A. Armstrong, Geneva, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.  
 Continuation-in-part of application Ser. No. 726,890, May 6, 1968. This application Mar. 1, 1971, Ser. No. 119,561

Int. Cl. B24d 3/00  
 U.S. Cl. 51—293

6 Claims

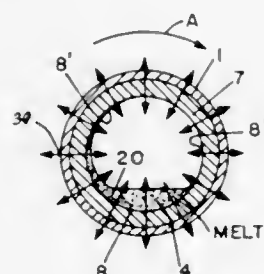


An apparatus and a method for securing grit to the exterior of a long thin-walled metal sleeve which ensures that the sleeve, even after being heated through a brazing cycle having temperatures as high as 2100° F., shall be straight in its final condition. By employing a ceramic support structure having a coefficient of thermal expansion less than the coefficient of thermal expansion of the sleeve, and preferably on the order of about  $3.0 \times 10^{-6}$  in./in./° F. at brazing temperatures, and selected fits lying preferably in the range of  $\frac{1}{8}$ " to  $\frac{3}{8}$ ", controlled, rectifiable distortions can be achieved which, with further processing, and possibly without further processing will result in a true, straight sleeve.

**3,689,242**  
**METHOD OF PREPARING ELECTRICALLY AND OPTICALLY ACTIVE VITREOUS AND POLYCRYSTALLINE MATERIALS**  
 Nicolaos S. Platakis, Cambridge, Harry C. Gatos, Weston, and August F. Witt, Arlington, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 16, 1970, Ser. No. 11,682  
 Int. Cl. C03b 29/00, 5/16  
 U.S. Cl. 65—32

9 Claims



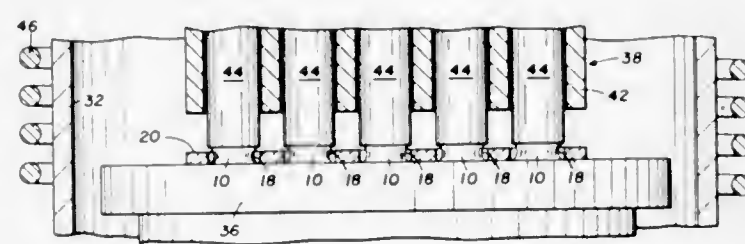
A method is disclosed for preparing an electrically and optically active material, either vitreous or polycrystalline, that provides a material that is non-porous, contains no inclusions, is chemically homogeneous, and one that can be cut or otherwise formed to some desired uniform geometrical shape. The process disclosed includes subjecting the components of the material held within a sealed ampoule or other closed container to an elevated temperature in an inert atmosphere or vacuum for a time period long enough for the components to become molten and to react chemically with one another. Heat is then withdrawn from the molten material to lower the temperature to a value at which a thin layer of molten materials adheres to the inner surface of the container. Relative movement is effected between the bulk of the molten material and the thin layer of melt that adheres

to the inner surface, the thin layer being moved away from the bulk of the melt to allow solidification thereby to form a solidified layer. The solidified layer is alternately brought into contact with the bulk of the molten material to pick up a thin layer of melt and removed from such contact to allow the thin layer to solidify, there being a continued withdrawal of heat from the region occupied by the ampoule in order that the solid layer will increase in thickness layer upon layer as additional molten material solidifies.

**3,689,243**  
**METHOD OF PASSIVATING SEMICONDUCTORS**  
 Jack P. Mize, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.  
 Filed Dec. 8, 1969, Ser. No. 883,020

Int. Cl. C03b 23/20  
 U.S. Cl. 65—42

8 Claims



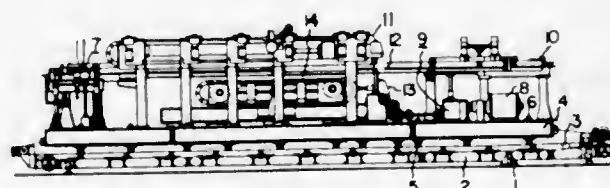
A method of passivating semiconductors includes the step of contracting a quantity of passivating material into engagement with a semiconductor device. In a first embodiment, semiconductor devices are positioned in apertures formed in a glass plate. The glass plate is then heated and deformed into engagement with the devices to form passivated semiconductor units. In a second embodiment, semiconductor devices are initially surrounded by a quantity of powdered passivating material. Subsequently, the powdered material is melted and forced into engagement with the devices. In a third embodiment, a ring of passivating glass is positioned around a semiconductor device. Upon heating, the ring shrinks into engagement with the device.

**3,689,244**  
**MOULD OPERATING MECHANISM OF A GLASS BULB MANUFACTURING MACHINE**  
 Takaaki Kurokawa, 4154 Kowada, Kanagawa-ken, Chigasaki, Japan; Noboru Inoue, 19-17, 6-chome, Kaijin, Chiba-ken, Funabashi, Japan; and Mitsugu Fukuda, 997 Shimokodanaka, Kanagawa-ken, Kawasaki, Japan  
 Continuation-in-part of application Ser. No. 37,389, May 11, 1970. This application July 29, 1971, Ser. No. 167,412

Claims priority, application Japan, Sept. 26, 1966, 41/63,344

Int. Cl. C03b 9/12  
 U.S. Cl. 65—159

5 Claims



In a glass bulb manufacturing machine wherein a plurality of parisons are formed to depend from a continuously moving ribbon shaped glass blank and the parisons are moulded into products of predetermined configuration, a

mould operating mechanism is provided which holds moulds in closed state along a predetermined path of movement of the parisons during normal operation of the machine but acts to hold the moulds in opened state during any desired period of the normal operation, for example, the starting period of the machine when the configuration of the parisons is not yet stable and may cause damage to the moulds. Each mould is divided into two halves removably mounted on mould operating members so that the time required for the replacement of the moulds can be minimized.

**3,689,245**  
**ALKALI METAL SILICATE-STABILIZED PESTICIDE FOAMS**

Verne Wesley Weidman and Paul C. Yates, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.  
 No Drawing. Continuation-in-part of application Ser. No. 779,275, Nov. 26, 1968. This application Sept. 21, 1970, Ser. No. 74,192

Int. Cl. A01n 9/00, 11/00, 17/06  
 U.S. Cl. 71—65

5 Claims

Agricultural pesticides are precisely and conveniently applied when dispersed or dissolved in an aqueous alkali metal silicate foam. This pesticide-containing foam is from 5 to 50 percent by weight of an alkali metal silicate or their mixtures, at least 40% by weight water, contains at least 0.5 percent by weight, based on the alkali metal silicate, of a surfactant and has a total volume of from 3 to 300 times the volume of the liquid in the foam. The foam serves as a carrier for a pesticide, the pesticide being from 0.1 to 25 weight percent of the foam.

**3,689,246**  
**SOLUTIONS OF AMMONIUM NITRATE, SULFATE AND CHLORIDE CONTAINING A THIOSULFATE AS DEFOLIANTS AND DESICCANTS**  
 Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.  
 No Drawing. Continuation-in-part of applications Ser. No. 421,688, Dec. 28, 1964, and Ser. No. 577,827, Sept. 8, 1966. This application Feb. 26, 1969, Ser. No. 802,648

Int. Cl. A01n 5/00, 11/02  
 U.S. Cl. 71—69

6 Claims

The invention comprises the application of aqueous solutions comprising a thiosulfate salt to the foliage of mature plants to effect desiccation and in some instances defoliation of the plants and thereby facilitate harvesting of the crops. The treatment can be applied to any plants where the desiccation or defoliation of the plant foliage would be desired, including cotton, potatoes, sugar beets, sugar cane, peppers, milo, roses, pineapple, alfalfa, tomatoes, grapes, etc. A surface active agent can be incorporated in the solution to facilitate wetting of the foliage by the applied solution and aerial or ground rig applications can be employed.

**3,689,247**  
 Patent Not Issued For This Number

**3,689,248**  
**METHOD OF PROCESSING COPPER-CONTAINING MATERIALS TO RECOVER METALLIC COPPER AND/OR COPPER CHLORIDE**

Charles W. Mehl, Redlands, Calif., assignor to Mehl Chemical Corporation, Riverside, Calif.  
 No Drawing. Filed May 24, 1971, Ser. No. 146,451  
 Int. Cl. C22b 3/00, 15/08; C01g 3/04

U.S. Cl. 75—1

6 Claims

A method of producing 99% pure copper from copper-based alloy scrap, or copper chloride from copper-bearing

ore, by an ion-exchange process comprising the steps of: reacting magnetically extracted black sand with concentrated HCl to produce an amber-colored colloidal solution consisting essentially of oxy-chlorides of all elements in the black sand, with pH of 1.0 and a marked Brownian movement; and then reacting said solution with copper-based alloy scrap to produce 99% pure copper; or reacting said solution with crushed copper ore of not less than about 1% copper content, to produce copper chloride solution. The Brownian movement of the solution causes the molecules of alloying metals in the scrap brass or bronze to dissolve out, leaving 99% pure copper behind. In the case of ore, the Brownian movement causes the various elements to break down by ion-exchange, leaving copper chloride in solution.

**3,689,249**  
**METHOD OF PELLETIZING USING COPPER-CONTAINING SILICEOUS WASTE MATERIALS**

Leonard R. Judd, Copperhill, Tenn., assignor to Cities Service Company, New York, N.Y.

No Drawing. Filed May 26, 1971, Ser. No. 147,194

Int. Cl. C22b 1/14, 15/00  
 U.S. Cl. 75—3

6 Claims

Flotation mill tailings and copper furnace slags are combined with iron calcine to form fired iron pellets used in iron manufacture. These formerly discarded wastes are utilized, and iron, copper and zinc values present in the wastes can be recovered.

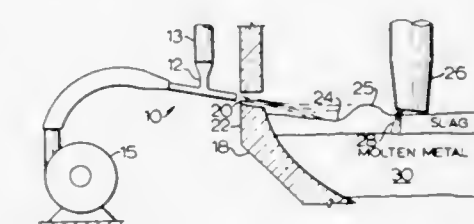
**3,689,250**  
**CONTROLLED SLAG FLOW IN AN ELECTRIC ARC FURNACE**

Gordon A. Roeder, Burlington, Ontario, Canada, and William H. Dailey, Solon, Ohio, assignors to The Steel Company of Canada Limited, Hamilton, Ontario, Canada, and Metallgesellschaft A.G., Frankfurt am Main, Germany

Filed Oct. 31, 1969, Ser. No. 872,960

Int. Cl. C21c 5/52; H05b 1/00  
 U.S. Cl. 75—12

8 Claims

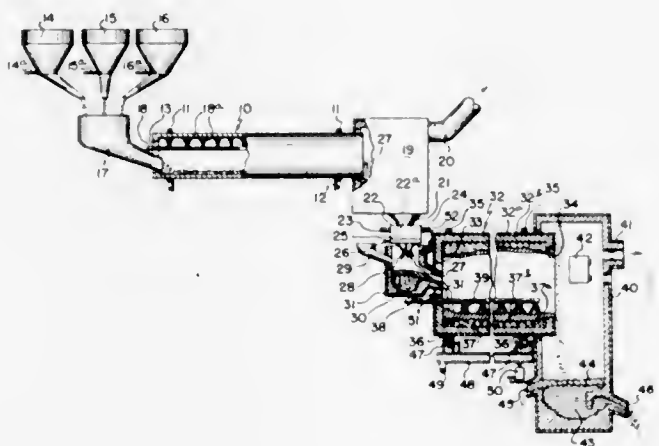


A method of steelmaking in an electric arc furnace wherein a continuous slag cover in the regions of the arcs promotes better heat transfer conditions, and reduced energy consumption by inducing the slag to flow directly toward each arc with sufficient velocity and volume rates to carry the unmelted ingredients directly into the turbulent arc region. The slag flow is induced by gas jets aimed directly at the surface of the slag, or by injection of solid or fluid steelmaking ingredients with a sufficient horizontal velocity component radially inwardly toward each electrode to create a hump of flowing slag between the arc and the furnace enclosure to shield the furnace sidewall.



**3,689,251**  
**REDUCTION OF SOLID IRON ORE TO HOT METALLIC IRON IN A ROTARY KILN-FLASH HEATER-ROTARY REACTOR COMPLEX**

Norman P. Goss, Mentor, Ohio, assignor of a fractional part interest to Arthur K. Blough, East Sparta, Ohio  
 Filed July 9, 1970, Ser. No. 53,575  
 Int. Cl. C21b 13/14, 13/08; C21c 5/56  
 U.S. Cl. 75—39 4 Claims



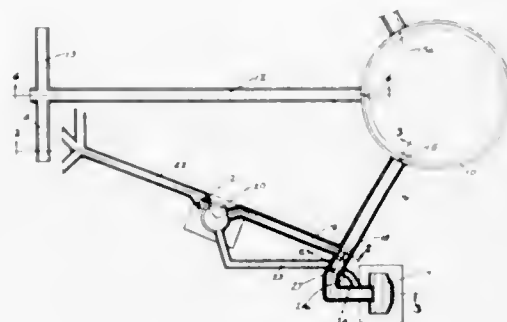
A method is disclosed of reducing solid iron ore particles to hot metallic iron in a continuous system involving a rotary kiln and a flash heater and a rotary reactor in series. Iron ore particles, suitable fluxes for removing impurities from iron, and solid fuel particles are fed in a continuous stream of small volume through this apparatus complex with the operation so controlled that the iron oxide is reduced step by step as it passes through the series of apparatus elements, with the temperature and chemistry properly controlled at each step so that the end product discharged from the rotary reactor is molten iron carburized to about three or four percent carbon. The invention makes it possible to utilize relatively inexpensive equipment, of modest dimensions, and capable of simple maintenance, while producing a carefully controlled end product.

**3,689,252**  
**RUNNER SYSTEM FOR CAST HOUSE, AND METHOD OF SEPARATING IRON AND SLAG**

Herbert L. Osborne, Middletown, Ohio, and Kenneth R. Haley, Ashland, Ky., assignors to Armco Steel Corporation, Middletown, Ohio  
 Filed Nov. 9, 1970, Ser. No. 87,704  
 Int. Cl. C21b 3/06, 7/14

U.S. Cl. 75—46 2 Claims  
 A runner system for a cast house, wherein the melt of a blast furnace is discharged into a trough leading to a hot metal container, the trough being provided with the usual dam and skimmer, the latter deflecting the slag and some iron into a slag runner. The slag runner discharges into an auxiliary ladle in which the iron entrained in the slag settles to the bottom. As the auxiliary ladle fills, the slag overflows into a continuation slag runner leading to a slag receptacle. At the completion of a cast, the hot metal and slag in the trough are directed down a supplementary slag runner and discharged into the auxiliary ladle. The auxiliary ladle is of sufficient capacity to hold approximately the volume of iron expected to be in the trough and the volume of iron which may be skimmed off during a cast, which may be on the order of fourteen tons. When the furnace is cast again, either

through a repaired iron notch or a second (alternate) iron notch, the auxiliary ladle is discharged into the trough so as again to pass the dam and skimmer for slag separation as during a regular cast. This system and method substantially eliminates slag in the hot iron container, and the loss of iron into the slag container.



tion as during a regular cast. This system and method substantially eliminates slag in the hot iron container, and the loss of iron into the slag container.

**3,689,253**  
**RECLAIMING LEAD FROM STORAGE BATTERIES**

Adrian C. Dorenfeld and Gust Bitsianes, Minneapolis, Minn., assignors to Minerals Technology Corporation, Minneapolis, Minn.  
 Filed Aug. 27, 1970, Ser. No. 67,506  
 Int. Cl. C22b 13/00

U.S. Cl. 75—77 7 Claims  
 Lead is recovered from storage batteries by a process that involves breaking the batteries into small pieces, separating the broken batteries into: (a) insulator chips; (b) lead buckles or fragments; and (c) sludge containing lead sulphate. The sludge, now substantially free of insulator chips and lead buckles, is mixed with aqueous sodium carbonate or the like with agitation to produce a reaction product that can be easily smelted with carbonaceous reducing agents and simple fluxes at temperatures from 900°–1050° C.

**3,689,254**  
**MAGNETIC MATERIAL**

Kiyoshi Inoue and Hideo Kaneko, Tokyo, Japan, assignors to Ishifuku Kinzoki Kogyo K.K. (also known as Ishifuku Metal Industry Co. Ltd.), Tokyo, Japan  
 Continuation-in-part of application Ser. No. 859,354, Sept. 19, 1969, which is a continuation-in-part of application Ser. No. 628,086, Apr. 3, 1967, both now abandoned. This application Apr. 28, 1971, Ser. No. 138,081  
 Claims priority, application Japan, Apr. 14, 1966, 41/23,707

U.S. Cl. 75—172 8 Claims  
 A magnetic material of high retentive capacity consisting essentially of 40 to 60 atomic percent platinum with good results when the Pt proportion is 45 to 55 atomic percent, balance cobalt (preferably 50 atomic percent  $\pm 1$  atomic percent platinum and 50 atomic percent  $\pm 1$  atomic percent cobalt), constituting a platinum/cobalt component and present as the balance of the magnetic material with between 4 and 15 atomic percent iron alone or with up to 5 atomic percent nickel (preferably above 0.1 atomic percent), the latter being present with or without copper in an amount up to 5 atomic percent copper (preferably at least 0.01 atomic percent) in the magnetic alloy. The cobalt proportion is in excess of the iron (in terms of atomic percent).

**3,689,255**  
**PROCESS FOR THE PRODUCTION OF CAST IRON WITH SPHERULITES**

Erich K. Modl, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland  
 No Drawing. Filed Nov. 30, 1970, Ser. No. 93,802  
 Claims priority, application Switzerland, Dec. 30, 1969, 19,378  
 Int. Cl. C22c 37/04

U.S. Cl. 75—123 CB 10 Claims  
 A cast iron with spheroidal graphite is produced with a relatively low silicon content which has improved plastic-deformation behavior and toughness at room temperatures and below to  $-40^{\circ}$  C. Cobalt and magnesium are added in common and simultaneously to achieve residual contents of from 0.1 to 1.5% and from 0.001 to 0.08% by weight, respectively.

**3,689,256**  
 Patent Not Issued For This Number

**3,689,257**  
**METHOD OF PRODUCING SINTERED FERROUS MATERIALS**

Teishiro Oda and Takashi Daikoku, Nakasaki-shi, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan  
 No Drawing. Filed Apr. 23, 1969, Ser. No. 818,796  
 Int. Cl. B22f 1/00

U.S. Cl. 75—214 4 Claims  
 The uses of sintered ferrous materials for important structural machine parts are considerably limited because of substantially inferior mechanical properties in usual forgings and castings of the same composition in spite of the fact that sintering materials can be produced at relatively low cost and they eliminate machining due to the close tolerances obtainable.  
 In order to overcome the above-mentioned faults and to attain sintered ferrous materials with high density, high strength and excellent ductility, there is provided a method of liquid phase sintering of ferrous materials in which Fe-Si alloy powders with more than 7 weight percent of Si, and the remainder Fe are added to iron powders at the rate of 0.3–10 weight percent of Si.

**3,689,258**  
**LOW CARBON HIGH TENSILE STRENGTH ALLOY STEEL**

Joseph R. Zanetti, Dearborn, Mich., assignor to National Steel Corporation  
 No Drawing. Original application Aug. 11, 1967, Ser. No. 659,885, now Patent No. 3,544,393, dated Dec. 1, 1970, Divided and this application July 14, 1970, Ser. No. 62,734  
 Int. Cl. C22c 39/14

U.S. Cl. 75—126 F 3 Claims  
 A low carbon, weldable, high tensile strength alloy steel characterized by ductility and toughness suitable for structural uses is produced in the "as rolled" condition by utilizing a steel consisting essentially, by weight, of

	Percent, about
Carbon	.10–.20
Manganese	.75–1.15
Silicon	.50–1.0
Chromium	.50–.80
Zirconium	.05–.20
Boron	.0005–.0025
Titanium	.02–.15
Columbium	.01–.06

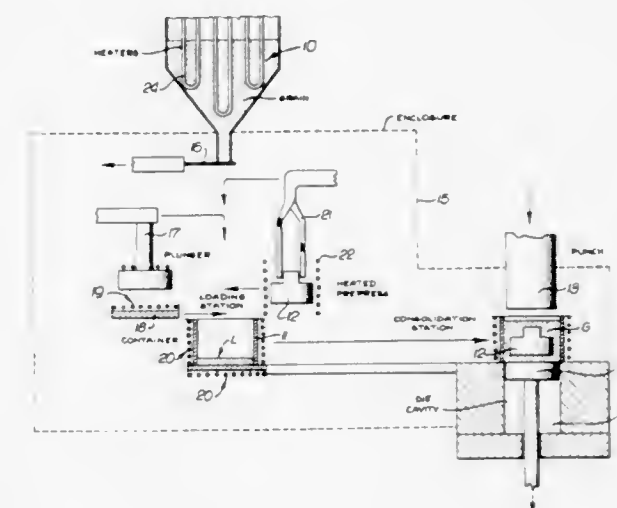
and the balance iron with residual impurities. The steel is hot rolled to form bars, plate and sheets with a starting

rolling temperature between 2100° F.–2300° F. and a finishing rolling temperature between 1400° F.–1700° F. followed by air cooling.

**3,689,259**  
**METHOD OF CONSOLIDATING METALLIC BODIES**

Robert W. Hailey, Long Beach, Calif., assignor to Wheeling-Pittsburgh Steel Corporation, Pittsburgh, Pa.  
 Filed June 2, 1969, Ser. No. 829,685  
 Int. Cl. B22f 3/14

U.S. Cl. 175—226 7 Claims



In accordance with the invention a metallic body in pre-pressed lower density form is heated to a temperature sufficiently high for subsequent consolidation by compaction under high pressure, the heated body is transferred into a heated container at a loading station where the contained body is embedded in granular refractory material, following which the heated container and its contents are moved to a compaction station at which the body and refractory material are displaced out of the container into a die cavity and therein subjected to compaction under pressure sufficiently high to consolidate the body to in excess of 95 percent of its theoretical maximum density.

**3,689,260**  
**COLOR ELECTROPHOTOGRAPHIC PROCESS WITH RESIN DEPOSITION FOR STABILIZATION OF TONER IMAGE**

Satoru Honjo, Yasuo Tamai, Masamichi Sato, Seichi Matsumoto, and Hasaaki Takimoto, Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan  
 No Drawing. Filed July 8, 1970, Ser. No. 53,301  
 Claims priority, application Japan, July 8, 1969, 44/53,465

U.S. Cl. 96—1.2 11 Claims  
 In an electrophotographic process for obtaining a multi-color image by performing an electrophotographic procedure including the steps of electrostatic charging, exposing, and developing three or more times repeatedly on a single electrophotographic sensitive material, the improvement comprising a color electrophotographic process for enhancing the mechanical strength of the image characterized by (1) providing a photoconductive zinc oxide spectrally sensitized so as to exhibit photo-response through out a substantial part of the visible spectrum, (2) providing a binder for the zinc oxide consisting essentially of a polyisocyanate cross-linked polyhydroxyl resin which forms a three-dimensional molecular structure, (3) carrying out the development with a liquid developer comprising an insulative carrier liquid with a resin component



dissolved therein and finely divided electrically charged particles dispersed therein on the surface of which part of the resin component is adsorbed or associated, and (4) bringing the surface of the developed sensitive layer while still wet with the developer into contact with a rinsing liquid having less dissolving power for the aforementioned resin component in the developer than that of the carrier liquid thereby removing the developer from the non-image areas and causing insolubilization of the resin component which deposits around the deposited toner to increase the mechanical strength of the image.

3,689,261

Patent Not Issued For This Number

3,689,262

# PHOTOGRAPHIC PRODUCTS AND PROCESSES FOR COLOR DIFFUSION TRANSFER

Howard G. Rogers, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

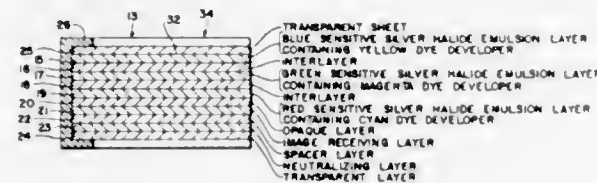
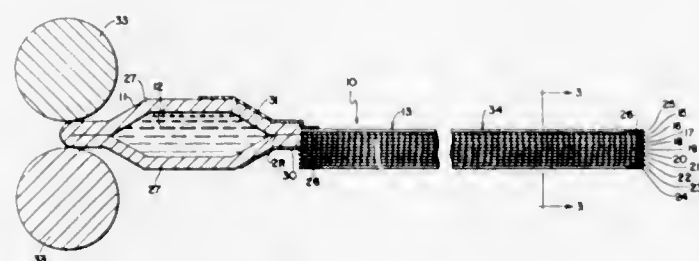
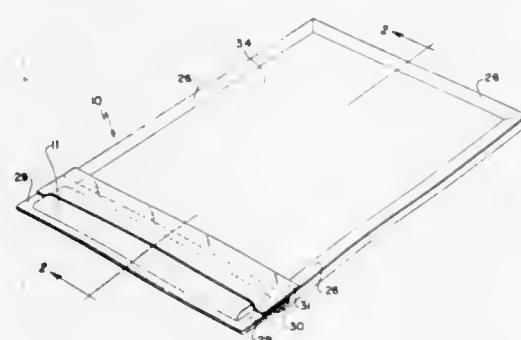
Continuation of application Ser. No. 39,646, May 22, 1970, now Patent No. 3,594,165, which is a continuation of abandoned application Ser. No. 815,585, Apr. 14, 1969, which is a continuation of abandoned application Ser. No. 728,535, May 13, 1968. This application July 2, 1971, Ser. No. 159,254

The portion of the term of the patent subsequent to July 20, 1988, has been disclaimed

Int. Cl. G03c 1/48, 5/54, 7/00

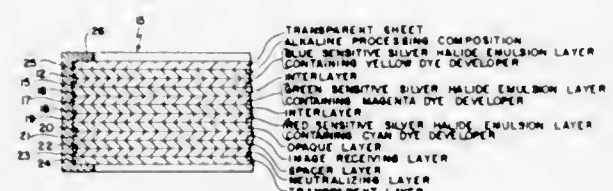
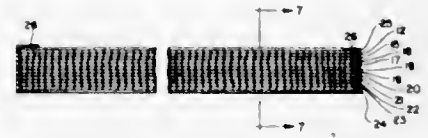
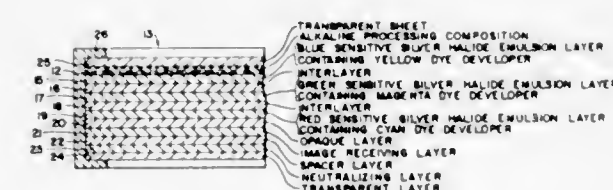
U.S. Cl. 96—3

16 Claims



The present invention relates to photography, particularly, to photographic products specifically adapted for employment in specified photographic diffusion transfer color processes and, more particularly, to photographic products which comprise a composite photosensitive structure containing, in combination, a photosensitive laminate including, as essential layers, in sequence, a dimensionally stable layer transparent to actinic radiation; a polymeric layer dyeable by the selected dye image-forming material;

a processing composition permeable opaque layer; and a photosensitive silver halide layer having associated therewith a dye image-forming material which is processing composition diffusible, as a function of the point-to-point degree of the silver halide layer's exposure to incident actinic radiation; a transparent dimensionally stable sheet superposed substantially coextensive the surface of the laminate opposite the dimensionally stable transparent layer; and processing composition retaining means containing an opacifying agent positioned extending transverse



a leading edge of the film unit to effect unidirectional discharge of the container's contents intermediate the dimensionally stable sheet and the laminate; and, associated with said laminate, a polymeric layer substantially transparent to incident radiation and containing sufficient acidifying capacity to effect reduction of a processing composition having a pH at which a selected dye image-forming material is diffusible to a pH at which such material is substantially nondiffusible; and to specified photographic diffusion transfer color processes employing such products.

3,689,263

Patent Not Issued For This Number

3,689,264

# METHOD FOR INCREASING INDEX OF REFRACTION IN TRANSPARENT BODIES AND ITS APPLICATION TO LIGHT GUIDES AND THE LIKE

Edwin Arthur Chandross, Berkeley Heights, Richard Lynn Fork, Holmdel, Ivan Paul Kaminow, New Shrewsbury, and Walter John Tomlinson III, Holmdel, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Mar. 19, 1970, Ser. No. 21,102

Int. Cl. G03c 5/00, 1/68

U.S. Cl. 96—35.1

11 Claims

There are disclosed a variety of methods for producing light guides in suitably sensitized samples upon irradiation with focused ultraviolet light and subsequent

aging. These methods are based upon the discovery that ultraviolet radiation from a mercury arc at 3650 Å. or from an ultraviolet helium-cadmium ion laser at 3250 Å. produces readily observable irreversible index of refraction changes in poly(methyl methacrylate) polymerized at low temperatures of around 40–50 degrees centigrade. Upon subsequent aging, the amount and gradient of the index change substantially increase.

3,689,265

# METHOD OF FORMING A COLOR CATHODE RAY TUBE SCREEN

Lyle W. Evans, Geneva, and Walter W. Slobbe, Seneca Falls, N.Y., assignors to Sylvania Electric Products Inc.

Application Feb. 2, 1970, Ser. No. 7,449, which is a continuation-in-part of application Ser. No. 822,794, Apr. 2, 1969, Divided and this application June 7, 1971, Ser. No. 150,518

Int. Cl. G03c 5/00

U.S. Cl. 96—36.1

3 Claims

Method of forming a tri-color patterned screen for a color cathode ray tube comprising a combination of phosphors that provide a display of improved brightness. The method utilizes a red-emitting phosphor, a blue-emitting phosphor, and a green-emitting phosphor silver activated zinc-cadmium sulfide material exhibiting no appreciable shift in hue or change in body color resultant of tube processing. The improved screen is backed by a substantially taut aluminizing film.

3,689,266

# METHOD OF MANUFACTURING FLUORESCENT SCREENS OF COLOR PICTURE TUBES

Takao Kawamura, Mohara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 31, 1971, Ser. No. 176,673

Int. Cl. G03c 5/00, 11/00

U.S. Cl. 96—36.1

21 Claims

A fluorescent screen of a color picture tube is manufactured by the method of forming a photosensitive coating on the inner surface of a face plate of the picture tube; exposing the photosensitive coating to light through perforations of a shadow mask; removing portions of the coating that have been exposed to the light, thus leaving the spots of the coating that have been exposed to the light; shrinking the spots of the coating; applying a coating of a nonluminous substance over the entire area of the inner surface of the face plate including the shrunk spots; removing the shrunk spots together with portions of the coating of the nonluminous substance applied thereon thus exposing portions of the inner surface of the face plate on which the shrunk spots have been applied; applying a coating of a phosphor onto the entire surface of the remaining nonluminous substance as well as the exposed portions of the inner surface of the face plate; applying a coating of photosensitive material onto the phosphor coating; exposing the coating of the photosensitive material to light beams passed through the perforations of the shadow mask thus forming phosphor dots.

3,689,267

# SCREEN MAKING PROCESS UTILIZING ROTATION OF OPTICAL PLATE

William S. Little, Jr., Rochester, N.Y., and John H. Lennon and John C. Urbach, Portola Valley, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 15, 1970, Ser. No. 80,864

Int. Cl. C03c 5/00

U.S. Cl. 96—38.3

8 Claims

A method is herein disclosed for producing a high resolution diffraction grating having a relatively large optical

working surface. An optically worked glass substrate is first coated with an even layer of photoresist material. The coated surface is then exposed to a pattern of light interference fringes and the pattern is scanned across the surface in a manner whereby the phase relationship between the interfering light beams remain unaltered at each point on the surface. The rate of scan is controlled to produce a uniform time average exposure of the fringe pattern on the coated surface. The exposed surface is developed by selectively removing the photoresist material from the glass substrate leaving behind a periodic array of extended parallel glass stripes separated by ridges of photosensitive material. The developed surface is next coated with a layer of glass adhering metal and the remaining photosensitive material, with the overlying metal coatings thereon, is stripped from the substrate leaving behind the metal bar pattern on glass.

3,689,268

# METHOD OF MAKING LIGHT SENSITIVE DIAZO PAPER FOR BLACK LINE IMAGE

Shigeaki Yoshida, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 649,466, June 28, 1967. This application Jan. 4, 1971, Ser. No. 103,849

Claims priority, application Japan, July 22, 1966,

41/47,656

Int. Cl. G03c 5/18, 1/54, 1/58

U.S. Cl. 96—49

2 Claims

There is provided a method of making black image diazotype prints having improved long term preservation properties.

3,689,269

# LIQUID TRAPPING MEANS FOR A FILM UNIT

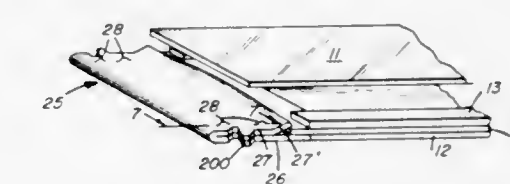
Stanley R. Schieven, deceased, late of Webster, N.Y., by Arline E. Schieven, executrix, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 7, 1971, Ser. No. 104,713

Int. Cl. G03c 1/48

U.S. Cl. 96—76 C

8 Claims



For trapping and retaining the excess processing fluid distributed between an exposed photosensitive sheet and a second sheet superposed therewith when the two are moved longitudinally between a pair of pressure applying members to rupture a pod containing an amount of processing solution in excess of that required to process the exposed latent image, the trailing end of one of the sheets is extended beyond the image area thereof and is medially folded back upon itself to provide a flap the free end of which will extend back at least to the trailing end of the other sheet, and probably beyond and under the trailing end of the other sheet, to form a trap for the excess processing fluid. The sheet whose trailing end is folded back to form the trap should be made of material having sufficient rigidity and/or resilience that it resists folding so that the free end of the folded-back flap normally remains spaced from the sheet proper to form an open mouth for receiving excess processing fluid. The



longitudinal edges of the folded-back trap are sealed together in such a way as to prevent the flow of processing fluid from the edges but to allow the escape of air therefrom. At least one protuberance is embossed in each of the sealed edges to effect a significant separation of the pressure applying members as the trap passes therebetween whereby the folded-back flap will not be compressed sufficiently to cause a back flow of any fluid which has entered the trap.

3,689,270

# **LIGHT-SENSITIVE COMPOSITIONS COMPRISING A SILVER SALT OF A TETRAAZAINDENE**

George de Winter Anderson, Hatfield Broad Oak, near Bishops Stortford, and Ronald E. Watts, Bishops Stortford, England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.  
No Drawing. Filed Jan. 3, 1969, Ser. No. 788,933  
Claims priority, application Great Britain, Jan. 8, 1968, 1,146/68

Int. Cl. G03c 1/02

U.S. Cl. 96—76

17 Claims

A light-sensitive composition comprising the silver salt of a tetraazaindene compound and intimately associated portion of silver halide is shown, together with methods for preparing the composition.

3,689,271

# **INCORPORATION PROCESS FOR MATERIALS USED TO FORM PHOTOGRAPHIC LAYERS**

Fritz Nittel, Cologne-Stammheim, and Erich Reckziegel, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany  
No Drawing. Filed Apr. 9, 1969, Ser. No. 814,808  
Claims priority, application Germany, Apr. 11, 1968, P 17 72 192.5

Int. Cl. G03c 1/84, 1/40

U.S. Cl. 96—84

11 Claims

The emulsification of additives into a photographic emulsion is stabilized by combining the additive with certain secondary carboxylic acids before they are emulsified.

3,689,272

# **PHOTOGRAPHIC COLOR PROCESSES WHICH YIELD EITHER POSITIVE OR NEGATIVE SILVER-TRANSFER IMAGES**

Judith A. Schwan and Edward A. Smith, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.  
No Drawing. Filed Jan. 25, 1971, Ser. No. 109,719  
Int. Cl. G03c 5/54, 7/02, 5/44

U.S. Cl. 96—3

19 Claims

Photographic color elements having a support coated on one side with at least one light-sensitive hydrophilic colloid layer containing imagewise-exposed silver halide grains and a nondiffusible coupler that reacts with oxidized aromatic primary amine color developing agent to form a nondiffusible dye, are advantageously processed by (1) contacting with a hydrophilic colloid processing web containing silver precipitating nuclei, an aromatic primary amine color developing agent, an organic amine-SO<sub>2</sub> addition product and, alternatively, an additional silver halide solvent until a dye image and silver image are formed in the element and a silver image is formed in the processing web, (2) separating the processing web from the element and, if desired, subsequently treating the element to remove silver and residual silver halide, provided that the hydrophilic colloid in the element and the hydrophilic colloid in the processing web are either hardened during manufacture or during step (1) by a hardener imbibed in the processing web just prior to step (1) to have a reticulation temperature greater than 65° C. and a melting point greater than 85° C.

3,689,273

# **SILVER HALIDE EMULSION CONTAINING SULFUR OR SELENIUM SENSITIZER AND HYDROXY TETRA-AZAINdene STABILIZER**

Jozef Frans Willems, Wilrijk, Jules Robert Berendsen, Deurne, Robert Joseph Pollet, Vremde, and Antoon Leon Vandenbergh, Hove, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium  
No Drawing. Filed Oct. 27, 1970, Ser. No. 84,491  
Claims priority, application Great Britain, Nov. 18, 1969, 56,426/69

Int. Cl. G03c 1/34, 1/28

U.S. Cl. 96—109

7 Claims

A photographic silver halide emulsion wherein the silver halide has been chemically ripened in an aqueous hydrophilic colloid medium comprising as a chemical sensitizer an aliphatic or aromatic sulphide or selenide comprising at least three sulphur and/or selenium atoms linked together and as a stabilizer against fog formation a hydroxy tetra-azaindene compound, and the method of preparing the emulsion is described. The emulsion has superior sensitivity and reduced fog particularly upon storage.

3,689,274

# **PROCESS OF HARDENING PHOTOGRAPHIC GELATIN LAYERS WITH A SULFONYL ESTER OR A SULFONAMIDE**

Johannes Sobel, Leverkusen, Wolfgang Himmelmann, Cologne-Stammheim, and Heinz Meckl, Cologne-Flittard, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany  
No Drawing. Continuation of abandoned application Ser. No. 795,080, Jan. 29, 1969. This application Aug. 6, 1971, Ser. No. 169,818

Claims priority, application Germany, Feb. 16, 1968, P 16 22 260.9

Int. Cl. G03c 1/30

U.S. Cl. 96—111

1 Claim

A process of hardening the gelatin of a photographic layer by the addition of a sulfonyl ester or a sulfonamide to the casein solution.

3,689,275

# **DETOXIFICATION OF OILSEED MEAL WITH CALCIUM HYDROXIDE**

Henry Marti Espoy, Seal Beach, Calif., assignor to Daylin Laboratories, Inc., Los Angeles, Calif.

No Drawing. Filed June 22, 1970, Ser. No. 48,433

Int. Cl. A23k 1/00; A23l 1/20

U.S. Cl. 99—2 E

7 Claims

The method is directed towards the detoxification of copra, cottonseed meal, peanut meal, and other products from aflatoxins by adding to the various meals a slurry consisting of calcium hydroxide in water, in which the mean particle size of the particulates is below 50 microns. In certain instances concerning copra, cottonseed meal, peanut meal, etc., from which the oil has been removed, it is necessary to add a binding agent such as sodium lignin sulfonate and to pellet the material using heat and pressure. In both cases, the meal must then be heated to a temperature of 50° C. or more and this temperature must be maintained from 1 to 60 minutes or longer.

3,689,276

# **DERMA FIBER MACHINE**

Charles Karl Kummer, St. Louis, Roger E. Walters, Glendale, and Gary Wayne White, Afton, Mo., assignors to Ralston Purina Company, St. Louis, Mo.  
Filed Apr. 29, 1971, Ser. No. 138,457

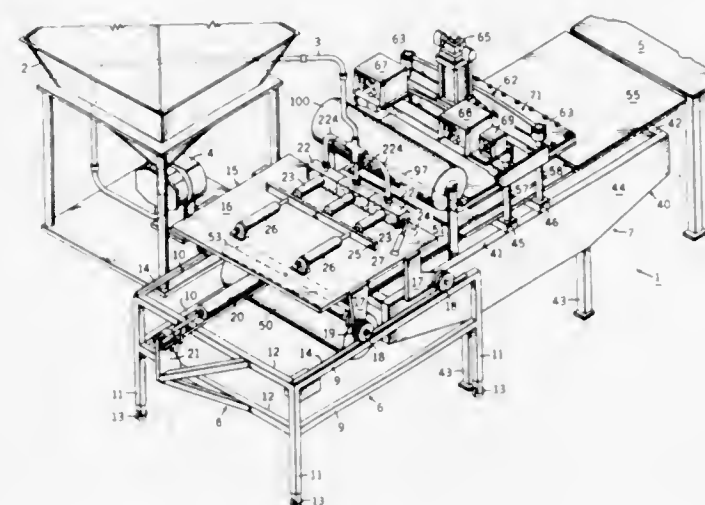
Int. Cl. B01j 1/02

U.S. Cl. 99—234 R

12 Claims

A machine for the manufacture of an artificial or fabricated skin is disclosed having a movable material supply mechanism for predeterminedly metering a desired quantity of material onto a conveyor. The conveyor thereafter

moves the material to a position between a pair of heated platens, at least one of which is reciprocally movable. When the platens are in mating engagement, they define a plurality of cavities having the desired shape and configuration of the skin to be fabricated. A fluid pressure responsive motor on the apparatus is effective to urge the platens



together with a predetermined pressure to effect the distribution of the material to completely fill the cavities and simultaneously with the exertion of pressure heat is supplied to the formed material to coagulate at least the surface proteins thereof. After the formation of the skin, the platens are separated and the conveyor is used to discharge the skin from the machine.

3,689,277

# **PREPARATION OF A CARAMEL FLAVORED PROTEIN HYDROLYSATE**

Michael R. Sfat and Bruce J. Morton, Manitowoc, Wis., assignors to Bio-Technical Resources, Inc., Manitowoc, Wis.

No Drawing. Filed May 5, 1970, Ser. No. 34,883

Int. Cl. A23l 1/00; A23j 1/14; C12c 9/00

U.S. Cl. 99—28

9 Claims

A protein hydrolysate of enhanced organoleptic properties is produced by heating a granular intimate mixture of a protein hydrolysate and a sugar in the presence of moisture at a temperature of about 75–100° C. until a caramel flavor is imparted to the mixture. The product is useful as a flavor precursor for a fermented alcoholic beverage, particularly beer, and as a food supplement or ingredient. The product may be incorporated in a fermentation wort for producing a fermented alcoholic beverage, and when produced employing a highly fermentable sugar, provides a wort yielding a low carbohydrate beverage. Preferred products may serve as a malt flavor base in foodstuffs, particularly non-alcoholic beverages.

3,689,278

# **TEA PROCESS**

Robert J. Carbonell, Stamford, Conn., assignor to Standard Brands Incorporated, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 707,366, Feb. 7, 1968. This application Oct. 21, 1970, Ser. No. 82,801

The portion of the term of the patent subsequent to

Feb. 7, 1985, has been disclaimed

Int. Cl. A23f 3/02

U.S. Cl. 99—77

5 Claims

A method of preparing tea concentrates which when reconstituted in hot water have improved flavor and aroma characteristics comprising subjecting tea to a flavor and aroma extraction process and collecting flavor and aroma constituents, mixing the constituents with soluble tea solids

to provide an aqueous mixture having a solids concentration of above about 20 percent by weight, freeze drying the mixture and mixing it with a spray dried instant tea.

3,689,279

# **HIGH PROTEIN READY-TO-EAT BREAKFAST CEREALS CONTAINING SOY ISOLATE**

William T. Bedenk, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed June 29, 1970, Ser. No. 50,924

Int. Cl. A23l 1/10

U.S. Cl. 99—83

18 Claims

Novel high protein content ready-to-eat cereal products are produced from soya. Soy isolate having a protein content of 90% up to 100% on a dry basis is partially hydrolyzed in the presence of a proteolytic enzyme and preferably thereafter combined with a cereal grain such as corn, rice, oats, or wheat. The resultant mixture is then processed to produce a cold cereal product having a high nutritive value, i.e. a protein content greater than 20% and that remains crispy and tender after exposure to milk.

3,689,280

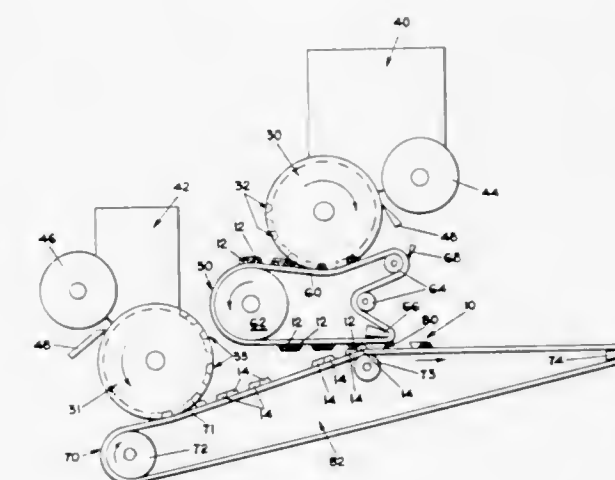
# **CENTER-FILLED COOKIE MAKING APPARATUS AND METHOD**

Frank Charles Werner, Grand Rapids, Mich., assignor to Werner Lehara Incorporated, Grand Rapids, Mich.  
Filed Dec. 28, 1970, Ser. No. 101,952

Int. Cl. A21d 8/00

U.S. Cl. 99—86

14 Claims



Apparatus and process for producing dough products having at least two portions each characterized by a different flavor or ingredient throughout. The apparatus provides in combination two die rollers for molding the two different portions separately, an inverting mechanism for inverting one of the portions, and means for superimposing the inverted portions upon those portions not inverted, to complete the product.

3,689,281

Patent Not Issued For This Number

3,689,282

# **PREPARATION OF A BAKED POTATO PRODUCT**

Bernard Feinberg, Berkeley, Calif., assignor to the United States of America as represented by the Secretary of Agriculture

Filed June 24, 1970, Ser. No. 49,411

Int. Cl. A23l 1/00

U.S. Cl. 99—100 P

2 Claims

Cooking raw whole unpeeled potatoes in a saturated aqueous solution of sodium chloride for a period long



enough to gelatinize the starch and to dehydrate the tubers, cooling the cooked potatoes to about room temperature, and then chilling the cooled potatoes until they are ready to be prepared by heating them until the skin is crisp.

3,689,283

## TREATMENT OF COOKED POULTRY

Kenneth Nathaniel May, State College, Miss., and Allison James Farr, Ithaca, N.Y., assignors to Calgon Corporation, Pittsburgh, Pa.

No Drawing. Filed Mar. 12, 1970, Ser. No. 19,117

Int. Cl. A22c 21/00

U.S. Cl. 99—107

7 Claims

This invention relates to the treatment of poultry following cooking to enhance its ability to retain moisture and water-soluble nutrients associated therewith and to improve oxidative stability. Immediately following cooking, the poultry is immersed in a solution of polyphosphate for cooling. The cooled poultry retains its moisture content more tenaciously and for a longer period than untreated poultry, and exhibits a fresh taste and appearance for an extended period.

3,689,284

## PROCESS OF PRODUCING A FOOD PRODUCT

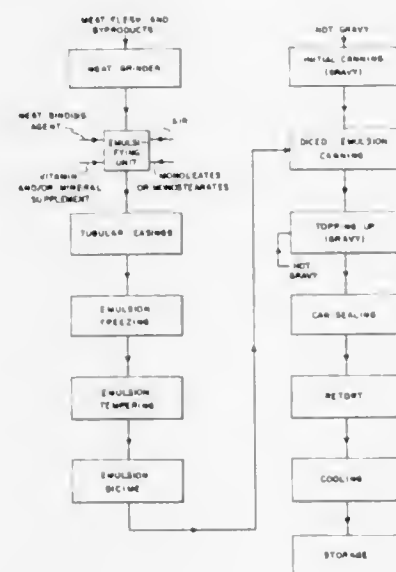
William Nash, Trenton, Ontario, Canada (R.R. 3, Belleville, Ontario, Canada), and Walter E. Ward, R.R. 2, Peterborough, Ontario, Canada

Continuation-in-part of application Ser. No. 821,309, May 2, 1969. This application Dec. 23, 1971, Ser. No. 211,480

Int. Cl. A22c 18/00; A23b 1/00; A23k 1/00

U.S. Cl. 99—107

1 Claim



A process for producing a food product is defined. The food product may be for either human or animal consumption. The process has the steps: (a) comminuting meat to form an emulsion having a proper consistency; (b) lowering the temperature to achieve the frozen or semi-frozen state; (c) dicing the emulsion; (d) covering the frozen or semi-frozen emulsion with an edible liquid at a temperature sufficient to heat set the protein in the outer surface of the diced portion; and (e) subsequently cooking the diced portions. Preferred embodiments include special temperature ranges, moisture levels, size of the diced portions, inclusion of an edible gas, inclusion of a meat binder, and placing the emulsion in a hermetically sealed container immediately prior to cooking.

3,689,285

## METHOD FOR MAKING A FOOD PRODUCT

Gordon S. Griffin, 512 Hollybrook Drive, New Whiteland, Ind. 46184, and Hormoz K. Broumand, 6404 Hoover Road, Indianapolis, Ind. 46260

No Drawing. Continuation-in-part of application Ser. No. 876,986, Nov. 14, 1969, which is a continuation-in-part of application Ser. No. 832,851, June 12, 1969.

This application June 11, 1971, Ser. No. 152,364

Int. Cl. A22c 18/00

U.S. Cl. 99—108

11 Claims

A method comprising the steps of placing water and finely ground cereal selected from the group consisting of corn, soy and rice and combinations thereof in a cooker and cooking the mixture of water and cereal, adding finely ground meat to the mixture, continuing cooking the mixture of water, cereal and meat until it forms a fluent coherent mass of solid particles, and compacting the mass into discrete pieces. The discrete pieces are preferably blast frozen for handling and packaging either before or after cooking, e.g., by deep frying. The compacting step may be carried out by stuffing said mass into casings to provide said discrete pieces, which casings are removed after the pieces or at least the outer surfaces thereof are frozen.

3,689,286

## RAPID PRODUCTION OF A CHEDDAR CHEESE FLAVORED PRODUCT

Anthony J. Luksas, Chicago, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

No Drawing. Continuation of application Ser. No. 719,271, Apr. 5, 1968. This application Sept. 24, 1970, Ser. No. 75,724

Int. Cl. A23c 19/00

U.S. Cl. 99—115

4 Claims

Fermented flavor of the cheddar type is prepared by acidifying a protein, e.g. milk or recombined milk to form a curd and then inoculating the curd with micrococci and allowing the micrococci to grow. A flavor intensity of 100 times one year old cheddar is produced. The acidification is preferably carried out by growing nontoxic enterococci, bacilli on the protein medium.

3,689,287

## PROCESS FOR MAKING PEANUT FLAKES

Jack H. Mitchell, Jr., 101 Bradley St., Clemson, S.C. 29631

No Drawing. Filed July 7, 1969, Ser. No. 839,673

Int. Cl. A23l 1/36

U.S. Cl. 99—126

6 Claims

A process of converting peanuts into precooked flakes, high in protein and calories, which includes the steps of removing the skins and hearts from the uncooked and unroasted peanuts, reducing the moisture content, grinding the peanuts to a fine consistency, heating the finely divided peanuts with water, and then drum drying the product.

3,689,288

## HIGH PROTEIN PUDDING

Jesse Thomas Duren, Belleville, Ill., assignor to Ralston Purina Company, St. Louis, Mo.

No Drawing. Filed June 18, 1970, Ser. No. 47,555

Int. Cl. A23l 1/14

U.S. Cl. 99—139

15 Claims

A high protein pudding is produced which utilizes the protein material as the thickening agent. A mixture con-

taining a protein material is subjected to a heating medium to form a gel, and thereafter the material is cooled while subjected to mechanical working so as to form a pudding having a texture and consistency substantially similar to starch pudding.

3,689,289

## CHICKEN FLAVOR AND PROCESS FOR PREPARING THE SAME

Marcel Andre Perret, Cutler Road, Greenwich, Conn. 06830

No Drawing. Continuation-in-part of applications Ser. No. 559,106, June 21, 1966, and Ser. No. 18,743, Mar. 11, 1970. This application May 24, 1971, Ser. No. 146,480

Int. Cl. A23l 1/26

U.S. Cl. 99—140 N

16 Claims

An artificial chicken flavor and a process for preparing the same are provided, starting from a combination of a hexose, a bland protein hydrolyzate, and arachidonic acid compound, such as arachidonic acid, and/or methyl or ethyl arachidonate, and cysteine, cystine or a nontoxic acid addition salt thereof. The flavor is obtained by heating this mixture for up to ten minutes at a temperature within the range from about 60 to about 90° C.

3,689,290

## PARTICULATE FOOD PRODUCT

Hoyt A. Blackstock, Canoga Park, and Nicholas D. Ross, Northridge, Calif., assignors to Carnation Company, Los Angeles, Calif.

No Drawing. Filed June 13, 1969, Ser. No. 833,166

Int. Cl. A23l 1/10, 1/22

U.S. Cl. 99—140

2 Claims

A dry particulate food product is provided by blending together fat, such as vegetable fat, a dry, bland particulate organic carrier, such as food starch, flavoring agent, with or without coloring agent to provide the flavor and appearance of selected food, and then coating the resultant mixture with dry powdered coating agent, such as powdered hydrolyzed cereal solids, having a smaller particle size than that of the carrier.

3,689,291

## COOKING PACKAGE FOR FREEZE-DRIED EGGS

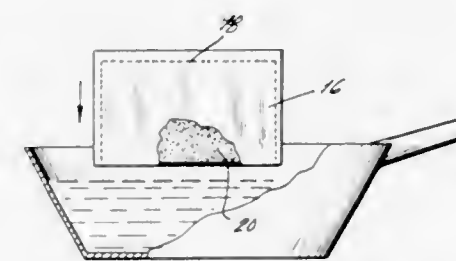
Alexander Draper, Garrison, N.Y. 10524

Filed Mar. 20, 1969, Ser. No. 808,846

Int. Cl. B65b 29/02

U.S. Cl. 99—177

4 Claims



A food package adapted to be cooked by contact with a hot cooking liquid which includes an outer envelope of nitrogen filled metallic foil, an inner container of porous fibrous material, and coarsely divided particles of freeze-dried eggs in the container so arranged that upon cooking an omelete-like portion of foodstuff is obtained. Flavoring may be provided.

3,689,292

## TIN IMMERSION PLATING BATH AND METHOD

John M. Preston, 7501 S. Broadway,

Carl Junction, Mo. 63111

No Drawing. Filed Dec. 7, 1970, Ser. No. 95,977

Int. Cl. C23c 3/02

11 Claims  
An electroless plating composition for immersion tin plating. This aqueous plating composition, which provides a bright adherent coating even on certain relatively high nobility substrates such as lead/tin eutectic, contains stannous chloride, fluoboric acid, thiourea, a wetting agent and a phosphorus compound selected from the group consisting of phosphoric acids having a  $P_2O_5$  content of between about 72% and 82% by weight and the alkali metal salts of such acids. A preferred plating composition additionally contains a small proportion of the reaction product between phosphoric acid and a sugar. A method of electroless plating which utilizes the plating composition is also disclosed.

3,689,293

## MICA GLASS-CERAMICS

George H. Beall, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed July 8, 1970, Ser. No. 53,121

Int. Cl. C03c 3/22, 3/30; C04b 33/00

U.S. Cl. 106—39 DV

2 Claims

This invention relates to the production of fluorine mica glass-ceramic articles from glass articles in the composition system  $SiO_2-B_2O_3-Al_2O_3-MgO-K_2O-F$  which are about 50-90% by volume crystalline, the crystals being related in structure and composition to the natural mineral phlogopite. These mica glass-ceramic products exhibit good machineability with steel tools, good mechanical strength and impact resistance, excellent thermal shock resistance, and superior dielectric properties.

3,689,294

## PORTLAND CEMENT COMPOSITIONS AND METHOD

Stephen Braunauer, 39 Chestnut St., Potsdam, N.Y. 13676

No Drawing. Continuation-in-part of application Ser. No. 811,239, Mar. 27, 1969. This application June 14, 1971, Ser. No. 153,107

Int. Cl. C04b 7/13, 13/28

U.S. Cl. 106—90

7 Claims

A free-flowing expanding cement paste is made by mixing finely ground cement with at least 0.0025 part of alkali or alkaline earth lignosulfonate and with about 0.20-0.28 part of water containing at least 0.0025 part of alkali carbonate. Mixtures of aggregate with such low-porosity pastes yield, on curing, mortars and concretes of improved strength and dimensional stability.

3,689,295

## QUICK-SETTING PORTLAND CEMENT

Arthur Theodore Hersey and James Richard Tonry, Easton, Pa., assignors to Alpha Portland Cement Company, Easton, Pa.

No Drawing. Continuation-in-part of application Ser. No. 843,195, July 18, 1969. This application May 26, 1971, Ser. No. 147,220

Int. Cl. C04b 13/26

U.S. Cl. 106—90

23 Claims

A portland cement composition is described which is capable of setting in a short period of time. The cement composition contains an additive composed of an ethanolamine and an acetate, acetic acid or acetic anhydride in amounts by weight between about 0.1% and 0.4%. The cement composition includes sulfur combined as  $SO_3$  in



controlled amounts between about 1% and 2.5% and has a Blaine fineness of at least about 4,000 square centimeters per gram. Concrete formed from this cement composition will develop a compressive strength of at least about 125 p.s.i. within about two hours in mortar tests.

3,689,296

# CEMENT COMPOSITION CONTAINING ALKANOL-AMINOLIGNOSULFONATE - FORMALDEHYDE SETTING RETARDER

Jean-Guy Landry, 1490 de la Verendrye, Quebec City 3, Quebec, Canada

No Drawing. Continuation-in-part of application Ser. No. 874,679, Nov. 6, 1969. This application Nov. 29, 1971, Ser. No. 203,004

Int. Cl. C04h 7/52, 13/28

U.S. Cl. 106—90

6 Claims

A setting retarder for concrete comprises the reaction product of formaldehyde and an aminolignosulfonate prepared by adding an amine to spent sulfite liquor. The retarder is added to the portland cement clinker which is then ground.

3,689,297

# METHOD OF INCORPORATING FILLERS IN CATIONIC BITUMINOUS EMULSIONS AND PRODUCTS PRODUCED THEREBY

Jack N. Dybalski, Chicago, and Robert D. Timmons, Tinley Park, Ill., assignors to Armour Industrial Chemical Company (a wholly owned subsidiary of Akzona Incorporated), Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 543,790, Apr. 20, 1966, which is a continuation-in-part of application Ser. No. 393,745, Sept. 1, 1964. This application Apr. 29, 1968, Ser. No. 725,202

Int. Cl. C08h 13/00, 17/22; C08j 1/46

U.S. Cl. 106—280

12 Claims

The method of preparing storage stable dispersions of fillers in aqueous cationic bituminous emulsions comprising pretreating finely divided filler material with an aqueous solution of certain monovalent salts and thereafter mixing the treated filler material with a cationic bituminous emulsion to obtain a dispersion of finely divided filler in the aqueous cationic bituminous emulsion, and dispersions produced by such a method. The storage stable dispersions obtained are useful as floor tile adhesives, roofing compositions, sound deadeners, protective coatings, insulating compositions and the like.

3,689,298

# METHOD OF INCORPORATING FILLERS IN CATIONIC BITUMINOUS EMULSIONS AND PRODUCTS PRODUCED THEREBY

Jack N. Dybalski, Chicago, and Robert D. Timmons, Tinley Park, Ill., assignors to Armour Industrial Chemical Company (a wholly owned subsidiary of Akzona Incorporated), Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 540,811, Apr. 7, 1966, which is a continuation-in-part of application Ser. No. 393,745, Sept. 1, 1964. This application Apr. 29, 1968, Ser. No. 725,201

Int. Cl. C08h 13/00, 17/22; C08j 1/46

U.S. Cl. 106—280

13 Claims

The method of preparing storage stable dispersions of fillers in aqueous cationic bituminous emulsions comprising pretreating finely divided filler material with an aqueous solution of a polyvalent metal salt and thereafter mixing the treated filler material with a cationic bituminous emulsion to obtain a dispersion of finely divided filler in the aqueous cationic bituminous emulsion, and dispersions produced by such a method. The storage stable dis-

persions obtained are useful as floor tile adhesives, roofing compositions, sound deadeners, protective coatings, insulating compositions and the like.

3,689,299

# PROCESS FOR PREPARING PITCH BOUND AGGREGATE

Lloyd H. Brown, Crystal Lake, and David D. Watson, Barrington, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

No Drawing. Filed Mar. 16, 1971, Ser. No. 124,983

Int. Cl. C08h 13/00, 17/02; C09d 3/24

U.S. Cl. 106—284

1 Claim

Improved process for producing bound aggregate with a thermosetting binder comprising a modified petroleum pitch plasticizer and powdered pitch, useful for example, in producing refractory linings and carbon electrodes.

3,689,300

# COUPLING AGENT FORMULATIONS

Fred Lee Bungler and Michael Levitsky, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 11,773, Feb. 16, 1970. This application Jan. 26, 1971, Ser. No. 109,968

Int. Cl. C09r 3/00

U.S. Cl. 106—287

8 Claims

Coupling agent formulations comprising metal oxide coated colloidal silica sols and organofunctional silanes; and reinforcing filler materials coated with such formulations.

3,689,301

# TRANSFER ELEMENTS AND PROCESS FOR PREPARING SAME

Michael A. Scott, South Croydon, England, assignor to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 775,121, Nov. 12, 1968. This application Dec. 30, 1970, Ser. No. 102,892

Claims priority, application Great Britain, Nov. 25, 1967, 53,710/67

Int. Cl. B41m 5/10

U.S. Cl. 117—36.4

10 Claims

Method of producing novel pressure-sensitive transfer elements having a polyolefin film foundation, preferably polypropylene, and a solvent-applied non-transferable resinous ink layer which exudes ink to a copy sheet under imaging pressure. The resinous ink layer is bonded to the foundation by means of a bonding layer comprising a mixture of a major amount by weight of a cured polyurethane polymer which is insoluble in the solvent of the ink layer and a minor amount by weight of a synthetic thermoplastic polymer which is soluble in said solvent.

3,689,302

# THERMOGRAPHICALLY COLOR-DEVELOPABLE COMPOSITION

Keishi Kubo, Kanagawa, Kiyoshi Sakai, Tokyo, Takashi Sato, Saitama, and Kuniaki Hakamada, Kanagawa, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

No Drawing. Filed Oct. 20, 1970, Ser. No. 82,518

Claims priority, application Japan, Jan. 9, 1970, 45/2,797

Int. Cl. B41m 5/00; G03c 1/64

U.S. Cl. 117—36.8

10 Claims

Thermographically color-developable compositions for use in the preparation of heat-sensitive copy sheets and

heat-sensitive stencil sheets containing ferrous or ferric salts of higher aliphatic carboxylic acids and at least one selected semicarbazide derivative.

3,689,303

# PROCESS FOR ELECTROLESS PLATING OF ABS RESINS

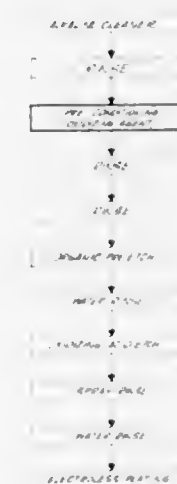
Eileen Maguire, San Gabriel, and Leon A. Kadison, Pasadena, Calif., assignors to Crown City Plating Company

Filed Dec. 21, 1970, Ser. No. 99,956

Int. Cl. B44d 1/092; C23c 3/02

U.S. Cl. 117—47 A

10 Claims



Conditioning the surface of an ABS resin by oxidation to increase its hydrophilic nature prior to contact with an organic pre-etch solution, eliminates surface blemishes when the resin is subsequently electrolessly plated.

3,689,304

# TREATING GLASS

Charles Raymond Bamford, Ormskirk, England, assignor to Pilkington Brothers Limited, Liverpool, England

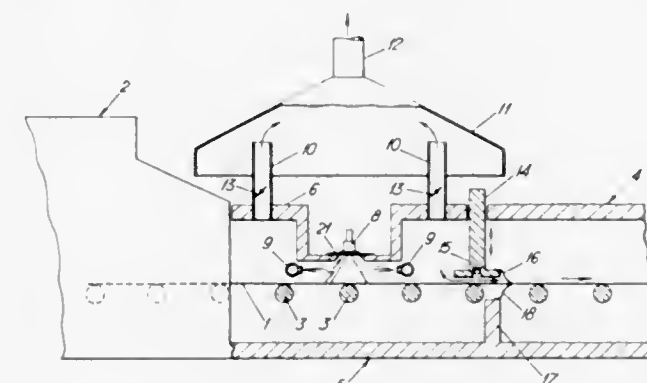
Filed Apr. 22, 1970, Ser. No. 30,719

Claims priority, application Great Britain, Apr. 23, 1969, 20,769/69

Int. Cl. C03c 17/22

U.S. Cl. 117—54

18 Claims



A hot glass ribbon is coated with a metal oxide by passing the ribbon through an enclosed chamber, and at the same time directing a selected compound in an organic solvent against the ribbon, the compound being such as to react on contacting the hot glass to produce a metal oxide coating. A flame inhibiting atmosphere is maintained within the enclosed chamber, the atmosphere being continuously displaced and being maintained at a temperature sufficiently high to prevent detrimental cooling effects on the ribbon.

3,689,305

# COMPOSITION AND METHOD FOR SEALING MORTAR-COATED PIPE

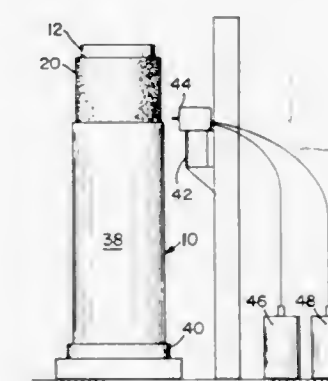
Delbert A. Hausmann, Glendale, Calif., assignor to American Pipe and Construction Co., Monterey Park, Calif.

Filed June 19, 1969, Ser. No. 834,734

Int. Cl. B44d 1/16

U.S. Cl. 117—70 C

4 Claims



A corrosion-preventing sealer coating can be applied to mortar-coated pipe without waiting for the mortar to cure if the sealer is a liquid, essentially solvent-free material of the proper flow characteristics to form a substantially pinhole-free, continuous layer over the irregularities of the rough mortar surface, and cures at room temperature into a hard, moisture-impervious coating by the use of a water-compatible, non-acid curing agent. A pigmented and thickened substantially solvent-free epoxy resin composition cured by an accelerated amido-amine curing agent is described as an example of a coating system which satisfies the above requirements.

3,689,306

Patent Not Issued For This Number

3,689,307

# GRADED RUBBER-URETHANE-ACRYLATE PAINT AND PAINTING PROCESS

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,475

Int. Cl. C08g 41/04, 22/00

U.S. Cl. 117—93.31

18 Claims

A radiation-curable paint binder dispersion comprises the addition product of a hydroxy-functional, acrylic graded-rubber particle, a diisocyanate and a hydroxyalkyl acrylate and vinyl monomers. The dispersion is applied to a substrate as a paint film and cured thereon by exposure to an electron beam.

3,689,308

# UNSATURATED POLYESTER-HYDROXY FUNCTIONAL, GRADED-RUBBER PAINT AND PROCESS

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,476

Int. Cl. C08f 19/00, 43/08

U.S. Cl. 117—93.31

15 Claims

A radiation-curable paint which on a pigment and particulate filler-free basis consists essentially of vinyl monomers and a unique, alpha-beta olefinically unsaturated, rubber-comprising resin formed by reacting an



alpha-beta olefinically unsaturated mono (acyl chloride)-functional polyester with a hydroxy-functional graded-rubber particle. The dispersion is applied to substrates as a paint film and cured thereon by exposure to ionizing radiation, e.g. an electron beam.

3,689,309

#### EPOXY-VINYL COPOLYMER AND GRADED-RUBBER PAINT AND PROCESS

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,479

Int. Cl. C08g 45/04

U.S. Cl. 117—93.31 13 Claims

A radiation-curable paint which on a pigment and particulate filler-free basis consists essentially of vinyl monomers and a unique, alpha-beta olefinically unsaturated, rubber-comprising resin formed by a reacting a mono-epoxy copolymer of vinyl monomers with a carboxy-functional, graded-rubber particle and reacting the resultant hydroxyl groups thereon with acrylyl chloride or methacrylyl chloride.

3,689,310

#### POLYESTER AND ACRYLIC RUBBER-URETHANE-ACRYLATE PAINT AND PAINTING PROCESS

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,494

Int. Cl. C08g 41/04, 22/00

U.S. Cl. 117—93.31 10 Claims

A radiation-curable paint binder dispersion comprises vinyl monomers, and alpha-beta olefinically unsaturated polyester resin having molecular weight in excess of about 1,000, and the addition product of a hydroxy-functional acrylic rubber particle, a diisocyanate and a hydroxyalkyl acrylate. The dispersion is applied to substrates as a paint film and cured thereon by exposure to ionizing radiation, e.g., an electron beam.

3,689,311

#### METHOD FOR EXTERNAL COATING OF CYLINDRICAL OBJECTS

Robert W. Loeffler, Olathe, and Walter W. Loeffler, Jr., Overland Park, Kans., and Edward L. Stubbs, Climax Springs, Mo., assignors to Ler-Son Company Incorporated, Olathe, Kans.

Filed Nov. 6, 1970, Ser. No. 87,491

Int. Cl. B44d 1/08

U.S. Cl. 117—94 4 Claims



An improved method and apparatus for the external coating of cylindrical objects in such a manner to accomplish the entire process including heating and surface preparation, coating application, curing, quenching and in-

spection in one continuous operation without interruption of the total process, including the coupling of the objects to be coated and to pass said coupled objects as one continuous entity through the entire process, with the provision for rotating the said objects around their longitudinal axis in a manner so as to obtain the most effective cleaning and heating and to provide a final coating which is even, with a minimum of pinholes and voids.

3,689,312

#### SPRAY METHOD FOR PRODUCING A GLARE-REDUCING COATING

George E. Long III, Neffsville, and Donald Walter Barch, Columbia, Pa., assignors to RCA Corporation

No Drawing. Filed Feb. 8, 1971, Ser. No. 113,737

Int. Cl. B44d 1/08

U.S. Cl. 117—94 10 Claims

A method for producing a glare-reducing coating upon a surface, for instance the external glass surface of the viewing window of an evacuated and sealed cathode-ray tube, comprising preparing a coating formulation consisting essentially of a siliceous polymer, an organic polymer, and a volatile organic liquid vehicle for the polymers, producing a spray of discrete droplets of the formulation in a gaseous medium, intercepting the spray upon the surface to produce a layer of droplets thereon, flashing off substantially all of the vehicle present in the layer leaving a substantially dry textured polymeric layer on the surface, and then baking the dry layer at about 100 to 200° C. until the layer is cured.

3,689,313

#### CREASE-RESISTANT WOVEN COTTON SHEETING AND A PROCESS FOR ITS PRODUCTION

Ernest Sewell, Pointe du Lac, Quebec, Canada, assignor to Wabasso Limited, Montreal, Quebec, Canada

No Drawing. Continuation-in-part of application Ser. No. 706,626, Feb. 19, 1968. This application July 15, 1970, Ser. No. 55,249

Claims priority, application Canada, Oct. 27, 1967, 3,653

Int. Cl. D06m 15/70; B23b 27/06

U.S. Cl. 117—139.4 12 Claims

This invention relates to crease-resistant woven cotton sheeting and to a process for its production. The process of this invention renders woven cotton fabric crease-resistant while retaining or improving its tear strength and pliability by impregnating the sheeting with a mixture of the monomers (or prepolymers) of two resins and polymerising the two resins by the action of oxalic acid to produce a tough pliable resinous film on the cotton fibres. The impregnating mixture comprises an aldehyde-urea resin and an acid stable polyacrylate resin.

3,689,314

#### METHOD FOR FABRICATING IMPROVED FLUSHABLE WRAPPERS FOR ABSORBENT PADS AND PRODUCT OBTAINED THEREBY

David V. Duchane, Menasha, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

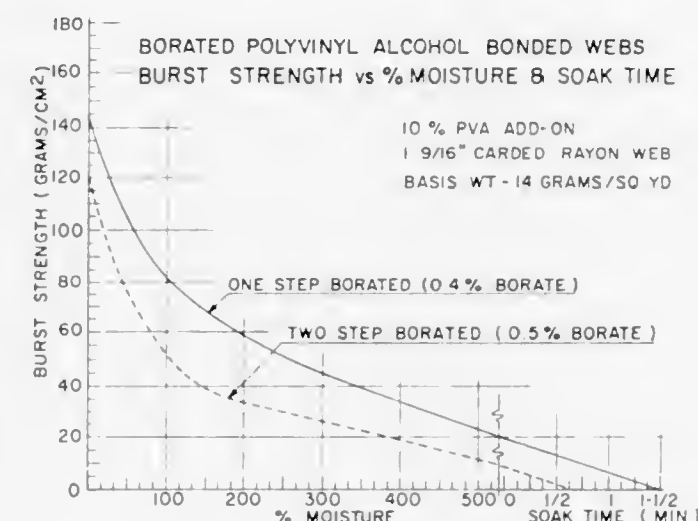
Filed Feb. 24, 1970, Ser. No. 13,842

Int. Cl. D06h 3/08

U.S. Cl. 117—140 A 5 Claims

A flushable wrapper for sanitary napkins and other absorbent pads. The wrapper comprises a non-woven fiber web bonded by a cold-water soluble polyvinyl alcohol

adhesive which has been insolubilized in situ after the adhesive is applied to the web. The polyvinyl alcohol is applied to the web in the form of a solution containing chemical additives which do not gelate or affect the solubility of the polyvinyl alcohol until after heat is applied to dry the treated web. The heat causes the chemical additives to react and to render the polyvinyl alcohol



sufficiently water resistant throughout its structure to maintain wet strength of the web at a level where it does not disintegrate in a heavily moisture laden environment. A web thus bonded has enough wet strength and abrasion resistance to perform satisfactorily at moisture levels encountered during normal use, yet disintegrates sufficiently fast after soaking in excess water to permit disposal by flushing.

3,689,315

#### COATED ELECTRIC CONDUCTOR

Jean-Pierre Quentin, Lyon, and Michel Ruau, Villeneuve par Ternay, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Feb. 27, 1969, Ser. No. 803,064

Claims priority, application France, Feb. 29, 1968, 141,830

Int. Cl. B44d 1/42; B01k 3/04

U.S. Cl. 117—228 5 Claims

Copolymers of vinyl alcohol with comonomers containing ion-exchange groupings are useful for coating electric conductors, particularly electrodes used in the electrolytic deionization of polar liquids.

3,689,316

#### TRANSFER MEDIUM FOR PRODUCING SCRATCH AND SMUDGE RESISTANT MARKS

Charles T. Fellows, Kettering, Stanley R. Hermann, Xenia, and Norman C. Hochwalt, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 54,856, July 14, 1970. This application Oct. 29, 1970, Ser. No. 85,312

Int. Cl. B41m 5/10

U.S. Cl. 117—234 13 Claims

A transfer medium comprising a base having a transferable coating composition thereon. The transferable composition comprises about 3 to 40 percent by weight of polysiloxane rubber gum; about 3 to 40 percent by weight of a polysiloxane resin; about 15 to 70 percent by weight of a thermoplastic aminotriazine-sulfonamide-aldehyde resin; and about 1 to 45 percent by weight of a sensible material. The outer surface of the coating composition has a thin coating of wax.

3,689,317

#### MAGNETIC RECORDING MEDIUM

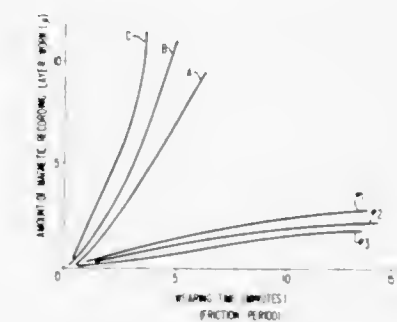
Goro Akashi and Yasuyuki Yamada, Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of abandoned application Ser. No. 798,643, Feb. 12, 1969. This application June 7, 1971, Ser. No. 150,744

Claims priority, application Japan, Feb. 12, 1968, 43/8,706

Int. Cl. H01f 10/02

U.S. Cl. 117—240 9 Claims



Magnetic recording medium wherein magnetizable layer comprises magnetizable particles dispersed in a binder formed of a cellulose resin, and epoxy resin and a polyisocyanate.

3,689,318

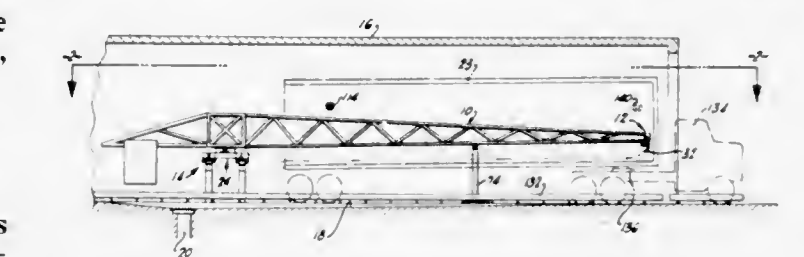
#### APPARATUS AND METHOD FOR WASHING TRAILER INTERIORS

Calvin C. Phillips, Denver, Colo., assignor to Safeway Stores, Incorporated, Oakland, Calif.

Filed Mar. 17, 1971, Ser. No. 125,118

Int. Cl. B08b 9/08

U.S. Cl. 134—23 16 Claims



Apparatus and method for washing trailer interiors using a horizontal boom carrying a washing head at its free end. A driver backs the trailer to be washed onto the boom so that the boom structure extends through the rear opening and into the trailer until the washing head is proximate the front of the trailer. Means are provided for sensing this condition and for starting a wash cycle in which the washing head provides a spray having a pattern extending laterally across the entire width of the interior of the trailer. The driver then slowly pulls forward and as the head delivers the spray, the same is swept along the trailer floor toward the rear thereof to clean the trailer.

3,689,319

#### PARAFFIN REMOVAL PROCESS

Thomas E. Sample, Jr., and Jack F. Tate, Houston, Tex., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Nov. 2, 1970, Ser. No. 86,382

Int. Cl. E21b 21/00; B08b 3/08, 9/02

U.S. Cl. 134—40 6 Claims

Solid paraffin-like hydrocarbon materials deposited on the surfaces of oil well production equipment are re-



moved by contacting the solid deposits with certain hydrolyzable, aprotic, halogenated organic materials, such as allyl chloride, and the halogenated organic compound containing the dissolved or peptized paraffin is removed from the equipment and conducted to a vessel containing water or a base dissolved in water.

3,689,320

# METHOD FOR MAKING A BATTERY PLATE USING CELLULOSIC MATERIAL

Thomas Brian Ashcroft, Birmingham, Walter Betteridge, Beckenham, and Victor Allen Tracey, Solihull, England, assignors to The International Nickel Company, Inc., New York, N.Y.

No Drawing. Continuation of application Ser. No. 751,726, Aug. 12, 1968. This application Mar. 25, 1970, Ser. No. 20,870. Claims priority, application United Kingdom, Aug. 17, 1967, 38,036/67; Apr. 19, 1968, 18,697/68; Aug. 9, 1968, 37,630/68.

Int. Cl. H01m 35/18

U.S. Cl. 136—75

7 Claims

Porous metal articles having good strength and conductivity are produced by impregnating a natural cellulosic material such as cotton cloth with a metal salt solution, drying the impregnated cloth, and heating the dried cloth in a reducing atmosphere to an elevated temperature to destroy the cellulosic material, convert the metal salt to metal and sinter the metal to a coherent body.

3,689,321

Patent Not Issued For This Number

3,689,322

# STORAGE BATTERY

Hans-Georg Lindenberg, Hannover, and Rolf Seyberlich, Bordenau, Germany, assignors to Varta Aktiengesellschaft, Frankfurt am Main, Germany.

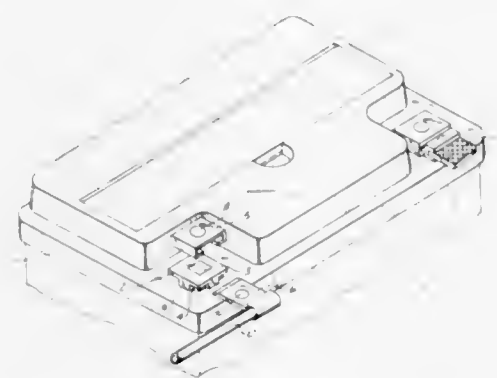
Filed Apr. 30, 1970, Ser. No. 33,189

Claims priority, application Germany, May 17, 1969, P 19 25 295.0

Int. Cl. H01m 5/00

U.S. Cl. 136—135 S

15 Claims



A terminal post in a storage battery of polygonal cross-section and has an exposed planar contact face. The post formed below the contact face with a circumferentially elongated groove which may be continuous or discontinuous. A clamp straddles the contact face and has portions which are received in the grooves so that the clamp is retained on the terminal post. A connecting cable is provided with a strip-shaped cable connector which is located between the clamp and the contact face and is clampingly retained in engagement with both.

3,689,323

# SOLID IONIC CONDUCTORS

Geoffrey W. Mellors, Strongsville, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed July 16, 1970, Ser. No. 55,623. Int. Cl. H01m 11/00; C01c 3/08

U.S. Cl. 136—153

8 Claims

The addition of iodides or cyanides of metals manganese, iron, cobalt, nickel, copper, zinc, gallium, cadmium, indium, tin, gold, mercury and thallium to binary compositions of silver iodide and alkali metal cyanide or silver iodide and alkali metal iodide produces ionic conductors of good specific conductivity and lower cost.

3,689,324

# PROCESS FOR OBTAINING PREFERRED ORIENTATION IN ZIRCONIUM AND ITS ALLOY

George W. Wiener, 2348 Marbury Road, Pittsburgh, Pa. 15221; William T. Reynolds, 109 Scenery Circle, McMurray, Pa. 15317; and Robert G. Aspden, R.D. 1, Flagstaff Drive, Export, Pa. 15632.

Filed Sept. 27, 1968, Ser. No. 763,298

Int. Cl. C22f 1/18; C22c 15/00

U.S. Cl. 148—11.5

18 Claims

A process is described in which zirconium and its alloys are subjected to a beta phase heat treatment and during said heat treatment a surface active agent is admitted to the heat treating environment. Thereafter, the metal or alloy is cooled to a temperature below the allotropic transformation temperature. The metal or alloy thus treated is characterized by a preferred orientation which includes a high volume proportion of the grains exhibiting the basal plane (0002) oriented to within 15° of the surface of the material.

3,689,325

# STAINLESS STEEL HAVING IMPROVED CORROSION AND FATIGUE RESISTANCE

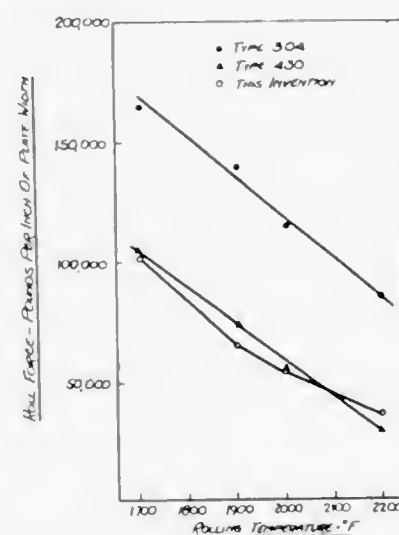
Howard Wayne Hayden, Jr., Suffern, N.Y., Robert Cameron Gibson, Ringwood, N.J., and Jere Hall Brophy, Suffern, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Application Aug. 1, 1968, Ser. No. 749,409, now Patent No. 3,574,002, dated Apr. 6, 1971, which is a continuation-in-part of application Ser. No. 638,519, May 15, 1967, which in turn is a continuation-in-part of application Ser. No. 559,185, June 21, 1966. Divided and this application Dec. 1, 1969, Ser. No. 882,390.

Int. Cl. C21d 7/14

U.S. Cl. 148—12

15 Claims



PULLING FORCES FOR PRODUCTIONS FROM 1 INCH TO 1/2 INCH PLATE THICKNESS FOR SEVERAL STAINLESS STEELS

Directed especially to readily workable stainless steels having a duplex, e.g., austenite-ferrite, microstructure con-

taining about 18% to about 35%, e.g., about 26%, chromium, about 2% to about 12%, e.g., about 6.5%, nickel, up to about 1.5%, e.g., about 0.2%, titanium, up to about 1% vanadium, not more than about 0.08%, e.g., up to about 0.05%, carbon and the balance substantially iron. The alloys are processed to have a fine grained microstructure and improved properties by heating to a temperature sufficiently high to dissolve at least a substantial proportion of the more soluble phase followed by a precipitation of the dissolved phase at a lower temperature accompanied by, or subsequent to, a plastic deformation.

3,689,326

# PROCESS FOR MAKING CONTINUOUS METAL MEMBERS SUCH AS SUCKER ROD STRINGS

Alexander Palynchuk, 10680 69th St., Edmonton, Alberta, Canada

Filed May 11, 1970, Ser. No. 36,107

Int. Cl. C21d 7/14

U.S. Cl. 148—12.3

5 Claims

Mill coils of steel sucker rod are joined end to end by flash butt welding and straightened to form a rod string. The string is heated in less than 60 seconds to above its  $A_c3$  temperature to convert ferritic grain structure to austenitic structure. It is hot rolled to deform its circular cross section to oval form. The oval rod is then quenched to 600° C. and slowly cooled to room temperature to avoid development of martensite. The string is then coiled with its minor diameter in the coil plane without stressing the steel beyond its .2% offset yield.

The product is a continuous oval sucker rod string particularly adapted to be transported.

3,689,327

# SOLDERING FLUX

Theodore Boyne, Chicago, Ill., assignor to National Can Corporation, Chicago, Ill.

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,292

Int. Cl. B23k 35/34, 35/36

U.S. Cl. 148—23

7 Claims

A flux is provided for soldering tin plate and particularly for soldering the side seams of cans for the storage of food. The flux comprises isophthalic acid and an amine hydrobromide in a dimethylformamide solvent.

3,689,328

# COHERENT DISPERSION HARDENED COMPOSITES

Giovanni Perona, Piazza Piola, N. 12, Milan, Italy

No Drawing. Filed July 2, 1968, Ser. No. 741,875. Claims priority, application Italy, Oct. 18, 1967, 21,721/67.

Int. Cl. C22f 1/04

U.S. Cl. 148—31.5

2 Claims

A composite material having a bundle of tubular hardening films and consisting of a single body formed of parallel fine wires diffusion welded to one another with interposition of substantially uniform layers of metals or compounds thereof capable of preventing the dislocation movement of the basic material, the diameter of said wires having a magnitude of 1 micron.

3,689,329

# CARBON STEEL SPRING ELEMENTS

Roy F. Kern, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

No Drawing. Filed Aug. 20, 1969, Ser. No. 852,157. Int. Cl. C21d 9/02

U.S. Cl. 148—36

3 Claims

A carbon steel composition for spring elements is disclosed wherein the steel includes carbon, manganese, silicon and boron. In accordance with its classification as a

"carbon steel," it does not include normal alloying elements, particularly chromium. The present steel is particularly characterized by excellent durability and fatigue life as well as by low cost. The carbon steel consists essentially of about .50–.80 percent carbon, about 0.50–1.65 percent manganese, about 0.02–0.60 percent silicon, about 0.050 maximum percent sulfur, about 0.040 maximum percent phosphorus, about 0.0005–0.007 percent boron, balance mainly iron.

3,689,330

# METHOD OF MAKING A LUMINESCENT DIODE

Masaki Dosen and Kunio Kaneko, Kanagawa, and Naozo Watanabe, Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

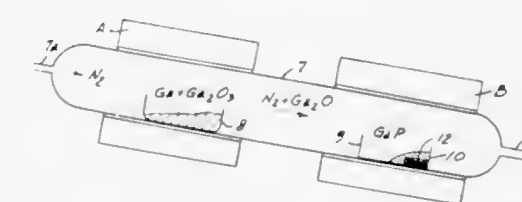
Filed Apr. 13, 1970, Ser. No. 27,794

Claims priority, application Japan, Apr. 18, 1969, 44/30,117

Int. Cl. H01l 7/38

U.S. Cl. 148—171

6 Claims



A method of making a luminescent diode including using gallium phosphide substrate and a melt of gallium phosphide. The substrate and the melt are disposed in a first boat within a fused quartz tube. The boat is inclined in such a manner that the melt is kept separate from the substrate. A second boat is provided within the tube and gallium plus gallium trioxide is placed in the second boat. First and second furnaces are provided about the tube in the vicinity of the respective boats. The gallium plus gallium trioxide forms gallium monoxide when heated. A carrier gas such as nitrogen is passed through the tube and carries the gallium monoxide into the vicinity of the boat containing the melt of gallium phosphide. As a result, the oxygen becomes doped into the melt. The tube is then inclined in such a way as to cause the melt to extend over the substrate and form an epitaxial growth upon cooling. The substrate contains an N type impurity such as tellurium, and during the growth of the epitaxial layer, a vapor containing a P type material such as zinc is added into the layer to form a PN junction. In this way, improved doping of oxygen into the junction which is required for a luminescent diode is achieved.

3,689,331

# NITROCELLULOSE BASE COMPOSITIONS AND METHOD FOR MAKING SAME

Everette M. Pierce, Somerville, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Feb. 28, 1964, Ser. No. 348,907

Int. Cl. C06d 5/06

U.S. Cl. 149—18

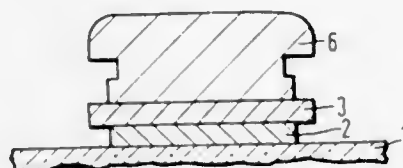
11 Claims

11. The method of curing a propellant composition which comprises bringing together in intimate admixture nitrocellulose and a nitrate ester plasticizer in the presence of a curing agent selected from the group consisting of ferrocene, ferrocene derivatives and mixtures of these, the amounts of said nitrocellulose, plasticizer and curing agent being sufficient to provide concentrations thereof of



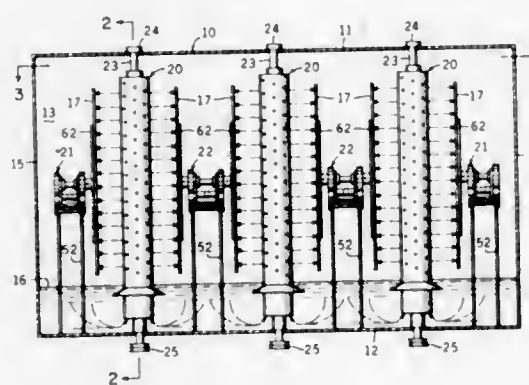
about 5 to 30 weight percent, about 30 to 70 weight percent and about 1 to 5 weight percent respectively, in the resulting cured mixture.

**3,689,332**  
**METHOD OF PRODUCING SEMICONDUCTOR CIRCUITS WITH CONDUCTANCE PATHS**  
Manfred Dietrich, Ottobrunn, Helmut Eger, Olching, and Eckart Neubert and Wolfgang Kruger, Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany  
Filed Oct. 13, 1970, Ser. No. 80,402  
Claims priority, application Germany, Oct. 29, 1969, P 19 54 499.1  
Int. Cl. H01I 7/50; H05k 3/06  
U.S. Cl. 156—11 5 Claims



A method of producing integrated circuits with conductance paths wherein an original body is first provided with a metal adhesive layer, then with a layer which, preferably acts as a barrier and, finally, with a gold layer which forms conductance paths. Prior to depositing the gold layer, a protective layer is applied which is then etched off, with the aid of a masking layer, in the regions provided for the conductance paths. After application of the gold layer, the masking layer and the protective layer are removed outside the conductance paths. Finally, the layer which, preferably serves as a barrier and the adhesive layer, are removed outside the conductance paths.

**3,689,333**  
**ETCHING MACHINE AND METHOD FOR MAKING PRINTING PLATES**  
Charles R. Hillhouse, Aurora, Mo., assignor to Tasopé Limited, Aurora, Mo.  
Filed Aug. 24, 1970, Ser. No. 66,531  
Int. Cl. B41m 3/02; H05k 3/00  
U.S. Cl. 156—14 16 Claims



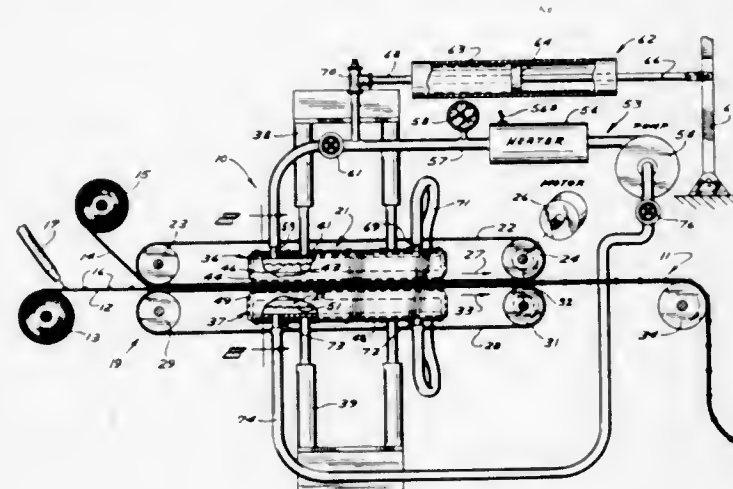
This etching machine includes an etchant tank housing an etchant spray system and a workpiece support system. The spray system includes at least one upright rotatable tubular body formed from coaxial cylinders closed at the upper end to provide a spray chamber. The

lower end of the tubular body is immersed in the etchant bath and helical vanes within the spray chamber deliver etchant under pressure through the spray apertures as the tubular body rotates. The rotation of the tubular body is accomplished by an axial drive shaft enclosed at its lower end by a well tube which extends above the etchant level to preclude etchant leakage. The workpiece system includes a rotatable element holding the workpiece in the vertical plane and movable along a track to revolve the workpiece as it passes through the spray path.

**3,689,334**  
**METHOD OF BONDING METAL TO POLYMERS WITH MELT ADHESIVE**  
William J. Dermody, Titusville, N.J., assignor to ESB Incorporated  
No Drawing. Filed Sept. 14, 1970, Ser. No. 72,184  
Int. Cl. B32b 31/20, 27/32, 15/08  
U.S. Cl. 156—73 14 Claims

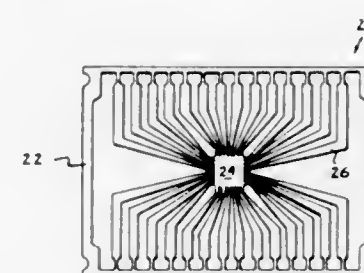
A method is provided for bonding organic polymers such as polypropylene to metals with a hot melt adhesive prepared from an olefinic interpolymers, a carboxylic functional resin capable of fluxing the metal, and a hydrocarbon wax. Techniques of spin-welding using the structural metal adhesive are provided which are particularly effective in sealing and bonding battery terminals to battery cases.

**3,689,335**  
**HEAT SEAL METHOD**  
John E. Eichenlaub, 9321 Franklin Ave. W., Minneapolis, Minn. 55426  
Original application Oct. 5, 1966, Ser. No. 584,564. Divided and this application Dec. 1, 1969, Ser. No. 879,953  
Int. Cl. B29c 11/06, 27/02  
U.S. Cl. 156—73 7 Claims



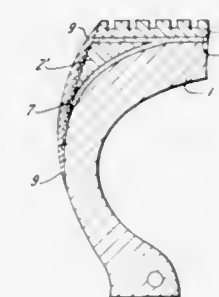
A method for welding heat sealable sheet members together with heated fluid moving under pressure in a platen having a chamber with a side closed with a flexible thin nonelastic membrane. The nonelastic membrane has a surface area exposed to the chamber which is larger than the cross-sectional area of the chamber. The membrane moves toward the sheet members when heated fluid under pressure is introduced into the chamber, whereby both heat and pressure are transferred to the sheet members to weld the sheet members together. Prior to the welding of the sheet members, portions of one sheet member are moved away from the other sheet member to provide spacing between non-welded portions of the sheet member.

**3,689,336**  
**FABRICATION OF PACKAGES FOR INTEGRATED CIRCUITS**  
Thomas D. Bunker, Bradford, and David F. Thompson, Warren, Pa., assignors to Sylvania Electric Products, Inc.  
Filed Jan. 4, 1971, Ser. No. 103,512  
Int. Cl. C03b 29/00; B01j 17/00; H05k 5/00  
U.S. Cl. 156—89 7 Claims



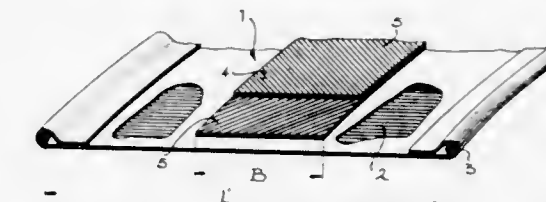
A process useful for fabricating articles having a ceramic hermetic sealing member and a high density of relatively thin electrically conductive leads comprising fabricating an electrically conductive member having a frame portion extending around the perimeter thereof and a relatively small central pad portion connected to two opposing sides frame portion by a plurality of component leads and at least one connecting lead, applying a heat decomposable adhesive suitable for bonding a metal foil to the pad and to a segment of each of the component leads and the connecting lead, compacting a metal foil over the coated pad and the coated segment of the leads and into the spacing between the leads, severing the component leads adjacent to the pad, forming a ceramic hermetic seal, by the application of heat, around a substantial portion of all of the leads between the foil and the frame and removing the foil and the decomposition products of the adhesive.

**3,689,337**  
**METHOD OF RECAPPING TIRES**  
Wilhelm Schelkmann, Witten, Germany, assignor to Vakuum Vulk Holdings, Ltd., Nassau, Bahamas  
Filed June 25, 1969, Ser. No. 836,454  
Int. Cl. B29h 17/36  
U.S. Cl. 156—95 8 Claims



Method of recapping tires comprising the first step of forming an assembly consisting of a carcass, a profiled tread superimposed upon the outer surface of the carcass, and a layer of binding material sandwiched between the outer surface and the tread with marginal portions of the tread and layer extending to opposite sides of the carcass, the second step of establishing a connection between the carcass and the tread across the marginal portions of the layer, and the third step of permanently binding the layer to the tread and carcass.

**3,689,338**  
**TIRE HAVING CARCASS SECTION BELOW THE BELT FREE FROM PULLING TENSION**  
Hermann Wittneben, Hannover, Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany  
Original application Dec. 7, 1966, Ser. No. 599,850, now Patent No. 3,532,150, dated Oct. 6, 1970. Divided and this application June 8, 1970, Ser. No. 44,128  
Claims priority, application Germany, Dec. 8, 1965, C 37,620  
Int. Cl. B29h 17/26  
U.S. Cl. 156—133 2 Claims



A method of making a pneumatic vehicle tire with a pull resistant belt for lateral stabilization of the tire and with a carcass having strength members extending from bead to bead at a substantially right angle with regard to the circumferential direction of the tire, those sections of the strength members which form said carcass and face toward said belt being free from pull stresses in the inflated condition of said tire.

**3,689,339**  
**METHOD OF FORMING A THERMOMETER STRUCTURE**  
Josef F. Klingler, Wilmette, Ill., assignor to Thermex, Inc., Chicago, Ill.  
Filed Dec. 10, 1969, Ser. No. 883,865  
Int. Cl. A63b 39/00  
U.S. Cl. 156—145 14 Claims

A method of forming a thermometer structure, such as a low cost clinical thermometer, wherein the thermometer enclosure structure is formed of plastic as by molding. The capillary element of the thermometer is molded about a taut wire and is removed from the molding cavity by being urged with the wire to an exterior position. The thusly removed element is utilized as a pressure-applying means on the wire to hold the wire taut for subsequent molding of a subsequent element in the mold cavity. A previously formed element is removed from the end of the wire as an incident of drawing the wire through a subsequently formed element. A scale is located on the capillary element by accurately determining the top of the liquid column at a preselected temperature and coordinating the placement of the scale on the element relative to said determined level. One end of the capillary bore is closed by a heat sealing process wherein a projecting portion of the element is deformed to seal the bore end.

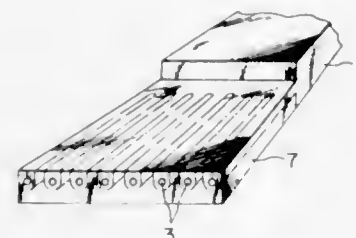
**3,689,340**  
Patent Not Issued For This Number

**3,689,341**  
**METHOD OF SPLICING RUBBER CONVEYER BELTS EACH HAVING A STEEL CORD EMBEDDED THEREIN**  
Kaneshige Ninomiya, Yokohama, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan  
Filed Dec. 3, 1970, Ser. No. 94,918  
Claims priority, application Japan, Dec. 9, 1969, 44/98,515  
Int. Cl. B31f 5/00  
U.S. Cl. 156—159 1 Claim

A method of splicing rubber conveyer belts each having a steel cord embedded therein comprising the steps of



cutting out of one end to be spliced of a rubber conveyor belt comb-teeth shaped projections each having a steel cord embedded therein and whose top surface is flat and bottom surface is convex in cross section, cutting out of another end of the rubber conveyor belt a base plate having a reduced thickness provided between successive steel cords with grooves formed complementally with the comb-teeth shaped projections at one end of the rubber conveyor belt and whose bottom surface is con-



cave in cross section, bringing the comb-teeth shaped projections into engagement with the grooves, and filling up gaps formed between respective ends of the belt with new rubber cover to form a flat and continuous spliced surface. The comb-teeth shaped projections and grooves are cut out of respective end of the belt with the aid of an electrically heating cutter having a U-shaped knife blade adapted to be heated at about 800° C. during its use.

3,689,342

#### METHOD FOR PRODUCING SPRAY-SPUN NONWOVEN SHEETS

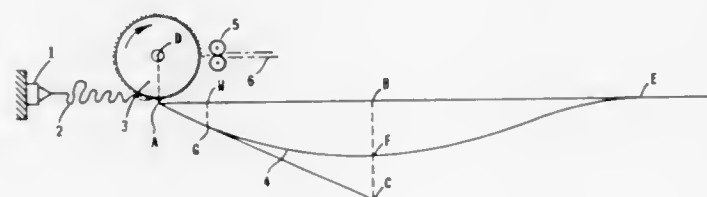
Clifford M. Vogt, Madison, and Joseph C. Polise, Morris Plains, N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Dec. 8, 1970, Ser. No. 96,040

Int. Cl. D04h 1/00, 3/00

U.S. Cl. 156—167

3 Claims



Spray-spun nonwoven sheets having improved physical properties are produced by spray spinning a fiber-forming polymer tangentially onto the surface of a sheet collection device. The randomness of the spray-spinning process provides a uniform sheet having both long and short filaments.

3,689,343

#### PROCESS FOR CONTINUOUS MANUFACTURE OF GLASS FIBER REINFORCED MODULES OF SYNTHETIC RESIN

Lothar Elsner, 19 Am oberen Schlossberg, 7141 Neckarremms, Germany

Filed Aug. 1, 1969, Ser. No. 846,717

Claims priority, application Germany, Aug. 1, 1968, P 17 79 336.1

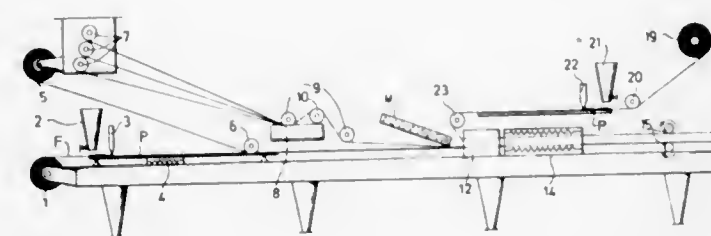
Int. Cl. B32b 5/10

U.S. Cl. 156—179

15 Claims

This invention relates to a method and apparatus for the continuous manufacture of modular elements of any desired cross-sectional area with or without a filler core

element from a longitudinally advancing fibrous reinforced material to which may be also added running lengths of strengthening fibers with all of the elements



being assembled on a longitudinally traveling synthetic resin coated web which is introduced into a forming die and extruded therefrom as an integrated, rigid product.

3,689,344

#### METHOD OF PREPARING A NON-WOVEN FIBROUS WEB

Robert Bolliand and Claude Saligny, Lyon, France, assignors to Societe Rhodiacta, Paris, France

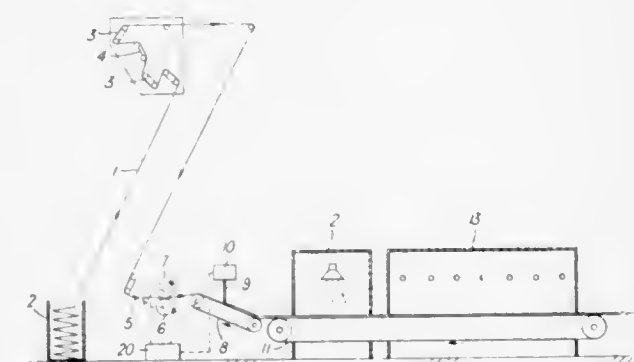
Filed Apr. 2, 1969, Ser. No. 812,646

Claims priority, application France, Apr. 2, 1968, 146,791

Int. Cl. B29h 9/04; D04h 3/08

U.S. Cl. 156—181

4 Claims



The specification describes a method and apparatus for forming a non-woven fibrous web, e.g. suitably for padding or stuffing. A tow is spread and fed without tension by two rollers, rotating at different speeds, onto a conveyor belt, and a pusher blade extending over the full width intermittently presses on the tow and moves faster than the belt. The resulting web is sprayed with a bonding agent which is then cured.

3,689,345

#### METHOD OF MAKING A QUASI-ISOTROPIC SANDWICH CORE

Irving E. Figge, Newport News, and Bernard L. Karp, Hampton, Va., assignors to the United States of America as represented by the Secretary of the Army

Filed May 20, 1970, Ser. No. 39,599

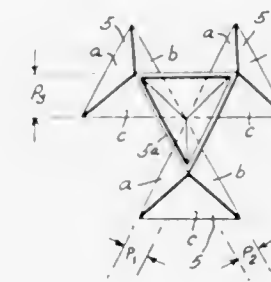
Int. Cl. B31f 1/08

U.S. Cl. 156—219

2 Claims

A structural core consisting of upper and lower sheets of a Fiberglas or like material. Each sheet defines parallel rows of raised, tetrahedral shaped, hollow knobs. The upper sheet is inverted over the lower one so that the edges of the tetrahedrons abut whereby all tetrahedrons

on the bottom sheet point up and all tetrahedrons on the upper sheet point down in alternating sequence along the rows. Each sheet is formed by placing it over a male mold having upstanding tetrahedron shaped raised knobs, folding the sheet between the tetrahedrons to produce puckers, applying bands in the fold lines to hold the sheet on the male mold, coating the sheet with an epoxy resin, cutting the bands and removing them, inverting a female mold



over the male mold and applying pressure thereto, allowing the resin to cure, then removing the sheet from the molds. The core is then formed by coating all edges of the tetrahedrons on both sheets with a resin type bonding material, inverting the upper sheet and nesting it in the lower sheet so that the edges of the upper tetrahedrons abut the edges of the lower tetrahedrons and then bonded together, the core is then allowed to cure.

3,689,346

#### METHOD FOR PRODUCING RETROREFLECTIVE MATERIAL

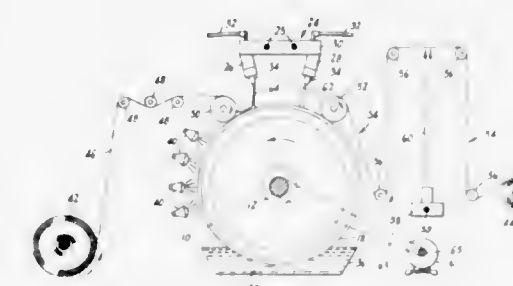
William P. Rowland, Southington, Conn., assignor to Rowland Development Corporation, Kensington, Conn.

Filed Sept. 29, 1970, Ser. No. 76,561

Int. Cl. B29h 3/00

U.S. Cl. 156—245

14 Claims



Retroreflective sheeting is produced on a continuous basis by applying transparent sheet material over a hardenable molding material previously deposited upon a moving mold surface, after which the molding material is solidified and bonded to the sheet material to produce a composite structure. The mold surface has an array of minute, contiguous cube-corner recesses therein, so that the sheeting correspondingly has a multiplicity of closely spaced cube-corner formations spaced about and projecting from a smooth surface of the sheet material, which provides the body portion thereof.

The apparatus most conveniently used is a drum mounted for rotation and having a mold surface providing an array of cube-corner recesses disposed about its circumference. A suitable member desirably cooperates

with the mold surface for application of the sheet material and uniform distribution of the molding material thereover.

3,689,347

#### METHOD IN THE MANUFACTURE OF BOARDS OF FIBROUS OR/AND PLASTIC MATERIAL

Rolf Bertil Reinhall, Lidingo, and Steiner Vardheim, Roslags Nasby, Sweden, assignors to Defibrator Aktiebolag, Stockholm, Sweden

No Drawing, Filed June 18, 1968, Ser. No. 737,846

Claims priority, application Sweden, June 19, 1967, 8,662/67

Int. Cl. B32b 9/00

U.S. Cl. 156—289

3 Claims

A means and method for making board composed of fibers, synthetic resins and mixtures thereof by pressing the material in a hot press including a glazing plate which has a material-contacting surface composed of a film that is detachably secured to such surface by an adhesive of such a nature that it permits the easy stripping away of the film when desired.

3,689,348

#### PROCESS FOR CONTINUOUS PRODUCTION OF COMPOSITE PLATES WHOSE FACES CAN BE GIVEN A PROFILE OR A FIXED IMPRESSION

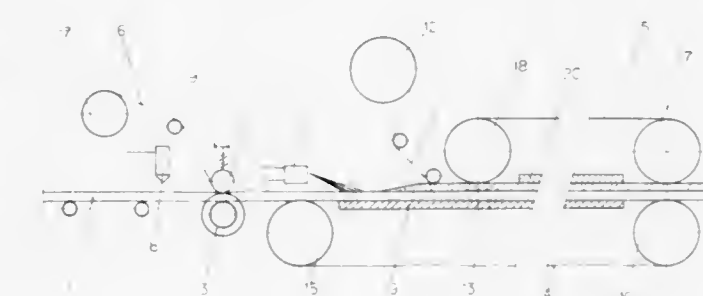
Jean Marie Raymond Albert Peille, 60 Rue E. Sermet, Esperaza Aude, France

Filed Oct. 18, 1968, Ser. No. 768,624

Int. Cl. B32b 31/08

U.S. Cl. 156—292

2 Claims



The present invention relates to a process and device for continuous production of composite plates specifically made of a core of expanded material and two facings that can be given a profile or fixed impression.

3,689,349

#### APPARATUS FOR CROSSLAYING FIBER WEBS

William H. Burger, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 23, 1970, Ser. No. 83,282

Int. Cl. B65h 17/00

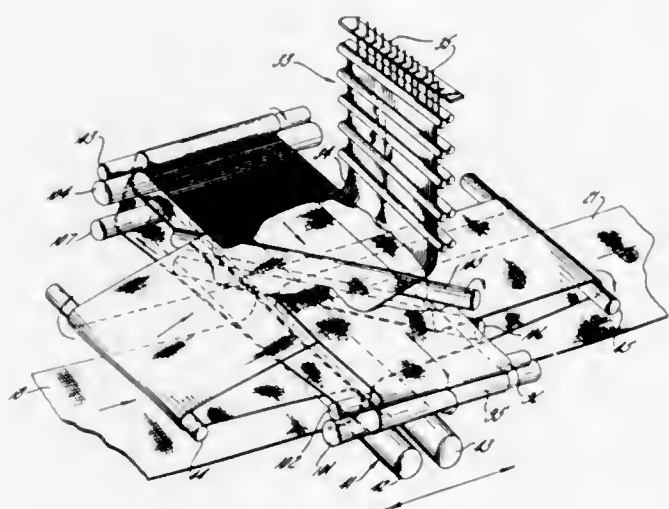
U.S. Cl. 156—439

22 Claims

A method and apparatus for producing a substantially seamless cross laid material by depositing side-by-side segments of a web of staple length fibers between the plies of a two ply sheet material. The sheet and cross laid materials are fed into and out of the cross layer at a predetermined constant machining speed. Within the cross layer, the sheet material is trained through a carriage beneath an intermittently operated fiber draw frame. The carriage is cyclically reciprocated in timed synchronism with the operation of the draw frame and includes a lost motion mechanism which is synchronously counter reciprocated to alternately and cyclically lengthen and shorten the effective



tive lengths of multiple reaches of sheet material and cross laid material at the input and output sides of the carriage, respectively, so that during the forward stroke of the carriage the sheet cross laid materials are stationary relative to the carriage, whereas on the return stroke they are advanced relative to the carriage a distance substantially equal to both the length of material fed into and out of



the cross layer during a complete cycle of carriage reciprocation and the width of the fiber web provided by the draw frame. Provision is made within the carriage for separating the plies of sheet material at the input side of the draw frame and for recombining them with the cross laid web imprisoned therebetween at the output side of the draw frame, so that the potentially disturbing and distort effects of windage and the like are minimized.

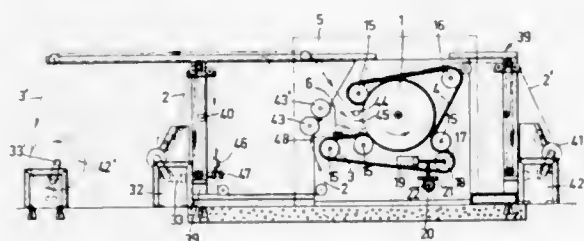
**3,689,350**  
**APPARATUS FOR THE HEAT TREATMENT OF SHEET AND FIBROUS MATERIAL**  
Henry Renant, 40 Rue Boucherde Perthes, 59 Roubaix, France

Continuation-in-part of application Ser. No. 813,833, Apr. 7, 1969. This application May 25, 1970, Ser. No. 40,099

Claims priority, application France, Dec. 9, 1968, 177,248

Int. Cl. B32b 31/08, 31/20  
U.S. Cl. 156—540

6 Claims



An apparatus for the heat treatment of sheet and fibrous material, in particular for carrying out a thermo-impregnation process, comprising a rotatable drum heated to a predetermined temperature against which the materials to be heated are applied by an endless belt whose linear velocity is equal to the angular velocity at the surface of the drum. The endless belt encompasses the major portion of the drum.

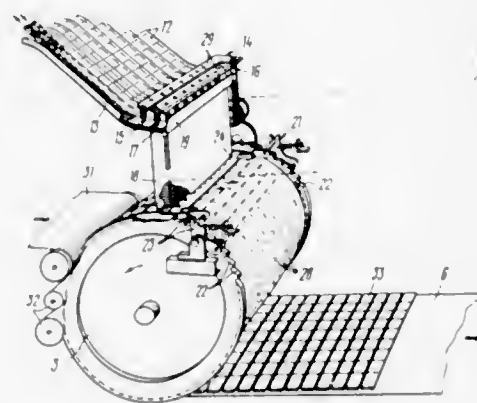
**3,689,351**  
**INSTALLATION FOR SETTING AND GLUEING FACING TILES TO BACKING MATERIAL**

Evgeny Timofeevich Samodaev, ulitsa Alexeya Tolstogo 18, kv. 9; Vasily Romanovich Verchenko, Leningradsky prospekt 69, kv. 128; Vladimir Ivanovich Gorjunov, Beiyaevo-Bogorodskoe, 48 kvartal, korpus 5, kv. 95; Vladimir Konstantinovich Andrikanis, Bulvar Yana Rainisa 18, korpus 2, kv. 17; Valery Alexandrovich Ilichev, A-482, korpus 342, kv. 133; Mikhail Grigorievich Gavrin, Leninsky prospekt 85, kv. 429; and Georgy Aronovich Binkou, Perovskaya ulitsa 22, korpus 4, kv. 94, all of Moscow, U.S.S.R.

Filed June 26, 1970, Ser. No. 50,035  
Int. Cl. B32b 31/10; B65c 9/10

U.S. Cl. 156—552

3 Claims



An installation for setting tiles and glueing them to a backing material wherein the device for feeding the tiles along the chutes into the magazine has a mechanism for pressing the tiles to the chutes at their discharge ends and a mechanism for pushing the tiles into the magazine whose outer wall has a folding-outward upper part; the rotating drum feeding the tiles onto the moving backing material has cells for the tiles and a mechanism for pushing the tiles from the magazine into these cells.

**3,689,352**  
**APPARATUS FOR APPLYING A SLIP OF MARBLE PAPER ONTO THE BOUND EDGE OF PILED SHEETS OF PAPER**

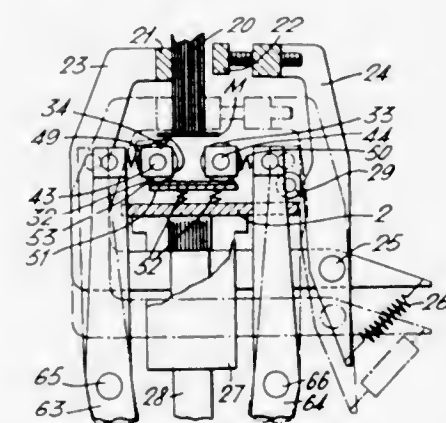
Yasuji Sugioka, Kyoto, Japan, assignor to Taiyo Seiki Co., Ltd., Kita-ku, Kyoto, Japan

Filed July 16, 1970, Ser. No. 55,426

Claims priority, application Japan, July 24, 1969, 44/58,561

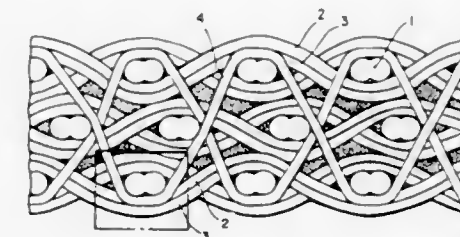
Int. Cl. B32b 31/20; B42c 7/00  
U.S. Cl. 156—556

6 Claims



Apparatus for applying a slip of marble paper onto the surface of the back or bound edge and adjacent areas of the opposite faces of a book or piled sheets of paper, comprising a pair of spaced, elongated guide members on

which a slip of marble paper is supplied having one surface thereof coated with adhesive and turned upside; a pair of spaced gripping bars disposed above the guide members; a pair of spaced pressure rollers disposed below the guide members; and drive means for moving the gripping bars toward each other and at the same time downwardly toward said guide members and pressure rollers. The book or piled sheets of paper bound along one edge thereof is inserted between the gripping bars, with the back or bound edge thereof facing down, so that the surface of the back or bound edge contacts the central portion of the adhesive surface of the slip of marble paper. Then the gripping bars grip the book or piled sheets of paper and moves them downwardly as far as the lateral marginal portions of the slip of marble paper are bent by contact with the pressure rollers so as to be applied onto those portions of the opposite faces of the book or piled sheets of paper which are adjacent to the back or bound edge thereof to which the central portion of the slip of marble paper has been applied.



**3,689,353**  
**NONWOVEN MATERIAL AND METHOD OF MAKING THE SAME**

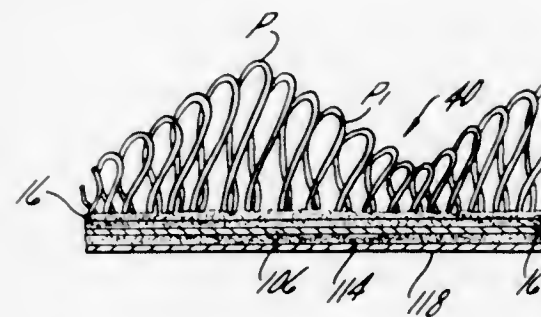
Harry L. Spiegelberg, Terry K. Timmons, and Robert J. Stumpf, Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 5, 1970, Ser. No. 77,843

Int. Cl. D04h 3/00, 11/00

U.S. Cl. 161—63

30 Claims



A nonwoven material comprising a laminate having a layer of adhesive and a multiplicity of elements looped outwardly from the layer, a barrier layer secured to the adhesive layer and means associated with the barrier layer for securing the material to a surface; and a method of making the material by first embedding a web of elements in an open pattern of adhesive bonding the elements in the adhesive, consolidating the adhesive, into a continuous backing layer while looping the elements outwardly from the adhesive backing, laminating a barrier layer to the adhesive backing and applying a means associated with the barrier layer for securing the fabric to a surface. In certain instances a second pattern of adhesive may be applied to the first pattern of the adhesive prior to the consolidation step.

**3,689,354**  
**ELASTOMERICALLY-REINFORCED POLYAMIDE STRAPPING AND METHOD**

Herbert Mamok and Rainer Hejl, Wuppertal-Elberfeld, and Joachim Körner, Remscheid, Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Sept. 3, 1970, Ser. No. 69,261

Claims priority, application Germany, Sept. 17, 1969, G 69 36 419.8

Int. Cl. B32b 5/02, 27/28

U.S. Cl. 161—92

5 Claims

A flexible, load-bearing strapping article which consists essentially of an intertwined structure of continuous multi-

filament yarns of a fibrous polyamide, e.g. nylon 6 (polycaprolactam) or nylon 6,6 (polyhexamethylene adipamide), which has been reinforced with an elastomeric copolymer of butadiene, styrene, acrylonitrile and meth-

acrylic acid. The article is produced by impregnating and surface-coating the intertwined yarn structure with an aqueous emulsion of the copolymer and then heating to cross-link the copolymer onto the yarn.

**3,689,355**  
**FLAME-RESISTANT CARPET BACKING**  
Edwin D. Hornbaker and Bryan Sparks, Baton Rouge, La., and Harold D. Orloff, Oak Park, Mich., assignors to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Mar. 1, 1971, Ser. No. 119,866

Int. Cl. B32b 5/20, 25/02; C08d 9/08

U.S. Cl. 161—92

16 Claims

A composition containing from about 5 to about 75 percent by weight on a dry basis of poly(vinyl bromide) in a rubber latex. The composition is particularly useful in producing flame-resistant foam backings for sheet material.

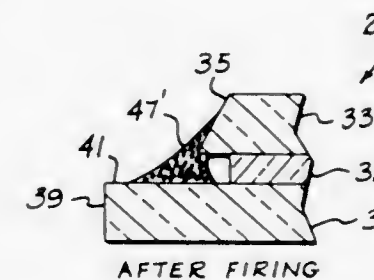
**3,689,356**  
**GRAVITY ENHANCED SEAL**  
Gordon T. Foreman, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated

Filed Mar. 8, 1971, Ser. No. 121,852

Int. Cl. B32b 1/04, 3/02, 17/00

U.S. Cl. 161—149

10 Claims



An improved edge-oriented gravity aided seal is provided for an article of manufacture such as a planar display device having top and bottom members hermetically joined therearound. In one embodiment, the top member of the device has an advantageously beveled peripheral edge oriented inwardly from the defined periphery of the bottom member to provide a beveled edge-related ledge. Bonding material is disposed along the so formed angular jointure whereupon the seal region is heated. The softened bonding material, with the aid of gravity, forms a meniscus shaped fillet which covers extensive portions of the discretely related bevel and ledge areas to provide a strong uniform seal therealong.



3,689,357  
**GLASS-POLYSILICON DIELECTRIC ISOLATION**  
Larry Lee Jordan, Kokomo, Ind., assignor to General  
Motors Corporation, Detroit, Mich.  
Filed Dec. 10, 1970, Ser. No. 96,689  
Int. Cl. C23f 1/02; H01l 7/00

U.S. Cl. 161—119 4 Claims



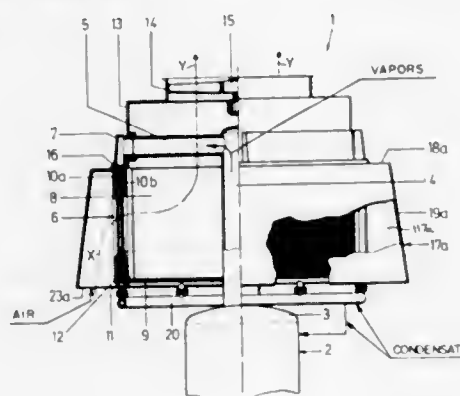
3,689,367

# AIR-COOLED CONDENSER FOR HEAD FRACTIONS IN RECTIFYING OR DISTILLING COLUMNS

Harry Kassat, Bochum, and Ernst Kissel, Ludwigshafen, Germany, assignors to Gea Luftkühlergesellschaft Happel G.m.b.H. & Co. K.G., Bochum, Germany  
Filed July 30, 1970, Ser. No. 59,632

Claims priority, application Germany, Sept. 17, 1969, P 19 46 915.9

Int. Cl. F24h 3/06; F28b; F24f 13/12; B01d 3/00  
U.S. Cl. 202—185 B 15 Claims



A distilling or rectifying column wherein the upper end portion of the shell carries an air-cooled condenser for the head fraction. The condenser has several discrete condensing units whose heat-exchanging pipes communicate with the shell to receive the head fraction and discharge condensate into collecting chambers. Each condensing unit is surrounded by an enclosure which has an inlet below the pipes and shields the outer sides of the pipes from wind, sun and precipitation. The air is drawn through the inlets by one or more fans which are mounted in a dome located above a compartment which is surrounded by the condensing units. The spaces defined by the enclosures at the outer sides of pipes in the condensing units taper upward from the inlets to insure uniform distribution of air pressure. The enclosures can be united into a single annular enclosure which completely surrounds the condensing units.

3,689,368

Patent Not Issued For This Number

3,689,369

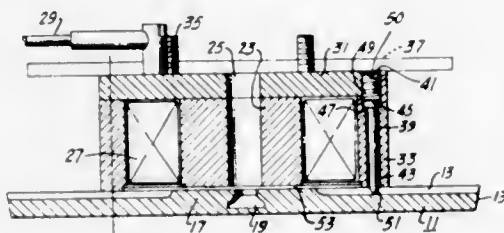
# CHARGING HOLE LID AND MAGNETIC LID LIFTER APPARATUS

Linwood G. Tucker, Pittsburgh, Pa., assignor to Koppers Company, Inc.

Filed Apr. 5, 1971, Ser. No. 131,076

Int. Cl. C10b 25/24, 31/00

U.S. Cl. 202—251 6 Claims



A coal charging hole lid for a coke oven chamber has a plurality of radially arranged grooves in its top surface. A magnet for lifting and seating the lid has a plurality of resiliently biased pins around its periphery that coact with respective grooves in the lid and effect positive rotative action of the lid when it has been resealed in the charging hole.

# PROCESS FOR PURIFYING HYDROFLUORIC ACID BY DISTILLATION WITH AN OXIDIZING AGENT AND A FERROUS SALT

Yonosuke Osaka and Kinya Watanabe, Osaka, Kohji Tamura, Kobe, and Heikitsu Sonoyama, Satoru Matsuda, Masao Haruhana, and Hideo Matoba, Osaka, Japan, assignors to Daikin Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Feb. 17, 1971, Ser. No. 116,257

Claims priority, application Japan, Feb. 20, 1970, 45/14,996

Int. Cl. C01b 7/22

U.S. Cl. 203—31 7 Claims

In purifying hydrofluoric acid containing arsenic and/or antimony compounds as impurities by treating it with alkali metal permanganate and/or dichromate and distilling the resultant liquid, the present process is characterized in that said distillation is conducted in the presence of an inorganic ferrous salt.

3,689,371

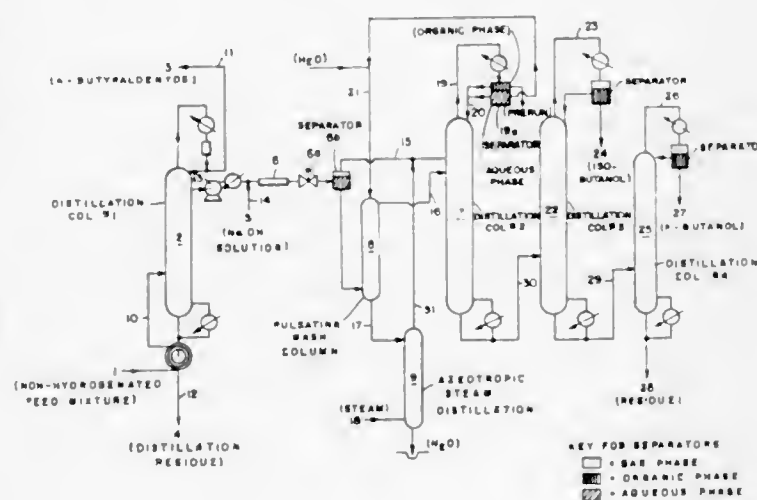
# RECOVERY OF BUTANOLS PLURAL STAGE DISTILLATION AND ALKALI METAL HYDROXIDE TREATMENT

Horst Kerber, 10 Gontardstrasse; and Heinz Hohenschutz, 12 Leibnitzstrasse, both of 6800 Mannheim, Germany; and Konrad Rauch, 7 Donnersbergstrasse; and Walter Scheidmeir, 56 Carl-Bosch-Strasse, both of 6703 Limburgerhof, Germany

Continuation-in-part of application Ser. No. 785,702, Dec. 20, 1968. This application Nov. 11, 1971, Ser. No. 197,760

Int. Cl. B01d 3/00; C07c 29/24

U.S. Cl. 203—37 6 Claims



A process for the recovery of butanols from a reaction mixture containing butanols which has been obtained by reaction of propylene with carbon monoxide and hydrogen in the presence of hydroformylation catalysts, particularly cobalt carbonyl compounds, at elevated temperature and under superatmospheric pressure followed by distilling off the greater part of the butyraldehyde formed, wherein without previous hydrogenation the reaction mixture is first subjected to distillation to separate a crude butanol mixture which is devoid of butyraldehyde and compounds boiling above 150° C., this is treated with an aqueous solution of an alkali metal hydroxide, the organic phase obtained (which may if desired be washed with water) is distilled while separating azeotrope-forming substances in the presence of water with simultaneous dehydration, and the butanol mixture thus obtained is separated by distillation into n-butanol and isobutanol. Butanols are important solvents and intermediates, for example for the production of esters.

3,689,372

# PROCESS FOR SEPARATING 2-CHLORO-1,3-BUTADIENE BY EXTRACTIVE DISTILLATION WITH DIMETHYLSULFOXIDE

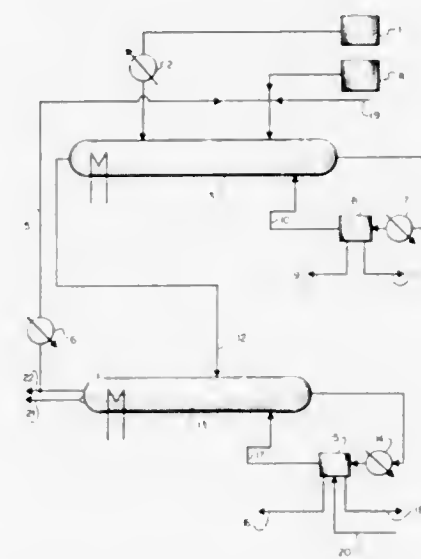
Seiroku Sugano, Tokyo, and Tomio Arai, Seinoshin Hayami, Sadao Watanabe, Shigeru Fujishiro, and Takeo Ono, Kanagawa, Japan, assignors to Chiyoda Kako Kensetsu K.K., and Denki Kagaku Kogyo K.K.

Filed Jan. 7, 1971, Ser. No. 104,630

Claims priority, application Japan, Jan. 7, 1970, 45/2,121

Int. Cl. B01d 3/40; C07c 21/20

U.S. Cl. 203—53 13 Claims



A process is provided for separating 2-chloro-1,3-butadiene, characterized by extractive distillation of a mixture comprising 2-chloro-1,3-butadiene and one or more chlorinated hydrocarbons, the boiling point thereof being close to that of 2-chloro-1,3-butadiene, with dimethyl sulfoxide alone or dimethyl sulfoxide containing water up to about 10 percent by weight as a solvent. The process of this invention is especially useful for separating 2-chloro-1,3-butadiene from a chlorinated hydrocarbon mixture which contains mainly 2-chloro-1,3-butadiene and trans-2-chloro-2-butene and/or 2-chloro-1-butene.

3,689,373

# PROCESS FOR SEPARATING HALOGENATED HYDROCARBONS BY GAS-LIQUID SEPARATION WITH A SOLVENT

William M. Hutchinson, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed May 10, 1971, Ser. No. 141,981

Int. Cl. C07c 17/38

U.S. Cl. 203—58 6 Claims

A process for separating 1,1,2-trichlorotrifluoroethane and 1,2-dichloro-1,1-difluoroethane and for separating 1,2-dichlorotetrafluoroethane and 1-chloro-1,2,2-trifluoroethane by adding an extraneous volatility-modifying agent and thereafter separating said compounds in the presence of said agent by a gas-liquid separation process.

3,689,374

# PROCESS FOR SEPARATING HALOGENATED HYDROCARBONS BY EXTRACTIVE DISTILLATION

Donald O. Hanson, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed May 10, 1971, Ser. No. 141,997

Int. Cl. C07c 17/38

U.S. Cl. 203—64 2 Claims

A process for separating 1,1,2-trichlorotrifluoroethane from a first mixture consisting essentially of 1,1,2-trichlorotrifluoroethane and 1,2-dichloro-1,1-difluoroethane by adding one of a glycol or glycol ether to the first mixture to form a resultant second mixture and thereafter extractively distilling the second mixture in an extractive distillation zone.

lation zone to separate the 1,1,2-trichlorotrifluoroethane from the 1,2-dichloro-1,1-difluoroethane.

3,689,375

# SEPARATING CLOSE BOILING, TWO COMPONENT MIXTURE BY DISTILLING IN PRESENCE OF SELECTIVE THIRD COMPONENT

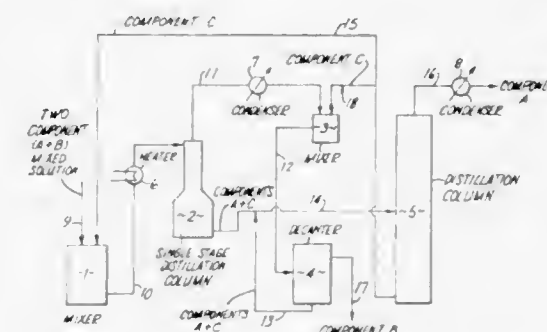
Hideo Furukawa, Yoshihiro Kida, and Yosinori Kuroda, Osaka, Japan, assignors to Daicel Ltd., Osaka, Japan

Filed June 1, 1970, Ser. No. 41,937

Claims priority, application Japan, June 6, 1969, 44/44,502

Int. Cl. B01d 3/34

U.S. Cl. 203—95 6 Claims



A method of separating efficiently a liquid mixture consisting of two volatile components into its constituent components which comprises adding to the liquid mixture a third component having a sufficient solubility with the first volatile component but having little or no solubility with the second volatile component, the third component being added in an amount of at least 20% by weight of the total weight of all three components, and evaporating the mixture thereby to generate a gaseous phase having a relatively large amount of the second component in the early stage of evaporation and thus effect the separation. When phase separation occurs on addition of the third component, a phase consisting predominantly of the second component is removed and then the residual liquid is subjected to said evaporating operation.

3,689,376

# PROCESS FOR SEPARATING HALOGENATED HYDROCARBONS FROM A HALOGENATED HYDROCARBON-ACETONE MIXTURE BY WATER EXTRACTIVE DISTILLATION

William M. Hutchinson, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed May 10, 1971, Ser. No. 141,951

Int. Cl. C07c 17/38

U.S. Cl. 203—95 3 Claims

A process for separating halogenated hydrocarbons from a halogenated hydrocarbon-acetone first mixture by adding water to the first mixture to form a second mixture, and extractively distilling the second mixture in an extractive distillation zone.

3,689,377

# EXTRACTIVE DISTILLATION OF ACRYLONITRILE FROM ACETONITRILE USING WATER

Alexander F. MacLean and Adin L. Stautzenberger, Corpus Christi, Tex., assignors to Celanese Corporation of America, New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 796,744, Mar. 3, 1959, and Ser. No. 480,260, Aug. 17, 1965, which are continuations-in-part of applications Ser. No. 256,368, Nov. 14, 1951, and Ser. No. 565,543, Feb. 15, 1956. This application Apr. 7, 1966, Ser. No. 540,810

Int. Cl. B01d 3/40; C07c 121/32

U.S. Cl. 203—96 6 Claims

1. A process for the purification of acrylonitrile containing acetonitrile as an impurity which comprises feed-



ing the impure acrylonitrile into a fractionating column, introducing sufficient water into said column at a point above the point of introduction of the acrylonitrile to provide between about 93 and 98 weight percent of water in the liquid phase in said column, maintaining the reflux ratio at from 0.07 to 0.20 to one, heating the said acrylonitrile and said water, and taking off as a distillate aqueous acrylonitrile, the ratio of acrylonitrile to acetonitrile in said distillate being greater than that present in the original mixture.

3,689,378

## PROCESS AND APPARATUS FOR MEASURING pH

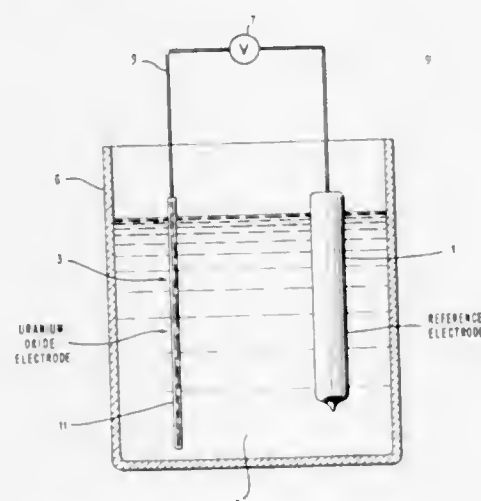
Gordon W. Neff, Mahopac, and Carlos J. Sambucetti, Mohegan Lake, N.Y., and John E. Tomko, Shelburne, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 15, 1969, Ser. No. 791,321

Int. Cl. B01r 3/02

U.S. Cl. 204—1 T

10 Claims



A high impedance voltmeter is coupled on one side to a standard reference electrode and on the other side to a pH sensitive uranium oxide ( $U_3O_8$ ) electrode. The low electrical impedance uranium oxide electrode comprises a noble metal wire coated with a thin smooth layer of uranium oxide.

3,689,379

## COMPOSITION AND METHOD FOR SEALING ANODIZED SURFACES

Robert L. Treiber, Elgin, Ill., assignor to Alcor Chemical Company, Inc., Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 13,832, Feb. 24, 1970. This application Apr. 7, 1971, Ser. No. 132,150

Int. Cl. B32b 15/20; C23f 17/00

U.S. Cl. 204—35 N

10 Claims

This invention is addressed to an improved composition and method for sealing anodized surfaces of aluminum and aluminum base alloys wherein the sealing composition is an aqueous solution of nickel acetate, cobalt acetate or mixtures thereof, a sodium salt of an alkyl naphthalene sulfonic acid, sodium lauryl sulfate and the condensation product of octyl phenol with ethylene oxide.

3,689,380

## PROCESS FOR ACID COPPER PLATING OF STEEL

Richard J. Clauss, Allen Park, and Norman C. Adamowicz, Inkster, Mich., assignors to Udylyte Corporation, Warren, Mich.

No Drawing. Continuation-in-part of application Ser. No. 834,861, June 19, 1969. This application Mar. 18, 1970, Ser. No. 20,854

Int. Cl. C23f 17/02; C23c 3/00

U.S. Cl. 204—38 B

7 Claims

A process for the copper electroplating of steel, particularly complex steel parts having recessed areas, where-

in a displacement nickel or cobalt-nickel deposit is formed on the steel surface by treatment with an immersion nickel or cobalt-nickel plating bath and, thereafter, the thus-plated surface is electroplated with copper from an acid copper electroplating bath.

3,689,381

## METHOD OF ELECTROPLATING ALUMINUM IN A BATH OF MOLTEN SALTS

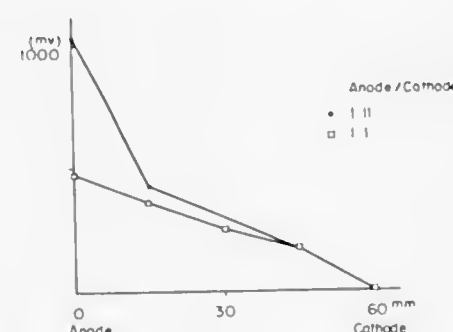
Akira Miyata, Hideyo Okubo, Chikayoshi Tomita, and Akio Suzuki, all % Nippon Kokan Kabushiki Kaisha Technical Industries, 2730 Minamiwataridamachi, Kawasaki-shi, Kanagawa-ken, Japan

Continuation-in-part of application Ser. No. 769,170, Oct. 22, 1968, now Patent No. 3,594,569. This application Apr. 13, 1970, Ser. No. 27,673

Int. Cl. C23b 5/00; C22d 3/12; B01k 3/02

U.S. Cl. 204—39

10 Claims



In a method of electroplating aluminum in a bath of fused salts, aluminum ions of low valence formed in the bath during a plating operation are oxidized into trivalent aluminum ions to prevent the bath from degrading. The oxidation can be effected concurrently with the normal electroplating operation or during interruption thereof.

3,689,382

## ELECTROCHEMICAL REDUCTIVE COUPLING

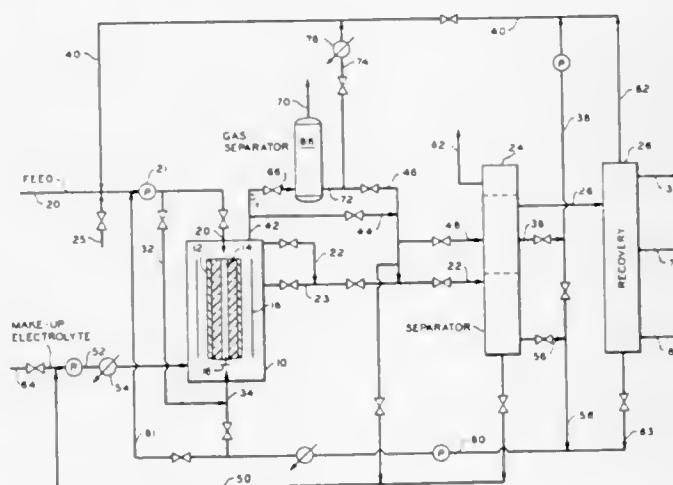
Homer N. Fox and Forrest N. Ruehlen, Bartlesville, Okla., assignors to Huyck Corporation, Rensselaer, N.Y.

Continuation-in-part of application Ser. No. 61,771, Aug. 6, 1970, which is a continuation-in-part of application Ser. No. 42,091, June 1, 1970. This application Nov. 23, 1970, Ser. No. 91,922

Int. Cl. C07b 29/06; C07c 121/14

U.S. Cl. 204—73 A

31 Claims



Activated substituted olefin reactants are reductively coupled in an electrolytic cell in the presence of a new aqueous mixed salt electrolyte containing cations which

decrease the solubility of said reactant in said electrolyte, cations which direct the reductive coupling of said reactant in said electrolyte, anions which do not increase the solubility of said reactant in said electrolyte, and said reactant.

3,689,383

## METHOD OF COATING AN ELECTRODE

Bernard J. De Witt, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Original application Mar. 28, 1969, Ser. No. 811,615, now Patent No. 3,616,446. Divided and this application June 22, 1971, Ser. No. 155,646

Int. Cl. B01k 3/06; C01b 7/06, 11/26

U.S. Cl. 204—95

2 Claims

The novel anode may be used in the electrolysis of an aqueous solution such as of alkali metal chloride. The anode includes a base member having a conductive coating or surface comprising an oxy-compound of a platinum group metal such as ruthenium and an alkaline earth metal, typically calcium, or a rare earth metal such as lanthanum.

3,689,384

## HORIZONTAL MERCURY CELLS

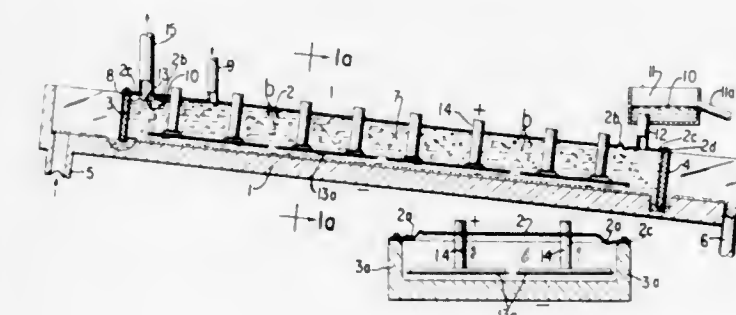
Alexander Louis Barbato, Perry, Ohio, Henry William Laub, Pasadena, Tex., and Richard Eric Lottfield, Chardon, Ohio, assignors to Electrochemical Industries Corporation, Chiasso, Switzerland

Filed Dec. 4, 1969, Ser. No. 882,030

Int. Cl. B01k 3/06; C01d 1/12; C22d 1/04

U.S. Cl. 204—99

17 Claims



Describes a horizontal mercury cell inclined between 0.1 and 1.9° from the horizontal which is preferably equipped with either dimensionally stable anodes or graphite anodes, has either a rigid or flexible cell cover and is operated as a flooded cell, substantially filled with electrolyte.

3,689,385

## METHOD FOR THE SURFACE TREATMENT OF ALUMINUM ELECTRODES FOR THE ELECTROLYTIC PRODUCTION OF ZINC, AND ELECTRODES THUS TREATED

Giovanni Scacciati and Giovanni Lanfranco, Turin, Italy, assignors to Centro Ricerche Metallurgiche S.p.A., Turin, Italy

No Drawing. Filed Nov. 30, 1970, Ser. No. 93,893

Claims priority, application Italy, Dec. 2, 1969, 25,228/69

Int. Cl. B01r 1/00; C22d 1/22; C23c 1/08

U.S. Cl. 204—114

9 Claims

A method is disclosed for the surface treatment of aluminum electrodes for the electrolytic production of zinc, characterized in that it substantially consists in dipping said electrodes, before their use, into a bath comprising an aqueous solution of at least one soluble lead salt. The preferred soluble lead salts are lead fluosilicate and lead fluoborate.

3,689,386

## METHOD FOR THE SURFACE TREATMENT OF ALUMINUM ELECTRODES FOR THE ELECTROLYTIC PRODUCTION OF ZINC, AND ELECTRODES THUS TREATED

Giovanni Scacciati and Giovanni Lanfranco, Turin, Italy, assignors to Centro Ricerche Metallurgiche S.p.A., Turin, Italy

No Drawing. Filed Nov. 30, 1970, Ser. No. 93,889

Claims priority, application Italy, Dec. 2, 1969, 25,229/69

Int. Cl. C22d 1/22; B01r 1/00; C23c 1/08

U.S. Cl. 204—114

4 Claims

A method is disclosed for the surface treatment of aluminum electrodes for the electrolytic production of zinc substantially consisting in dipping said electrodes, before their use, into a bath comprising an aqueous solution of at least one acid selected from the class consisting of hydrofluoric acid and fluosilicic acid. The concentration of the acid in the treating bath is between 1 to 20 g./l., and the dipping time is between 5 and 500 seconds.

3,689,387

## METHOD FOR ELECTROPOLISHING SPARK GAP MACHINED PARTS

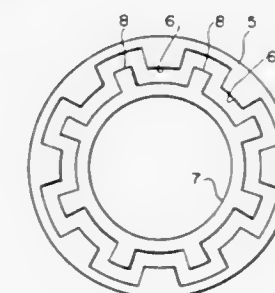
John F. Jumer, 16 W. 131 Timber Trails Drive, Elmhurst, Ill. 60126

Filed Oct. 22, 1969, Ser. No. 868,513

Int. Cl. C23b 3/06

U.S. Cl. 204—140.5

6 Claims



Surfaces of metal parts are machined and finished by a combination of electric discharge machining (EDM) followed by electropolishing with formation of a gaseous film over the surface being finished and carrying out the electropolishing at a voltage in excess of the critical voltage or nadir dip point voltage in the current density/voltage curve. The active surface of the cathode used should be shaped and dimensioned to conform to the final finish desired while allowing for adequate spacing between the active surface and piece part surface undergoing polishing to accommodate the electrolyte solution. The electropolishing treatment serves to completely or adequately remove the objectionable surface layer which is characteristic of electric discharge machining and leave the finished surface substantially free of peaks, crevices, and recast material and eliminates the need for tempering or annealing.

3,689,388

## ELECTROLYTIC POLISHING OF NIOBIUM PARTS

Heinrich Diepers and Otto Schmidt, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 2, 1971, Ser. No. 149,248

Claims priority, application Germany, June 3, 1970, P 20 27 156.1

Int. Cl. C23b 3/06; B01k 3/00

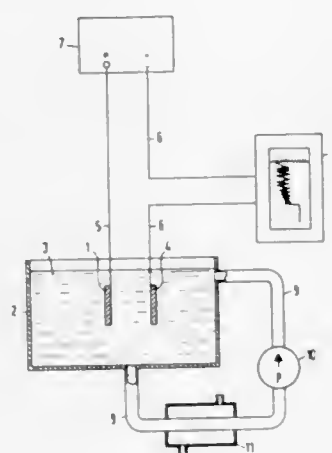
U.S. Cl. 204—140.5

9 Claims

A method of electrolytically polishing parts made of niobium, which comprises immersing the niobium parts as an anode in an electrolyte substantially composed by



weight of 86 to 93%  $H_2SO_4$ , 1.5 to 4.0% HF and 5.5 to 10.0%  $H_2O$ , maintaining the electrolyte during the polishing action at a substantially constant temperature between about 15° and 50° C., applying between the niobium part and an immersed cathode a substantially constant uni-



directional voltage of about 9 to 15 volts whereby electrolyte current oscillations occur whose amplitude decays due to progressing oxidation of the niobium surface. Upon sufficient decay of the oscillations, the voltage is disconnected until the oxide is substantially dissolved. Preferably the same cycle is many times repeated.

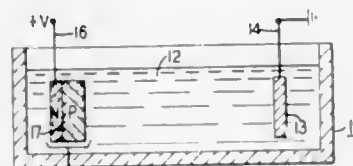
### 3,689,389 ELECTROCHEMICALLY CONTROLLED SHAPING OF SEMICONDUCTORS

Herbert A. Waggener, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 16, 1969, Ser. No. 885,605

Int. Cl. B23p 1/00; C23f 13/00; H01l 7/00

U.S. Cl. 204—147 10 Claims



A method for selectively etching a semiconductor, particularly applicable to precision thinning of silicon integrated circuit wafers. The semiconductor and a cathode are inserted in an electrolyte which etches the semiconductor in the absence of applied voltage to the cathode, and all of the semiconductor portions, which are at a potential less than some passivation potential, are etched away. Those semiconductor portions which are at a potential greater than the passivation potential are not etched. In practice, a suitable voltage differential (above and below the passivation potential) can exist across a PN junction, so that the etching stops automatically at a junction, the location of which can be accurately predetermined. Alternatively, series resistance can be used to provide a suitable voltage differential across preselected portions of a semiconductor body. For silicon, the passivation potential is about 0.5 volt where the electrolyte is potassium hydroxide in equilibrium with air and the cathode is platinum.

3,689,390

Patent Not Issued For This Number

### 3,689,391 METHOD FOR CHEMICALLY INITIATING PHOTOCHEMICAL REACTIONS

Edwin F. Ullman, Palo Alto, Calif., assignor to Synvar Associates, Palo Alto, Calif.

No Drawing, Filed May 13, 1970, Ser. No. 37,025

Int. Cl. B01j 1/10; C07b 29/00; C07c 167/00

U.S. Cl. 204—159 14 Claims

The inducement of photochemical reactions in the absence of an external light source through utilization of a chemical reaction that yields at least one product which, in its electronically excited state, either produces light emission or exhibits a sufficiently long-lived excited state so as to permit direct energy transfer to a compound capable of undergoing the photochemical reaction. The amount of energy transferred must be sufficient to initiate the reaction. Both chemiluminescent reactions and electrochemiluminescent reactions can be employed to induce the photochemical reaction.

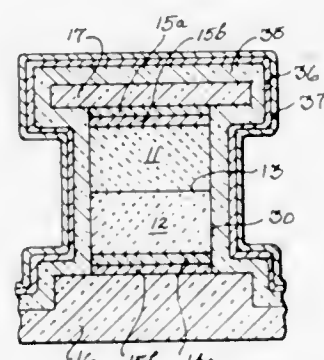
### 3,689,392 METHOD OF MAKING A SEMICONDUCTOR DEVICE

Jiri Sandera, Manhattan Beach, Calif., assignor to TRW Inc., Lawndale, Calif.

Filed July 2, 1970, Ser. No. 51,948

Int. Cl. C23c 15/00

U.S. Cl. 204—192 10 Claims



A semiconductor device adapted for high temperature processing and the method for making same. A silicon wafer of a given conductivity is provided, a layer of the opposite conductivity being disposed thereon forming a PN junction. Metallized layers are disposed on the top and bottom surfaces of the wafer, a glass substrate being removably secured to each of the metallized layers. After etching, the wafer is adapted to withstand the high temperature processing resulting from glass encapsulation by the alternative disposition of layers of silicon dioxide, silicon nitride and silicon dioxide.

### 3,689,393 BLOOD DIAGNOSTIC INSTRUMENTS

Merlin Davis, 105 Columbia Ave., Pittman, N.J. 08071

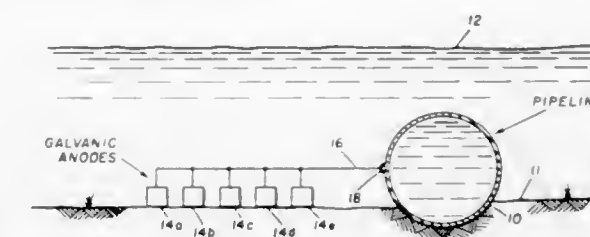
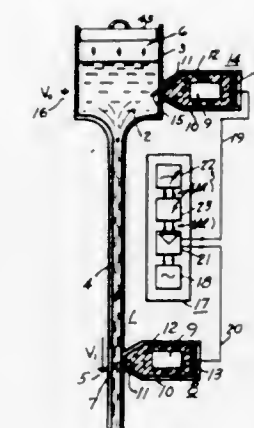
Filed Oct. 20, 1969, Ser. No. 867,561

Int. Cl. A61b 51/02

U.S. Cl. 204—195 B 5 Claims

A diagnostic instrument intended primarily for the evaluation of velocity-related abnormalities in blood. These conditions are determined by sensing the inherent tendency of blood red cells to modulate the amplitude of an electric current at a distance from the electrodes. Resulting variations in electrical impedance follow an invariable cube-root function of corpuscle velocity. Electrode configuration and placement are essential factors. The electrodes employed are specially adapted for the measurement of velocity in very small vessels or hollow

tubes. Remote sensing, without penetration of the vessel, The corrodible material is chosen to provide a predetermined corrosion rate when immersed in a particular elec-



trolyte, whereby an opening is created to expose the anode material at a desired delay time.

### 3,689,396 APPARATUS FOR STRIPPING METAL LAYERS FROM METALLIC SUPPORTS

Gianpaolo Casagrande, San Dona di Piave, Turmo de Michelis, Milan, Attilio de Rossi, Mestre, and Ferdinando Gnesotto, Venice, Italy, assignors to Montepoli & Montecchio S.p.A., Cagliari, Italy

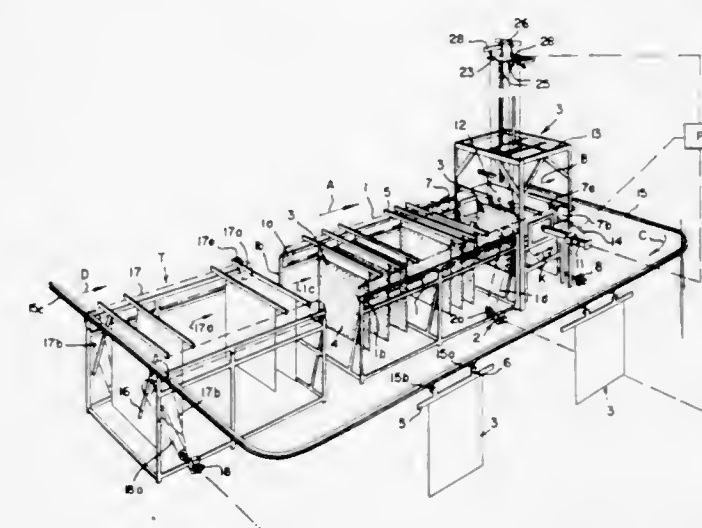
Filed Nov. 10, 1970, Ser. No. 88,413

Claims priority, application Italy, Nov. 10, 1969,

24,183/69

Int. Cl. B65g 49/00

U.S. Cl. 204—198 9 Claims



An apparatus for stripping or peeling metallic layers, especially electrodeposited metal in the form of sheets, from sheet-like metallic supports, e.g. an electrodeposition cathode. The apparatus comprises a conveyor arrangement for advancing the sheets in an upright orientation to a tower in which blades are displaceable to shed to electrodeposited layers from the cathode. A guard or masking member hinged to each cathode is swung aside by a moving device to reveal a setback lateral edge of the metal layers at the top of the cathode. A wedge arrangement is passed between the electrodeposited layer and the cathode horizontally to lift this edge to accommodate the peeling blades between the electrodeposited layer and the cathode.

### 3,689,395 CATHODIC PROTECTION SYSTEM AND DELAY- ACTIVATION ANODE

Floyd E. Blount and Wallace B. Allen, Dallas, Tex., assignors to Mobil Oil Corporation

Filed June 20, 1969, Ser. No. 835,023

Int. Cl. C23f 13/00

U.S. Cl. 204—197 4 Claims

The specification discloses an extended lifetime cathodic protection system employing sequentially activated galvanic anodes. All of the anodes are connected by means of an electrical conductor to the metallic structure to be protected so that as one anode is consumed an additional anode or anodes are activated in sequence to provide continuous electrical current flow over any desired period of time. A delay-activation anode is disclosed with a body of anode material enclosed by a hermetic casing which includes a relatively corrodible material such as iron.

### 3,689,397 MERCURY CATHODE ELECTROLYTIC CELLS EMPLOYING IMPROVED CATHODE SUPPORT

Leslie K. Norton, St. Louis, Mo., assignor to Monsanto Enviro-Chem Systems, Inc., Chicago, Ill.

No Drawing, Filed Oct. 8, 1970, Ser. No. 79,273

Int. Cl. B01k 3/06; C22d 1/04

U.S. Cl. 204—219 6 Claims

Mercury cathode electrolytic cells, such as are employed in the manufacture of caustic and elemental chlorine by the electrolytic decomposition of sodium

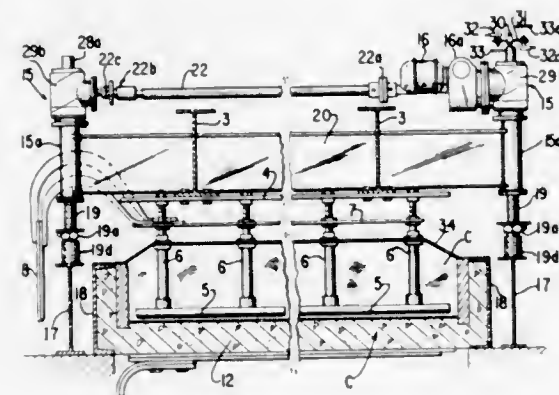


chloride, which can be and preferably are conventional in design and construction except that the mercury cathode is supported on a surface not wetted by mercury and formed entirely or predominantly of titanium, hafnium, vanadium, zirconium, molybdenum, and/or tungsten.

**3,689,398**  
**AUTOMATIC ANODE RAISING DEVICE**  
Abele Caleffi, Milan, Italy, assignor to Nora International Company, Panama, Panama  
Filed Oct. 6, 1970, Ser. No. 78,512  
Int. Cl. B01k 3/00; C22d 1/04

U.S. Cl. 204-220

15 Claims

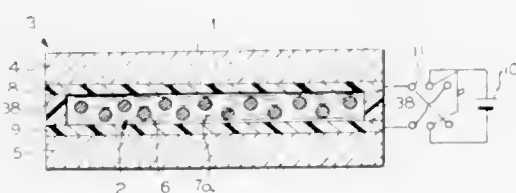


Describes a method and apparatus for protecting mercury cathode electrolysis cells against damage from internal short circuits in which the current flow through the cell is measured so as to detect any voltage unbalance through an anode bank and when a substantial increase in the current in an anode bank occurs, raising said anode bank to increase the gap between the anodes in said bank and the cathode.

**3,689,399**  
**PHOTOELECTROPHORETIC IMAGE REPRODUCTION DEVICE**  
Isao Ota, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan  
Filed Sept. 14, 1970, Ser. No. 72,033  
Claims priority, application Japan, Sept. 20, 1969, 44/74,794, 44/75,555  
Int. Cl. B01k 5/00

U.S. Cl. 204-299

24 Claims



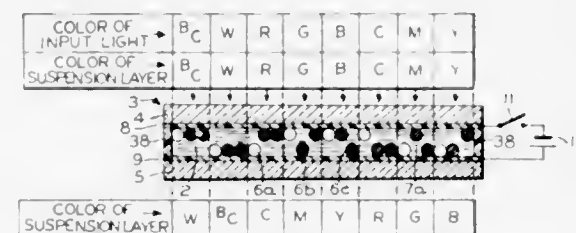
A photoelectrophoretic image reproduction device has an electrophoretic suspension layer including a dispersion of at least one photosensitive electrophoretic material in a finely divided powder form suspended in a colored suspending medium interposed between a pair of electrodes, at least one of which is substantially transparent. Means are provided to impose a D.C. electric field across the electrophoretic suspension layer between the electrodes and to expose the electrophoretic suspension layer to an image with actinic electromagnetic radiation through the

transparent electrode, said electric field and said image changing the electrophoretic property of said one photosensitive electrophoretic material so as to change electrophoretically the spatial distribution of said one photosensitive electrophoretic material, whereby an image is reproduced.

**3,689,400**  
**COLOR IMAGE REPRODUCTION DEVICE**  
Isao Ota, Osaka-shi, and Tetsuro Otsuka, Takatsuki-shi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan  
Filed Oct. 16, 1970, Ser. No. 81,290  
Claims priority, application Japan, Oct. 18, 1969, 44/83,561  
Int. Cl. B01k 5/00

U.S. Cl. 204-300

21 Claims



A photoelectrophoretic color image reproduction device in which an electrophoretic suspension layer having a white colored suspending medium and at least three differently colored photosensitive electrophoretic materials in the form of finely divided powder suspended in said white colored suspending medium is interposed between a pair of electrodes. The three differently colored photosensitive electrophoretic materials are cyan colored material which is principally photosensitive to red light, magenta colored material which is principally photosensitive to green light, and yellow colored material which is principally photosensitive to blue light. Means are included to impose a D.C. electric field across the electrophoretic suspension layer between the electrodes and to expose the electrophoretic suspension layer to a color image through the transparent electrode, said electric field acting to change, in cooperation with the color image, the electrophoretic property of the photosensitive electrophoretic materials so as to change electrophoretically the spatial distribution of the photosensitive electrophoretic materials, in order to reproduce the color image.

## ERRATUM

For Class 206-5 AA see:  
Patent No. 3,689,458

**3,689,401**  
**PROCESS FOR TREATING BY-PRODUCT HEAVY FRACTIONS FORMED IN THE PRODUCTION OF OLEFINS**

Shinpei Gomi, Masaaki Takahashi, Tadashi Ishiguro, and Akio Okagami, Tokyo, and Kunihiro Uemoto and Hiroshi Kuribayashi, Kanagawa, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 11, 1970, Ser. No. 97,231  
Claims priority, application Japan, Dec. 11, 1969, 44/99,046; Feb. 23, 1970, 45/11,341, 45/11,342  
Int. Cl. C10g 23/00, 37/06

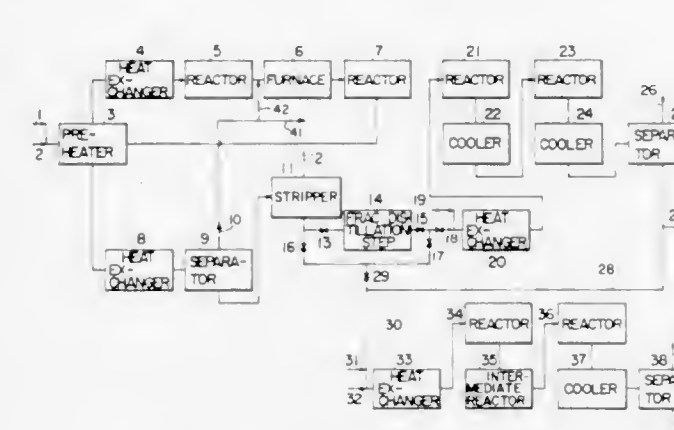
U.S. Cl. 208-57

13 Claims

A process for obtaining improved hydrocarbon oil products by treating by-product heavy fractions, formed in the production of olefins and having initial boiling

point of above 160° C. and a 75% distill-off point of below 450° C., with hydrogen at a temperature of from 40 to 200° C. and a pressure of from 5 to 300 kg./cm.<sup>2</sup> G using a nickel-containing catalyst which has been pre-

generator in response to a deviation of a reactor temperature from a predetermined reactor temperature, and by



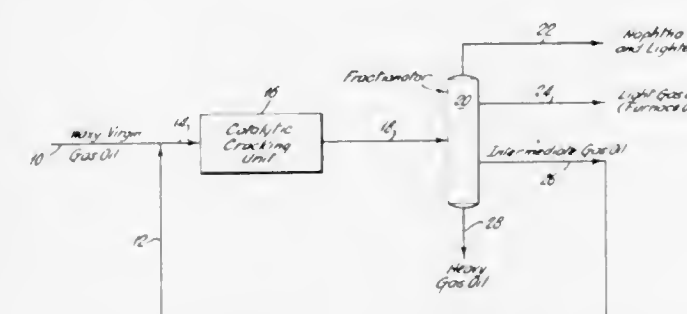
treated with organic sulfur compounds, to thereby impart thermal stability to the oil, then subjecting the resulting oil to a hydrorefining followed by reaction with an olefin and/or a hydrogenation is disclosed.

**3,689,402**  
**FURNACE OIL FROM WAXY GAS OILS**  
Douglas J. Youngblood, Groves, Tex. (Co. Texaco Inc., P.O. Box 1608, Port Arthur, Tex. 77640), and John M. Weiss, 1414 N. Horseshoe Drive, Sugar Land, Tex. 77478

Continuation of application Ser. No. 793,643, Jan. 15, 1969. This application Oct. 29, 1970, Ser. No. 85,295  
Int. Cl. C10g 11/00

U.S. Cl. 208-93

8 Claims



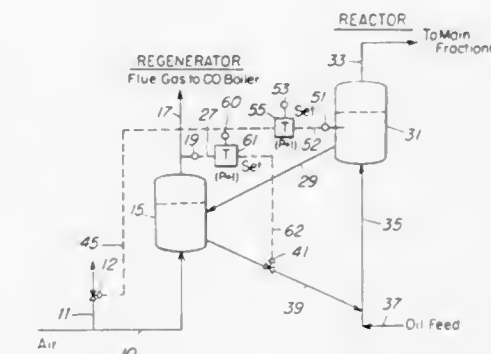
Low pour point light cycle gas oil for use as furnace oil may be obtained when catalytically cracking a waxy gas oil if the light gas oil fraction from the catalytic cracking unit is limited to a boiling range of about 430-550° F. while an intermediate gas oil fraction therefrom having an initial boiling point of about 550 and an end point in the range of 650 to 750° F. is recycled to extinction back to the feed to the catalytic cracker. The virgin gas oil to the catalytic cracker may have an IBP of about 430 or about 550° F. To maximize furnace oil production when the IBP of the waxy gas oil feed to the catalytic cracker is about 550° F., the light gas oil fraction from the catalytic cracker is admixed with a virgin waxy gas oil having a boiling range of about 430-550° F.

**3,689,403**  
**FCC CATALYST SECTION CONTROL**  
Bernard C. Long, Woodbury, N.J., assignor to Mobil Oil Corporation  
Filed Dec. 7, 1970, Ser. No. 95,597  
Int. Cl. C10g 13/18

U.S. Cl. 208-164

3 Claims

The specific embodiments provide for controlling a catalyst section of a fluid catalytic cracking system by adjusting the flow rate of an oxygen-containing gas to a re-

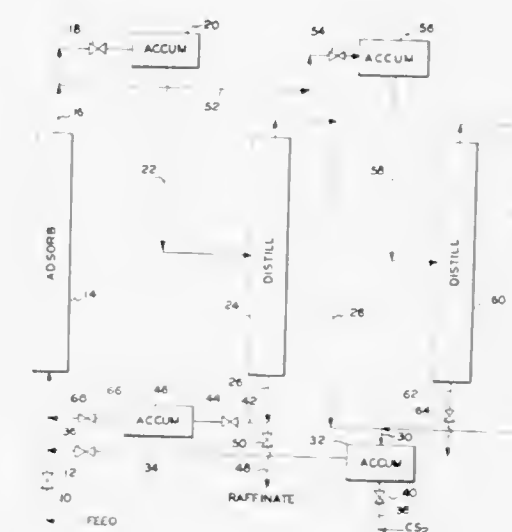


adjusting the regenerated catalyst flow rate in response to a deviation of the flue gas temperature from a predetermined flue gas temperature.

**3,689,404**  
**SEPARATION OF HYDROCARBONS WITH ACTIVATED CARBON**  
Lawrence J. E. Hofer, Pittsburgh, Pa., David B. Carpenter, Hackettstown, N.J., and Edward A. Thompson, Louisa, Ky., assignors to Calgon Corporation, Pittsburgh, Pa.  
Filed Apr. 5, 1971, Ser. No. 131,054  
Int. Cl. C07c 7/12

U.S. Cl. 208-310

18 Claims



Hydrocarbon mixtures, such as light cycle oils from a catalytic cracking unit, paraffinic lubricating oils and the like, are selectively separated by a cyclic adsorption technique involving passing the hydrocarbon mixture through a fixed bed of activated carbon to adsorb selectively more readily adsorbed components or an adsorbate phase while collecting less readily adsorbed components or a raffinate phase; passing a first portion of a predetermined volume of carbon disulfide through the carbon to displace the adsorbate phase while collecting a portion of the raffinate phase as a recycle stream; passing the remainder of the carbon disulfide through the carbon while collecting an adsorbate phase; passing a first portion of the collected recycle material through the carbon while collecting an adsorbate phase; passing the remainder of the collected recycle material through the carbon while collecting a raffinate phase; and separating carbon disulfide from the raffinate and adsorbate phase for reuse as a displacing fluid.



3,689,405

**SOLVENT EXTRACTION PROCESS**

Armand J. De Rosset, Clarendon Hills, Ill., Richard C. Wackher, Forsyth, Mo., and Stephen N. Massie, Palatine, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed May 3, 1971, Ser. No. 139,972  
Int. Cl. C07c 7/10; C10g 21/00

U.S. Cl. 208—326 8 Claims  
A process for the separation of aromatic hydrocarbons from saturated hydrocarbons using a solvent comprising a succinimide in which a feed stock contacts the solvent at solvent extraction conditions. The resulting raffinate and extract phases are separated. The extract phase is thereafter subjected to treatment to remove aromatic hydrocarbons therefrom. The solvent may be recycled to the process for continuous use.

3,689,406

**METHOD FOR SEPARATING OILS FROM WATER**

Masanori Ohta, 55 Takehana-Nishinokuchi-cho Yamashina, Higashiyama-ku, Kyoto Prefecture, Kyoto, Japan

No Drawing. Filed Dec. 1, 1970, Ser. No. 94,204  
Claims priority, application Japan, Dec. 12, 1969, 44/99,381

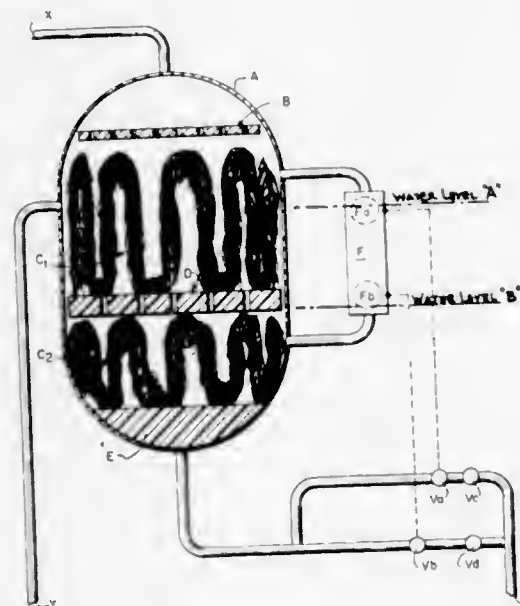
Int. Cl. B01d 13/00, 17/02  
U.S. Cl. 210—23 5 Claims  
Oil is removed from water, e.g., waste water, by means of a fibrous filter composed essentially of a hydrophilic cellulose material such as regenerated cellulose, mercerized cellulose and acetylated cellulose.

3,689,407

**OIL AND WATER SEPARATING DEVICE**

Herbert M. Rhodes, New Orleans, La., assignor to Oil Mop, Inc., Metairie, La.

Filed Feb. 16, 1971, Ser. No. 115,327  
Int. Cl. B01d 15/06, 39/18  
U.S. Cl. 210—23 5 Claims



The present disclosure is directed to a method and apparatus for separating oil from a mixture of oil and water by pouring the mixture over two oil attracting media each having a different physical characteristic and placing the second oil attracting media between two floats having different specific gravities so that the second oil attracting media is wrung out due to its compression be-

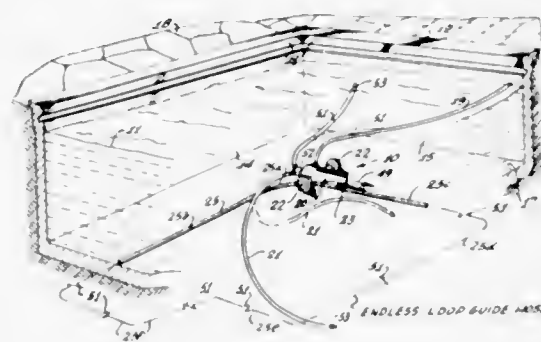
tween the two floats to release the oil and to permit it to rise above the water level in the apparatus so that the oil may be drawn off separately from the water.

3,689,408

**AUTOMATIC POOL CLEANER**

James R. Edmiston, Sherman Oaks, and Harry M. Clinton, Northridge, Calif., assignors to Swimrite, Inc., Van Nuys, Calif.

Filed Mar. 15, 1971, Ser. No. 123,957  
Int. Cl. E04h 3/20  
U.S. Cl. 210—169 12 Claims



A swimming pool cleaner comprising a car having two turbine-driven rear wheels and a steerable front wheel guided on an endless track in the form of a weighted tube resting on the bottom of the pool. Water under pressure from the pool circulation system is delivered to the turbine to drive the rear wheels, and exits through two elongated sweep hoses which direct the water in jets into the pool.

3,689,409

Patent Not Issued For This Number

3,689,410

**DRY MIX FOR CHALK-STABILIZED EMULSION**

Henry C. H. Darley and Jack M. Jackson, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed May 21, 1970, Ser. No. 39,526  
Int. Cl. C10m 1/06, 1/10, 1/14

U.S. Cl. 252—8.55 R 2 Claims  
A dry mix for preparing a soluble well completion fluid comprises powdered chalk particles containing adsorbed oil wetting and interfacial tension lowering surfactants and having particle sizes and surfactant proportions such that the chalk particles provide both stability and low filter loss in a water-in-oil emulsion.

3,689,411

**EXTREME PRESSURE, RUST PREVENTIVE SYNTHETIC BASE GREASE**

Joseph F. Messina, Havertown, Henry Gisser, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Apr. 6, 1971, Ser. No. 131,774  
Int. Cl. C10m 7/24, 7/28

U.S. Cl. 252—25 4 Claims  
Grease lubricants for military and industrial use consisting of about 65 to 75 weight percent trimethylolpropane ester of straight chain monocarboxylic acids having 5 to 7 carbon atoms, 25 to 35 weight percent polytetrafluoroethylene having a molecular weight 10,000 to 50,000 and 0.25 to 0.75 weight percent sodium nitrite, the grease exhibiting excellent extreme pressure properties as well as rust prevention characteristics.

3,689,412

**GREASE COMPOSITION**

George J. Quaal, Midland, and Alfred Lewis, Saginaw, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Mar. 17, 1971, Ser. No. 125,325  
Int. Cl. C10m 5/12, 7/16, 7/50

U.S. Cl. 252—49.6 8 Claims  
Solid p-oxybenzoyl polymer is added in powder form to a lubricating oil vehicle in an amount sufficient to thicken the mixture to a grease-like consistency.

3,689,413

**HIGH TEMPERATURE STABLE GREASE COMPOSITIONS**

Donald E. Loeffler, Ferguson, Mo., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed May 9, 1969, Ser. No. 823,484  
Int. Cl. C10m 5/20, 7/30, 7/34

U.S. Cl. 252—51.5 A 10 Claims  
Grease compositions comprising an oleaginous lubricant base containing polyamide, polyurethane, or amido-urethane thickening agents have good thermal stability and high temperature characteristics.

3,689,414

**METHOD OF MANUFACTURING FERROELECTRIC CERAMIC**

Hideo Watanabe, Kofu, and Yoshiyuki Yagi, Mitamachi, Nishiyashiro-gun, Japan, assignors to T.D.K. Electronics Co., Ltd., Tokyo, Japan

Continuation-in-part of application Ser. No. 696,768, Jan. 10, 1968. This application Apr. 27, 1970, Ser. No. 32,014

Int. Cl. C04b 35/46, 35/48, 35/64  
U.S. Cl. 252—62.9 2 Claims  
Novel  $Pb(Nb_{2/3}Zn_{1/3})O_3$ - $PbTiO_3$ - $PbZrO_3$  compositions with superior electromechanical coupling coefficients are provided by optimization of the pre-firing temperature. The optimum pre-firing temperature is determined as a function of the stoichiometry according to the following formula

$$T_p = 850 - 3[x - 0.087(2z + x - 100)] \pm 10$$

wherein

$T_p$  is the pre-firing temperature  
 $x$  is the mol percent of  $Pb(Nb_{2/3}Zn_{1/3})O_3$   
 $z$  is the mol percent of  $PbZrO_3$ .

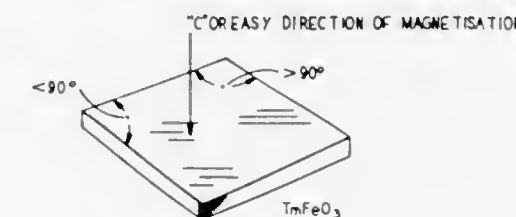
3,689,415

**OXIDIC CRYSTALS AND  $V_2O_5$ -CONTAINING FLUX GROWTH THEREOF**

Joseph Peter Remeika, Warren Township, Somerset County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 18, 1970, Ser. No. 38,126  
Int. Cl. G03g 9/00

U.S. Cl. 252—62.61 12 Claims



Growth of crystals of oxidic materials of the garnet, orthoferrite and spinel ferrite structures from lead oxide-containing fluxes to which  $V_2O_5$  is added yields crystals

of increased size. In certain systems, notably of the orthoferrite structure, control of easy direction of magnetization is afforded so that plates with the easy direction normal to the plane may be reproducibly grown.

3,689,416

Patent Not Issued For This Number

3,689,417

**POWDERLESS ETCHING BATH**

Takashi Oikawa and Takeshi Fujimoto, Tokyo, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed June 3, 1970, Ser. No. 43,195  
Claims priority, application Japan, June 11, 1969, 44/45,399

Int. Cl. C09k 3/00; C23f 1/00  
U.S. Cl. 252—79.3 5 Claims  
An improved powderless etching bath for etching aluminum or an aluminum-base alloy comprising (a) an acid aqueous solution containing sulfuric acid, (b) metal ions of a metal having an ionization tendency less than that of aluminum, (c) a water-immiscible organic liquid, (d) a phosphate ester anionic surfactant, and (e) a nonionic surfactant.

3,689,418

**DETERGENT FORMULATIONS**

Russell D. Harken, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Jan. 18, 1971, Ser. No. 107,468  
Int. Cl. C11d 1/12

U.S. Cl. 252—89 3 Claims  
Detergent formulations comprising tetra alkali metal ethene tetracarboxylate as a detergent builder in combination with conventional surfactants provide effective cleaning action.

3,689,419

**TOILET BAR**

Mao H. Yueh, Minneapolis, Minn., assignor to General Mills, Inc.

No Drawing. Filed Aug. 12, 1970, Ser. No. 63,289  
Int. Cl. C11d 17/00

U.S. Cl. 252—90 7 Claims  
A soap or toilet bar and a method of preparing and using such a soap bar is disclosed. The soap bar includes a nucleoprotein material.

3,689,420

Patent Not Issued For This Number

3,689,421

**HOUSEHOLD HYPOCHLORITE BLEACH WITH STABLE LATEX OPACIFIER**

Benjamin R. Briggs, Los Alamitos, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 714,449, Mar. 20, 1968. This application Apr. 9, 1971, Ser. No. 132,805

Int. Cl. C01b 11/06  
U.S. Cl. 252—95 11 Claims  
Liquid household bleach having visual opacity is provided by the incorporation into the bleach of a particularly prepared styrene-vinyl acid copolymer latex which is highly resistant to deterioration in the bleach and which enables maintenance of useful available chlorine levels over extended periods of time. The latex is prepared by introduction of styrene monomer into a preformed aqueous solution of the vinyl acid and a noncationic surfactant.



3,689,422

Patent Not Issued For This Number

3,689,423

Patent Not Issued For This Number

3,689,424

## WASHING AGENTS CONTAINING A TEXTILE SOFTENER

Markus Berg, Dusseldorf-Holthausen, Walter Fries, Erkrath-Unterbach, and Albrecht Lohr, Hesel, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed Apr. 16, 1970, Ser. No. 29,287  
Claims priority, application Germany, Apr. 30, 1969, P 19 22 046.3; Aug. 1, 1969, P 19 39 190.3; Dec. 16, 1969, P 19 62 919.7; Austria, Dec. 24, 1969, A 12.043/69

Int. Cl. C11d 3/32; D06m 13/38

U.S. Cl. 252—110 16 Claims

Detergent compositions containing textile softeners consisting essentially of:

(1) from 5% to 100% by weight of a mixture of surface-active agents consisting essentially of:

(a) from 20% to 90% by weight of customary surface-active compounds utilizable in neutral to alkaline textile washing baths selected from the group consisting of anionic surface-active compounds, amphoteric surface-active compounds, non-ionic surface-active compounds, and mixtures thereof, and

(b) from 80% to 10% by weight of a textile softener composition consisting essentially of

(i) from 100% to 20% by weight of a fatty acid-hydroxyalkylpolyamine condensation product of glyceride of higher fatty acids having from 8 to 24 carbon atoms with at least 50% of said higher fatty acids having from 16 to 24 carbon atoms, with a hydroxyalkyl-alkylpolyamine having at least one hydroxyalkyl selected from the group consisting of hydroxyethyl, hydroxypropyl and dihydroxypropyl and at least two hydrogen atoms bonded to nitrogen atoms, said condensation product containing from 5% to 40% by weight of fatty acid partial glycerides, and

(ii) from 0 to 80% by weight of quaternary ammonium compounds containing two alkyls having 14 to 26 carbon atoms and at least one quaternary nitrogen atom in the molecule, and

(2) from 95% to 0 of other customary components of detergent compositions.

3,689,425

## DETERGENT COMPOSITIONS CONTAINING NOVEL OPTICAL BRIGHTENING AGENTS

Nathan N. Crounse, Cincinnati, Ohio, assignor to Sterling Drug Inc., New York, N.Y.  
No Drawing. Continuation-in-part of application Ser. No. 655,339, July 24, 1967, now Patent No. 3,575,956. This application June 15, 1970, Ser. No. 46,482

Int. Cl. C09d 23/00; C09k 1/00; C11d 9/30

U.S. Cl. 252—117 3 Claims

2-benzoxazol-6-yl-2H-naphtho[1,2-d]triazoles, 2-benzothiazol-6-yl-2H-naphtho[1,2-d]triazoles and 2-benzimidazol-6-yl-2H-naphtho[1,2-d]triazoles, having attached at the 2-position of the benz-X-azol-6-yl ring thereof a substituent of from 8-18 carbon atoms and 4-8 conjugated double bonds, are optical whitening and brightening agents having particularly desirable shades of fluorescence.

3,689,426

Patent Not Issued For This Number

3,689,427

## POLYMERIZABLE MIXTURES COMPRISING A BIVALENT METAL SALT OF AN ACRYLATE- OR METHACRYLATE-PHTHALATE ESTER OF AN ALKYLENE GLYCOL

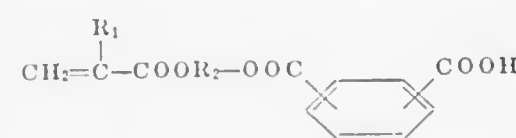
Hideaki Matsuda, Marugame, Takanori Okamoto, Nakatado, and Hidemi Dohi, Marugame, Japan, assignors to Okura Kogyo Kabushiki Kaisha, Kagawa-ken, Japan  
No Drawing. Filed Aug. 18, 1970, Ser. No. 64,808

Claims priority, application Japan, Aug. 27, 1969, 44/68,112

Int. Cl. C08d 3/04; C08f 3/66

U.S. Cl. 252—188.3 11 Claims

A polymerizable substance is prepared by first making a bivalent metal salt of a compound having the structural formula



wherein  $R_1$  is hydrogen or methyl and  $R_2$  is an alkylene group which may or may not be halogenated, and then mixing said salt with another monomer capable of copolymerization with it. The polymerizable substance so obtained can be used in paints or as a molding material or adhesive.

3,689,428

## NUCLEAR FUEL HAVING MINIMUM-GAS-RELEASE PROPERTIES

William H. Pechin and Ronnie A. Bradley, Oak Ridge, and John D. Sease, Knoxville, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed June 8, 1970, Ser. No. 44,572

Int. Cl. G21c 19/42

U.S. Cl. 252—301.1 R 4 Claims

This invention relates to an improved nuclear fuel composition characterized as a hypostoichiometric solid solution of an oxide of plutonium and uranium, having a surface-to-volume ratio of greater than 100 in.<sup>-1</sup> and a gas-release index of no more than 0.1 cc./g. of fuel as measured at 1600° C., and to the process for making same.

3,689,429

## DISPERSIONS OF OPTICAL BRIGHTENERS CONTAINING SALT-FORMING SOLUBILIZING GROUPS

Reinhold Deubel, Kelkheim, Taunus, Erich Schinzel, Hofheim, Taunus, Volker Hemmerling, Bad Soden, Taunus, and Günter Rösch, Altenhain, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation of abandoned application Ser. No. 784,464, Dec. 17, 1968. This application Apr. 15, 1971, Ser. No. 134,474

Int. Cl. D06l 3/12

U.S. Cl. 252—301.2 W 6 Claims

Stable dispersions of optical brighteners having salt-forming solubilizing groups are obtained when using an anhydrous water-miscible di- or trihydric lower aliphatic alcohol, a lower alkyl or phenyl ether or a water-soluble polyether thereof as dispersing agent and dispersing medium. The use of a further non-ionic dispersing agent is optional.

These dispersions are preferred for continuous brightening processes because of their easy dosage and the avoiding of dust and dissolving manipulations.

3,689,430

## SURFACE ION EXCHANGED ASBESTOS COMPOSITIONS

Paul C. Yates, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 758,129, Sept. 6, 1968. This application Aug. 10, 1971, Ser. No. 170,630

Int. Cl. B01j 13/00

U.S. Cl. 252—309 9 Claims

This invention relates to colloidal dispersions of surface modified disoriented and disaggregated fibrils of chrysotile asbestos in concentrated hydrotropic salt solutions having at least the surface ions of magnesium of said fibrils 10<sup>-4</sup> to 10<sup>-3</sup> equivalents per gram of asbestos replaced by lithium, calcium, barium, zinc, cadmium, cobalt or nickel ions; to the method for preparing said surface ion exchanged asbestos fibrils; and to dispersions in organic solvents formed when said surface ion exchanged asbestos fibrils are treated with anions of alkyl, aryl or alkylaryl sulfates, sulfamates, sulfonates, carboxylates and phosphates.

3,689,431

## SILICA SOL COMPOSITIONS

Charles C. Payne, Chicago, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Feb. 1, 1971, Ser. No. 111,619

Int. Cl. B01j 13/00

U.S. Cl. 252—313 S 3 Claims

Silica sol compositions especially useful for coatings are prepared by homogenizing an aqueous silica sol with a silica powder. The compositions are particularly useful for improving the frictionizing of paper.

3,689,432

## EMULSION COPOLYMERIZATION INITIATOR

Ellsworth E. Faust, Berkeley Heights, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed Mar. 31, 1971, Ser. No. 130,028

Int. Cl. C08f 15/02

U.S. Cl. 252—428 1 Claim

A specific initiation system of hydrogen peroxide-zinc formaldehyde sulfoxalate/t-dodecyl mercaptan provides high conversion levels in vinyl acetate/alpha-olefin emulsion copolymerization reactions.

3,689,433

## PROCESS FOR PREPARING OLEFIN DISPROPORTIONATION CATALYSTS

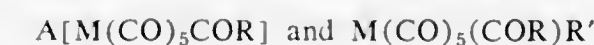
Wolfram R. Kroll and Gerald Doyle, Somerville, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

No Drawing. Filed Mar. 4, 1970, Ser. No. 16,562

Int. Cl. C07c 3/62

U.S. Cl. 252—429 R 8 Claims

A process for preparing a catalyst which consists essentially of contacting a carbene complex selected from the group consisting of complexes having the formulas



wherein A is a unipositive cation selected from the group consisting of Li, Na, K and cations having the general formula J<sub>4</sub>Q wherein Q is a Group V element and J is selected from the group consisting of hydrogen and C<sub>1</sub> to C<sub>30</sub> hydrocarbyl radicals, M is a Group VI-B metal, R and R' are C<sub>1</sub> to C<sub>30</sub> hydrocarbyl radicals, with AlY<sub>3</sub> or an organometallic halide selected from the group consisting of compounds having the general formula R''<sub>n</sub>DY<sub>m</sub> where R'' is chosen from the group consisting of C<sub>1</sub> to C<sub>30</sub> hydrocarbyl radicals, D is a metal selected from the group consisting of Group II and Group III

of the Periodic Table of the Elements, Y is a halide, and n is an integer of from 1 to 3 and m is an integer of from 0 to 3, their total equal to the valence of D, the molar ratio of organo-metallic halide to Group VI-B metal being from about 0.5:1 and 50:1, at a temperature of from about -100 to +150° C. and a pressure of from about 0.1 to 1000 atmospheres, whereby a catalyst is formed. The resulting catalyst is useful for disproportionating olefins.

3,689,434

## CATALYST FOR HYDROCARBON CONVERSION

Robert M. Suggitt and John H. Estes, Wappingers Falls, and Stanley Kravitz, Wicopee, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed July 29, 1968, Ser. No. 748,197

Int. Cl. B01j 11/78

U.S. Cl. 252—442 8 Claims

A method for preparing a hydrocarbon conversion catalyst composed of alumina and chlorine or bromine by contacting alumina with an activator system comprising chlorine or bromine and an inorganic sulfur compound selected from the group hydrogen sulfide and compounds corresponding to the formula S<sub>m</sub>X<sub>2</sub>. The catalyst may additionally include a metal such as platinum, palladium, ruthenium or rhodium. The catalysts so prepared are useful in such hydrocarbon conversion processes as isomerization, cracking, hydrocracking, reforming, alkylation, dehydrogenation, disproportionation and polymerization.

3,689,435

## DETERGENCY COMPOSITIONS CONTAINING A SYNERGISTIC MIXTURE OF PVP AND PVA

Rene P. Berni, Oradell, N.J., and Richard A. Grifo, Easton, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed July 27, 1970, Ser. No. 58,647

Int. Cl. C11d 3/065, 3/20, 3/28

U.S. Cl. 252—524 7 Claims

A soil, anti-redeposition agent for use in laundry applications is disclosed, which agent comprises a synergistic mixture of polyvinylpyrrolidone and polyvinyl alcohol.

3,689,436

## PHOSPHONATE DETERGENT BUILDERS

James K. Stamm, 432 Forest Ave., Erlanger, Ky. 41018; Edwin R. Loder, 2543 Vera Ave., Cincinnati, Ohio 45237; Charles A. Brungs, 1710 Mount Vernon Ave., Fort Wright, Ky. 41011; and Herman Kerst, 310 Woodbridge Road, Des Plaines, Ill. 60016

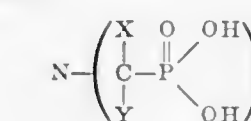
No Drawing. Filed Oct. 19, 1970, Ser. No. 82,092

Int. Cl. C11d 3/36

U.S. Cl. 252—545 4 Claims

The invention disclosed is directed to detergent builder compositions including:

(A) Amino tri(lower alkylidene)phosphonic acids, having the formula:



wherein X, Y or both represent hydrogen or a lower alkyl group (1-4 carbon atoms)

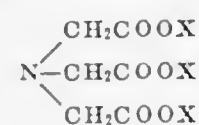
or a water-soluble salt or ester thereof and

(B) a member of the group consisting of:

(1) a water soluble acrylic or methacrylic acid polymer which is polyacrylic acid, polymethylacrylic acid, acrylic acid-methacrylic acid copolymers, hydrolyzed polyacrylamide, hydrolyzed



- polymethacrylamide, hydrolyzed acrylamide-methacrylamide copolymers, hydrolyzed polyacrylonitrile, hydrolyzed polymethacrylonitrile, hydrolyzed acrylonitrile-methacrylonitrile copolymers, or mixtures of any two or more of the said acrylic polymers; or water-soluble salts of these acrylic polymers, or polymer mixtures; or
- (2) a water-soluble organic complexing polymer builder ingredient having a weight average molecular weight of from about 1,000,000 to about 12,000,000 and comprising a linear aliphatic backbone having N-carboxymethyl amine or N-carboxymethyl amide side chains imparting complexing properties to the polymer; or a water soluble salt of such complexing polymer; or
- (3) nitrilotriacetic acid or a water soluble salt thereof having the formula



wherein each X is independently hydrogen or a suitable cation such as alkali metal or ammonium and to detergent compositions containing said builders.

Also disclosed are methods for enhancing the building activity of said amino phosphonic acid compounds in hard water cleaning solutions prepared from water having a hardness of up to 20 grains per gallon or more; and for enhancing the building activity of said complexing polymer in cleaning solutions prepared from water having a hardness of up to 10 grains per gallon.

3,689,437

**MALLEABLE DETERGENT PRODUCT**

James Hugh McLaughlin, Ridgefield, N.J., assignor to Center For New Product Development, New York, N.Y.

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,014

Int. Cl. C11d 1/12

U.S. Cl. 252—557

10 Claims

Malleable, non-hardenable detergent products suitable for molding into various shapes while retaining detergency function are prepared from a mixture comprising by weight of the total composition (A) from about 20 to 55 percent of a water soluble salt of an ester of a fatty acid and isethionic acid wherein said fatty acid contains from 8 to 18 carbon atoms, (B) from about 10 to 35 percent water, (C) from about 4 to 10 percent gelatin, (D) a member chosen from the group consisting of mineral oil and paraffin and mixtures thereof, the combined weight of (C) and (D) being from about 12 to 33 percent, and (E) from 0 to about 50 percent of a filler material.

3,689,438

**CATION EXCHANGE MEMBRANES AND THEIR PREPARATION**

Guy Bourat, Bourg-la-Reine, and Rodolphe Margraff, Ris-Orangis, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Mar. 29, 1971, Ser. No. 129,172

Claims priority, application France, Apr. 29, 1968, 149,933

Int. Cl. C08f 33/08; C08j 1/34; B01k 3/10

U.S. Cl. 260—2.2 R

19 Claims

Cation exchange resins are made from crosslinked poly-p-vinylphenols containing cation exchange groups mixed with an inert polymer.

3,689,439

**PROCESS FOR PREPARING A CROSSLINKED POROUS POLYVINYL PYRROLIDONE GRANULE**

Nathan D. Field, Allentown, and Earl P. Williams, Pen Argyl, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 736,302, June 12, 1968. This application Apr. 5, 1971, Ser. No. 131,434

Int. Cl. C08c 17/08; C08d 13/08; C08f 47/10

U.S. Cl. 260—2.5 N

14 Claims

A porous granular or porous bead form of a vinylpyrrolidone polymer is produced from a suspension of monomeric vinyl-pyrrolidone, optionally with additional monomer or monomers, and a controlled amount of cross-linking agent in an aqueous solution of an electrolyte, the suspension being maintained during polymerization by mechanical means. A free radical polymerization source is utilized. The resultant product maintains its particulate form after wetting.

3,689,440

**POLYURETHANE FOAMS PREPARED FROM AROMATIC HYDROXYL-CONTAINING POLYOLS AND POLYISOCYANATES**

Orville L. Glaesmann, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 8, 1970, Ser. No. 79,291

Int. Cl. C08g 22/44

U.S. Cl. 260—2.5 AM

9 Claims

The thermal stability of polyurethane foams prepared from polyisocyanates and an aromatic hydroxyl-containing polyol is improved by the addition of an aldehyde or a compound capable of releasing formaldehyde.

3,689,441

**COATING COMPOSITIONS FOR ARRESTING THE SURFACE LUBRICITY OF POLYOLEFIN SHAPED ARTICLES**

Yasuaki Hori, Yokohama, and Kazuo Yoneda and Takahiko Kobayashi, Fujisawa-shi, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Sept. 9, 1968, Ser. No. 758,626

Claims priority, application Japan, Sept. 19, 1967, 42/59,775

Int. Cl. C08c 11/70

U.S. Cl. 260—5

10 Claims

Coating compositions for arresting the surface lubricity of polyolefin shaped articles, which are composed of a homogeneous mixture of a finely divided inorganic solid substance, a polymer containing no chlorine in the molecule, a low-molecular-weight polyethylene, a chlorine-containing polymer and an organic solvent.

3,689,442

**RIGID, NON-ELASTOMERIC, NON-CELLULAR HOT WATER RESISTANT 4,4'-METHYLENE-BIS(CYCLOHEXYLISOCYANATE)-POLYETHER POLYOL POLYURETHANES**

Bernard Taub, Williamsville, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed July 6, 1970, Ser. No. 52,719

Int. Cl. C08b 25/00; C08g 22/06

U.S. Cl. 260—9

6 Claims

This invention relates to rigid, non-elastomeric, non-cellular polyurethane compositions characterized by excellent retention of tensile strength even after exposure to hot water environments for extended periods. The compositions are prepared by the reaction of 4,4'-methylene-bis(cyclohexylisocyanate) and a polyether polyol or mixture thereof having an average functionality of between about 4 and 8 and a hydroxyl number of from about 300 to 600.

3,689,443

**THERMOPLASTICALLY PROCESSABLE POLYURETHANE ELASTOMERS**

Walter Fensch, Hannover, Germany, assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Continuation of abandoned application Ser. No. 783,139, Dec. 11, 1968. This application Nov. 9, 1970, Ser. No. 88,128

Claims priority, application Germany, Dec. 13, 1967, P 17 20 544.6

Int. Cl. C08g 22/10

U.S. Cl. 260—18 TN

8 Claims

A polyurethane adapted to be processed thermoplastically into a product having a substantially permanent hardness of about Shore A 80° or less is provided by reacting a hydroxy polycaprolactone having a molecular weight of from about 1,500 to about 2,500, a hydroxy polycaprolactone having a molecular weight of from about 500 to about 600, a glycol having a molecular weight below about 250 and diphenylmethane-4,4'-diisocyanate.

3,689,444

**LATENT CATALYSTS FOR ONE-COMPONENT EPOXY RESIN/ANHYDRIDE COMPOSITIONS**

Norman Gilbert Wolfe, New Albany, Ind., assignor to Celanese Coatings Company, New York, N.Y.

No Drawing. Filed Apr. 23, 1971, Ser. No. 137,040

Int. Cl. C08g 30/12; C08h 9/00

U.S. Cl. 260—18 EP

13 Claims

Curable epoxy resin/anhydride compositions which cure tack-free and a process for preparing same are provided, the compositions comprising (a) an epoxy resin, (b) a dicarboxylic acid anhydride curing agent, and (c) an accelerator which is a mixture of a zinc salt of an aliphatic monocarboxylic acid and at least one metal salt of an aliphatic monocarboxylic acid wherein the metal is selected from the group consisting of lithium, manganese, and cobalt. The process comprises the steps of (a) mixing the accelerator with the curing agent at a temperature in the range of from about 200 to about 400 degrees Fahrenheit, and (b) adding the epoxy resin after cooling the accelerator/curing agent mixture to about 100 degrees Fahrenheit. The resultant epoxy resin/anhydride compositions are especially useful as encapsulating and impregnating compounds for electrical components.

3,689,445

**THICKENED AQUEOUS LATICES**

John Joseph Hopwood, Glen Waverley, Victoria, Robert William Kershaw, South Blackburn, Victoria, and Frederick John Lubbock, Beaumaris, Victoria, Australia, assignors to Balm Paints Limited, Melbourne, Victoria, Australia

No Drawing. Filed Dec. 16, 1968, Ser. No. 784,197

Claims priority, application Australia, Dec. 28, 1967, 31,725/67

Int. Cl. C09d 3/00

U.S. Cl. 260—29.6

7 Claims

Thickened aqueous latices of 0.4 to 2.0 micron average disperse polymer particle diameter and comprising 0.1 to 10.0% by weight of the polymer particles of a polymeric thickener of molecular weight 10,000 to 300,000 are disclosed. The thickener consists of a chain-like copolymer of vinyl alcohol and at least one co-monomer containing 4 to 18 carbon atoms whereof a homopolymer is insoluble in the aqueous liquid and in which the proportion of co-monomer bears a specific relationship to the number of carbon atoms it contains. In a particular embodiment a process is provided of preparing thickened aqueous latices with a flow coefficient of greater than 1.5.

3,689,446

**ELECTROPHORETIC COATING**

Akio Furuya and Masaaki Hayashi, Yokohama-shi, Kouichi Nagami, Kawasaki-shi, Masakatsu Uchida, Kamakura-shi, Sakae Nishino and Toshikatsu Asada, Yokohama-shi, Yasuo Nagao, Kamakura-shi, Hiroyoshi Matsuda, Moriguchi-shi, and Harufumi Tsuchiya, Ibaragi-shi, Japan, assignors to Dai Nippon Toryo Kabushiki Kaisha, Konohana-ku, Osaka, Japan

Filed Dec. 8, 1969, Ser. No. 882,822

Claims priority, application Japan, Dec. 9, 1968, 43/90,053

Int. Cl. C23b 13/00

U.S. Cl. 260—23.7 R

6 Claims

An electrophoretic coating composition comprising a polybutadiene water-soluble resin prepared by esterifying an adduct of butadiene polymer containing 70% or more of 1,2-bonding and maleic anhydride, the addition degree of maleic anhydride being 5–20 weight percent, with an esterifying agent having at least one primary or secondary alcoholic hydroxyl group in its molecule to an esterification degree of 10–50% provides a coating having an excellent appearance, and which is free of water-mark when applied by electrodeposition.

3,689,447

**PROCESS FOR PREPARING EMULSION INTERPOLYMERS CONTAINING VINYL CHLORIDE AND ETHYLENE, HAVING IMPROVED HEAT STABILITY**

Samuel J. Makower, 1492 Wister Drive, Wyncote, Pa. 19095, and Philip A. Cautilli, 2012 Shady Brook Lane, Feasterville, Pa. 19047

No Drawing. Filed June 8, 1970, Ser. No. 44,634

Int. Cl. C08f 1/03, 15/02

U.S. Cl. 260—29.6 RB

10 Claims

This invention relates to heat resistant interpolymers containing 6–30% ethylene and 94–70% of comonomer comprising a major portion of vinyl chloride. Latexes of said interpolymers, mechanically stable at high solids, are made by gradually adding said comonomer to an aqueous composition maintained under ethylene pressure not higher than 3,000 p.s.i., at a temperature between about 50° C. and 85° C. and containing a seed latex and a thermally activated initiator selected from the group consisting of water-soluble persulfates and peroxydiphosphates.

3,689,448

**PROCESS FOR THE MANUFACTURE OF ETHYLENE COPOLYMER DISPERSIONS**

Harald Berger, Kelkheim, Herbert Bestian, Frankfurt, and Helmut Korbanka, Adelsried, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of application Ser. No. 732,554, May 28, 1968. This application Oct. 9, 1970, Ser. No. 79,664

Int. Cl. C08f 1/09

U.S. Cl. 260—29.6 TA

6 Claims

Process for the manufacture of ethylene copolymer dispersions by copolymerizing ethylene with alkali metal salts of one or more mono-unsaturated acylamide-N-sulfonic acids of the formula  $R_1CH=C(R_2)CONH-SO_3H$ , wherein  $R_1$  and  $R_2$  each represents a hydrogen atom or an organic radical containing 1 to 10 carbon atoms. If necessary, further copolymerizable compounds may be used additionally. The copolymer dispersions of the invention may be used for coating plastics materials, wood, paper and the like as well as for impregnating or finishing paper, felt or fibrous materials.



3,689,449

**COMPOSITION FOR IMPARTING ANTI-BACTERIAL CHARACTERISTICS TO VINYL RESINS**

Charles C. Yeager, Glen Ellyn, and Ronald C. Wilson, Mount Prospect, Ill., assignors to Ventron Corporation, Chemicals Division

No Drawing. Filed Apr. 1, 1971, Ser. No. 130,491

Int. Cl. C08f 45/34

U.S. Cl. 260—33.4 P

4 Claims

Vinyl resins while inert to microbial and fungal attack, can act as carriers for microorganisms and phenoxarsine compounds are used to impart microbicidal properties to such resins. The amount of phenoxarsine compounds required to impart such microbicidal properties to vinyl resin materials may be markedly reduced when the phenoxarsine compounds are used in conjunction with hexachlorodimethyl sulfone which acts to promote the effectiveness of the phenoxarsine compounds even though the sulfone per se imparts no microbicidal properties to a vinyl material. In a preferred embodiment of the invention, hexachlorodimethyl sulfone is incorporated into the nonyl phenol solution of, for example, 10,10' oxybis-phenoxarsine and the phenol solution incorporated into vinyl resin plasticizers, such as epoxidized soya, so that the phenoxarsine and sulfone solute components will be present in the resin in amounts of 50 to 250 parts per million of phenoxarsine compound and 100 to 1000 parts per million of sulfone compound.

3,689,450

**METHOD OF PREPARING SEALANTS FROM POLYBUTADIENE AND MERCAPTO HYDROXY COMPOUNDS**

Paul F. Warner, Phillips, Tex., assignor to Phillips Petroleum Company

No Drawing. Filed Oct. 29, 1970, Ser. No. 85,291

Int. Cl. C08f 21/04, 27/06

U.S. Cl. 260—23.7 M

7 Claims

A method for preparing adducts of polybutadiene and mercapto hydroxy compounds having good adhesive properties through the reaction of mercapto hydroxy compounds with liquid polybutadiene under the influence of a free radical generator, wherein said adducts are useful as the base material in sealants, adhesives, plasticizers, paints, and the like.

3,689,451

**ELASTOMER-SILICA PIGMENT MASTERBATCHES AND PRODUCTION PROCESSES RELATING THERETO**

Oliver W. Burke, Jr., Fort Lauderdale, Fla. (1510 SW. 13th Court, Pompano Beach, Fla. 33061)

Continuation-in-part of application Ser. No. 798,215, Sept. 16, 1968, which is a division of application Ser. No. 611,250, Jan. 24, 1967, now Patent No. 3,523,096, which in turn is a continuation-in-part of applications Ser. No. 458,379 and Ser. No. 458,420, both May 24, 1965, and Ser. No. 479,806, Aug. 16, 1965, now Patent No. 3,401,017. This application July 16, 1970, Ser. No. 55,454

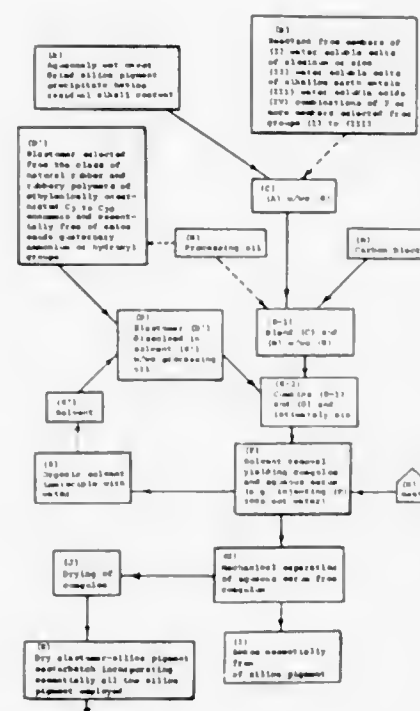
Int. Cl. C08c 11/10; C08k 1/08

U.S. Cl. 260—33.6 AO

9 Claims

Curbing of silica pigment losses and the promotion of uniformity of product in the preparation of an elastomer-silica pigment masterbatch are effected (a) by combining (1) 5 to 75 parts by weight, dry basis, of an aqueously

wet hydrated silica pigment precipitate which has a bound alkali content, which has been prepared by precipitation from an aqueous alkali metal silicate solution, and which has been continuously maintained in an aqueously wet state without having been dried after its precipitation, with (2) 5 to 75 parts by weight of carbon black; with or with-



3,689,452

**ELASTOMER-SILICA PIGMENT MASTERBATCHES AND PRODUCTION PROCESSES RELATING THERETO**

Oliver W. Burke, Jr., Fort Lauderdale, Fla. (1510 SW. 13th Court, Pompano Beach, Fla. 33061)

Continuation-in-part of application Ser. No. 798,215, Sept. 16, 1968, which is a division of application Ser. No. 611,250, Jan. 24, 1967, now Patent No. 3,523,096, which in turn is a continuation-in-part of applications Ser. No. 458,379 and Ser. No. 458,420, both May 24, 1965, and Ser. No. 479,806, Aug. 16, 1965, now Patent No. 3,401,017. This application July 16, 1970, Ser. No. 55,460

Int. Cl. C08c 11/10; C08d 9/00

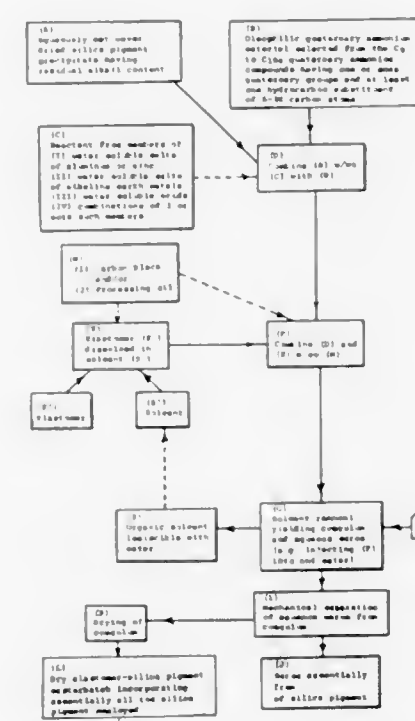
U.S. Cl. 260—33.6 AO

6 Claims

Curbing of silica pigment losses and the promotion of uniformity of product in the preparation of an elastomer-silica pigment masterbatch are effected (a) by combining (1) an aqueous slurry of hydrated silica pigment precipitate which has a bound alkali content, which has been prepared by precipitation from an aqueous alkali metal silicate solution, and which has been continuously maintained in an aqueous phase without having been dried after its precipitation, with (2) a quantity of oleophilic quaternary ammonium material, (3) combining the resulting treated silica pigment slurry with a solvent dispersion of the elastomer, with or without (4) carbon black

and/or processing oil and (5) selected reactant, and (b) removing the solvent and aqueous phase and recovering

the absence of moisture but cure to the rubbery solid elastic state upon exposure to moisture. The compositions are particularly useful as adhesives and sealants in the construction of electronic equipment in that they do not give off corrosive by-products when curing.



the resulting combination as a masterbatch essentially without loss of silica pigment.

3,689,453

**DIALLYL PHTHALATE MOLDING COMPOSITIONS**

Nicholas Richard Segro, Baltimore, Md., assignor to FMC Corporation, New York, N.Y.

No Drawing. Filed Dec. 22, 1970, Ser. No. 100,842

Int. Cl. C08f 45/10

U.S. Cl. 260—41 AG

4 Claims

Molding compositions comprising diallyl orthophthalate prepolymer and, where desired for flame retardancy, a chlorine containing monomer such as diallyl chloredate, fillers, mold release agents, and a catalyst to promote the heat advancing or thermosetting thereof, and about 2-10% by weight of an epoxy compound, based on the weight of the prepolymer plus monomer, to stabilize articles molded from the molding compositions against development of crystalline sublimate when the molded articles are exposed to high temperatures.

3,689,454

**CURABLE COMPOSITIONS**

Stanley D. Smith, Ballston Lake, and Stephen B. Hamilton, Jr., Schenectady, N.Y., assignors to General Electric Company, Waterford, N.Y.

No Drawing. Filed Jan. 6, 1971, Ser. No. 104,488

Int. Cl. C08f 11/04

U.S. Cl. 260—46.5 G

20 Claims

Fluid organopolysiloxanes which are vulcanizable at room temperature to silicone elastomers are prepared by mixing a novel catalyst such as the propanedioxy bis(ethylacetate) complex of titanium, a cross-linking agent such as methyltrimethoxysilane and a silanol chain-stopped polydiorganosiloxane fluid in the absence of moisture. These compositions are stable, free-flowing fluids in

3,689,455

**PREPARATION OF SILOXY-CARBORANYL POLYMERS**

Dwain R. Chapman, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed May 1, 1969, Ser. No. 821,145

Int. Cl. C08g 33/18

U.S. Cl. 260—46.5 E

1 Claim

Siloxy-carboranyl polymers are prepared by condensation of bis(hydroxysilyl)neocarboranes, bis(alkoxysilyl)neocarboranes or siloxanyl derivatives thereof in the presence of tetrafluoroethanesulfonic acid. The polymers obtained by this process are thermally stable fluids and elastomers.

3,689,456

**COMPOSITIONS OF EPOXY RESINS WITH 2,6-DIKETO-N-CARBOXYMETHYLMORPHOLINE**

Raymond R. Hinderstinn, Lewiston, George C. Hopkins, Clarence, and Charles S. Ilardo, Tonawanda, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Original application June 28, 1968, Ser. No. 740,853. Divided and this application Apr. 5, 1971, Ser. No. 131,456

Int. Cl. C08g 30/16

U.S. Cl. 260—47 EN

2 Claims

Epoxy resins can be cured with 2,6-diketo-N-carboxymethylmorpholine as the sole curing agent to produce fully cured, strong and hard compositions.

3,689,457

**NOVEL POLYAMIDES HAVING AN AMINE FUNCTION**

Andre Rio, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

No Drawing. Continuation of abandoned application Ser. No. 762,349, Sept. 16, 1968. This application Jan. 20, 1971, Ser. No. 108,196

Claims priority, application France, Sept. 21, 1967, 121,812

Int. Cl. C08g 20/08

U.S. Cl. 260—47 CP

5 Claims

The invention provides novel polyamides containing a 5-amino-isophthaloyl residue, optionally with other acid residues, linked via polyamine residues. These polyamides are useful, inter alia, in purifying aldehydes.

3,689,458

**QUICK-OPENING FULCRUM PACKAGE**

Harold Richard Hellstrom, 5245 Center Ave., Pittsburgh, Pa. 15232

Filed Mar. 23, 1970, Ser. No. 21,628

Int. Cl. B65d 83/00

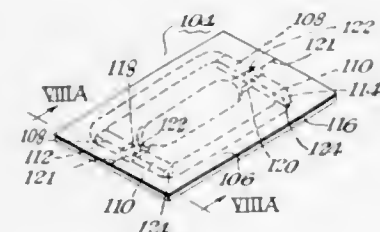
U.S. Cl. 206—56 AA

23 Claims

A quick opening package comprises a base member, at least one elongated pocket on the base member, a fran-



gible layer on the base member and secured thereto generally around the pocket for enclosing an item contained therein. Generally apposed and angulatable portions of the base member are strengthened such that an angulation fold region extending generally between the base member



portions is defined thereby. A stiffening arrangement is secured to the base member and to the pocket but only at an end portion thereof to aid in spreading the pocket for development of rupturing forces in the frangible layer upon angulation of the package and to concentrate the opening forces at the pocket end portion.

#### 3,689,459 NOVEL ETHER

Bernard M. Regan, Chicago, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.  
No Drawing. Filed Aug. 10, 1970, Ser. No. 62,679  
Int. Cl. C07c 43/00, 43/12

U.S. Cl. 260—614 F 1 Claim  
The novel organic compound difluoromethyl 1,2,2,3,3-pentafluoropropyl ether, useful as a general anesthetic agent.

#### 3,689,460 INTERPOLYMERS OF CARBON MONOXIDE AND PROCESS FOR PREPARING SAME

Kenzie Nozaki, El Cerrito, Calif., assignor to Shell Oil Company, New York, N.Y.  
No Drawing. Filed Mar. 4, 1971, Ser. No. 121,162  
Int. Cl. C08f 1/64, 13/04

U.S. Cl. 260—63 CQ 7 Claims  
High melting, crystalline interpolymers of carbon monoxide with one or more unsaturated compounds such as aliphatic monoolefins particularly ethylene, are prepared by reacting carbon monoxide with said unsaturated compounds in the presence of selected inert solvents and a catalytic amount of tetrakis(triaryl phosphine) palladium, particularly tetrakis(triphenyl phosphine) palladium.

#### 3,689,461 PROCESS FOR THE PREPARATION OF LINEAR CONDENSATION POLYESTERS

Laszlo J. Balint, Chester, Stanley D. Lazarus, Petersburg, and William N. Russell, Colonial Heights, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 812,350, Apr. 1, 1969. This application Sept. 18, 1969, Ser. No. 859,102  
Int. Cl. C07c 69/82  
U.S. Cl. 260—75 M 8 Claims  
A high molecular weight linear condensation polyester is prepared from a polycarboxylic acid and a polyol by (a) esterifying said polycarboxylic acid with said polyol by subjecting to conditions of direct esterification a flowable, uniform dispersion comprised of (1) a paste of the said polycarboxylic acid and the said polyol, and (2) at

least 3 parts by weight per part paste of a partially esterified product of said polycarboxylic acid with said polyol, and thence (b) further esterifying and polycondensing the esterification product of step (a) until there is obtained an improved polyester of the desired molecular weight.

#### 3,689,462 PROCESS FOR PREPARING POLYCARBONATES

Michael J. Maximovich, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.  
No Drawing. Filed May 19, 1971, Ser. No. 144,994  
Int. Cl. C08g 17/13

U.S. Cl. 260—77.5 D 10 Claims  
Polycarbonates prepared from an alkylene or dialkyl carbonate (or 1,2-epoxide with carbon dioxide) and monomeric polyols are prepared in good yield at atmospheric pressure and/or with high carbon dioxide concentrations in short reaction times by employing a stannate catalyst of the formula:



wherein M is an alkali metal, alkaline earth metal or ammonium, preferably potassium or sodium; and x is an integer of 1 or 2 sufficient to satisfy the valence requirements.

#### 3,689,463 METHOD OF PRODUCING LIQUID WATER- SOLUBLE UREA-FORMALDEHYDE RESINS EMPLOYING AN ARYL OR ALKYL SUL- FONIC ACID

Anatoly Abramovich Kruglikov, ulitsa Vyazovskaya 9, kv. 9; Militina Alexeevna Nikolaeva, ulitsa Vyazovskaya 13, kv. 15; Simon Borisovich Vilker, ulitsa Pervomaiskaya 70-a, kv. 12; and Viktor Vasilievich Detkov, ulitsa Tsiolkovskogo 17, kv. 13, all of Nizhny Tagil, U.S.S.R.  
No Drawing. Filed May 7, 1971, Ser. No. 141,425  
Int. Cl. C08g 9/10, 9/32

U.S. Cl. 260—70 R 10 Claims  
A method of producing liquid water-soluble urea-formaldehyde resins comprising successive condensation of urea and formaldehyde in an alkaline, acidic and neutral media. An acidic medium is created by introducing aromatic or aliphatic sulphononic acids. Concentration in the neutral medium is carried out with the addition of formaldehyde. Said process conditions ensure the producing of resins featuring an unlimited water-solubility in any proportions, such unlimited water-solubility of the resins being combined with stability of this property under prolonged storage.

#### 3,689,464 IMIDO-SUBSTITUTED POLYAMIDE COMPOSITIONS

Fred F. Holub and Milton L. Evans, Schenectady, N.Y., assignors to General Electric Company  
No Drawing. Continuation-in-part of application Ser. No. 838,315, July 1, 1969. This application Dec. 18, 1970, Ser. No. 99,653  
Int. Cl. C08g 20/20

U.S. Cl. 260—78 UA 11 Claims  
Polyamides having terminal aliphatically unsaturated imido radicals are provided and a method for making such materials. Blends of the imidosubstituted polyamides and a variety of aliphatically unsaturated organic monomers, such as styrene, N-phenylmaleimide, bismaleimides or organic polymers, such as polyphenylene oxides, polyvinyl chloride, polystyrene, polysulfone, polycarbonate, etc., also are provided. The imido-substituted compositions of the present invention can be employed as molding compounds, laminates, varnishes and adhesives.

#### 3,689,465 SULFUR-CONTAINING POLYAMIDE

Stanley D. Turk, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed July 17, 1967, Ser. No. 653,660  
Int. Cl. C08g 20/04

U.S. Cl. 260—78 A 8 Claims  
A novel sulfur-containing polyamide has the repeating units



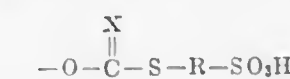
wherein each R is a saturated aliphatic or aromatic radical having up to 8 carbon atoms and R' is hydrogen, phenyl or a saturated aliphatic radical having up to 6 carbon atoms. The sulfur-containing polyamides of the invention are useful for conversion into fibers, films, formed objects, and coatings.

#### 3,689,466 SULFONATED POLYMERIC ALCOHOLS

Douglas J. Bridgeford, Champaign, and Albin F. Turbak and Noel I. Burke, Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

No Drawing. Filed Sept. 9, 1969, Ser. No. 856,455  
Int. Cl. C08b 3/00, 9/00; C08f 27/06  
U.S. Cl. 260—79.3 R 24 Claims

Polymeric alcohol derivatives consisting of polymeric alcohol sulfonic acids containing S-xanthogenate ester substituents of the general formula

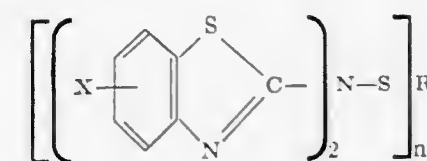


and salts of said polymeric alcohol sulfonic acids prepared by reaction of a sultone, e.g., 1,3-propane sultone, with the free acid form or a salt of a polymeric alcohol xanthogenate ester, e.g., cellulose xanthate. The novel omega-sulfonated polymeric alcohol derivatives have physical and chemical properties, e.g., solubility, viscosity, reactivity with cross-linking agents, and an anionic character, adapting them for advantageous use in a wide range of applications. The derivatives find particular utility as anti-static and anti-soiling agents which are effective when applied to a wide range of soil receptive substrates, e.g., natural and synthetic textiles.

#### 3,689,467 BENZOTHAZOLE SULFENAMIDES

Kamel Boustany and John J. D'Amico, Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Jan. 28, 1971, Ser. No. 110,658  
Int. Cl. C08c 11/62; C08f 27/06  
U.S. Cl. 260—79.5 B 11 Claims  
Compounds of the formula



wherein X is hydrogen, alkyl alkoxy, nitro, halo, or hydroxy and n is one or two; when n is one R is alkyl, cyclo-

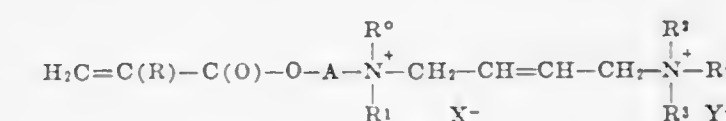
alkyl, aralkyl or aryl; when n is two R is alkylene which compounds are delayed action cure activators for rubber.

#### 3,689,468 UNSATURATED QUATERNARY MONOMERS AND POLYMERS

Harry J. Cenci, Warminster, and Travis E. Stevens, Ambler, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,059  
Int. Cl. C08f 3/64, 3/66, 15/16

U.S. Cl. 260—86.1 5 Claims  
This invention is concerned with monoethylenically unsaturated acid ester monomers, such as those of acrylic or methacrylic acid, containing a bis-quaternary ammonium halide group, such as one of the formula



R being H or methyl,  
A being (C<sub>2</sub>-C<sub>6</sub>)alkylene,  
R<sup>1</sup> being lower alkyl,  
R<sup>2</sup> being lower alkyl,  
R<sup>3</sup> being lower alkyl, R<sup>4</sup> being lower alkyl,  
X being an anion, and  
Y being an anion.

It is also concerned with addition polymers of such monomers, and methods of producing the monomers and polymers. The monomers and polymers are reasonably stable at both alkaline and acid pH values under normal temperature and pressure conditions although capable of reacting with other reactants at the point of unsaturation in the alkenyl linkage between the two quaternary nitrogen groups. The invention also concerns the use of these monomers and polymers as antistatic agents for textiles and other articles formed of hydrophobic materials, as wet-strength agents in making paper and as electroconductive aids in making of various electroconductive papers for electrostatic image reproduction systems.

#### 3,689,469 COPOLYMERS OF VINYL ALCOHOL AND METHYL METHACRYLATE AND USES THEREFOR

Harold Kirkwood Inskip, Tonawanda, N.Y., and Robert Leonard Adelman, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 15, 1969, Ser. No. 842,020  
Int. Cl. C08f 15/26

U.S. Cl. 260—86.1 3 Claims  
A copolymer of vinyl alcohol and methyl methacrylate is provided which possesses properties making it suitable for a number of uses with a proper balance of gel resistance and water sensitivity realized when the methyl methacrylate content is between about 3.5 and 5 percent by weight. In uses where gel resistance is not important the methyl methacrylate content can be as low as 2 percent. For textile warp sizing applications, particularly for polyester/cotton blends heat-set in the greige, the methyl methacrylate content can be slightly higher than 6 percent, i.e., up to 6.5 percent.







linear alkyl radicals with 1-6 carbon atoms, by etherifying with an alcohol, in the presence of an acid substance the corresponding 3-hemisuccinyloxy derivative having the same kind of optical activity. The dextrorotatory forms of the compounds of the Formula I are pharmaceutically superior to the corresponding levorotatory compounds.

**3,689,479**  
**PROCESS FOR OXIDIZING AN  $\alpha$ -HYDROXYLAMINOLACTAM TO THE CORRESPONDING  $\alpha$ -OXIMINOLACTAM**

Jan F. Van Peppen, Chester, and David Jerolamon, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.  
No Drawing. Filed July 20, 1970, Ser. No. 56,660  
Int. Cl. C07d 41/06

U.S. Cl. 260—239.3 R 8 Claims  
 $\alpha$ -Hydroxylaminolactam can be oxidized to the corresponding  $\alpha$ -oximinolactam by contacting the  $\alpha$ -hydroxylaminolactam, dissolved in an inert solvent, with an oxygen-containing gas, such as air, in the presence of ammonia or a volatile amine as a catalyst.  $\alpha$ -Oximinolactams are useful as chelating agents and  $\alpha$ -oximinocaprolactam is particularly useful as a precursor of lysine.

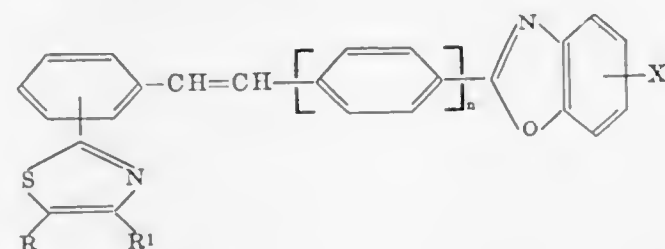
**3,689,480**  
**PHOSPHANILIC ACID DERIVATIVES**  
Burton G. Christensen, Scotch Plains, N.J., and William J. Leanza, Staten Island, N.Y., assignors to Merck & Co., Inc., Rahway, N.J.  
No Drawing. Continuation-in-part of application Ser. No. 612,800, Jan. 31, 1967. This application Aug. 5, 1969, Ser. No. 847,730  
Int. Cl. C07d 51/44; A61k 27/00

U.S. Cl. 260—239.75 4 Claims  
Fluoro substituted phosphanilic amides are produced by the reduction of the corresponding fluoro-nitrobenzenephosphonamide. The nitrobenzenephosphonamides may be prepared from the phosphonic dihalide by reaction of the dihalide with an amine. The phosphonic dihalide may be prepared from the corresponding fluoro-substituted phosphonic acid by reaction with a halogenating agent. The fluoro-phosphanilic amides are useful as anti-bacterial agents.

**3,689,481**  
**BENZOXAZOLYL OPTICAL BRIGHTENING AGENTS**

Horst Scheuermann, Ludwigshafen, and Peter-Matthias Hell, Frankenthal, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany  
No Drawing. Filed Dec. 30, 1970, Ser. No. 102,896  
Claims priority, application Germany, Jan. 2, 1970, P 20 00 027.5  
Int. Cl. C07d 91/32

U.S. Cl. 260—240 CA 1 Claim  
Optical brightening agents having the formula:



useful for the optical brightening of polyamides, cellulose esters and polyesters.

**3,689,482**  
**BASICALLY SUBSTITUTED URETHANE WITH LOCAL ANAESTHETIC ACTIVITY**

Rolf Geiger, Frankfurt am Main, Wolfgang König, Langenhain, Taunus, and Walter Siedel, deceased, by Helene Elise Siedel nee Graf, heiress, Bad Soden, Taunus, and Roman Muschawek, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 845,121, July 14, 1969. This application Dec. 9, 1970, Ser. No. 96,602  
Claims priority, application Germany, July 25, 1968, P 17 70 973.8  
Int. Cl. C07d 29/30

U.S. Cl. 260—240 K 1 Claim  
1-phenyl-propen(1)yl(3)-oxycarbonyl - 2' - piperidinoethylamide and its salts with physiologically tolerable acids having local anaesthetic activity.

**3,689,483**  
**REMOVAL OF A LOWER CARBOXYLIC ACID FROM A SOLUTION OF CEPHALEXIN THEREIN**

Hugh McCorquodale, Montrose, Angus, Scotland, and Phillip Thomas Siddons, Pinner, England, assignors to Glaxo Laboratories Limited, Greenford, Middlesex, England

No Drawing. Filed Aug. 10, 1970, Ser. No. 62,705  
Claims priority, application Great Britain, Sept. 26, 1969, 47,572/69  
Int. Cl. C07d 99/24

U.S. Cl. 260—243 C 1 Claim  
A method of removing a lower carboxylic acid from a solution of cephalexin or of 7 $\beta$ -amino-3-methylceph-3-em-4-carboxylic acid containing the lower carboxylic acid comprises contacting the solution with methanol in the presence of an acid catalyst to form the corresponding methyl carboxylate and distilling off the methyl carboxylate.

**3,689,484**  
**ALKYLATION OF PHENOTHIAZINE**

Ilgvars J. Spilners, Monroeville, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.  
No Drawing. Filed Dec. 28, 1970, Ser. No. 102,230  
Int. Cl. C07d 93/14

U.S. Cl. 260—243 A 7 Claims  
Alkyl-substituted phenothiazines useful as antioxidants for incorporation into mineral and synthetic oils are obtained in a process which comprises reacting phenothiazine and an alkyl halide in the presence of an aluminum halide catalyst.

**3,689,485**  
**PROCESS FOR THE PREPARATION OF 3,4-DIHYDRO-1,2,3-OXATHIAZIN-4-ONES**

Karl Clauss, Eppenhain, Taunus, and Gerhard Lohaus, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany  
No Drawing. Filed Jan. 7, 1971, Ser. No. 104,794  
Claims priority, application Germany, May 21, 1970, P 20 24 694.0  
Int. Cl. C07d 95/00

U.S. Cl. 260—243 R 2 Claims  
3,4-dihydro-1,2,3-oxathiazinones are obtained when reacting ketones with aryloxysulfonyl isocyanates. The compounds having low-molecular substituents are artificial sweetening agents and the derivatives having hydrophobic substituents are interfacial active agents. All of the new compounds are organic intermediates having a plurality of reactive groups.

**3,689,486**  
**3,4-DIHYDRO-1,2,3-OXATHIAZIN-4-ONES AND THEIR PREPARATION**

Karl Clauss, Eppenhain, Taunus, and Harald Jensen, Frankfurt am Main, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany  
Filed Jan. 7, 1971, Ser. No. 104,795

Claims priority, application Germany, Jan. 10, 1970, P 20 01 017.7  
Int. Cl. C07d 95/00

U.S. Cl. 260—243 R 11 Claims  
3,4-Dihydro-1,2,3-oxathiazinones, a new class of chemical compounds having a ring system being hitherto unknown, are obtained when reacting fluoro sulfonyl isocyanates with ketocompounds of alkynes. The compounds having low-molecular substituents are artificial sweetening agents and the derivatives having hydrophobic substituents are interfacial active agents. All of the new compounds are organic intermediates having a plurality of reactive groups.

**3,689,487**  
**TRIAZINYLAMINO SUBSTITUTED DIMETHYL ETHERS**

Paul J. Mason, Rte. 2, Box 973; William R. Moore, 12565 Brook Lane, both of Chester, Va., and Harry E. Ulmer, 2503 W. Broadway, Hopewell, Va.

Division of Ser. No. 757,456, Sept. 4, 1968, Pat. No. 3,595,639. This application Jan. 27, 1971, Ser. No. 110,335  
Int. Cl. C07d 55/20

U.S. Cl. 260—249.8 3 Claims  
N,N'-bis[(2-chloro-4-alkylamino-6-s-triazinyl)amino]-dimethyl ethers are prepared by reacting a 2-alkylamino-4-amino-6-chloro-s-triazine with formaldehyde in alkaline solution. The products are highly selective herbicides.

**3,689,488**  
**CERTAIN S-TRIAZOLO 1,5-A PYRIMIDINES**  
Michael Dukes, Macclesfield, England, assignor to Imperial Chemical Industries Limited, Millbank, London, S.W., England

No Drawing. Filed Aug. 14, 1969, Ser. No. 850,221  
Claims priority, application Great Britain, Sept. 13, 1968, 43627/68; May 1, 1969, 22266/69  
Int. Cl. C07d 57/18

U.S. Cl. 260—256.4 F 0 Claims  
A series of novel 5-(or 7-)oxo or thioxo dihydro-s-triazolo[1,5-a]pyrimidine derivatives bearing an amino, substituted amino or carboxy derivative in the 2-position, an alkyl or alkenyl substituent in the 4-position and, optionally a halogen or alkyl substituent in the 6-position. These compounds prevent broncho-spasm and are therefore useful in the treatment of asthma.

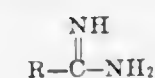
**3,689,489**  
**SUBSTITUTED 4-AMINOQUINAZOLINES AND A PROCESS FOR THEIR PRODUCTION**

Klaus Wagner, Cologne, Buchheim, and Ernst Roos, Cologne, Flittard, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany  
Filed Aug. 13, 1969, Ser. No. 849,868

Claims priority, application Germany, Aug. 31, 1968, P 17 95 271.5  
Int. Cl. C07d 51/48

U.S. Cl. 260—256.4 Q 9 Claims

A process for preparation of 4-aminoquinazolines and novel 4-aminoquinazolines. In the process a benzonitrile derivative substituted in the 2-position by a halogen atom or alkoxy, alkylthio, aryloxy or arylthio group and in the 3- and/or 5-position by an electronegative radical, is reacted with a compound corresponding to the general formula



in which R represents a hydrogen atom, a hydrocarbon radical, an amino group, mono- or di-substituted amino group or a substituted sulphhydryl group, in an inert solvent.

**3,689,490**  
**DERIVATIVES OF 2-(4-ARYL-1-PIPERAZYL)-BICYCLO[3.3.1]NONAN-9-ONES**

Robert Norman Schut, Edwardsburg, Mich., and Frederick Edmund Ward, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed May 19, 1969, Ser. No. 825,935  
Int. Cl. C07d 51/70

U.S. Cl. 260—268 BC 5 Claims  
Compounds which are derivatives of 2-(4-aryl-1-piperazyl)-bicyclo[3.3.1]nonan-9-ones are prepared that demonstrate useful tranquilizing activity. These compounds are prepared by reacting 2-(4-aryl-1-piperazyl)bicyclo[3.3.1]nonan-9-ones with a suitable compound in a carbonyl addition reaction.

**3,689,491**  
**METHOD OF PRODUCING PYRIDINE**

Boris V. Suvorov, ulitsa Pushkina, 10 2/44, kv. 27; Alfred Davydovich Kagarlitsky, ulitsa Timiryazeva, 71, kv. 44; Iskra Ivanovna Kan, ulitsa Masanchi, 76, kv. 68, and Olga Borisovna Lebedeva, 3 mlkoraion, 31, kv. 17, all of Alma-Ata, U.S.S.R.

Filed June 7, 1971, Ser. No. 150,792  
Int. Cl. C07d 31/12

U.S. Cl. 260—290 R 1 Claim  
A method of producing pyridine, comprising vapor-phase oxidation of 2-picoline with oxygen at a temperature of 300°-380° C on oxide vanadium-titanium catalysts at a molar ratio of vanadium pentoxide to titanium dioxide of 1:0.5-1.6.

The process of oxidation is carried out at a molar ratio of 2-picoline to oxygen, ammonia and water equal to 1:10-60:1-10:40-100 respectively. The resulting oxidation products are entrapped by dissolving them in water. The aqueous ammonia solution of the reaction products is subjected to heat treatment at a temperature of 250°-300° C and a molar ratio of ammonia to said reaction products of at least 0.5 mole of ammonia per mole of the said products, pyridine being thus obtained.

The present method makes it possible to produce pyridine with a yield of up to 87-97 percent as calculated for the 2-picoline used and up to 90-99 percent as calculated for the 2-picoline reacted.

**3,689,492**  
**1-[4'-OXO-4-(P-FLUOROPHENYL)-N-BUTYL-1']-4-ACETYL-4-(M-HYDROXY-PHENYL)-PIPERIDINE**

Hans-Detlef Schroeder, Am Lenneberg 2; Herbert Merz, Rheinstrasse 16 8/1; Adolf Langbein, Albrecht Duerer Strasse 8, all of Ingelheim/Rhine, Germany; Kurt Freter, c/o Pharma Research 250 Hymus Blvd., Pointe Claire, Quebec, Canada; Karl Zeile, Taunusstrasse 11; Peter Danneberg, Am Lenneberg 2, both of Ingelheim/Rhine, Germany; Rolf Giesemann, Beethovenstrasse 14, Bingen/Rhine, Germany, and Helmut Wick, Gehaurweg 10, Ingelheim/Rhine, Germany

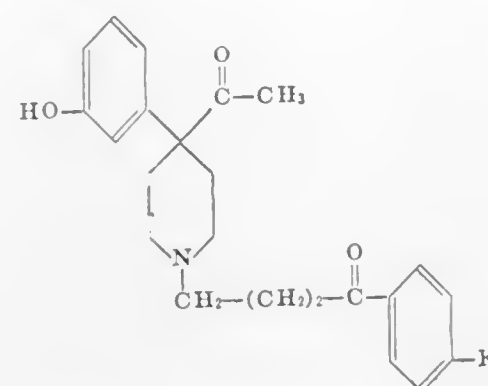
Continuation-in-part of Ser. No. 866,380, Oct. 14, 1969, abandoned, which is a continuation-in-part of Ser. No. 732,058, May 27, 1968, abandoned, which is a continuation-in-part of Ser. Nos. 574,574, Aug. 24, 1966, abandoned, and Ser. No. 700,360, Jan. 25, 1968, abandoned. This application Dec. 3, 1970, Ser. No. 94,952

Claims priority, application Germany, Sept. 10, 1965, B 83 682; Jan. 26, 1967, B 90 912

Int. Cl. C07d 29/20

U.S. Cl. 260—293.8 1 Claim  
Compound of the formula





and non-toxic, pharmacologically acceptable acid addition salts thereof, useful as analgesics in warm-blooded animals.

3,689,493

## 5-,6-AND 7-AZACHROMONES

William Hubert Hunter, Amersham, and John Barry Harbridge, Thundersley, Benfleet, both of England, assignors to Fisons Pharmaceuticals Ltd., Loughborough, Leicestershire, England

Filed March 17, 1970, Ser. No. 20,409

Int. Cl. C07d 99/04

U.S. Cl. 260—295 F

8 Claims

Azachromone-2-carboxylic acids, processes for their preparation, pharmaceutically acceptable derivatives thereof and compositions containing them. The compounds of the invention are indicated for use in inhibiting the effects of antibody-antigen reactions.

3,689,494

## N-PYRIDINEALKYL-ALKANOLAMINE NITRATES

William R. J. Simpson, 269 River Road, Hanover, N.J.

Continuation-in-part of Ser. No. 124,490, March 15, 1971.

This application March 31, 1971, Ser. No. 129,998

Int. Cl. C07d 31/42

U.S. Cl. 260—296 R

3 Claims

Nitrate esters of N-pyridinealkyl-alkanolamines, e.g., 2,2'-(2-{(α-pyridine-ethyl)-imino} diethanol dinitrate, are prepared by nitrating N-pyridinealkyl-alkanolamines and are useful as anti-analgesic agents.

3,689,495

## SYNTHESIS OF CRYSTAL VIOLET

George Y. Lohmann, Jr., 110 Bidwell Parkway, Buffalo, N.Y.

Filed Sept. 4, 1969, Ser. No. 855,359

Int. Cl. C09b 11/12

U.S. Cl. 260—391

2 Claims

A triphenyl methane dye, particularly crystal violet, is synthesized by reacting an aniline, particularly N, N-dimethyl aniline, with a carbon tetrahalide, particularly carbon tetrachloride, in the presence of aluminum chloride as a catalyst.

3,689,496

## MANUFACTURE OF DIAKYL PYRIDINES

Dieter Dieterich, and Rudolf Braden, both of Leverkusen, Germany, assignors to Farbenfabrik Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 13, 1969, Ser. No. 849,919

Claims priority, application Germany, Aug. 27, 1968, P 17 95 239.5

Int. Cl. C07d 31/02

U.S. Cl. 260—290 P

6 Claims

Alkyl pyridines are manufactured by reacting R—C(CH<sub>2</sub>OH)<sub>3</sub> (a trimethylolalkane) with ammonia or an amine, preferably in the presence of a polar solvent (water) and an acid catalyst.

3,689,497  
SUBSTITUTED BENZOPYRANO (3,4-B) PYRIDINES AND PROCESS FOR THEIR PREPARATION

Richard E. Brown, Hanover, and John Shavel, Jr., Mendham, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

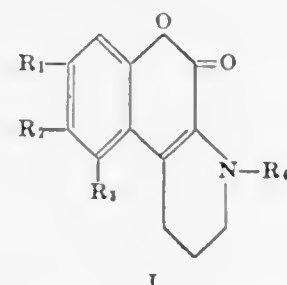
Filed March 9, 1971, Ser. No. 122,508

Int. Cl. C07d 31/34

U.S. Cl. 260—295 T

5 Claims

Substituted benzopyrano pyridines having the following structural formula are disclosed:



In the above formula, R<sub>1</sub> and R<sub>2</sub> are hydrogen, hydroxy, lower alkoxy or lower alkyl or R<sub>1</sub>, R<sub>2</sub> taken together with the carbon atoms to which they are attached form a methylenedioxy group.

In addition, R<sub>3</sub> can also be an oxyacetic acid or a derivative thereof, such as an ester, amide or a substituted amide. R<sub>4</sub> is hydrogen or hydroxy, R<sub>4</sub> is hydrogen or an omega-amino alkyl in which the omega-amino group can be further substituted with one or two alkyl groups or may be a part of a heterocyclic system such as morpholine or imidazoline. In addition, R<sub>4</sub> may be an acetic acid or a derivative thereof such as an ester, amide or substituted amide. These compounds are prepared by known reactions. They are useful as bronchodilators.

3,689,498

## HALIDE AND SULFATE SALTS OF 5-AMINO-ISOXAZOLYL METHYLENE DIAKYLAMINE

Willy Leimgruber, Montclair, and Manfred Weigle, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed July 20, 1970, Ser. No. 56,715

Int. Cl. C07d 85/22

U.S. Cl. 260—307 H

3 Claims

Halide and sulfate salts of 5-amino-4-isoxazolylmethylene dialkylamine and a process for the preparation of these salts. These salts are intermediates for 4-amino-2-methylpyrimidine utilized in the synthesis of thiamine.

3,689,499

## METHOD FOR PREPARING IMINOXAZOLIDINES FROM GUANIDINES

Sidney H. Metzger, Jr., Franz-Hiltzenstrasse 28, 509 Leverkusen-Neuenhof, Germany

Continuation-in-part of Ser. No. 402,951, Oct. 9, 1964, Pat. No. 3,594,387, and a continuation-in-part of Ser. No. 544,683, April 25, 1966, abandoned. This application Oct. 28, 1968, Ser. No. 771,364

Int. Cl. C07d 85/26

U.S. Cl. 260—307 F

11 Claims

Iminoxazolidines are prepared by reacting a guanidine compound with an alkylene oxide or an alkylene carbonate. The iminoxazolidines are useful as stabilizers for ester containing compositions.

3,689,500  
O,O-DIETHYL-O-[(1-METHYL-3-PHENYL-S-TRIAZOLYL-(5)) PHOSPHOROTHIOATE

Beat Bohner, Binningen/BL, and Kurt Gubler, Riehen/BS, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 16, 1970, Ser. No. 90,100

Int. Cl. C07f 9/08, 9/16

U.S. Cl. 260—308 R

1 Claim

O,O-Diethyl-O-[(1-methyl-3-phenyl-s-triazolyl-(5))] phosphorothioate is an active agent for the control of pests.

3,689,501

## ANTHRAQUINONE COMPOUNDS CONTAINING A TRIAZOLYLTHIO GROUP

Max A. Weaver, and Ralph R. Giles, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

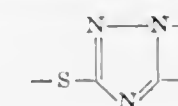
Filed Feb. 27, 1969, Ser. No. 803,116

Int. Cl. C07d 55/06, 57/00, 99/10

U.S. Cl. 260—308 R

13 Claims

Anthraquinone compounds containing the group



are useful as dyes for hydrophobic textile materials such as polyester, polyamide, and cellulose acetate fibers.

3,689,502

## PREPARATION OF N-(2-ALKYLTHIOETHYL) NITROIMIDAZOLES

Neil Montgomery Scollick, New London, Conn., and Eric Frederick James Thorpe, Birmington, England, assignors to Pfizer Inc., New York, N.Y.

Filed Dec. 14, 1970, Ser. No. 98,212

Claims priority, application Great Britain, Dec. 17, 1969, 61,415/69

Int. Cl. C07d 63/12

U.S. Cl. 260—309

6 Claims

Alkylation of 2-alkyl-5-nitroimidazole with 2-alkylthioethanols in the presence of a hydrogen halide and Lewis acid in a reaction-inert solvent at 70°–120° C.

3,689,503

## INDOLE-2-CARBOXYLATES

Brian E. Reynolds, Dresher, Pa., and John R. Carson, Norristown, Pa., assignors to McNeil Laboratories, Inc.

Division of Ser. No. 828,727, May 28, 1969, which is a continuation-in-part of Ser. No. 734,532, June 5, 1968, abandoned. This application July 30, 1970, Ser. No. 64,925

Int. Cl. C07d 27/56

U.S. Cl. 260—326.13 R

6 Claims

Compounds of the class of 2,3,4,5-tetrahydro-1H-1,4-diazepino[1,2a]indoles useful for their pharmacological properties and novel intermediates used in the syntheses thereof.

3,689,504

## N-SUBSTITUTED-ALPHA-METHYL-3,4-(METHYLENEDIOXY) PHENETHYLAMINES

Bruce Wayne Horrom, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

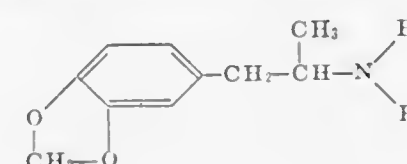
Division of Ser. No. 770,126, Oct. 23, 1968, abandoned. This application Dec. 24, 1970, Ser. No. 101,441

Int. Cl. C07d 13/10

U.S. Cl. 260—340.5

3 Claims

N-substituted-α-methyl-3,4-(methylenedioxy)-phenethylamines of the formula:



wherein R is cyclopropyl or cyclopropylmethyl. The compounds are useful as appetite depressants.

3,689,505

## CRYSTALLINE PLICATIN

John Howard, Shelton, Wash., assignor to International Telephone and Telegraph Corp., New York, N.Y.

Filed May 27, 1969, Ser. No. 828,378

Int. Cl. C07d 5/32

U.S. Cl. 260—343.3

7 Claims

A new composition of matter comprising the pure crystalline γ-lactone of plicatic acid (i.e., crystalline plicatin) is prepared. The new processes for preparing this crystalline plicatin comprise dissolving crystalline plicatic acid tetrahydrate in an excess of an inert, neutral solvent, heating the resulting solution and then rapidly cooling the solution whereupon pure crystalline plicatin is obtained. Acid catalysts in catalytic amounts may be incorporated into the plicatic acid-solvent solution.

3,689,506

## BENZOFURAN DIAMIDINE COMPOUNDS

Otto Dann, c/o Farbwerke Hoechst AG., Frankfurt am Main, Germany

Division of Ser. No. 731,287, May 22, 1968, Pat. No.

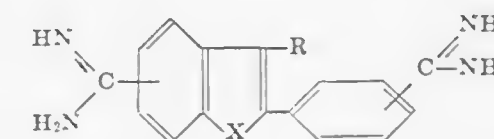
3,652,591. This application April 27, 1970, Ser. No. 43,263 Claims priority, application Germany, May 26, 1967, D 53173

Int. Cl. C07d 5/42

U.S. Cl. 260—346.2 R

4 Claims

New diamidine compounds having trypanocidal action and corresponding to the general formula



in which R represents hydrogen or lower alkyl, and X represents oxygen, —NH— or —CH<sub>2</sub>— and salts of these compounds with inorganic or organic acids.

3,689,507

## 2-ORGANYLOXY-2,3-DIHYDRO-5-BENZOFURANYL ESTERS OF ALKYL SULFONIC ACIDS

Peter Stuart Gates, Cambridge; John Gillon, Sheldford, and David Thomas Sagers, Saffron Essex, all of England, assignors to Tysons Limited, Felixstowe, Suffolk, England

Filed May 20, 1969, Ser. No. 826,274

Int. Cl. C07d 5/36

U.S. Cl. 260—346.2 R

8 Claims

2,3-dihydro benzofuranyl-5-esters, particularly esters of alkyl sulfonic acids which possess physiological activity, which are particularly useful as herbicides and also as plant growth regulants.

3,689,508

## 2-HALO-1,2-EPOXYPROPYLPHOSPHONIC ACID AND DERIVATIVES

Edwin F. Schoenewaldt, Watchung, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 729,414, May 15, 1968, abandoned. This application Jan. 7, 1971, Ser. No. 104,787

Int. Cl. C07f 9/33, 9/40

U.S. Cl. 260—348 R

5 Claims

(±)- and (—)-(cis-1,2-epoxypropyl)-phosphonic acids and non-toxic salts thereof are prepared by a dehalogenation process comprising reacting a 1,2-epoxypropylphosphonic acid compound substituted at the 2-position with halogen, with a dehalogenating agent. (±)- and (—)-(cis-1,2-epox-



propyl)-phosphonic acids and salts thereof are active antibiotic agents.

3,689,509

Patent Not Issued For This Number

3,689,510

## DISPERSIBLE ANTHRAQUINONE DYESTUFFS

Hans-Peter Kolliker, Munchstein/BL; Alfred Staub, Binningen/BL, and Peter Hindermann, Bottmingen/BL, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed April 1, 1970, Ser. No. 24,810

Int. Cl. C09b 1/50

U.S. Cl. 260—376

3 Claims

Difficultly water-soluble anthraquinone dyestuffs free from water-solubilizing groups which dissociate acid in water bearing in at least one  $\beta$ -position, either directly or by way of a bridging member, the grouping  $-Y-O-COOR$ , wherein Y represents an alkylene group, optionally substituted by a hydroxyl group and R represents an optionally substituted aliphatic, cycloaliphatic or aromatic radical; these dyestuffs being suited particularly for the dyeing of synthetic organic fibers, especially polyethylene glycol terephthalate fibers, affording dyeings on these fibers which have good fastness properties and especially good fastness to light and sublimation.

3,689,511

## PROCESS FOR PRODUCTION OF ERGOSTA-4,22-DIEN-3-ONE FROM ERGOSTEROL

Donald E. Ayer, Kalamazoo, Mich., and David R. White, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed June 17, 1971, Ser. No. 154,227

Int. Cl. C07c 167/00, 167/34

U.S. Cl. 260—397.2

6 Claims

A process for the production of ergosta-4,22-dien-3-one from ergosterol. The intermediate 4,22-ergostadiene-3-one is readily converted by known methods to progesterone which is a valuable progestational agent and intermediate from which other highly active steroids are derived.

3,689,512

## NOVEL 3-ETHERIFIED-1,3,5(10)-TRIENE-STERIODS AND PROCESS THEREOF

Harshavadan C. Shah, Collingdale; George C. Buzby, Jr., Philadelphia, and Herchel Smith, Bryn Mawr, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Oct. 6, 1970, Ser. No. 78,583

Int. Cl. C07c 169/20

U.S. Cl. 260—397.4

18 Claims

Disclosed are new and novel 3-cyclobutylloxy, 3-cyclopropylmethoxy and 3-cyclobutylmethoxy-1,3,5(10)-trien-steroids and a method for the production thereof by reacting the corresponding 3-hydroxy steroids with a (lower)alkoxide in a (lower)alkanol followed by an appropriate tosylate or halide of cyclopropylmethyl, cyclobutyl and cyclobutylmethyl. The new and novel compounds are useful for depressing lipid levels in animals.

3,689,513

## INHIBITORS OF OXIDATIVE DEGRADATION

Maurice Edward Cain, Welwyn Garden City; Brian Saville, Welwyn, and Geoffrey Thomas Knight, Shefford, all of England, assignors to The Natural Rubber Producers' Research Association, London, W.C. 2, England

Filed July 14, 1969, Ser. No. 841,610

Claims priority, application Great Britain, July 23, 1968, 35,194/68

Int. Cl. C07c 87/50, 95/08

U.S. Cl. 260—404.5

10 Claims

Novel secondary aromatic-aliphatic amines having anti-oxidant properties are prepared by reacting aromatic nitroso amines or phenols with olefins having at least one hydrogen atom attached to a carbon atom which is in the  $\alpha$ -position with respect to a carbon-carbon double bond. The reaction may be performed by heating the reactants together under an inert atmosphere in the presence of a polar or non-polar organic solvent, or using the olefin as a solvent.

3,689,514

## SUPPOSITORY VEHICLE AND PROCESS OF MAKING SAME

Rudolf Neissner, Hamburg-Melendorf, and Eckhard Schulz, Halstenbek, near Hamburg, both of Germany, assignors to Edelfettwerke Werner Schlueter, Hamburg 57, Germany

Filed May 21, 1969, Ser. No. 826,677

Int. Cl. C11c 3/08; A61k 9/06

U.S. Cl. 260—410.8

6 Claims

The suppository vehicle material of this invention consists of hard fat, the hydroxyl number of which has been reduced to less than 10 and preferably to less than 3, by esterification of the free hydroxyl groups of said hard fat with mono-alkanoic acids with one to eight carbon atoms. Such suppository vehicle material is especially suitable for preparing suppositories with drugs having acid groups, such as acetyl salicylic acid. The resulting suppositories are stable even on prolonged storage and at deep freeze temperatures, do not become brittle, have a sharp melting point, and solidify rapidly and completely in suppository molds.

3,689,515

## VANADYL OXALATE COMPOUNDS AND PROCESS FOR PRODUCING SAME

William Novis Smith, Jr., Exton, Pa., assignor to Foote Mineral Company, Exton, Pa.

Filed June 4, 1971, Ser. No. 150,055

Int. Cl. C07f 9/00

U.S. Cl. 260—429 R

8 Claims

Vanadyl oxalate compounds, particularly vanadyl oxalate monohydrate and vanadyl oxalate sesquihydrate, are prepared by reacting vanadium pentoxide with oxalic acid dihydrate or anhydrous oxalic acid in an acetic acid solvent system.

3,689,516

## BIS-CARBOXYETHYL GERMANIUM SESQUIOXIDE AND PROCESS FOR PREPARING SAME

Kazuhiko Asai, Tokyo-to, and Kazuo Makabe, Kamakura-shi, both of Japan, assignors to Daiichi Yakuhin Sangyo Kabushiki Kaisha, Tokyo-to, Japan

Filed March 7, 1969, Ser. No. 805,370

Claims priority, application Japan, March 29, 1968, 43/20085

Int. Cl. C07j 7/00; A61k 27/00

U.S. Cl. 260—429 R

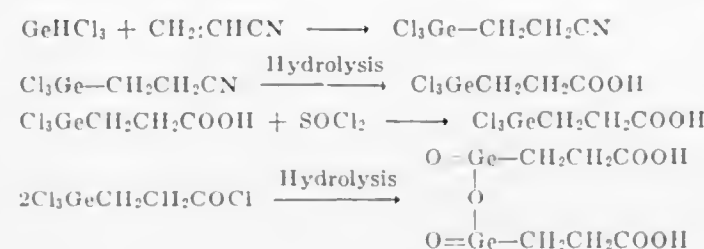
2 Claims

The compound bis-carboxyethyl germanium sesquioxide is prepared as illustrated by the following equations:

SEPTEMBER 5, 1972

CHEMICAL

277



3,689,517

## NICKEL TRITHIOCARBONATE COMPOUNDS

Jonathan Turner Carriel, South Nyack, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed April 7, 1971, Ser. No. 132,163

Int. Cl. C07f 15/04; A01n 9/20

U.S. Cl. 260—439 R

13 Claims

Novel derivatives of triamino nickel trithiocarbonate are prepared by reacting the latter with ethylenediamine or diethylenetriamine. Triamino nickel trithiocarbonate and the derivatives thereof, e.g., ethylene-diamine bis-(diamino nickel trithiocarbonate) are effective as light stabilizing additives in polymers and as fungicides.

3,689,518

Patent Not Issued For This Number

3,689,519

## PREPARATION OF CHLOROSILANES FROM DISILOXANES

Marcel Lefort, Caluire, France, assignor to Rhone-Poulenc S.S., Paris 8e, France

Filed Aug. 20, 1971, Ser. No. 173,703

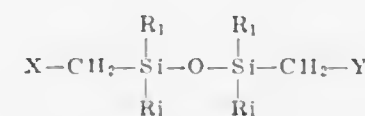
Claims priority, application France, Aug. 21, 1970, 7030754

Int. Cl. C07f 7/12

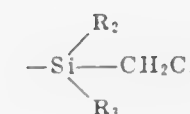
U.S. Cl. 260—448.2 E

6 Claims

Chlorosilanes are obtained by reacting disiloxanes of formula:



wherein  $\text{R}_1$  is hydrogen or an aliphatic or cycloaliphatic radical and X and Y are hydrogen, chlorine or



wherein  $\text{R}_2$  and  $\text{R}_3$  are hydrogen, chlorine or an aliphatic, cycloaliphatic, phenyl, phenylalkyl, alkylphenyl, alkoxy or cycloalkoxy radical; with thionyl chloride in the presence of sulphuric, orthophosphoric or pyrophosphoric acid.

3,689,520

## CATALYTIC PREPARATION OF AROMATIC ISOCYANATES

Eric Smith, Madison, Conn., assignor to Olin Mathieson Chemical Corporation

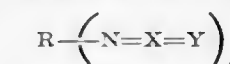
Filed Feb. 3, 1969, Ser. No. 796,208

Int. Cl. C07c 119/04

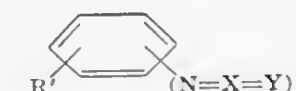
U.S. Cl. 260—453 PC

20 Claims

The process for preparing an organic isocyanate by reacting an organic nitro compound with carbon monoxide in the presence of a catalyst system comprising a halide of a noble metal and a heterocumulene compound having the formula:



wherein R is an aryl moiety, X is C or S; Y is O, S or NR where R has the same meaning as previously described; n is an integer of from 1 to 2 inclusive and with the proviso that when Y is S, then X is C. Especially useful heterocumulene compounds include compounds of the formula:



wherein  $\text{R}'$  is selected from the group consisting of hydrogen, alkyl, aryl, alkaryl, and aralkyl; X is C or S; Y is S, O or  $-\text{NR}''$ , wherein  $\text{R}''$  is an aryl group; and n is an integer of from 1 to 2 inclusive and with the proviso that when Y is S, then X is C. Examples of preferred heterocumulene compounds include phenyl isocyanate, p-tolyl isocyanate, phenyl isothiocyanate, p-tolyl isothiocyanate, 2,4-toluene diisocyanate, N-sulfinyl-p-toluidine, N-sulfinyl aniline, diphenyl carbodiimide, and N,N'-di-p-tolyl carbodiimide. The noble metal halide is preferably a halide of palladium, rhodium, iridium, rhenium, platinum, and mixtures thereof. The catalyst system may also include molybdenum trioxide or another metal oxide.

3,689,521

## ORGANIC COMPOUNDS AND PROCESSES

Gordon L. Bundy, Kalamazoo, Mich., and Norman A. Nelson, Galesburg, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

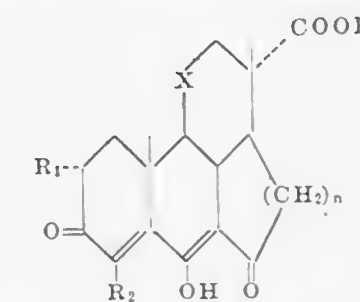
Filed July 28, 1969, Ser. No. 845,526

Int. Cl. C07c 64/74

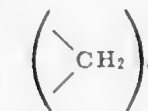
U.S. Cl. 260—468.5

1 Claim

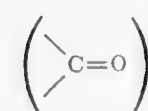
This invention relates to novel ring-D seco steroid transformation products, of the following formula and tautomeric forms thereof and to processes for their preparation:



wherein R is lower-alkyl,  $\text{R}_1$  and  $\text{R}_2$  are each hydrogen or methyl, X is methylene

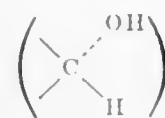


carbonyl

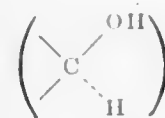




$\alpha$ -hydroxymethylene



or  $\beta$ -hydroxymethylene



and  $n$  is the whole number 1, 2, or 3. The compounds of the above Formula 1 are active anti-inflammatory agents.

3,689,522

# FLUORINATED ESTERS WITH A PESTICIDE ACTION

Giorgio Rossi; Giannantonio Micheli, both of Milan, and Paride Paolucci, Rimini, all of Italy, assignors to Montecantini Edison S.P.A., Milan, Italy

Filed Nov. 15, 1968, Ser. No. 776,274

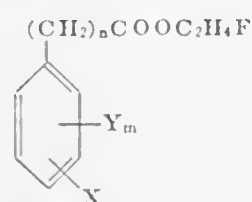
Claims priority, application Italy, Nov. 16, 1967, 22760 A/67

Int. Cl. A01n 9/24; C07c 69/76, 69/78

U.S. Cl. 260—469

4 Claims

Described are fluorinated aromatic compounds of the formula:



wherein  $n = 0$  or  $\geq 1$  and  $m = 0, 1$  or  $2$ ; when  $n = 0, m = 0$  or  $1$ ; when  $n = 1, m = 0, 1$  or  $2$ ; when  $n > 1, m = 0$ ; and

- when  $n = 0, m = 0$ , X may be alkyl with a linear or branched chain, alkoxyl, hydroxyl, phenyl optionally substituted, nitro, halo, carboxy-2-fluoro-ethyl and acyl;
- when  $n = 0, m = 1$ , X and Y equal or different from each other, may be alkyl with a linear or branched chain, alkoxyl, hydroxyl, phenyl optionally substituted, nitro, halo, acyl;
- when  $n = 1, m = 0$ , X may be cyclohexyl, phenyl, optionally substituted, benzyl, benzoyl, azophenyl;
- when  $n = 1, m = 1$  or  $2$ , X and Y, the same or different from each other, may be nitro or halo;
- when  $n > 1, m = 0$ , X may be halo, alkoxyl, phenyl optionally substituted.

3,689,523

# SUBSTITUTED HALOALKANESULFONANILIDES

Ronald J. Trancik, White Bear Lake; George G. I. Moore, Birchwood, and Joseph Kenneth Harrington, Edina, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

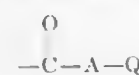
Continuation-in-part of Ser. No. 28,130, April 13, 1970, abandoned. This application Jan. 4, 1971, Ser. No. 103,802

Int. Cl. C07c 143/74

U.S. Cl. 260—470

19 Claims

Substituted haloalkanesulfonamides in which the sulfonamido nitrogen is optionally substituted by a cation, an alkyl group or a member of the group



wherein A is oxygen or a carbon-carbon bond, Q is a lower alkyl group, the anilide phenyl and another phenyl are linked by a group selected from  $-\text{CHOH}-$ ,  $-\text{CHONCH}_2-$ ,  $-\text{C}(\text{CH}_3)_2\text{OH}-$  and  $-\text{C}(\text{C}_6\text{H}_5)_2\text{OH}-$  and the phenyl rings

are optionally substituted. These compounds are physiologically active, for example as anti-inflammatory agents, antimicrobial agents or herbicides.

3,689,524

# PHENETHYLAMINE DERIVATIVES

David Jack; David Hartley, and Lawrence Henry Charles Lunts, all of London, England, assignors to Allen & Hansbrys Limited, London, E. 2, England

Filed May 27, 1970, Ser. No. 41,053

Claims priority, application Great Britain, May 30, 1969, 27,407/69

Int. Cl. C07c 101/12, 101/42, 101/72

U.S. Cl. 260—471 A

3 Claims

The present invention provides compounds of the general formula 1 and physiologically acceptable addition salts thereof:



in which  $R^1$  represents a hydrogen atom or a lower alkyl group;

$R^2$  represents a hydrogen atom or a benzyl or benzhydryl group;

$R^3$  represents a hydrogen atom or a lower alkyl group or  $R^3$  represents an arylalkyl or aryloxyalkyl radical, which radicals may optionally be substituted by one or more alkoxy or hydroxyl groups;

Z represents a group of formula  $-(\text{CH}_2)_n\text{Y}$  in which  $n$  has the value of 0, 1 or 2, and Y represents a hydroxyl radical (except when  $n$  has the value 0) or an alkoxy carbonyl group of the formula  $\text{COOR}$  where R represents a hydrogen atom or a lower alkyl group, or Y represents an amido group of formula  $\text{CONR}^2\text{R}^6$  in which  $R^5$  and  $R^6$  are as defined below or a group of formula  $-\text{NR}^4\text{CONR}^2\text{R}^6$ , or  $-\text{NR}^4\text{SO}_2\text{R}^7$  (in which  $R^4, R^5$  and  $R^6$ , which may be the same or different, represent hydrogen atoms or lower alkyl groups and  $R^7$  represents a lower alkyl group) except where  $n = 0$  and  $Y = \text{NR}^4\text{SO}_2\text{R}^7$ ,  $R^4$  is not hydrogen. Preferably at least one of the groups  $R^1, R^2$  and  $R^3$  is other than hydrogen, particularly when Z represents a  $-\text{COOR}$  group.

3,689,525

# P-ALKOXYPHENYL ESTERS OF 4-CAPRONYLOXY BENZOIC ACID

Bruno Scheurle, Königstein, Taunus, and Kans Kelker, Frankfurt am Main, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Feb. 26, 1971, Ser. No. 119,349

Claims priority, application Germany, Feb. 28, 1970, P 20 09 528.7

Int. Cl. C07c 69/78

U.S. Cl. 260—473 R

3 Claims

N-(4-methoxybenzylidene)-4'-O-n-butylaminophenol and 4-methoxy- or 4-ethoxybenzylidene-4'-n-butyl aniline form enantiotropic nematic phases which are stable at room temperature or slightly above. If as third component 4-capronylhydroxy benzoic acid-4'-alkoxy phenol ester is added wherein alkoxy stands for ethoxy and butoxy, nematic phases are obtained which have melting points below  $0^\circ\text{C}$ . The new nematogenic mixtures are useful for example as solvents for the NMR-spectroscopy.

3,689,526

# PREPARATION OF ESTERS OF

## TETRACHLOROTEREPHTHALIC ACID

Delbert L. Hanna, Oak Park, Ill., assignor to Melsical Chemical Corporation, Chicago, Ill.

Continuation of Ser. No. 477,923, Aug. 6, 1965, abandoned.

This application Feb. 20, 1970, Ser. No. 13,176

Int. Cl. C07c 69/82

U.S. Cl. 260—475 R

13 Claims

A process for the preparation of mono- and dialkyl esters of tetrachloroterephthalic acid which comprises reacting a lower alkyl sulfuric ester and tetrachloroterephthalic acid in a reaction medium having an acid strength greater than 100 percent sulfuric acid.

3,689,527

# PROCESS FOR ESTERIFICATION OF

## TETRACHLOROTEREPHTHALIC ACID

Delbert L. Hanna, Oak Park, Ill., assignor to Velsical Chemical Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 477,927, Aug. 6, 1965, abandoned. This application Feb. 27, 1969, Ser. No. 803,072

Int. Cl. C07c 69/82

U.S. Cl. 260—475 R

8 Claims

A process for the esterification of tetrachloroterephthalic acid which comprises reacting tetrachloroterephthalic acid and an alkylating agent in an aqueous medium having a pH between about 5 and about 10.

3,689,528

# UREA DERIVATIVES OF DODECAHYDRO-5,9-METHANOBENZOCYCLOCTENES

Edward J. Merrill, Whippany, N.J., assignor to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.

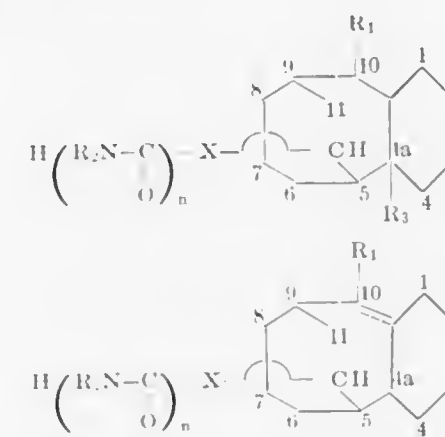
Division of Ser. No. 678,162, Oct. 24, 1967, Pat. No. 3,498,993, which is a continuation-in-part of Ser. No. 401,978, Oct. 6, 1964, abandoned. This application Jan. 7, 1970, Ser. No. 1,290

Int. Cl. C07c 125/06

U.S. Cl. 260—482 C

4 Claims

Substituted dodecahydro-5,9-methanobenzocyclooctenes of the formula I:



wherein  $R_1, R_2, R_3$  and X are as defined below. These compounds are useful as anti-arrhythmic agents.

3,689,529

# PROCESS OF MANUFACTURING CHLOROPHENYL ESTERS

Jean Leheureau, Rambert L'ile Barbe, and Jase M. Moyne, Caluire, both of France, assignors to Progil, Paris 8 eme, France

Filed July 8, 1969, Ser. No. 840,041

Claims priority, application France, July 15, 1968, 6850222

Int. Cl. C07c 67/02

U.S. Cl. 260—479 R

5 Claims

Esters of organic acids and chlorinated phenols useful as pesticides are produced by reacting chlorinated phenol chloroformate with organic acid.

3,689,530

# 2,2,2 TRIHALOETHYL GLYCINATE

Edmund Stanley Granatek, and Alphonse Peter Granatek, both of Baldwinsville, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation of Ser. No. 605,156, Dec. 28, 1966. This application June 24, 1969, Ser. No. 838,041

Int. Cl. C07c 101/06

U.S. Cl. 260—482 R

4 Claims

2,2,2-Tribromoethyl glycinate and 2,2,2-trichloroethyl glycinate, and the pharmaceutically acceptable salts thereof, are compounds possessing sedative-hypnotic activity in mammals, including man.

The compounds are prepared by mixing either tribromoethanol or trichloroethanol with glycine in the presence of concentrated sulfuric acid with the subsequent isolation of the trihaloethyl glycinate or its acid-addition salt.

3,689,531

# COPOLYMERS OF LACTONES AND ALKYLENE OXIDES

Frank Edward Critchfield, South Charleston, W. Va.; John Edward Hyre, Cincinnati, Ohio, and Eldon Charles Stout, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed April 1, 1969, Ser. No. 812,305

Int. Cl. C07c 69/66

U.S. Cl. 260—484 A

10 Claims

This invention relates to the manufacture of novel polymeric products which result from the polymerization of an admixture containing lactones, alkylene oxides, and an organic monohydroxyl initiator, using potassium hydroxide as the catalyst therefor.

3,689,532

# PROCESS FOR POLYOXYALKYLATION

William D. Emmons, Huntingdon Valley, Pa., and George A. Frank, Fort Washington, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 624,151, March 20, 1972, abandoned. This application Oct. 14, 1969, Ser. No. 866,382

Int. Cl. C07c 69/40, 69/52, 69/54

U.S. Cl. 260—485 G

6 Claims

This invention relates to a process for the polyoxyalkylation of aliphatic acids, and  $\alpha,\beta$ -unsaturated carboxylic acids in two stages. Monooxyalkylation is conducted with a quaternary ammonium salt catalyst, followed by the introduction of a boron trifluoride catalyst to effect the polyoxyalkylation stage. In one example, polymerizable emulsifying agents are prepared according to this invention which are nonionic  $\alpha,\beta$ -unsaturated dicarboxylic acid esters, having a hydrophilic non-ionic polyoxyalkyl radical portion alpha to or conjugated with a polymerizable double bond, and a hydrophobic ester radical portion beta to or unconjugated with the polymerizable double bond. Polymerdispersions thus formed may be used in the preparation of coating, impregnating and binding compositions.

3,689,533

# PRODUCTION OF CARBOXYLIC ACIDS AND ESTERS

Robert G. Schultz, Vinita Park, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 701,639, Jan. 30, 1968, abandoned. This application March 15, 1971, Ser. No. 124,476

Int. Cl. C07c 51/12, 51/14, 67/00

U.S. Cl. 260—488 K

9 Claims

The present invention relates to a process for the preparation of carboxylic acids and esters, specifically by the reaction of alcohols and carbon monoxide in the presence of a supported catalyst comprising the decomposition products of rhodium nitrate on a carrier, the said reaction being conducted in the presence of a halide promoter. The process is also directed to the production of mixtures of organic acids together with organic esters.



3,689,534

## NEW FORMLOXYALKANALS AND PROCESS FOR THEIR PREPARATION

Jean-Claude Brunie; Michel Constantini; Noel Crenne, all of Lyon, and Michel Jouffret, Villeurbanne, all of France, assignors to Rhone-Poulenc S.A., Paris 8e, France

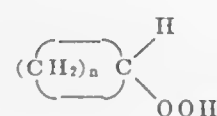
Filed Oct. 9, 1969, Ser. No. 865,166

Int. Cl. C07c 67/00

U.S. Cl. 260—488 F

4 Claims

$\omega$ -Formyloxyalkanals of formula  $\text{HCO} \cdot \text{C}(\text{CH}_2)_n \cdot \text{CHO}$  in which  $n$  represents an integer from 5 to 11 are prepared by reacting formic acid with a cycloalkyl hydroperoxide of the formula



in which  $n$  is an integer from 5 to 11. They are valuable intermediates, for example, in the preparation of  $\alpha, \omega$ -alkanediois and  $\omega$ -hydroxyalkanoic acids, which can be used to prepare fibers and resins.

3,689,535

## PROCESS FOR PREPARING ETHYLENE GLYCOL ESTERS

John Kollar, 6 Spencer Court, Wyckoff, Bergen County, N.J.

Continuation-in-part of Ser. No. 763,001, Sept. 26, 1968, abandoned. This application March 24, 1969, Ser. No. 819,507

Int. Cl. C07c 67/04

U.S. Cl. 260—497 R

16 Claims

This invention relates to a process for preparing ethylene glycol esters by intimately contacting a mixture of ethylene, bromine or chlorine (or a bromine or chlorine containing compound) and oxygen, in the presence of a carboxylic acid and a variable valent metal cation. It also relates to a process for preparing vinyl acetate from ethylene, by pyrolysis of ethylene glycol diacetate prepared as above noted, and to the preparation of ethylene glycol monoester as well as ethylene glycol by the hydrolysis of the ethylene glycol di-ester as prepared above.

3,689,536

## SALICYLIC ACID AND HALO-SUBSTITUTED SALICYLIC ACID SALTS OF OXYDIANILINE

Theodore E. Majewski, 1424 Dilloway Drive, Midland, Mich., and James P. Easterly, 2411-25th St., Bay City, Mich.

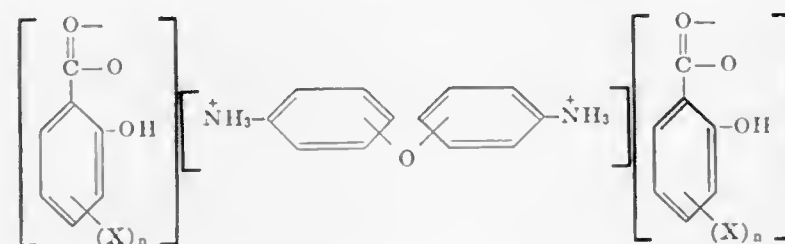
Filed May 3, 1968, Ser. No. 726,537

Int. Cl. C07c 93/00

U.S. Cl. 260—501.18

1 Claim

Compounds of the formula



in which X is H, Br, or Cl; and  $n$  is 0, 1, 2.

The compounds are useful as fungicides, insecticides, herbicides, and the like.

3,689,537

## 3,3-DIMETHYL-2-NORBORNANE PROPIONIC ACID

Robert C. Kuder, Excelsior, Minn., assignor to General Mills, Inc.

Continuation-in-part of Ser. No. 570,711, Aug. 8, 1966, abandoned. This application March 13, 1969, Ser. No. 807,075

Int. Cl. C07c 61/12

U.S. Cl. 260—514 B

1 Claim

A process of preparing certain alpha substituted carboxylic acid anhydrides by reaction of a compound having ethylenic unsaturation (preferably at a terminal position) and an anhydride of a  $\text{C}_2$ — $\text{C}_{18}$  carboxylic acid having an available alpha hydrogen such reaction being carried out in the presence of hydrogen peroxide as the free radical initiator. The products produced by the process are easily esterified to produce esters suitable as perfume additives or flavor additives.

3,689,538

## NOVEL CARBOXYLIC ACIDS AND PROCESS FOR SYNTHESIZING CARBOXYLIC ACIDS

Ellis K. Fields, Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 542,208, April 13, 1966, Pat. No. 3,442,939. This application April 14, 1969, Ser. No. 862,093

Int. Cl. C07c 63/00

U.S. Cl. 260—515 A

2 Claims

A process for preparing novel carboxylic acids which process comprising heating aromatic compounds which do not readily undergo electrophilic substitution with 3-carboxyphenyl sulfonyl chloride at a temperature of about 150° to 350° C. for a period of about 0.25 to 24 hours in the mole ratio of 4:1 to 20:1.

3,689,539

## CARBOXYLATION OF ACETYLENIC COMPOUNDS

Edwin L. Patmore, Fishkill; William R. Siegert, Poughkeepsie, and Harry Chafetz, Poughkeepsie, all of N.Y., assignors to Texaco Inc., New York, N.Y.

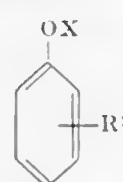
Division of Ser. No. 784,901, Dec. 18, 1968, Pat. No. 3,595,907. This application Feb. 3, 1971, Ser. No. 119,433

Int. Cl. C07c 51/00

U.S. Cl. 260—515 R

5 Claims

Method of carboxylating a compound of the group of  $\text{R}-\text{C}\equiv\text{CH}$ ,  $\text{RCH}_2\text{CN}$ , indene, cyclopentadiene or fluorene, where R is hydrocarbyl, comprising contacting said compound with carbon dioxide under substantially anhydrous conditions in the presence of a base of the formula:



where X is sodium or potassium,  $\text{R}^1$  is hydrogen or alkyl and subsequently acidifying the resultant reaction product to form the carboxylated product.

3,689,540

## PHLORETIC ACID DERIVATIVES

John W. James, Langley, and Robert Stevens, Slough, both of England, assignors to Aspro-Nicholas Limited, London, England

Filed June 11, 1969, Ser. No. 832,433

Claims priority, application Great Britain, June 21, 1968, 29,719/68

Int. Cl. C07c 65/04

U.S. Cl. 260—521 R

9 Claims

Novel 5-hydroxymethyl and 3,5-dihydroxymethyl phloretic acid derivatives are described together with a process for their preparation from the corresponded unsubstituted phloretic

acid derivative, useful as polymerizable monomers. Esters with monohydric and polyhydric alcohols, mixed esters with other acids and alcohols, and polymerization products of the phloretic acids and esters are provided.

3,689,541

## PROCESS FOR ISOLATING ACRYLIC ACID FROM AQUEOUS CRUDE ACRYLIC ACID BY EXTRACTION WITH A KETONE AND PLURAL STAGE DISTILLATION

Kurt Sennewald, 6 Seinsheim Weg., Hurth-Hermulheim; Heinz Erpenbach, 22 Giesdorfer Strasse, Surth; Heinz Handte, 50 Heumarkt, Cologne, and Winfried Lork, 1 Tulpenweg, Friesheim, all of Germany

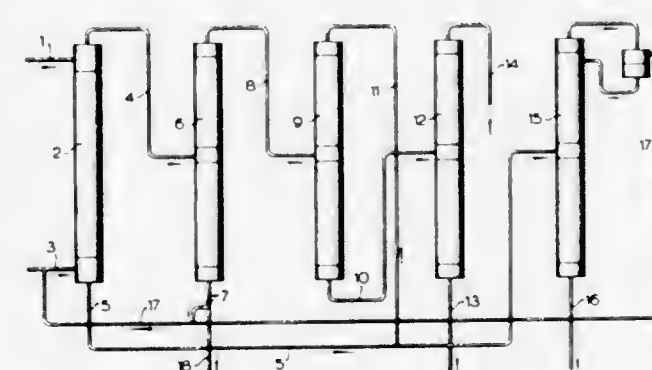
Filed Jan. 18, 1971, Ser. No. 106,988

Claims priority, application Germany, Feb. 5, 1970, P 20 05 163.2

Int. Cl. B01d 3/34; C07c 57/04

U.S. Cl. 260—526 N

7 Claims



Pure acrylic acid is isolated from an aqueous crude acid containing acrylic acid together with minor proportions of acetic acid, formaldehyde and high boilers boiling at a temperature higher than 220°C by liquid-liquid extraction with the use of 3,3,5-trimethylcyclohexanone and/or isophorone as the extractant(s). To this end, the aqueous acrylic acid-containing crude acid is subjected in an extraction zone to counterflow extraction with the use of the extractant(s) and with the resultant formation of an organic extract containing acrylic acid, acetic acid, high boilers and minor proportions of water, which are dissolved in the extractant; the extract is introduced approximately into the midsection of a first distilling column, which is operated under reduced pressure; the base product of said first distilling column, containing the high boilers and the extractant(s) is recycled to the extraction zone; distillate containing acrylic acid, acetic acid, water and minor proportions of extractant(s) is delivered approximately to the midsection of a second distilling column, which is operated under reduced pressure; a mixture of water and extractant(s) is distilled off; the base product of said second distilling column, containing acrylic acid and acetic acid is introduced into a third distilling column, which is operated under reduced pressure; and acetic acid is separated therein as a distillate and acrylic acid is separated therein as the base product.

3,689,542

Patent Not Issued For This Number

3,689,543

## PRODUCTION OF ALKALI METAL SALTS OF NITRILOTRIACETIC ACID

Christoph Berding, Limburgerhof; Paul Guenther, Iggelheim; Gerhard Schulz, and Waldemar Koehler, both of Ludwigshafen, Germany, assignors to Basische Anilin- & Soda-Fabrik Aktiengesellschaft, 3, Ludwigshafen/Rhine, Land Rheinland-Pfalz, Germany

Filed Aug. 8, 1969, Ser. No. 848,694

Int. Cl. C07c 101/20

U.S. Cl. 260—534 E

5 Claims

Production of alkali metal salts of nitrilotriacetic acid from an alkali metal cyanide, formaldehyde and ammonia by reac-

tion in at least two stages, the alkali metal cyanide being reacted with formaldehyde in approximately stoichiometric ratio of 50° to 200° C. and 2 to 50 atmospheres gauge in the presence of an excess of ammonia in the first stage and the resultant solution (after decompression to atmospheric pressure) being treated in one or more further stages with further amounts of alkali metal cyanide and formaldehyde at 60° to 110° C. while removing ammonia at the same time.

3,689,544

## PROCESS FOR PREPARING CHELATING AGENTS

Patricia M. Scanlon, Arlington, Mass., and Jon C. Thunberg, Amherst, N.H., assignor to W. R. Grace & Co., New York, N.Y.

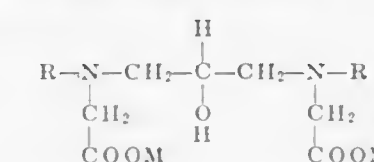
Filed June 14, 1971, Ser. No. 152,987

Int. Cl. C07c 101/26

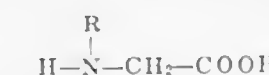
U.S. Cl. 260—534 E

6 Claims

A chelating agent having the formula



wherein; R is an alkyl group having about one to 20 carbon atoms, hydrogen,  $-\text{CH}_2\text{CH}_2\text{OH}$ , or  $-\text{CH}_2\text{COOH}$ ; and M is an alkali metal cation, is prepared by; (a) adjusting the pH of a first aqueous system consisting essentially of water and an amino acid having the formula



or an alkali metal salt of the acid to about 6–10.5 to form a second aqueous system consisting essentially of the alkali metal salt of the amino acid dissolved in water, and adjusting the temperature of the second aqueous system at about 65°–105°F.; and (b) admixing epichlorohydrin with the second aqueous system while; (i) maintaining the pH of the resulting mixture at about 6–10.5; and (ii) maintaining the temperature of the resulting mixture at about 65°–105° C. for about 30–180 minutes to form a third aqueous system consisting essentially of an aqueous solution of the chelating agent.

3,689,545

## PROCESS FOR THE PREPARATION OF TRIFLUOROACETYL FLUORIDE

Helmut Hahn, and Siegfried Rebsdatt, both of Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Feb. 17, 1969, Ser. No. 799,970

Claims priority, application Germany, March 2, 1968, P 16 68 105.3

Int. Cl. C07c 51/58

U.S. Cl. 260—544 F

4 Claims

Trifluoroacetyl fluoride is prepared by pyrolyzing the reaction products of tetrafluoroethane and sulfur trioxide, namely 3,3,4,4-tetrafluoro-2,2-dioxo-1,2-oxathietane, 4,4,5,5-tetrafluoro-2-oxo-1,3,2-dioxathiolane and 2-sulfofluorido-difluoroacetyl fluoride, in the presence of aluminum oxide or charcoal, as catalyst at a temperature of 50° to 240° C. The sulfur dioxide set free as a byproduct can be recycled after reoxidation to sulfur trioxide.

3,689,546

## PREPARATION OF ARYL HALIDES

Lawrence S. Kirch, Huntington Valley, Pa., assignor to Rohmand Haas Company, Philadelphia, Pa.

Filed March 5, 1969, Ser. No. 804,677

Int. Cl. C07c 51/58, 63/10

U.S. Cl. 260—544 M

3 Claims

The invention relates to a process for the preparation of an



aryl dihalide by heating an aryldisulfonyl halide in the presence of an elemental halogen.

3,689,547

## BENZOHYDROXAMATES

Teruhisa Noguchi, Fujisawa; Mitsuo Asada, Hiratsuka; Reiji Sakimoto, Takaoka, and Koichi Hashimoto, Tsubatamachi, Kahoku-gun, all of Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

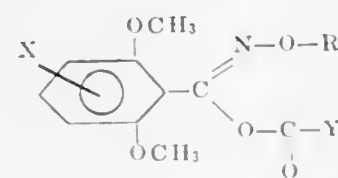
Filed March 12, 1970, Ser. No. 19,083

Int. Cl. C07c 119/00

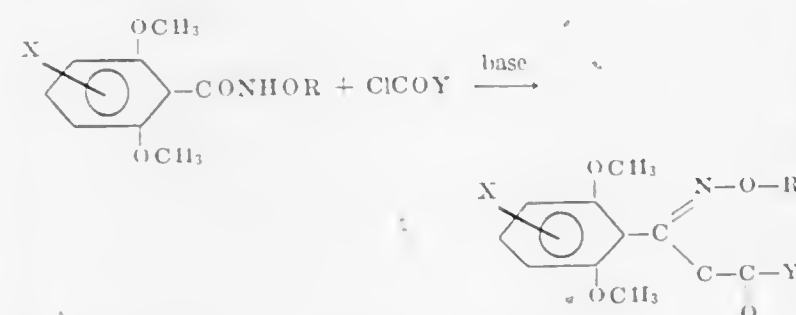
U.S. Cl. 260—545 R

2 Claims

The compound having formula:



(wherein R represents an alkyl component of one through four carbon atoms, or alkenyl component of one through four carbon atoms, X represents hydrogen, methoxy or halogen and Y represents phenyl or phenyl substituted with methyl, chlorine or nitro) are prepared in accordance with the following equations:



(wherein R, X and Y represent the aforementioned components)

3,689,548

## PROCESS FOR PREPARING ORGANIC PHOSPHINIC ACID ANHYDRIDES

Ludwig Maier, Zurich, Switzerland, assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 14, 1969, Ser. No. 799,515

Int. Cl. G07I 9/28

U.S. Cl. 260—545 P

1 Claim

A process for preparing organic phosphinic acid anhydrides of the formula  $R^1R^2P(O)OP(O)R^1R^2$  by reacting an organic phosphinic acid of the formula  $R^1R^2P(O)OH$  with thionyl chloride, e.g., reacting bis-(hydroxymethyl)-phosphinic acid with thionyl chloride.

3,689,549

## PRODUCTION OF SULFONYL ISOCYANATES FROM SULFONAMIDES IN A SULFOLANE SOLVENT

Ralph P. Williams, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed May 6, 1969, Ser. No. 822,293

Int. Cl. C07c 143/84

U.S. Cl. 260—545 R

7 Claims

A sulfonyl isocyanate is prepared by reaction of the sulfonamide in a sulfolane solvent with phosgene. The solvent increases rapidly of the reaction and yields a product of increased purity.

3,689,550

## N-HYDROXYPHENYL-N'-PHENYLUREAS

Max Schellenbaum, Muttentz; Max Duennenberger, Frenken-dorf, and Fulvio Casagrande, Binningen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed March 11, 1969, Ser. No. 806,302

Claims priority, application Switzerland, March 21, 1968, 4167/68

Int. Cl. C07c 127/16

U.S. Cl. 260—553 C

3 Claims

N-hydroxyphenyl-N'-phenylureas useful as active ingredients in preparations for combatting harmful micro-organisms, especially bacteria.

3,689,551

ODOR FREE NON-CAKING CONDITIONED UREA COMPOSITION AND PROCESS OF PREPARING SAME  
Paul Raymond Patterson, 189 Elberta Ave., Niagara Falls, Ontario; Darryl Diamond Fry, 632 Furlong Ave., Chippawa, Ontario, both of Canada, and Irving Kloth, 215 Mount Lucas Road, Princeton, N.J.

Continuation-in-part of Ser. No. 724,637, April 26, 1968,

abandoned. This application Nov. 6, 1969, Ser. No. 874,691

Int. Cl. C07c 127/00

U.S. Cl. 260—555 C

8 Claims

This invention relates to a novel, odor free, non-caking, conditioned urea composition and a method for the preparation thereof. More particularly, the present invention is concerned with the preparation of finely divided urea compositions in which the urea particles are treated with selected conditions which prevent the evolution of free ammonia from the particles and accumulation of free ammonia in the area in which the particulate mass is stored and maintain said particulate mass in a non-caking condition for an extended period of time.

3,689,552

Patent Not Issued For This Number

3,689,553

## TRIFLUOROMETHANESULFONAMIDO-SUBSTITUTED DESOXYBENZOINS

George G. I. Moore, Village of Birchwood, and Joseph Kenneth Harrington, Village of Edina, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 4, 1971, Ser. No. 103,804

Int. Cl. C07c 143/74

U.S. Cl. 260—556 F

5 Claims

Trifluoromethanesulfonamido-substituted desoxybenzoins and pharmaceutically acceptable salts thereof. These compounds are active anti-microbial agents.

3,689,554

## HYDRAZONES

Kurt Ley, Odenthal-Globusch; Ernst Roos, Cologne, Flittard; Theo Kampermann, Cologne, Lindenthal, and Roland Nast, Cologne, Buchheim, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

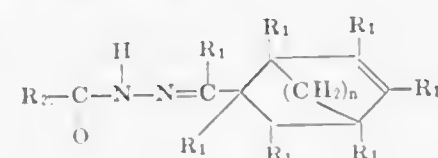
Filed Aug. 15, 1969, Ser. No. 850,637

Int. Cl. C07c 109/18

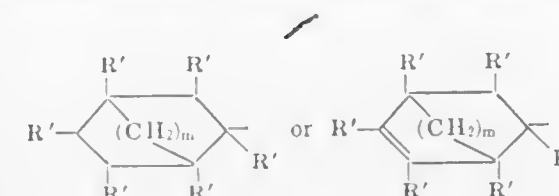
U.S. Cl. 260—557 H

5 Claims

Compounds of the formula



wherein  $R_1$  is hydrogen or methyl,  $n$  is 0 or 1 and  $R_2$  is



wherein  $R'$  is hydrogen or methyl and  $m$  is 0 or 1 and their utility as anti-ozonants in natural and synthetic rubbers.

3,689,555

## NORBORNYLAMINOACETANILIDES

Robert N. Schut, Edwardsburg, Mich., and Gust Nichols, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Dec. 3, 1970, Ser. No. 94,999

Int. Cl. C07c 103/30

U.S. Cl. 260—558 A

6 Claims

Certain substituted norbornylaminoacetanilides and their acid addition salts are disclosed as new compounds which are useful as analgesics.

3,689,556

## NITRO-TRIFLUOROMETHYL-BENZANILIDES

Dean Earl Welch, and Robert Richard Baron, both of Charles City, Iowa, assignors to Salsburg Laboratories

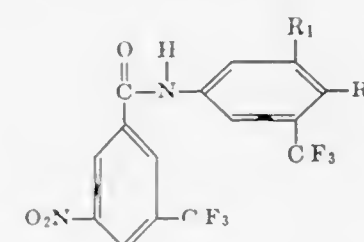
Filed Nov. 18, 1968, Ser. No. 776,752

Int. Cl. C07c 103/30

U.S. Cl. 260—558 P

3 Claims

5-nitro-3,3'-trifluoromethylbenzanilides of the general configuration



in which  $R_1$  is H or  $CF_3$  and  $R_2$  is H or  $NO_2$  and veterinary compositions for the treatment of avian coccidiosis containing the same. The compounds 4',5-dinitro-3,3'-(bis)-trifluoromethylbenzanilide and 5-nitro-3,3'-(bis)-trifluoromethylbenzanilide are disclosed as illustrative examples.

3,689,557

## PHENETHYLAMIDES

Ronald J. McCaully, Malvern, and George L. Conklin, Martintown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed June 9, 1969, Ser. No. 831,725

Int. Cl. C07c 103/38

U.S. Cl. 260—559 B

3 Claims

Novel chloro- or alkoxy-substituted phenethylamides, optionally substituted on the nitrogen by alkyl and containing an alkyl-, an alkanoyloxyalkyl-, a hydroxyalkyl- or a diphenoxylalkylamino group (I) are pharmacologically active as bronchodilators and as central nervous system depressants. Compounds (I) are provided by (a) acylating a substituted phenethylamine (II) with a reactive derivative, e.g., halide or anhydride, of an alkanolic, alkanoyloxyalkanoic, hydroxyalkanoic, or diphenoxylalkanoic acid (III) or (b) dealkanylating an alkanoyloxy alkyl compound (Ia) to provide the corresponding hydroxyalkyl compound (Ib).

3,689,558

## POLYMERIZATION INHIBITORS FOR THE CATALYTIC HYDRATION OF ACRYLONITRILE

James H. Moden, and Gary E. Newton, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed March 9, 1970, Ser. No. 17,943

Int. Cl. C07c 103/08

U.S. Cl. 260—561 N

7 Claims

In the catalytic hydration of acrylonitrile to acrylamide, polymer formation is reduced or prevented by maintaining in the acrylonitrile solution a small but effective amount of cupferron, a nitrosophenol or a trialkylamine having alkyl groups of one to six carbon atoms where not more than two alkyl groups are methyl.

3,689,559

## AROMATIC BROMINATION PROCESS

Edward C. Taylor, and Alexander McKillop, both of 1500 Spring Garden St., Philadelphia, Pa.

Division of Ser. No. 766,002, Oct. 8, 1968, Pat. No. 3,622,640.

This application March 18, 1971, Ser. No. 125,895

Int. Cl. C07c 103/34

U.S. Cl. 260—562 R

7 Claims

Aromatic substrates such as benzene, substituted benzenes, naphthalenes, substituted naphthalenes, anthracene, phenanthrene, fluorene, biphenylene, and terphenyl are brominated to give pure monobromo products by reaction with bromine in the presence of thallic acetate.

3,689,560

## CERTAIN DIFLUORAMINO COMPOUNDS

Charles D. Wright, White Bear Lake, and Joseph La Mar Zollinger, Woodbury Township, Washington County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

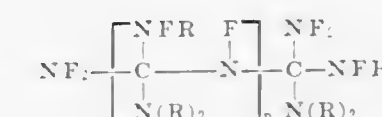
Filed Nov. 15, 1962, Ser. No. 239,101

Int. Cl. C07c 87/20, 87/22

U.S. Cl. 260—583 NH

6 Claims

1. Fluorinated compounds of the group consisting of compounds having the formula



wherein  $n$  is a number of the group 0 and 1 and R is an atom of the group hydrogen and fluorine, all R's being identical in any one compound.

3,689,561

## PREPARATION OF ALKANE NITRO-AMINES

Richard J. Lee, Park Forest, Ill., and Robert E. Karll, Munster, Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed July 30, 1969, Ser. No. 846,248

Int. Cl. C07c 85/00

U.S. Cl. 260—583 F

6 Claims

Nitration of an alkene with dinitrogen tetroxide under oxidizing conditions forms the corresponding vicinal nitro-, nitrate-substituted alkane. Reaction of about 1-4 mols of the nitro-nitrate alkane with 1 mol of an alkylamine or alkylene polyamine forms alkane nitro-amines containing vicinal nitro-, amino-nitrogen groups. The alkane nitro-amines are useful as surfactants, rust or corrosion inhibitors, flotation agents and as additives in petroleum products.



3,689,562

## SYNTHESIS OF ALKYL CYCLOPENTYL KETONES

John C. Leffingwell, and Ronald E. Shackelford, both of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed March 13, 1969, Ser. No. 807,120  
Int. Cl. C07c 45/00

U.S. Cl. 260—586 R 5 Claims  
Pyrolysis of trans-1-hydroxy-2-acetoxycyclohexanes to produce alkyl cyclopentyl ketones.

3,689,563

## PREPARATION OF PERHALOALKYL NITROGEN-CHLORINE COMPOUNDS

David E. Young, Denville; Lowell R. Anderson, and William B. Fox, both of Morristown, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Feb. 9, 1970, Ser. No. 9,953  
Int. Cl. C07c 87/02

U.S. Cl. 260—583 NH 3 Claims  
N,N-dichloro(chlorodifluoromethyl)amine having the following formula:



prepared by reacting cyanogen chloride with either chlorine monofluoride or perfluoromethyl hypochlorite. It belongs to a family of compounds useful as flame retardants, fumigants and polymerization initiators. It is also an intermediate in the preparation of other similarly useful perhalogenated products. For instance, it may be dechlorinated to yield N-chloro(difluoromethylene)imine,  $\text{CF}_2\text{NCl}$ , a new compound additionally useful as a source of the  $\text{CF}_2\text{N}^\cdot$  radical. Thus, this imine may be reacted with a stoichiometric quantity of tetrafluoroethylene to yield a new N-perhaloethyl(difluoromethylene)imine,  $\text{CF}_2\text{NCF}_2\text{C}_2\text{Cl}$ , which is a stable heat transfer liquid and polymer solvent.

3,689,564

STEROIDS INTERMEDIATES HAVING A 17 $\alpha$ -HYDROXY-13-HYDROCARBON SUBSTITUTED 8,14-SECOGONA-1,3,5(10),9,15-PENTAEN-14-ONE NUCLEUS

Kentaro Hiraga, Ikeda; Tsunehiko Asako, Sulta, and Takuchi Miki, Amagasaki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed March 21, 1968, Ser. No. 714,772

Claims priority, application Japan, March 24, 1967, 42/18327; March 24, 1967, 42/18328  
Int. Cl. C07c 49/82

U.S. Cl. 260—590 2 Claims  
A process is described for preparing a compound having a 13-hydrocarbon substituted-gona-1,3,5(10),8,14-pentaen-17 $\alpha$ -ol nucleus from a compound having a 17 $\alpha$ -hydroxy-13-hydrocarbon substituted-8,14-secogona-1,3,5(10),9,15-pentaen-14-one nucleus via a compound having a 13 $\alpha$ -hydrocarbon substituted-9,14-oxido-8,14-secogona-1,3,5(10),15-tetraen-17-one nucleus and a compound having a 13 $\alpha$ -hydrocarbon substituted-9,14-oxido-8,14-secogona-1,3,5(10)-trien-17-one nucleus. A process is also described for preparing the compound having the 17 $\alpha$ -hydroxy-13-hydrocarbon substituted 8,14-secogona-1,3,5(10),9,15-pentaen-14-one nucleus from a 13-hydrocarbon substituted-8,14-secogona-1,3,5(10),9,15-pentaene-14,17-dione by Meerwein-Ponndorf-Verley reduction. Novel intermediates for preparing known compounds of known utility by per se known methods are disclosed.

3,689,565

 $\alpha$ -METHYLOLBENZON ETERS

Horst Hoffmann, 4 Neuwiesenstrasse, 6700 Ludwigshafen; Heinrich Hartmann, 46 Weinheimer Strasse, 6703 Limburgerhof; Carl Heinrich Krauch, 51 Am Schlierbachhang, 6900 Heidelberg, and Otto Volkert, 2 Neuwiesenstrasse, 6700 Ludwigshafen, all of Germany

Filed May 4, 1970, Ser. No. 34,530  
Int. Cl. C07c 49/82

U.S. Cl. 260—590 3 Claims  
 $\alpha$ -methylolbenzoin ethers, their production and their use as photoinitiators.

3,689,566

## 4'-CYCLOALKYLMETHYL ACETOPHENONE

Richard N. Knowles, R. D. Mill Creek Road, Hockessin, Del. Division of Ser. No. 635,304, April 20, 1967, which is a continuation-in-part of Ser. Nos. 574,499, Aug. 18, 1966, and Ser. No. 574,276, Aug. 18, 1966. This application May 17, 1968, Ser. No. 730,199

Int. Cl. C07c 49/76

U.S. Cl. 260—592 9 Claims  
The invention relates to compounds of the formula



wherein  $\text{R}_1$  is cycloalkyl ( $\text{C}_4$  to  $\text{C}_8$ ), cycloalkyl-alkyl ( $\text{C}_5$  to  $\text{C}_{10}$ ), bicycloalkyl ( $\text{C}_7$  to  $\text{C}_{10}$ ), or tricycloalkyl ( $\text{C}_{10}$  to  $\text{C}_{11}$ ). These compounds are used as intermediates in preparing N-acetylcyclohexyl amines, having utility as animal repellants.

3,689,567

## BENZYL METHYL SULFONES AND PROCESS FOR PREPARING SAME

Tsung-Ying Shen, 728 Tamagway Way, and Clifford H. Shunk, 2057 W. Broad St., both of Westfield, N.J.

Continuation-in-part of Ser. No. 458,435, May 24, 1965, abandoned. This application Aug. 1, 1966, Ser. No. 569,039  
Int. Cl. C07c 147/06

U.S. Cl. 260—607 A 7 Claims  
Benzyl methyl sulfones having anti-inflammatory, antipyretic and analgesic activity. Also included is a method of substituting a benzyl methyl sulfone.

3,689,568

## PREPARATION OF PRIMARY MERCAPTANS

Richard J. Eletto, 24 Leatherstocking Lane, White Plains, N.Y., and Donald J. Martin, 140 N. Broadway, Irvington, N.Y.

Continuation-in-part of Ser. No. 830,497, June 4, 1969, abandoned. This application Aug. 13, 1969, Ser. No. 849,888  
Int. Cl. C07c 149/06

U.S. Cl. 260—609 B 14 Claims  
The non-Markownikoff reaction of hydrogen sulfide with a hydrocarbon or substituted hydrocarbon having at least one olefinic linkage is accomplished by reacting hydrogen sulfide and hydrocarbon in the presence of a trivalent organic phosphorus compound as the sole initiator.

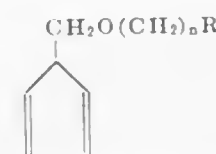
3,689,569

## PROCESS FOR PRODUCING SUBSTITUTED CYCLOPENTADIENES

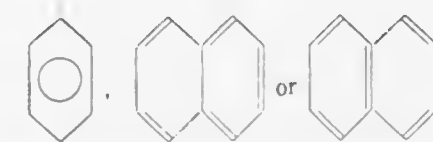
Ned M. Weinshenker, Sunnyvale, Calif., and Niels H. Andersen, Seattle, Wash., assignors to ALZA Corporation

Filed Jan. 22, 1971, Ser. No. 108,967  
Int. Cl. C07c 41/00

U.S. Cl. 260—611 R 3 Claims  
A novel process for preparing a 5-substituted-1,3-cyclopentadiene of the general formula,



by reacting cyclopentadienyl thallium with  $\text{R}-(\text{CH}_2)_n-\text{O}-\text{C}_2\text{H}_5$  wherein R is H,



n is 1 to 3 and X is a halogen. The 5-substituted-1,3-cyclopentadienes are useful intermediates for preparing therapeutically useful prostaglandins.

3,689,570

## MONOALKYLATION OF UNSUBSTITUTED DIHYDRIC PHENOLS WITH LOWER ALKYL CHLORIDES USING ALKALI METAL CARBONATES OR BICARBONATES AS A CONDENSING AGENT

Peter S. Gradeff, Forest Lakes, Andover, N.J., and Claude Bertrand, 4 Gifford Road, Somerset, N.J.

Continuation-in-part of Ser. No. 800,700, Feb. 19, 1969. This application Jan. 14, 1970, Ser. No. 2,951  
Int. Cl. C07c 43/22

U.S. Cl. 260—613 D 12 Claims  
Unsubstituted dihydic phenols are alkylated with lower alkyl chlorides having a comparatively low reactivity in the presence of alkali metal carbonates or bicarbonates as a condensing agent. The reaction proceeds at moderate temperatures, and gives high yields of the monoalkylated phenols, ranging up to 98 percent, with dialkylation suppressed to below 3 percent.

3,689,571

## FLUORINATED ETHER

Bernard M. Regan, and John C. Longstreet, both of Chicago, Ill., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Continuation-in-part of Ser. No. 771,365, Oct. 28, 1968, abandoned. This application July 31, 1970, Ser. No. 60,132  
Int. Cl. C07c 43/00

U.S. Cl. 260—614 F 1 Claim  
The novel organic compound fluoromethyl 1,1,1,3,3,3-hexafluoro-2-propyl ether, useful as an anesthetic agent.

3,689,572

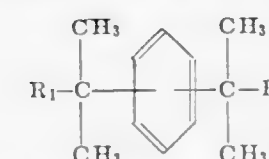
## AROMATIC HYDROXY COMPOUNDS

Heinrich Ruppert, Krefeld-Bockum, and Hermann Schnell, Krefeld-Uerdlingen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 187,215, April 13, 1962, abandoned. This application Aug. 16, 1966, Ser. No. 572,863  
Claims priority, application Germany, April 22, 1961, F 33 738

Int. Cl. C07c 39/12, 39/14, 39/16

U.S. Cl. 260—619 B 4 Claims  
Hydroxy substituted xylenes of the formula



wherein  $\text{R}_1$  and  $\text{R}_2$  are individually defined as monohydroxyphenyl, dihydroxyphenyl, alkyl-monohydroxyphenyl, cycloalkyl-hydroxyphenyl, phenyl-hydroxyphenyl, monohydroxyhalophenyl and monohydroxynaphthyl.

3,689,573

## PROCESS FOR THE PREPARATION OF CYCLOPENT-2-ENYL PHENOLS

Alfons Klein, Duesseldorf, and Karlfried Wedemeyer, Cologne-Stammheim, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 11, 1969, Ser. No. 841,126

Claims priority, application Germany, July 15, 1968, P 17 68 930.4

Int. Cl. C07c 37/14

U.S. Cl. 260—621 R 17 Claims  
Reacting (optionally mono or di halo or alkyl-substituted) phenols, at least one ortho- or para- position to the hydroxy group of which is unsubstituted, with cyclopentadiene in the presence of an aluminum phenolate as catalyst, at a temperature of substantially between about 40°–120° C, to form in high yield and purity the corresponding known (optionally mono or di halo or alkyl-substituted)-ortho or para-cyclopent-2-enyl phenols, which are known intermediates usable for the synthesis of known insecticides.

3,689,574

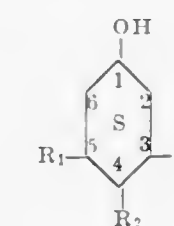
## 3,4,5-TRIMETHYLCYCLOHEXANOL

John E. Engelhart, Westfield, N.J., assignor to Esso Research and Engineering Company

Filed April 28, 1970, Ser. No. 32,729

Int. Cl. C07c 35/08; A01n 9/24

U.S. Cl. 260—631 R 1 Claim  
3,4,5-trialkylcyclohexanols characterized by the following structural formula:



wherein  $\text{R}_1$ ,  $\text{R}_2$  and  $\text{R}_3$  may be the same or different  $\text{C}_1 - \text{C}_3$  alkyl groups. These compounds have been discovered to possess unique broad spectrum fungicidal activity.

3,689,575

## METHANOL SYNTHESIS

Mehmet Orhan Tarhan, Bethlehem, Pa., assignor to Bethlehem Steel Corporation

Filed Dec. 11, 1970, Ser. No. 97,367

Int. Cl. C07c 31/04, 31/06

U.S. Cl. 260—632 R 3 Claims  
A process for the synthesis of methanol in which water in liquid is reacted with gaseous carbon monoxide in the presence of a select carbon monoxide shift catalyst at temperatures of 180°–380° C. and pressures above about 250 atmospheres.

3,689,576

## PREPARATION OF NITROALKANES BY THERMAL DECOMPOSITION OF ACYL NITRATE

Gustave Bryant Bachman, Lafayette, and Theodore F. Biermann, West Lafayette, both of Ind., assignors to Purdue Research Foundation

Filed Dec. 5, 1969, Ser. No. 882,735

Int. Cl. C07c 79/04

U.S. Cl. 260—644 5 Claims  
A process for the production of nitroalkanes and nitroaromatics having from one to 19 carbon atoms by the thermal decomposition of an acyl nitrate having from one to 20 carbon atoms.



3,689,577

## PROCESS FOR HALOGENATING PARAFFINS AND CYCLOALKANES

Charles M. Selwitz, Pitcairn, Pa., assignor to Gulf Research &amp; Development Company, Pittsburgh, Pa.

Filed March 25, 1970, Ser. No. 22,711

Int. Cl. C07c 17/10, 19/00, 23/10

U.S. Cl. 260—648 R

14 Claims

A process for chlorinating or brominating a paraffin or a cycloalkane which involves heating a paraffin or a cycloalkane with chloride or bromide ions, nitrate ions, sulfuric acid and water.

3,689,578

## PROCESS FOR THE PRODUCTION OF VINYLICALLY CHLORINATED OLEFINS

Danford H. Olson, and George M. Bailey, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Division of Ser. No. 499,041, Oct. 20, 1965, Pat. No.

3,501,539. This application Oct. 7, 1969, Ser. No. 870,949

Int. Cl. C07c 21/00

U.S. Cl. 260—654 R

6 Claims

A process for producing tetrachloroethylene comprising passing a gas stream of ethylene over a catalyst composition of cupric chloride and an inert material at a temperature in the range of 400 to 525° C. and at a flow rate of less than 5 cc of gas stream per minute per gram of cupric chloride.

3,689,579

## PROCESS FOR THE MANUFACTURE OF 2-CHLOROBUTADIENE-(1,3)

Herbert Baader, Hermulheim near Cologne; Kurt Sennwald, Knapsack near Cologne; Helmut Reis, Hurth near Cologne, and Gunther Viertel, Bruhl near Cologne, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

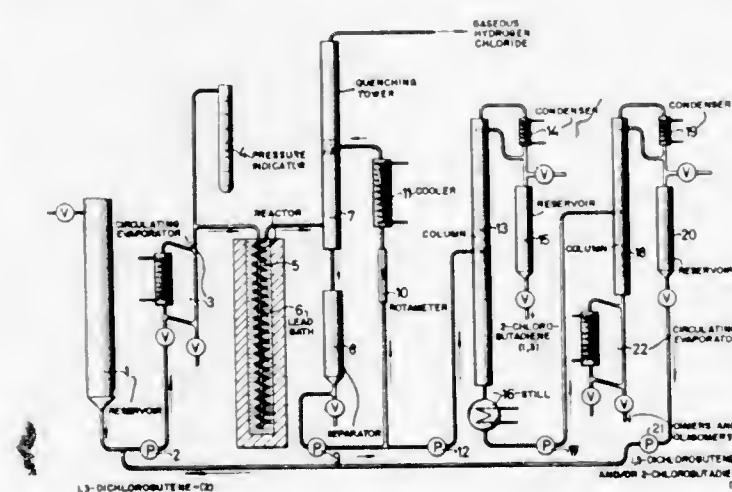
Filed Oct. 31, 1966, Ser. No. 590,731

Claims priority, application Germany, Nov. 20, 1965,

Int. Cl. C07c 21/20

U.S. Cl. 260—655

9 Claims



Process for converting 1,3-dichlorobutene-(2) to 2-chlorobutadiene-(1,3) by uncatalyzed dehydrochlorination of the previously vaporized reactant for a period not exceeding 10 seconds and at a temperature of 450°–650° C, the resulting gases being immediately cooled to a temperature of 0°–35° C by quenching and substantially pure product recovered from the quenching liquid.

3,689,580

## PREPARATION OF HALODIENES

David W. Hall, Vancouver, Canada, and Ed Hurley, Jr., Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 502,466, Oct. 22, 1965,

abandoned. This application Aug. 30, 1968, Ser. No. 756,367

Int. Cl. C07c 21/20

U.S. Cl. 260—655 R

13 Claims

A process for preparing a halodiene compound by reacting an alpha-haloether with an acetylene to form a haloether adduct of the acetylene and splitting alcohol from the haloether adduct to form a halodiene compound.

3,689,581

Patent Not Issued For This Number

3,689,582

## PROCESS FOR RECOVERING DICHLOROETHANE IN OXYCHLORINATION PROCESS

Satoshi Wakiyama, and Kyoichi Hori, both of Yamaguchi, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi, Japan

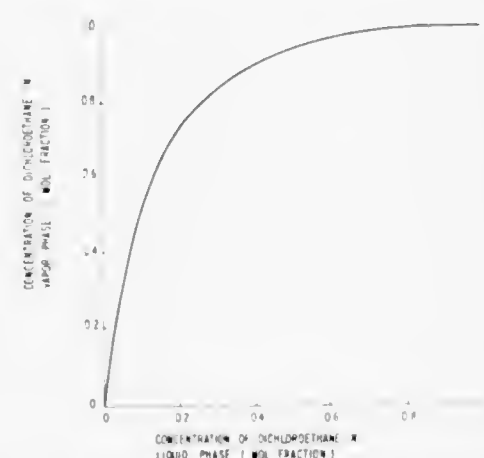
Filed July 29, 1968, Ser. No. 748,322

Claims priority, application Japan, Aug. 16, 1967, 42/52595

Int. Cl. C07c 17/02

U.S. Cl. 260—659 A

3 Claims



A process for recovering dichloroethane produced by the oxychlorination of ethylene in air whereby a dichloroethane is absorbed into an alkyl benzene absorbent.

3,689,583

## PRODUCTION OF DIMETHYLSTYRENES

Naoya Kominami, 27-6, 3-chome, Nakadai, Itabashi-ku, Tokyo; Nobuhiro Tamura, 38, Tsuruoka, Ooimachi, Iruma-gun, Saitama-ken, and Etsuo Yamamoto, 27-6, 3-chome, Nakadai, Itabashi-ku, Tokyo, all of Japan

Filed Dec. 2, 1969, Ser. No. 881,621

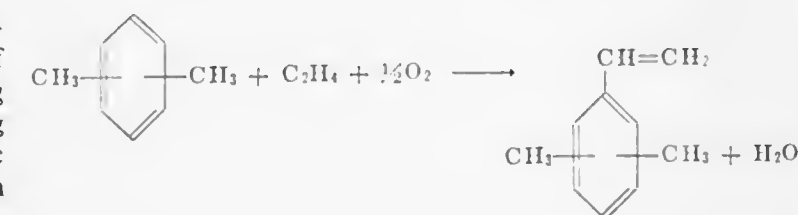
Claims priority, application Japan, June 3, 1969, 44/42931; Sept. 22, 1969, 44/74585; June 2, 1969, 44/42476; May 22, 1969, 44/39133; Dec. 10, 1968, 43/89938; May 28, 1969, 44/40990

Int. Cl. C07c 15/10

U.S. Cl. 260—669 R

11 Claims

Dimethylstyrenes are produced by reacting xylenes, ethylene and oxygen in the presence of a lower aliphatic carboxylate of palladium, according to the equation:



The palladium compound is preferably supported on a porous carrier, and promoted with an oxide or carboxylate of a metal such as copper, silver, lead, chromium or the like, and the catalyst is preferably conditioned with a basic nitrogen-containing organic compound.

3,689,584

## A CHEMICAL PROCESS OF SEPARATING OLEFINS FROM ALUMINUM ALKYL BY FORMING COMPLEXES OF THE ALUMINUM ALKYL WHICH ARE INSOLUBLE IN THE OLEFINS

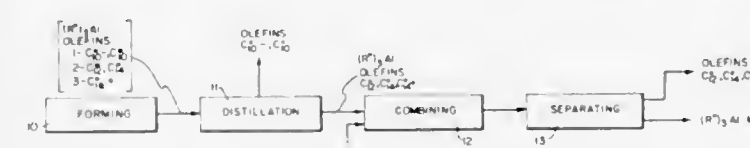
Paul Kobetz, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Filed Aug. 24, 1970, Ser. No. 66,437

Int. Cl. C07c 11/24

U.S. Cl. 260—677 A

20 Claims



It is disclosed that olefins can be readily separated from aluminum alkyls and related compounds by forming complexes of the aluminum alkyls which are insoluble in the olefins. Two liquid phases that form on standing are readily separated by decantation. The insolubility condition is enhanced by the absence of light olefins hence the separation is particularly applicable to dodecene and higher olefins because lower olefins are readily separated from aluminum alkyls by distillation and because the higher olefins are less miscible with the complexes. An important aspect of the present disclosure is the avoidance of any need for pyrolysis cleavage of complexes.

3,689,585

## PRODUCTION OF ISOPRENE OLIGOMERS

Hiroyuki Morikawa, Ami-machi, Japan, assignor to Mitsubishi Petrochemical Company, Limited, Tokyo-to, Japan

Filed Dec. 14, 1970, Ser. No. 98,127

Claims priority, application Japan, Dec. 24, 1969, 44/104020

Int. Cl. C07c 11/12

U.S. Cl. 260—677 R

4 Claims

Isoprene oligomers are selectively produced in high yields by causing isoprene to undergo oligomerization in contact with a catalyst essentially comprising, in combination, a zirconium compound  $\text{Zr}(\text{OR})_n$  (e.g., zirconium tributoxy chloride), a phosphorous compound  $\text{PR}_3$ ,  $\text{POR}_3$  or  $\text{PO}(\text{OR})_3$  (e.g., triphenylphosphine), and an aluminum compound  $\text{AlR}_2\text{X}'$  (e.g., diethylaluminum chloride), in which R, R', and R'' are the same group or different groups selected from alkyl, cycloalkyl, alkenyl, and aryl groups, X and X' are the same or different halogens, and n is 3 or 2.

3,689,586

## PROCESS FOR SMOOTH OPERATION OF BURNER IN PRODUCTION OF ACETYLENE-CONTAINING GAS

Bernhard Busch, 4 Neubergstrasse, Gerolsheim upper Palatine; Hans Funk, 12 Friesenstrasse, Ludwigschafen/Rhein, and Walter Teltschik, 12 Wildstrasse, Frankenthal/Upper Palatine, all of Germany

Division of Ser. No. 742,459, July 3, 1968, abandoned. This

application Sept. 28, 1970, Ser. No. 76,049

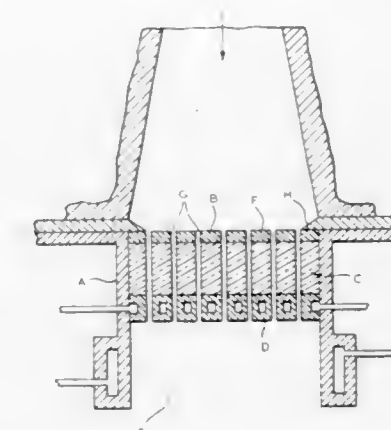
Int. Cl. C07c 11/24

U.S. Cl. 260—679 R

3 Claims

Process for maintaining the smooth operation of an acetylene burner in the production of an acetylene-containing gas, said burner having a mixing chamber and a combustion chamber separated by a ceramic gas distribution block with parallel passages, by providing a metal plate with passages

aligned with said parallel passages as a cover for the upstream face of the ceramic block to prevent spalling thereof caused



by premature ignitions in the mixing chamber and triggering of further premature reactions by ceramic fragments.

3,689,587

## PRODUCTION OF OLEFINS

John Grebbell, Woking, Surrey, and Thomas James Symes, Twickenham, Middlesex, both of England, assignors to BP Chemicals Ltd., London, England

Filed May 6, 1970, Ser. No. 35,224

Claims priority, application Great Britain, May 29, 1969, 27,309/69

Int. Cl. C07c 3/20

U.S. Cl. 260—683.15 E

3 Claims

A process for the production of  $\text{C}_7$  olefins which comprises codimerising ethylene and propylene in the presence of a catalyst prepared by dispersing sodium and/or lithium on an anhydrous potassium compound to form a mixture of olefins containing  $\text{C}_3$  olefins including pentene-1, isomerising at least some of the pentene-1 to pentene-2 and codimerising the  $\text{C}_3$  olefins containing pentene-2 with ethylene in the presence of a catalyst prepared by dispersing sodium and/or lithium or an anhydrous potassium compound.

3,689,588

## PROCESS FOR DIMERIZATION OF OLEFINS

Howard E. Dunn, Evansville, Ind., assignor to Phillips Petroleum Company

Filed June 18, 1970, Ser. No. 47,630

Int. Cl. C07c 3/10

U.S. Cl. 260—683.15 D

6 Claims

A process for the catalytic dimerization of olefins with a catalyst formed from (1) a nickel(II) complex containing organophosphine ligands and a carbon-containing moiety sigma bonded to the central nickel atom, and (2) an alkylaluminum halide activator.

3,689,589

## DISPROPORTIONATION-DIMERIZATION OF ETHYLENE

Robert E. Reusser, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Aug. 11, 1969, Ser. No. 849,184

Int. Cl. C07c 3/20, 3/62

U.S. Cl. 260—683.15 R

11 Claims

Ethylene is upgraded to hydrocarbons of higher molecular weight by contact with a catalyst comprising an olefin dimerization component and an olefin disproportionation component.



### 3,689,590 SULFURIC ACID ALKYLATION WITH P-PHENYLENEDIAMINE

Marvin S. Rakow, East Brunswick, and William H. Lockwood, Jr., Heightstown, both of N.J., assignors to Cities Service Oil Company, Tulsa, Okla.

Filed Oct. 30, 1970, Ser. No. 85,744

Int. Cl. C07c 3/54

U.S. Cl. 260—683.63

6 Claims

An improvement for a conventional alkylation process is disclosed in which a low molecular weight olefin and an isoparaffin are mixed in contact with an acid catalyst at controlled temperatures. The improvement comprises the addition of small concentrations of N-N'-diisopropyl p-phenylenediamine or p-phenylene diamine to the alkylation catalyst to improve the quality and yield of the desired branched chain paraffinic isomers or alkylate produced in the gasoline boiling range.

### 3,689,591 FURAN RESINS MODIFIED WITH CARBOXY CONTAINING COPOLYMER

Guido Lorentz, Frankfurt-Hoechst, and Dieter Stahl, Krieffel, Tanous, both of Germany, assignors to Chemische Werke Albert, Wiesbaden-Blebrich, Germany

Filed April 21, 1971, Ser. No. 136,232

Claims priority, application Germany, April 25, 1970, P 20 20 260.2

Int. Cl. C08f 31/04

U.S. Cl. 260—829

10 Claims

Process for reducing the amount of shrinking that occurs when a furan resin is cured which comprises adding to a furan resin from 15 to 50 percent by weight based on the total weight of the binding material, of a copolymer of (a) at least one  $\alpha,\beta$ -olefinically unsaturated carboxylic acid component which is at most dibasic and has not more than four carbon atoms and (b) a copolymerizable olefinically unsaturated monomer having from 2 to 18 carbon atoms in a ratio of a) to b) from 1:0.5 to 1:20, said copolymer having an average molecular weight of 400 to 3000, and moulded bodies comprising a cured furan resin containing a copolymer as defined above.

### 3,689,592 HEAT-HARDENABLE, FOIL CONTAINING POLYMERIZATE WITH PENDENT GLYCIDYL GROUPS

Jürgen Fock, Essen-Bredeney, and Ulrich Holtschmidt, Essen, both of Germany, assignors to Th. Goldschmidt A.-G., Essen, Germany

Filed Nov. 23, 1970, Ser. No. 92,217

Claims priority, application Germany, Dec. 8, 1969, P 19 61 452.9

Int. Cl. C08g 45/04

U.S. Cl. 260—836

11 Claims

This invention relates to a heat-hardenable foil and process for the preparation thereof, the foil comprising a mixture of copolymerizates (A) and (B) in a weight ratio of 1:20 to 1:3,

- being an elastomeric copolymerizate obtained by polymerization of
  - 70 to 99 per cent by weight of an acrylic acid alkyl ester, whose alkyl residue has one to eight carbon atoms, and
  - 1 to 30 per cent by weight of a compound selected from the group consisting of an unsaturated monocarboxylic acid or an anhydride of an unsaturated dicarboxylic acid, and
- being a hard-brittle copolymerizate obtained by polymerization of
  - 60 to 70 per cent by weight of a compound selected from the group consisting of styrene or a methacrylic acid alkyl ester whose alkyl residue has one to four carbon atoms,

- 1 to 20 per cent by weight of a glycidyl ester of acrylic or methacrylic acid, and
- 1 to 20 per cent by weight of a compound selected from the group consisting of an unsaturated monocarboxylic acid or an unsaturated dicarboxylic acid.

### 3,689,593 CHAIN TRANSFER LINKED URETHANE GRAFT COPOLYMERS

Bruce W. Jackson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 121,144, March 4, 1971, abandoned, which is a continuation-in-part of Ser. No. 90,855, Nov. 18, 1970, abandoned. This application Nov. 19, 1971, Ser. No. 200,572

Int. Cl. C08g 41/04

U.S. Cl. 260—859

20 Claims

Film-forming graft copolymers having a backbone and graft segments linked together by a chain transfer agent and a diisocyanate and a process for their preparation.

### 3,689,594 CURING PROCESSES USING DI-(2-METHYLBENZOYL)PEROXIDE

Jürgen Groepper, Gunzburg, Germany, assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Dec. 31, 1970, Ser. No. 103,283

Int. Cl. C08f 21/00

U.S. Cl. 260—861

3 Claims

Improved processes for curing unsaturated polyester resin compositions by employing di-(2-methylbenzoyl) peroxide as a curing catalyst.

### 3,689,595 HIGH IMPACT POLYPROPYLENES

J. S. Gwinn, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed April 28, 1970, Ser. No. 32,734

Int. Cl. C08f 29/12, 33/08

U.S. Cl. 260—876 B

11 Claims

A high impact polypropylene having an improved low brittleness temperature and an increased Izod impact strength is produced by blending together (1) a mixed copolymer, produced by first forming blocks of propylene homopolymer in presence of which there is then polymerized unreacted propylene and added ethylene by continuing the polymerization reaction thus resulting in said mixed copolymer with (2) a resinous radial block copolymer obtained by sequentially polymerizing a monovinyl-substituted aromatic hydrocarbon and a conjugated diene, and subsequently treating polymer thus obtained with a polyfunctional treating agent to obtain said copolymer which is radial with respect to long branches which radiate from a nucleus formed by the polyfunctional compound. The mixed copolymer can be produced by either batch or continuous operation. When produced by continuous operation, it is improved as a high-impact resin by addition of the radial copolymer, which lowers brittleness temperature and increases Izod impact. The batch produced mixed copolymer, the properties of which are already attractive can be further improved with respect to reduction of brittleness temperature and increase of Izod impact by adding thereto the radial resin. An increase in flexural modulus of the mixed copolymer, for example, as produced by continuous operation, can be obtained by blending it with polypropylene as produced by a usual method. Mixed copolymer is also blended with the radial copolymer and with polypropylene to obtain an improved high impact polypropylene polymer. The radial block copolymer can also be polymodal.

### 3,689,596 IMPACT RESISTANT STYRENE-MALEIC ANHYDRIDE/HYDROXYLATED DIENE BLOCK COPOLYMER COMPOSITIONS

Munisamappa Narayana, Midland, Mich., and Jerry E. Mason, Hemlock, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 847,395, Aug. 4, 1969, abandoned. This application April 19, 1971, Ser. No. 135,377

Int. Cl. C08f 29/36, 33/08

U.S. Cl. 260—876 B

4 Claims

A plastic composition with a good balance of physical properties especially having improved impact and high heat distortion is prepared by intimately mixing from about 15 to 50 weight percent of a partially hydroxylated diene block copolymer with about 85 to 50 weight percent of an anhydride containing thermoplastic such as a styrene-maleic anhydride copolymer.

### 3,689,597 POLYPHASE COMPOSITIONS AND PROCESS FOR THEIR PREPARATION

Bert H. Mahlman, West Chester, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 670,412, Sept. 25, 1967, abandoned. This application June 26, 1970, Ser. No. 50,300

Int. Cl. C09j 3/26

U.S. Cl. 260—897 R

3 Claims

Unique polyphase compositions are disclosed having, as a continuous phase a propylene polymer and as a second phase a substantially amorphous organic material selected from solid or semi-solid hydrocarbons and hydrocarbon resins. These compositions are prepared by dispersing a propylene polymer of substantially all sub-micron particle size in the second phase and fusing the polymer under controlled conditions which assure the formation of the propylene polymer into a continuous phase.

### 3,689,598 PROCESS FOR THE MANUFACTURE OF FOILS AND SHEETS OF MOLDING COMPOSITIONS OF TACTIC VINYL CHLORIDE HOMO AND/OR COPOLYMERS

Egon Bierwirth; Robert Buning, both of Oberlar; Harald Dorfmut, Hanger, and Hans-Ewald Konermann, Oberlar, all of Germany, assignors to Dynumit Nobel AG, Troisdorf, Germany

Filed Oct. 2, 1969, Ser. No. 863,314

Claims priority, application Germany, Oct. 5, 1968, P 18 01 400.1

Int. Cl. C08f 29/24

U.S. Cl. 260—876 R

9 Claims

Molding composition containing tactic vinyl chloride homo or copolymer and 5 to 25 weight percent of at least one member selected from the group consisting of a binary copolymer of methyl methacrylate and 1 to 20 weight percent of another methacrylate or 1 to 10 weight percent of an acrylate each having an alcoholic moiety of two to 10, preferably two to four, carbon atoms; a graft copolymer of methyl methacrylate, butadiene and styrene; and a graft copolymer of acrylonitrile, butadiene and styrene. This molding composition has improved physical properties as compared to tactic vinyl chloride polymers alone.

3,689,599

Patent Not Issued For This Number

3,689,600

Patent Not Issued For This Number

### 3,689,601 PHOSPHONIUM SALTS AND PROCESS FOR MAKING SAME

Martin Grayson, Norwalk, Conn., and Patricia Tarpey Keough, Ridgefield, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 674,107, Oct. 10, 1967, abandoned, which is a continuation of Ser. No. 292,123, July 1, 1963, abandoned. This application Nov. 17, 1969, Ser. No. 871,628

Int. Cl. C07f 9/54; C08f 45/58

U.S. Cl. 260—932

7 Claims

Organo phosphonium salts of the formula:



are prepared by reacting compounds of the formulas



or



with H-Q wherein: X is halogen, Y is the residue of an acylating agent, and Q is the residue of a reactant having an electronegative group and providing a replaceable hydrogen atom (H) which is replaced by the  $R^1R^2R^3PCH_2CH_2$ -group of compounds I or II in forming the compound A. The phosphonium salts are useful as fire retardants in plastics.

### 3,689,602 HALOGENATED ESTERS OF THE PHOSPHORIC ACIDS

Roshdy Ismail, 5213 Spich, Rodderstrasse 6, Germany

Filed Jan. 27, 1969, Ser. No. 795,142

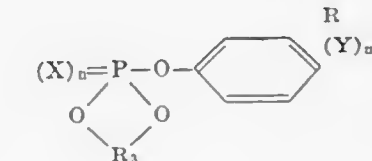
Claims priority, application Germany, Jan. 25, 1968, D 55182

Int. Cl. C07d 105/04; C07f 9/02; A01n 9/36

U.S. Cl. 260—936

4 Claims

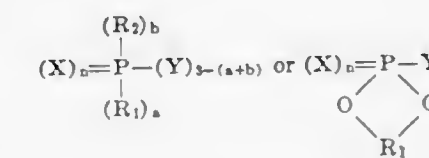
Halogenated esters of phosphoric acids of the formula:



wherein R represents alkyl, X represents oxygen, Y represents halogen, other than fluorine,  $R_3$  represents phenylene, halogenated phenylene, diphenylene, halogenated diphenylene, diphenylenealkane or halogenated diphenylenealkane, n is 0 or 1 and m is a whole number of from 2 to 4, as well as mono-(nitrophenyl)-di-polyhalophenyl phosphites or phosphates and di-(nitrophenyl)-polyhalophenyl phosphites or phosphates.

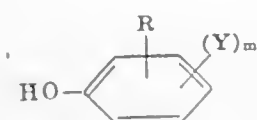
The above compounds have utility as insecticides, acaricides, pesticides and bactericides. They are also useful as flame retardants for plastics and as difficulty combustible dielectrics.

They are prepared by condensing an acid halide of phosphorus of the formula:



wherein  $R_1$  is alkyl, alkenyl, cycloalkyl or aryl,  $R_2$  is alkoxy ( $C_{1-4}$ ), halogenated alkoxy ( $C_{1-4}$ ), cyclo-alkoxy or aryloxy, a and b are whole numbers having a value of from 0 to 2, the sum of a + b not exceeding 2 and n,  $R_3$ , X and Y are as above defined, with a halogenated phenol or alkyl substituted halogenated phenol





wherein R, Y and *m* are as above defined, in the presence of a catalytic amount of at least one member of the group of tertiary amines, the amino group of which is part of an aromatic ring system, acid amides of phosphorus, arsenic and antimony compounds having bonds to organic radicals and salts of such amines and amides, at a temperature of from 50° to 220°C.

3,689,603

## O-ALKYL-O-PHENYL-S-ALKOXYETHYL-PHOSPHOROTHIOATES

Shigeo Kishino, Tokyo; Koza Shiokawa; Akio Kudamatsu, both of Kanagawa-ken, and Yasuo Yamada, Tokyo, all of Japan, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 23, 1970, Ser. No. 57,793

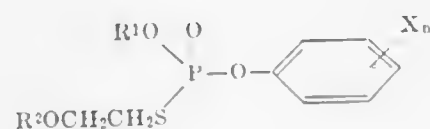
Claims priority, application Japan, July 26, 1969, 44/58738

Int. Cl. C07f 9/12; A01n 9/36

U.S. Cl. 260—950

38 Claims

O-alkyl-O-phenyl-S-alkoxyethyl-phosphorothiolates of the general formula



in which

R<sup>1</sup> and R<sup>2</sup>, which may be the same or different, denote alkyl radicals of one to four carbon atoms, each X independently denotes a halogen atom, and *n* is 0, 1, 2 or 3, which possess insecticidal, fungicidal and nematocidal properties.

3,689,604

## AMIDO-THIOLPHOSPHORIC ACID-O,S-DIMETHYL ESTER

Gerhard Schrader, Wuppertal-Cronenberg; Walter Lorenz, Wuppertal-Vohwinkel; Gunter Unterstenhofer, Opladen, and Ingeborg Hammann, Cologne, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 30, 1965, Ser. No. 468,585

Claims priority, application Germany, July 2, 1964, F 43 328

Int. Cl. C07f 9/24; A01n 9/36

U.S. Cl. 260—959

1 Claim

O-alkyl-S-methyl-phosphoric acid diester amides, which possess biocidal, especially insecticidal and acaricidal, properties.

3,689,605

## DETOXIFICATION OF DITHIOPHOSPHORIC ESTERS

Romano Santi, Milan, Italy, assignor to Montecatini Edison S.P.A., Milan, Italy

Filed June 17, 1969, Ser. No. 834,175

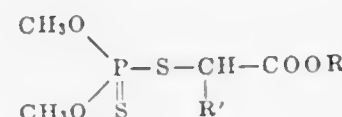
Claims priority, application Italy, June 19, 1968, 17901 A/68

Int. Cl. A01n 9/36; C07f 9/16

U.S. Cl. 260—990

7 Claims

Described is a method of reducing the toxicity to warm-blooded animals of dithiophosphoric esters of the formula:



wherein R = alkyl with 1-5 carbon atoms, R' = phenyl or carboethoxymethyl. The method consists substantially in adding to the above esters, either undiluted or in solution, adequate quantities of acyl bromides or iodides.

3,689,606

Patent Not Issued For This Number

3,689,607

## UREA PRILLING

Peter Stanley Backlund, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Oct. 26, 1970, Ser. No. 84,246

Int. Cl. B01j 2/06

U.S. Cl. 264—13

13 Claims

(1) Particulate solids of water-soluble, fertilizer materials are prepared by dispersing a substantially anhydrous spray of molten and discrete droplets of the fertilizer material into a liquefied, volatile, cooling medium. Suitable cooling media include liquefied air, nitrogen, ammonia, carbon dioxide, or C<sub>1</sub> to about C<sub>4</sub> alkanes and halogenated derivatives thereof. The molten fertilizer material is preferably dispersed as discrete droplets having sizes from about 0.04 to about 0.30 inch by spraying the molten material into the liquefied cooling medium. The material is permitted to reside in the cooling medium a sufficient time to cool the material to below its freezing point and thereby form the particulate solids which are thereafter separated from the liquid. Any vaporized liquid can be recovered and refrigerated for reuse in the process. Urea is a preferred fertilizer material.

3,689,608

## PROCESS FOR FORMING A NONWOVEN WEB

Herbert John Hollberg, Richmond, Va., and John Edward Owens, Hockessin, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 735,889, June 10, 1968, abandoned, which is a continuation-in-part of Ser. No. 372,623, June 4, 1964, Pat. No. 3,387,326. This application June 10, 1970, Ser. No. 48,825

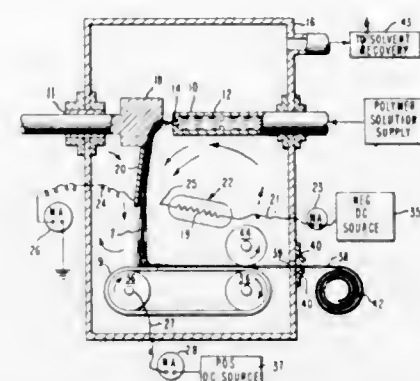
Int. Cl. D04h 3/03

5 Claims

U.S. Cl. 264—24

A process for spreading, electrostatically charging, and forwarding a fibrous web concomitantly formed with a vapor blast. The web is charged by passing it through a highly ionized zone created by a corona discharge between an ion gun and a target plate. The electrical potential between the ion gun and target plate causes current to flow which is sufficient

cient to deposit a charge on the web which is preferably 75 to 100 percent of the maximum sustainable charge, but low



enough to avoid loss of web charge through secondary corona discharge between the target plate and the web.

3,689,609

## BLOWN FILM TUBE COLLAPSING

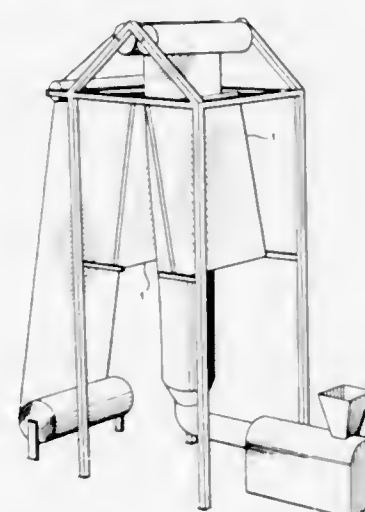
Leroy E. Robinson, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Feb. 5, 1970, Ser. No. 8,977

Int. Cl. B29c 17/07, 25/00

U.S. Cl. 264—40

1 Claim



A blown film tube collapsing frame comprising two separate plenum chambers having perforate metal surfaces facing a blown film tube or bubble is used to force air through the perforations in said surface to collapse the tube or bubble. Each plenum chamber contains adjustable baffles, movable by ropes to fit any size bubble, to ensure the air egress through the perforations immediately adjacent the bubble. Magnets imbedded into the surface of the baffles ensure contact of the perforated plate and the baffles.

3,689,610

## MANUFACTURE OF INSULATED ELECTRIC CABLES

Peter Nicholson, Walderslade, Chatham, England, assignor to British Insulated Callender's Cables Limited, London, England

Filed June 5, 1969, Ser. No. 830,712

Claims priority, application Great Britain, June 6, 1968, 27,056/68

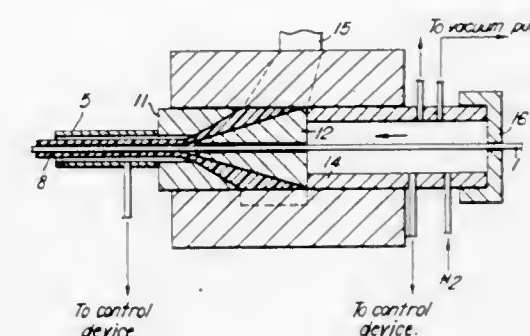
Int. Cl. B29f 3/10; B29h 9/08

U.S. Cl. 264—40

10 Claims

In the manufacture of an extruded covering on a continuously advancing core by passing the core through the core tube of an extrusion machine which applies a continuous covering on to the core and effecting continuous treatment of the covering by passing the covered core through a chamber

sealed to the extrusion machine and containing a fluid medium at super-atmospheric pressure, fluid under pressure is injected into the interior of the core tube of the extrusion machine. The injected fluid is maintained at a pressure which is less than that of the fluid medium by an amount such that the pressure difference across the extruded covering at the ex-



trusion orifice is sufficient to cause the extruded covering to collapse firmly on to the core as it emerges from the extrusion machine but is insufficient to force the extruded covering back along the core tube. The pressure difference is preferably automatically maintained constant by a differential pressure control device associated with the chamber and with the core tube.

3,689,611

## METHOD OF MAKING GLAZED CERAMIC BONDED EXPANDED VERMICULITE ARTICLES

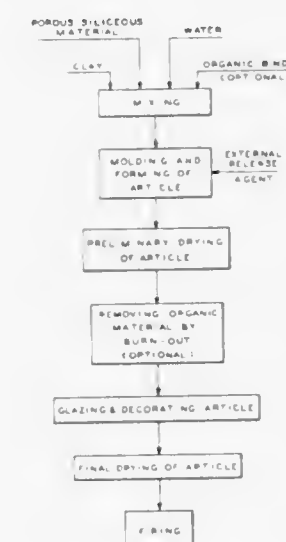
Paul Wilson Hardy, Barrington, and Orrin Martel Peterson, Crystal Lake, both of Ill., assignors to American Can Company, Greenwich, Conn.

Continuation of Ser. No. 706,741, Jan. 31, 1968, abandoned, which is a continuation-in-part of Ser. No. 578,064, Sept. 8, 1966, abandoned. This application Aug. 6, 1970, Ser. No. 61,831

Int. Cl. C04b 21/08, 31/26, 33/34

U.S. Cl. 264—43

13 Claims



A method for producing strong low density articles suitable for use as disposable containers by mixing expanded vermiculite and a ceramic material in about equal proportions by weight with water, pressing to the desired shape, drying, coating with an engobe and a glaze and firing to mature the glaze and ceramically bond the matrix material with the vermiculite. Suitable matrix materials are clays, talc, feldspar, flint and wollastonite. Optionally pressing lubricants can be used.



3,689,612

# METHOD FOR EXTRUDING INTO CAVITIES DEFINED BY A FIXED PLATE AND MOVING METAL MOLDS A FOAMABLE ON NON-FOAMABLE THERMOPLASTIC POLYMERIC RESIN

Jun Taga, 5664, Ikuta, Kanagawa Prefecture, Kawasaki, Japan

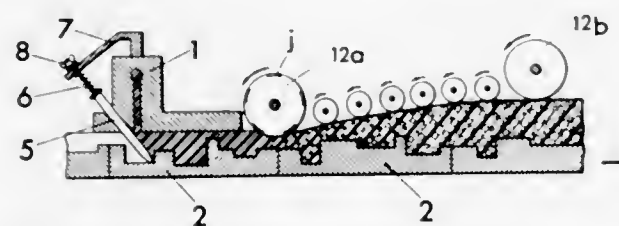
Filed May 12, 1970, Ser. No. 36,518

Claims priority, application Japan, May 14, 1969, 44/036524

Int. Cl. B29f 1/00; B29d 27/00

U.S. Cl. 264—48

9 Claims



A method for molding synthetic thermoplastic polymeric organic resin which also may be foamable comprising successively placing under pressure the, molten resin which is extruded from a die of an extruder in cavities to be formed between the die and continuously moving plural metallic moulds, and preventing a leakage of the molten resin out of the cavity in rear of the die by means of one or more barriers which are movable simultaneously or independently with each other, said barrier being adapted to be, at its tip end, always in contact with an inner floor of the metallic mould or held leaving a slight space therefrom and being adjacent to the rear portion of a die orifice thereby to enable the flow line of resin to be substantially perpendicular in relation to the direction of movement of the metallic mould and thus to be short and an apparatus for performing said method. There is also disclosed an apparatus as mentioned above, wherein in front of the die is provided a pressing coiling roll or endless belt having a function of adjusting a cooling temperature thereby to effect the solidification of the molten resin while pressing and cooling, whereupon the molded product is withdrawn. Thereby, the thermoplastic materials can be continuously molded without leakage of materials to give a molded article having excellent properties, especially stress-free property.

3,689,613

# GLOVE MAKING

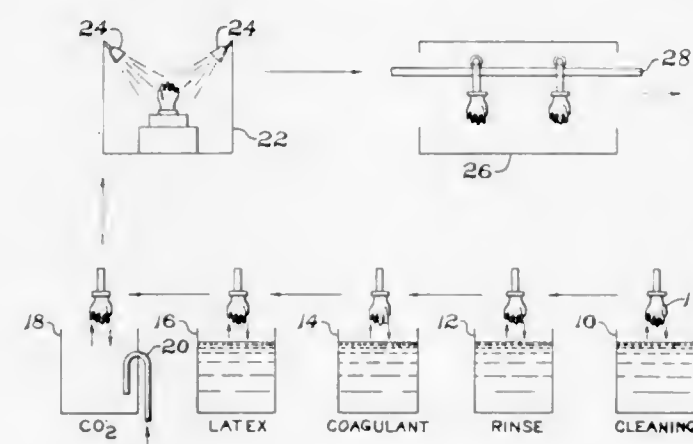
Anselm Talalay, 2867 Ludlow Road, Cleveland, Ohio

Filed Nov. 2, 1970, Ser. No. 85,839

Int. Cl. B29h 3/04

U.S. Cl. 264—83

4 Claims



A process for manufacturing latex gloves which includes coating a form with coagulant solution, then coating the coagulant dipped form with latex followed by exposing the latex dipped form to carbon dioxide to harden the deposit thereon, then washing such coated form, and thence curing such deposit on such form.

3,689,614

# CENTRIFUGAL MOLDING OF CERAMIC TUBES CONTAINING METAL FIBERS

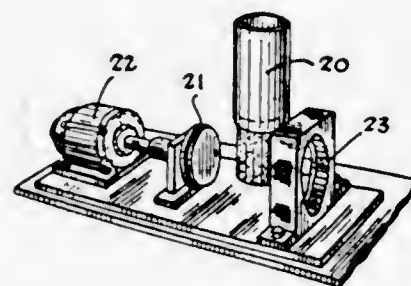
Seymour A. Bortz, Highland Park; Linden E. Shipley, Evanston, both of Ill., and Lefferd B. Haughwout, Delafield, Wis., assignors to Abex Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 719,977, April 9, 1968, abandoned. This application Jan. 28, 1970, Ser. No. 6,435

Int. Cl. C04b 35/72

U.S. Cl. 264—60

6 Claims



A sound strong ceramic body of tubular or pipe shape is obtained by centrifugally casting a mixture of ceramic powders and fibrous metal, the metal having a coefficient of expansion higher than that of the ceramic.

3,689,615

# METHOD OF IMPROVING REFRACTORY BRICKS

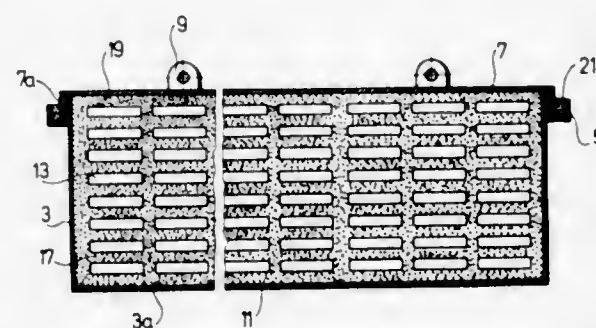
Miklos Sandor, Istvan Nyitrai, both of Borsodnadasd, and Jozsef Nemeth, Budapest, all of Hungary, assignors to Borsodnadasdi Lemezgyar, Borsodnadasd, Hungary

Filed Jan. 4, 1971, Ser. No. 103,673

Int. Cl. C04b 41/06

U.S. Cl. 264—60

1 Claim



Heat and wear resistance and other properties of refractory bricks are improved by embedding them in a special powder and heating them in an oxygen-free atmosphere at 900°–1,100° C. for 18–36 hours. The powder is prepared by heating bauxite powder slowly to 950°–1,100° C. and keeping it there for 10–15 hours, then cooling and comminuting the powder and admixing 40–60 percent by weight of it with 40–60 percent by weight of powdered aluminum and 1–6 percent by weight of powdered ammonium chloride, then annealing this intermediate powder at 950°–1,100° C. for 22–26 hours, cooling and comminuting and admixing 10–20 percent by weight powdered aluminum and 0.5–3 percent by weight powdered aluminum chloride.

3,689,616

# COLD WAX PROCESS FOR FORMING CANDLES

Bernard B. Kelley, Sherwood, Oreg., assignor to Joseph Vergeer, Portland, Oreg. and Paramatic Corporation, part interest to each

Filed April 2, 1970, Ser. No. 25,161

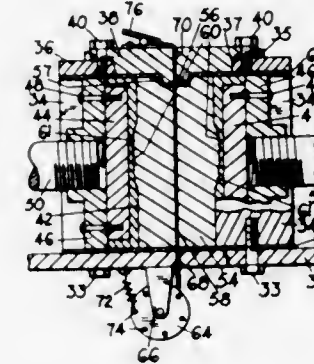
Int. Cl. B29c 3/00

U.S. Cl. 264—68

9 Claims

A process for molding wax candles at room temperature. The wax is first reduced to particles and then compressed into a product at a pressure and mold closing time capable of

developing a sufficient internal heat from the heat of compression and the heat of friction to fuse the wax into a solid, substantially uniform density product. Necessary to the invention the particles employed in the process must be reduced to a size or shape capable of producing the necessary heat of compression and heat of friction for fusing the wax substantially uniformly throughout the product. The apparatus employed



includes pressure operated plungers which are arranged to move mold members at a speed and at a force such that the heat of compression and heat of friction developed in the crystalline structure of the wax reach a temperature capable of fusing the wax without the application of outside heat. The apparatus also includes wick feeding mechanism capable of holding wicks under tension in a cavity when the candles are being molded.

3,689,617

# METHOD FOR EXTRUSION OF INTERLACED WEBS

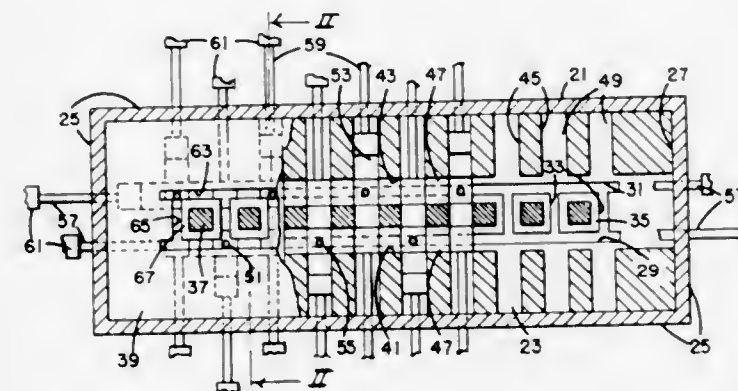
Theodore H. Fairbanks, Liverpool, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 793,731, Jan. 24, 1969, Pat. No. 3,600,751. This application Feb. 5, 1971, Ser. No. 112,945

Int. Cl. D04g 1/00; D02g 1/20

U.S. Cl. 264—103

7 Claims



A method of making a woven web by extruding a series of spaced streams of flowable strand-forming material in each of two laterally spaced, parallel planes, with the streams in one of such planes being staggered with relation to the streams in the other of such planes. These streams are then moved simultaneously, first transversely in such planes with the streams in one of such planes moving in a direction opposite to the streams in the other of such planes, and then in a direction substantially perpendicular to such planes. The extruded streams are set preferably prior to contact therebetween.

3,689,618

# USE OF AN UNADVANCED SILICONE RESIN BINDER IN RESISTOR MANUFACTURE

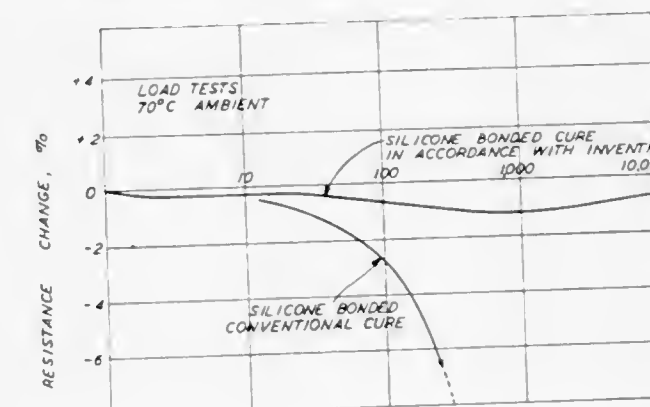
George F. Chadwick, N. Tonawanda, N.Y., assignor to Air Reduction Company, Incorporated, New York, N.Y.

Continuation of Ser. No. 690,897, Dec. 15, 1967, abandoned, which is a continuation-in-part of Ser. No. 410,091, Nov. 10, 1964, Pat. No. 3,382,574. This application Aug. 5, 1970, Ser. No. 61,399

Int. Cl. H01c 7/00

U.S. Cl. 264—104

1 Claim



A carbon composition resistor and method for manufacture thereof is disclosed, the resistor being characterized as having a body comprising a conductive particulate component, a nonconductive particulate component, and a silicone resin binder for said components, said binder being advanced and cross-linked entirely in situ in the body.

3,689,619

# CONTINUOUS GRANULATION OF TRIOXANE

Joern Borchmann, 19 Woehlerstrasse; Hugo Fuchs, 165 Sternstrasse; Gert Goeschel, 7 an der Froschlache; Bruno Sander, 10 Moerikestrasse, and Heinrich Sperber, 158 Mundenheimer Strasse, all of 6700 Ludwigshafen, Germany

Filed April 3, 1970, Ser. No. 25,561

Claims priority, application Germany, April 5, 1969, P 19 17 647.7

Int. Cl. B01j 2/12

U.S. Cl. 264—144

4 Claims

Method of granulating trioxane in which molten trioxane containing small quantities of water is contacted with a cold surface.

3,689,620

# HIGH SPEED WET SPINNING TECHNIQUE

Toshio Miyazaki, Etuzou Omura; Kyoku Katakabe; Minoru Makita; Enji Iwase; Hideo Tsutsumiuti; Takashi Yotsumoto; Fumiaki Ikeda; Yoshiro Takashima; Hiromu Sueyoshi, and Tomio Maesaka, all of Nobeoka-shi, Miyazaki-ken, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 2, 1970, Ser. No. 94,468

Claims priority, application Japan, Dec. 2, 1969, 44/96347; Dec. 2, 1969, 44/96348

Int. Cl. D01d 5/14

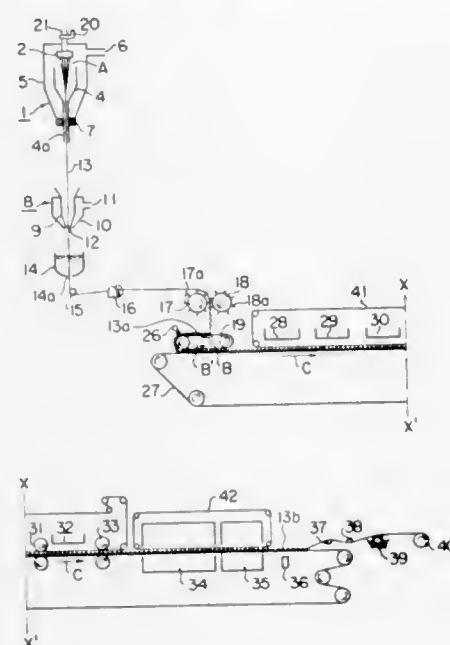
U.S. Cl. 264—181

3 Claims

In the spinning process the filaments leaving the spinnaret in a vertically downward direction pass through a first coagulating bath and the fluid entrained by the filaments is decelerated by means of concentric angularly directed jets of fluid prior to passage through a second coagulating bath. The filament may then pass over a bar which changes the direction of the filament and removes entrained fluid. Further coagulating bath treatment may be provided by passage through the trough of a



saddle guide prior to passage between a pair of vane type rolls for shaking the remaining bath fluid from the filaments. The filaments are then loosely deposited on a travelling web for



further treatment. Specific apparatus for carrying out the process is provided including elastic covered vanes on the rolls as well as several embodiments for the decelerating fluid jet arrangement.

### 3,689,621 CONTINUOUS WET SPINNING METHOD OF PRODUCING USEFUL FILAMENTARY MATERIALS OF AN ACRYLONITRILE COPOLYMER

Saburo Fujii; Yasuo Saji; Kozo Yamada; Zenji Makita, and Shigeru Ikegami, all of Suntogun, Shizuoka, Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan

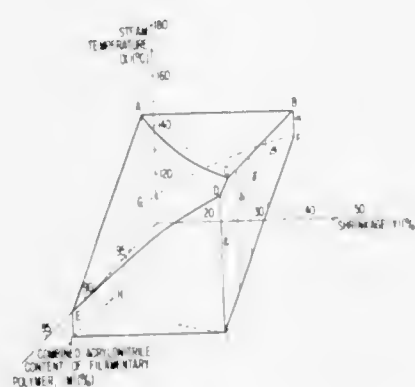
Filed March 2, 1970, Ser. No. 15,656

Claims priority, application Japan, March 2, 1969, 41/15717

Int. Cl. D01f 3/28

U.S. Cl. 264—182

17 Claims



A continuous wet-spinning method for producing a useful filamentary material, such as multi-filaments or a tow, from a spinning solution of an acrylonitrile copolymer in an aqueous saline solvent consisting essentially of zinc chloride. In this method, an aquagel filamentary material obtained by spinning the spinning solution is taken up from an aqueous coagulating bath, continuously stretched in water and continuously dried so as to form a dried filamentary material having a moisture content of less than 5 weight percent and a transparency of at least 70 percent, measured under specific conditions. Subsequently, the dried filamentary material is continuously relaxed under a tension of at least 2 mg. per denier in substantially saturated steam at a temperature,  $X(^{\circ}\text{C})$ , such that the following expression is satisfied:  $55 \log Y + 5M - 417 \leq X$

$100 \log Y + 5M - 434$  wherein  $160^{\circ}\text{C} \leq X \leq 100^{\circ}\text{C}$ , 45 percent  $Y \leq 15$  percent and  $Y$  is the percent of shrinkage.

### 3,689,622 METHOD FOR PRODUCING HIGHLY CRIMPED REGENERATED CELLULOSE FIBERS BY SOLVENT STRETCHING

Atsushi Kawai, and Migaku Suzuki, both of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

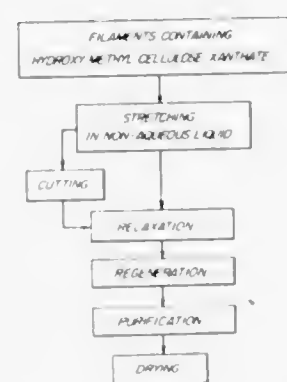
Filed June 12, 1970, Ser. No. 45,722

Claims priority, application Japan, June 24, 1969, 44/49834

Int. Cl. D01f 3/28

U.S. Cl. 264—197

13 Claims



Highly crimped regenerated cellulose fibers can be obtained by stretching filaments containing the reaction product of cellulose xanthate and formaldehyde in a non-aqueous liquid having a boiling point of at least  $80^{\circ}\text{C}$ . and maintained at a temperature of  $60^{\circ}\text{C}$  to  $150^{\circ}\text{C}$ , relaxing said filaments in an incompletely regenerated state in an aqueous solution having a swelling action on the filaments and maintained at a temperature of  $30^{\circ}\text{C}$  to  $90^{\circ}\text{C}$  and then subjecting the filaments to regeneration treatment to complete regeneration.

### 3,689,623 METHOD FOR PREPARING FIBERS OF POLYETHYLENE-1,2-DIPHENOXYETHANE-4,4'- DICARBOXYLATE

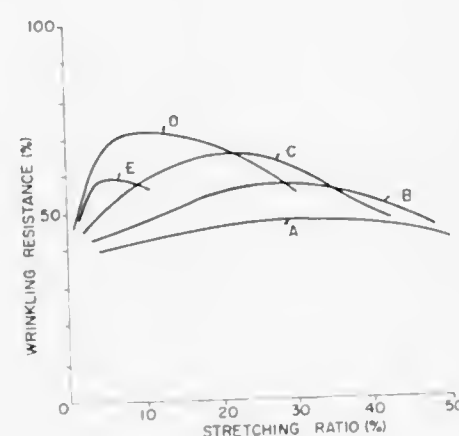
Hidehiko Kobayashi, Tokyo; Kiichiro Oimachi Sasaguri, Irumagun; Kazuya Neki, and Noboru Tanimura, both of Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 17, 1969, Ser. No. 885,703

Int. Cl. D01d 5/12

U.S. Cl. 264—210 F

8 Claims



Stretched synthetic fibers are prepared by spinning polyethylene-1,2-diphenoxymethane-4,4'-dicarboxylate which has been obtained by copolymerizing comonomer(s) containing one or more metal salts of strong acid having a  $\text{pK}_a$  value of 3.5 or less and has the residual carboxyl groups in the polymer of 20 gram—equivalents or less per  $10^6$  g at a high winding speed of 1,500 to 5,000 m/min, and continuously or

discontinuously 5 to 50 percent stretching the thus obtained fibers. The stretched fibers have a good strength, a good boiling water shrinkage and a good bending and wearing strength.

The textile plain-woven from the stretched fibers has a good wrinkling resistance.

3,689,624

Patent Not Issued For This Number

3,689,625

METHOD OF FORMING A MOLDED RING GASKET  
Donald H. Zipper, Western Springs, Ill., assignor to Continental Can Company, New York, N.Y.

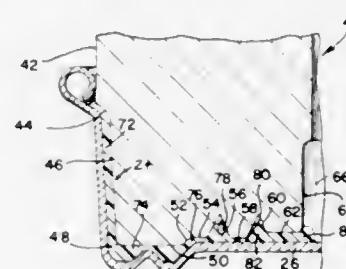
Division of Ser. No. 750,628, Aug. 6, 1968, Pat. No. 3,473,683.

This application June 12, 1969, Ser. No. 871,109

Int. Cl. B29c 13/02

U.S. Cl. 264—268

4 Claims



A punch for forming a closure gasket which includes at least two annular grooves, each having a land radially inwardly thereof, a plurality of inwardly extending notches in the lands and extending between the grooves, and generally radially and generally axially facing surfaces disposed outwardly of the grooves for forming a gasket along and inwardly of the skirt portion of a closure. The method includes disposing gasket forming compound on the inner surface of the skirt of a cap shell, moving a punch into a gasket channel of the shell to form a gasket, and allowing air entrapped with the compound to escape radially inwardly of the punch while directing excess gasket compound into a plurality of concentric rings. The closure comprises a cap shell with a gasket having sealing surfaces disposed on the skirt and in a gasket channel just inwardly of the skirt, and excess gasket forming compound disposed in a plurality of rings just inside the channel. The top panel center portion of the closure, and the spaces adjacent the rings, preferably are free of compound or contain not more than relatively thin or intermittent deposits of gasket forming compound.

3,689,626

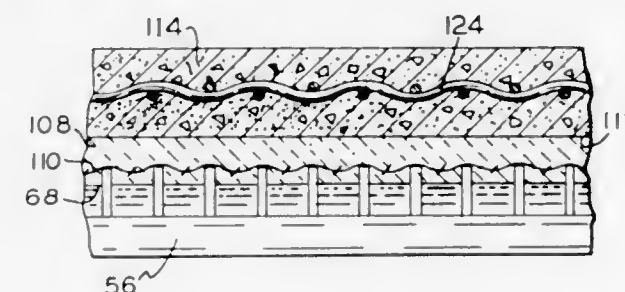
PROCESS FOR CASTING CONCRETE MEMBERS  
Ralph K. Scott, Kennewick, Wash., assignor to Columbia Fabricators, Inc., Kennewick, Wash.

Filed July 6, 1970, Ser. No. 52,533

Int. Cl. B28b 1/14

U.S. Cl. 264—253

22 Claims



Concrete members including wall panels and the like are made in a mold having a mold bottom portion formed of a

3,689,627

Patent Not Issued For This Number

3,689,628

Patent Not Issued For This Number

3,689,629

SOLVENT SURFACE TREATMENT OF MICROPOROUS  
POLYURETHANE ELASTOMER

Graham Rodney Hull, North Lynn, King's Lynn, Norfolk, England, assignor to Porvair Limited, Norfolk, England

Continuation-in-part of Ser. No. 621,124, March 7, 1967, abandoned. This application Aug. 15, 1969, Ser. No. 850,666

Claims priority, application Great Britain, Mar. 7, 1966, 9976/66

Int. Cl. B29c 25/00

U.S. Cl. 264—341

7 Claims

A microporous polyurethane coating is given an appearance resembling that of calf grain leather by being sprayed with a solvent for the polyurethane, for example N-N dimethylformamide and heating the surface to evaporate the solvent. The preferred spray has a narrow range of droplet sizes defined in the specification.

### ERRATUM

For Class 424—4 see:  
Patent No. 3,689,631

### ERRATA

For Class 423—239 see:  
Patent No. 3,689,212  
For Classes 423—379 to 423—447 see:  
Patents Nos. 3,689,214 thru 3,689,220  
For Class 423—342 see:  
Patent No. 3,689,230



3,689,630

**BARIUM SULFATE CONTRAST MEDIA**

Katsumi Kikuchi, and Koji Daigo, both of Sakai-shi, Japan, assignors to Sakai Chemical Industry Company Limited, Osaka-fu, Japan

Filed Sept. 9, 1968, Ser. No. 758,597

Int. Cl. A61k 27/08

U.S. Cl. 424—4

9 Claims

A barium sulfate contrast medium which comprises a barium sulfate aqueous suspension having a barium sulfate concentration of 750 to 1,200 grams per liter of the suspension and containing carbon dioxide in combination with a suspending agent, said carbon dioxide being contained in the range of 0.2 to 4 gas volume.

3,689,631

Patent Not Issued For This Number

3,689,632

**RHEUMATOID AGGLUTINATION TEST AND REAGENT**

Yutaka Mizushima, and Hidetaka Nagai, both of Tokyo, Japan, assignors to Kowa Company, Ltd., Nagoya, Japan

Filed Jan. 6, 1969, Ser. No. 789,349

Int. Cl. G01n 31/00, 31/04, 33/16

U.S. Cl. 424—12

13 Claims

A rheumatoid agglutination test reagent, which can be used for detecting rheumatoid factor in whole blood as well as serum, and which demonstrates excellent results with respect to its sensitivity, reproducibility in the detection, comprising a buffered saline of a pH  $7.5 \pm 1.5$  wherein are contained proper amounts of  $\gamma$ -globulin coated resin particles formed by combining an ion-exchange resin with human  $\gamma$ -globulin in the said solution and one class of assistant selected from the group consisting of hemolytic agent and coloring agent which can color the said  $\gamma$ -globulin, method for preparation thereof and a diagnostic method of using some.

3,689,633

**PREPARATION OF TEST SAMPLE FOR IMMUNOLOGICAL ASSAY OF PREGNANCY OF MARES**

Matsushima Sanae, Tokyo; Tadashi Tezuka, and Kameo Nakanowatari, both of Kawasaki-shi, all of Japan, assignors to Teikoku Hormone Mfg. Co., Ltd., Tokyo, Japan

No Drawing. Filed Jan. 13, 1969, Ser. No. 790,868

Int. Cl. A23j 1/06; C07g 7/00; G01n 33/16

U.S. Cl. 424—12

1 Claim

A process for the preparation of a sample to be tested by immunological assay for detecting serum gonadotrophin in blood of mares, for the purpose of diagnosing the mares pregnancy, which comprises adding an acid selected from the group consisting of sulfosalicylic, perchloric, and metaphosphoric acids, to the blood, plasma, or serum of the mare to be diagnosed, at a concentration of at least 0.15 m-mol based on 1 ml of serum but below the saturation concentration, separating the resultant precipitate and recovering the supernatant liquid, and a method diagnosis of pregnancy of a mare using such test sample.

3,689,634

**PROTRACTED ACTIVITY ORAL HYDROGEL BEAD**

Karel Kliment, Princeton, N.J.; Jiri Vacik, Prague; Zdenek Ott, Prague; Vladimir Majkus, Prague; Miroslav Stol, Prague; Vladimir Stoy, Prague, and Otto Wichterle, Prague, all of Czechoslovakia, assignors to Ceskoslovenska Akademie ved, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 607,637, Jan. 6, 1967, Pat. No. 3,551,556. This application Sept. 23, 1970, Ser. No. 74,905

Claims priority, application Czechoslovakia, Feb. 9, 1966, 838/66

Int. Cl. A61k 27/12

U.S. Cl. 424—21

5 Claims

Drugs are released gradually to a living organism after oral ingestion, through a layer of non-ionogenic, neutral hydrogel of a polymer of ethylene glycol methacrylate or similar monomer cross-linked sufficiently to make the polymer insoluble in all gastro intestinal liquids.

3,689,635

Patent Not Issued For This Number

3,689,636

**COMPOSITION AND METHOD FOR DESENSITIZING SENSITIVE TEETH**

Leonard J. Svajda, Corpus Christi, Tex., assignor to Bextex Pharmaceutical Company, Houston, Tex.

Continuation-in-part of Ser. No. 655,332, July 24, 1967, abandoned. This application Oct. 24, 1969, Ser. No. 869,374

Int. Cl. A61k 7/16

U.S. Cl. 424—49

3 Claims

A composition and method for desensitizing sensitive teeth is disclosed. The composition comprises the chloride salts of calcium, magnesium, sodium, and potassium. According to a preferred embodiment of this invention, the compositions are formed by mixing saturated solutions of each salt. The compositions can be applied to the gingival crevices or other sensitive areas of the teeth.

3,689,637

**DENTIFRICE COMPOSITION**

Morton Pader, West Englewood, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed July 11, 1969, Ser. No. 841,156

Int. Cl. A61k 7/16

U.S. Cl. 424—52

9 Claims

This disclosure is concerned with a dentifrice composition which has a high molecular weight polyethylene glycol, a silica xerogel and a silica aerogel and which is opaque, translucent or transparent.

3,689,638

**DENTAL PREPARATIONS CONTAINING OROTIC ACID**

Helmut Harth, Mainz; Karl Rau, Wiesbaden-Sonnenberg, and Helmar R. Wagner, Im Erlich, all of Germany, assignors to Blendax-Werke R. Schneider & Co., Mainz, Germany

Filed May 12, 1970, Ser. No. 36,677

Claims priority, application Germany, May 29, 1969, P 19 27 425.0

Int. Cl. A61k 7/16

U.S. Cl. 424—54

3 Claims

A dental preparation for the care of the mouth which exerts a refreshing and stimulating action on the mucous membranes of the mouth and the gum contains uracil-4-carboxylic acid and/or its inorganic and organic salts, optionally with a solubilizer.

3,689,639

**ANTIBIOTIC BERNINAMYCIN AND PROCESS FOR MAKING SAME**

Malcolm E. Bergy, 2617 Lomond Drive; John H. Coats, 3419 Old Colony Road, both of Kalamazoo, Mich., and Fritz Reusser, 6548 Trotwood, Portage, Mich.

Filed Jan. 23, 1969, Ser. No. 793,290

Int. Cl. A61k 21/00

U.S. Cl. 424—117

7 Claims

Antibiotic berninamycin producible by culturing *Streptomyces bernensis* Dietz, sp. nov., in an aqueous nutrient medium. Berninamycin inhibits the growth of *Bacillus subtilis* and can be used to control slime and corrosion in petroleum products caused by this bacterium.

3,689,640

**ANTIBIOTIC ACIDOPHILIN AND PROCESS OF PREPARING THE SAME**

Khem M. Shahani; Jayantkumar R. Vakil, both of Lincoln, Nebr., and Ramesh Chandra Chandan, Hitchin, England, assignors to The University of Nebraska, Lincoln, Nebr.

Continuation-in-part of Ser. No. 542,874, April 15, 1966, abandoned. This application Sept. 28, 1967, Ser. No. 676,001

Int. Cl. A61k 21/00

U.S. Cl. 424—118

2 Claims

Disclosed is a new antibiotic. The antibiotic is produced by fermenting *Lactobacillus acidophilus* in a liquid medium containing constituents of milk, extracting the fermentate with alcohol, evaporating the alcohol to a residue, extracting the residue with acetone, evaporating the acetone and chromatographing the residue.

3,689,641

**CONCENTRATED WATER SUSPENSION OF NUTRIENTS**

Herbert D. Spangler, Philadelphia, Pa., and William G. Walker, Avenel, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 20, 1970, Ser. No. 65,702

Int. Cl. A21d 2/22, 2/28; A23l 1/30

U.S. Cl. 424—147

5 Claims

A concentrated aqueous solution for the enrichment of foodstuffs containing a water soluble ferrous salt, thiamine, niacinamide, riboflavin that has been treated so as to remain in suspension, and as an anti-oxidant a combination of L-cysteine hydrochloride and ascorbic or erythroic acid. The riboflavin suspension is produced by adding concentrated hydrochloric acid to the riboflavin and then adding the mixture to the aqueous solution containing the other nutrients and a suspending agent which is either methylcellulose, gum tragacanth or sodium carboxymethylcellulose.

3,689,642

Patent Not Issued For This Number

3,689,643

**COMBINATION OF L-DOPA, 2-IMINO-5-PHENYL-4-OXAZOLIDINONE AND AN ALUMINUM OR ALKALINE EARTH METAL SALT OR BASE USED TO TREAT PARKINSON'S DISEASE**

Nicholas Peter Plotnikoff, Lake Bluff, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 92,166, Nov. 23, 1970, abandoned. This application Jan. 27, 1971, Ser. No. 110,256

Int. Cl. A61k 27/00

U.S. Cl. 424—157

7 Claims

Covers a composition comprising the combination of L-dopa, 2-imino-5-phenyl-4-oxazolidinone or salt thereof and a third agent comprising an aluminum or alkaline earth metal salt or base and use of said composition in treating Parkinson's disease.

3,689,644

**2-IMINO-5-PHENYL-4-OXAZOLIDINONE AND A POTENTIATING AGENT TO TREAT PARKINSON'S DISEASE**

Nicholas Peter Plotnikoff, Lake Bluff, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 80,760, Oct. 14, 1970, abandoned. This application Jan. 27, 1971, Ser. No. 110,255

Int. Cl. A61k 27/00

U.S. Cl. 424—157

6 Claims

Covers the use of the combination of 2-imino-5-phenyl-4-oxazolidinone or a salt thereof and a potentiating agent comprising an aluminum or alkaline earth metal salt or base in treating Parkinson's disease.

3,689,645

**ERYTHROMYCIN AMIDES AS ANTIBACTERIAL AGENTS**

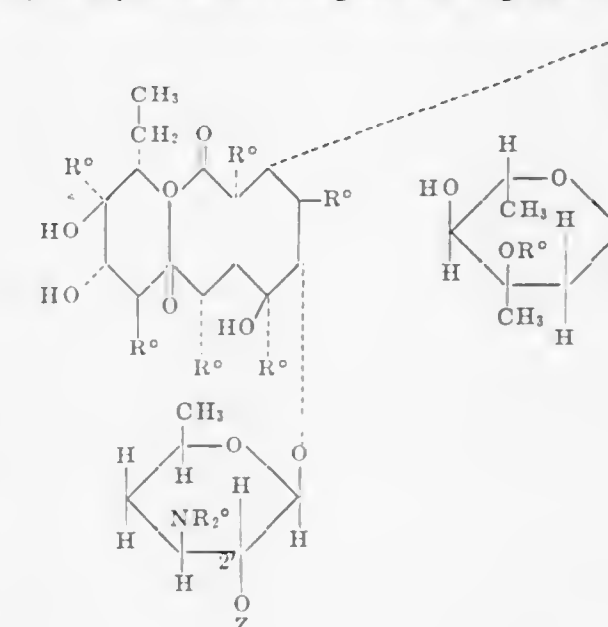
Anthony A. Sinkula, 2607 Pine Ridge Road, Kalamazoo, Mich. Division of Ser. No. 824,679, May 14, 1969, Pat. No. 3,597,415. This application March 17, 1971, Ser. No. 125,357

Int. Cl. A61k 21/00

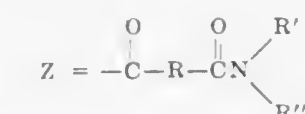
U.S. Cl. 424—181

8 Claims

Erythromycin amides having the following formula:



wherein:



$R^* = CH_3$

R = the radical obtained by the removal of the two carboxyl groups from a dicarboxylic acid which can be dehydrated to an inner anhydride.

R' and R'' = H, alkyl of from one to 20 carbon atoms, inclusive, and isomeric forms thereof, cycloalkyl of three to eight carbon atoms, inclusive, and aralkyl of not more than 12 carbon atoms.

Erythromycin amides are superior tasting erythromycin compounds possessing erythromycin antibacterial activities and the same uses as erythromycin.

3,689,646

**ANTIMUTAGENIC TREATMENT OF BACTERIA**

Manasseh G. Sevag, Newtown Square, Pa., assignor to The Trustees of the University of Pennsylvania

Division of Ser. No. 576,566, Sept. 1, 1969, abandoned, which is a continuation-in-part of Ser. No. 297,200, July 24, 1963, abandoned, and a continuation-in-part of Ser. No. 355,480, March 27, 1964, abandoned. This application Sept. 4, 1969, Ser. No. 871,019

Int. Cl. A61k 21/00, 27/00

U.S. Cl. 424—181

9 Claims

This invention is concerned with a method of killing bacteria with a bactericide so as not to inherently produce bac-



teria strains resistant to the bactericide. In the method of this invention, the bactericide is utilized along with an effective amount of an antimutagenic agent such as spermine, spermidine, quinacrine hydrochloride, chlorpromazine, promethazine, levomepromazine, cyclobenzaprine, 3-chlorodibenzocycloheptene, protriptyline, amitriptyline, azepine hydrochloride and imipramine.

3,689,647

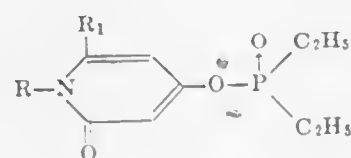
**NOVEL METHOD OF CONTROLLING NEMATODES**  
Paul Herman Schroeder, Medina, N.Y., assignor to FMC Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 605,982, Dec. 30, 1966, abandoned. This application Nov. 26, 1969, Ser. No. 880,382  
Int. Cl. A01n 9/22, 9/36

U.S. Cl. 424—200

7 Claims

Nematodes and other parasitic worm life in the soil are controlled by application of pyridonyl phosphates of the general formula



wherein R and R<sub>1</sub> are each low molecular weight hydrocarbon radical. The preparation and physical properties of representative compounds of this class, and their application for the control of nematodes, are illustrated.

3,689,648

**PHOSPHORUS ACID ESTER-CONTAINING PESTICIDAL COMPOSITION AND METHODS OF COMBATING PESTS**  
Walter Lorenz, Wuppertal-Vohwinkel; Christa Fest, Wuppertal-Elberfeld; Ingeborg Hammann, Cologne; Manfred Federmann; Winfried Flucke, both of Wuppertal-Elberfeld, and Wilhelm Stendel, Wuppertal-Vohwinkel, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 553,031, May 26, 1966, Pat. No. 3,591,662. This application Oct. 24, 1968, Ser. No. 792,876  
Int. Cl. A01n 9/36

U.S. Cl. 424—210

18 Claims

Compositions and methods of using phosphoryl-, phosphonyl-, thionophosphoryl- and thionophosphonyl- $\alpha$ -oximino-arylacetic acid nitriles which possess pesticidal, especially insecticidal and/or acaricidal, properties, and which may be produced by reacting the corresponding phosphorus acid ester halide with the corresponding  $\alpha$ -oximino-arylacetic acid nitrile.

3,689,649

**N-SUBSTITUTED N-ARYLSULFONYL UREAS FOR PRODUCING A HYPOGLYCAEMIC EFFECT**

Henri Dietrich, Sonnenweg 5, Arlesheim, Switzerland  
Division of Ser. No. 667,363, Sept. 13, 1967, Pat. No. 3,575,926. This application July 16, 1970, Ser. No. 62,757  
Int. Cl. H61k 27/00

U.S. Cl. 424—229

28 Claims

N-arylsulfonyl-1,2,4,5-tetrahydro-3H-3-benzazepine-3-carboxamides and addition salts thereof with bases, which compounds have useful hypoglycaemic action, as well as starting materials for their production; therapeutic compositions containing these carboxamides or their pharmaceutically acceptable addition salts and processes of producing hypoglycaemic effects in mammals. An illustrative embodiment is N-(p-tolylsulfonyl)-1,2,4,5-tetrahydro-3H-3-benzazepine-3-carboxamide.

3,689,650

Patent Not Issued For This Number

3,689,651

**TREATMENT OF MAMMALS WITH DI-SUBSTITUTED ISOCYANURIC ACID AND THEIR SALTS**

Perry A. Argabright, Littleton; Virgel G. Erwin, Boulder, and Brian L. Phillips, Littleton, all of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Sept. 2, 1969, Ser. No. 854,723

Int. Cl. A61k 27/00

U.S. Cl. 424—249

21 Claims

Di-substituted isocyanuric acids and their salts have been found highly effective in blocking convulsions in living mammals. Particularly preferred are the lower alkyl di-substituted derivatives of isocyanuric acid and their salts.

3,689,652

**METHOD OF LOWERING BLOOD PRESSURE IN MAMMALS**

William Vincent Curran, 27 Harding St., Pearl River, N.J.; Adma Schneller Ross, 65 Campbell Ave., Suffern, N.J., and Andrew Stephen Tomcufcik, 48 Dearborn Drive, Old Tappan, N.J.

Filed Oct. 9, 1970, Ser. No. 79,671

Int. Cl. A61k 27/00

U.S. Cl. 424—250

10 Claims

This invention relates to new compositions of matter for lowering blood pressure. More particularly, it relates to therapeutic compositions containing certain 6-(substituted-phenyl)-4,5-dihydro-3(2H)-pyridazinones which operate to reduce blood pressure in mammals. The invention includes the new compositions of matter and methods of lowering blood pressure therewith.

3,689,653

**COMPOSITIONS AND METHODS FOR TREATING INFLAMMATION USING SUBSTITUTED NICOTINIC ACIDS**

Margaret H. Sherlock, Bloomfield, N.J., and Nathan Sperber, North Caldwell, N.J., assignors to Schering Corporation, Bloomfield, N.J.

Division of Ser. No. 790,442, Jan. 10, 1969, abandoned, Continuation of Ser. No. 603,719, Dec. 22, 1966, abandoned, which is a division of Ser. No. 504,125, Oct. 23, 1965, Pat. No. 3,377,570, which is a continuation-in-part of Ser. No. 329,999, Dec. 12, 1963, abandoned. This application July 6, 1970, Ser. No. 52,671

Int. Cl. A61k 27/00

U.S. Cl. 424—266

14 Claims

This application relates to 2-anilino nicotinic acids and to processes for making such compositions and their use as anti-inflammatory and analgesic agents.

3,689,654

**PHARMACEUTICAL COMPOSITIONS**

John D. Conklin, and Edward L. D'Orazio, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc.

Filed Sept. 14, 1970, Ser. No. 72,196

Int. Cl. A61k 27/00

U.S. Cl. 424—273

1 Claim

The physiologic availability of a muscle relaxant, 1-[5-(p-nitrophenyl)furfurylideneamino]hydantoin, in the form of its sodium salt when administered orally to man in capsule form containing a formulation comprising it, lactose, starch, talc and magnesium stearate is increased at least twofold.

3,689,655

**RODENTICIDAL AND RODENT REPELLENT COMPOSITIONS**

Franklin J. Rosenberg, Bethlehem, N.Y., and James G. Miller, Fort Lauderdale, Fla., assignors to Sterling Drug Inc., New York, N.Y.

Filed Dec. 7, 1970, Ser. No. 95,991

Int. Cl. A01n 9/22, 17/08

U.S. Cl. 424—273

14 Claims

Rodent repellent and rodenticidal compositions containing as the active ingredient 1-(2-imidazolin-2-ylmethyl)-3-ethylindole and methods of combatting rodents comprising orally administering an effective rodent repellent or rodenticidal quantity of the active ingredient.

3,689,656

**SUBSTITUTED PHENYLACETIC ACIDS AND ESTERS THEREOF IN THE TREATMENT OF PAIN AND INFLAMMATION**

Rolf Denss, Basel, Switzerland; Niels Clauson-Kaas, Farum, Denmark, and Franz Ostermayer, Riehen, Switzerland, assignors to Ciba-Geigy Corporation

Division of Ser. No. 679,224, Oct. 30, 1967, Pat. No.

3,579,535. This application April 29, 1970, Ser. No. 43,649  
Claims priority, application Switzerland, Oct. 31, 1966, 15768/66; Jan. 18, 1967, 713/67; Aug. 7, 1967, 11178/67

Int. Cl. A61k 27/00

U.S. Cl. 424—274

20 Claims

Substituted phenyl acetic acids, addition salts thereof with bases as well as esters thereof, which compounds exhibit useful antiinflammatory (antiphlogistic), analgesic and antipyretic activity, and processes for the production of these compounds, as well as starting materials used in said processes; therapeutic compositions containing these compounds, and methods of treatment, particularly methods of inducing antiinflammatory, analgesic and antipyretic effects in mammals. Illustrative embodiments are 2-[p-(1-pyrryl)-phenyl]-butyric acid, [3-chloro-4-(1-pyrryl)-phenyl]-acetic acid and 2-[p-(1-pyrryl)-phenyl]-propionic acid methyl ester.

3,689,657

**INDOLE DERIVATIVES IN THE TREATMENT OF SKELETAL MUSCLE FATIGABILITY**

Nathan Norman Share, 5826 Hudson Ave., Cote St. Luc, Montreal 268, Quebec, and Cyril Stephen McFarlane, 2157 Pauline St., Ville Lasalle, Montreal 660, Quebec, both of Canada

Filed Nov. 23, 1970, Ser. No. 92,299

Claims priority, application Canada, Feb. 3, 1970, 073876

Int. Cl. A61k 27/00

U.S. Cl. 424—274

10 Claims

Skeletal muscle fatigability is treated by administration of a composition containing a skeletal muscle stimulant which is a derivative of indole-3-acetic acid or of indole-3-ylmethyl-tetrazole.

3,689,658

**PESTICIDAL COMPOSITION COMPRISING A BENZOTHIENYL CARBAMATE AND SYNERGIST**

John R. Kilsheimer, Westfield, and Harold A. Kaufman, Piscataway, both of N.J., assignors to Mobile Oil Corporation

Continuation-in-part of Ser. No. 559,408, June 22, 1966, abandoned. This application June 19, 1969, Ser. No. 834,869

Int. Cl. A01n 9/22

U.S. Cl. 424—274

5 Claims

In the cases wherein the activity of a benzothienyl pesticide is low, the activity can be enhanced by using a combination of the benzothienyl carbamate and a synergist containing a 3,4-methylenedioxyphenyl group or an N-alkyl (C<sub>1</sub>-C<sub>16</sub>) bicycloheptene dicarboximide.

3,689,659

**PHARMACEUTICAL COMPOSITION COMPRISING CERTAIN  $\alpha,\beta$ -UNSATURATED KETONES**

Carl M. Langkammerer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 17, 1966, Ser. No. 551,843

Int. Cl. A01n 9/00, 9/12, 9/20

U.S. Cl. 424—275

2 Claims

The invention relates to a pharmaceutical composition comprising a diluent and an effective amount of certain  $\beta,\beta$ -bis(trifluoromethyl or chlorodifluoromethyl)- $\alpha,\beta$ -unsaturated ketones and a method of applying these compositions to animals for the purpose of causing disability.

3,689,660

**STABLE LIQUID ANTIMICROBIAL COMPOSITION**

George A. Burk, Bay City, Mich., and Jurgen H. Exner, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 31, 1970, Ser. No. 60,094

Int. Cl. A01n 9/20, 17/08

U.S. Cl. 424—304

7 Claims

Stable liquid compositions useful as antimicrobial agents comprise a halocynoacetamide such as 2,2-dibromo-2-cyanoacetamide and a straight-chain polyalkylene glycol such as polyethylene glycol 200. The compositions can also contain water.

3,689,661

**REVERSIBLE AGGLOMERATION OF POWDERS FOR AERIAL DISSEMINATION**

George L. Braude, Ellicott City, Md., and Joseph A. Coglian, Baltimore, Md., assignors to W. L. Grace & Co., New York, N.Y.

Filed Aug. 14, 1969, Ser. No. 850,238

Int. Cl. A61j 3/02

U.S. Cl. 424—304

4 Claims

Powders are agglomerated by solid binders that vaporize when the agglomerates are aerially dispersed from an airplane, a specially-equipped dissemination vehicle (truck), etc. The biologically active powders are then available in their original particle size. The powders can be, for example, a pesticide, etc.

3,689,662

**NEMATOCIDEL USE OF 3,4,4-TRIFLUORO-3-BUTENYLTHIO METHYLIDENE COMPOUNDS**

Mervin E. Brokke, Richmond; Thomas B. Williamson, Santa Clara, both of Calif.; George E. Lukes, deceased, late of El Cerrito, Calif., and Wayne C. Jaeschke, special administrator, Walnut Creek, Calif. (of said George E. Lukes, deceased), assignors to Stauffer Chemical Company, New York, N.Y.

Continuation of Ser. No. 888,111, Dec. 18, 1969, abandoned, which is a division of Ser. No. 735,495, May 27, 1968, Pat. No. 3,510,503, which is a continuation-in-part of Ser. No. 491,508, Sept. 27, 1965, abandoned. This application Dec. 10, 1970, Ser. No. 97,006

Int. Cl. A01n 9/12

U.S. Cl. 424—301

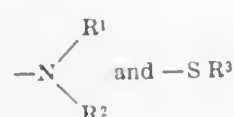
4 Claims

Compounds of the formula



wherein X is a member selected from the group consisting of oxygen, sulfur, imino, phenylimino, chlorophenylimino, alkylimino containing from one to eight carbon atoms, inclusive, and alkenylimino containing two to four carbon atoms, inclusive, R is selected from the group





wherein  $R^1$  and  $R^2$ , individually, are selected from the group consisting of hydrogen, alkyl containing from one to 10 carbon atoms, inclusive, hydroxyalkyl containing from one to four carbon atoms, inclusive, alkenyl containing from two to four carbon atoms, inclusive, cycloalkyl containing from four to six carbon atoms, inclusive, phenyl, and  $R^1$  and  $R^2$  jointly are a divalent alkylene radical containing four to six carbon atoms, inclusive, and  $R^3$  is selected from the group lower alkyl, chlorophenyl lower alkyl, and 3,4,4-trifluoro-3-butenyl. The above compounds are effective herbicides and nematocides. Representative compounds are S-(3,4,4-trifluoro-3-butenyl) N-methyl dithiocarbamate, S,S-bis-(3,4,4-trifluoro-3-butenyl) N-ethylimino dithiocarbonate, 3,4,4-trifluoro-3-butenyl ethyl trithiocarbonate, S-(3,4,4-trifluoro-3-butenyl)-N-phenyl-N-methyl isothiurea.

3,689,663

#### LOWERING CHOLESTEROL BLOOD LEVELS WITH FLAVANOLS

Josef Kramer; Klaus Irrmscher, both of Darmstadt; Hans-Otto Voge, Ober-Ramstadt, and Herbert Halpaap, Jugenheim, all of Germany, assignors to E. Merck Aktiengesellschaft, Darmstadt, Germany

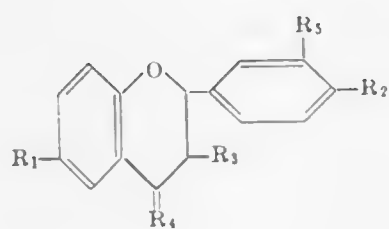
Division of Ser. No. 392,304, Aug. 26, 1964, Pat. No. 3,450,717. This application April 2, 1969, Ser. No. 850,273. Claims priority, application Germany, Aug. 28, 1963, M 57991; Oct. 5, 1963, M 58433; Jan. 18, 1964, M 59597; March 4, 1964, M 60149; May 9, 1964, M 60951

Int. Cl. A61k 27/00

U.S. Cl. 424—283

10 Claims

A method of effecting a cholesterol-level-decreasing effect in blood, and also pharmaceutical compositions, are both based on substituted flavanols of the following formula, as well as their acid addition salts and quaternary ammonium derivatives:



wherein

$R_1$  and  $R_2$  are identical or different and can represent OH; alkoxy of one to 10 carbon atoms and if desired substituted by other moieties; tetrahydropyranyl-(2)-oxy; acyloxy of one to six carbon atoms;  $NO_2$ ;  $NH_2$ ; alkylated  $NH_2$  having one to eight carbon atoms; or acylamino of two to six carbon atoms;  $R_3$  can represent H; OH; alkyl and alkoxy of one to three carbon atoms;  $NH_2$ ; or Hal;

$R_4$  can represent O; H; OH; H; H; or N,  $NH_2$ ;  $R_5$  can represent H or  $R_1$ ;

Hal can represent Cl; Br; or I;

$R_2$  and  $R_5$  together can also represent methylene dioxy; ethylene dioxy; or propylene dioxy; and wherein, in the 2,3-position, an additional double bond can be present.

#### 3,689,664 ARTHROPODICIDAL COMPOSITIONS AND METHODS OF COMBATING ARTHROPODS USING N-CARBONIC ACID DERIVATIVES OF CYANO CONTAINING 1,2-DICARBONYLPHENYLHYDRAZONES

Karl Heinz Buchel; Wilfried Draber, both of Wuppertal-Elberfeld, and Ingeborg Hammann, Cologne, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 785,391, Dec. 19, 1968, Pat. No. 3,627,816. This application April 6, 1971, Ser. No. 131,832. Int. Cl. A01n 9/14, 9/20

U.S. Cl. 424—304

10 Claims

N-carbonic acid derivatives of 1,2-dicarbonylphenylhydrazones, i.e. N-(alkoxy, phenoxy, alkylmercapto, cyclohexyloxy and dialkylamino)-carbonyl and -thiono-N-(alkyl- and/or electro-negative substituent [e.g. halo, haloalkyl, nitro and/or alkyl sulfonyl]-substituted phenyl)-N'-( $\alpha$ -cyano- $\alpha$ -[alkanoyl and carboalkoxyl]-carbonyl)-hydrazones, which possess arthropodocidal, especially acaricidal and insecticidal, properties and which may be produced by reacting the corresponding alkali metal salt of a 1,2-dicarbonylphenylhydrozone, or such 1,2-dicarbonylphenylhydrozone in the presence of an acid-binding agent, with the corresponding carbonic acid chloride.

3,689,665

#### ANTIBACTERIAL UNSYMMETRICAL DIPHENYL CARBONATES

Walter Traber, Riehen, and Anton G. Weiss, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 747,795, July 26, 1968, Pat. No. 3,634,484. This application Jan. 14, 1971, Ser. No. 106,537. Int. Cl. A01n 9/24

U.S. Cl. 424—301

5 Claims

Unsymmetrical diphenyl carbonates which contain as one alcohol moiety a phenoxyphenyl radical which is unsubstituted or substituted by halogen and/or lower alkyl or trifluoromethyl, and as a second alcohol moiety a phenyl radical which is unsubstituted or bears certain substituents, are disclosed as antibacterial agents.

3,689,666

Patent Not Issued For This Number

3,689,667

#### C22 ACID AND ITS SALTS TO PROMOTE WOUND HEALING

Kwan-Hua Lee, San Francisco, Calif., assignor to The Regents of the University of California

Filed June 24, 1970, Ser. No. 49,505. Int. Cl. C08h 17/36

U.S. Cl. 424—318

2 Claims

A C22 homolog of retinoic acid and its salts have been found effective in promoting wound healing. The acid or the salt is applied to the wound as a solution, ointment or powder.

3,689,668

#### METHOD OF ALLEVIATING WRINKLES ON SKIN

Emile Leon Piette, 40, Avenue Moliere, Brussels 18, Belgium. Continuation of Ser. No. 736,032, June 11, 1968, abandoned. This application Oct. 13, 1970, Ser. No. 80,492

Claims priority, application Belgium, Oct. 18, 1967, 49740. Int. Cl. A61k 7/00

U.S. Cl. 424—319

13 Claims

Cosmetic compositions containing an amine, such as the di-aspartate of arginine para-aminobenzoylethylaminoethanol, and a method for the substantial reduction of folds and wrinkles in the skin are disclosed. The cosmetic compositions are useful in that they have a hydrating

effect on the human skin such that the complexion and brightness thereof can be substantially improved, whereas the folds and wrinkles of the skin can be substantially reduced.

3,689,669

#### ANTIDEPRESSANT METHOD AND COMPOSITION

Arthur J. Prange, Jr., Chapel Hill; Ian C. Wilson, and Morris A. Lipton, both of Raleigh, all of N.C., assignors to The University of North Carolina, Chapel Hill, N.C.

Division of Ser. No. 813,294, April 3, 1969, Pat. No. 3,621,096. This application Oct. 9, 1970, Ser. No. 79,704. Int. Cl. A61k 27/00

U.S. Cl. 424—319

8 Claims

The antidepressant action of tricyclic antidepressants is enhanced by concurrent administration of thyroid hormone. A composition for treating depression comprises a tricyclic antidepressant and a thyroid hormone in pharmaceutically effective amounts admixed with a pharmaceutical carrier.

3,689,670

#### METHOD OF REPELLING ANIMALS USING CYCLOHEXYLOXYCYCLOHEXYLAMINES

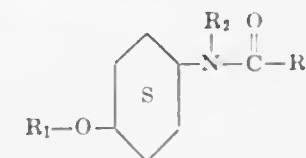
Richard N. Knowles, R.D. 1, P.O. Box 302, Hockessin, Del.

Division of Ser. No. 634,417, April 20, 1967. This application Oct. 24, 1968, Ser. No. 770,453. Int. Cl. A01n 9/00, 17/00

U.S. Cl. 424—320

8 Claims

Repelling animals with N-acetyl-4-cycloalkyloxycyclohexylamines of the formula:



wherein

$R_1$  is cycloalkyl,  
 $R_2$  is hydrogen or alkyl, and  
 $R_3$  is hydrogen or alkyl.

Typical is N-acetyl-4-cyclohexyloxycyclohexylamine useful for repelling animals.

3,689,671

#### P-AMINO-P'-UREIDODIPHENYL SULFONE IN TREATING MAREK'S DISEASE

David B. R. Johnston, Warren; Theodore A. Maag, New Shrewsbury, and Tsung-Ying Shen, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 878,589, Nov. 20, 1969, abandoned. This application Aug. 12, 1970, Ser. No. 63,264. Int. Cl. A61k 27/00

U.S. Cl. 424—322

7 Claims

The use of p-amino-p'-ureidodiphenyl sulfone and soluble salts thereof in reducing mortality and decreasing lesion incidence of poultry exposed to Marek's disease and to compositions comprising the p-amino-p'-ureidodiphenyl sulfone as the active ingredient are provided.

3,689,672

#### COMPOSITIONS AND METHOD FOR REDUCING BLOOD PRESSURE WITH 2-PHENYL-2-(1-NAPHTHYL)ACETAMIDES

Enos C. Pesterfield, Briarcliff Manor, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 654,365, July 19, 1967, Pat. No. 3,539,642. This application Feb. 19, 1970, Ser. No. 14,870. Int. Cl. A61k 27/00

U.S. Cl. 424—324

23 Claims

Certain 2-phenyl-2-(1-naphthyl)acetamides, having cardiovascular properties and being useful chemical intermediates are prepared through treatment of a 1-phenyl-2-oxo-

1,2-dihydronaphtho[2,1-b]furan or a 2-phenyl-2-(2-alkoxy-1-naphthyl)acetyl chloride with ammonia or a primary or secondary amine. A typical embodiment is N-t-butyl 2-phenyl-2-(2-hydroxy-1-naphthyl)acetamide.

3,689,673

#### PROCESS OF SOAKING AND STERILIZING HYDROPHILIC SOFT CONTACT LENSES WITH CHLORHEXIDENE

Russell E. Phares, Jr., Sunnyvale, Calif., assignor to Barnes-Hind Pharmaceuticals Inc.

Filed Nov. 10, 1970, Ser. No. 88,521. Int. Cl. A61k 27/00

U.S. Cl. 424—326

6 Claims

Chlorhexidine solutions are employed to sterilize and soak both hard and soft contact lenses.

3,689,674

#### ANTIHYPERGLYCAEMIC AGENT

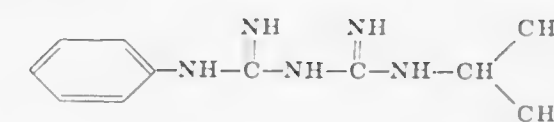
Hans-Joachim Kabbe, Leverkusen; Harald Horstmann, Wuppertal-Elberfeld; Hans Plumpe, Wuppertal-Elberfeld; Walter Puls, Wuppertal-Elberfeld, and Siegfried Petersen, Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 25, 1971, Ser. No. 118,962. Claims priority, application Germany, March 3, 1970, P 20 09 737.4. Int. Cl. A61k 27/00

U.S. Cl. 424—326

2 Claims

$N^1$ -phenyl- $N^5$ -isopropyl-biguanide of the formula



and its non-toxic salts have a good antihyperglycaemic effect, which even surpasses that of some commercial biguanides.

3,689,675

#### IRRITANT COMPOSITION COMPRISING CERTAIN SUBSTITUTED FORMANIDINES

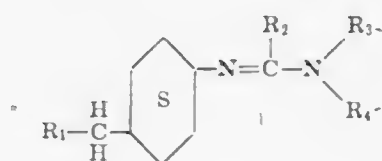
Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 634,037, April 20, 1967. This application Oct. 24, 1968, Ser. No. 770,451. Int. Cl. A01n 9/20, 9/22

U.S. Cl. 424—326

8 Claims

Repelling animals with cyclohexylformamides of the formula:



wherein

$R_1$  is alkyl, cycloalkyl, bicycloalkyl, or tricycloalkyl,  
 $R_2$  is hydrogen or alkyl,  
 $R_3$  is alkyl, and  
 $R_4$  is alkyl and can be joined with  $R_3$  to form a saturated ring.



Typical is N,N-dimethyl-N'-(4-cyclohexylmethylcyclohexyl)-formamidine useful for repelling animals.

3,689,676

**BICYCLOALKANES IN TREATING DEPRESSION**

Charles Ferdinand Huebner, Chatham, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

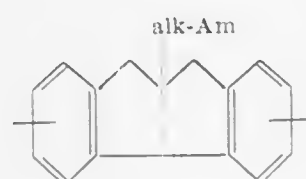
Filed April 2, 1969, Ser. No. 812,865

Int. Cl. A61k 27/00

U.S. Cl. 424—330

2 Claims

1-Aminoalkyl-dibenzobicycloalkanes, e.g., those of the formula



Am = an alkylated amino group  
alk = alkylene  
and salts thereof are antidepressants.

**3,689,677**  
**METHOD FOR CONTROLLING STRIPE SMUT**  
James Almy Simmons, 430 Hickory Drive, and Robert Joseph Bell, Route No. 2, both of Marysville, Ohio  
Continuation-in-part of Ser. No. 568,132, July 27, 1966, abandoned. This application Sept. 4, 1969, Ser. No. 855,382  
Int. Cl. A01n 9/20

U.S. Cl. 424—349

4 Claims

The control of stripe smut by the post-emergence application of 2,3,4,5,6-pentachloro-1-nitrobenzene to a turf area.

**3,689,678**  
**SOLID BATH OIL COMPOSITION CONTAINING A CLATHRATE**

Charles Fox, and James Tassoff, both of Fairlawn, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.  
Continuation-in-part of Ser. No. 487,623, Sept. 15, 1965, abandoned. This application April 3, 1968, Ser. No. 718,372  
Int. Cl. A61k 7/00

U.S. Cl. 424—365

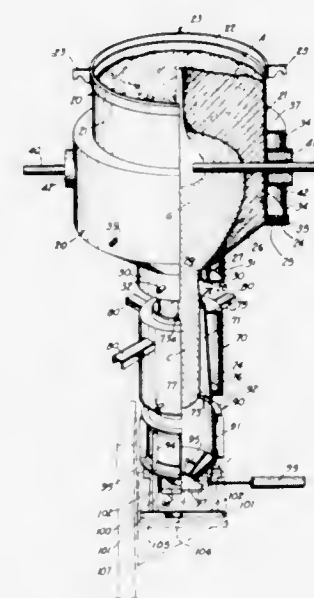
14 Claims

A solid bath oil composition containing bath oil adjuvant materials is prepared in the form of a dry, free-flowing powder or a molded configuration by utilizing urea, thiourea, or a mixture thereof as a clathrating agent to occlude the liquid, oily components of the bath preparation. The solid clathrate system thus formed releases theemollient oil upon contact with an aqueous medium.

**3,689,679**  
**DEVICE FOR CONTINUOUS LIQUEFACTION OF SILICEOUS MATERIAL**  
Shohei Niwa, Mizunami; Kazuo Oki, Okazaki; Masaaki Hayashi, Nagoya, and Yuukichi Morimoto, Kariya, all of Japan, assignors to Glasrock Products, Inc., Atlanta, Ga.  
Filed March 8, 1971, Ser. No. 121,974  
Claims priority, application Japan, March 12, 1970, 45/20660; July 2, 1970, 45/57547  
Int. Cl. C03b 5/02, 17/00

U.S. Cl. 13—6

44 Claims



An apparatus and method for the continuous liquefaction of finely divided raw material capable of forming a highly viscous material when heated to molten condition, the apparatus including a hollow vessel, means for constricting the bottom opening of the vessel, means for adding the finely divided material into the vessel at the same time the viscous material is removed through the bottom opening of the vessel, a pair of horizontally disposed electrodes in the vessel for producing an electrical arc to generate sufficient heat to form a molten viscous melt from the raw material, and means for removing the molten viscous melt from the vessel at substantially the same rate as the melt is formed for maintaining a stable condition within the vessel. The disclosed method continuously forms a viscous extrusion melt from finely divided raw material which is charged into the vessel, the melt being withdrawn by gravity or by rollers and broken or severed periodically. The conversion of silica i.e. sand into fused silica is disclosed.

**3,689,680**  
**ELECTRODE MELTING ARRANGEMENT**  
Uwe Reimpel, Varangeviller Str. 36; Helmut Scheldig, Feldbergstr. 19, both of 6451 Bruchkobel, and Hans Friedrich Wolfgang Schwartz-Domke, Odenwaldstr. 4, 645 am Main, all of Germany  
Filed Sept. 8, 1971, Ser. No. 178,758  
Int. Cl. H05b 3/60

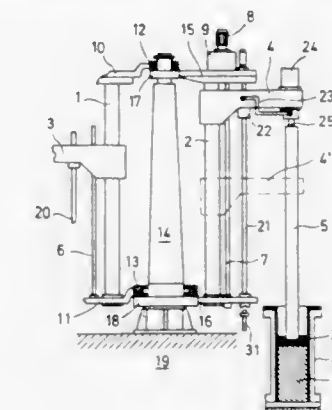
U.S. Cl. 13—9

8 Claims

An arrangement for the melting of electrodes and converting the melted material into ingot block form, in which a plurality of guide posts are mounted rotatably about a stationary common column. An electrode is supported by a carrying arm

**ELECTRICAL**

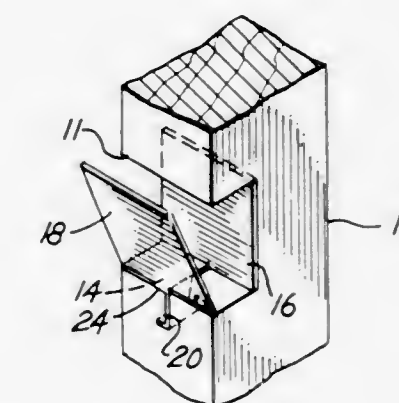
at each end of the guide posts. The electrode is melted and the melted material is allowed to cool in a chill mold. Mounted



**3,689,681**  
**CONDUCTOR PROTECTING FIXTURE**  
Glenn V. Searer, 2509 Pleasant Plain Ave., and Vernon A. Searer, 3210 Sassafras Drive, both of Elkhart, Ind.  
Filed Sept. 29, 1971, Ser. No. 184,659  
Int. Cl. H02g 3/26

U.S. Cl. 174—48

10 Claims



A fixture for protecting electrical conductors installed in slots in studding of mobile home, modular homes, trailers and the like, in which a metal, generally U-shaped body is provided with a downwardly and rearwardly extending projection, adapted to be driven into the front of the studding beneath the slot for retaining the fixture in the slot. The fixture has a front and rear panel and a base, the rear panel being rigidly joined to the rear edge of the base and the front panel being yieldably joined to the front edge of the base. The downwardly extending spike is provided with a point and preferably with an elongated member extending rearwardly along the edge thereof. During the installation of the fixture in the slot, the spike is driven into the studding, and the front panel, which is initially positioned angularly and outwardly from the rear panel, is closed inwardly, substantially parallel with the face of the studding after the conductor or conductors have been installed in the slot within the fixture.

**3,689,682**  
Patent Not Issued For This Number



3,689,683

## MODULE FOR INTEGRATED CIRCUITS AND METHOD OF MAKING SAME

Raimondo Paletto, Milan, and Giuseppe Cossuta, San Giovanni, both of Italy, assignors to Ates Componenti Elettronici S.p.A., Milan, Italy

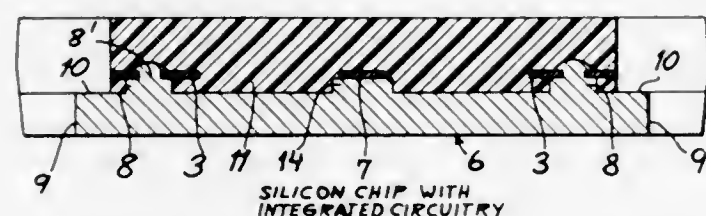
Filed Oct. 18, 1971, Ser. No. 189,887

Claims priority, application Italy, Oct. 19, 1970, 31157 A/70

Int. Cl. H05k 5/00

U.S. Cl. 174—52 PE

10 Claims



A coherent metal foil, punched from a sheet to form two sets of conductor strips interconnected by narrow bridges, has a pair of perforated wings by which it is mounted on a pair of upstanding bosses of a metal bar acting as a heat sink. The bar has a central platform onto which a silicon chip bearing integrated circuitry is soldered, with simultaneous soldering of the conductor strips to corresponding terminals of the chip. The central part of the foil, including the wings, is then encased along with the chip in a body of synthetic resin adhering to the underlying bar, leaving free a pair of mounting ears on the bar and the bridge portions of the foil which are subsequently severed to insulate the conductor strips from one another and from the wings.

3,689,684

## LEAD FRAME CONNECTOR AND ELECTRONIC PACKAGES CONTAINING SAME

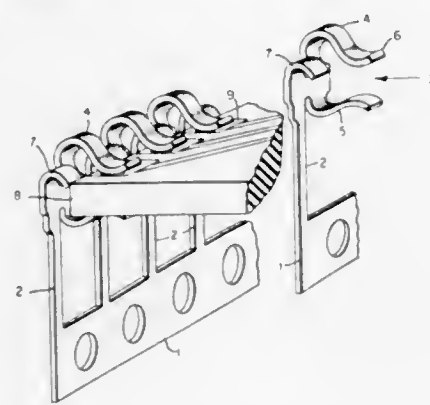
John J. Cox, Jr., and Richard G. Fisher, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 5, 1971, Ser. No. 113,007

Int. Cl. H05k 1/06

U.S. Cl. 174—68.5

4 Claims



This invention relates to a lead frame connector utilizing mechanical clamping features to hold the lead frame in place on a dielectric substrate. The lead frame is held onto the substrate by its clamping mechanism while a bonding operation is performed. After the bonding operation has been performed, the clamping features of the lead frame assist in keeping it rigid and in increasing the strength of the bonded joint. The lead frame can be attached to various electronic devices, such as semiconductor packages, hybrid circuits, and passive elements.

3,689,685

Patent Not Issued For This Number

3,689,686

## INTEGRAL ELECTRICAL INSULATOR AND SUPPORTING MEMBER FOR ELECTRICAL WIRE FENCE

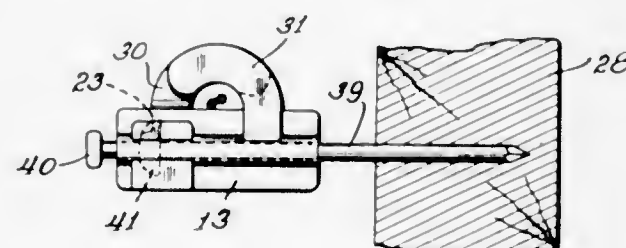
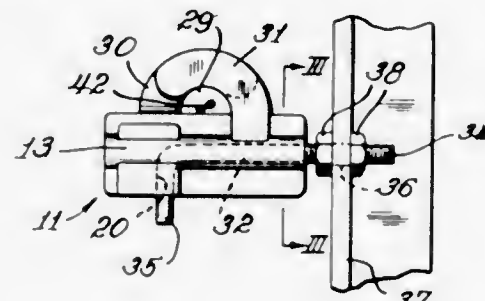
Robert M. Wilson, 190 Castway Drive North, Battle Creek, Mich.

Filed Oct. 30, 1970, Ser. No. 85,496

Int. Cl. H01b 17/24, 17/16

U.S. Cl. 174—166 R

4 Claims



An integral insulator assembly is provided for supporting electrically charged wires on a fence, comprising an insulator body molded of a moldable material such as a synthetic plastic, and having a metallic means affixed therein for mounting the insulator on a fence post.

3,689,687

## INSULATOR ARM SUPPORT DEVICE

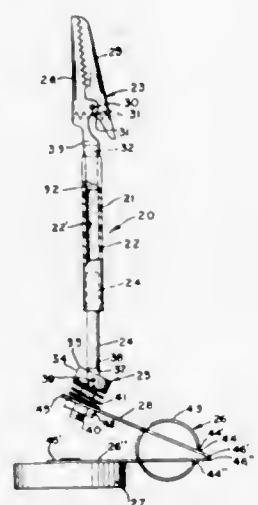
James D. Bosch, 892 East Main, Valley City, N. Dak.

Filed Sept. 21, 1971, Ser. No. 182,430

Int. Cl. H01b 17/14

U.S. Cl. 174—161 R

2 Claims



The invention comprises a support device for supporting electrical components such as an electric wire carrying a live charge. The device has an arm member with a telescoping sleeve. The sleeve is made of electrically insulating material. A clip is mounted to the top of the sleeve for grasping and holding the electric wire. A swivel connection is provided at the bottom of the sleeve connecting the sleeve of the arm to a second clip member so as to enable the arm to swivel relative to the second clip member. The second clip member is attached to a magnetized base member and the magnetized member placed on an iron or steel surface.

3,689,688

## COMMUNICATIONS SECRECY SYSTEM

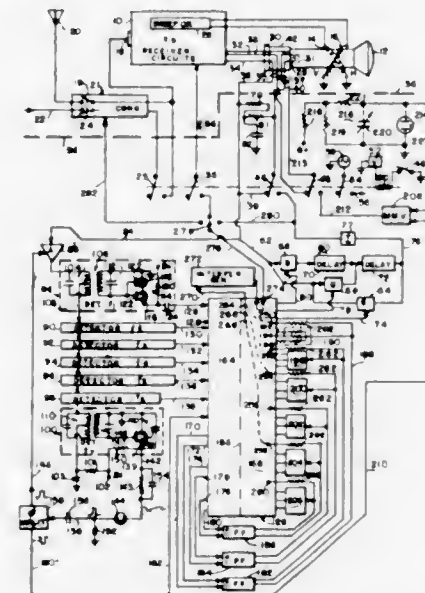
William J. Shanahan, Northport, Long Island; Vincent R. Zopf, Commack, Long Island, and Albert M. Loshin, Melville, Long Island, all of N.Y., assignors to Skiatron Electronics & Television Corporation, New York, N.Y.

Filed Nov. 2, 1970, Ser. No. 85,918

Int. Cl. H04n 1/44

U.S. Cl. 178—5.1

24 Claims



1. A decoder for use with a receiver in a secrecy system of the type in which at least part of the intelligence signals are scrambled, comprising means for employing at a given time a unique unscrambling code for decoding the scrambled intelligence signals, and means in the decoder for coding at least some of the intelligence signals during any of said given time in which no code whatsoever is employed to effect said decoding.

3,689,689

## CIRCUIT ARRANGEMENT FOR COLOR POINT ADJUSTMENT

Fritz Weitzsch, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

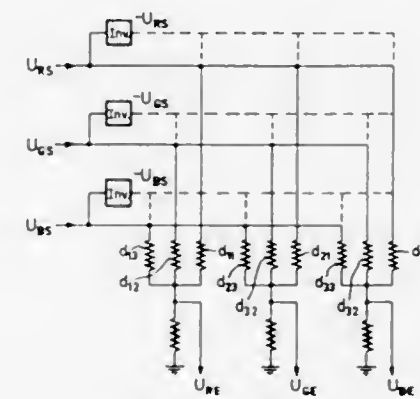
Filed March 5, 1970, Ser. No. 16,781

Claims priority, application Germany, March 7, 1969, P 19 11 686.0

Int. Cl. H04n 9/02

U.S. Cl. 178—5.2 R

10 Claims



Circuits for modifying either transmitted or received color signals feature at the transmitter, means for adding selected portions of the blue and red signals to the luminance signal before matrixing it to form the color difference signals. At the receiver, the blue and red color signals are applied to a generated green color difference signal. This enables certain colors to be varied without effecting other colors.

3,689,690

## COLOR TELEVISION CAMERA PROVIDED WITH ONE PICK-UP TUBE AND A COLOR FILTER WITH MEANS FOR CONVERTING A SEQUENTIAL OUTPUT TO A SIMULTANEOUS OUTPUT

Sing Liong Tan, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

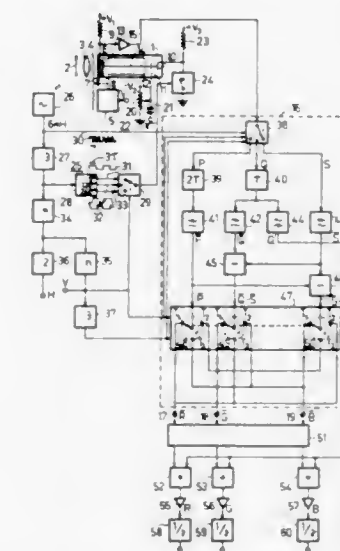
Filed Sept. 11, 1970, Ser. No. 71,627

Claims priority, application Netherlands, Sept. 20, 1969, 6914309

Int. Cl. H04n 9/06, 9/42

U.S. Cl. 178—5.4 ST

12 Claims



A color television camera including a color filter for reproducing a scene alternately in a different color on a target plate in a pick-up tube. The target plate is not completely scanned by an electron beam during each line period, but one line is scanned in short spaced parts. The parts which are scanned and which are not scanned are partially scanned during the next field period. The output of the pick-up tube is connected to a converter in which the signals generated by the tube are combined without memory, but in a switching manner to substantially simultaneously occurring chrominance signals.

3,689,691

## CHANNEL EQUALIZATION FOR DIFFERENCING PRE-RECORDED AND LIVE VIDEO SIGNALS

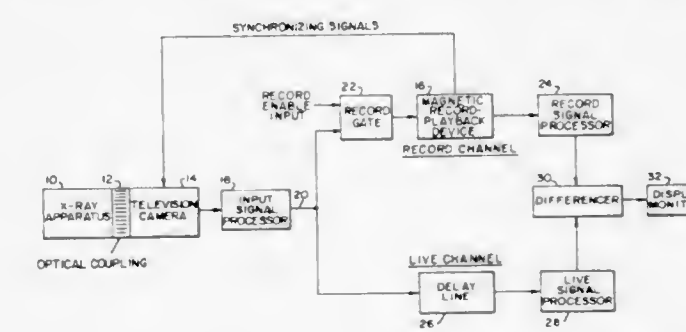
Tamas I. Pattantyus, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 17, 1970, Ser. No. 90,260

Int. Cl. H04n 5/76, 7/18

U.S. Cl. 178—6.8

8 Claims



A system of channel equalization for differencing recorded and live signals, such as produced in response to input video signals, wherein the input video signals are processed commonly then applied to separate record and live channels having essentially identical characteristics. The difference between the recorded and live signals, having substantially identical processing, is then taken and displayed on a monitor.



3,689,692

**SOUND RECORDS AND REPRODUCING APPARATUS**

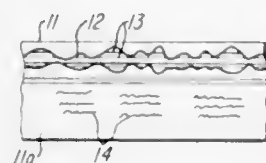
Charles Chung-Sen Ih, Trenton, N.J., assignor to RCA Corporation

Filed Oct. 27, 1970, Ser. No. 84,355

Int. Cl. G11b 1/118; H04n 5/86

U.S. Cl. 178-6.6 R

17 Claims



A sound record comprising a tape having a diffraction grating line pattern thereon, audio information being contained as width modulation of the diffraction grating pattern. Sound reproduction apparatus for use with the width modulated diffraction grating tape comprises a light source formed into a narrow beam of light and focused across the width of the tape. A light sensitive detector is disposed to receive diffracted light from the tape. Diffracted light from the tape corresponding to the audio information is focused onto the light detector for producing electrical signals corresponding to the audio information.

3,689,693

**MULTIPLE HEAD INK DROP GRAPHIC GENERATOR**

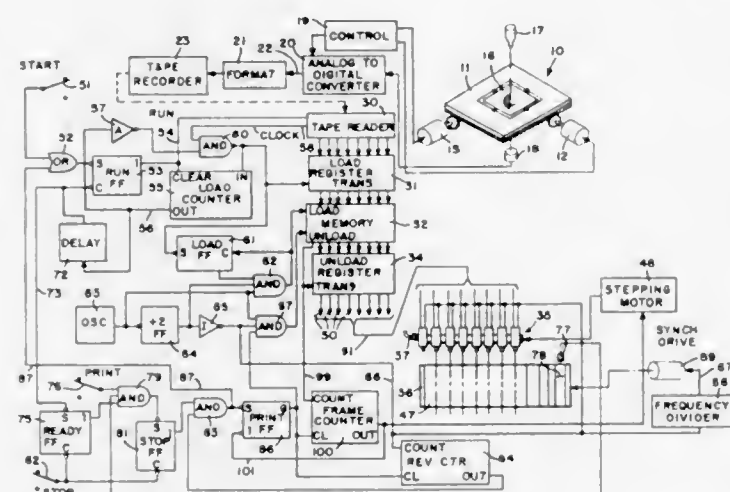
Lysle D. Cahill, Dayton; John Feller, Vandalia; William W. Marshall, Dayton; Edward R. Thomas, Dayton, and Harold P. Thompson, Dayton, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Nov. 17, 1970, Ser. No. 90,279

Int. Cl. G01d 15/118; H04n 1/04, 1/28

U.S. Cl. 178-6.6 R

7 Claims



A method of and apparatus for reproducing a graphic representation includes a scanner for scanning the original along a series of contiguous lines and transmitting an analog signal proportional to the intensity of the scanned area to an analog to digital convertor to provide a series of parallel, binary signals. Circuitry is provided which permits the digital signals to be stored and retrieved as a number of simultaneous signals from corresponding points in an equal number of transverse bands across the original. The retrieved digital signals are then used to control a bank of drop projectors, equal in number to the transverse bands, which project drops toward a receiving member mounted on a rotating cylinder, with the drop generators moving incrementally, axially of the cylinder, one line spacing each revolution of the cylinder to cause the reproduction to be produced as a series of contiguous, transverse bands corresponding to the transverse bands of the original.

3,689,694

**SPECIAL EFFECTS GENERATOR**

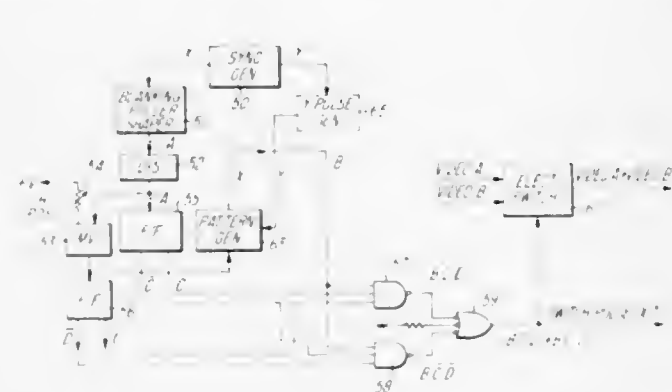
Laurence Joseph Thorpe, Burlington, N.J., assignor to RCA Corporation

Filed May 6, 1971, Ser. No. 140,844

Int. Cl. H04n 5/22

U.S. Cl. 178-6.8

9 Claims



One type of special effects generator for television systems permits one image to be superimposed over another, and to be movable so that the superimposed image may appear at any desired position on the raster of the reproduced composite image. When the superimposed image is moved so that it extends partly beyond one edge of the raster, the generator prevents that portion of the superimposed image which extends beyond the normal raster from appearing at the opposite edge thereof.

3,689,695

**VEHICLE VIEWING SYSTEM**

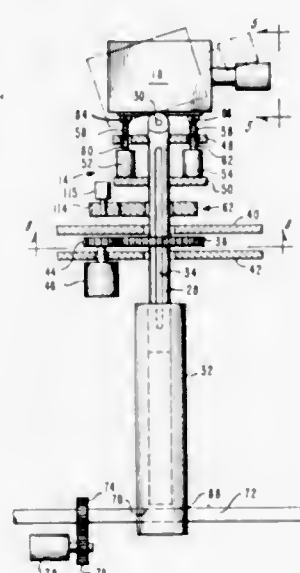
Harry C. Rosenfield, 22571 Margarita Drive, Woodland Hills, Calif., and Chang C. Chen, 984 Ashbridge Lane, Harbor City, Calif.

Filed April 10, 1970, Ser. No. 27,321

Int. Cl. H04n 7/18

U.S. Cl. 178-7.81

5 Claims



A television camera is mounted on a support in a motor vehicle. The support is designed to permit the camera to have vertical movement, horizontal movement, rotary movement, tilting movement, and lateral movement across the width of the vehicle. A viewing system is mounted in the cab of the vehicle comprising three persistent image cathode ray display tubes. Rotation of the camera on a vertical axis plus appropriate control circuits provides three simultaneous continuous views of selected regions around the vehicle.

3,689,696

**SPEECH SYNTHESIS FROM A SPECTROGRAPHIC TRACE**

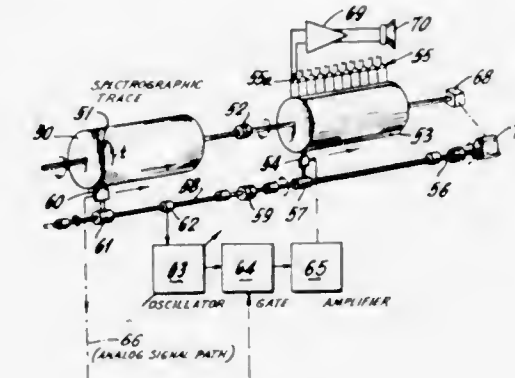
Kiyoshi Inoue, 100 Sakato, Kawasaki, Kanagawa, Tokyo, Japan

Filed Jan. 9, 1970, Ser. No. 1,801

Int. Cl. G101 1/00, 1/12

U.S. Cl. 179-1 SA

23 Claims



A voice synthesis system using a sound spectrogram, showing the spectrum in the form of a plot of frequency against time with intensity being represented by the variable density of the plot. The spectrogram is scanned and analog signals are produced the amplitude of which is a function of the density of the spectrogram plot. Synchronously with the production of the analog signals oscillation signals are produced at the respective scanning frequencies and are amplitude modulated by the analog signal. The amplitude modulated oscillation signals are stored and summed and subsequently reproduced thereby synthesizing an acoustic signal.

3,689,697

**SYNCHRONIZING SYSTEM**

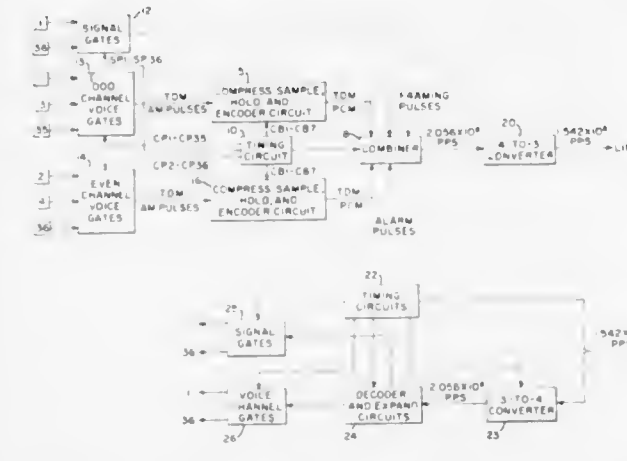
James S. Smith, Jr., Lynchburg, Va., assignor to General Electric Company

Filed March 15, 1971, Ser. No. 124,192

Int. Cl. H04j 3/06

U.S. Cl. 179-15 BS

17 Claims



In a time-division multiplex, pulse-code modulation system, each sequence of four binary pulses representing information are converted to a group of three ternary pulses for transmission to a receiver. At the receiver, the same groups of three ternary pulses are converted back to four binary pulses for decoding and demultiplexing. Both conversions are made in accordance with a code in which three ternary zeros do not appear in any correct ternary grouping. If the receiver is out of frame, a condition which can be indicated by framing binary pulses, the receiver sends an alarm to the distant transmitter to cause the distant transmitter to send a special code of ternary pulses having a large number of three zeros in sequence. If, at the receiver, three zeros appear in a ternary pulse group, the grouping is shifted by one ternary pulse. If three zeros subsequently appear in a group, the grouping is again shifted by

one ternary pulse. After no more than two such shifts, the grouping will be correct and the proper ternary-to-binary conversion, followed by decoding and demultiplexing, can take place.

3,689,698

**MULTIPLEXING SYSTEM**

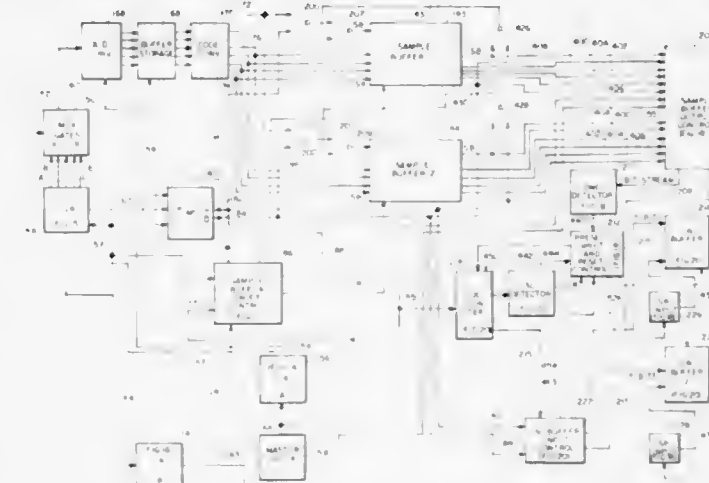
Theodore Lerner, Williamsville, N.Y., assignor to Textron Inc., Providence, R.I.

Filed April 7, 1971, Ser. No. 131,856

Int. Cl. H04j 3/04

U.S. Cl. 179-15 BW

37 Claims



Successive frames of a binary bit stream which is a multiplexed series of binary words derived from the amplitude levels of a large number of voice channels each may be represented by a series of binary words which locate the occurrence of "ones" in each frame. The number of "ones" in each frame is related to the probability of occurrence of the sampled amplitude levels such that these "ones" occur infrequently. Thus, the binary words or location numbers which represent each frame contain fewer bits than the number of bits constituting each frame. By transmitting these location numbers and then reconstructing the original bit stream from them, the data rate required of the transmission system is very much reduced; or, for a given available data rate, more voice channels may be accommodated; or, for a given available data rate and a given number of voice channels, the fidelity of the system may be increased.

3,689,699

**SYNCHRONIZING SYSTEM**

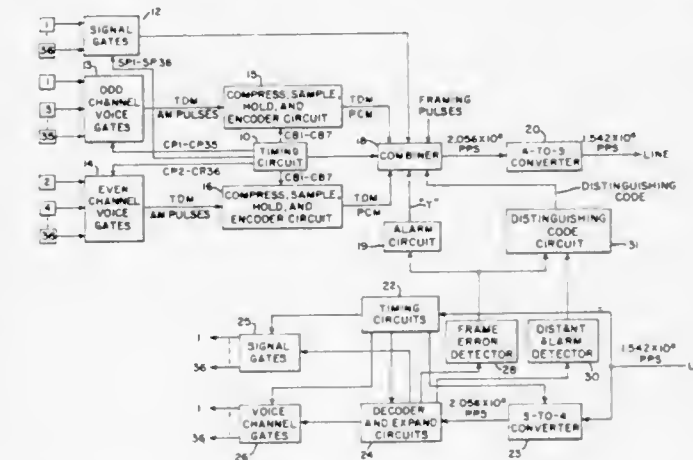
Theodore Brenig; James S. Smith, Jr., and Paul E. Woodie, Jr., all of Lynchburg, Va., assignors to General Electric Company

Filed April 12, 1971, Ser. No. 133,194

Int. Cl. H04j 3/06

U.S. Cl. 179-15 BS

8 Claims



In a time-division multiplex, pulse-code modulation system, each sequence of four binary pulses representing information



are converted to a group of three ternary pulses for transmission to a receiver. At the receiver, the same groups of three ternary pulses are converted back to four binary pulses for decoding and demultiplexing. Both conversions are made in accordance with a code in which three ternary zeros do not appear in any correct ternary grouping. If the receiver is out of frame, a condition which can be indicated by framing binary pulses, the receiver sends an alarm to the distant transmitter to cause the distant transmitter to send a special distinguishing code in place of the information. This distinguishing code produces a large number of three ternary zeros in sequence. If, at the receiver, three zeros appear in a ternary pulse group, the grouping is shifted until no group contains three ternary zeros. The distinguishing code also makes the framing binary pulses distinct so that binary framing is made rapidly and accurately. When the receiver is in frame, the alarm signal is removed so that the distant transmitter sends voice information again.

3,689,700

## SUBSCRIBER LOOP EXTENSION UNIT

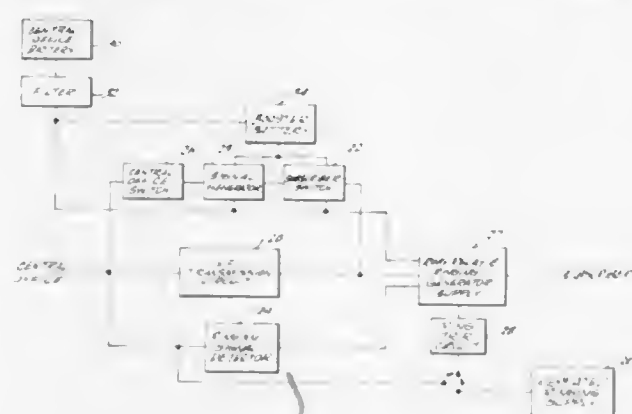
Worthington C. Lent, Whittier, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Sept. 21, 1970, Ser. No. 73,745

Int. Cl. H04q 1/36; H04b 3/36, 3/40

U.S. Cl. 179-16 F

21 Claims



A loop extension unit for transmission circuits for increasing the central switching office to subscriber station range. The unit provides dial pulse repeating, transmission of ringing signals from whatever source provided and other supervisory signalling. Interruption of ringing is controlled by the unit by detection of an off-hook condition at the subscriber location with the ringing circuit locked out during completion of the subscriber loop between the central office and the station. DC isolation of the unit is provided by utilizing a periodically varying signal generator and transformer coupling as part of the pulse repeating circuitry.

3,689,701

## MULTISIGNALLER ASSOCIATED WITH A TIME DIVISION MULTIPLEX SWITCHING CENTER

Marc Edgar Marie Bosonnet, Paris; Michel Andre Robert Henrion, Boulogne, both of France, and Jean-Pierre LeCorre, deceased, late of Sainte-Genevieve-Des-Bols, France (by Yvette Marie Laurence Le Corre, administratrix), assignors to International Standard Electric Corporation, New York, N.Y.

Filed March 31, 1970, Ser. No. 24,115

Claims priority, application France, March 21, 1969, 6908270

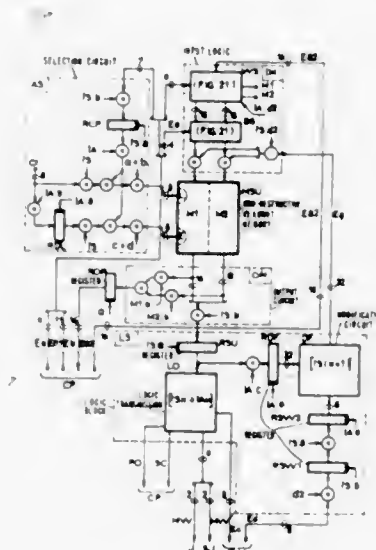
Int. Cl. H04j 3/12

U.S. Cl. 179-18 J

6 Claims

Signalling instructions connected to a PCM switching network in the same way as a number of trunks. The information it receives is in the form of program instructions supplied from a central processor. The signalling unit is so organized that it

may process simultaneously 96 instructions controlling as many different operations in a selected exchange (supermultiplex of 192 channels). Three different types of instructions are provided. These instructions may be grouped into programs capable of controlling the functions of a telephone central exchange.



The instructions are as follows:

1. Instructions which control a data transfer between the signalling unit and one junctor,
2. Instructions which control the supervision of the line and establish the digit analysis and the digit transmission, and
3. Instructions which control the switching network path check.

3,689,702

## REMOTE DIALING TELEPHONE APPARATUS

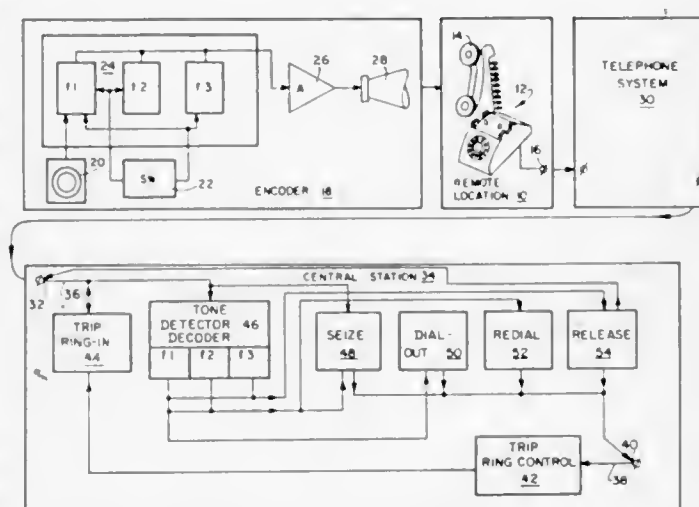
Thomas E. McCay, Norman, Okla., assignor to Com-U-Trol Corp., Chicago, Ill.

Filed July 9, 1970, Ser. No. 53,498

Int. Cl. H04m 3/54

U.S. Cl. 179-18 BE

19 Claims



A call initiated from any remote and random location to an input line of a central station is made capable of seizing an output line from the central station; whereby, a caller at the remote location can thereupon call any desired location as if the call had originated from the central station. The central station operates automatically and is provided with: a plural function tone detector and decoder which regulates line seizure and control functions, a trip ring circuit and a trip ring control circuit. The originating caller is provided with a portable tone generating encoder, which is employed for line seizure, control functions, and dialing of the desired location.

3,689,703

## INFORMATION RECORDING SYSTEM

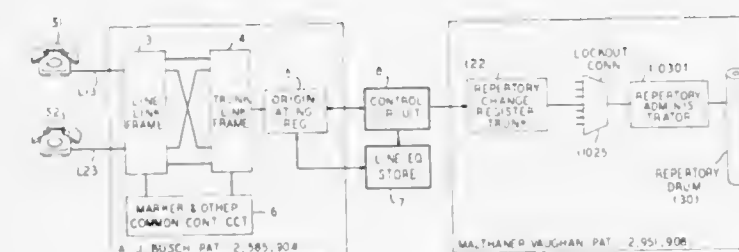
Larry Carl Allen, Arvada, and Roderic Romero, Boulder, both of Colo., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 100,169

Int. Cl. H04m 3/42

U.S. Cl. 179-18 B

10 Claims



A control information recording system arranged so that a predetermined telephone station user may write changes into memory storage locations assigned for use by other telephone stations. The system is arranged so that the predetermined station's class of service indication in combination with a dialed code enables a register to release the predetermined station's automatically recorded line equipment location number and replace it with a selected station line equipment location number dialed by the predetermined telephone station user. The register utilizes this dialed line equipment location number to access a common memory storage location which is defined by the selected station's line equipment location number.

3,689,705

## SYSTEM FOR PARTY LINE SIGNALLING USING RE-ENCODED RINGING SIGNALS

Edouard Pinede, and Abraham De Kam, both of Guelph, Ontario, Canada, assignors to International Standard Electric Corporation, New York, N.Y.

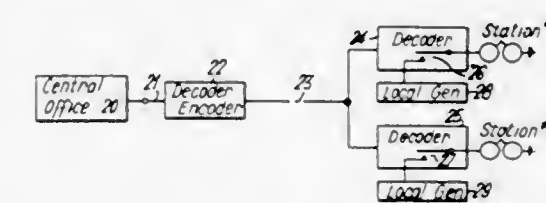
Filed June 8, 1970, Ser. No. 44,220

Claims priority, application Canada, June 16, 1969, 54,496

Int. Cl. H04m 3/02

U.S. Cl. 179-17 E

6 Claims



A telephone party line signalling system which employs an electronic monitor circuit at the output end of a central office switching circuit to detect the code of any coded ringing signal emanating from the office. Responsive to this code, the monitor circuit stores and re-encodes these signals into a signal in other forms. The re-encoded signal is sent out over a called line, the other signal form being a multifrequency set of tones which characterize a particular digit in the well known push-button tone signalling, for example. Each subscriber station is adapted to respond to the combination of the frequencies comprising these tones and to locally supply ringing current to its own subscriber station.

3,689,706

Patent Not Issued For This Number

3,689,707

Patent Not Issued For This Number

3,689,708

## STEP-BY-STEP PULSE TRANSMITTER

Christopher Darius Nabavi, Harlow, England, assignor to Standard Telephones and Cables Limited, London, England

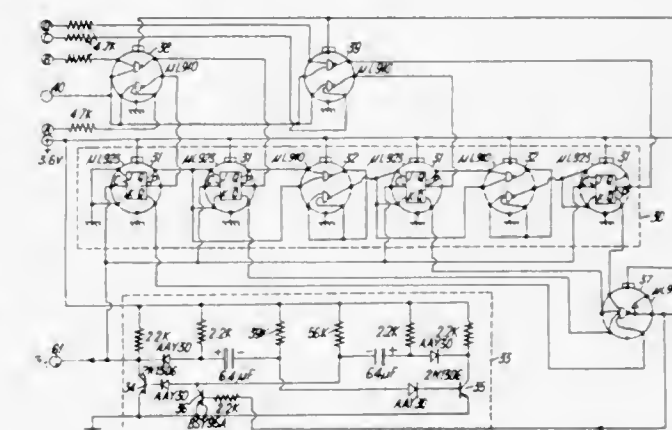
Filed March 3, 1970, Ser. No. 15,975

Claims priority, application Great Britain, March 5, 1969, 11,785/69

Int. Cl. H04m 1/30

U.S. Cl. 179-90 R

8 Claims



3,689,704

## CONSTANT CURRENT OUTPUT CONTROLLED REPEATER INSERTION

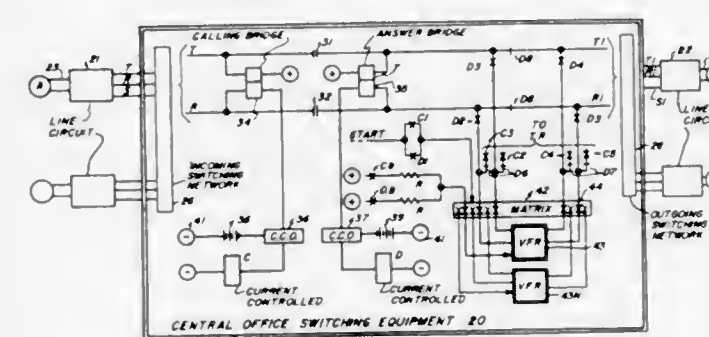
Richard E. Wadding, Milan, Tenn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 17, 1969, Ser. No. 885,672

Int. Cl. H04q 1/28

U.S. Cl. 179-16 F

4 Claims



Individual voice frequency repeaters may be associated with any telephone connection, as required. More particularly, the lines involved in the connection are supplied by a constant current output (CCO) device. When the output of the CCO device reaches the level of voltage which indicates the line requires a given signal level gain, a switching access network operates to connect a repeater in the pool to the particular line requiring that level gain. If the required level is reached on both the calling and called line, the repeater output is increased.

An adaptor unit for a voice operated typewriter employing morse code to provide a voice operated hands free telephone dialling facility. The unit consists of a four-bit counter interconnected with a multi-vibrator so that the counter is incre-



mented by each pulse generated by the multi-vibrator and so that the multi-vibrator is held off when the count is zero. When a number is written into the counter from the voice



operated typewriter employing morse code, the multi-vibrator is enabled to generate the requisite number of pulses needed to restore the count to zero.

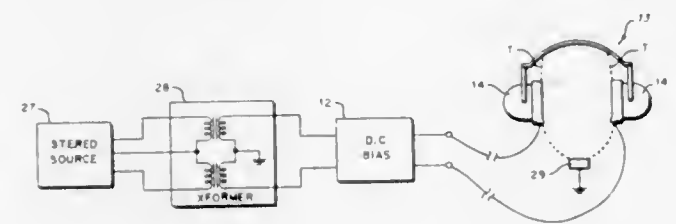
3,689,709

**ELECTROSTATIC ELECTROACOUSTIC TRANSDUCER**  
Max A. Salmansohn, Abington, and Daniel A. La Monica, Norristown, both of Pa., assignors to Non-Acoustic Audio Corporation, Washington, D.C.

Filed Oct. 31, 1969, Ser. No. 872,886  
Int. Cl. H04r 19/00

U.S. Cl. 179—111 R

9 Claims



An electroacoustic transducer apparatus for electrostatically transducing audio frequencies from electrical signals to sound or from sound to electrical signals. One embodiment includes a headset having a pair of insulated electrodes positionable on opposite sides of and in contact with a wearer's head near the auditory centers. A single-channel audio signal is coupled through an isolation transformer and a fixed or automatic d.c. bias circuit to the electrodes. Each electrode and the adjacent head tissue form plates of a capacitor and the insulation there between constitutes the dielectric. On application of an electric audio signal, the tissue is caused to vibrate and propagate pressure waves in accordance with the frequency and amplitude of the signal and thereby produce monaural sound reproduction. In another embodiment, two stereo channels of electric audio signals are similarly coupled to the headset electrodes with their common output coupled to a third uninsulated electrode in contact with the wearer's body for producing three-dimensional sound reproduction. In still another embodiment, an insulated electrode constitutes a sound pickup having its output connected through a d.c. bias circuit directly to the input of an audio signal responsive device such as a loud speaker system or recorder. When held against the wearer's head near the vocal center, the electrode and the tissue adjacent thereto act as the plates of a capacitor and the insulation constitutes the dielectric. Vibration of the tissue due to sound propagation from the vocal center produces an electric signal in accordance with the frequency and amplitude of the vibration.

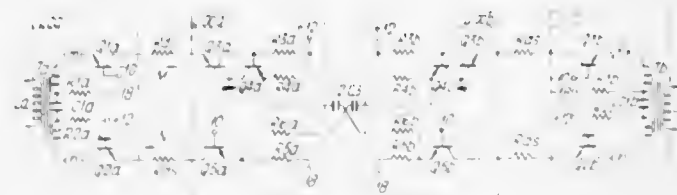
### 3,689,710 TWO-WIRE TO FOUR-WIRE CONVERSION CIRCUIT FOR A DATA SWITCHING CENTER

Joel Serge Colardelle, Creteil; Pierre Girard, Paris, and Claude Paul Henri Lenouge, Maurepas, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 12, 1970, Ser. No. 79,777  
Claims priority, application France, Oct. 17, 1969, 6935622  
Int. Cl. H04b 1/58

U.S. Cl. 179—170 D

2 Claims



In a two-wire to four-wire data switching center, the usual hybrid transformer(s) is replaced by a single transformer with a symmetrical secondary. Interaction between both directions of transmission is avoided by connecting the extremities of the secondary respectively to the output of a first current amplifier and to the input of a second current amplifier. This circuit is intended specifically for use with electronic switching such as that using MOS switching crosspoints and stages.

3,689,711

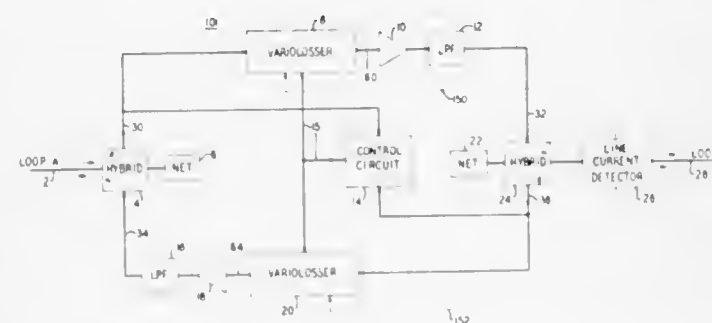
### CALL DIVERTER REPEATER

Harold Westly Earle, New Shrewsbury, and Douglas Sidney Shelton, Atlantic Highlands, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 27, 1971, Ser. No. 110,021  
Int. Cl. H04b 3/24

U.S. Cl. 179—170.6

6 Claims



A call diverter repeater is voice-switched to provide gain in the direction from the talking party to the non-talking party and loss in the opposite direction. The gain provided is related to the value of current in the subscriber loop so that more gain is automatically provided for longer loops.

3,689,712

Patent Not Issued For This Number

3,689,713

### ELECTRIFIED RAIL SYSTEM AND EXPANSION JOINT THEREFOR

Jurek Shkredka, Oakland, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

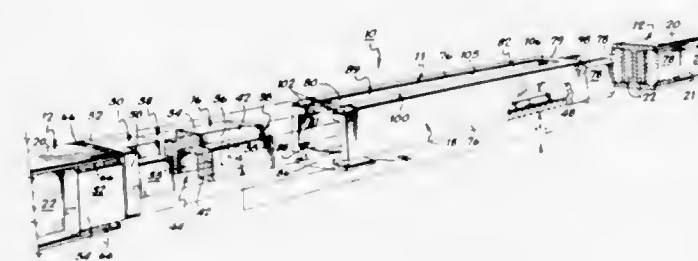
Filed Sept. 21, 1970, Ser. No. 73,878  
Int. Cl. B60m 1/30

U.S. Cl. 191—29

11 Claims

Electrified rail system wherein the rails have unique tongue and sleeve-like fittings at the opposite ends thereof for use in

forming an improved expansion joint between adjoining rails. An electric shunt connected across adjoining rails minimizes power loss and an improved rail anchoring device can be used to restrict excess movement of a rail in the area of a rail to rail joint.



power loss and an improved rail anchoring device can be used to restrict excess movement of a rail in the area of a rail to rail joint.

3,689,714

### REVERSIBLE CONTACT BRIDGE ARRANGEMENT FOR ELECTRICAL SWITCHES

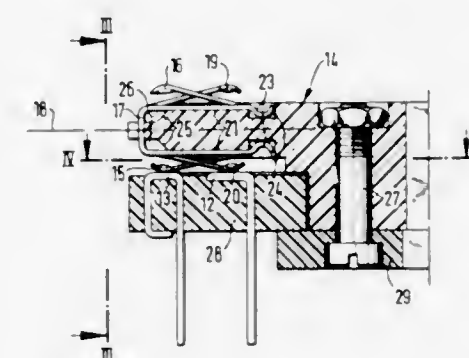
Manfred Walz, Musberg, Germany, assignor to EBE Elektro Rau-Elemente GmbH, Stetten/Filder, Germany

Filed Dec. 14, 1970, Ser. No. 97,596  
Claims priority, application Germany, Dec. 23, 1969, P 19 64 580.8

Int. Cl. H01h 15/06, 1/06

U.S. Cl. 200—11 A

15 Claims



A contact bridge arrangement for a rotary type stepping switch having a contact bridge arranged on a switching arm which is generally disposed parallel to two parallel contact paths, a portion of such paths consisting of at least partly of individual contacts. The contact bridge has a set of bridging contacts on one side, with a set of break contacts being located on the opposite side whereby the contact bridge is readily reversible on the switching arm without dismantling the switch so that at choice either the bridging contacts or the break contacts will be in position to collaborate with and operatively engage the contact paths.

3,689,715

### ELECTRICAL SWITCHING DEVICE AND CIRCUIT BOARD THEREFOR

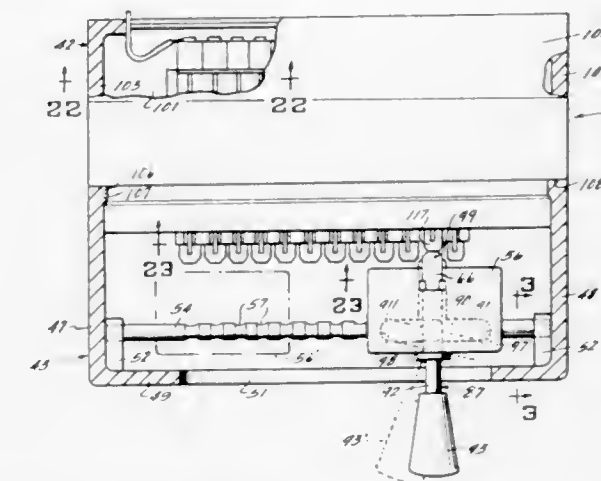
Ashley C. Glenn, 2440 Dorian Drive, Reading, Ohio

Filed Sept. 21, 1971, Ser. No. 182,454  
Int. Cl. H01h 13/52

U.S. Cl. 200—16 R

3 Claims

A switching device which includes a housing in which a plurality of circuit boards are mounted for transverse movement into and out of operative position. A circuit board actuator is mounted in the housing and movable therealong to positions at which it is engageable with selected ones of the circuit boards for moving the circuit boards. Each circuit board has



Each circuit board includes a plate-like body with spaced conductive strips on both faces thereof terminating at a contact edge thereof.

3,689,716

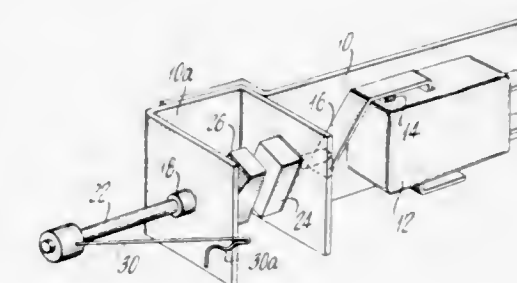
### MAGNETIC STOP MOTION DEVICE

Gregory Csurgay, Fort Lauderdale, Fla., assignor to U.S. Textile Machine Company, Scranton, Pa.

Filed April 30, 1971, Ser. No. 139,173  
Int. Cl. B65h 25/14

U.S. Cl. 200—61.18

2 Claims



A feeler arm for textile thread which activates a stop motion device by magnetic means. The magnets operatively engage with a lever arm of a microswitch. The magnetic means may constitute a two magnet or a three magnet system and by proper proportioning will achieve the required rotating torque and axial movement to actuate the microswitch and thereby stop the yarn delivery system.

3,689,717

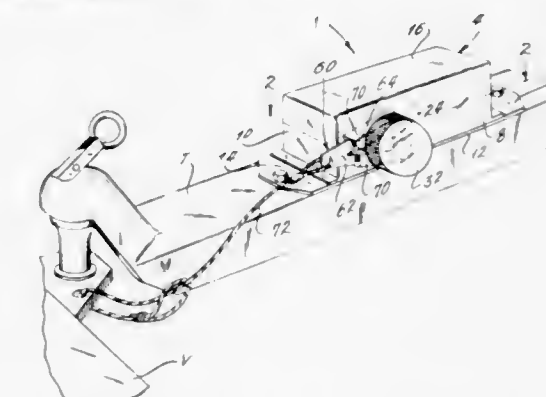
### SWITCH ACTUATED BY THE SEPARATION OF TWO COUPLED UNITS

Keith G. Westenhaver, 305 Bourn Ave., Columbia, Mo.

Filed May 13, 1971, Ser. No. 143,109  
Int. Cl. H01h 27/04

U.S. Cl. 200—61.19

11 Claims



A switch alters an electrical circuit when two normally coupled units are separated. The switch includes a housing at



tached to one of the coupled units, and this housing has a plunger mounted therein which moves inwardly and outwardly with respect to the housing. At its inner end the plunger has a contact which moves toward and away from the fixed contact as the plunger moves so that the circuit is complete when the two contacts are engaged and disrupted when the contacts are separated. A spring urges the plunger to its innermost position in the housing, while a spacer grips the outwardly exposed portion of the plunger and normally prevents the plunger from moving inwardly under the influence of the spring. A cable attaches the spacer to the other of the two coupled units so that when the coupled units separate the spacer is disengaged from the plunger, thereby freeing the plunger and enabling the spring to move it into the housing to alter the circuit.

3,689,718

## AUTOMATIC LINE SWITCH LOCK-OUT

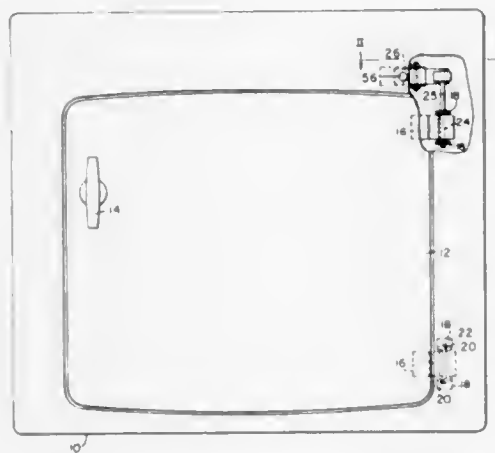
Harold F. Gorsuch, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 31, 1971, Ser. No. 129,684

Int. Cl. H01h 3/16

U.S. Cl. 200—61.62

7 Claims



The invention provides a control arrangement for an appliance and includes a switch and switch control mechanism associated with the door of the appliance which permits the door to mechanically control the electrical functioning of the switch through movement of the door between an open and closed position. The control mechanism includes a cam and linkage arrangement which positively prevents closing the switch until the door has been closed and which opens the switch when the door opens. Once the loading door has been closed, and the cam and linkage mechanism placed in a position to free the switch means, the switch means must then be manually actuated to an "on" position to provide for operation of the appliance with which it is used.

3,689,719

## FLUID PRESSURE OPERATED DIAPHRAGM SWITCH WITH IMPROVED ADJUSTMENT MEANS AND CONTACT STRUCTURE

James W. Phillips, and James R. Wintek, both of Michigan City, Ind., assignors to Dwyer Instruments, Inc.

Filed Sept. 13, 1971, Ser. No. 179,822

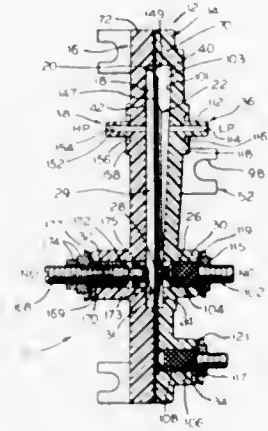
Int. Cl. H01h 35/40

U.S. Cl. 200—83 P

13 Claims

A fluidic switch comprising a housing in the form of a pair of housing sections snapped together in back to back relation and shaped to define a generally planar, small volume, and elongate diaphragm chamber across which is mounted a diaphragm of low spring rate, and a snap spring diaphragm plate anchored cantilever fashion at one end of the chamber and having a snapping portion adjacent its anchored end that snaps between normally closed and normally open contacts on

either side of the housing. The housing adjacent the free end of the snap spring is formed for connection to differential gas



pressure sources, for snap changing of the switch at a predetermined pressure differential that may be adjusted by adjusting one of the said contacts.

3,689,720

## CIRCUIT BREAKER INCLUDING SPRING CLOSING MEANS WITH MEANS FOR MOVING A CHARGING PAWL OUT OF ENGAGEMENT WITH A RATCHET WHEEL WHEN THE SPRING MEANS ARE CHARGED

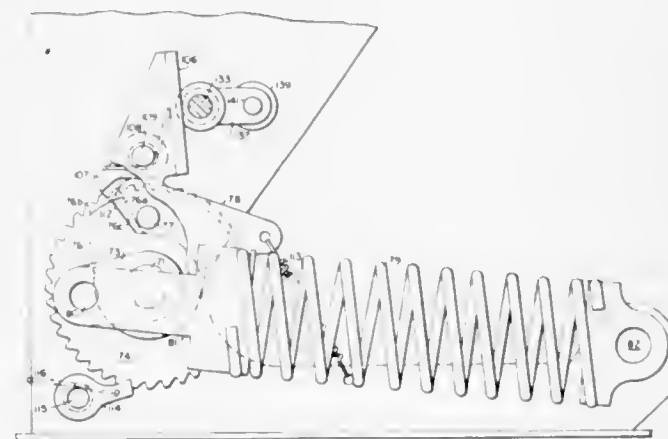
Nagar J. Patel, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 16, 1971, Ser. No. 181,011

Int. Cl. H01h 3/30

U.S. Cl. 200—153 SC

10 Claims



A circuit breaker characterized by spring means for closing contacts, means for charging the spring means and including a crank shaft structure, a ratchet wheel rotatably mounted on the shaft, driving pawl means operable to advance the ratchet wheel for charging the spring means, means moving the charging pawl means out of driving engagement with the ratchet wheel when the spring means are charged. Means is also provided to permit movement of the crank shaft structure relative to the ratchet wheel upon discharge of the closing spring.

3,689,721

## CIRCUIT BREAKER INCLUDING RATCHET AND PAWL SPRING CHARGING MEANS AND RATCHET TEETH DAMAGE PREVENTING MEANS

Alan G. McGuffie, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 16, 1971, Ser. No. 181,012

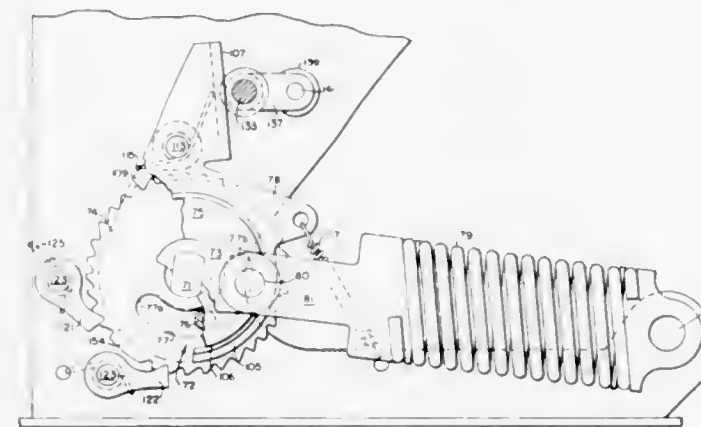
Int. Cl. H01h 3/30

U.S. Cl. 200—153 SC

19 Claims

A circuit breaker characterized by spring closing means for closing contacts, means for charging the spring closing means and including a crank shaft and a disk fixedly mounted on the shaft, a ratchet wheel rotatably mounted on the shaft and hav-

ing an arcuate pin-receiving slot, a pin on the disk and extending into the slot, whereby upon release of the spring closing means from the charged position any charged stored energy



causes oscillations in the shaft and disk which oscillations are dissipated by the pin oscillating in the ratchet slot without damage to the ratchet teeth.

3,689,722

## REED SWITCH HAVING CONTACTS PLATED WITH A THIN SILVER LAYER

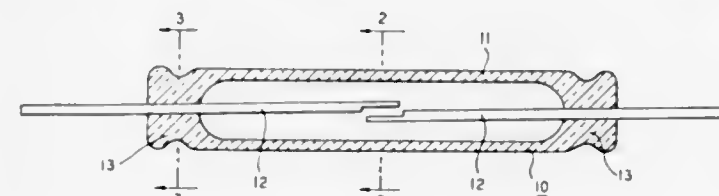
Earl Truman Ratliff, Pataskala, and Paul William Renault, Columbus, both of Ohio, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 23, 1971, Ser. No. 182,957

Int. Cl. H01h 1/02

U.S. Cl. 200—166 C

5 Claims



A sealed contact dry reed switch in which nickel-iron reed contacts are held in a glass envelope by seals and in which the surfaces of the reed contacts, including those portions under the seals, are covered with a thin layer of silver.

3,689,723

## LINE CORD SWITCH

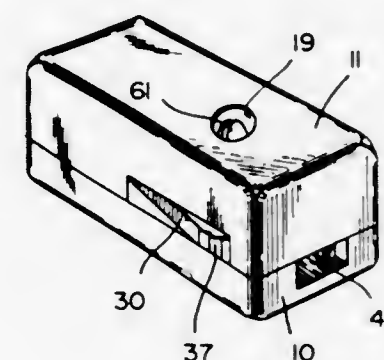
Louis Ludwig, c/o Eagle Electric Mfg. Co., Inc., 23-10 Bridge Plaza S., Long Island City, N.Y.

Filed Dec. 11, 1970, Ser. No. 97,115

Int. Cl. H01h 9/02

U.S. Cl. 200—168 E

7 Claims



A line cord switch, the casing of which is subdivided by an insulating panel into two compartments. The line cord is in one compartment and the active switch elements including the actuating element and electrical contact elements are in the other compartment. The switch actuating element is of trian-

gular shape and is rockably mounted within the switch compartment. Two of the apices of the switch actuating element are arranged to alternately project from opposite sides of the casing corresponding to either off or on position of the switch.

3,689,724

## CHANNEL SELECTION APPARATUS FOR HIGH FREQUENCY RECEIVERS WITH VARIABLE CAPACITANCE DIODE TUNING

Wolfgang Labude, Ketteler Str. 5, 874 Bad Neustadt Saale, and Karl-Heinz Bauer, Rhonblick 22, 874 Muhlbach, both of Germany

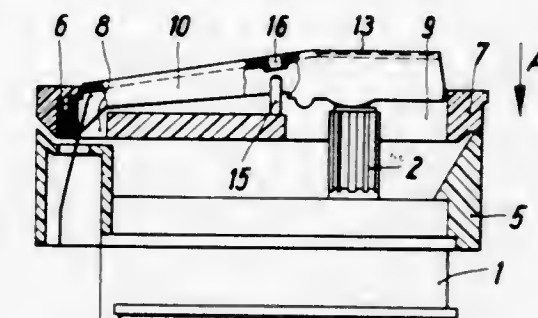
Filed Jan. 27, 1970, Ser. No. 6,148

Claims priority, application Germany, March 8, 1969, P 19 11 898.0

Int. Cl. H01h 3/04

U.S. Cl. 200—172 A

10 Claims



A channel selection apparatus in the general form of a box having a swingable access door. The door is biased to remain open when opened and to remain closed when closed. The access door carries a plurality of manually depressible keys in the form of levers. Upon depression each lever engages and activates an electrical switch carried within the box.

3,689,725

## APPARATUS FOR HIGH SPEED WELDING OF STAINLESS STEEL TUBE WITH HIGH VELOCITY GAS

Herman J. Hammer, Brooklyn; Sherman T. Heald, Wilmoughby, and Frank A. Royce, Euclid, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

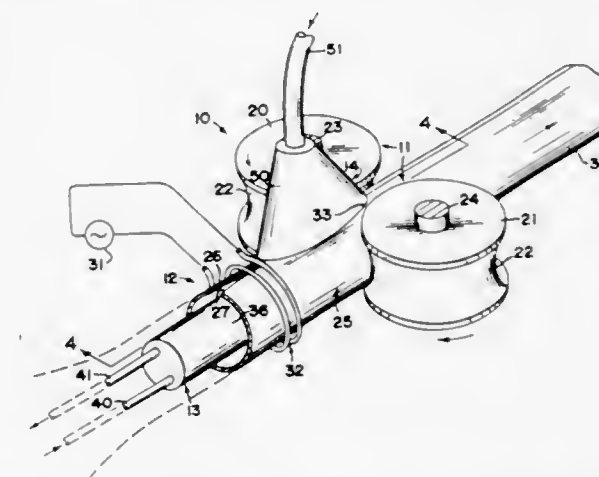
Division of Ser. No. 721,967, April 17, 1968, Pat. No.

3,588,424. This application Aug. 14, 1970, Ser. No. 63,768

Int. Cl. H05b 5/00

U.S. Cl. 219—8.5

2 Claims



Apparatus for forming seam welded stainless steel tube including a skelp forming mill, dies for forming the skelp into a tube-like configuration defining a welding vee between advancing edges of the skelp, an induction heater for producing current flow along the edges of the skelp and around the vee to heat portions of the skelp defining the vee, a nozzle disposed adjacent the vee and effective to direct at a high velocity a mixture of inert and reducing gasses onto the vee.



An internally cooled impeder is disposed within the skelp adjacent the vee for restricting the area of the current path to maximize the heating effect produced by a given current flow.

3,689,726

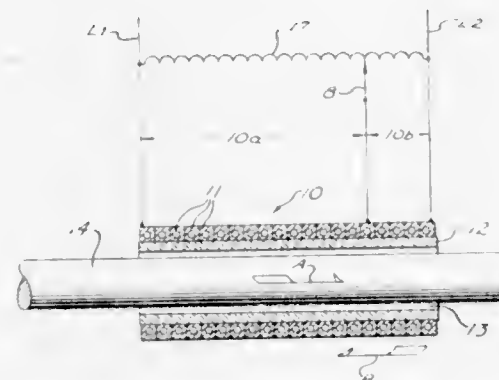
## SCANNING TYPE INDUCTION HEATING

Charles N. Howell, Poland, Ohio, assignor to Ajax Magnethermic Corporation, Warren, Ohio  
Filed March 10, 1971, Ser. No. 122,795

Int. Cl. H05b 5/06

U.S. Cl. 219—10.71

17 Claims



There is disclosed herein means for providing progressive or scanning type induction heating of an elongated workpiece by means of a multiturn induction coil wherein there is continuous relative axial movement between the load and the coil. Means are provided for tapping a part or parts of the induction coil toward the exit end thereof whereby a separate voltage adjustment may be made at the tapped section or sections wherefor the temperature of the moving load is highest toward the exit end of the inductor.

3,689,727

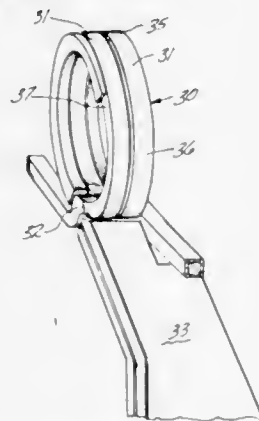
## INDUCTION COIL FOR HIGH FREQUENCY WELDING

Jack Morris, Orange, Conn., assignor to Olin Corporation  
Filed March 30, 1971, Ser. No. 129,524

Int. Cl. H05b 9/02

U.S. Cl. 219—10.79

7 Claims



An induction coil and a welding apparatus employing same having at least two helically wound turns of metal tubing, the turns of metal tubing being in close proximity to each other and to lead means, and a facing means for providing a substantially planar surface affixed to a face of at least one of the turns.

3,689,728

## CONTINUOUS PRODUCTION DIELECTRIC HEATING APPARATUS

Aldo M. Marini, Woodbury, N.Y., assignor to Willcox & Gibbs, Inc., New York, N.Y.

Filed Aug. 19, 1971, Ser. No. 173,043

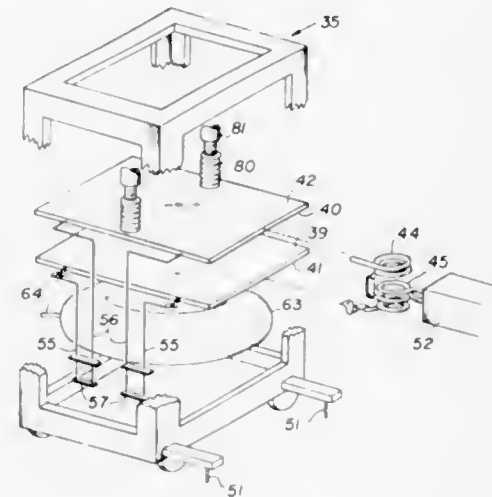
Int. Cl. H05b 9/04

U.S. Cl. 219—10.81

20 Claims

A movable support, such as a cart or dolly moves along a continuous production line path, preferably in a closed loop.

Each cart carries a pair of spaced essentially parallel plates, between which the structure to be heated dielectrically is to be placed. The plates are connected to a non-contacting electric RF energy coupler, such as a pair of spaced coils, between which another coil is movable, the other coil being connected over a movable arm to an RF generator. As the carts move along the path, the arm carrying the coil connected to the



generator is engaged by a cart. Its coil matches with the coils carried by the cart, and is moved synchronously therewith for a predetermined period of time during which energy is transferred from the generator to the plates. To provide for uniform voltage distribution on the plates, tuning stubs or lines, preferably with a movable short circuit, are connected to the plates at suitable locations.

3,689,729

## ELECTRODE FOR ELECTRICAL DISCHARGE MACHINING

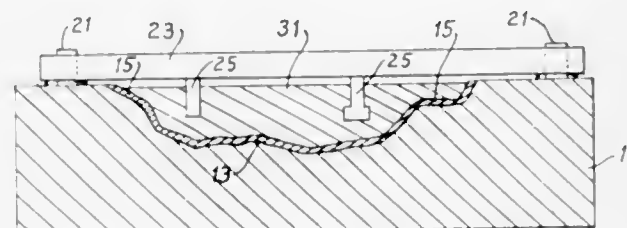
George A. Neward, and Joseph F. Novek, both of Rochester, N.Y., assignors to Mor-Wear Tools, Inc., Rochester, N.Y.

Filed Dec. 4, 1969, Ser. No. 882,023

Int. Cl. C23f 7/00, 17/00; B01k 3/04

U.S. Cl. 219—69 E

7 Claims



An electrode for electrical discharge machining is made by providing a mould shaped to the desired shape wanted for the final article. The mould cavity is electroplated. Before the plating layer is removed from the mould cavity, it is backed up by a strong alloy having substantially the same coefficient of thermal expansion as the electroplate layer, the alloy being, for example, an alloy of bismuth and tin, poured into the mould cavity over the electroplated layer and around anchoring pins which depend into the cavity from a rigid locating bar mounted on the mould. When the alloy has solidified, the composite structure comprising the electroplate layer, the back-up strengthening alloy, the anchoring pins, and the locating bar, is removed as a unit from the mould, and is made ready for mounting on a conventional electrical discharge machine, to make duplicates of the original mould by the known electrical discharge machining process. The back-up alloy prevents the warping of the electroplate layer which frequently occurs when the electrode is made by prior methods.

3,689,730

## APPARATUS FOR BONDING METALLIC PANELS

James R. Campbell, South Laguna, Calif., assignor to Thomas P. Mahoney, Santa Monica, Calif., a part interest

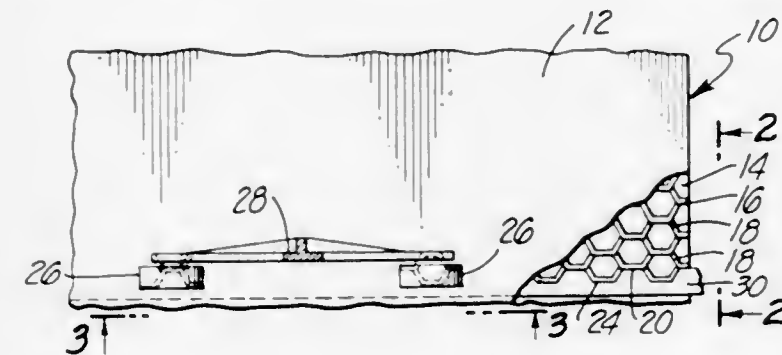
Division of Ser. No. 844,718, June 30, 1969, Pat. No.

3,598,953. This application April 19, 1971, Ser. No. 135,013

Int. Cl. B23k 11/06

U.S. Cl. 219—82

6 Claims



The apparatus of the invention is particularly directed to achieving proper electrical bonding current distribution between the various components of the panel in such a manner as to achieve a suitable temporary bond prior to the subjection of the panel to the heat bonding step. The apparatus includes electrical bonding means consisting of a pair of longitudinally translatable electrodes cooperative with an electrode bar. The longitudinally translatable electrodes are mounted for movement in engagement with the exterior surface of one of the face sheets of the panel, and the elongated electrode bar is inserted into the interior of the panel in supportive relationship with a core element being bonded into the core structure of the panel and to the inner surface of the respective face sheet.

The longitudinally translatable pair of electrodes is so spaced as to cause them to deliver electrical bonding current to spaced portions of the panel and core structure having different electrical characteristics. Furthermore, the longitudinally translatable pair of electrodes are connected in a circuit with the elongated electrode in such a manner that maximum current equalization at both of the electrodes is achieved with minimum current bypassing through the surface sheet. In addition, the elongated electrode bar is provided with means adapted to cooperate with longitudinally translatable electrodes to subject different portions of the panel and core structure to different current densities to accommodate for different thicknesses of the face sheet and core structure being bonded to one another.

3,689,731

## RESISTANCE WELDING ELECTRODE

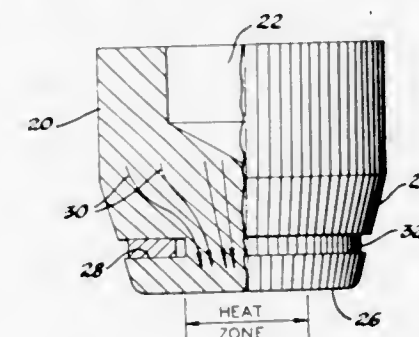
William K. Miller, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 7, 1971, Ser. No. 178,254

Int. Cl. B23k 9/24

U.S. Cl. 219—119

3 Claims



A spot welding electrode composed of a low resistivity copper alloy has a peripheral slot near the tip to concentrate

current flow in the central portion of the electrode. The slot contains a high resistivity steel support material to lend strength to the electrode.

3,689,732

## ELECTRIC ARC WORKING TORCH

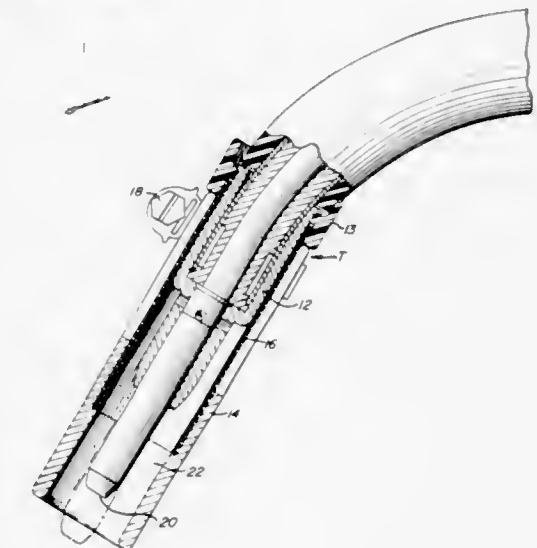
Clifford Warren Hill, Pleasantville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sept. 9, 1970, Ser. No. 70,800

Int. Cl. B23k 9/00

U.S. Cl. 219—130

8 Claims



A front design for electric arc working torches featuring at least one sleeve of electrically insulating material surrounding the torch body and insulating such body from the nozzle, and a clamp and nozzle arrangement such that upon heating of such member they are brought into tighter contact increasing heat transfer thereacross.

3,689,733

## ARC WELDING GUN

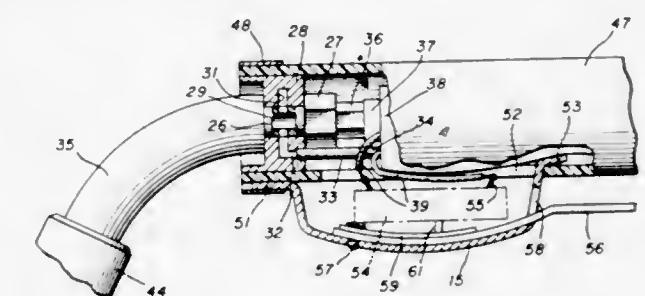
John L. Matasovic, c/o Horton, Davis, McCaleb & Lucas, Suite 2040, 230 W. Monroe St., Chicago, Ill.

Filed Sept. 10, 1971, Ser. No. 179,357

Int. Cl. B23k 9/16

U.S. Cl. 219—130

12 Claims



Electric arc welding gun having a base secured to a power cable and gas tube, a head portion including a head member, an electrode-contacting tip and an annular nozzle, an intermediate gooseneck portion comprising a rigid curved neck interconnecting the base and head member, an insulating cap integral with the inner end of the head member, a head nut slidable on the insulating cap with its outer end screwed to the nozzle to hold the latter concentric with the tip and a radial flange at its inner end for contact only with the insulating cap to insulate the nozzle and nut from the tip, a tubular handle, a manually operable switch assembly, and a single ring clamp alone securing the switch assembly to the handle and the handle to the base and quickly releasable to permit selective adjustment of the head portion through 360° about the longitudinal axis of the handle to any desired position relative to the



switch assembly, the base being interiorly grooved to direct gas from the gas tube to the gooseneck portion and thereby also employ the gas to effect a cooling action.

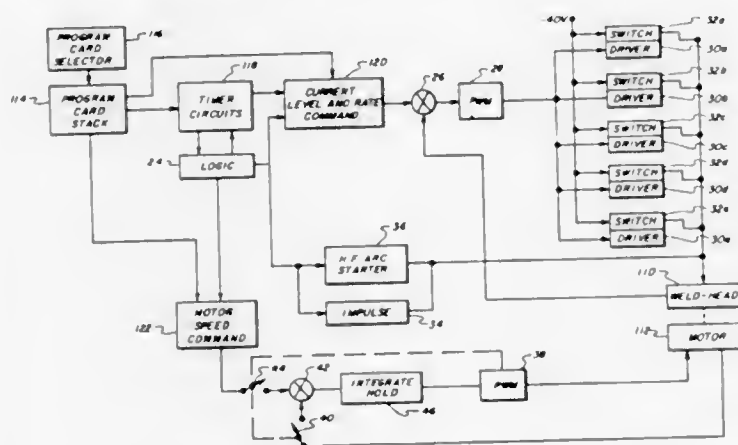
3,689,734

## PROGRAMMED CONTROL SYSTEM

Richard Kenneth Burley; Robert Friedman, both of Reseda, and Howard D. Lesher, Canoga Park, all of Calif., assignors to North American Rockwell Corporation  
Filed March 4, 1969, Ser. No. 804,251  
Int. Cl. B23k 9/10

U.S. Cl. 219—131 R

16 Claims



A programmed welding system is described which automatically controls weld current, electrode travel rate, and weld duration time in an orbital type welder. Each program is carried on a single card bearing a number of resistors of which each controls one of the various parameters that is peculiar to the chosen program. A closed-loop modular transistorized power supply controlled by pulse width modulation is disclosed together with a combination of high frequency and impulse starting and precision pulse width modulation closed-loop control of electrode travel rate. All actions for a single weld operation are automatically controlled by the group of resistors on a selected program card. The operator, to perform a complete weld, need only select the desired program and operate the start switch.

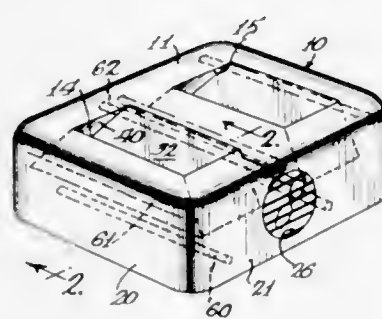
3,689,735

## SHRINK DEVICE FOR WEARABLE PRODUCTS MADE OF HEAT SHRINKABLE FILM

David P. McLeod, 947 Sherwood Rd.; Allen L. Lutz, 1510 W. Norton Ave., Apt. 10, both of Muskegon, Mich., and John J. Dragone, 223 California Ave., North Muskegon, Mich.  
Filed Dec. 3, 1969, Ser. No. 881,768  
Int. Cl. H05b 1/00

U.S. Cl. 219—215

11 Claims



A shrink device having a casing with an opening for receiving a foot or other body part and a receptacle within the casing for holding the foot in position with electrical means for apply-

ing heat to an overshoe or other article made of heat shrinkable film for shrinking thereof onto the shoe of the wearer or a foot or other body part placed within the receptacle.

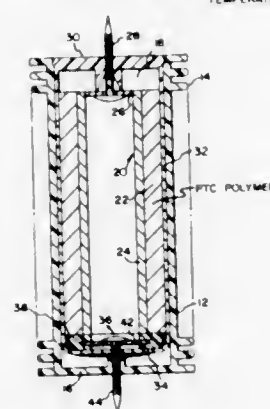
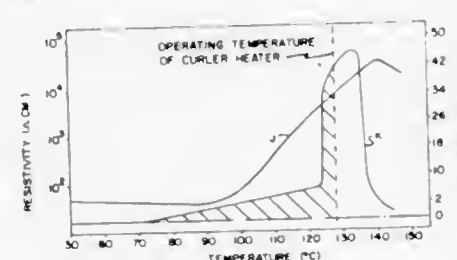
3,689,736

## ELECTRICALLY HEATED DEVICE EMPLOYING CONDUCTIVE-CRYSTALLINE POLYMERS

John V. Meyer, Brighton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.  
Continuation-in-part of Ser. No. 6,095, Jan. 27, 1970, abandoned. This application Jan. 25, 1971, Ser. No. 109,414  
Int. Cl. A45d 2/36; H05b 1/02, 3/12

U.S. Cl. 219—222

11 Claims



A hair curler employing a heater element formed of a conductive crystalline polymer is disclosed. The polymer, loaded with conductive particles, such as carbon black, has a positive temperature coefficient (PTC) of resistivity characteristic and combines a fast warm-up time with a slow cool down time due to the phase change of amorphous polymer to crystalline polymer upon cooling. The heat of fusion curve of the crystalline polymer is related to the temperature versus resistivity curve such that a sharp rise in resistance above an anomaly temperature and in and around the operating temperature of the curler limits the heat generation and prevents some of the crystalline polymer from changing state and maintains the structural integrity of the polymer. Since the polymer retains its shape, no special sealing means is required to confine it as in fusible wax devices. Means are disclosed to make electrical contact to the heater element and for mounting it within an outer hair curler shell.

3,689,737

## RADIANT HEAT GUN

Paul N. Eckles, Carmichael, and Edwin B. Ryan, Dublin, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed March 27, 1969, Ser. No. 842,037  
Int. Cl. H05b 3/44, 3/06

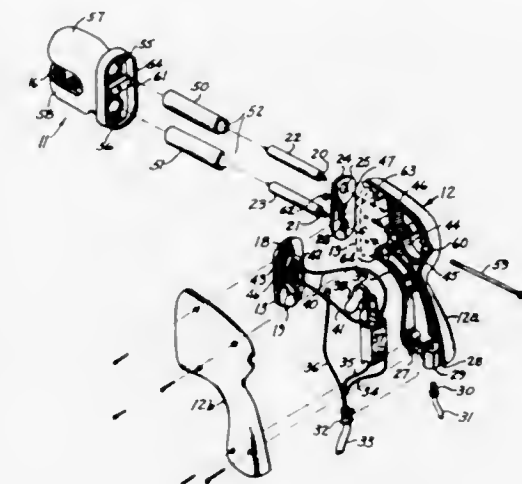
U.S. Cl. 219—346

7 Claims

A portable light weight heat unit for delivering instantaneous heat to a local heating area as in brazing, welding and join-

ing operations, comprising a housing having a handle and a reflector provided with means for supporting heat lamps located in the reflector and a trigger switch arrangement for

ing operations, comprising a housing having a handle and a reflector provided with means for supporting heat lamps located in the reflector and a trigger switch arrangement for



turning the electric power on and off from the lamps and provision for blowing air through the handle and out past the lamps and out of the reflector.

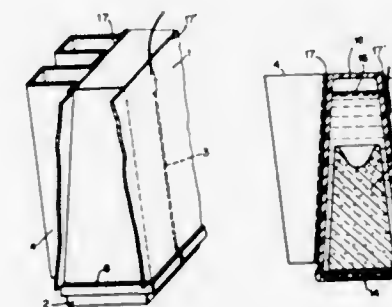
3,689,738

VESEL FOR MELTABLE HEAT STORAGE MASSES  
Nikolaus Laing, Hofener Weg 35-37, 15 7141 Aldingen near Stuttgart, Germany

Filed July 13, 1970, Ser. No. 54,553  
Claims priority, application Austria, July 31, 1969, 7381/69  
Int. Cl. F24h 7/00; H05b 1/00

U.S. Cl. 219—378

5 Claims



A tapered vessel having a horizontal metallic base plate and vertically extending deformable plastic side walls contains a melttable crystalline heat storage mass having a greater density in its solid than liquid states whereby the mass is urged against the base plate by gravity. A first electric heater is disposed adjacent the base plate for melting the mass. A second electric heater of less heat output than the first heater extends vertically along a side wall of the vessel to form a connecting channel to relieve excess pressures in the region between the base plate and the bottom of the mass. The vessel is provided with corrugated heat exchange ribs to dissipate the stored heat to the air.

3,689,739

## CONTROL CIRCUIT

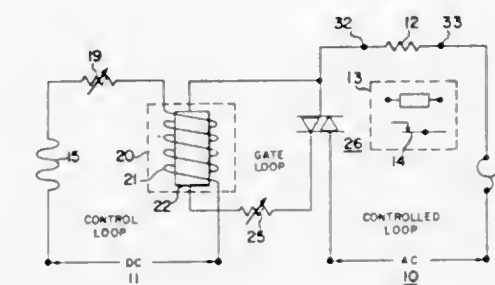
Willis E. Rieman, Skaneateles, N.Y., assignor to Gulf & Western Industries Inc., New York, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,016  
Int. Cl. H05b 1/02

U.S. Cl. 219—498

3 Claims

A temperature sensitive responsive loop and a heater element control loop are functionally connected by a gate con-



cally coupled to the gate control which is coupled across a gate controlled switching element in the heater control loop.

3,689,740

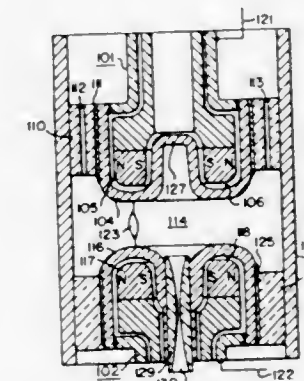
## ARC HEATER APPARATUS EMPLOYING FLUID-COOLED ELECTRODES HAVING PERMANENT MAGNETS TO DRIVE THE ARC THEREFROM

Serafino M. De Corso, and James M. Wallace, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 4,488, Jan. 21, 1970, Pat. No. 3,610,796.  
This application April 29, 1971, Ser. No. 138,830  
Int. Cl. H05b 7/18

U.S. Cl. 219—383

15 Claims



An arc heater having means forming an enclosed arc chamber, said means including first and second spaced electrodes electrically insulated from each other, the second electrode being the downstream electrode, the first and second electrodes being adapted to be connected to terminals of opposite polarity of a source of potential to produce and sustain an arc therebetween, means for admitting gas to be heated into the chamber and exhausting heated gas therefrom. Each of the first and second electrodes including a tip forming an arcing surface, each electrode tip having at least one space therein extending around the entire periphery of the tip, at least a portion of the space forming a fluid passageway for the flow of cooling fluid to conduct heat flux from the arcing surface, at least one permanent magnet mounted in the tip and occupying at least some of the remainder of the space in the tip, each electrode including supporting means for the tip secured thereto and including means for conducting fluid to and from the passageway in the tip, the permanent magnets within the tips creating a magnetic field with lines which are transverse to the arcing surfaces of both electrodes and which exert a force on the arc which causes the arc to move substantially continuously around and between the arcing surfaces of the tips.



# 3,689,741 BOMBING INSTRUMENT FOR TARGETS HAVING TRANSVERSE MOTION RELATIVE TO AIRCRAFT FLIGHT PATH

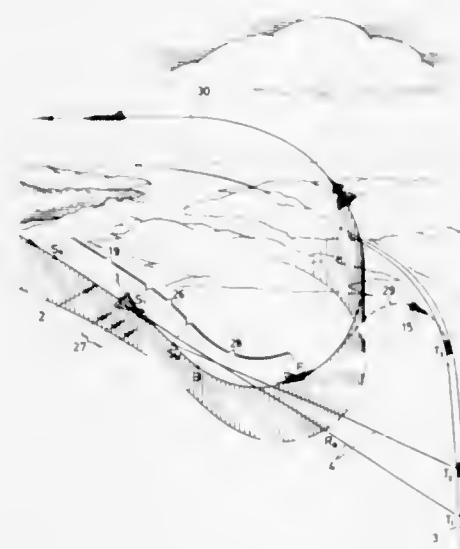
Bengt Sjöberg, and Oskar Viberg, both of SAAB Aktiebolag,  
Linköping, Sweden

Filed July 8, 1970, Ser. No. 53,260

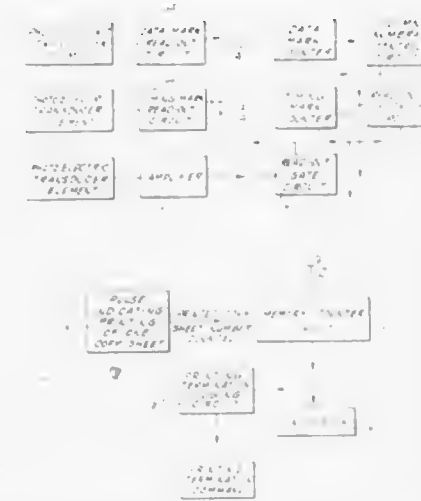
Claims priority, application Sweden, July 9, 1969, 9717/69  
Int. Cl. G05d 1/10; G06f 15/50

U.S. Cl. 235—61.5 D

11 Claims



mounted on the master cylinder, the marks are automatically read by read-out means provided in the printing machine and



duplication of the particular master plate is automatically terminated when a predetermined number of copy sheets have been printed.

# 3,689,743 MAGNETIC CHARACTER READER

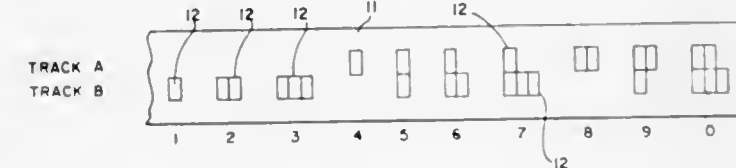
C. W. Rampy, Grapevine, and Alba J. Bonham, Plano, both of  
Tex., assignors to Hycel, Inc., Houston, Tex.

Filed May 5, 1970, Ser. No. 34,821

Int. Cl. G06k 7/08, 19/00; G11b 5/00

U.S. Cl. 235—61.11 D

5 Claims



Disclosed is magnetic character reader which records an ac signal on discontinuous portions of magnetic material and detects the prerecorded signal as a function of character width to decode the character significance of the magnetic portions.

# 3,689,744 METHOD AND APPARATUS FOR SCANNING CHARACTERS

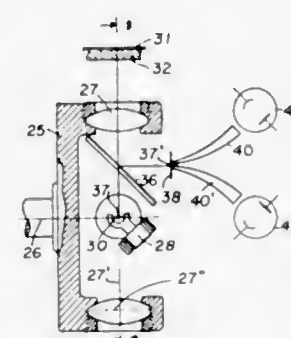
Ernest Wildhaber, 124 Summit Drive, Rochester, N.Y.

Filed Sept. 22, 1970, Ser. No. 74,392

Int. Cl. G06k 7/10; E04g 1/700

U.S. Cl. 235—61.11 E

13 Claims



The characters used on the records are symbols made up of parallel straight marks for which equal space partitions are provided. To avoid crowding, the marks are applied on two levels. The space partitions of the two levels are relatively displaced by half the spacing of the partitions. A narrow beam of light is passed over each line of characters from one end to the

# 3,689,742 PRINTED COPY SHEET NUMBER READ-OUT DEVICE

Yoshiharu Kagari; Toshiya Ogawa, and Koichi Hirokawa, all  
of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo,  
Japan

Filed Sept. 4, 1970, Ser. No. 69,567

Claims priority, application Japan, Sept. 9, 1969, 44/71487  
Int. Cl. G06m 3/02; G06k 5/00; G06f 7/38

U.S. Cl. 235—61.11 E

8 Claims

A printed copy sheet number read-out device adapted for use with an offset printing machine which permits one master plate after another to be automatically mounted on its master cylinder. Each master plate to be duplicated by this machine is provided in one marginal portion thereof with a plurality of sets of timing marks each set representing the column of the number of copy sheets to be printed and data marks each being provided for one set of timing marks and placed above one timing mark of each set which represents the particular numeral in each column. When one of such master plates is

other. An image of the narrow lighted area is formed adjacent a point common to all character positions. The rays of the two image halves that correspond to the two character levels are transmitted to different photocells. The fluctuating electric currents received therefrom are combined after transformation.

# 3,689,745

Patent Not Issued For This Number

# 3,689,746 METHOD FOR MEASUREMENT OF SCATTER AND ABSORPTION OF LIGHT

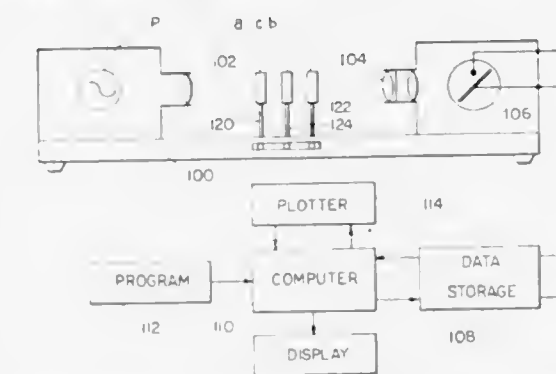
Dale H. Hansen, 6442 Langford Circle, Huntington Beach,  
Calif.

Filed Oct. 19, 1970, Ser. No. 81,660

Int. Cl. G01m 11/02

U.S. Cl. 235—151.3

10 Claims



The transmission, reflectivity, and loss characteristics of mirrors is determined by a method and apparatus employing several mirrors whose transmission characteristics are measured individually and in series. The use of a pair of like mirrors simplifies the method and minimizes the amount of computer time needed to conduct the process for determining mirror reflectivity and loss. The absorbed component of total loss is found by determining loss at zero spacing of a pair of mirrors by extrapolation from measurements made when the mirrors were spaced. For the most part, the method is arranged so that the computations may be made by hand rather than by computer, if desired.

# 3,689,747

## DIGITAL EVAPORATION MONITOR SYSTEM

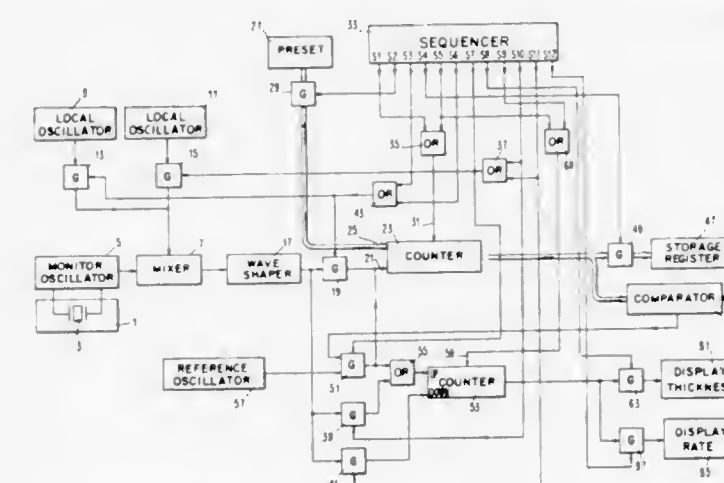
Vincent Di Milia, Tarrytown; Arnold Halperin, Peekskill, and  
Morris A. Koblenz, Mahopac, all of N.Y., assignors to Inter-  
national Business Machines Corporation, Armonk, N.Y.

Filed Dec. 9, 1970, Ser. No. 96,377

Int. Cl. G01b 7/06; G01r 23/10; H03d 13/00

U.S. Cl. 235—151.3

11 Claims



The thickness and rate of evaporation are determined by digitally monitoring the change in frequency effected by the

increasing thickness of deposited evaporation on the monitor crystal of the monitor oscillator in the evaporation stream. A preset digital count is loaded into a counter arrangement and the frequency count on the monitor oscillator, taken over a fixed interval of time, is added to the present count to thereby provide a combined count. The combined count is transferred to a storage register and thereafter successive samples of the frequency count on the monitor oscillator are compared to the combined count in the storage register to provide successive difference counts, indicative of evaporation thickness. An up-down counter arrangement is employed to determine evaporation rate by first running up the count on the up-down counter, in response to a sample of the frequency count on the monitor oscillator, taken over a fixed interval of time and then, a fixed time thereafter, running down the count on the up-down counter, in response to a sample of the frequency count of the monitor oscillator, taken over the same fixed interval of time used to run the count up.

# 3,689,748 PNEUMATIC MULTIPLEXER METHOD AND APPARATUS

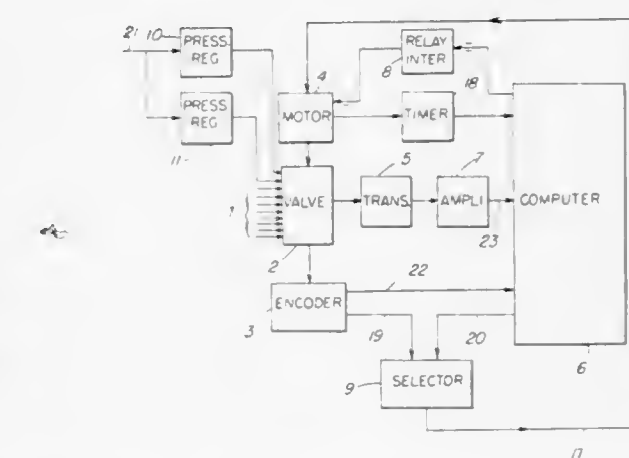
Ralph Edward Bothne, Bellingham, Wash., assignor to Mobil  
Oil Corporation

Filed Jan. 25, 1971, Ser. No. 109,680

Int. Cl. G01l 27/00, 9/04

U.S. Cl. 235—151.3

6 Claims



A computer controls a multiposition valve so that a plurality of pneumatic signals are sequentially scanned and passed through the valve to a pressure to electric transducer. The computer then stores the output from the transducer. A time delay unit is provided to prevent the computer from reading the early portion of each new transducer output. At the end of a scan of the pneumatic signals, a selector unit permits selective monitoring of one or several of the pneumatic signals. Pneumatic regulators are connected to the valve to provide calibration signals to the computer and a relay interface is provided to isolate the computer from the internal voltage of the valve circuitry.

# 3,689,749 DIGITAL MULTIPLIER USEFUL IN MULTIPLE PRODUCT DISPENSING APPARATUS

Reed H. Johnston, Wellesley, Mass., assignor to Veeder Indus-  
tries Inc., Hartford, Conn.

Filed July 16, 1970, Ser. No. 55,380

Int. Cl. G06f 7/56

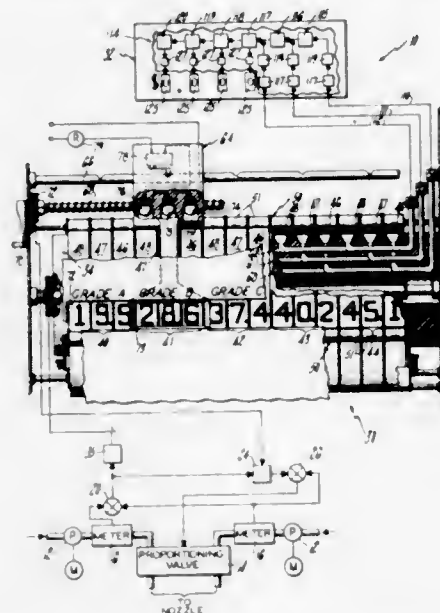
U.S. Cl. 235—156

28 Claims

A five product fuel dispensing system having an electronic cost counter, a rotary drum connected to be driven in accordance with the volume of fuel delivered having a plurality of light apertures arranged in a plurality of axially spaced circles and three photoelectric pickups operable by the light apertures for generating three electrical pulse trains for operating the cost counter in accordance with a three place



unit volume price. A bank of fifteen coaxial masking rings encircling the drum provide five sets of price wheels for establishing the unit volume prices of the five available products respectively and the five sets of price wheels are adapted to be selectively conditioned by an axially shiftable



selector for selecting the established unit volume price in accordance with the fuel product selected. The price wheels also function as price posting wheels for displaying the established unit volume prices of the available fuel products and the axially shiftable selector provides for framing the displayed price of the selected set of price wheels.

3,689,750

#### PHASE-INDEPENDENT DIGITAL CORRELATOR FOR USE IN RADAR SYSTEMS

Leonard Jan Maria Esser, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

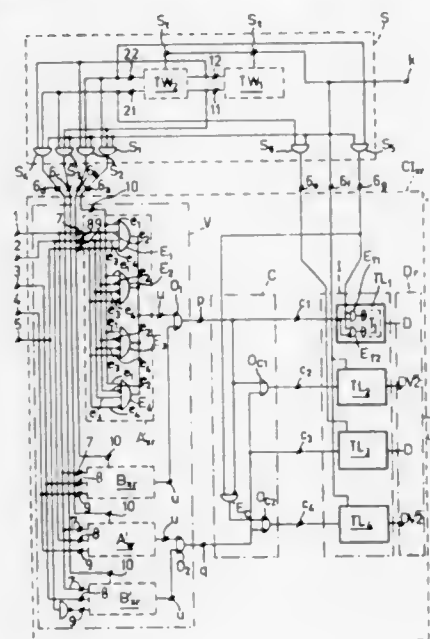
Filed Dec. 14, 1970, Ser. No. 97,624

Claims priority, application Netherlands, Dec. 13, 1969, 6,918,738

Int. Cl. G06f 15/34; G06g 7/18

U.S. Cl. 235—181

4 Claims



A phase independent digital correlator for use in radar systems comprising a signal input circuit, a multiplying stage, a plurality of combination devices, an integrating circuit, a plurality of threshold devices and a signal output circuit. The multiplying stage comprises at least one pair of 90° phase-shifted multipliers. The combination devices, coupled between the multipliers and the integrators, form linear com-

binations of the product signals produced by the multipliers. The threshold circuit comprises a plurality of inputs that are coupled to separate integrators.

3,689,751

#### SINGLE WALL DOMAIN LOGIC ARRANGEMENT

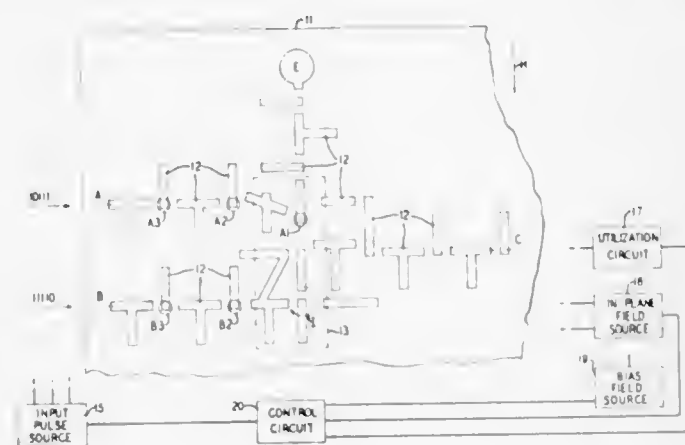
Woo Fong Chow, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 2, 1970, Ser. No. 86,248

Int. Cl. G06f 7/50; G11c 11/14

U.S. Cl. 235—176

8 Claims



A serial full adder is defined by a magnetically soft overlay pattern in a slice of magnetic material in which single wall domains can be moved. The overlay defines a unique intersection between two input and one output domain propagation channels which carries out the carry function in response to the reorienting in-plane field which effects domain movement in the channels.

3,689,752

#### FOUR-QUADRANT MULTIPLIER CIRCUIT

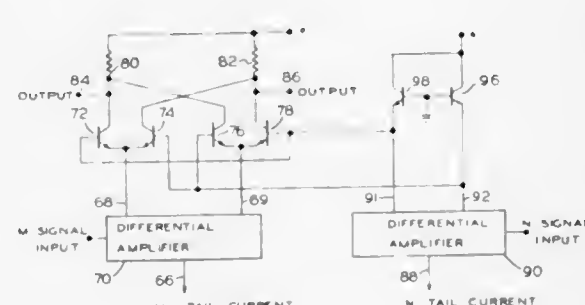
Barrie Gilbert, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed April 13, 1970, Ser. No. 27,765

Int. Cl. G06g 7/16

U.S. Cl. 235—194

11 Claims



A wideband differential amplifier comprises a pair of differentially connected control devices, for example transistors, having a pair of semiconductor junction input devices coupled thereto for receiving complementary input currents. The input devices exhibit logarithmic characteristics substantially compensating for nonlinear properties of the pair of differentially connected control devices, whereby a linear rather than a nonlinear amplifier current output is produced. Multipliers, cascaded amplifiers, and other useful circuit configurations are provided.

3,689,753

#### ENGINE CONTROL SYSTEMS

Malcolm Williams, Solihull; Duncan Barry Hodgson, Leamington, and Michael Murray Bertoli, Lichfield, all of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

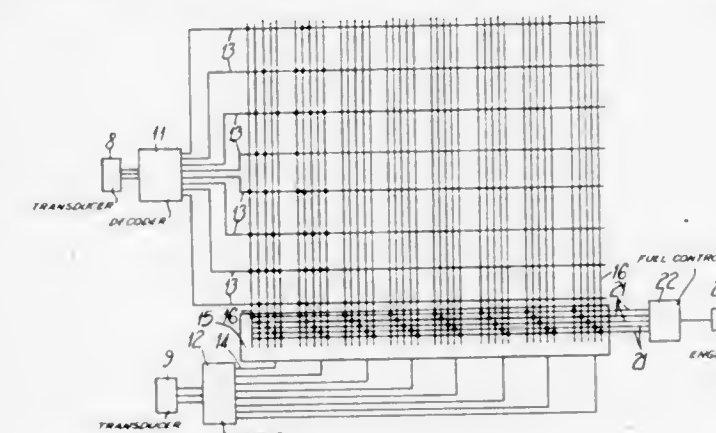
Filed Sept. 15, 1970, Ser. No. 72,722

Claims priority, application Great Britain, Sept. 23, 1969, 46,904/69

Int. Cl. G06g 7/26; G06j 1/00

U.S. Cl. 235—197

6 Claims



An engine control system includes first transducer means producing a first digital signal representing a first variable parameter and second transducer means for producing a signal representing a second parameter. The first parameter changes in steps of X, and the second parameter in steps of Y. The two signals are fed to a memory store, which produces an output indicating the way in which the engine is to be controlled. In order to obtain better accuracy, at least the first digital signal is varied, for a given value of the first variable parameter, by an amount no greater than X.

3,689,754

#### FUNCTION GENERATOR

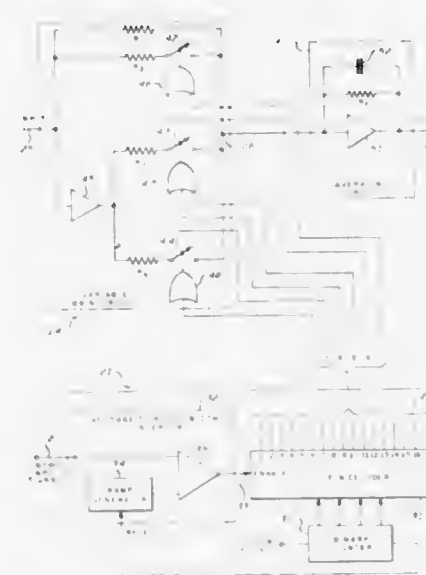
David A. Le Febvre, Phoenix, Ariz., assignor to Sperry Rand Corporation

Filed Dec. 7, 1970, Ser. No. 95,550

Int. Cl. G06g 7/36

U.S. Cl. 235—197

11 Claims



The invention comprises a means for providing a non-linear function. A first independent variable signal may be applied to a multiple switch variable gain circuit. A second independent variable signal, after being weighted by pulse width techniques in a sequencing circuit, controls the switching function of the variable gain circuit. The resultant signal is averaged and the output signal represents the first independent variable signal as a function of the second independent variable signal.

3,689,755

#### ENGINE CONTROL SYSTEMS

Duncan Barry Hodgson, Whitnash, Leamington, and Malcolm Williams, Solihull, Warwickshire, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

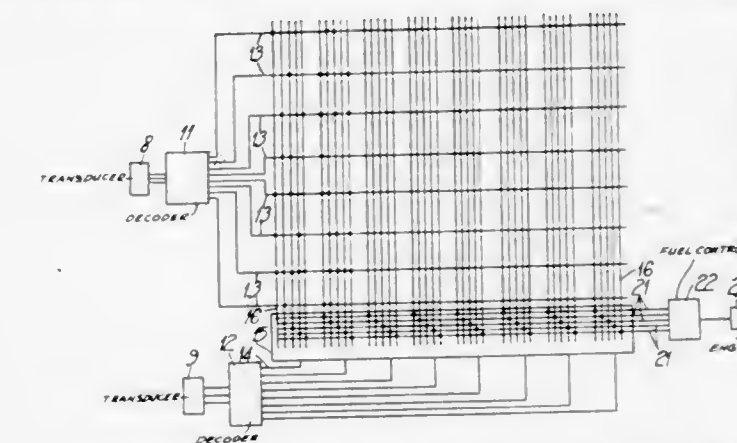
Filed Sept. 15, 1970, Ser. No. 72,724

Claims priority, application Great Britain, Sept. 23, 1969, 46,904/69

Int. Cl. G06g 7/26; G06j 1/00

U.S. Cl. 235—197

9 Claims



An engine control system, particularly for a road vehicle, includes two transducers for producing two signals representing any two of the parameters engine speed, manifold pressure and throttle angle. These signals provide input to a matrix which gives an n-bit output determined by both input signals, where n is at least two. This output controls an engine characteristic.

3,689,756

#### ELECTRO-MECHANICAL FUNCTION GENERATOR

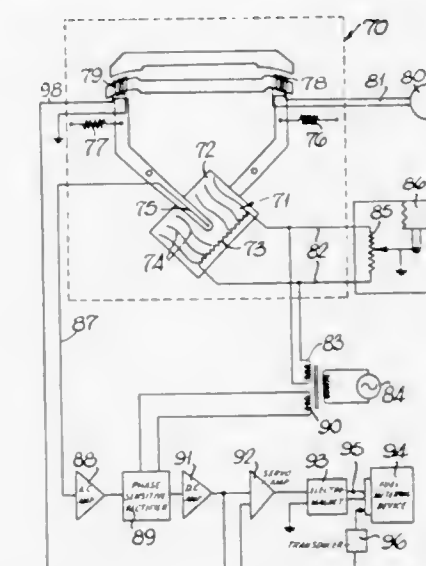
Richard Wolliscroft Haigh, Beauchamp near Worcester, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed May 21, 1969, Ser. No. 826,484

Int. Cl. G06q 7/26

U.S. Cl. 235—197

19 Claims



A function generator for producing an output signal which is a known function of two independent parameters includes a conductor pattern on a support which can be moved in a predetermined path in accordance with the value of first parameter. The conductor pattern defines a family of curves of the required function plotted against the first parameter, for a number of constant values of the second parameter. A chain of impedances is also carried by the support and each conductor curve is connected to a junction between a pair of these impedances. A.C. signals of opposite phase are applied across the impedance chain, and at least one of these signals is varied in accordance with the first parameter. There occurs therefore



on the impedance chain a zero point whose position is dependent on the first parameter, the conductor, or conductors, nearest that point will be at or near zero.

A pick-up is movable by a servo system in a path transverse to that of the conductor pattern and in a direction to seek the conductor at or near zero. The displacement of the pick-up from a datum, or rest, position provides a signal corresponding to the required function.

3,689,757

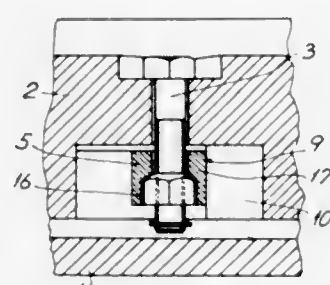
**HOUSING FOR AN AIRFIELD INSET RUNWAY LIGHT**  
Theodor Vilshammer, Hvidovre, Denmark, assignor to Aktieselskabet Laur Knudsen, Nordisk Elektricitets Selskab, Copenhagen, Denmark

Filed Dec. 8, 1970, Ser. No. 96,069

Int. Cl. B64f 1/20; B65d 43/28

U.S. Cl. 240—1.2

3 Claims



In a housing for an airfield inset runway light the upper and the lower parts of the housing are connected by means of screws and clamping members supported thereby and rotatable by means of the screws between two positions limited by stops, in one of which the clamping members project laterally from the upper part of the housing and engage the lower surface of an unbroken circumferential flange provided in the lower part of the housing and in the other of which the clamping members are turned clear of the inner surface of the flange.

3,689,758

**LIGHTED EARRING**

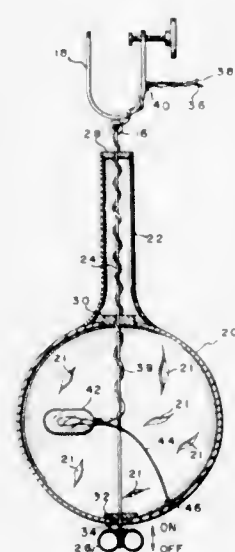
Don W. Power, R.R. 1, Rushville, Ind.

Filed May 23, 1969, Ser. No. 827,286

Int. Cl. F21v 33/00

U.S. Cl. 240—6.4 W

5 Claims



A lighted earring has unique lighting effect arrangements including a control switch mechanism for controlling lighting thereof and variable color display arrangements for the earring unit.

3,689,759

**UNDERWATER SEARCHLIGHT**

Hans Rudolf Dill, Zurich, Switzerland, assignor to A. G. Elektron, Zurich, Switzerland

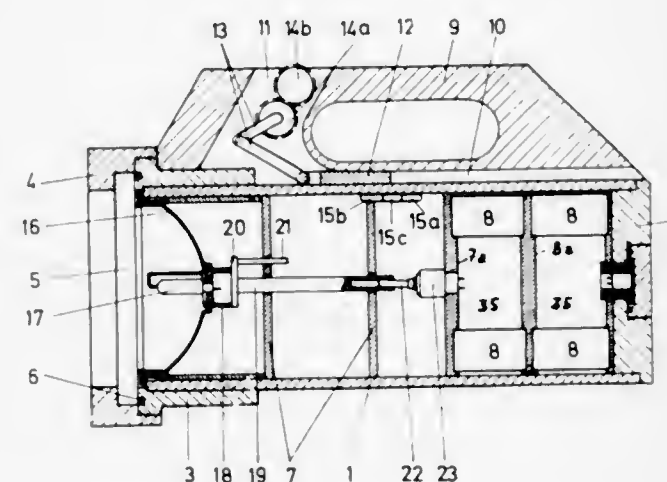
Filed Nov. 19, 1969, Ser. No. 878,143

Claims priority, application Switzerland, Nov. 22, 1968, 17543/68

Int. Cl. F21l 15/02, 1/00

U.S. Cl. 240—10.69

8 Claims



Underwater searchlight with adjustable beam, having an adjustable magnet on the outside of a pressure-resistant and water-tight housing, and control elements inside the housing for switching the searchlight on and off, and for adjusting its light beam. The control elements are preferably reed switches, and the magnet can be brought selectively into operative alignment with each of them.

3,689,760

**EFFICIENT REFLECTOR FOR A PROJECTOR**

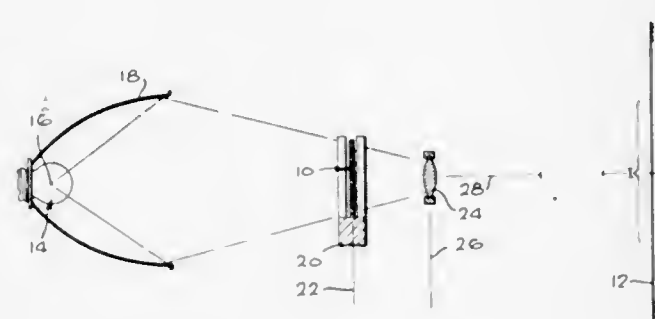
George W. Stewart, Jr., Costa Mesa, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 25, 1971, Ser. No. 109,354

Int. Cl. F21v 13/04

U.S. Cl. 240—41.3

8 Claims



An efficient projector for film slides or the like, which can project a uniformly bright image on a screen using a low wattage lamp and a small diameter projection lens, comprising a reflector for reflecting light from a lamp through a frame area of the film plane and through a lens. The reflector is shaped so that most of the light rays emanating from the lamp are reflected to a small area of the lens plane to enable a small lens to be used, the rays being directed along paths that cause uniform illumination of a predetermined frame area of the film plane.

3,689,761

**DENTAL OPERATING LIGHT**

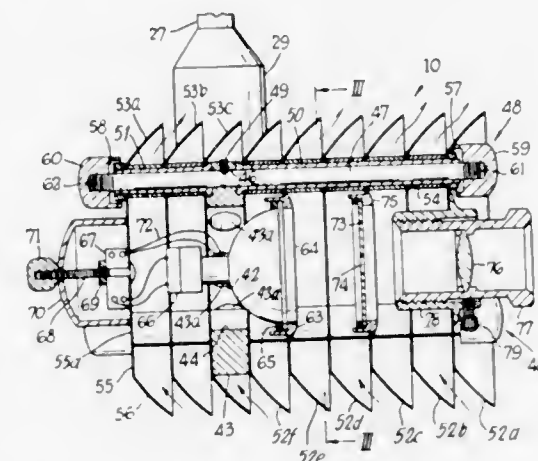
Cyril Rosen, St. Margaret, Totteridge Lane, N.20, and Stan Patok, Claremont Hall, Pentonville Road N.1, both of London, England

Filed Oct. 7, 1970, Ser. No. 78,681

Int. Cl. A61b 1/06

U.S. Cl. 240—41.15

13 Claims



A lamp primarily for use as a dental operating lamp which comprises an annular frame which is connected to an arm for mounting the lamp on a support, a light source and lens system mounted on the annular frame with the optical axis of the lens system generally aligned with the axis of the frame and a plurality of annular convection fins removably mounted on both sides of the frame in spaced relationship to one another so as to surround the light source and lens system while allowing an uninterrupted passage for convection currents in substantially all radial directions around the light source. The convection fins are preferably dished so as to form a shade for the light source without impeding the air flow and the lamp is preferably mounted on a support comprising a tubular arm which is adapted to form a continuous conduit for a flexible cable and which includes two joints along the lamp to be rotated through at least 330° about each of two mutually perpendicular axes which axes are preferably both perpendicular to and pass through the optical axis of the lamp.

3,689,762

**MODULAR TABLE LAMP**

David M. Shatan, 490 Bleeker Ave., Mamaroneck, N.Y.

Filed April 23, 1971, Ser. No. 136,728

Int. Cl. F21s 1/12, 3/10

U.S. Cl. 240—81 C

5 Claims



A kit constituted by a set of modules which may be compactly packaged and shipped in flat form, and which may be readily assembled to create a table lamp having a box-like

shade whose corners are supported on straight legs. The kit includes a set of four modules, each composed of a translucent panel, one edge of which is joined to a post whose length is greater than the length of the panel, the post having a longitudinal groove therein adapted to receive the free edge of the panel of an adjoining module whereby when assembled, the four modules define a box-like shade supported on corner posts. To complete the assembly, four legs are provided, each of which is adapted to slide over a post and to engage a longitudinal bead formed on the adjoining panel adjacent the free edge thereof, whereby each leg serves to lock the associated module post to the adjoining panel.

3,689,763

**LAMP STRUCTURES**

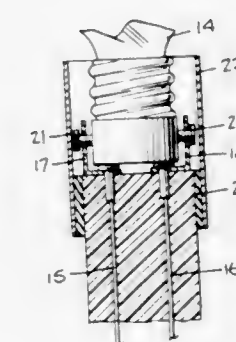
Peter R. Hamburger, 434 Lafayette Street, New York, N.Y.

Filed March 30, 1970, Ser. No. 23,707

Int. Cl. F21v 21/00

U.S. Cl. 240—88

5 Claims



A standing lamp structure in which the base and stem are defined by a unitary acrylic rod which is spiraled to form the base, the center of the spiral leading upwardly to form the stem which terminates in a lamp socket. Running through the rod in bores therein is a pair of parallel wires to conduct current to the socket, the bores having a reflective surface to render the wires effectively imperceptible.

ERRATUM

For Class 246—182 A see:  
Patent No. 3,689,788

3,689,764

**MASS SPECTROMETER SCANNING**

Brian Noel Green, Cheadle, and Michael Barber, Manchester, both of England, assignors to Associated Electrical Industries Limited, London, England

Continuation of Ser. No. 686,390, Nov. 27, 1967, abandoned.

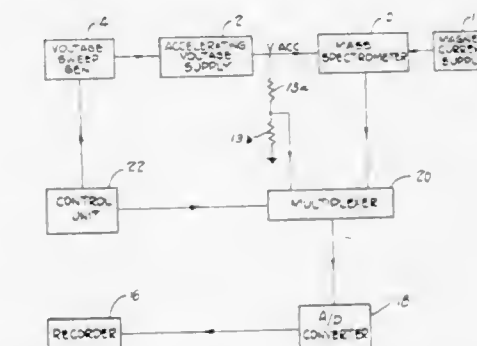
This application Oct. 9, 1970, Ser. No. 79,675

Claims priority, application Great Britain, Dec. 1, 1966, 53,876/66

Int. Cl. B01d 59/44; H01j 39/34

U.S. Cl. 250—41.9 ME

57 Claims



The positions of output peaks in a double focussing mass spectrometer due to metastable ions are separated by provid-



ing a high speed, limited duration, electrostatic scan when a peak is reached as a result of the magnetic scan. The electrostatic scan may be superimposed on the magnetic scan, or the magnetic scan may be interrupted for the duration of the electrostatic scan. The electrostatic scan is produced by varying the ratio between the ion accelerating voltage and the electrostatic deflecting voltage. Both the various voltages and the amplitudes of the output peaks may be digitized and recorded.

3,689,765

Patent Not Issued For This Number

3,689,766

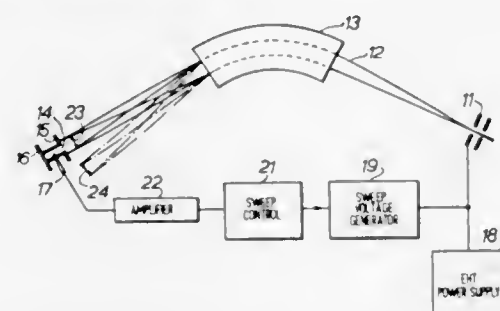
**APPARATUS FOR BOMBARDING A TARGET WITH IONS**  
James Harry Freeman, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England  
Filed Aug. 21, 1970, Ser. No. 65,941

Claims priority, application Great Britain, Sept. 5, 1969, 44,171/69

Int. Cl. H01j 37/00; G01n 23/00

U.S. Cl. 250—49.5 T

13 Claims



An electromagnetic separator adapted for ion implantation on an industrial production scale has its beam current stabilized and a mechanism within the target chamber for automatically moving targets through the ion beam according to a predetermined scanning pattern.

3,689,767

**METHOD AND APPARATUS FOR UNIFORMLY CHARGING THE SURFACE OF AN INSULATING MEMBER**

Masamichi Sato, and Isoji Takahashi, both of Asaki, Japan, assignors to Xerox Corporation, Stamford, Conn.

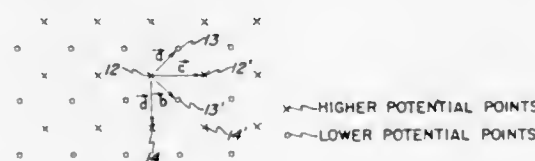
Filed Nov. 27, 1970, Ser. No. 93,316

Claims priority, application Japan, Dec. 4, 1969, 44/97341

Int. Cl. G03g 15/00

U.S. Cl. 250—49.5 ZC

4 Claims



Method and apparatus for uniformly and efficiently charging the surface of an insulating member. A plurality of charging needles in substantially perpendicular positions with respect to the surface to be charged are provided. The charging needles are further positioned on a plane parallel to the surface corresponding to the lattice points of a two-dimensional lattice. A low bias potential is applied to at least one of the charging needles corresponding to a lattice point of the basic lattice. A relatively high bias potential is applied to the tips of the remaining charging needles, the tips being maintained at a substantially fixed distance from the surface to be charged. The surface to be charged and the charging needles are displaced relative to each other along a direction which is

not parallel or perpendicular to the basic translation vectors of the two-dimensional lattice formed by the closest and next-closest high bias potential charging needles.

3,689,768

**ELECTRON BEAM RECORDING MATERIALS**  
Masamichi Sato; Seiji Matsumoto; Satoru Honjo, and Yoshio Hayakawa, all of 105, Oaza Mizonuma, Asaka-shi, Saitama, Japan

Filed June 14, 1971, Ser. No. 152,842

Claims priority, application Japan, June 18, 1970, 45/52987

Int. Cl. G01n 23/00

U.S. Cl. 250—49.5 E

8 Claims



An electron beam recording material consists of a support, a silver halide photosensitive layer thereon, an opaque layer on the photosensitive layer and a thin metallic layer of 50–1,000 Å. thickness, vacuum deposited on the opaque layer and an additional opaque layer on the rear side of the support, with the metallic layer preventing scattering of the electron beam during recording.

3,689,769

**ELECTROPHOTOGRAPHIC COPY PROCESS AND ELEMENT PRODUCED IN SAME**

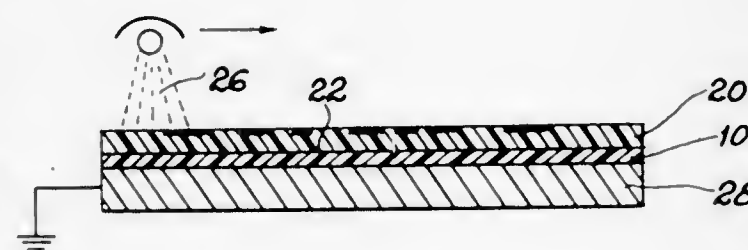
Alexander U. Averbach, 4926 Howard St., Skokie, Ill.

Continuation-in-part of Ser. No. 551,404, May 19, 1966, abandoned. This application Nov. 17, 1969, Ser. No. 877,064

Int. Cl. G03g 13/00

U.S. Cl. 250—65 ZE

11 Claims



An electrostatic copy process in which the electrostatic charge is applied to a film of a polyester resin and in which charge differential for development of a latent electrostatic image is achieved by exposure to intense ultraviolet radiations.

3,689,770

**EXPOSURE CONTROL CIRCUIT FOR AN ELECTRICALLY SHUTTERED IMAGE TUBE**

Donald F. Dion, Burlington, Mass., assignor to The United States of America

Filed July 28, 1971, Ser. No. 121,091

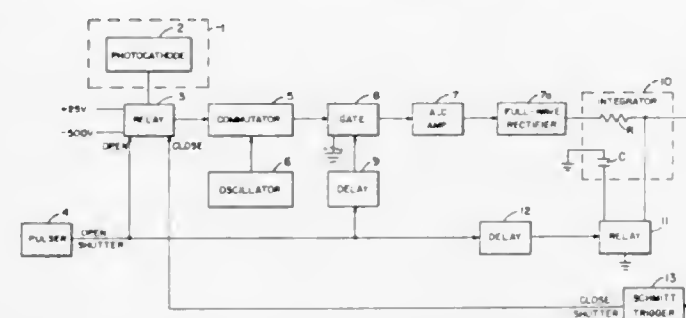
Int. Cl. H01j 31/50, 39/12

U.S. Cl. 250—206

2 Claims

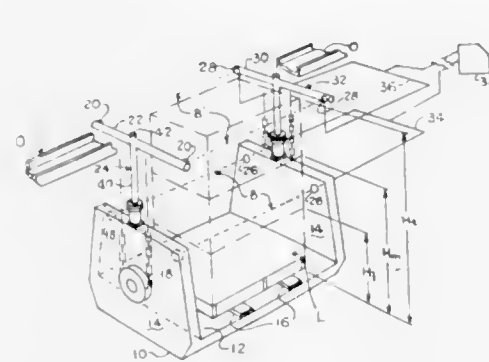
In order to maintain an optimum image under varying light conditions for an electrically shuttered image tube, it is neces-

sary to control the time that the electronic shutter is open. This is done in the instant disclosure by detecting the amount





the rod, an elongated cylinder filled with liquid in which the piston and rod are moveable and a compressible gas bladder. When the piston rod contacts an overhead obstruction, the



rod is pushed into the liquid filled cylinder and displaces a volume of the liquid to compress the bladder. When the rod is withdrawn from the obstruction, the rod is again fully extended by expansion of the bladder.

3,689,775

## INTERLOCK CONTROL SYSTEM

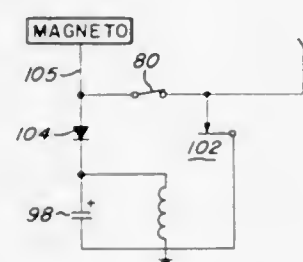
Jerry L. Smith, 3008 Imperial Blvd., Springfield, Ohio, and Robert B. Mead, 1013 North Lincoln, Wilmington, Ohio

Filed March 5, 1971, Ser. No. 121,324

Int. Cl. H02g 3/00

U.S. Cl. 307—9

17 Claims



Safety apparatus in the form of an ignition interlock for a powered work unit, particularly one using a magneto ignition engine. An electrical control circuit has a switch which when closed shorts the magneto to ground. An element in the transmission and associated with a gear selector maintains the switch open when the transmission is not in gear and provides for its closing concomitantly with shifting into any gear. An energizable relay in the electrical circuit provides that once the engine is started and running it will continue to run, in or out of gear, until shut off.

3,689,776

## ISOLATION OF PARALLEL CELL STACKS IN THERMAL BATTERIES BY A SQUIB SWITCH

David G. Evans, Hackettstown, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Aug. 25, 1970, Ser. No. 66,717

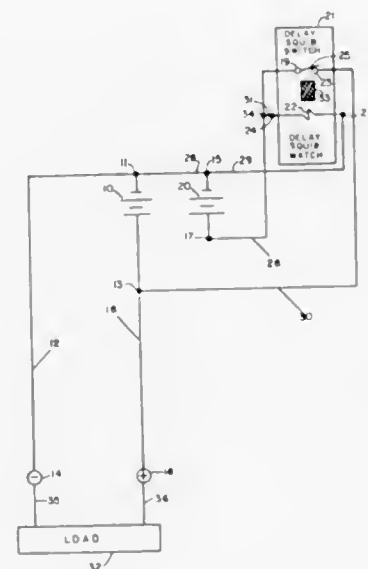
Int. Cl. H02j 7/00

U.S. Cl. 307—66

2 Claims

A squib switch is used to reliably isolate and transfer power to an external load in the presence of high nuclear and thermal radiations. The squib switch is used in an electrical circuit to remove the fast activate battery from the external load after a long life, slow activate thermal power battery connected in parallel, comes up to voltage. The electrical circuit provides

for cell isolation so that the fast rise time of the fast activate battery can be combined with the long life characteristic of



the slow activate battery without having the residual internal impedance of the fast activate battery dissipate energy from the power battery.

3,689,777

## INSULATOR TYPE POWER CIRCUIT BREAKER

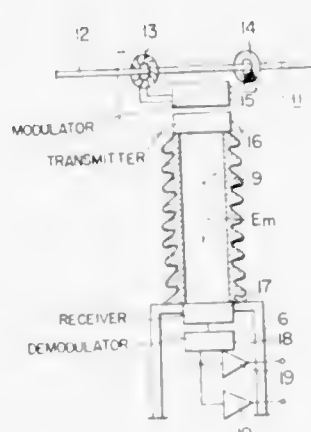
Yoshio Nitta, Kawasaki, Japan, assignor to Fuji Denki Seizo Kabushiki Kaisha, Kanagawa-ken, Japan

Filed Dec. 22, 1970, Ser. No. 100,627

Int. Cl. H01h 33/82

U.S. Cl. 307—140

1 Claim



An insulator type power circuit breaker comprising at least one circuit breaking part supported by an elongated insulator, in which a current transformer adapted to detect the bus line current, a potential transformer adapted to produce pulse voltage at zero point of the current, and a converter for converting said pulse voltage into an electromagnetic wave are provided at a high potential part, said electromagnetic wave being radiated through interior of said insulator to a receiving device provided at an earth potential part and then converted to at least one electric signal by means of a converter provided at said receiving device, said electric signal being used as a control signal, whereby electric variation of the bus line current is accurately transmitted to an earth potential side without necessitating independent insulators for supporting said current and potential transformers.

3,689,778

## ELECTRICAL CIRCUIT ARRANGEMENTS FOR CONVERTING A VARIABLE RATE OF PULSE TRANSMISSION INTO A RELATED ELECTRICAL OUTPUT QUANTITY

Denis Sharp, East Grinstead, England, assignor to U. S. Phillips Corporation

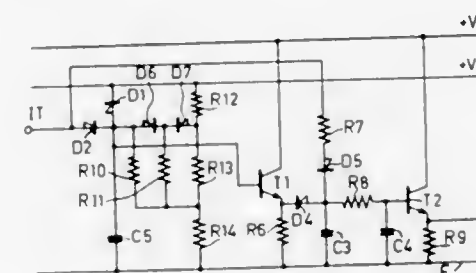
Filed July 27, 1970, Ser. No. 58,350

Claims priority, application Great Britain, July 25, 1969, 37,578/69

Int. Cl. H03k 5/20

U.S. Cl. 307—233

18 Claims



A circuit for deriving an output voltage that is proportional to the frequency of a train of input pulses. The input pulses charge a first capacitor and are also applied to an RC timing circuit. Between pulses the charge on the timing capacitor decays approximately as a rectangular hyperbola to produce a corresponding reference voltage. If and when the reference voltage reaches a given voltage level, the first capacitor begins to discharge and follows the reference voltage until it is recharged upon receipt of the next input pulse. An output terminal is coupled to the first capacitor to derive an output voltage proportional to the input pulse frequency.

3,689,779

## CONTROLLED GUNN-EFFECT DEVICE

Gerhard Schickle, Brudenerstr 22, 715 Backnang/Württemberg, Germany

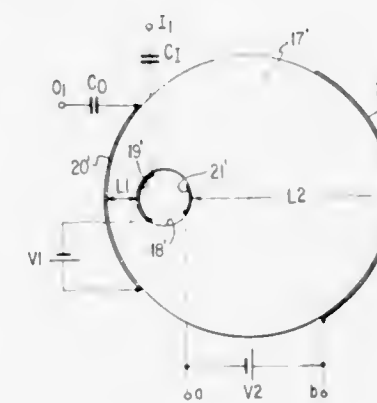
Continuation-in-part of Ser. No. 761,684, Sept. 23, 1968, Pat. No. 3,621,306. This application Oct. 15, 1971, Ser. No. 189,596

Claims priority, application Germany, Sept. 29, 1968, P 15 91 725.6

Int. Cl. H03k 3/02

U.S. Cl. 307—299

10 Claims



A Gunn-effect device in which the active layer of the semiconductor body is provided with a suitable recess, hole or opening which extends through the active layer in a direction perpendicular to the direction of drift movement of the charge carriers. Preferably at least one contact is provided within the bore which cooperates with another contact disposed on the opposite edge of the active layer. The active layer of the semiconductor body may, for example, be circular, rectangular or oval, and may if desired include a plurality of pairs of contacts, one contact of each pair being within the hole and the other contact being on the edge of the active layer.

3,689,780

## CONTROL OF FLOW ACROSS A WEAK LINK IN SUPERCONDUCTIVE AND SUPERFLUID DEVICES

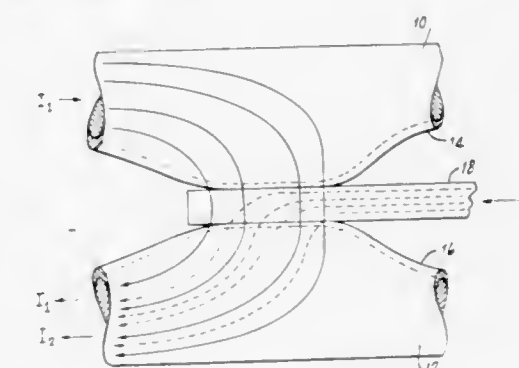
Hans Walter Meissner, 438 Grandview Terrace, Leonia, N.J., and Roger R. Rockefeller, Dawes Avenue, Clinton, N.Y.

Filed Aug. 14, 1969, Ser. No. 849,955

Int. Cl. H03k 3/38

U.S. Cl. 307—306

23 Claims



A method and means for influencing flow in a superconductive or superfluid device by introducing a control flow into a region interposed between two regions characterized by internal flow in the form of superflow. A superconductive device is presented comprising a superconductive region capable of emitting current and a superconductive region capable of receiving current, which regions are separated by an interposed region, not in a superconductive state but capable of transferring current between the two regions. When control current (AC or DC) is introduced into the interposed region from an external source, an interaction takes place between the control current and the main current being transferred through the interposed region and influences the main current in a manner which is described. An equivalent superfluid device is also discussed for electrically neutral fluid flow across a region separating two regions characterized by internal superflow.

3,689,781

## VOLTAGE TRANSFORMING DEVICES UTILIZING PIEZOELECTRIC ELEMENTS

Takehiko Kawada, Yokohama, Japan, assignor to Denki Onkyo Company, Limited, Tokyo, Japan

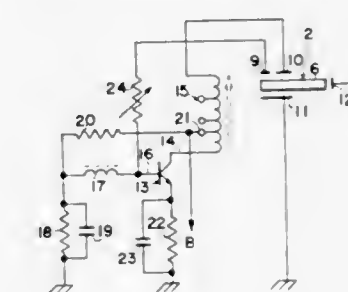
Filed Nov. 20, 1970, Ser. No. 91,482

Claims priority, application Japan, Nov. 22, 1969, 44/93806

Int. Cl. H01v 7/00

U.S. Cl. 310—8.1

4 Claims



In a voltage transforming device comprising a piezoelectric element having a pair of driving electrodes applied to the opposite sides of the driving region and an output electrode applied to the end surface of the generating region and a driving source for applying a driving voltage across the driving electrodes, a feedback electrode is provided near one of the driving electrodes and the voltage derived from the feedback electrode and proportional to the displacement amplitude of the vibration of the piezoelectric element is fed back to the driving source to cause it to oscillate at the frequency of the mechanical vibration of the element.



3,689,782

**ELECTRONIC TRANSDUCER FOR A PIEZOELECTRIC LINE**

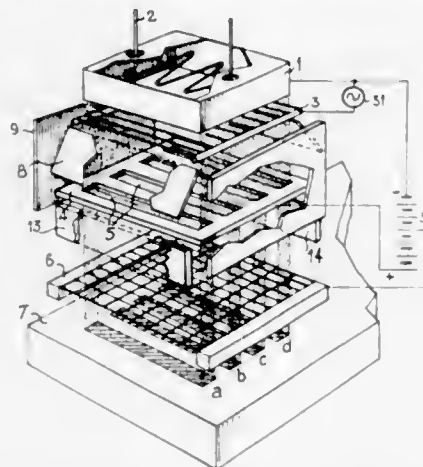
Bernard Epszein, Paris, France, assignor to Thomson-CSF, Paris, France

Filed July 1, 1971, Ser. No. 158,805

Int. Cl. H01v 7/00

U.S. Cl. 310—8.1

8 Claims



Piezoelectric transducer for creating alternating mechanical stresses in a piezoelectric material, in which said mechanical stresses are obtained by depositing electric charges on the surface of the piezoelectric material. These charges are those of electron beams impinging on the piezoelectric material, whose intensity are such and whose impact zones are so distributed at the surface of the piezoelectric material that the alternating mechanical stresses created by the electron beams are cophasal with the mechanical wave propagating within the piezoelectric material.

3,689,783

**ULTRASONIC TRANSDUCER WITH HALF-WAVE SEPARATOR BETWEEN PIEZOELECTRIC CRYSTAL MEANS**

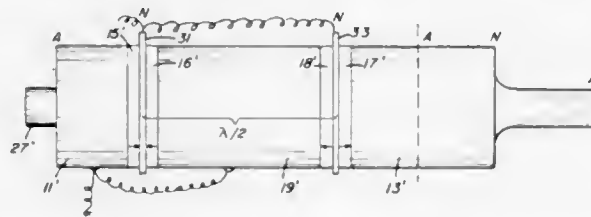
David A. Williams, 1669 Lake Ave., Fairport, N.Y.

Filed March 11, 1971, Ser. No. 123,204

Int. Cl. H04f 17/00

U.S. Cl. 310—8.3

13 Claims



An ultrasonic transducer comprises metal front and rear masses, two piezoelectric crystal means sandwiched therebetween, and a thick metal separator nearly one half wavelength thick between the crystal means to provide improved cooling by conduction of heat from the crystals. The transducer should have a length equal to a multiple of half wavelengths, and at least two half wavelengths, from end to end. A horn having a length equal to one half wavelength can comprise a part of the transducer, in which case the transducer length equals three half wavelengths.

3,689,784

**BROADBAND, HIGH FREQUENCY, THIN FILM PIEZOELECTRIC TRANSDUCERS**

John De Klerk, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 10, 1970, Ser. No. 71,094

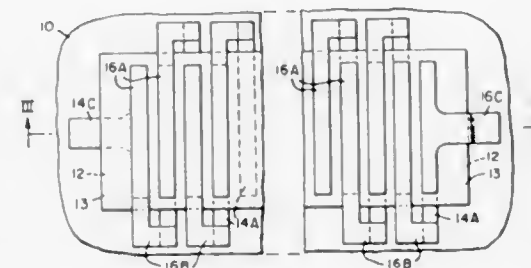
Int. Cl. H01v 7/00

U.S. Cl. 310—9.8

5 Claims

Piezoelectric thin film transducers are provided in a form to match the impedance of a transmission line. The transducer

structure includes a plurality of serially connected transducer elements on a single substrate provided by a first pattern of electrodes on the substrate, a single layer of piezoelectric material overlying the first electrode pattern and a second electrode pattern overlying the piezoelectric layer with selec-



tive connections between electrodes of the first and second patterns, such structure being directly amenable to fabrication by thin film technology. Such an arrangement provides greatly increased bandwidth characteristics and improved conversion efficiency.

3,689,785

**ELECTRODYNAMIC AGGREGATE MOTION POSITIONING**

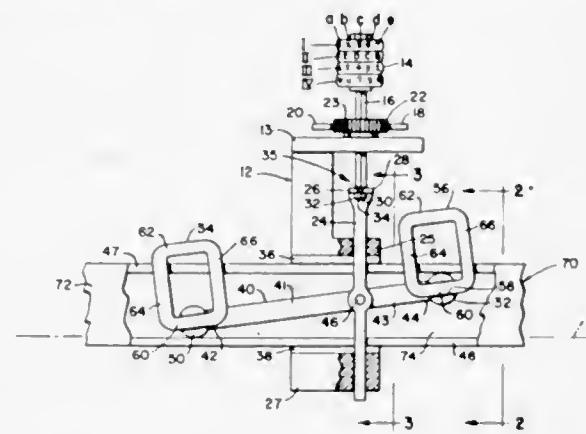
Gerhard Cless, Skokie, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed March 4, 1971, Ser. No. 121,097

Int. Cl. H02k 7/06

U.S. Cl. 310—37

11 Claims



An elongated actuator is arranged for rocking between a pair of rails defining a generally horizontal path. Therein, the actuator is pivotally connected, off-center from its opposed ends, to an output member which is constrained for reciprocation in a vertical course extending transversely of the path. Displacement of the output member is effected by rocking the opposed ends of the actuator into bearing association with inner path defining surfaces of the rails.

3,689,786

**DYNAMO ELECTRIC MACHINES**

Peter Hunt, Shipley, England, assignor to Rotax Limited, Birmingham, England

Filed May 26, 1971, Ser. No. 147,075

Claims priority, application Great Britain, May 26, 1970, 25,308/70

Int. Cl. H02k 9/00

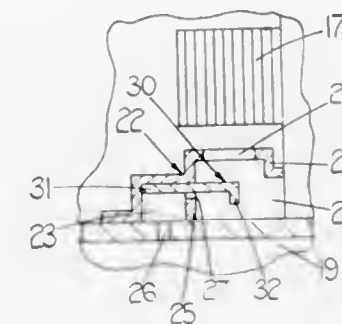
U.S. Cl. 310—58

6 Claims

This invention relates to a dynamo electric machine having a rotatable shaft with at least one machine component mounted on the shaft for rotation therewith. The shaft has an axial bore for the passage of a cooling fluid and cooling fluid distributor means mounted on the shaft for discharging cooling fluid on to the component. The cooling fluid distributor means comprises an annular chamber which communicates

with the axial bore and with flow control means, the latter ensuring an even or substantially even discharge of fluid

vided to determine what the car's velocity should be when it leave the last retarder just prior to entering the bowl portion of



therefrom by means of centrifugal force when, in use, the shaft, the component, and the cooling fluid distributor means are rotated.

3,689,787

**PERMANENT MAGNET MOTOR HAVING POLE SHOE ROTOR WITH LAMINATIONS TO RETARD EDDY CURRENTS**

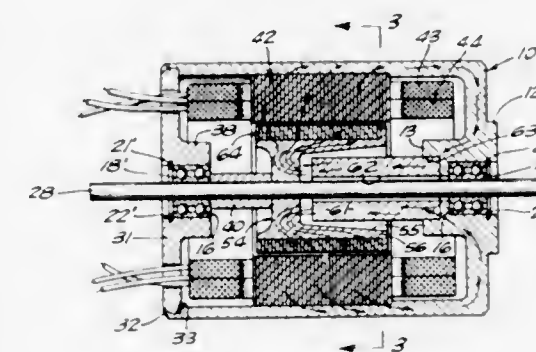
Simon Saretzky, Harbor Road, Harbor Point, N.Y.

Filed March 22, 1971, Ser. No. 126,429

Int. Cl. H02k 1/22

U.S. Cl. 310—266

7 Claims



A permanent magnet motor particularly adapted as a stepper motor. It is of a low inertia type having an axially polarized permanent magnet and wherein the feature of an axial air gap between a rotor and the magnet is embodied. The rotor provides the axial air gap. It is in the form of a low reluctance body having a peripheral part of laminated construction to improve pulsed stepping operation by minimizing deleterious effects caused by eddy currents.

3,689,788

**ROLLABILITY PREDICTION SYSTEM**

Peter J. Wong, Menlo Park; Dale W. Ross, Sunnyvale, and Kenneth W. Gardiner, Menlo Park, all of Calif., assignors to Southern Pacific Transportation Company, San Francisco, Calif.

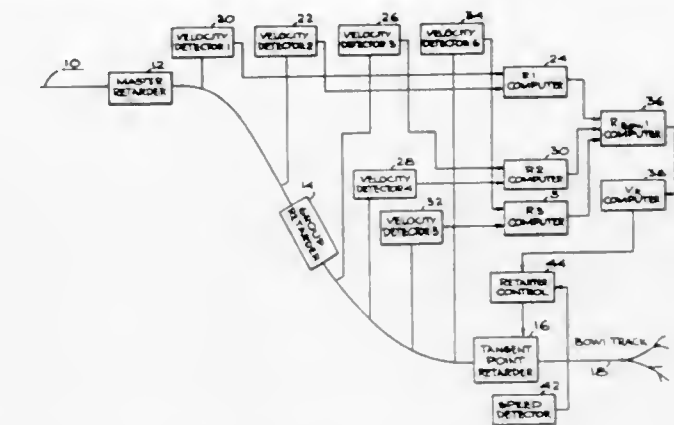
Filed Oct. 23, 1970, Ser. No. 83,365

Int. Cl. B61 17/00

U.S. Cl. 246—182 A

4 Claims

In a railway classification yard a car's rollability is measured several times as it is traveling through the upper yard. These measurements are employed to predict the car's rollability on the bowl track. From the predicted rollability, means are pro-



3,689,789

**FAST DESTRUCTIVE-READ SCAN CONVERTER TUBE**

Nobuo J. Koda, Vista, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 1, 1970, Ser. No. 33,753

Int. Cl. H01j 31/58, 31/64

U.S. Cl. 313—68 R

8 Claims



A scan conversion electron tube is disclosed for converting one type of raster scan to another with a destructive readout, thereby to allow only a limited number of readout scans. The tube is an elongated envelope having a writing gun on one side thereof and a reading gun at the other side with an improved storage target disposed intermediate the guns that possesses a dielectric relaxation time of the order of one second, thereby enabling the tube to operate at a write scan rate of from 10–30 frames/second.

3,689,790

**MOVING TARGET SEALED X-RAY TUBE**

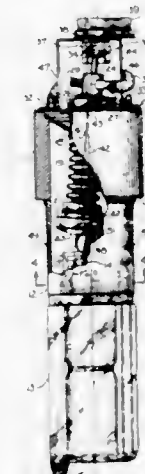
David J. Haas, Stamford, Conn., and Jerome Pichert, Centerport, N.Y., assignors to Pepl, Inc., New York, N.Y.

Filed April 29, 1971, Ser. No. 138,627

Int. Cl. H01j 35/04

U.S. Cl. 313—60

7 Claims



A sealed-off X-ray tube having a convex target surface facing an electron beam source and carried by a rigid support



mounted for rotary pivotal motion about a fixed pivot point. A bellows is sealed vacuum tight to the target and to the wall of the tube around the pivot point so that the target, the bellows, and the envelope of the tube form a closed surface. Conduits extend through the pivotal bearing to direct the flow of cooling fluid against the back surface of the target and carry the fluid away. The target surface is spherically convex with a center of curvature at the pivot point. The axis of the target precesses about the axis of the tube but the target does not rotate on its own axis. The target may be moved manually or by motor and with a linear, circular or spiral motion. Because of the curvature of the target, the electron optical forces are substantially unaffected by the precessing motion, and virtually constant X-ray beams radiate through windows of the tube.

3,689,791

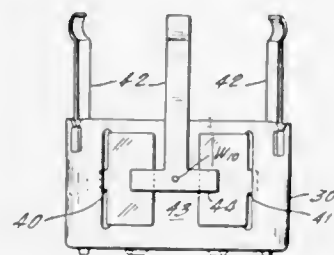
## CONVERGENCE ASSEMBLY

John McQueen, Bloomfield, and Leonard D. Minutillo, Sayreville, both of N.J., assignors to Griffith Electronics, Inc., Chicago, Ill.  
Filed Oct. 30, 1970, Ser. No. 85,643. The portion of the term of this patent subsequent to Dec. 1, 1987, has been disclaimed.

Int. Cl. H01j 29/02, 31/20

U.S. Cl. 313—77

3 Claims



A convergence assembly for use in color television kinescopes in which the internal pole pieces are secured to the housing thereof by means of an ear or tab portion engaging a slot in the housing and by means of a substantially T-shape arrangement mechanically connected to exert a force on the pole pieces tending to keep them in proper alignment position. An interleaving sheet arrangement is further provided to shield the magnetic field associated with one pole pair from the magnetic field associated with a second such pair.

3,689,792

## ALUMINUM ELECTRON SHIELD COATED WITH POWDER OF ONE OF IRON, COPPER, NICKEL AND COBALT

Masayoshi Ezawa, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

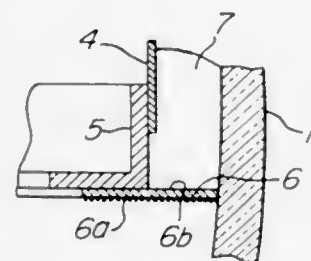
Filed Oct. 28, 1970, Ser. No. 84,631

Claims priority, application Japan, Oct. 31, 1969, 44/102932

Int. Cl. H01j 29/06, 31/20, 61/52

U.S. Cl. 313—85 S

1 Claim



An improved electron shield for color picture tubes provided in the space between a supporting section of a color selective electrode, such as a shadow mask, and a gas-tight vessel to prevent unnecessary electrons from bombarding the

phosphor screen. The material used for the shield is a surface-roughened aluminum sheet with metal powder not larger than  $1 \mu$  in grain diameter deposited in an alloy-like state on one side of an aluminum sheet as a base material. Thus, both the effective area and the thermal radiation of the electron shield are made large, whereby the temperature rise in the shadow mask is reduced to prevent chromatic aberration.

3,689,793

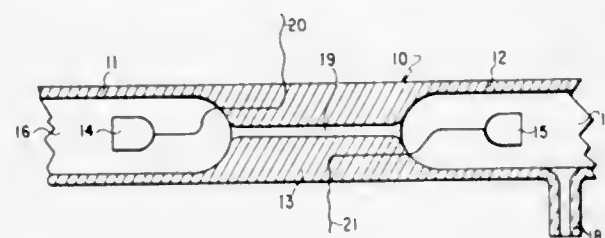
## ELECTRODE ARRANGEMENT FOR DIRECT CURRENT FED GAS DISCHARGE LAMPS

Alfred Walz, Am Kurzwarm 7, Emmendingen/Baden, Germany  
Filed Oct. 20, 1970, Ser. No. 82,435

Int. Cl. H01j 17/16

U.S. Cl. 313—220

2 Claims



A d.c. gas discharge lamp in which the space at the electrodes communicates through one or more apertures sufficiently small in cross-section to prevent arcing but sufficiently large to permit diffusion of metallic vapor. A single channel or a diaphragm may be utilized in a hot or cold cathode tube.

3,689,794

## PUNCTIFORM CATHODE, IN PARTICULAR SUITABLE FOR DETACHABLE ELECTRIC DISCHARGE TUBES

Johannes van Esdonk, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

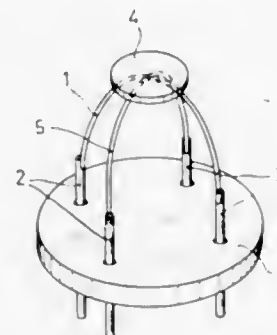
Filed Feb. 22, 1971, Ser. No. 117,501

Claims priority, application Netherlands, March 7, 1970, 7003279

Int. Cl. H01j 17/06, 1/05, 1/15

U.S. Cl. 313—311

3 Claims



A punctiform cathode for detachable tubes consisting of a tantalum plate which is secured to the tops of one or more V-shaped filaments.

3,689,795

## BORON-CONTAINING ROTATING X-RAY TARGET

Friedrich Benesovsky, Reutte, Austria, assignor to Schwarzkopf Development Corporation, New York, N.Y.

Filed May 27, 1971, Ser. No. 147,615

Claims priority, application Austria, June 2, 1970, A 4945/70

Int. Cl. H01j 35/10, 1/38

U.S. Cl. 313—330

7 Claims

This invention relates to an improvement in rotating X-ray targets involving incorporation of small quantities of boron into the molybdenum-containing base portion.

3,689,796

## ELECTROMAGNETIC LENS FOR HIGH SPEED ELECTRON BEAMS

Rolf Wideroe, Nussbaumen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie., Baden, Switzerland

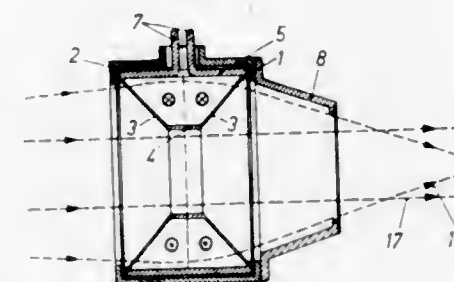
Filed June 24, 1969, Ser. No. 836,040

Claims priority, application Switzerland, June 27, 1968, 9636/68

Int. Cl. H01j 29/46

U.S. Cl. 315—14

12 Claims



A lens of the magnetic field type for high speed electron beams such as those which emerge from an electron accelerator comprises a multi-turn toroidal coil having a trapezoidal configuration, which is energized by pulse currents. The coil is wound from ribbon-form conductor material, such as aluminum and the conductor parts on the conical surface zones of the coil which are traversed by the electron rays have a smaller thickness than the conductor parts at the inner and outer peripheral surface portions of the coil. Cooling means in the form of fins in contact with a fluid coolant can be provided in heat transfer relation with those conductor parts of the coil which are not traversed by the electron rays.

3,689,797

## CIRCUIT ARRANGEMENT IN A PICTURE DISPLAY DEVICE UTILIZING A STABILIZED SUPPLY VOLTAGE CIRCUIT

Wilhelmus Theodorus Hendrikus Hetterscheid, and Gerrit Pieter Johannes van Schaik, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

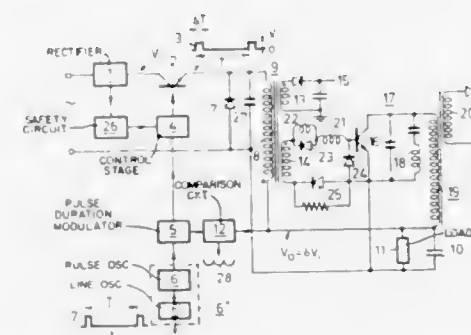
Filed April 13, 1970, Ser. No. 27,853

Claims priority, application Netherlands, April 25, 1969, 6906394; Nov. 4, 1969, 6916659

Int. Cl. H01j 29/70

U.S. Cl. 315—27 TD

7 Claims



A stabilized supply voltage circuit for a picture display device comprising a chopper wherein the switching signal has the line frequency and is duration-modulated. The coil of the chopper constitutes the primary winding of a transformer a secondary winding of which drives the line output transistor so that the switching transistor of the chopper also functions as a driver for the line output stage. The oscillator generating the switching signal may be the line oscillator. In a special embodiment the driver and line output transistor conduct simultaneously and in order to limit the base current of the line output transistor a coil shunted by a diode is incorporated in the drive line of the line output transistor. Other secondary windings of the transformer drive diodes which conduct simul-

taneously with the efficiency diode of the chopper so as to generate further stabilized supply voltages.

3,689,798

## DEVICE FOR AUTOMATICALLY CONTROLLING ELECTRICAL CONDITIONS OF AN ELECTRON BEAM UNIT

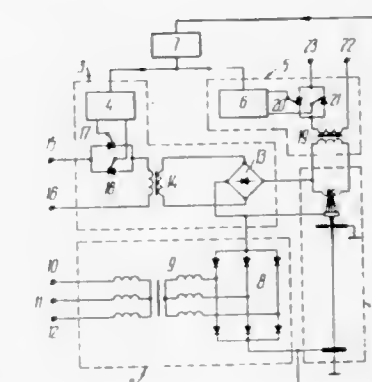
Igor Pavlovich Brukovsky; Pavel Borisovich Yakovlev; Kirill Davidovich Gutterman; Alexandr Vasilievich Perov, all of Moscow; Vladimir Fedorovich Zhukov, Rzhev Kalininskoi oblasti; Larisa Petrovna Nekrasova, Rzhev Kalininskoi oblasti, and Jury Dmitrievich Ivanovsky, Rzhev Kalininskoi oblasti, all of U.S.S.R., assignors to Moskovsky Energetichesky Institut, Moscow, U.S.S.R.

Continuation of Ser. No. 841,816, July 15, 1969. This application July 16, 1971, Ser. No. 163,028  
Claims priority, application U.S.S.R., July 17, 1968, 1257961

Int. Cl. H05b 11/00

U.S. Cl. 315—106

1 Claim



A device for automatically controlling electrical conditions of an electron beam unit having an electron gun wherein a main cathode is heated by a current of electrons emitted by an auxiliary cathode, the main cathode of the electron gun is supplied from a main cathode heating unit, the auxiliary cathode is supplied from an auxiliary cathode heating unit and a heating correction unit of said main cathode is connected to at least one of said units.

3,689,799

## METHOD OF DOSING LAMPS

Stephen P. Senft, Cleveland Heights, Ohio, assignor to General Electric Company

Filed Sept. 14, 1970, Ser. No. 72,051

Int. Cl. H01j 9/18, 9/38

U.S. Cl. 316—4

5 Claims



Molten lamp-dosage material such as indium triiodide is drawn into tubing of slippery plastic material such as Teflon and allowed to solidify. The tubing and its contents are sliced at suitable intervals for providing desired quantities of dosage



material per lamp, and the pellets of dosage material are forced out of the sliced tubing sections and into the lamp bulbs.

3,689,800

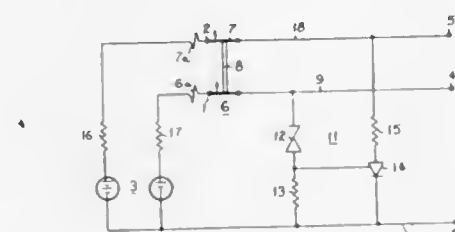
**ARRANGEMENT FOR DISCONNECTING CONSUMERS FROM A DIRECT CURRENT VOLTAGE SUPPLY SOURCE**  
Waldemar Lau, Hockenheim, and Anton Schaffernak, Eppelheim, both of Germany, assignors to Aktiengesellschaft Brown, Boveri & Cie., Baden, Switzerland  
Filed April 20, 1971, Ser. No. 135,665

Claims priority, application Germany, April 30, 1970, P 20 21 206.0

Int. Cl. H02h 3/20

U.S. Cl. 317—16

6 Claims



A protective circuit arrangement is provided for disconnecting a consumer requiring different potentials at different input terminals from a direct current power source having two output terminals supplying the different potentials in the event of a short-circuit between the potential terminals. The protective circuit includes a pair of mechanical circuit breakers located respectively in the connection lines extending between the power output and consumer input terminals which are each equipped with current overload contact release mechanisms and an electronic circuit responsive upon the occurrence of a short-circuit between the potential terminals serves to establish a current flow path from one of the connection lines to ground and short-circuit the input terminals of the consumer until one of the circuit breakers functions through its current overload release mechanism to open its contacts. The contacts of the two circuit breakers are mechanically coupled by an insulating coupling so that an opening movement of the contacts of one circuit breaker causes the contacts of the other circuit breaker to open also.

3,689,801

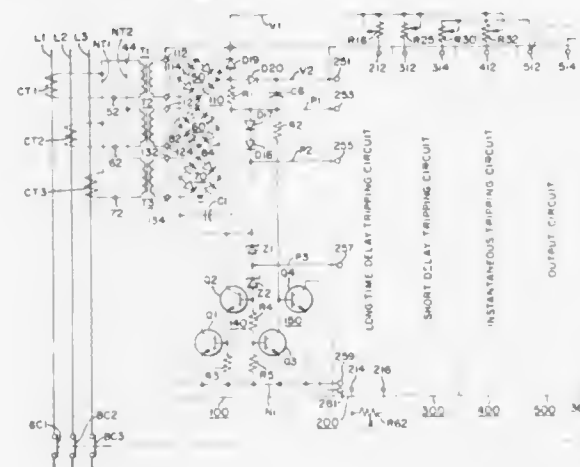
**CIRCUIT BREAKER INCLUDING IMPROVED CURRENT AUCTIONEERING CIRCUIT**  
Joseph C. Engel, and Robert T. Elms, both of Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 7, 1970, Ser. No. 35,517

Int. Cl. H02h 7/26

U.S. Cl. 317—26

6 Claims



A circuit breaker including a current auctioneering circuit for obtaining a unidirectional output current which is substan-

tially equal to the unidirectional output current of only one of a plurality of substantially constant, unidirectional current sources each having a pair of output terminals comprising means for connecting the output terminals of the current sources in series circuit relation between a pair of overall output terminals and rectifier means connected to the output terminals of each current source.

3,689,802

**APPARATUS FOR SUPERVISING THE FUNCTIONING OF AN ANALOG PLURAL-CHANNEL REGULATING SYSTEM**

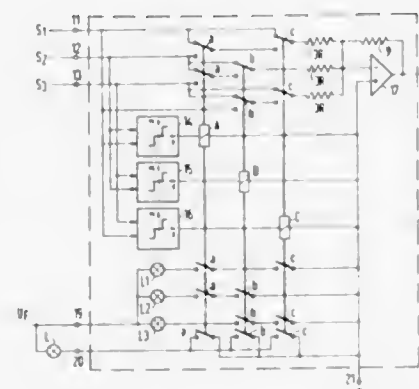
Hermann Waldmann, Wiesenstr. 14, Weiher, Germany  
Filed April 21, 1971, Ser. No. 135,933

Claims priority, application Germany, April 29, 1970, P 20 2940.9

Int. Cl. H02h 3/26

U.S. Cl. 317—27 R

9 Claims



The mean value of the amplitude of analog signals appearing on individual control paths is continuously formed. Three-level switch means are provided which are addressed by groups of two control path voltages of the individual control paths, and a disturbed control path is disconnected by the switch means, and either the output signal of the mean-value forming unit or one of the remaining connected input signals is weighted, so that failure of one control path does not significantly affect the output signal of the mean-value forming unit which is supplied to following apparatus. Thus, the failure of a control path can occur without interruption or significantly changing the operation of this supervisory apparatus. This failure can sound an alarm which pinpoints the specific location of the fault.

3,689,803

**INTEGRATED CIRCUIT STRUCTURE HAVING A UNIQUE SURFACE METALLIZATION LAYOUT**  
Theodore H. Baker, Poughkeepsie, and Daniel Tuman, Beacon, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed March 30, 1971, Ser. No. 129,428

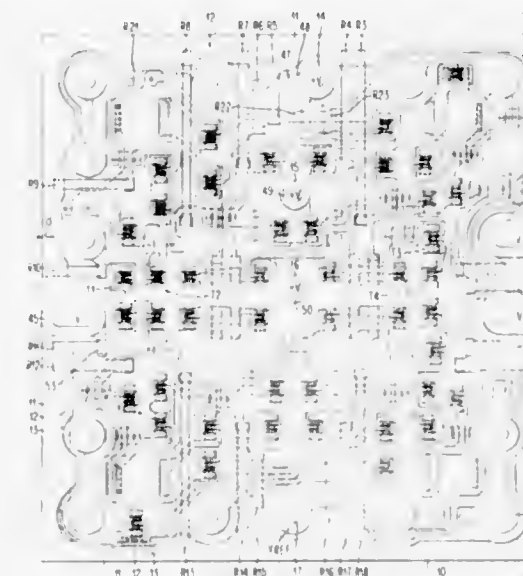
Int. Cl. H01l 19/00

U.S. Cl. 317—101 A

8 Claims

A planar monolithic integrated circuit chip containing an isolation region of one conductivity type extending completely around the edge or periphery of the chip in order to insure that there are no exposed P-N junctions on an edge surface of the chip. Such an isolation region extends for at least a minimum distance from the edge of the chip, said distance being determined so as to minimize the risk of any edge defects in the chip resulting from dicing and handling from extending beyond the isolation region into the body of the chip. An insulative layer over the planar surface of the chip supports a metallization pattern for interconnecting the devices in the integrated circuit and for distributing a plurality of voltage supplies at different levels to the devices. The metallization

pattern is arranged so that only metallization connected to the voltage supply at the same level as the peripheral isolation re-



gion is located on the portion of the insulative layer between the chip edge and the minimum distance of the isolation junction from the edge.

3,689,804

**HYBRID CIRCUIT DEVICE**

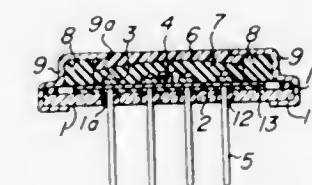
Masaru Ishihama, and Yukio Kobayashi, both of Tokyo, Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Filed Sept. 30, 1971, Ser. No. 185,242

Int. Cl. H05k 5/06

U.S. Cl. 317—100

7 Claims



A hybrid circuit device including circuit elements connected on a printed circuit plate mounted on a radiator is provided with flexible insulating material packed between the elements thereof. Lead terminals are secured to the printed circuit plate and the printed circuit plate is fixed to the radiator with the intervention of flexible insulating material with a rubber-like insulator mounted on the marginal portion of the circuit plate by use of a metal frame. Flexible insulating material is covered on the circuit and the circuit is enclosed by enclosure resin.

3,689,805

**EXPOSURE CONTROL**

Allen Gwyn Stimson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 863,403, Aug. 4, 1969, abandoned.

This application Jan. 18, 1971, Ser. No. 107,525

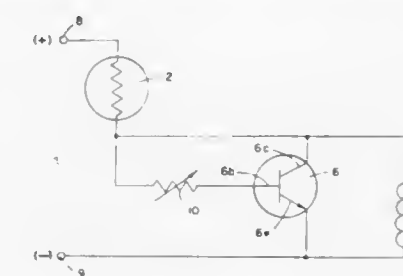
Int. Cl. G01j 1/52

U.S. Cl. 317—124

5 Claims

An automatic diaphragm control, in which the transducer which drives the diaphragm, is bypassed by a transistor, the

degree of bypass increasing as the diaphragm aperture gets smaller. This is done in order to make the exposure control



less sensitive at high light levels, and to give the exposure control a logarithmic sensitivity curve.

3,689,806

**TIME HOLDING SWITCH**

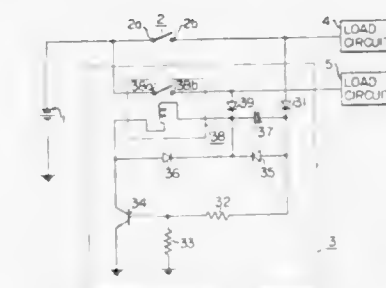
Toshikazu Saita, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Chryodaku, Tokyo, Japan

Filed Aug. 10, 1971, Ser. No. 170,512

Int. Cl. B60q 1/06

U.S. Cl. 317—141 S

3 Claims



The disclosed device comprises serially connected switch, relay and transistor. Upon closing the switch, a dc source renders the transistor conducting to energize the relay connecting the source to a load. Upon opening the switch, a capacitor disposed between it and the relay begins to charge to supply a base current to the transistor to keep the relay energized. At the end of the charging, the transistor becomes nonconducting to deenergize the relay disconnecting the load from the source. Alternately, a capacitor may be connected to the switch to charge during its closure. Upon opening the switch, the capacitor begins to discharge. At the end of this discharging the load is disconnected from the source as in the above case.

3,689,807

**PUT TIME DELAY RELAY**

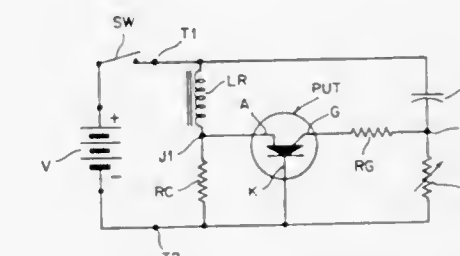
Mircea M. Tenenbaum, New Haven, Conn., assignor to Allied Control Company, Inc., Plantsville, Conn.

Filed Feb. 3, 1971, Ser. No. 112,133

Int. Cl. H01h 47/18, 47/36

U.S. Cl. 317—141 S

7 Claims



A time delay relay utilizes a programmable unijunction transistor (PUT) wherein the junction of a resistor-capacitor timing circuit is connected to the gate electrode of the PUT and the coil of an electromechanical relay is connected to the



anode of the PUT. The firing of the PUT and consequently the current flow through the relay coil is determined by the anode-gate voltage which exponentially changes from an initial cut off value at the start of the timing interval.

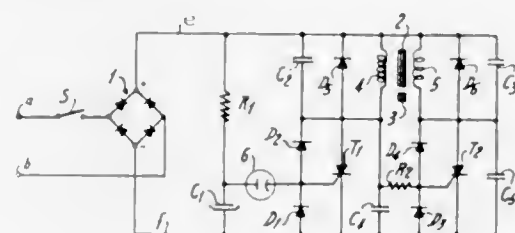
3,689,808

**CONTROL SYSTEM FOR AN ELECTROMAGNET**  
Harald Stampfli, Petit-Saconnex Geneva, Switzerland, assignor to Lucifer S.A., Geneva, Switzerland  
Filed Oct. 1, 1970, Ser. No. 77,238  
Claims priority, application Switzerland, Oct. 24, 1969, 15880/69

Int. Cl. H01h 47/32

U.S. Cl. 317-155

2 Claims



A control system for an electromagnet provided with a power winding controlling the motion of the movable core and with a maintenance winding holding the core in its attracted condition. The power winding is first energized through a first thyristor (a silicon controlled rectifier, generally designated SCR) or transistor by a closing of a rough rectified A.C. circuit and, after a short delay, a condenser discharges through a component provided with a threshold for voltage conduction into an electrode controlling another thyristor or transistor or the like means which energizes then the maintenance winding and provides for the release or the first thyristor or transistor so as to deenergize the power winding. The maintenance winding remains then energized until the rectified circuit is switched off.

3,689,809

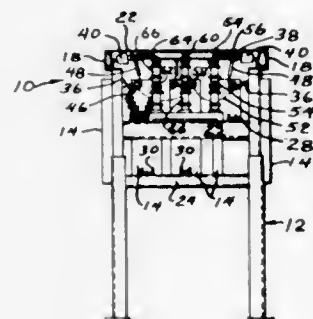
**CAPACITOR BANK ARRANGEMENT**  
Jackie F. McDonald, and William E. Midden, both of Springfield, Ill., assignors to Sangamo Electric Company, Springfield, Ill.

Filed Oct. 19, 1971, Ser. No. 190,590

Int. Cl. H01g 1/11

U.S. Cl. 317-256

13 Claims



A low profile capacitor bank arrangement wherein a frame structure supports a plurality of capacitors which have their high voltage and neutral terminals projecting inwardly of the frame structure for connection to bus bar means supported within the frame structure, the surface of the capacitors exposed exteriorly of the frame structure presenting a low outer profile and uncluttered appearance, and being safer through the elimination of the usual exteriorly projecting conductive elements.

3,689,810  
**ALL-PLASTIC ELECTRIC CAPACITOR**  
Wilhelm E. Walles, 3606 Chestnut Hill, Midland, Mich.  
Filed April 23, 1971, Ser. No. 136,800  
Int. Cl. H01g 1/01

U.S. Cl. 317-258

7 Claims



An all-plastic electric capacitor having electroconductive organic plastic as electrodes, e.g., polystyrene film having neutralized sulfonic acid groups on the surface thereof, and non-conductive organic plastic as dielectric material, e.g., a vinyl chloride/vinylidene chloride copolymer film. Such plastic capacitors are particularly useful in low frequency applications requiring transparent or translucent capacitors.

3,689,811

**HIGH VOLTAGE CAPACITOR**  
Paul Hoffman, 9244 Balboa Ave., San Diego, Calif.  
Filed Oct. 21, 1971, Ser. No. 191,159  
Int. Cl. H01g 1/14

U.S. Cl. 317-259

7 Claims



A high energy density, high voltage capacitor. The capacitor comprises a plurality of stacked capacitor winding sections having tab connectors extending completely through the windings and folded back adjacent opposed sides of the windings. The winding sections with the tab connectors are stacked and compressed to series connect the sections. The sections are impregnated with a scavenger-type dielectric fluid and are encapsulated in a solid organopolymeric body.

3,689,812

**GENERATOR-FED MOTOR CONTROL WITH DYNAMIC BRAKING FOR VEHICLE PROPULSION**  
Max Eisele, Widerlichstr. 12, Erlangen, Germany, assignor to Siemens Aktiengesellschaft  
Filed Feb. 11, 1971, Ser. No. 114,594  
Claims priority, application Germany, Feb. 14, 1970, P 20 06 801.3

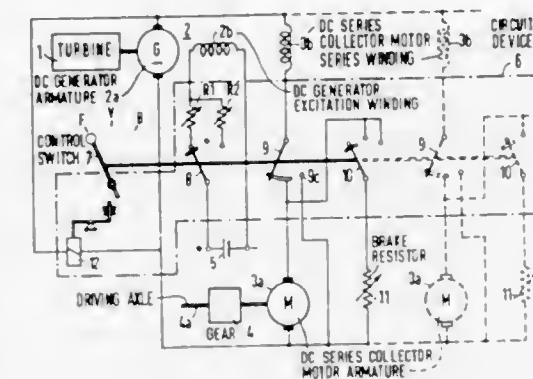
Int. Cl. H02p 5/26

U.S. Cl. 318-151

3 Claims

In a variable voltage drive of the Ward Leonard type the excitation of the generator is discontinued for braking and the armature of the generator and the armature of the drive motor

are connected to a brake resistor. As a result, a braking effect occurs without delay and the voltage of the generator decays



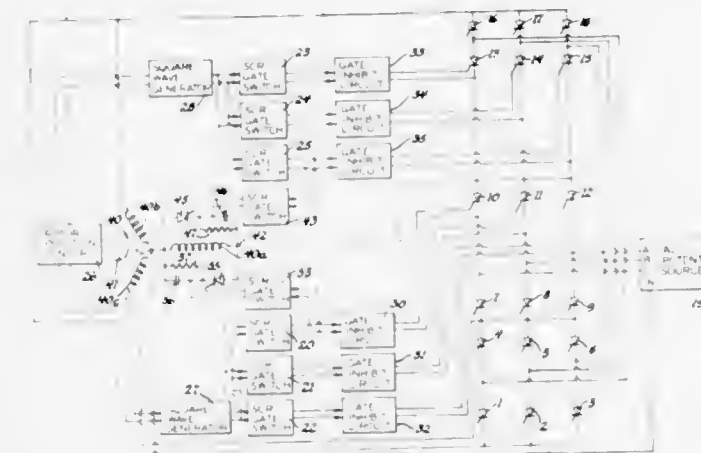
quickly to a value which is required for the connection to the excitation winding of the drive motor.

3,689,813

**CYCLOCONVERTER SILICON CONTROLLED RECTIFIER GATE SIGNAL DELAY CIRCUIT**  
Elbert M. Sawyer, Torrance, and Frank J. Bourbeau, Santa Barbara, both of Calif., assignors to General Motors Corporation, Detroit, Mich.  
Filed July 13, 1971, Ser. No. 162,243  
Int. Cl. H02p 5/40

U.S. Cl. 318-227

4 Claims



A cycloconverter silicon controlled rectifier gate signal delay circuit for delaying the application of cycloconverter silicon controlled rectifier gate signals to the cycloconverter silicon controlled rectifiers next to be gated conductive to energize, in the opposite direction, a phase winding of a cycloconverter operated motor through which conduction has just been terminated. The anode-cathode electrodes of each of two oppositely poled silicon controlled rectifiers are connected in series with a coil and the parallel combination of a resistor and a capacitor across each phase winding of the motor. When conduction is to be terminated through a phase winding, the silicon controlled rectifier connected thereacross which is forward poled by the potential induced in the phase winding as the magnitude of phase current flow therethrough decreases is gated conductive. Respective magnetically operated reed-type switches, magnetically coupled to the magnetic field produced by the flow of current through the coil connected in series with the conducting silicon controlled rectifier, operate to delay the application of the cycloconverter gate signal to each of the cycloconverter silicon controlled rectifiers next to be gated conductive to energize the same phase winding of the motor in the opposite direction until phase current has reduced to substantially zero.

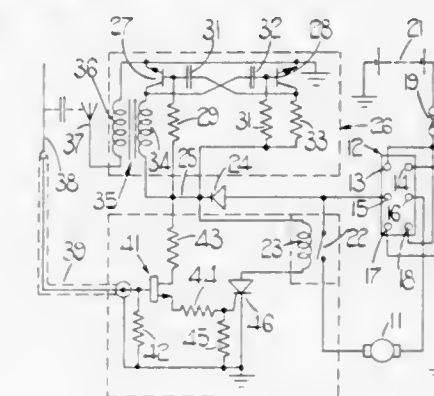
3,689,814

**WINDOW LIFT CONTROL SYSTEMS**  
William David Holt, Colne, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England  
Filed Dec. 16, 1970, Ser. No. 98,706  
Claims priority, application Great Britain, Dec. 30, 1969, 63,230/69

U.S. Cl. 318-266

Int. Cl. H02p 1/22

5 Claims



A window lift control system has a motor for lifting and lowering the window and a reversing switch for operating motor to raise or lower the window. There is also a control circuit which when energized prevents the window from being raised, and means is provided for energizing the control circuit whenever the window is touched while it is being raised.

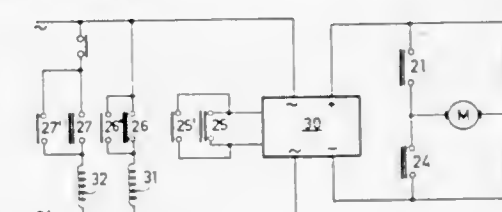
3,689,815

**METHOD OF SWITCHING A DIRECT-CURRENT MOTOR OF A WASHING MACHINE**  
Yves Albert Daniel Thibaut, Amiens, France, assignor to U.S. Philips Corporation, New York, N.Y.  
Filed Sept. 14, 1970, Ser. No. 71,967  
Claims priority, application France, Sept. 12, 1969, 6931174

U.S. Cl. 318-281

Int. Cl. D06f 33/02

6 Claims



A circuit arrangement for a direct-current motor for a washing machine, which motor is equipped with permanent magnets for starting the spinning operation from a predetermined direction of rotation of the oscillatory washing movement for the washing operation, irrespective of any manual operation of the timer.

The operation of the timer and of the voltage change-over device of the motor are effected independently of one another by means of one or two motors.

The arrangement may be used in washing machines equipped with direct-current motors which permit of starting the spinning operation either with the tub filled or with the tub empty.

3,689,816

**PHASE AND SPEED CONTROL OF A DC MOTOR**  
Henri Matthey, La Chaux-de-Fonds, and Jean-Jacques Bessire, Bienne, both of Switzerland, assignors to ERESA S.A., Bienne, Switzerland  
Continuation of Ser. No. 671,460, Sept. 28, 1967, abandoned. This application Aug. 26, 1970, Ser. No. 67,191

Int. Cl. H02p 5/16

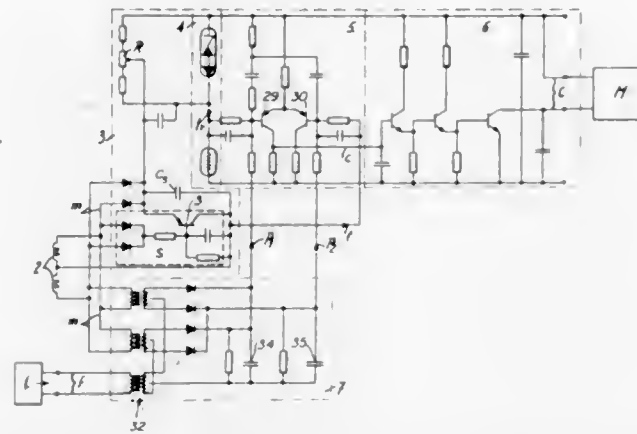
U.S. Cl. 318-314

3 Claims

A control device for controlling the speed of an electric motor characterized by means for forming a reference signal having a frequency corresponding to the desired speed and to



the desired angular position of the motor, means for forming a signal the frequency of which corresponds to the actual speed



and angular position of the motor, and means for comparing the signals and controlling the motor according thereto.

3,689,817

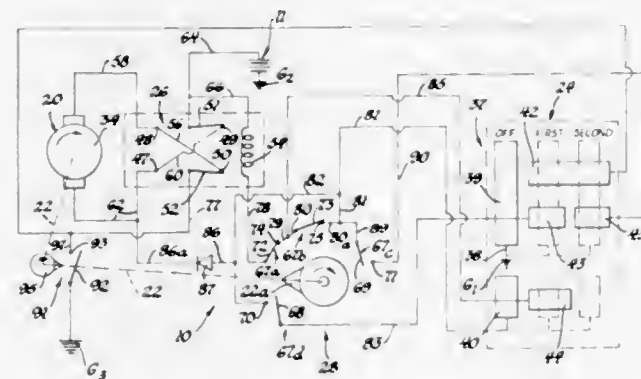
## WINDSHIELD WIPER SYSTEM

James O. Elliott, Xenia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 9, 1971, Ser. No. 170,112  
Int. Cl. H02p 1/04

U.S. Cl. 318-443

5 Claims



In a preferred form, this disclosure relates to a windshield wiper system wherein the direction of the rotation of an electric motor is periodically reversed to effect oscillation of a wiper through a wipe cycle having a first angular stroke when a manual switch is placed in a first on position and is reversed periodically faster to effect oscillation of the wiper through a wipe cycle having a second angular stroke which is less than the first angular stroke when the manual switch is placed in a second on position. The windshield wiper system includes relay operated switch means which is operatively connected with the motor and the manual switch for reversing the direction of rotation of the motor and a plurality of position switches which are interconnected with the relay operated switch means and actuated by a cam on the drive shaft of the motor for controlling energization and de-energization of the relay operated switch means to effect the periodic reversal of the motor.

3,689,818

## CONTROL MEANS FOR ELECTRIC MOTORS OPERATED FROM BATTERIES

John Morton, Gazel Grove; Keith Drummond Stevens, Marple, and Graham Spencer Thexton, Marple Bridge, all of England, assignors to Cableform Limited, Cheshire, England  
Filed Feb. 16, 1971, Ser. No. 115,534

Claims priority, application Great Britain, Feb. 17, 1970, 7473/70

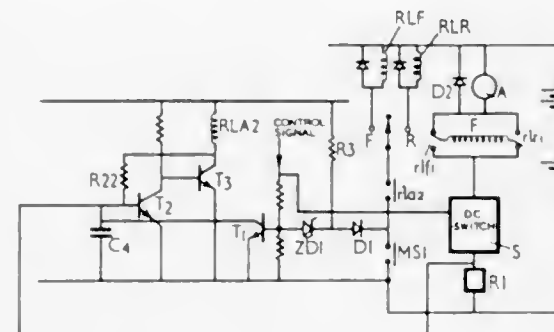
Int. Cl. H02p 1/44

U.S. Cl. 318-478

7 Claims

In, for example, battery operated vehicles such as fork lift trucks, the electric motor is supplied with pulses of current

from a D.C. switch comprising thyristors. If spurious signals get into the control circuit the vehicle may take off out of control. The invention provides a control circuit in which the pul-



ses of current through the D.C. switch are compared with the control signal pulses and in which the D.C. switch is disabled if there is a current signal in the absence of a control signal.

3,689,819

## MECHANISM FOR SIMULTANEOUS X-Y POSITIONING ON TWO OPPOSING VERTICALLY DISPOSED WORK SURFACES

Masato Kamimura; Risauro Aral, and Saburo Fukui, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Minato-ku, Tokyo, Japan

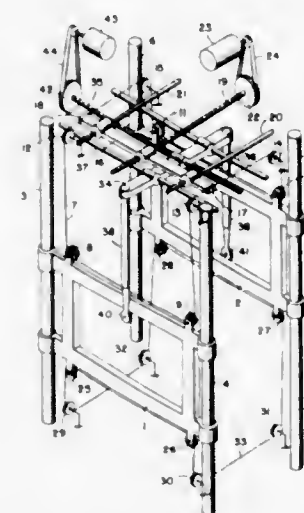
Filed Nov. 30, 1970, Ser. No. 93,572

Claims priority, application Japan, Dec. 1, 1969, 44/96718

Int. Cl. G05b 19/32

U.S. Cl. 318-575

5 Claims



Apparatus for simultaneously positioning two implements, e.g., wire wrapping guns for a wiring application, with respect to two physically reversed work pieces, e.g., electrical connection boards, along an orthogonal coordinate (e.g. X-Y) axis system employs two worktables which vertically (Y-axis) translate in opposite directions upon a frame. A locator arm end is adapted to vertically move with each worktable, and to selective translate horizontally (X-axis) thereacross.

A first carriage linearly moves in one direction responsive to rotation of a Y-axis motor to vertically move the worktables in inverse directions to define a Y-axis coordinate. A second carriage moves in an orthogonal direction responsive to rotation of an X-axis motor to laterally position each location arm, therefore defining the X-axis coordinate.

3,689,820

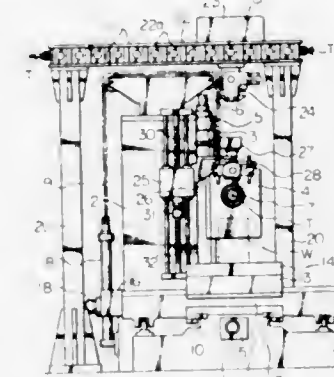
## DIGITAL FINE-COARSE RAPID INDEXING MOTOR CONTROL INCLUDING MEANS TO SENSE SHORTEST DISTANCE

Hiroyasu Takegawa, Kariya, Japan, assignor to Toyoda Machine Works, Limited, Kariya-shi, Aichi-ken, Japan  
Filed Jan. 19, 1971, Ser. No. 107,805

Claims priority, application Japan, Jan. 31, 1970, 45/8648  
Int. Cl. G05b 11/18

U.S. Cl. 318-594

6 Claims



In an indexing control device for a tool storage magazine having a plurality of index positions, each of which has a specific decimal number coded by binary coded decimal elements, the tool storage magazine is divided into a plurality of regions by means of the upper figures of the decimal numbers. The index control device comprises first and second discriminating circuit means, one of which selects the rotating direction of the magazine in to index the region including the desired index position to a predetermined position in a shorter route by means of the upper figure, and the other of which selects the rotating direction to index the desired index position to the predetermined position in a shorter route by means of the subordinate figure of the decimal number after indexing of the region.

3,689,821

## CORRECTION SYSTEM FOR NUMERICAL CONTROLS

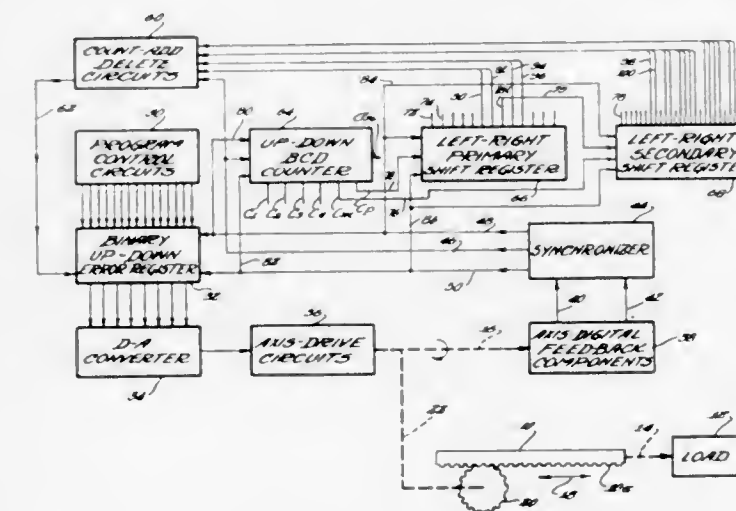
Kenneth Leonard Slawson, Depew, N.Y., assignor to Hour-dalle Industries, Inc., Buffalo, N.Y.  
Continuation of Ser. No. 681,776, Nov. 9, 1967, abandoned.

This application March 9, 1971, Ser. No. 122,550

Int. Cl. G05d 23/275

U.S. Cl. 318-632

13 Claims



A correction system for numerical controls which compensates for non-linearity in rack tooth spacing wherein a primary shift register shifts its active state for each primary interval over the range of movement of the rack drive (such as every 10 inches), and a secondary shift register is activated to register sub-intervals of a selected one of the primary intervals

(such as one inch sub-intervals between 50 and 60 inches). A series of correction pulses may be generated in response to transitions in the state of either of the shift registers to provide any desired degree of precision. The correction pulses may be used to add or delete pulses in a feedback pulse train so as to bring the electronically registered position of the rack into substantial conformity with the actual rack position over the operating range of the system.

3,689,822

## MOTOR CONTROLLED AUTOMATIC LEVELLER CIRCUIT

Walter S. Eggert, Jr., Huntingdon Valley, Pa., assignor to Boothe Airside Services, Inc.

Continuation-in-part of Ser. Nos. 15,537, March 2, 1970, Pat.

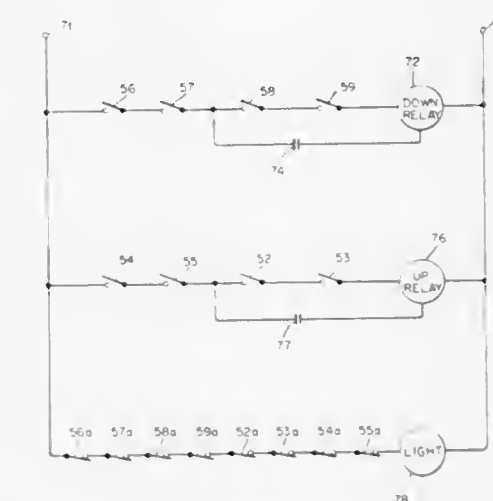
No. 3,628,117, and Ser. No. 76,346, Sept. 29, 1970. This

application Jan. 28, 1971, Ser. No. 110,432

Int. Cl. B64c 17/02

U.S. Cl. 318-648

7 Claims



An electrical circuit provides automatic levelling to maintain two movable bodies in the same relative positions with respect to each other. When the position of one body changes in a given plane, mechanical means are moved to actuate switching circuitry to restore the bodies to their original relative positions.

3,689,823

## HIGH VOLTAGE ELECTRIC NETWORK

Erich Uhlmann, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

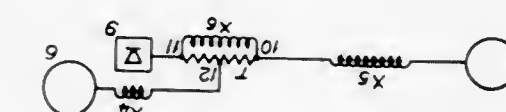
Filed March 1, 1971, Ser. No. 119,731

Claims priority, application Sweden, Feb. 27, 1970, 2566/70

Int. Cl. H02m 7/00

U.S. Cl. 321-2

7 Claims



A high voltage electric network has an AC part and a DC part and a converter station connecting the parts. An arrangement is provided for controlling the converter station to maintain a predetermined power exchange between the two parts of the network and to dampen oscillations arising in the AC part. The AC part has two portions as seen from the connection point of the converter station. The converter station is connected to the AC part by an inductive member which has an intermediate output connected to the portion of the AC part of lower impedance while one end of the inductive member is connected to the converter and the other end portion of the AC part.

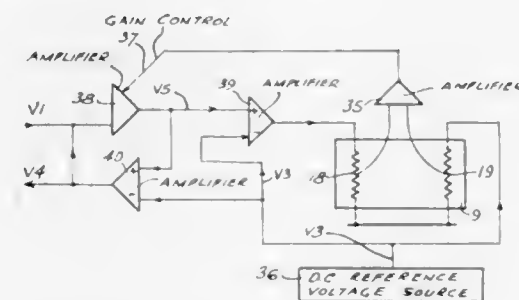


3,689,824

**CIRCUIT FOR CONVERSION FROM (RMS) A.C. TO D.C.**  
Ian Malcolm, Smiths Falls, Ontario, Canada, assignor to  
Guilidine Instruments Limited, Smiths Falls, Ontario,  
Canada

Filed Aug. 30, 1971, Ser. No. 176,192  
Int. Cl. H02m; G01r

U.S. Cl. 321-1.5



A multijunction thermal convertor of the differential type is employed to obtain energy balance between a D.C. input voltage and an A.C. input voltage in order to determine the RMS value of the A.C. voltage. Amplified feedback from the output of the convertor is used to maintain this balance, by controlling the gain of an amplifier in the A.C. input. The value of this gain in relation to the D.C. input voltage is a measure of the desired (RMS) A.C. input voltage, and such value is expressed as a D.C. output voltage. The system has greater accuracy than previous systems for achieving a similar measurement.

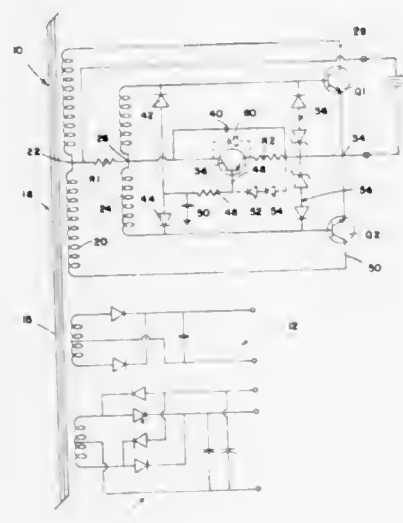
3,689,825

**INVERTER DRIVE CIRCUIT**

Edwin E. Mason, Harrisburg, and Ross C. Libby, West Jefferson, both of Ohio, assignors to Design Elements, Inc.

Filed Sept. 27, 1971, Ser. No. 183,995  
Int. Cl. H02m 7/52

U.S. Cl. 321-45 R



In a voltage feedback, one transformer, transistor inverter circuit, an improved drive circuit having a first resistor connected between the center tap of the base circuit winding and the center tap of the collector circuit winding and having a series first bipolar junction transistor and second resistor connected between the center tap of the base winding and the interconnected common emitter terminals of a push-pull connected pair of transistors. The first resistor has a substantially greater resistance than the second resistor and the first transistor is polarized to permit base current to flow around the base circuit loops. The first transistor is switched by a pair of diodes connected between its base and the opposite ends of the base circuit winding. Base current is limited by a series

connected pair of diodes connected between the base and said interconnected common emitter terminals of the push-pull transistors.

3,689,826

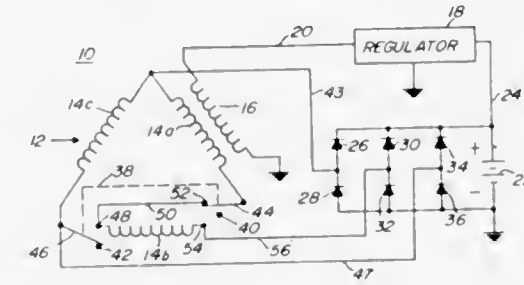
**MOTOR VEHICLE POWER SUPPLY SYSTEM**

James R. Cherry, Barrington, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed May 24, 1971, Ser. No. 146,394  
Int. Cl. H02h 7/06

U.S. Cl. 322-29

5 Claims



A power supply system for a motor vehicle includes an alternator having a rotating field winding and a three phase stator winding. The output of the stator winding is rectified to power a load. A switching arrangement is connected to the stator winding to connect the phases thereof in series relation at relatively low rotational speeds of the field winding and in delta relation at higher rotational speeds, to substantially maximize the output of the system at low and high engine speeds.

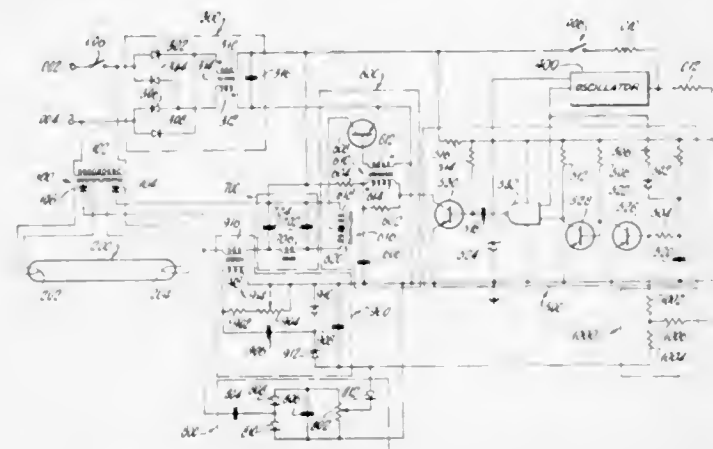
3,689,827

**VOLTAGE AND CURRENT REGULATED POWER SUPPLY CIRCUIT FOR GASEOUS DISCHARGE LAMP**  
Halsey P. Quinn, Morris Plains, N.J., assignor to Wagner Electric Corporation

Filed Dec. 30, 1970, Ser. No. 102,610  
Int. Cl. G05f 1/30

U.S. Cl. 323-20

11 Claims



A voltage and current regulated circuit operative to supply sinusoidal high-frequency (28 kilohertz) electrical power which meets both the starting and running requirements of a gaseous discharge lamp without mechanical switching means or saturable reactors.

3,689,828

**MANUALLY CONTROLLED CASE DEPTH MEASURING INSTRUMENT WITH INDICATORS TO GUIDE ITS USE**

Tadashi Kurose; Ryuichi Kagaya, both of Katsuta; Kunio Ono, and Kimio Kanda, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Marunouchi, Chiyoda-ku, Tokyo, Japan

Filed March 17, 1970, Ser. No. 20,218  
Int. Cl. G01r 33/12

U.S. Cl. 324-34 R

3 Claims

A case depth measuring instrument for measuring the depth of the hardened layer of a steel to be tested, by impressing a

3,689,830

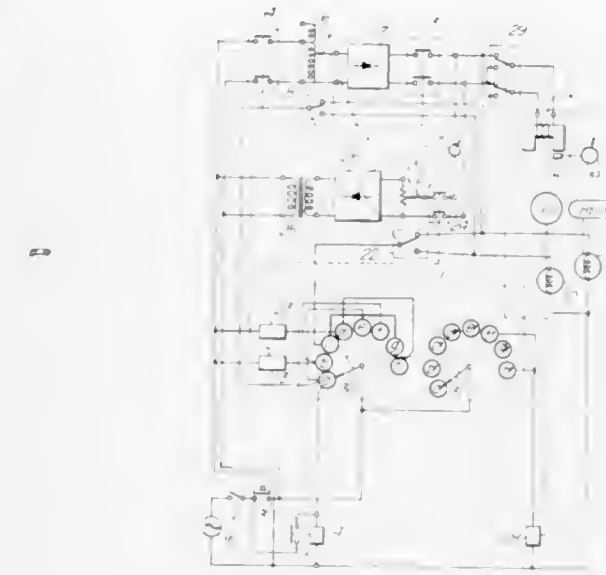
**EXPLODING BRIDGEWIRE TESTER WITH SQUARE WAVE GENERATOR**

James M. Caldwell, Alexander, Ala.; William R. Day, League City, Tex., and Thomas J. Keating, Plantation, Fla., assignors to The United States of America as represented by the Secretary of Army

Filed April 5, 1971, Ser. No. 131,312  
Int. Cl. G01r 31/02

U.S. Cl. 324-51

2 Claims



force of said field and reading the value of the coercive force of said field at the point when the magnetic flux has reached zero.

3,689,829

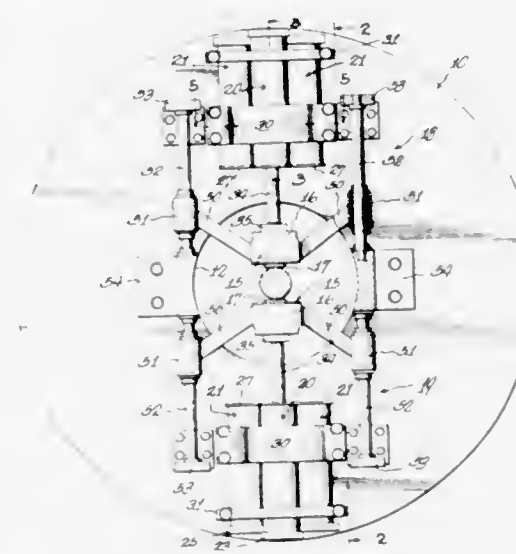
**ORBITAL FLAW DETECTOR WITH RADIALLY ALIGNED FLUID ACTUATORS WITH MEANS TO COUNTERACT CENTRIFUGAL FORCES**

John S. Miller, Poland, Ohio, assignor to Wean Industries, Inc., Youngstown, Ohio

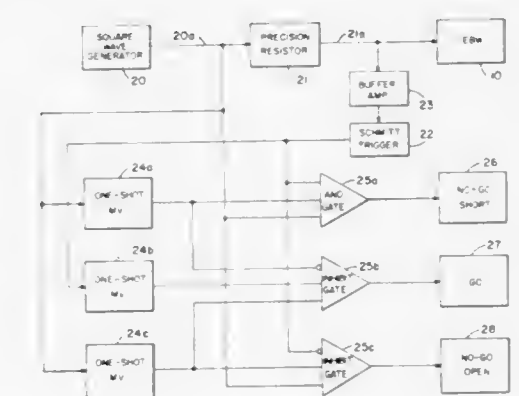
Filed Jan. 13, 1971, Ser. No. 106,217  
Int. Cl. G01r 33/12

U.S. Cl. 324-37

10 Claims



An orbital tester for detecting flaws in elongated, round metal workpieces, comprising a rotatable face plate having a central opening through which the workpiece passes in longitudinal manner, a pair of probe members having search coils engageable with opposed surfaces of the workpiece, a pair of diametrically opposed main fluid cylinders carried by the face plate and having connection with the probe members to press their search coils into engagement with workpiece surfaces, and further cylinders at the side of said main cylinders. The pistons of the main cylinders have rack and gear connection with the pistons of the side cylinders, the connections being so constructed and arranged that as the pistons in the side cylinders move in one direction, the pistons in the main cylinders move in the opposite direction.



The capacitance of an exploding bridewire (EBW) with a series spark gap is used as a measure of its acceptability. A square wave is applied to the EBW through a resistor. The resistor and EBW capacitance form an integrator for the square wave. A logic system having inputs connected both to the square wave and to the integrated square wave gives outputs indicative of whether the EBW has low capacitance (open bridewire), normal capacitance (acceptable), or high capacitance (shorted gap).

3,689,831

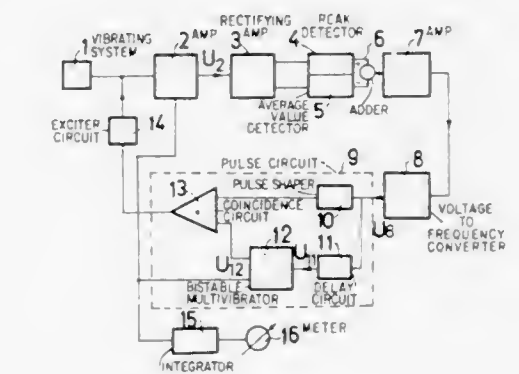
**TEST CIRCUIT FOR MEASURING FIGURE OF MERIT OR ATTENUATION RATIO OF VIBRATING SYSTEMS**

Hfnryk Gawronski, Dobra 17/38; Adam Kunicki, Kordickiego 62/20, and Marceli Lewandowski, Al. Waszyngtona 12/14 m.3, all of Warsaw, Poland

Filed Nov. 30, 1970, Ser. No. 93,641  
Claims priority, application Poland, Dec. 1, 1969, 137239  
Int. Cl. G01r 27/00

U.S. Cl. 324-57 R

6 Claims



A test circuit for measuring the attenuation ratio of vibrating systems comprises a vibrating system connected to an amplifier in turn connected to a detector responding to average value, and a peak detector connected in parallel to the average detector. The outputs of the two detectors are connected to an adder whose output is applied, through a voltage-to-frequency converter, to a pulse circuit whose outputs are connected to an exciting circuit, to the amplifier and to an integrator.



3,689,832

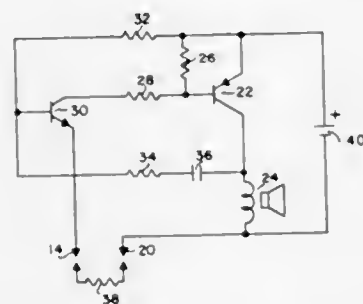
**RESISTANCE TESTER FOR PRODUCING AN AUDIBLE TONE THAT VARIES WITH THE RESISTANCE**

Alfonso Leto, Granada Hills, Calif., and William R. Davis, Glendale, Calif., assignors to Western Technical Products, Inc., North Hollywood, Calif.

Continuation-in-part of Ser. No. 669,855, Sept. 22, 1967, abandoned. This application May 1, 1970, Ser. No. 31,849  
Int. Cl. G01r 27/02

U.S. Cl. 324—65 R

2 Claims



An audible resistance and electrical continuity tester in the form of a small self-contained hand tool having a speaker driven by a pulse generator, the frequency of which varies directly with measured resistances from a low audible pitch representing a zero resistance to a high audible pitch representing continuity to a relatively high resistance.

3,689,833

**PARTICLE ANALYZING APPARATUS**

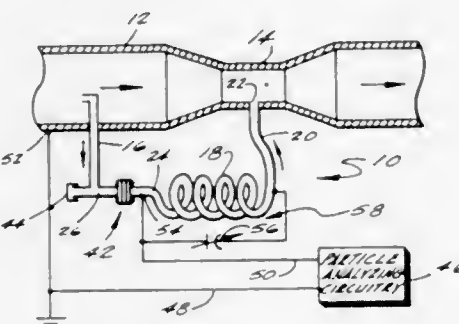
Walter R. Hogg, Miami Lakes, Fla., assignor to Coulter Electronics, Inc., Miami, Fla.

Filed June 29, 1971, Ser. No. 157,829

Int. Cl. G01n 27/08

U.S. Cl. 324—71 CP

26 Claims



Electronic particle analyzing apparatus operating in accordance with the Coulter principle in which it is desired to isolate the aperture electrically from the electrolyte or suspending fluid flow system without breaking the flow of liquid. The metal-fluid interface normally provided by immersed electrodes is here provided by metallic conduit. The metallic conduit for the flowing particle-carrying medium is provided in the form of a helical coil having capacitive reactance means connected across the coil enabling the coil to act as an inductance and the combination to be tuned for any desired purpose. The principal purpose for such tuning is to achieve resonance, as for example, parallel resonance in which case the metallic conduit is frequency selective. In the case of parallel resonance, the metallic conduit presents high impedance to the flow of resultant electrical signals so as to isolate the aperture as stated. Other uses for resonance in metallic coils carrying liquid with suspended particles are described. In all cases the electric current is at high frequency.

3,689,834

Patent Not Issued For This Number

3,689,835  
**ANALOG/DIGITAL METER HAVING FRONT INDICATOR MEANS OVERLYING A REAR INDICATOR MEANS**

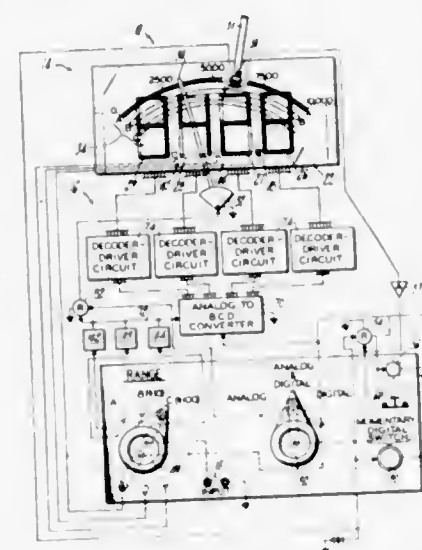
John H. Bickford, Middletown, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Sept. 10, 1970, Ser. No. 71,152

Int. Cl. G01r 15/10, 1/20

U.S. Cl. 324—115

8 Claims



An analog/digital meter comprising a transparent liquid crystal numeral indicator and an analog indicator with a pivotal needle mounted behind the numeral indicator. A mode selector switch provides for selectively operating the numeral and analog indicators for selectively presenting corresponding digital and analog readings in accordance with the voltage of an input electrical signal and the setting of a range selector switch. A wire magnet is mounted on the pivotal needle of the analog indicator, and a magnetic pickup head is pivotally mounted to be set at any point along the arc of travel of the wire magnet to generate a predetermining signal when the needle moves into alignment with the pickup head.

3,689,836

**MAGNETODIODE PULSE INITIATOR**

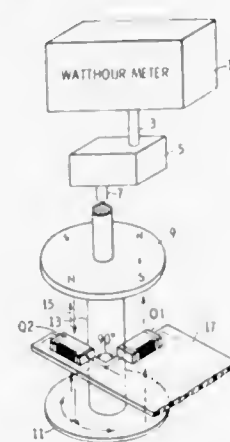
Carl J. Snyder, Raleigh, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 8, 1970, Ser. No. 79,145

Int. Cl. G01r 33/00, 33/02

U.S. Cl. 324—117 R

6 Claims



A pulse initiator for generating pulses at a rate proportional to the rate of rotation of a shaft includes a disc-shaped permanent magnet and a return plate axially displaced on the shaft for generating a magnetic field parallel to the shaft which alternates in polarity at any given point in the gap between the magnet and the return plate as the shaft rotates. A pair of magnetodiodes mounted in the air gap so that they are continuously exposed to magnetic fields of opposite polarity, alternately generate positive and negative output signals from a

bridge circuit as the polarity of the magnetic field alternates. Two transistors operating in the switching mode gate either positive or negative half cycles of alternating current to a latching, mercury-wetted contact type relay depending upon the polarity of the output of the bridge circuit. A small AC bias current applied to the control circuits of the transistors assures positive operation with a moderate strength magnetic field.

3,689,837

**POSITIONING MEANS FOR WATTHOUR METER FULL LOAD CALIBRATING SCREW**

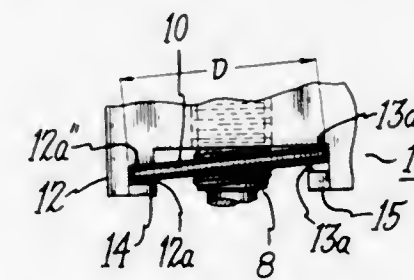
Alexander M. McQuarrie, Rochester, and James J. Grady, Somersworth, both of N.H., assignors to General Electric Company

Filed April 15, 1971, Ser. No. 134,299

Int. Cl. G01r 1/16, 1/102

U.S. Cl. 324—152

9 Claims



A full load calibration screw assembly for an electric watt-hour meter is provided with a generally straight resilient spring member that is releasably mounted between a pair of bosses integrally formed on the meter frame. The spring member is held in an operating position by the bosses which assures its easy and accurate alignment with helical threads cut on a full load calibrating screw for the meter. The spring member operates to retain the calibrating screw in position once it is manually adjusted to calibrate the meter.

3,689,838

**SEMICONDUCTOR TESTER HAVING VISUAL AND AUDIBLE DISPLAY**

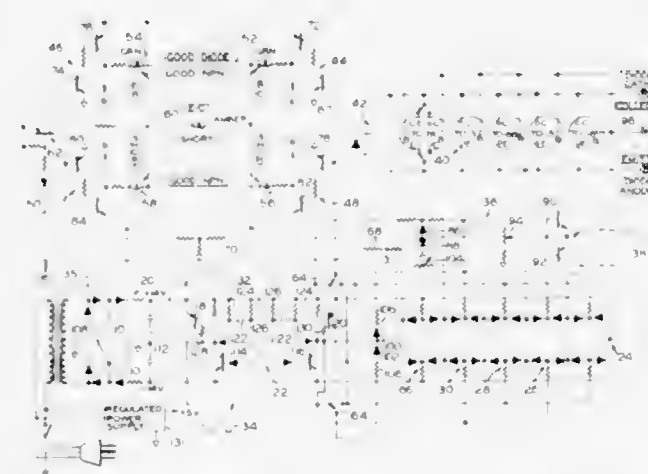
Milton E. Thurman, Jr., 721 W. 11th St., Newton, Kans.

Filed June 7, 1971, Ser. No. 150,368

Int. Cl. G01r 31/22, 15/12

U.S. Cl. 324—158 T

9 Claims



A semiconductor tester having a visual display including four information indicator lamps arranged in square with green lamps at adjacent corners and red lamps at the remaining corners and having an amber mode indicator lamp at the center of the square, is provided with a circuit producing an audible signal if the results of tests of the junctions of a bipolar transistor in two different test modes are that the junctions are conductive in the proper direction and are not short circuited,

and also producing such audible signal if the results of the test of a diode in a single mode test is that the diode is conductive in one direction only. The information indicator lights provide additional information such as whether a good transistor is



3,689,839

**MACHINE TOOL MONITORING SYSTEM**

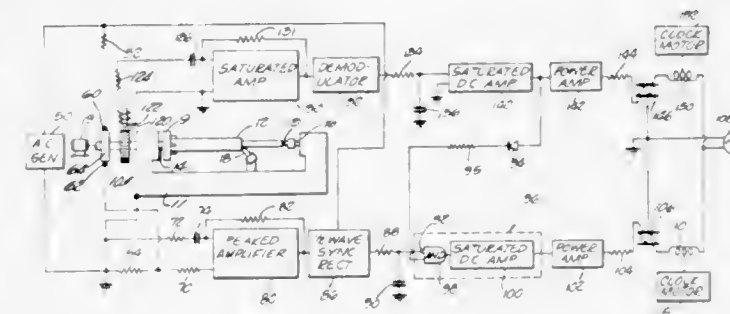
Robert H. Cother, Fullerton, Calif., assignor to Becton, Dickinson Electronics Company, Pasadena, Calif.

Filed Jan. 25, 1971, Ser. No. 109,117

Int. Cl. G04f 9/00; G01n 27/00

U.S. Cl. 324—181

6 Claims



A system is provided for measuring the time during which a machine tool is performing useful work, such as cutting a work piece. During cutting, the work piece and a work member are in electrical contact with each other. But when both the work piece and work member are rotating with respect to each other and they are not cutting, they are electrically insulated from each other. An electrical circuit having a power source is connected to the machine tool. One terminal of the power source is electrically connected to the work piece and the other terminal is electrically connected to the work member. A first signal is detected during the rotation of the work piece and the work member with respect to each other and the time during which such rotation occurs is measured. A second signal is detected when the machine is performing work and the time during which the machine is performing work is measured.

3,689,840

**CODING OF SIGN INFORMATION IN DPCM SYSTEMS**

Earl Franklin Brown, Piscataway, and William Kaminski, West Portal, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed April 29, 1971, Ser. No. 138,586

Int. Cl. H04b 1/00

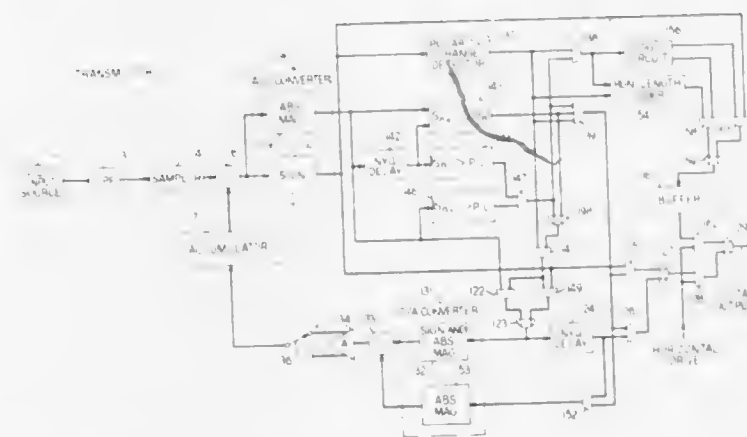
U.S. Cl. 325—38 B

5 Claims

A differential pulse code modulation system substantially reduces sign redundancy by transmitting sign information only



for actual changes in polarity between differential samples. Upon the occurrence of a change in sign when both differential samples of opposite sign do not exceed a predetermined level, one of two polarity words is transmitted in place of the code word that represents the differential sample with the smaller magnitude. One polarity word indicates a positive polarity while the other word indicates a negative polarity.



Only the absolute magnitudes of the differential samples are transmitted between sign changes. When both differential samples of opposite sign exceed a predetermined level, the absolute magnitude is transmitted for both differential samples and a run-length code work indicative of the location of the change in sign together with a polarity word are transmitted at a later time.

3,689,841

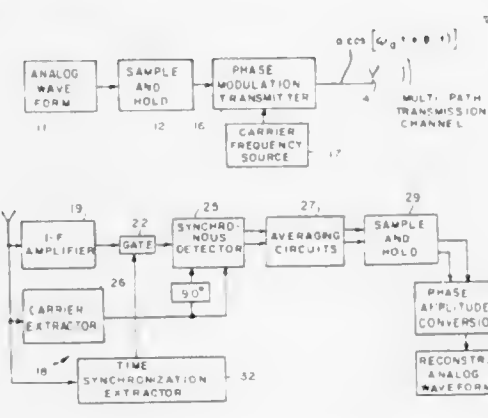
### COMMUNICATION SYSTEM FOR ELIMINATING TIME DELAY EFFECTS WHEN USED IN A MULTIPATH TRANSMISSION MEDIUM

Phillip A. Bello, Needham Heights, and Howard C. Salwen, Newtonville, both of Mass., assignors to Signatron, Inc., 2, Lexington, Mass.

Filed Oct. 23, 1970, Ser. No. 83,472  
Int. Cl. H04b 1/00

U.S. Cl. 325—39

14 Claims



A communication system for providing effective multipath transmission without intermodulation or other distortion effects normally arising from the transmission through a dispersive medium, such as multipath troposcatter communication links. In the invention the analog information is used to phase or amplitude modulate a transmitter signal and digital information is used to frequency and phase modulate such signal in a hybrid modulation process which is readily adapted to permit alternate analog and digital modulation, simultaneous analog and digital modulation, or sole analog or sole digital modulation over periodically occurring frame intervals of time. At the receiver the multipath signal is appropriately gated to select only those portions of the received signal which are the least affected by time delays introduced by the multipath transmission, such selected portions being demodulated to reconstruct the analog and digital information which has been transmitted.

3,689,842  
**ELECTRONIC MARKER MARINE**  
Marcus J. Meed, 389 Main St., Ottawa, Ontario, Canada  
Continuation-in-part of Ser. No. 758,398, Sept. 9, 1968. This application Sept. 23, 1970, Ser. No. 74,819  
Int. Cl. H04b 1/02

U.S. Cl. 325—114

10 Claims



A marker for marking the instantaneous position of an aircraft relative to the ground, more particularly over water, in the form of a protective casing containing a transmitter and an antenna which even in use remains inside the casing, the transmitter and the antenna both in themselves and by their mounting in the casing being able to withstand the acceleration forces involved in their being ejected from the aircraft with a velocity component in the direction opposite to that in which the aircraft is travelling substantially equal to the forward speed of the aircraft. The marker is thus brought to rest relative to the ground (as regards horizontal movement) as it leaves the aircraft.

3,689,843

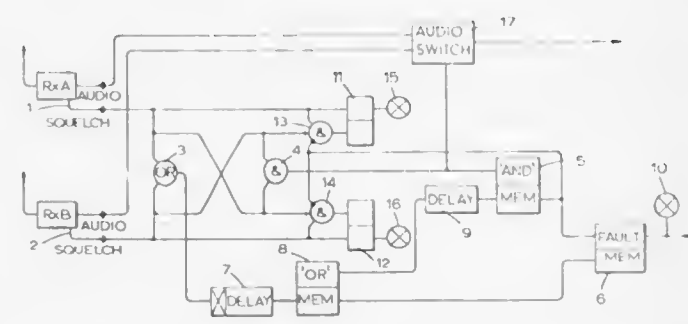
### RECEIVER ALARM SYSTEM

Ivan John Coussell, and Roy Pattison, both of Cambridge, England, assignors to Pye Limited

Filed Oct. 15, 1970, Ser. No. 81,009  
Int. Cl. H04b 1/06

U.S. Cl. 325—302

1 Claim



A receiving system has two receivers, each including a squelch circuit arranged to give an output when the carrier level at demodulator of the receiver exceeds a threshold value. An alarm circuit has a first memory circuit settable by the simultaneous presence of squelch outputs from both receivers at any time during a transmission period, a second memory circuit settable by an output from the first memory circuit in the set condition, and a third memory circuit settable by the presence of a squelch output from either or both receivers during the transmission period. The setting signal is applied to the third memory circuit via a first delay means so arranged that the third memory circuit is not set unless the squelch signal persists for a period greater than the duration of transient interfering signals. The third memory circuit produces an output pulse when the setting signal is removed at

the end of the transmission period. The output pulse is applied to a reset terminal of the second memory circuit, and to a reset terminal of the first memory circuit via a delay means adapted to provide a delay at least equal to the duration of the output pulse. The output pulse generated at the end of a transmission period is ineffective to reset the second memory circuit if the first memory circuit has been set during that transmission period, but is effective if the first memory circuit has not been set.

3,689,844

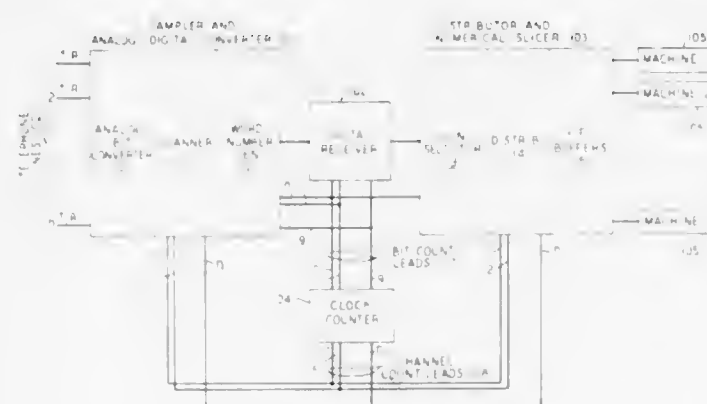
### DIGITAL FILTER RECEIVER FOR FREQUENCY-SHIFT DATA SIGNALS

Clair A. Buzzard, Eatontown, and Burton R. Saltzberg, Middletown, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 11, 1969, Ser. No. 884,250  
Int. Cl. H04b 1/16

U.S. Cl. 325—320

4 Claims



Sampled FSK data signals are converted to multibit numbers and processed by a digital filter receiver which includes a band-pass filter, a dual-resonator discriminator and a low-pass filter. The dc baseband data signal is reconstructed from the receiver output number by a "slicer" which detects the sign of the output numbers. The analog-to-number conversion is simplified by limiting the multibit numbers to be processed to two values, simulating the hard limiting of analog signals. Signal harmonics introduced by the nonlinearities of the analog-to-digital converter are substantially eliminated by fixing the sampling rate to a rate which interleaves, in the frequency spectrum, the filter aliases with the harmonics. The receiver is advantageously arranged to be time-shared by a plurality of channels.

3,689,845

### CIRCUIT ARRANGEMENT FOR SUPPRESSING INTERFERENCES IN A RECEIVER OF ELECTRICAL SIGNALS

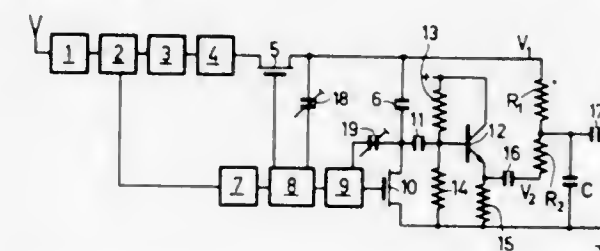
Gerard Hepp, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 21, 1970, Ser. No. 82,637  
Claims priority, application Netherlands, Nov. 1, 1969, 6914498

U.S. Cl. 325—473

Int. Cl. H04b 1/10

6 Claims



A circuit arrangement for interference suppression in which the signal is applied through a gating circuit blocked during in-

terference to a storage capacitor which maintains the signal level constant during interference. To reduce the distortion, pulses are added to the signal thus obtained, which pulses occur after releasing the gating circuit and whose amplitude is proportional to the signal step occurring as a result of the release in the output signal of the gating circuit.

3,689,846

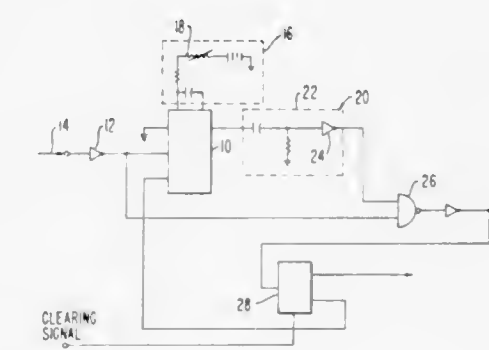
### START BIT DETECTION CIRCUIT

Roger S. Naeyaert, Grosse Pointe Woods, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed March 30, 1971, Ser. No. 129,526  
Int. Cl. H03k 5/20

U.S. Cl. 328—63

2 Claims



A circuit for selectively detecting a start bit in a receiver of asynchronous serial data signals wherein timing means and logical gating measure signals in a transmission medium against a time base established by the timing means. Noise signals of similar amplitude and polarity as a start bit, but of shorter duration that occur prior to a start bit are thus not recognized as true start bits.

3,689,847

### OSCILLATOR FOR A CYCLOTRON HAVING TWO DEES

Nico Frederick Verster, Geldrop, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

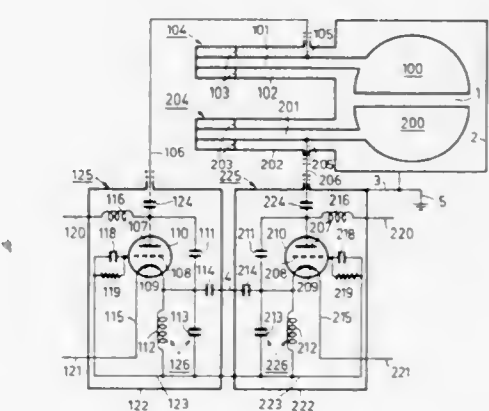
Filed May 4, 1971, Ser. No. 140,136

Claims priority, application Netherlands, May 29, 1970, 7,007,871

U.S. Cl. 328—234

Int. Cl. H05h 13/00

2 Claims



An oscillator for a cyclotron having two accelerating electrodes which are not connected together. The oscillator comprises two electron tubes, of which the cathodes are connected together by a low-loss impedance (capacity or inductance). As a result of this the oscillator oscillates either with the two accelerating electrodes in the push-pull mode while excluding the parallel mode, or in the parallel mode while excluding the push-pull mode.



3,689,848

## VOLTAGE-TO-CURRENT CONVERTER

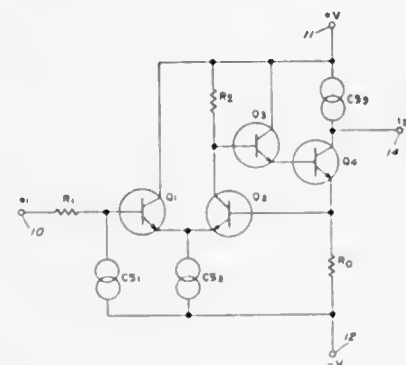
Philip R. Geffe, Laurel, and Sylvester C. Tabisz, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed May 4, 1970, Ser. No. 34,031

Int. Cl. H03f 3/68

U.S. Cl. 330—30 D

1 Claim



A voltage-to-current converter circuit having a differential amplifier with one input coupled to receive voltage signals and an output coupled through transistors in a Darlington configuration, the last of which is coupled in a current source circuit to produce a current output from the collector and a negative feedback from the emitter to the other input of the differential amplifier to supply current on the output directly proportional to the input voltage with thermal stability.

3,689,849

## SIGNAL GENERATOR

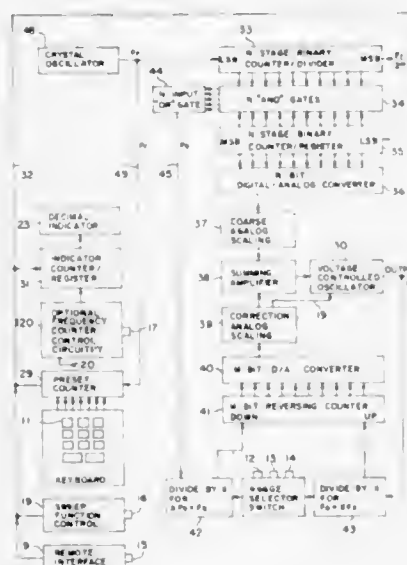
Elston H. Swanson, Locust Valley; James D. Fahnestock, and William H. Wicks, both of Huntington, all of N.Y., assignors to Instruments for Industry, Inc., Farmingdale, N.Y.

Filed July 21, 1971, Ser. No. 164,652

Int. Cl. H03b 3/04

U.S. Cl. 331—1 A

9 Claims



A signal generator whose output is selected and controlled by digital circuitry consisting of a frequency selector, a reference frequency generator for producing a stable fixed frequency, a multi-stage binary counter/divider connected to the output of the reference frequency generator, a counter connected to the output of the frequency selector and the reference frequency generator for producing the nine's complement of the selected frequency, a multi-stage binary counter/register connected to the output of the counter, a multi-stage "AND" gate circuit coupled to the outputs of the counter/divider and the counter/register to permit selected "AND" gates to be enabled to produce a selected frequency, and a multi-stage digital/analog converter controlled by the counter/register. The analog voltage thus produced is compared with a correction voltage derived from a digital/analog converter controlled by a reversing counter which compares the selected frequency with the output frequency. The combination of voltages is served to that voltage that minimizes the difference between the selected frequency and the output frequency on a cycle-for-cycle basis.

combined with a correction voltage derived from a digital/analog converter controlled by a reversing counter which compares the selected frequency with the output frequency. The combination of voltages is served to that voltage that minimizes the difference between the selected frequency and the output frequency on a cycle-for-cycle basis.

3,689,850

## DEVICE FOR NEUTRALIZING TEMPERATURE DEPENDENT GAIN VARIATIONS IN AN OPTICALLY PUMPED LASER ROD

Erik Arne Bergqvist, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed April 23, 1970, Ser. No. 31,261

Claims priority, application Sweden, May 6, 1969, 6422/69

Int. Cl. H01s 3/00

U.S. Cl. 331—94.5

4 Claims



The mirror system of a resonator for a solid state laser includes a totally reflecting prism the principal section of which is a right-angled isosceles triangle and which has its hypotenuse side facing one end of the laser rod so that an incident beam from the laser is reflected back into the laser rod in parallel with the direction of incidence. A temperature sensitive device senses the temperature in the neighborhood of the laser rod and actuates the prism so that its 90° corner is displaced in relation to the center axis of the laser rod in response to temperature changes to cause a reflected beam to travel through a part of the laser rod having an excitation level appropriate for the desired optical gain.

3,689,851

## PHASE-LOCKED FAR INFRARED LASER

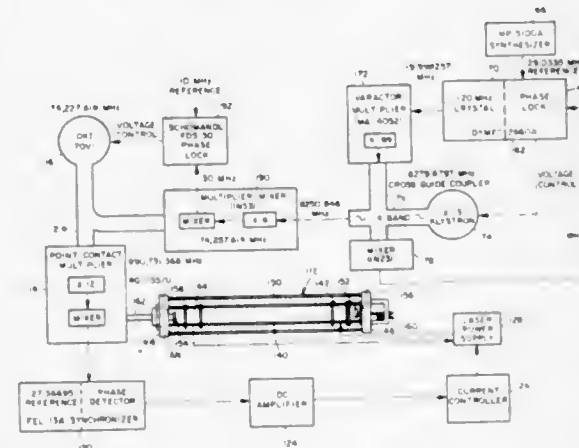
Vincent J. Corcoran, Orlando, Fla.; Richard E. Cupp, Boulder, Colo., and James J. Gallagher, Orlando, Fla., assignors to Martin Marietta Corporation, New York, N.Y.

Filed Oct. 20, 1970, Ser. No. 82,256

Int. Cl. H01r 3/00

U.S. Cl. 331—94.5

6 Claims



A technique for stabilizing a gas laser to a frequency standard, and more particularly to the use of a phase lock loop in

which the laser and its power supply are disposed, with the output of the laser being arranged to be compared with a multiplied frequency standard. In this invention the laser output is mixed with the multiplied frequency standard in a mixer, with the beat frequency from the mixer being compared to a radio frequency reference in a phase detector. The output of the phase detector is sent to a current controller which varies the laser power supply current, thus selectively changing the frequency of the laser. If the laser fluctuates in phase, a control signal brings the beat frequency signal back in phase with the reference input to the phase detector. As a result, a hydrogen cyanide laser phase locked in accordance with this invention has produced an output signal whose beat is less than 50 Hz wide, with a long term stability of less than 10 Hz.

3,689,852

## RING AND BAR DELAY LINE

Bernard Epsztajn; Gerard Kantorowicz, and Pierre Ribout, all of Paris, France, assignors to Thomson-CSF

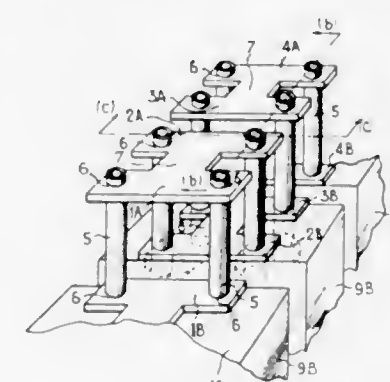
Filed Feb. 11, 1971, Ser. No. 114,465

Claims priority, application France, Feb. 13, 1970, 05166

Int. Cl. H03h 7/30

U.S. Cl. 333—31

7 Claims



A "ring and bar" type of delay line has rings formed by plates connected by metal tubes through which a coolant liquid, having good dielectric properties, is caused to flow. The rings are supported on dielectric blocks which have good thermal conductivity and through which the coolant liquid is caused to circulate.

3,689,853

## SIX POSITION MEMORY TYPE UHF TUNER

Joe G. Badger, and Alarico A. Valdetaro, both of Bloomington, Ind., assignors to Sarkes Tarzian, Inc., Bloomington, Ind.

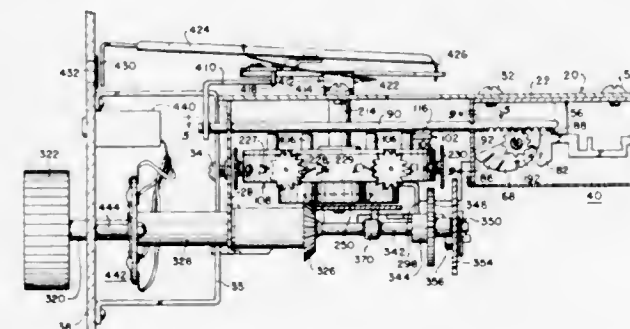
Continuation of Ser. No. 856,277, Sept. 9, 1969, abandoned.

This application Aug. 17, 1971, Ser. No. 172,552

Int. Cl. H03j 5/06

U.S. Cl. 334—55

24 Claims



The rotor shaft of a UHF tuner is spring biased by means of a torsion wire which extends longitudinally along the axis of the rotor shaft so that as the rotor shaft is rotated the wire is twisted. A rotatable memory turret is interconnected with the UHF tuner rotor shaft to provide UHF channel selection in

any one of six positions of a main selector shaft. Indicator lights are selectively energized by means of a switching arrangement connected to the main selector shaft and a sensitive dial pointer arrangement is provided so that the operator may correlate a particular position of the main selector shaft with the particular UHF station which is being received. An AFC defeat switch is actuated each time the main selector shaft is moved to a different UHF channel position and is closed at all times when the main selector shaft is moved rearwardly for adjustment of the UHF rotor shaft to a new memory position.

3,689,854

## SWITCHING MEANS

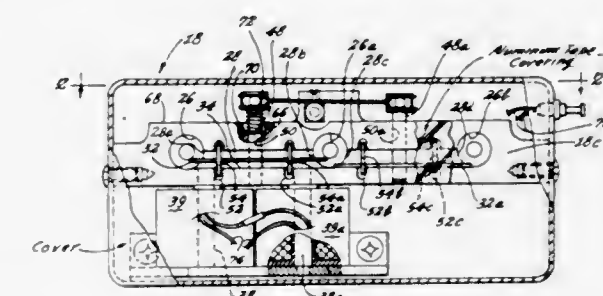
Edgar R. Brastow, Cerritos, and Tai Y. Lee, Los Angeles, both of Calif., assignors to Transco Products, Inc., Venice, Calif.

Filed Jan. 28, 1971, Ser. No. 110,712

Int. Cl. H01h 53/00

U.S. Cl. 335—5

21 Claims



By means of connectors with pins which shieldedly extend into a cavity defined by a metal housing into which the connectors are fixedly inserted, the inner line of a first coaxial cable is exposed for connection with the inner line of one of the other of the two other coaxial cables. Such alternative connection is accomplished by a pair of magnetizable conductive reeds, each being disposed to bridge, and thereby make contact between, the pin of the first coaxial cable and the pin connected with the inner line of one of the two other cables. Each reed is displaceable in a transverse direction and, upon such displacement, breaks its connections and is grounded against the metal wall of the housing. Such displacement may be effected by the energization of solenoid coils disposed perpendicularly to a first reed, thereby creating a magnetic field to draw that reed toward the coils and against the housing wall. Each reed is attached to one side of a rocker assembly which is spring-biased against the first reed to dispose it in its connecting position when its solenoid coils are not energized. Such disposition of the first reed, through its attachment to the rocker assembly, secures the other reed in its disconnecting and grounded position, but the reed positions are reversed when the solenoid coils are energized. A control switch is provided to enable an operator selectively to cause energization of the coils or to de-energize them. An indicator circuit may be provided to indicate which reed is in its bridging and hence, connecting position.

3,689,855

## CIRCUIT PROTECTOR

Isami Setone, Seto, and Akira Yoshino, Owari Asahi, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed April 22, 1971, Ser. No. 136,416

Claims priority, application Japan, April 27, 1970, 45/36138

Int. Cl. H01h 7/14

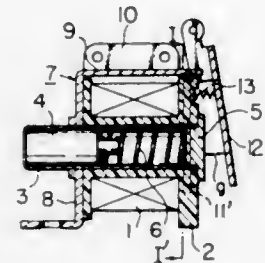
U.S. Cl. 335—63

4 Claims

A circuit protector including an electromagnetic device, said device comprising a coil through which circuit current flows and wound on a coil bobbin, a cylinder provided at the



center of said bobbin, an oil-dash type plunger provided within said cylinder movably against a compression force of a spring arranged between a cylinder head and the plunger, a yoke integrally connected to said cylinder and the bobbin, and



an armature mounted to an end of said yoke in a manner capable of being attracted to the plunger head, said bobbin is provided with a magnetic leakage in the vicinity to the cylinder head.

3,689,856

### SWITCH HAVING OPPOSED DOME AND FLEXIBLE BIFURCATED CONTACTS

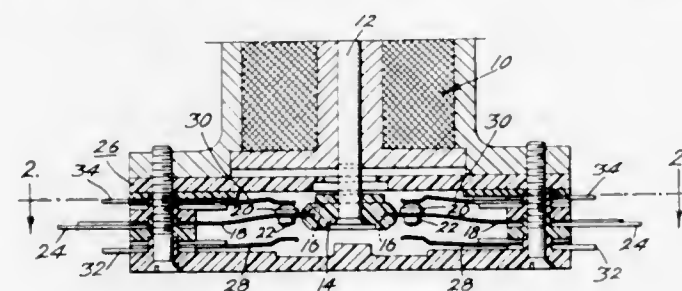
James B. Lambert, Norwalk, Conn.; Lewis J. Seiden, Tappan, N.Y., and A. Henry Morgan, Westport, Conn., assignors to T-Bar Incorporated, Wilton, Conn.

Filed Sept. 15, 1971, Ser. No. 180,629

Int. Cl. H01h 1/18

U.S. Cl. 335—133

5 Claims



In a switch a convex domed contact is opposed to a bifurcated contact consisting of a pair of elements providing contact surfaces spaced from one another and each having a dome contact wiping edge opposed to a portion of the dome contact and supported by a pair of flexible spring supports capable of resilient flexing and twisting so that as the contacts are urged together the spring supports continuously urge each of the contact surfaces into wiping engagement with the dome contact.

3,689,857

### SEQUENCE RELAY

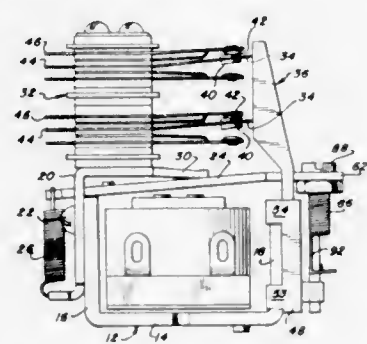
Theodore J. Obszarny, Chicago, Ill., assignor to Guardian Electric Manufacturing Company

Filed Sept. 30, 1971, Ser. No. 185,240

Int. Cl. H01h 9/24

U.S. Cl. 335—165

22 Claims



A sequence relay includes a coil mounted on a frame. Current through the coil will drive an armature from a first position

to a second position. Attached to the frame is a biased lifter which may translate from a biased first position to a second position by operation of the armature. A pawl mounted on the frame engages the lifter in the second position to hold it in that position even though the armature is released by the coil. When the armature is subsequently operated, it engages and releases the pawl from the lifter, thereby permitting the biased lifter to assume its first position. Switching is effected by an extension of the lifter which engages contacts and moves them from a first to a second position.

3,689,858

### REMOTE-CONTROLLED MAGNETICALLY OPERABLE SWITCH

Helmuth Rosch; Herbert Nehurg, both of 84 Regensburg, Germany, and Erich Schlenz, deceased, late of 84 Regensburg, Germany (by Frieda Schlenz, heir), assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

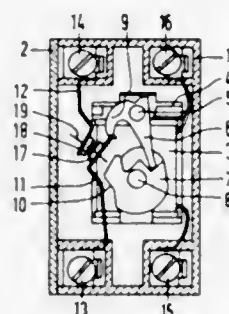
Filed July 8, 1971, Ser. No. 165,848

Claims priority, application Germany, July 11, 1970, P 20 34 465.4

Int. Cl. H01h 3/42

U.S. Cl. 335—188

6 Claims



A magnetically operable switch comprises a magnetic yoke. A magnetically controllable clapper armature is mounted on the yoke. A cam type rocker is rotatably mounted on the yoke. A pair of contact spring means are engageable with each other to close the switch and disengageable from each other to open the switch. One of the contact spring means is engageable with and controllable in position by the rocker. A tappet is rotatably mounted on and movable with the armature and engageable with the rocker to move the rocker between closed and open switch positions. A spreading hook extends from the tappet and has a configuration such that it enters between the two contact spring means during the rotation of the tappet when the switch is opening to disengage the spring means from each other.

3,689,859

### REED SWITCH

E. R. Carl Straub, 1611 Lincoln Ave., Cozad, Nebr.

Filed March 22, 1971, Ser. No. 126,491

Int. Cl. H01h 3/12, 36/00

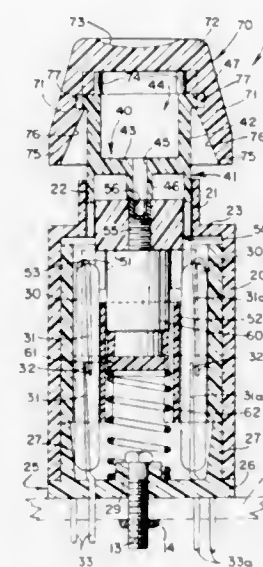
U.S. Cl. 335—206

5 Claims

A reed switch includes a housing with a pair of magnetically-responsive contacts mounted therein, which contacts are closed when an axially-movable magnetic actuator reaches a specified distance with respect to the contacts. A plunger is carried by the housing and moves the actuator toward and away from the contacts. Adjusting means are provided which

operatively engage the magnet and the plunger for varying the initial distance of the magnet from the contacts. A cap is

secondary core, the primary and secondary cores positioned with their long axes parallel and their short axes non-parallel



removably attached to the plunger and is constructed to conceal and protect the adjusting means.

3,689,860

### COLOR PICTURE TUBES

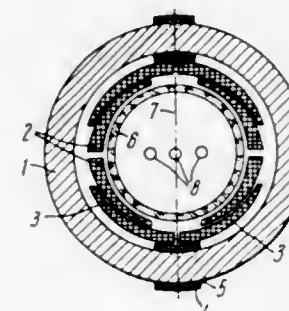
Albertas Vatslovovich Bauzhis, ulitsa Mintes, 34-50; Petras-Kestutis Petrovich Damienaitis, ulitsa Venuolio, 6, kv. 32; Sauljus Bonoventuro Zhlabis, ulitsa Charno, 53, kv. 29, and Petras-Alvidas Petro Shilenas, ulitsa Zhirmunu, 29, kv. 102, all of Vilnius, U.S.S.R.

Filed Nov. 9, 1971, Ser. No. 196,887

Int. Cl. H01f 7/00

U.S. Cl. 335—210

1 Claim



A color picture tube, comprising a deflection system with two pairs of coils placed on the inner surface of a ferrite core and a dynamic beam convergence system made in the form of at least two additional coils wound on the diametrically opposite ends of said ferrite core and having a common plane of symmetry with one of the pairs of coils in the deflection system.

3,689,861

### LINEAR SHUNTED TRANSFORMER

William Wallace Gibson, Concord, Calif., assignor to Glenn Company, Pacheco, Calif.

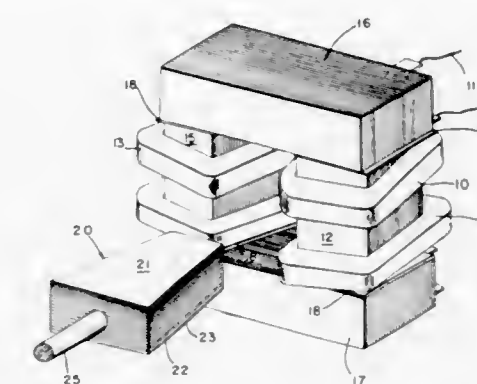
Filed Jan. 7, 1972, Ser. No. 216,135

Int. Cl. H01f 21/06

U.S. Cl. 336—133

6 Claims

There is disclosed a shunted transformer having a magnetic circuit of a primary core, a secondary core and two connecting magnetic elements forming a magnetic circuit between opposite poles of the cores, at least one primary coil surrounding the primary core, at least one secondary coil surrounding the



to form tapered faces, and a tapered magnetic shunt movable into and out of contact with the tapered core faces.

3,689,862

### STACKABLE COIL FORM

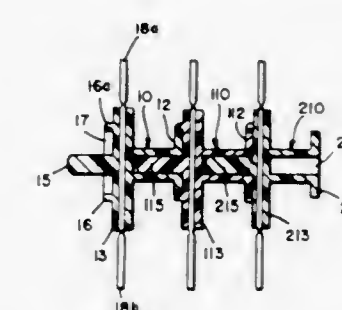
Raymond H. Hilgers, Hoffman Estates, Ill., assignor to Precision Paper Tube Company, Wheeling, Ill.

Filed Jan. 20, 1971, Ser. No. 103,360

Int. Cl. H01f 27/30

U.S. Cl. 336—208

12 Claims



A molded plastic coil form is provided with a pair of end flanges to permit a plurality of such coil forms to be interconnected or stacked. A pin portion extends outwardly from one of the end flanges, and an opening extends inwardly through the other end flange. The pin portion and opening are sized to permit the pin of one coil form to be received by the opening of another coil form, and a plurality of coil forms can be joined by inserting the pin portion of each coil form into the opening of the adjacent coil form. One of the flanges is smaller than the other, and the other flange is recessed to non-rotatably receive the smaller flange as the coil forms are joined. At least one wire is imbedded in the recessed end flange and extends outwardly from the end flange generally perpendicularly to the tubular portion.

3,689,863

### VOLTAGE DEPENDENT RESISTORS IN A SURFACE BARRIER TYPE

Michio Matsuoka; Takeshi Masuyama, and Yoshio Iida, all of Osaka-fu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 24, 1970, Ser. No. 92,380

Claims priority, application Japan, Dec. 8, 1969, 44/98789;

Apr. 4, 1970, 45/29908

Int. Cl. H01c 7/10

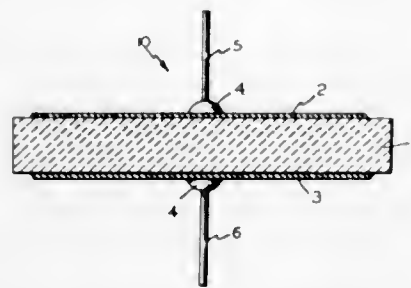
U.S. Cl. 338—20

10 Claims

A voltage dependent resistor of the surface barrier type. A sintered body consisting essentially of, as a major part, zinc oxide (ZnO) and 0.05 to 10.0 mole percent of, as an additive, beryllium oxide (BeO), has electrodes in contact therewith.



At least one of the electrodes is in non-ohmic contact with the body. The body can have minor amounts of further additives



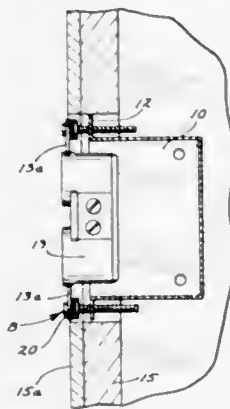
such as nickel oxide, titanium oxide, barium oxide, stannic oxide, aluminum oxide, lead oxide, cadmium fluoride and thallium oxide.

**3,689,864**  
**EXTENSION CONNECTOR FOR ELECTRICAL OUTLET BOX**

James Glader, 8548 Rich Avenue S., Minneapolis, Minn.  
Filed June 24, 1971, Ser. No. 156,199  
Int. Cl. H01t 3/06

U.S. Cl. 339—14 R

6 Claims



An extension connector for electrical outlet box which embodies a threaded bolt extending through the attachment ear of an electrical unit such as a switch or receptacle and provided with a fixed collar spaced from the head of the bolt and disposed on the underside of the ear and provided with a spring washer between the ear and the collar to maintain positive electrical contact between the bolt and the ear of the electrical unit and thereby provide an adjustable connector for threadably connecting the electrical unit to an outlet box to produce and maintain the desired position of the unit with respect to a finished wall surface while positively maintaining a satisfactory ground connection between the attachment ear of the unit and the box.

**3,689,865**  
**CONNECTOR**

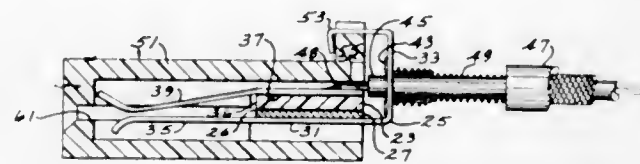
John M. Pierini, South Attleboro; John C. Sarazen, Mansfield, and Reidar G. Larsen, North Attleboro, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.  
Continuation of Ser. No. 712,196, March 11, 1968, abandoned. This application June 23, 1970, Ser. No. 64,046  
Int. Cl. H01r

U.S. Cl. 339—17 L

22 Claims

The detachable connector disclosed herein facilitates the coupling of high frequency signals from coaxial or other paired signal paths to so-called microstrip signal paths or the like. These microstrip signal paths comprise conductor strips on a circuit board having a ground plane on the opposite side of a dielectric substrate from the signal conductor strips. In the connector the transformation of the signal path from coaxial to microstrip form is provided at a point different from the releasable connection which permits the circuit board to be

disconnected from the connector. A section of circuit board material is included within the connector to provide signal paths having matching characteristic impedances on the opposite sides of the line of separation. Conductive areas which match the impedance characteristics of the conductor strips on the circuit board are provided by the method of etching a metallic foil on the circuit board section in the connector.



posited sides of the line of separation. Conductive areas which match the impedance characteristics of the conductor strips on the circuit board are provided by the method of etching a metallic foil on the circuit board section in the connector.

**3,689,866**  
**HEAVY DUTY CABLE CONNECTOR**  
William Kelly, 6930 Snake Road, Hayward, Calif.  
Filed Sept. 11, 1970, Ser. No. 71,443  
Int. Cl. H01r 13/40

U.S. Cl. 339—59 R

1 Claim

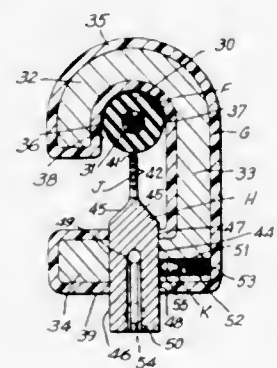


A heavy duty electrical cable connector having an electrically insulating housing formed with a first opening to receive an electrical cable, an internal cavity communicating with the first opening and formed for mounting of a connector holder therein, and a second opening communicating with the cavity through which a connector terminal may be secured in the housing. A connector holder, preferably a metallic insert integrally molded into the housing, is provided and formed with a resiliently biased terminal retaining portion for detachably fastening the connector terminal in the housing. The holder and housing are formed to secure the holder against any movement in the housing, which completely encloses the holder to prevent electrical shock through contact with the human body.

**3,689,867**  
**ELECTRICAL CONNECTIONS FOR MODULAR BUILDING CONSTRUCTIONS**  
Myron Jenner, c/o Jen Products, Inc., Bethel, Vt.  
Filed Feb. 11, 1970, Ser. No. 10,463  
Int. Cl. H01r 11/20

U.S. Cl. 339—97 R

8 Claims



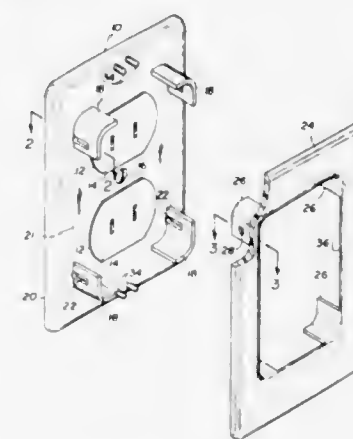
An electrical connector, for use between a rising cable in a column of a building structure and a line branched off that cable at a floor level, includes a gripper member with a cable-engaging bight portion and a transverse portion in which a piercing member is slidably and rotatably mounted. The piercing member has a flattened penetrating end which, after being driven into the core of the multistrand cable and turned

through 90°, spreads the strands and wedges the cable sheath tightly in the bight of the gripper; the opposite end of the piercing member has an axial bore of polygonal profile in which a terminal of a branch lead is clamped by means of a resilient insert.

**3,689,868**  
**CORD STORING FACE PLATE**  
Ernest L. Snyder, Boulder, Colo., assignor to DTM Products, Incorporated, Boulder, Colo.  
Filed Nov. 20, 1970, Ser. No. 91,310  
Int. Cl. H01r 13/60

U.S. Cl. 339—119 C

12 Claims



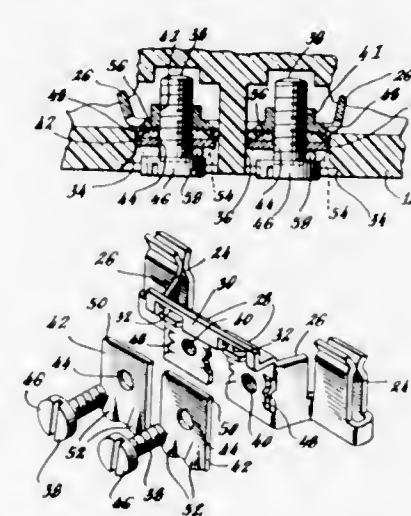
A cord storing face plate is provided for use with an electrical outlet. The face plate has a cover plate and a facing plate which is adapted to be mounted to the cover plate and to form a spool therebetween around which electrical cord can be wound and stored. The size of the spool can be varied as desired. While the stored cord can be quickly released by disengaging the facing plate from the cover plate, accidental release cannot occur since the facing plate and cover plate cannot be pulled apart.

**3,689,869**  
**Patent Not Issued For This Number**

**3,689,870**  
**ELECTRICAL RECEPTACLE HAVING AN IMPROVED CONTACT TERMINAL ARRANGEMENT**  
Frank C. Jaconette, Trumbull, Conn., assignor to Harvey Hubbell, Incorporated, Bridgeport, Conn.  
Filed March 3, 1971, Ser. No. 120,648  
Int. Cl. H01r 13/50

U.S. Cl. 339—217 R

2 Claims



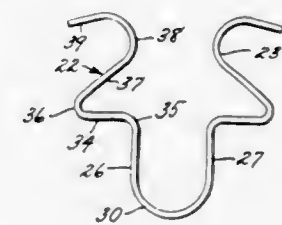
An improved contact terminal arrangement for an electrical receptacle to provide both back and side wiring thereof. The improved contact terminal arrangement includes providing a

threaded aperture in the terminal portion which is generally integral with an electrical contact and providing a clamping plate between the head of the binding screw and the terminal portion.

**3,689,871**  
**SOLDERLESS ANODE CLIP FOR CATHODE RAY TUBES**  
Otto Hoegerl, Saegerstown, Pa., assignor to National Electronics Corporation, Great Neck, N.Y.  
Filed Feb. 9, 1971, Ser. No. 113,987  
Int. Cl. H01n 11/22

U.S. Cl. 339—256 R

1 Claim

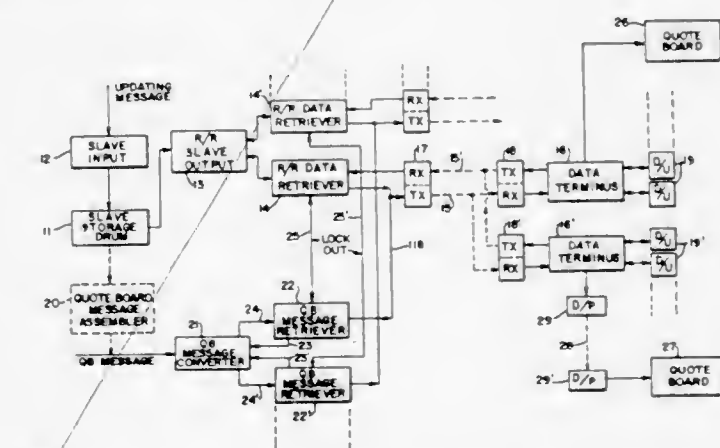


An improved anode clip normally employed to interconnect the end of an insulated conductor to a cathode ray tube including first, second and third conductor-engaging members, the first member being centrally disposed with respect to the second and third members, and including an arcuate portion partially surrounding a conductor, and communicating with a pair of cathode terminal-engaging members to resiliently bias the same; the second and third conductor-engaging members each including an arcuate portion joined at the medial parts thereof to the medial part of the arcuate portion of the first conductor-engaging member, and communicating with planar members on either side thereof which are crimped against the outer surface of the conductor insulation, thereby offering increased resistance to twisting forces perpendicular to the axis of the conductor tending to loosen the clip from the conductor.

**3,689,872**  
**DATA RETRIEVAL AND QUOTE BOARD MULTIPLEX SYSTEM**  
Frank W. Sieracki, Philadelphia, Pa., assignor to Ultronic Systems Corp., Pennsauken, N.J.  
Division of Ser. No. 634,603, April 28, 1967, Pat. No. 3,513,442. This application March 9, 1970, Ser. No. 22,730. The portion of the term of this patent subsequent to May 19, 1987, has been disclaimed.  
Int. Cl. H04q 5/00, 11/00

U.S. Cl. 340—154

3 Claims



Updating quote board (QB) messages are transmitted on reply lines connecting respective data retrievers and data terminus units of a request/reply data retrieval system serving respective pluralities of request units. A reply to any line initiates a QB message in the next bit interval and the message has a single bit sync section. During a QB message, a reply (if

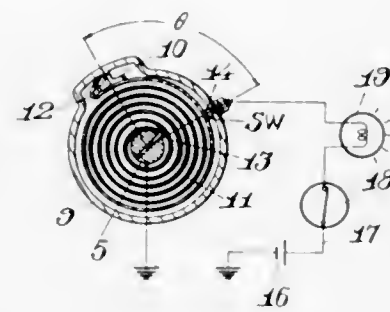






when the linings become dangerously overheated. A conductive metal pin is inserted through the brake lining support so that one end of the pin is positioned in the brake lining. The pin is provided with a moisture-proof insulating coating which covers the one pin end and extends toward, but terminates before, the other pin end. An insulating washer is inserted over the other pin end and is snugly received about the insulating coating on the pin, and an insulated conducting wire is electrically connected to the pin adjacent to the other pin end. A hardenable insulating fluid is thereafter applied to the exposed portion of the conducting wire and the pin to insulate all exposed metal surfaces. If desired, a disc of low-melting-point metal can be positioned over the pin end before the hardenable

detached from the fixed contact when the spring is tightened, and thus the switch is cut off.



The present device can effectively detect the pull-out motion of the seat belt and call upon an occupant to put on the seat belt when it is not yet pulled out.

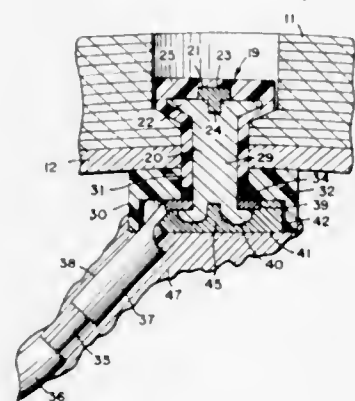
3,689,882

### ANTI-CRASH RADIO DETECTOR FOR AUTOMOTIVE VEHICLES

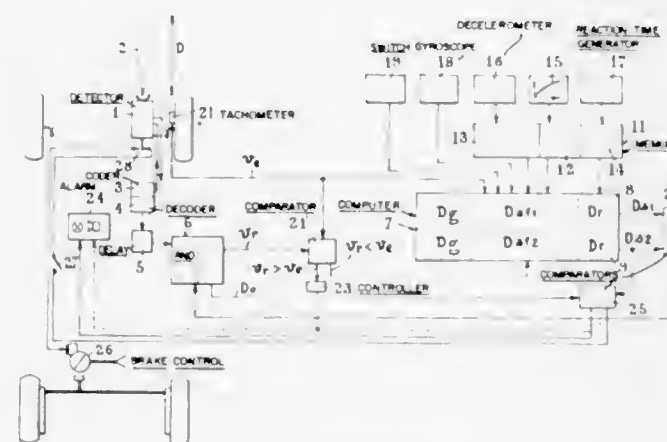
Rene Dessailly, Montrouge, France, assignor to T.E.M.I. Techniques Modernes Internationales, Montrouge, France  
Filed Dec. 29, 1970, Ser. No. 102,427  
Claims priority, application France, Dec. 29, 1969, 6945241  
Int. Cl. G08g 1/00

U.S. Cl. 340—53

6 Claims



ble insulating material is applied. When the brake lining is worn to the level of the insulation-coated pin, the insulation abrades and the pin eventually makes contact with the rotating braking element, either the brake drum or the brake disc, thereby completing an electrical circuit and activating a warning signal, intermittently each time the brakes are applied. If the brake linings become excessively heated, the insulation will melt and permit the pin to make contact with the lining support and activate a warning signal whether the brakes are applied or not. If the pin is equipped with the metal disc, the disc will also melt and insure electrical contact between the pin and lining support.



Anti-crash radio-detector system for automotive vehicles adapted to take due account of all traffic conditions and operate efficiently for preventing an accident when an obstacle is detected ahead.

This system is characterized in that it comprises a radio-electric or radar detector, a device for producing from the information delivered by said detector another information concerning the approach speed of the equipped vehicle, an electronic computer for determining a first safety distance and a second safety distance, a light and/or sound alarm device, and a device for controlling the braking system.

This detector system is applicable to road and rail vehicles.

3,689,883

### LIQUID LEVEL DETECTOR

William Frank Hill, Stafford, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England  
Filed Aug. 14, 1970, Ser. No. 63,785  
Int. Cl. B60q 1/00; G01f 23/24

U.S. Cl. 340—59

5 Claims

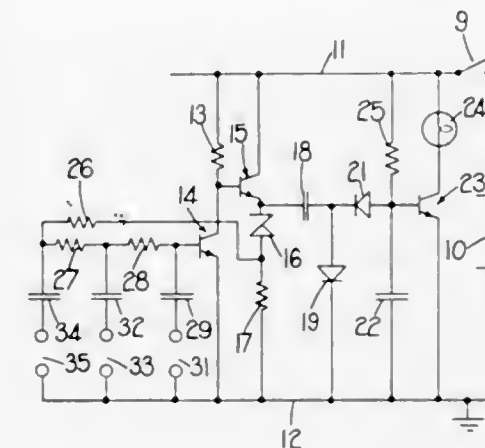
U.S. Cl. 340—52 E

5 Claims

A device in an automobile for detecting a pullout motion of a seat belt characterized in that there is provided a spring case rotatably receiving a belt winding shaft and encasing therein a coil spring, one end of which is engaged with a hooked portion formed in the inner peripheral wall of said spring case and the other end of which is fixed to said winding shaft so that the coil spring is tightened when a seat belt is pulled out. The spring case is further provided with a fixed electric contact on its inner peripheral wall. Said fixed electric contact forms an electrical switch in combination with a coil spring which serves as a movable electric contact and is adapted to be

A liquid level detection circuit for use in a road vehicle has an oscillator which functions with a plurality of separate liquid containers, each incorporating a probe immersed in the liquid, the level in any of the containers of which is to be detected.

When the liquid level falls below a predetermined level, the resistance of the probe changes with a result that the oscillator



ceases to operate. A warning device is employed which is held inoperative only when the oscillator is operating.

3,689,884

### DIGITAL CORRELATOR FOR CALCULATING FIGURE OF MERIT OF COMMUNICATION TRANSMISSION SYSTEM

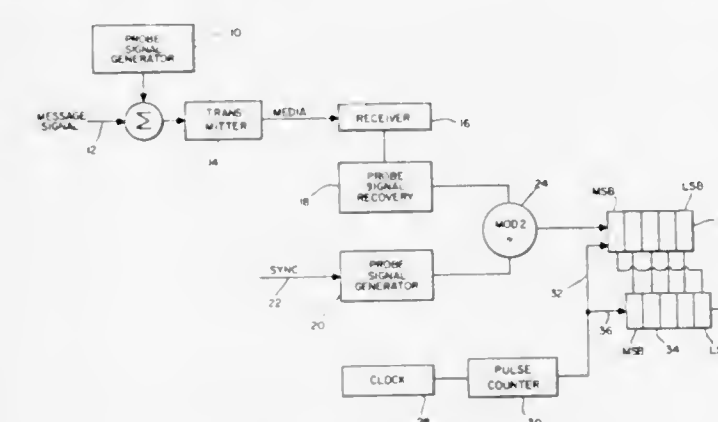
Walter Hosey Tew, Jr., Deland, Fla., assignor to General Electric Company

Filed Dec. 31, 1970, Ser. No. 103,033

Int. Cl. G08c 25/00

U.S. Cl. 340—146.1 E

2 Claims



A circuit for providing a measure of the fidelity of a communication transmission (figure of merit) by determining the correlation between a transmitted sequence of digital numbers with the same numbers locally generated. The number of correlated digital numbers is counted (hits) which occur during a transmission of a total number of digital numbers (hits plus misses). The number of hits in binary form is converted to the number of hits minus misses by shifting the digit in the most significant bit position to that of the least significant bit. This binary number is a close approximation of the figure of merit (disregarding the decimal point).

3,689,885

### INDUCTIVELY COUPLED PASSIVE RESPONDER AND INTERROGATOR UNIT HAVING MULTIDIMENSIONAL ELECTROMAGNETIC FIELD CAPABILITIES

Leon M. Kaplan, and Thomas A. Krolsky, both of Goleta, Calif., assignors to Transit Corporation

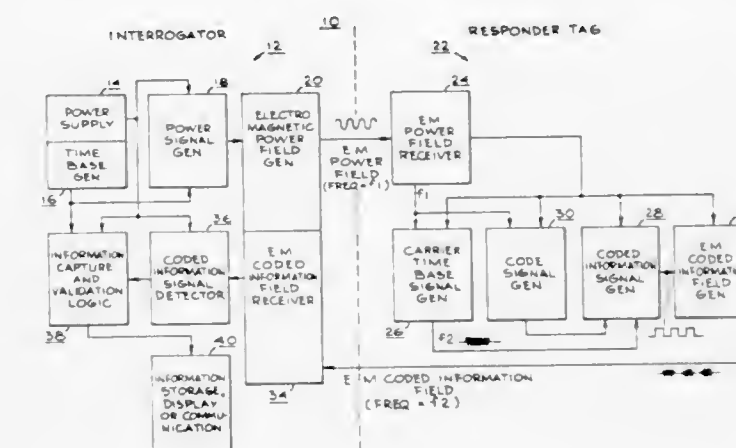
Filed Sept. 15, 1970, Ser. No. 72,483

Int. Cl. H04q 7/00

U.S. Cl. 340—152 T

40 Claims

An interrogator-responder system wherein the responder is a passive responder receiving an inductively coupled electromagnetic power field from an interrogator unit and generating an unique predetermined electromagnetic coded information field in response to the presence of the elec-



tromagnetic coded information field independent of the orientation of the responder for two dimensional or three dimensional capabilities.

3,689,886

### CONTROL SYSTEM HAVING TRANSMITTER-RECEIVER SETS FOR OPERATING FUNCTIONAL DEVICE OVER POWER LINES

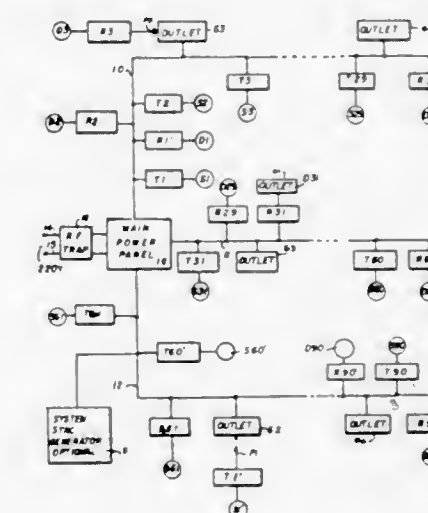
John E. Durkee, Ft. Atkinson, Wis., assignor to Thomas Industries Inc., Ft. Atkinson, Wis.

Filed Feb. 9, 1971, Ser. No. 113,954

Int. Cl. H04q 11/04

U.S. Cl. 340—163

35 Claims



A control system for operating functional devices over an AC power line which includes a transmitter for each functional device connected to the AC power line for generating coded signals for transmission over the power line, and a receiver for each functional device connected to the power line and responsive to the coded signals transmitted over the power line by the corresponding transmitter to effect the connection of an associated functional device to the power line to receive operating power therefrom.

3,689,887

### INFORMATION TRANSFER SYSTEM

Robert A. La Fake, Neptune, and William M. Spencer, West End, both of N.J., assignors to The Bendix Corporation

Filed June 11, 1970, Ser. No. 45,462

Int. Cl. H04q 9/00

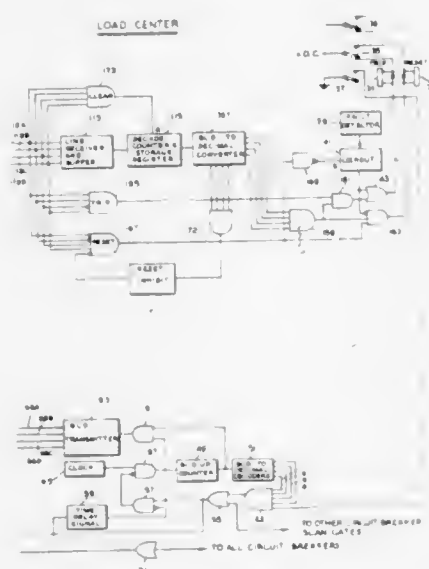
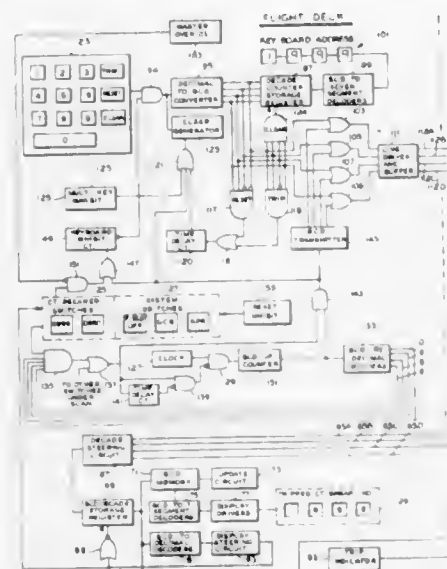
U.S. Cl. 340—163

26 Claims

An information transfer system uses coded signals identifying stations and commands for addressing selected stations



and for performing selected commands on the selected stations to change their conditions. The stations are scanned con-



tinuously to determine their conditions, and information is displayed to indicate only those stations in a predetermined condition.

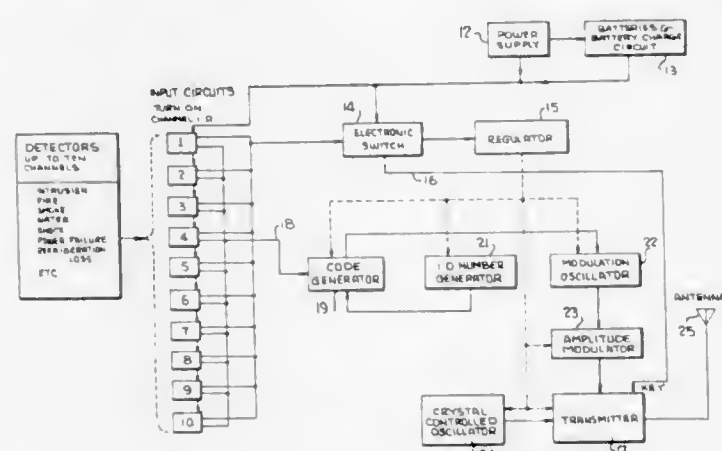
3,689,888

**PULSE POSITION MODULATED ALARM SYSTEM**  
Thomas S. Wootton, El Paso, Tex., assignor to Baldwin Electronics, Inc., Little Rock, Ark.

Filed Dec. 31, 1970, Ser. No. 103,203  
Int. Cl. H04q 1/42

U.S. Cl. 340-164 R

13 Claims



A system for transmitting, via a radio link to a central station, alarm indications at a plurality of monitored stations.

Each monitored station includes a different code identification number which controls pulse position modulation of a carrier that is transmitted to the central station only in response to an alarm condition being sensed. The type of alarm condition being sensed also pulse position modulates the carrier transmitted from the peripheral station to the central station. At the central station, the carrier is received and the pulse position modulated pulses are detected and processed to provide indications of the identity of the monitored station at which the alarm condition was sensed, as well as the cause of the sensed alarm.

3,689,889

**SWITCHING MATRIX FOR RELAY COUPLERS WITH THRESHOLD VALUE SWITCHES**

Hermann Feucht, Farchanstrasse 59, 8000 Munich 55, and Ulrich Korber, Passauerstrasse 50, 8000 Munich 25, both of Germany

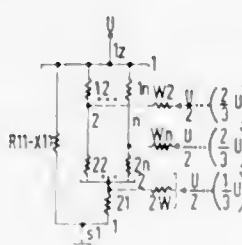
Filed Feb. 7, 1969, Ser. No. 797,561

Claims priority, application Austria, Feb. 9, 1968, A 1260/68

Int. Cl. H04q 3/00

U.S. Cl. 340-166 R

9 Claims



A switching matrix with threshold value switches connected between the junctions of row and column lines, the threshold value switches being responsive to the temporary application of a sufficiently high operating potential to the associated row and column lines to close or become conductive. Individual pre-resistance means are connected to the row and column lines which have a small value of resistance compared to that of the threshold value switches in blocked or open condition. Control potentials are applied over the threshold value switches in blocked condition to further threshold value switches. Each of the latter are connected to at least one of a row and column line not receiving the operating potential to decrease the effect of the operating potential thereon to an extent such that the further threshold value switches cannot close.

3,689,890

**ELECTRONIC REMOTE SUPERVISION AND CONTROL OF STATES AND PROCESSES**

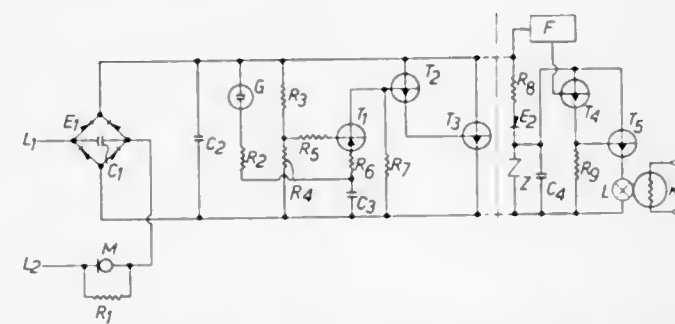
Leo Anker Jensen, Udsigten 26., Brabrand, Denmark

Filed April 20, 1970, Ser. No. 29,990

Int. Cl. H04m 11/00; H04q 9/00

U.S. Cl. 340-171 R

8 Claims



A remote electronic control device for use with an information transmission system. The system includes means for responding to a calling signal from the control system, such as

a telephone call signal, after a predetermined period of time. The system, after this waiting period, is then energized for a predetermined period of time during which time supervisory control signals are supplied to the device to modify or change a process being supervised.

3,689,891  
MEMORY SYSTEM

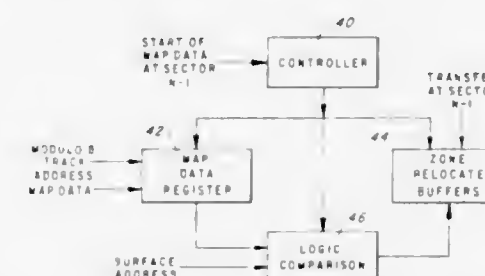
Russell S. Kril, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 2, 1970, Ser. No. 86,245

Int. Cl. G06f 9/00

U.S. Cl. 340-172.5

9 Claims



A memory system having unusable storage locations relocated on a redundant data surface so that all addressable memory locations may be utilized. Programmable control of the transfer of data storage to the redundant data surface is provided by recording map tracks on the control surface of a separate disc.

3,689,892

**ELECTRONIC CONTROL APPARATUS HAVING LEARN AND AUTOMATIC OPERATE MODES**

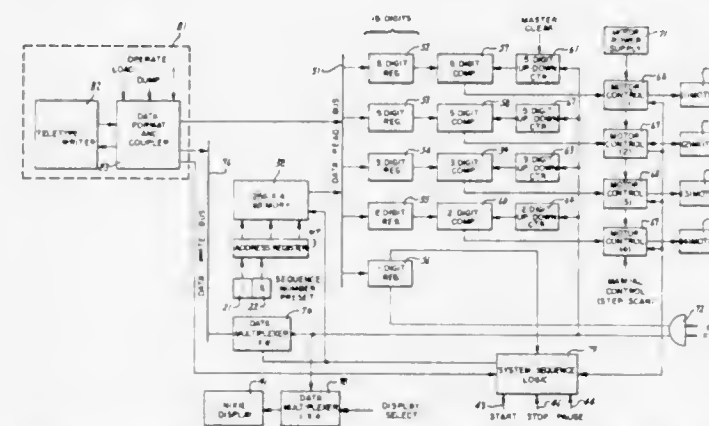
David A. Glenn, Cupertino, and David N. Lytle, Tiburon, both of Calif., assignors to Electroglas, Inc., Menlo Park, Calif.

Filed March 18, 1970, Ser. No. 20,706

Int. Cl. G06f 15/18, 15/46

U.S. Cl. 340-172.5

16 Claims



Electronic control apparatus and method using stepping motors which are operated open loop and which are slaved to counters so that the stepping motors first can be operated in a learn mode and information recorded in a memory, and thereafter operated automatically by use of the information recorded in the memory.

3,689,893

**ACCOUNTING MACHINE PROCESSOR**

Romano Taddei, Cascinetta D'Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed April 10, 1970, Ser. No. 27,223

Claims priority, application Italy, May 9, 1969, 51763 A/69

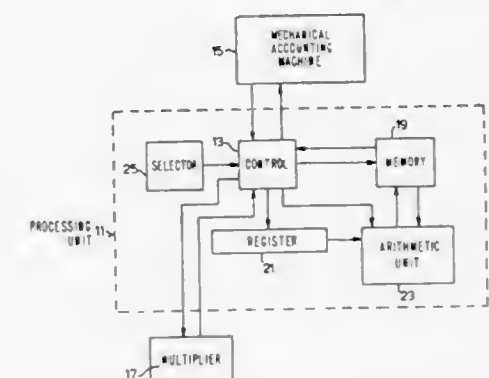
Int. Cl. G06f 15/02, 15/22, 3/00

U.S. Cl. 340-172.5

2 Claims

An electronic processing unit for mechanical billing and accounting machines comprising a multiregister memory and an

arithmetic unit for operating on data received from the mechanical unit in conjunction with the data stored in an addressed memory register and for storing the result of the operation in the addressed register. A control unit controls the operation of the processing unit in accordance with instruc-



tions received from the connected mechanical unit and is responsive to reference codes received from the mechanical unit for overriding the address associated with the following instruction and to the designation of a register for preventing any modification of the data stored in the designated register.

3,689,894

**IMAGE STORAGE AND RETRIEVAL SYSTEM**

James F. Laura, Chelmsford, and Albert Eng, Chestnut Hill, both of Mass., assignors to Foto-Mem, Inc., Natick, Mass.

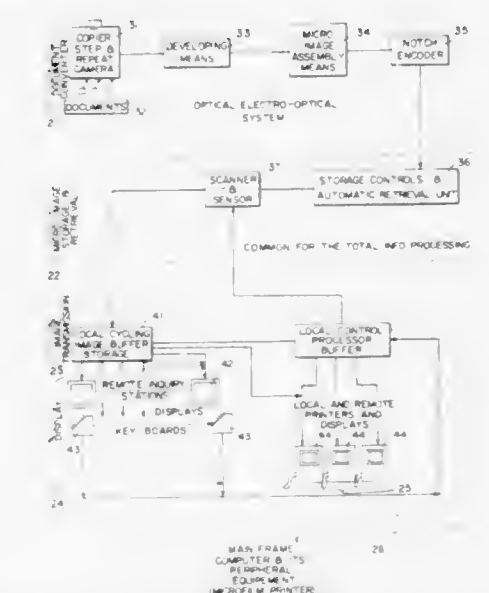
Continuation-in-part of Ser. No. 713,340, March 15, 1968.

This application April 6, 1970, Ser. No. 26,016

Int. Cl. G06f 3/14

U.S. Cl. 340-172.5

2 Claims



A total image storage and retrieval system has a copier, step and repeat camera for photographing documents on microfilm frames, and means for developing the microfilm and assembling the frames on microfiche cards that are encoded and stored in a large capacity storage bin having associated means for automatically retrieving the microfiche. One or more retrieval stations, each typically having a keyboard for selecting images sought to be retrieved and a display, such as a television tube, for displaying the selected retrieved images, includes means for signaling the data file bin to produce a specific image, scan the image thus retrieved, store the scanned retrieved image and transmit the stored scanned retrieved image to designated displays, typically the display tube associated with the interrogating keyboard, or to a printer that may provide a copy of the retrieved image in permanent form, and/or to data processing machines to interpret the information or data for further transmission or processing with other pertinent information and/or data. A specific image



may be produced by writing data on a film by an optical system, which may include a laser source. The data may be read by a second optical system, such as an optical fiber detector array.

3,689,895

## MICRO-PROGRAM CONTROL SYSTEM

Takuo Kitamura, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

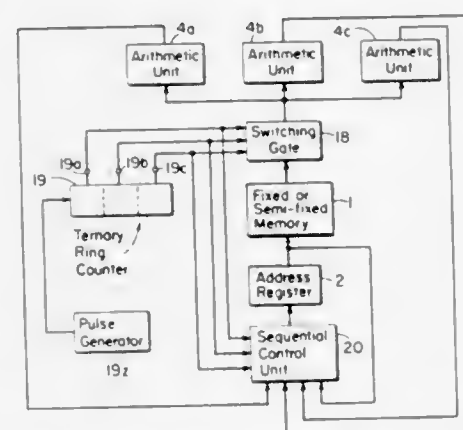
Filed Nov. 23, 1970, Ser. No. 91,810

Claims priority, application Japan, Nov. 24, 1969, 44/94068

Int. Cl. G06F 9/19

U.S. Cl. 340—172.5

11 Claims



A micro-program control system for computing apparatus provides a time shared concurrent utilization of a fixed, or semi-fixed memory containing a plurality of micro-programs. Micro-instructions of each micro-program are read out in repetitive, sequential manner from the memory and entered into control registers associated with the respective micro-programs. During the time interval in which a micro-instruction of one micro-program is read out, executed and the next address for that micro-program determined, a micro-instruction for another micro-program is read from the memory for implementation.

Both the utility of the memory, and the speed of the overall data processing, are thereby improved.

3,689,896

## TIME DIVISION SWITCHING SYSTEM

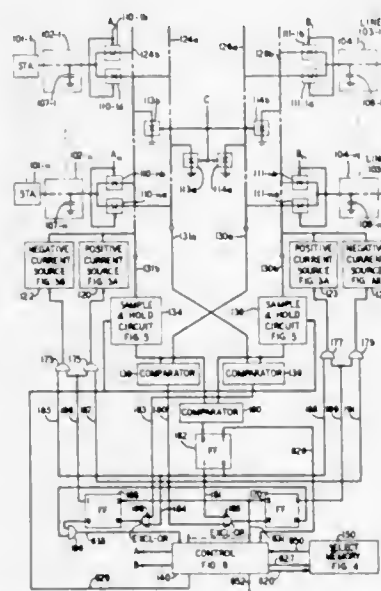
James Owen Dimmick, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 100,146

Int. Cl. H04J 7/00

U.S. Cl. 340—172.5

15 Claims



In a time division switching system, signals are exchanged between a pair of selected storage devices in a distinct time

slot by means of opposite type pulses applied to the selected storage devices. The signal output of each storage device is sampled at the beginning of a distinct time slot and the sampled output of one selected storage device is compared to the continuously monitored output of the other selected storage device. When the sampled output of the one selected storage device is equal to the continuously monitored output of the other selected storage device, the pulse applied to the other selected storage device is terminated whereby signals are transferred between the selected storage devices.

3,689,897

## SWITCHING MAXTRIX CONTROL CIRCUIT FOR HANDLING REQUESTS ON A FIRST-COME FIRST-SERVE PRIORITY BASIS

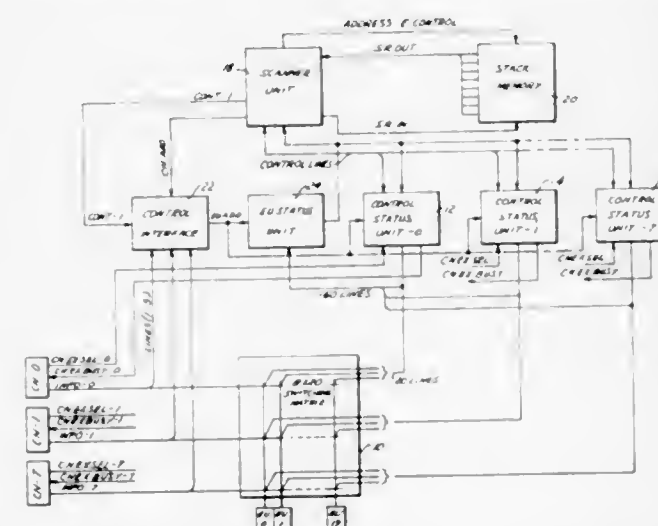
Larry L. Sciuchetti, Arcadia, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 13, 1971, Ser. No. 106,063

Int. Cl. G06F 3/00

U.S. Cl. 340—172.5

12 Claims



There is described a control for a switching matrix providing an interchange between a group of requesting units and a group of terminal units. In response to a request for a connection to any designated terminal unit by a requesting unit, the designation of the requesting unit is inserted in the bottom of a stack memory. The contents of the stack are then scanned from the top to the bottom. As each requesting unit designation stored in the stack is read out, a check is made if the requested terminal unit is busy. If not, the designation of the requested terminal unit is stored and a connection is completed through the switching matrix between the two units. The requesting unit designation is then cleared from the stack.

3,689,898

## INFORMATION PROCESSING SYSTEM

Francis H. Sites, Wayland, Mass., assignor to Servo Corporation of America, Hicksville, N.Y.

Filed April 29, 1971, Ser. No. 138,682

Int. Cl. G06K 7/12

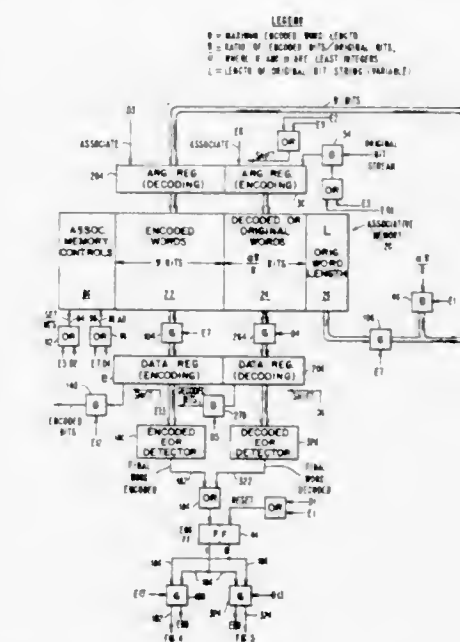
U.S. Cl. 340—172.5

10 Claims

An information processing system in which data is encoded in labels having an array of stripes arranged in a plurality of selected stripe-pair code combinations; the first stripe of each pair being an orange, blue or white retroreflective stripe and the second stripe of each pair being an orange, blue, or white retroreflective stripe or a black non-retroreflective stripe. The stripes are scanned by a beam of light and the reflected light from the retroreflective stripes is employed to generate pulse signals representative of the data encoded in the label. The pulse signals generated by the scanning of the first stripe of a stripe-pair are stored in a first set of flip-flops and the pulse signals, if any, generated by the scanning of second stripe of a stripe-pair are stored in a second set of flip-flops. To load the

pulse signals corresponding to the first stripe of a stripe-pair, a control signal to the first set of flip-flops, for enabling the pulse signals to be loaded therein, is produced by first loading circuitry in response to the leading edge of a pulse signal as the stripe-pair is scanned. To load the pulse signals corresponding to the second stripe of a stripe-pair, a control signal to the second set of flip-flops, for enabling the pulse signals to be loaded therein, is produced by second loading circuitry only if the pulse signals occur a predetermined period after the leading edge of a pulse signal derived from the first stripe of a stripe-pair. The predetermined period (15 microseconds) is equal to the maximum width of a pulse signal generated by a single stripe, and therefore causes pulse signals generated by

upon detecting a valid word-ending bit pattern following the erroneous bit. While the code words are of variable length, the



rate of data transmission is constant due to a fixed ratio between the number of original data bits and the corresponding encoded data bits.

3,689,900

## PHOTO-CODED DIODE ARRAY FOR READ ONLY MEMORY

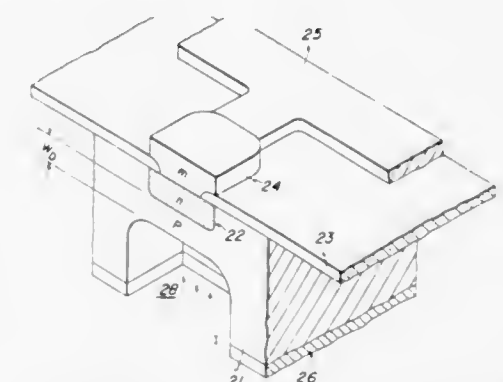
Arthur C. M. Chen, Schenectady, N.Y., assignor to General Electric Company

Filed Aug. 31, 1970, Ser. No. 68,102

Int. Cl. G11c 11/36, 11/42; H011 15/06

U.S. Cl. 340—173 LM

4 Claims



A diode read only memory array is disclosed in which the intersecting signal lines of the array are connected by a series circuit comprising a conventional diode and a photodiode, oppositely poled. Information is stored by selectively irradiating the array to produce reverse conduction in selected ones of the photodiodes. The integrated circuit structure used in fabricating the memory array is also disclosed.

3,689,901

## MAGNETIC DOMAIN DETECTOR ARRANGEMENT

Andrew Henry Bobeck, Chatham, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed May 6, 1971, Ser. No. 140,894

Int. Cl. G11c 11/14

U.S. Cl. 340—174 TF

12 Claims

Single wall domains moved in a slice of a host magnetic material, by changing magnetic pole patterns exhibited by a pattern of magnetic elements in response to a magnetic field

the scanning of the second stripe of a stripe-pair to be loaded into the second set of flip-flops. The second loading circuitry includes a first difference circuit to which the various pulse signals are applied. The pulse signals are also delayed by 15 microseconds and applied to the first difference circuit. The output of the first difference circuit is the difference between the pulse signals and the delayed pulse signals. The pulse signals and the output of the first difference circuit are applied to a second difference circuit. Thus, the second difference circuit produces an output pulse during the period the second stripe of a stripe-pair is being scanned, but only if the second stripe is reflective. This output pulse is coupled to the second set of flip-flops for causing pulse signals generated by scanning of the second stripe to be loaded therein.

3,689,899

## RUN-LENGTH-LIMITED VARIABLE-LENGTH CODING WITH ERROR PROPAGATION LIMITATION

Peter A. Franaszek, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 7, 1971, Ser. No. 150,317

Int. Cl. G08c 25/00; G06f 11/00

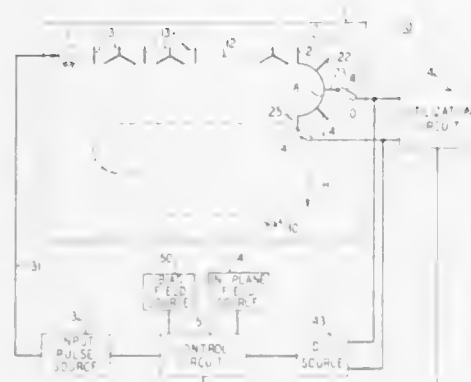
U.S. Cl. 340—172.5

22 Claims

This is a run-length-limited, variable-length coding scheme which reduces the implementation needed to perform encoding and decoding functions and which limits the propagation of framing errors caused by incorrect coding or faulty bit detection. All code words utilized in this scheme are constrained to have distinctive word-ending bit sequences. Word-ending tests are performed repeatedly at strategic points in the bit stream in order to detect bit patterns that may denote word endings, and framing decisions are based upon these tests. Decoding functions are suspended while each new code word or frame is being serially entered into the input register for decoding. Where misframing occurs due to the presence of an erroneous bit in a code word, the propagation of such a framing error through subsequent words is limited by the fact that subsequent word-ending tests are performed independently of the framing decisions that preceded them, and also due to the fact that the average code word length is much less than in a fixed-length code system. Synchronization is quickly restored



reorienting in the plane of the slice, are expanded during propagation at a prescribed point in the pattern due to a local-



ized modification in the pattern there. The expansion of domains relieves constraints on turns in the channel as well as detector design.

3,689,902

## CYLINDRICAL MAGNETIC DOMAIN DECODER

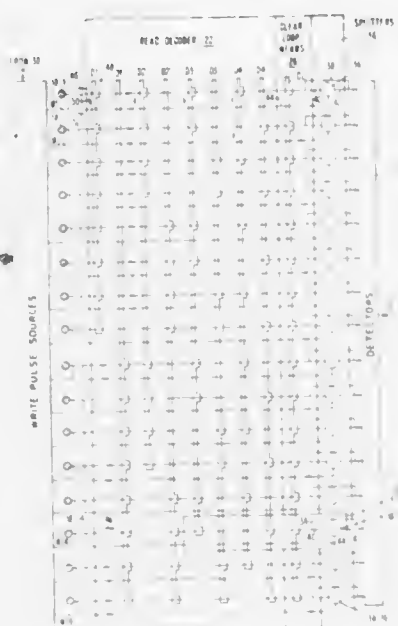
Hsu Chang, Yorktown Heights; George E. Keefe, Montrose; Yeong S. Lin, Mount Kisco, and Laurence L. Rosier, Amawalk, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,232

Int. Cl. G11c 11/14, 19/00

U.S. Cl. 340—174 TF

20 Claims



A decoder for cylindrical magnetic domain shift registers having means to clear the information from selected registers thus enabling new information to be written into those registers. The decoder is incorporated into  $2^N$  closed loop shift registers and uses only a small part of the storage area of the magnetic sheet in which domains exist. It is activated by  $2N$  control lines ( $N$  pairs). Depending upon the activation of the decoder, the information in a selected shift register is passed to a clear means which sends it into one of two paths depending upon the activation of the clear means. One path brings the information to a detector for destructive readout, while the other path brings the information to a domain splitter. The domain splitter splits the input domains into two parts, one of which propagates to the detector while the other returns to the proper shift register. Thus, non-destructive readout (NDRO) or destructive read-out (DRO) is provided depending upon the activation of the clear means.

3,689,903

## VOLTAGE CONTROLLED OSCILLATOR WITH CONSTRAINED PERIOD OF FREQUENCY CHANGE

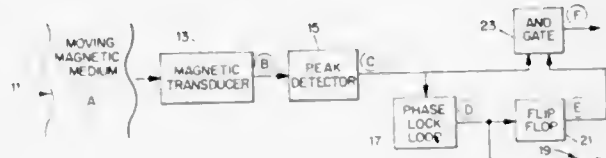
Ashok K. Agrawala, St. Paul, Minn.; Samuel J. Dixon, Holiston, and George H. Sollman, Cambridge, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 16, 1970, Ser. No. 81,306

Int. Cl. G11b 5/44

U.S. Cl. 340—174.1 H

13 Claims



A voltage controlled oscillator output frequency is constrained to follow the highest component of significant transitions in an input signal by allowing the input signal to change oscillator-controlling voltages only within a predetermined period after receipt of an input signal transition. The output frequency is maintained at its last corrected value between periods of change. The oscillator forms part of a phase lock loop for establishing a clock to recover variable frequency recorded information.

3,689,904

## DEMAGNETIZING CIRCUIT

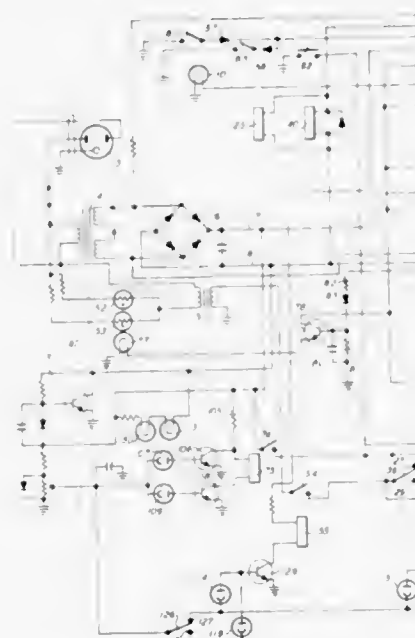
Frank H. Blitchington, Jr., Greensboro, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 10, 1969, Ser. No. 876,637

Int. Cl. H01j 29/06

U.S. Cl. 340—174.1 R

6 Claims



A circuit for selectively producing magnetized areas on a sheet-like magnetizable material utilizing a plurality of magnetic heads adjacent to the magnetizable material. A DC current is first passed through the coils in the heads and then a decreasing AC current is passed through selected coils. The decreasing AC current is produced by a radiant energy controlled resistance in series with the selected coils. A lamp controlled by an RC circuit illuminates the radiant energy controlled resistance to produce the decreasing AC current.

3,689,905

## HIGH-FREQUENCY INDUCTANCE TYPE APPARATUS FOR DETECTING SLIGHT MOVEMENT

Shinichiro Ariga, 3-3, 3-chome, Ojima Hanchō, Nagaoka-shi, Niigata-ken, Japan

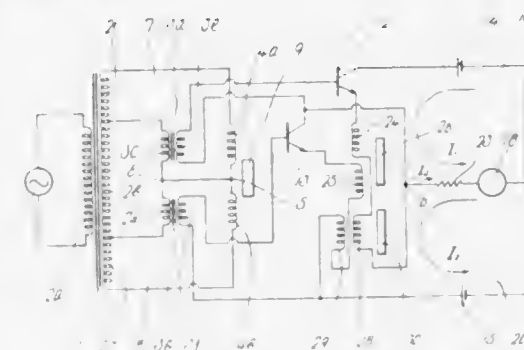
Filed June 1, 1971, Ser. No. 148,449

Claims priority, application Japan, June 1, 1970, 45/47311

Int. Cl. G08c 19/00

U.S. Cl. 340—199

9 Claims



A movement detecting device with a power transformer coupled to a high-frequency signal source. Supplemental windings are connected to the secondary of the power transformer and to respective coils. Two high-frequency transformers include primaries connected in respective closed loops with the supplemental windings and coils and secondaries which are coupled to a meter. The coils are wound on a common tube in which there is a movable core. The meter is part of a common leg in two further closed loops which include variable resistors or inductors and transistors.

3,689,906

## MONITORING AND ALARM SYSTEM

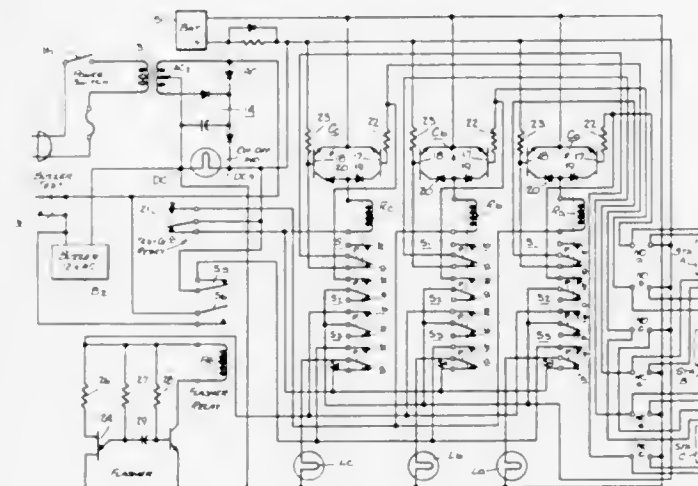
Marvin J. Levy, 2133 Kewood Place, Bellmore, N.Y.

Filed Sept. 2, 1970, Ser. No. 68,908

Int. Cl. G08b 23/00

U.S. Cl. 340—213 R

5 Claims



An alarm and monitoring system provided with a central console having a bank of relay-actuated light indicators. Associated with each relay is a solid-state control circuit having a pair of normally non-conductive transistors, one of which is coupled by wires to an external, normally-open sensor switch at a remote station, the other being coupled by wires to an external, normally closed sensor switch at the same station. The arrangement is such that when either switch is actuated, a bias is applied to the base of the related transistor through a resistor of relatively high value to render it conductive and thereby energize the associated relay. Because the bias is determined by the voltage drop across the resistor, the relatively low resistance in the wires going to the external switches has no material effect on the operation of the system even though this resistance is in series with the resistor.

3,689,907

## DEWPOINT MONITOR

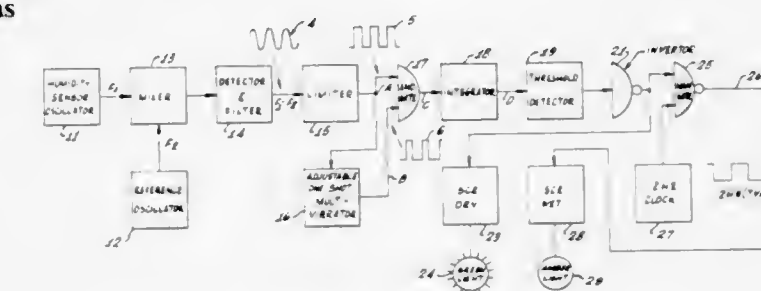
Ciro Guajardo, Harbor City, Calif., assignor to Robbins Aviation, Inc., Vernon, Calif.

Filed Aug. 3, 1970, Ser. No. 60,365

Int. Cl. G08b 21/00

U.S. Cl. 340—235

9 Claims



A monitor for compressed air and other gases signaling the moisture level thereof relative to a predetermined dewpoint. The basic sensor is a piezoelectric quartz crystal coated with a hygroscopic material which adsorbs moisture and changes the overall mass of the crystal and its oscillating frequency. This frequency is compared to the frequency of a reference crystal oscillator and the difference frequency is operated on in an electronic circuit to signal the moisture content of a compressed gas relative to the predetermined dewpoint.

3,689,908

## RATE OF FLOW ALARM

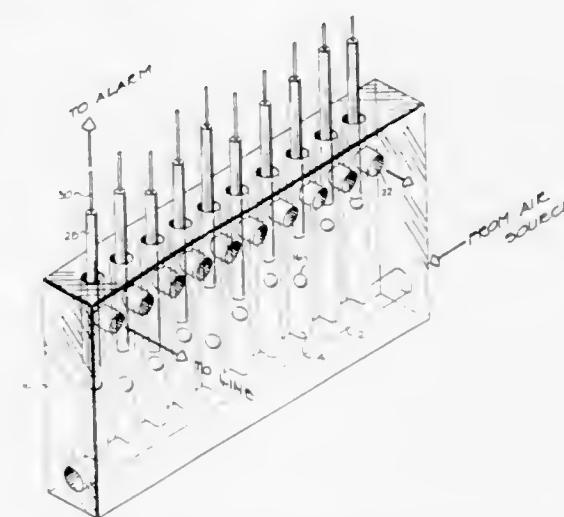
Jimmy C. Ray, Route 2, Box 33, Denison, Tex.

Filed Jan. 4, 1971, Ser. No. 103,442

Int. Cl. G08b 21/00

U.S. Cl. 340—239 R

5 Claims



A tapered-bore rate of flow meter is attached to the tubing connecting a source of dry gas to a telephone cable. A photo cell is attached to the rate of flow meter so if the ball of the flow meter interferes with the light source of the photo cell and a signal is produced. This signal is transmitted to a central point where a plurality of signal carriers are connected to a single alarm system. Thus, an excessive rate of flow into any one of a plurality of cables sets off an alarm.

3,689,909

## PRODUCT DEPLETION INDICATOR FOR REFRIGERATORS

Anthony P. Cotter, 13218 Lowell, Grandview, Mo.

Filed Feb. 24, 1971, Ser. No. 118,383

Int. Cl. G08b 21/00

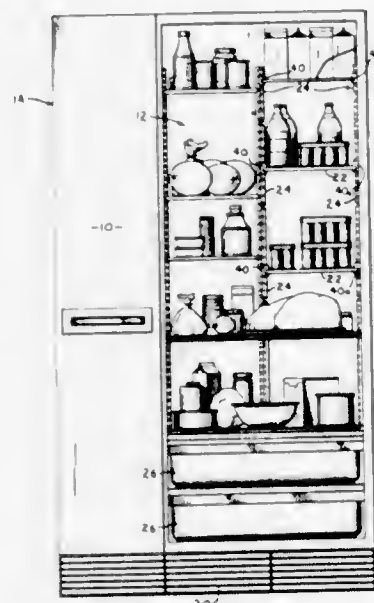
U.S. Cl. 340—272

5 Claims

A refrigerator in which each of a plurality of shelves is adapted to receive a number of consumable products of a particular type. The shelves are mounted for limited up-and-down



movement under the weight of products thereon, each shelf in its upper position being in a depleted condition and effecting actuation of a switch that controls the energization of an in-



dicator light on the exterior of the cabinet. The lights are of different colors to identify a particular depleted shelf and signal the depleted condition without the need to open the refrigerator door and inspect the shelves.

3,689,910

# ELECTROOPTICAL DISPLAY SYSTEM INCLUDING OPTICAL ENCODING MEANS

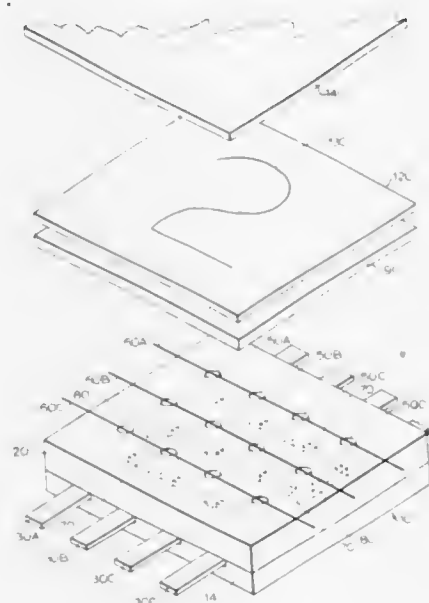
David Glaser, Green Brook, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 28, 1970, Ser. No. 84,561

Int. Cl. G06k 9/12

U.S. Cl. 340—324 R

9 Claims



An electrooptical display system includes a display panel having a plurality of gas-filled glow cells and electrodes for scanning or firing the cells in accordance with a predetermined pattern. The system includes a transparency which carries a message to be transmitted and a novel pickup for reading light which passes through the transparency and generating electrical signals therefrom. The signals can be used at a remote location to reconstitute the message or for any other purpose.

# 3,689,911 ALPHANUMERIC CHARACTER DISPLAY AND WAVEFORM GENERATOR THEREFOR

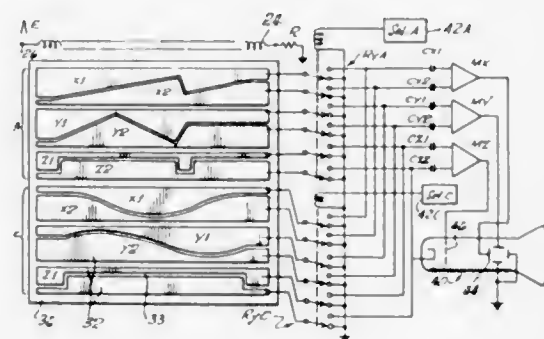
Robert S. Harp, 166 Merrill Ave., Sierra Madre, Calif.

Filed April 8, 1970, Ser. No. 26,495

Int. Cl. G06f 3/14

U.S. Cl. 340—324 A

4 Claims



Electrical waveforms of arbitrary shape are generated by pulsing a delay line and taking a signal from the line via conductive strips of varying width mounted parallel to the line and capacitively coupled to it. The signal variation with time corresponds to the variation of effective capacitance as the energizing pulse is propagated along the delay line. With strips suitably contoured, the waveforms may be applied to the orthogonal deflecting electrodes of a cathode ray tube to trace any desired character on the tube screen. For example, a font of 96 characters can be made available with three delay lines carrying strips formed by printed circuit techniques and controlled by relatively simple selection circuits. Described sampling techniques permit indefinite expansion of the time base of developed waveforms.

3,689,912

# GASEOUS DISPLAY DRIVER CIRCUITS

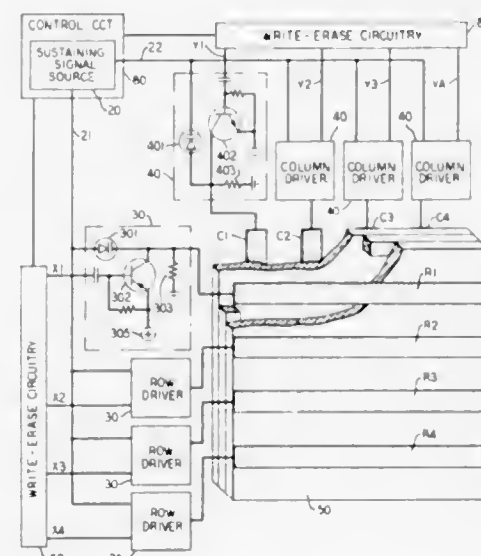
George Wilmer Dick, Colts Neck, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 16, 1970, Ser. No. 98,754

Int. Cl. G08b 5/36

U.S. Cl. 340—324 R

8 Claims



Integrable driver circuits employing transistor-diode circuitry couple high voltage, alternating polarity sustaining signals to a plasma display while isolating the row and column selection pulses used for writing and erasing purposes. In one driver circuit arrangement, a charge storage diode is employed as a selection device and is connected in a "Y" with a pair of oppositely-poled switching diodes for coupling the sustaining signals. In another driver circuit arrangement, a single charge storage diode is employed for coupling both polarities of the sustaining signals.

# 3,689,913 CONVERSION TO A DIGITAL CODE WHICH IS SELF-CLOCKING AND ABSOLUTE PHASING

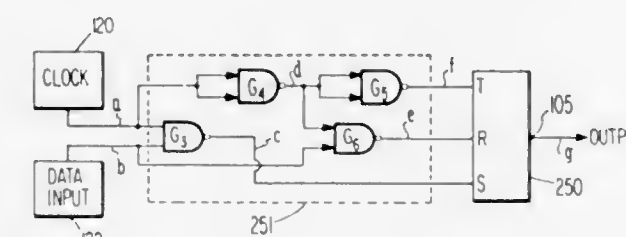
Gilbert Shelton Newcomb, Lake Pine, N.J., assignor to RCA Corporation

Filed April 17, 1970, Ser. No. 29,487

Int. Cl. G06f 3/00

U.S. Cl. 340—347 DD

8 Claims



An encoded binary signal which is self clocking and absolute phasing is provided by a method which provides a first pulse manifesting a first binary value having all transitions of the same predetermined polarity at bit interval boundaries and transitions of the opposite polarity intermediate the bit interval boundaries. A second pulse is provided having no transitions intermediate the interval boundaries and at least one transition in coincidence with one interval boundary thereof having the same predetermined polarity, the second pulse manifesting a second binary value. The presence or absence of a transition within a bit interval determines the binary value manifested by the pulse occurring in that interval and the time of occurrence of all transitions of the predetermined polarity identifies the time of occurrence of the interval boundaries of the signal.

3,689,914

# WAVEFORM GENERATOR

Jaquith Gould Butler, Cherry Hill, N.J., assignor to RCA Corporation

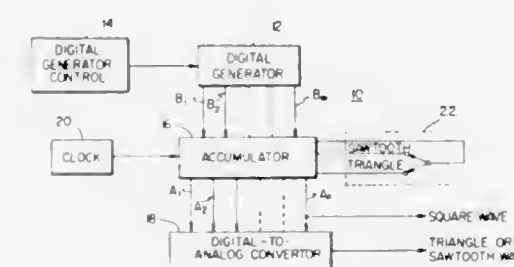
Continuation of Ser. No. 836,751, June 26, 1969, abandoned.

This application Aug. 9, 1971, Ser. No. 170,296

Int. Cl. H03k 13/02

U.S. Cl. 340—347 DA

5 Claims



A waveform generator is disclosed in which a constant binary signal is applied to a digital accumulator. For every clock pulse, the accumulator adds the binary signal and its stored contents and then stores the added sum. Periodically the accumulator becomes full and at the next clock pulse, the value of the contents returns to approximately zero. The stored signal from the accumulator is applied to a digital-to-analog converter and an analog signal is derived therefrom corresponding to the binary number stored in the accumulator. A periodic wave appears at the output of the digital-to-analog converter having a frequency equal to  $K/2N \times f_c$  where  $K$  is the analog value of the constant,  $N$  the number of stages in the accumulator, and  $f_c$  the clock frequency. This frequency can be varied within one clock cycle without causing a phase discontinuity in the output signal by merely changing the value of the constant binary signal.

# 3,689,915 ENCODING SYSTEM

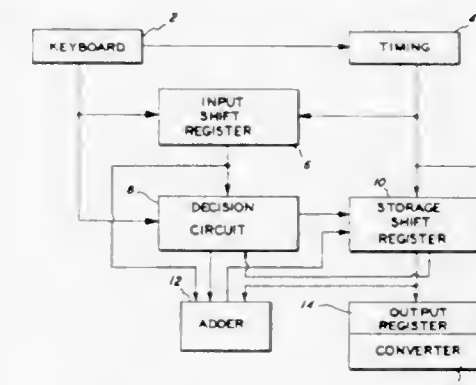
Robert D. De Clerck, Fairport, and Glenn D. Smith, Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Jan. 9, 1967, Ser. No. 608,015

Int. Cl. H03k 13/00

U.S. Cl. 340—347 DD

9 Claims



An encoding circuit for retrieval apparatus wherein retrieval or access phrases are entered via an alphanumeric keyboard which converts each character into a  $m$  bit binary code. The phrases are then broken into segments of  $n$  characters each of which are logically compared with each other in a particular manner so that the first bit of the first segment's first character is compared with the first bit of the second segment's first character, etc. The results of this first comparison is then similarly compared with the character bits of the next segment, and the cycle is repeated for any additional segments.

3,689,916

Patent Not Issued For This Number

3,689,917

# FREQUENCY SELECTOR AND SYNTHESIZER

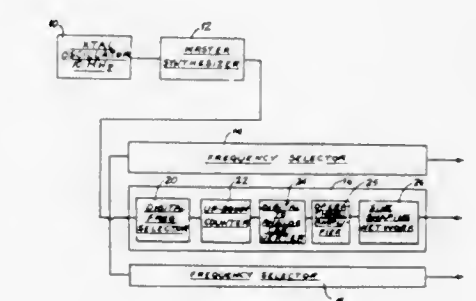
Francis J. Honey, and Frank D. Wells, both of Denver, Colo., assignors to Computer Image Corporation, Denver, Colo.

Filed Sept. 16, 1970, Ser. No. 72,642

Int. Cl. G06f 3/14

U.S. Cl. 340—324 A

44 Claims



A system for synthesizing a plurality of mutually coherent electrical signals with means for selecting the frequency of each signal.

3,689,918

Patent Not Issued For This Number



3,689,919

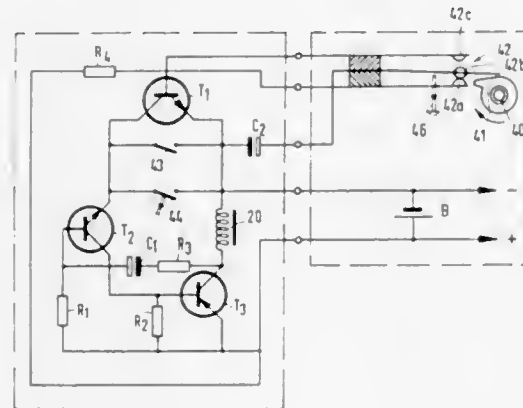
**ELECTRIC STRIKING MECHANISM FOR TIME PIECES**  
Wolfgang Ganter, Schramberg-Sulgen, and Georg Kunz, Lauterbach, both of Germany, assignors to Gebrüder Junghans GmbH, Schramberg/Wurtemberg, Germany  
Filed Aug. 24, 1970, Ser. No. 66,287

Claims priority, application Germany, Sept. 2, 1969, P 19 46 341.3

Int. Cl. G10k 1/065

U.S. Cl. 340—392

5 Claims



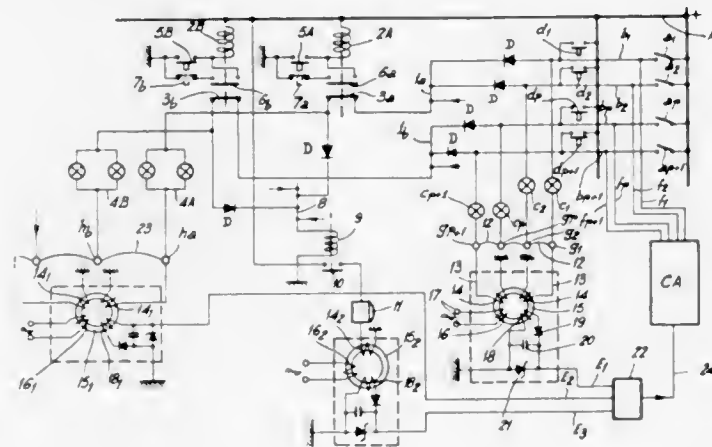
An electric striking mechanism for clocks and the like including an electromagnet, a sounding body, a striking mechanism responsive to the electromagnet for striking the sounding body, a circuit for supplying an impulse current to the electromagnet and a control responsive to the electromagnet for controlling the circuit.

3,689,920

**AUTOMATIC MONITORING SYSTEM FOR ALARM CIRCUITS USED ON BOARD AIRCRAFT**  
Augustin Moline, Toulouse, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France  
Continuation-in-part of Ser. No. 740,255, June 26, 1968, abandoned. This application March 3, 1971, Ser. No. 120,640  
Claims priority, application France, July 6, 1967, 67113334  
Int. Cl. G08b 29/00

U.S. Cl. 340—411

8 Claims



An automatic monitoring system for alarm circuits used on board aircraft including a uniselector which successively ener-

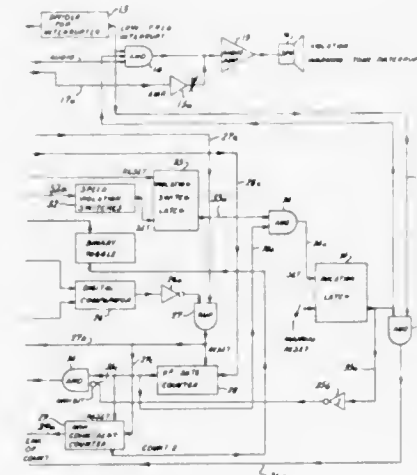
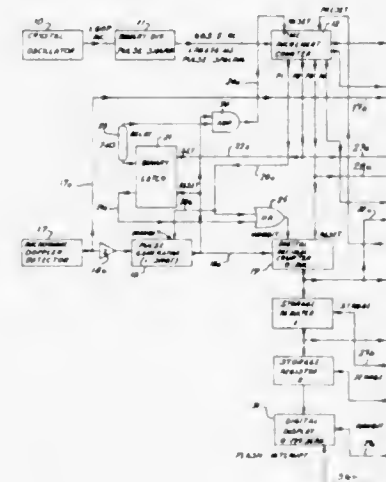
gizes the alarm circuits, each comprising a plurality of parallel-connected alarm devices. Owing to detector means associated to each alarm device and one AND-gate collecting signals from the detectors, simultaneous operation of the alarm devices associated with one alarm circuit is checked and the monitoring proceeds.

3,689,921

**METHOD AND APPARATUS FOR DIGITALLY DETERMINING THE SPEED OF A MOVING OBJECT**  
Fred M. Berry, Leawood, Kans., assignor to Kustona Signal, Inc., Chanute, Kans.  
Filed April 24, 1970, Ser. No. 31,609  
Int. Cl. G01s 9/44

U.S. Cl. 343—8

30 Claims



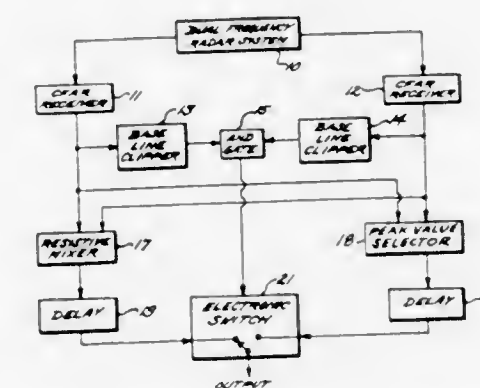
A digital display Doppler radar unit has a crystal control time base and a means for correlating received Doppler signals, indicative of speed, with the time base. A digital counter counts the cycles of the received Doppler signal and compares the count with an amount (either 0 or more) previously stored. Circuit means are provided to validate the received Doppler signals only after a preselected number of valid comparisons are made and the speed corresponding to the valid received Doppler signals are displayed and/or a speed alarm sounded.

3,689,922

**RADAR SYSTEM LOGIC CIRCUIT**  
Calvert F. Phillips, Jr., Annapolis, Md., assignor to The United States of America as represented by the Secretary of Air Force  
Filed March 23, 1966, Ser. No. 538,173  
Int. Cl. G01s 7/28

U.S. Cl. 343—17.1 R

3 Claims

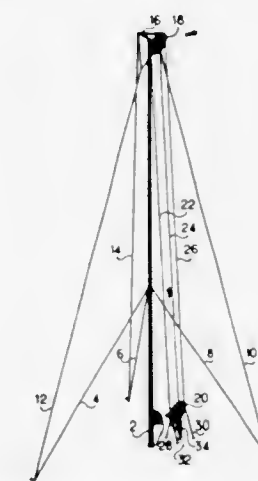


A dual frequency radar system that automatically switches from a resistive mixer of two receiving channels to a peak value selector. The switching is determined by the presence of signals in each channel above a given threshold.

3,689,923

**STABILISED AERIAL**  
Yves Tocquec, Marcoussis, France, assignor to Compagnie Generale D'Electricite, Paris, France  
Filed July 22, 1970, Ser. No. 57,266  
Claims priority, application France, July 23, 1969, 6925176  
Int. Cl. H01q 1/12, 19/10  
U.S. Cl. 343—781

9 Claims



A lightweight aerial mast for electromagnetic waves is provided with a planar reflector fixed to the top of the mast for reflecting waves onto a planar reflector near the ground, which in turn reflects the waves to a parabolic reflector at whose focus there is a horn aerial. The parallelism of the two planar reflectors is made independent from the bending of the mast due to a connection between these two reflectors provided by three parallel wires of equal lengths which are held taut.

3,689,924

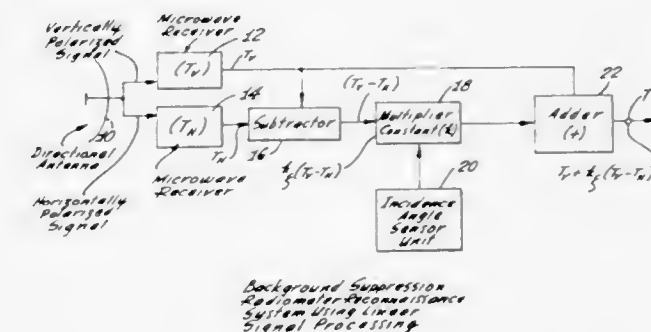
**RECONNAISSANCE AND GUIDANCE MICROWAVE RADIO-METRIC SYSTEM**  
Philip J. Caruso, Jr., 15611 Del Prado Drive, Hacienda Heights, Calif.  
Filed Sept. 18, 1968, Ser. No. 760,593  
Int. Cl. G01w 1/00

U.S. Cl. 343—100 ME

10 Claims

A microwave radiometric system is provided for reconnaissance and guidance purposes which responds to polarized

microwave radiations from the terrain under observation. The system utilizes such radiations to distinguish different materials in the observed area, and it may also be designed to use selected materials in the observed area for tracking purposes.



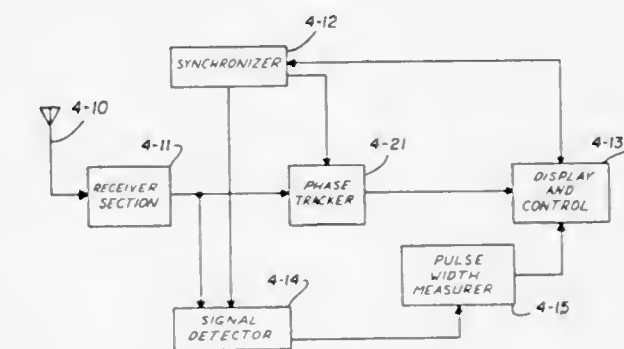
The system to be described includes a sensitive radiometric receiver and directional antenna, and it utilizes a relatively simple linear processing system for the received signals, rather than the prior art ratio approach.

3,689,925

**RECEIVER FOR OMEGA NAVIGATION SYSTEM**  
Burton L. Hulland, Glenwood Landing, N.Y., assignor to Dynell Electronics Corporation, Melville, N.Y.  
Filed May 7, 1970, Ser. No. 35,433  
Int. Cl. G01s 1/30

U.S. Cl. 343—105

16 Claims



A receiver responsive to a plurality of Omega Navigation System transmissions, wherein digital circuits effect all phase tracking functions and wherein a single phase tracking circuit can be multiplexed to handle all potential transmissions.

3,689,926

**RADIO DIRECTION-FINDING METHOD AND A DEVICE FOR IMPLEMENTING SAID METHOD**  
Etienne Honore, Chatenay Malabry, and Emile Torcheaux, Paris, both of France, assignors to Societe d'Etudes & d'Application des Techniques Nouvelles NEO-TEC, Paris, France  
Filed July 3, 1969, Ser. No. 838,943  
Claims priority, application France, July 5, 1968, 158,011  
Int. Cl. G01s 1/30

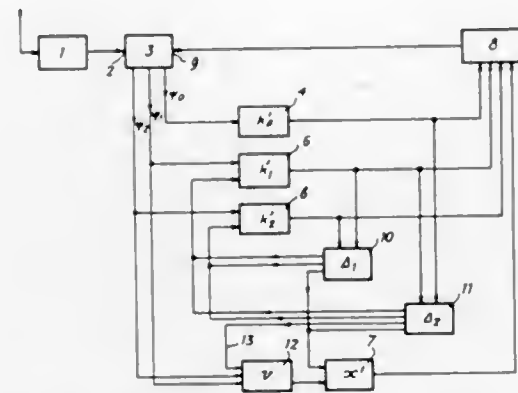
U.S. Cl. 343—105 R

39 Claims

A method and apparatus for radio position-finding of the hyperbolic type to determine the position of a vehicle including intersecting signals of a radio position-finding hyperbole of



one family with a radio position-finding hyperbole of another family, the hyperbole being derived from audio frequency



direction-finding signals of predetermined phases, comparing the signals and correcting the differentials between the obtained signals.

3,689,927

## RADIO-CONTROLLED DECOY

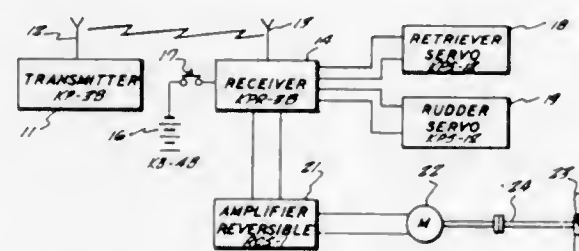
Robert T. Boston, 9713 1/2 Longden Ave., Tangle City, Calif.

Filed July 8, 1971, Ser. No. 160,801

Int. Cl. H04b 7/00; A01m 31/06

U.S. Cl. 343-225

7 Claims



A water fowl decoy contains a radio receiver adapted to receive signals from a remote radio transmitter. The receiver connects to an amplifier, one or more servos and other components within the decoy. A rudder operable by a servo steers the decoy. An electric motor drives a propeller to motivate the decoy. A folded or recessed grapple is extended when a servo mechanism within the decoy responds to a signal from the transmitter through the receiver. The decoy carries a battery pack and internal flotation.

3,689,928

## MULTI-BAND TUNABLE HALF-WAVE WHIP ANTENNA

Robert A. Felsenfeld, Livingston, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Dec. 30, 1970, Ser. No. 102,724

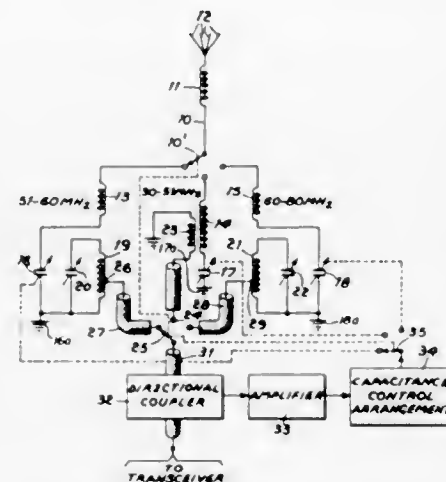
Int. Cl. H01q 9/00

U.S. Cl. 343-703

17 Claims

A physically shortened half-wave antenna of the whip type is disclosed. The antenna includes a main antenna rod, a pair of helices, one helix coupled to each end of the rod, and a capacitive top load coupled to the upper one of the helices. An RF terminal is inductively coupled to the lower one of the helices to supply RF energy to or remove RF energy from the antenna. A variable capacitance means is coupled between the lower helix and a capacitive bottom load, which may be ground, a small ground plane or an equivalent arrangement, to resonate the antenna. A plurality of lower helices and an associated variable capacitance means for each are selectively connected to the rod to enable the antenna to cover a relatively broadband frequency range. In one embodiment an inductive coupling to the lower helix is accomplished by a single tuned arrangement for the lower frequency band of the frequency range and by a doubled tuned arrangement for the middle and upper frequency band of the frequency range.

Other embodiments may include all single tuned arrangements, all double tuned arrangements or a different combination of single and double tuned arrangements than that used for said one embodiment. A directional coupler and



capacitance control arrangement are provided to adjust the capacitance of the variable capacitance means for reresonating the antenna when the resonance of the antenna is changed by an object coming into the proximity of the antenna.

3,689,929

## ANTENNA STRUCTURE

Howard B. Moody, 12 South Second St., Newark, Ohio

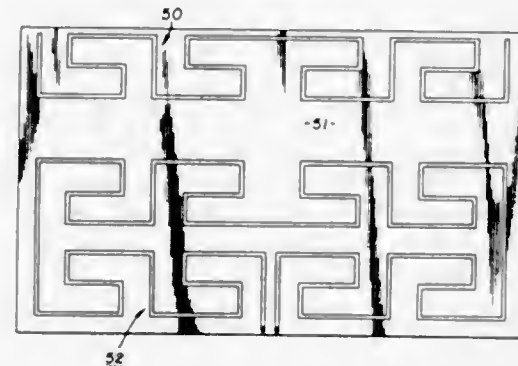
Continuation of Ser. No. 777,596, Nov. 21, 1968, abandoned.

This application Nov. 23, 1970, Ser. No. 92,287

Int. Cl. H01q 9/16

U.S. Cl. 343-802

2 Claims



This antenna structure designed primarily for the V.H.F. and U.H.F. radio and television frequency spectrums, either transmitting or receiving, comprises a thin-film, electrically conductive element formed on a surface of a relatively thin, flexible supporting substrate with the conductive element being a relatively narrow, elongated strip arranged in a "Greek-Key" configuration. This design configuration of the conductive element results in an antenna structure having a physical length which is relatively compressed while maintaining a desired effective electrical length and electromagnetic wave response characteristic. The antenna may be fabricated with a parasitic element for enhanced response with the parasitic element also being of the "Greek-Key" design configuration.

3,689,930

## OPINION SAMPLING APPARATUS

Robert E. Strickland, 1965 S. Beverly Glen Blvd., West Los Angeles, Calif.

Filed Dec. 9, 1970, Ser. No. 96,410

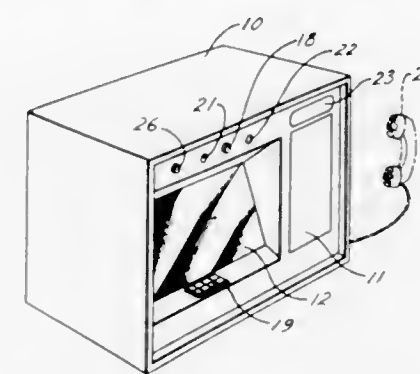
Int. Cl. G01d

U.S. Cl. 346-1

18 Claims

Apparatus and method are provided for obtaining public opinion data or the like from a sample of the public. The ap-

paratus has a console on which an inquiry is projected by a slide projector and a plurality of push buttons by which a person may respond to the questions asked. Pressing one of the push buttons causes a tape punch to record the answer to the question, and also causes the slide projector to advance to the



next slide in a predetermined sequence. If no answer is received in a selected time interval, means are provided for cycling the slide projector to the beginning of a sequence. In a preferred embodiment, a circular tray projector is employed, with switches actuated by cams on the tray initiating various functions.

3,689,931

## CENTRIFUGAL PUMPS

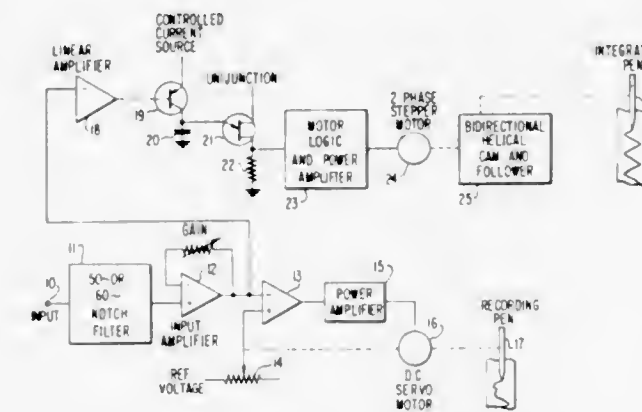
Luis R. Pagan Fortis, 112 Whitley Drive, Norristown, Pa. 19401

Filed May 19, 1971, Ser. No. 144,983

Int. Cl. F03b 1/04; F01d 1/36

U.S. Cl. 415-206

3 Claims



The invention related to a self-priming rotodynamic centrifugal pump and more particular to the novel vertically split casing, the cylindrical peripheral closing ring and novel impeller embodying a fluted conical impulsor planetary disc and spheres or "planets" which also are the main impeller support and ball bearings, the vertical "O" rings and annular gasket seals solution to expansion and contraction and the recirculation passage and air passage ports for the priming cycle.

3,689,932

## SCANNING DEVICE FOR EXPOSING A PHOTORESENSITIVE SURFACE

Heinz Joseph Gerber, West Hartford, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.

Division of Ser. No. 692,981, Dec. 22, 1967. This application May 25, 1970, Ser. No. 40,413

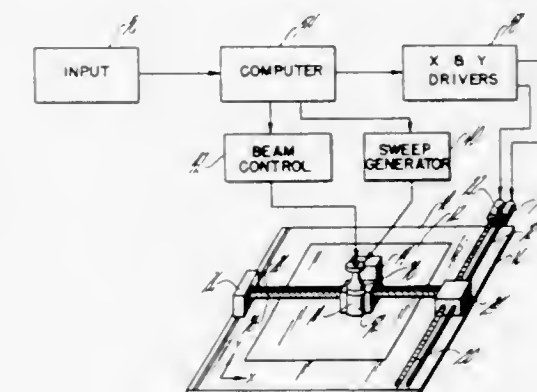
Int. Cl. G01d 9/40

U.S. Cl. 346-29

12 Claims

A device for producing graphic art work by exposing a photosensitive surface consists of a device having a working surface for supporting a sheet of photosensitive material and a

carriage movable in both directions over such working surface. The carriage carries a device for projecting light onto the photosensitive surface along a given line. The light projecting device is such that the light projected therefrom passes through a large number of discrete spots located along the given line, and means are provided for controlling the amount of light passing through each such outlet area and onto the photosensitive surface. The carriage is moved in a scanning fashion over the surface of the photosensitive material in a direction generally perpendicular to the projected line, and as



such movement occurs the amount of light energy projected through each of the outlet areas is varied as necessary to produce the desired graphic. A computer receiving input information as to the desired graphic is used to control the scanning movement of the carriage and the variation of the light energy projected through each outlet area. The source of light energy may be either a cathode ray tube having a mask with a large number of openings, or a fiber-optic bundle having a separate light source for each fiber. A lens may be used between the surface from which the light is emitted and the photosensitive surface to effect a reduction in size.

3,689,933

## APPARATUS EMPLOYED IN ELECTROSTATIC PRINTING

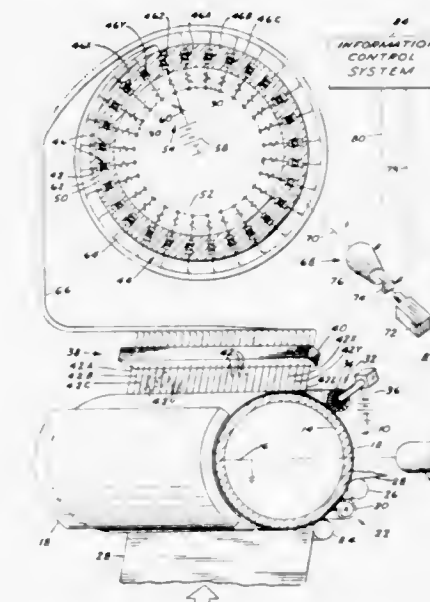
Peter H. Klose, Troy, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jan. 7, 1970, Ser. No. 1,264

Int. Cl. G01d 15/06; H04n 1/12

U.S. Cl. 346-74 ES

12 Claims



A rotating laser beam impinges on a ring of current controlling devices which couple a power supply to a row of slide



wires. By modulating the laser beam certain devices conduct current from the power supply to the corresponding slide wires. The slide wires are mounted to make electrical contact with the dielectric surface of a rotating drum. Charge is deposited on the dielectric surface as a function of the amount of current conducted by the slide wires. The dielectric surface is developed by applying ink particles thereto. The particles are transferred to a document to produce an image corresponding to the pattern of charge deposited by the slide wires.

3,689,934

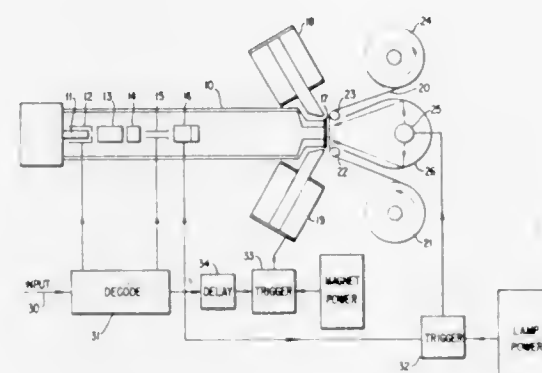
# APPARATUS FOR MAGNETIC RECORDING OF ELECTRONIC SIGNALS

George Raymond Nacci, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
Continuation-in-part of Ser. No. 779,393, Nov. 27, 1968, Pat. No. 3,555,556, Continuation-in-part of Ser. No. 636,729, May 8, 1967, abandoned, Continuation-in-part of Ser. No. 409,855, Nov. 9, 1964, abandoned. This application Oct. 8, 1970, Ser. No. 79,213

Int. Cl. G03g 19/00; G11b 11/04

U.S. Cl. 346—74 MT

5 Claims



A cathode ray tube having a faceplate composed of a thin non-magnetic gas-impermeable plate having a pattern of indentations on the innerface, the indentations being at least partially filled with a finely particulate hard magnetic material, preferably having a Curie temperature below 500° C. is described. Images in the form of a pattern of magnetization are formed on the faceplate thermomagnetically by the heating effect of the electron beam. The image on the faceplate can then be transferred to a magnetic recording member external to the cathode ray tube by thermomagnetic transfer.

3,689,935

# ELECTROSTATIC LINE PRINTER

Gerald L. Pressman, San Jose, Calif., and John V. Casanova, Racine, Wis., assignors to Electropoint, Inc., Palo Alto, Calif.

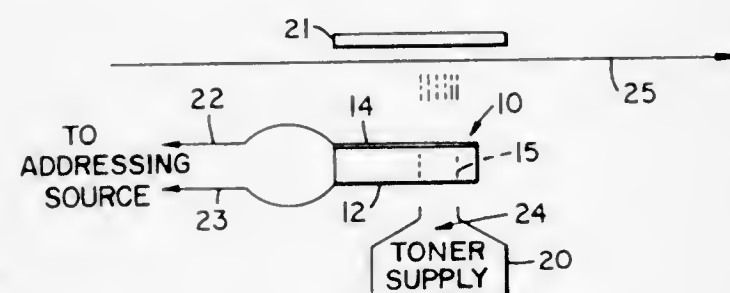
Filed Oct. 6, 1969, Ser. No. 864,022  
Int. Cl. G03g 15/04; H04n 1/24

U.S. Cl. 346—74 ES

22 Claims

An electrostatic line printer incorporating a multilayered particle modulator comprising a layer of insulating material, a continuous layer of conducting material on one side of the insulating layer and a segmented layer of conducting material on the other side of the insulating layer. At least one row of apertures is formed through the multilayered particle modulator. Each segment of the segmented layer of conductive material is

formed around a portion of an aperture and is insulatively isolated from every other segment of the segmented conductive layer. Selected potentials are applied to each of the segments of the segmented conductive layer while a fixed potential is applied to the continuous conductive layer. An overall applied field projects charged particles through the row of apertures



of the particle modulator and the density of the particle stream is modulated according to the pattern of potentials applied to the segments of the segmented conductive layer. The modulated stream of charged particles impinge upon a print-receiving medium interposed in the modulated particle stream and translated relative to the particle modulator to provide line-by-line scan printing.

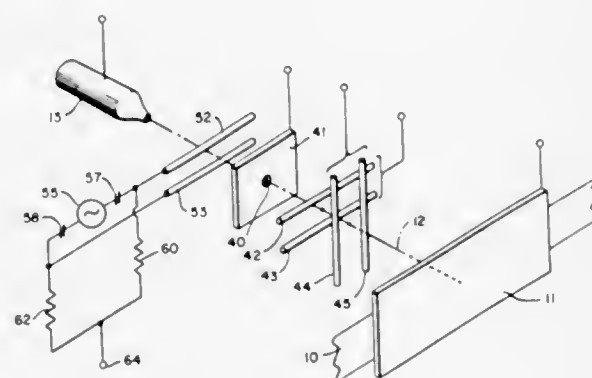
3,689,936

# LATERAL OSCILLATION TO FORM INK DROPLETS

Robert J. Dunlavey, Glenview, Ill., assignor to Teletype Corporation, Skokie, Ill.  
Filed Aug. 20, 1970, Ser. No. 65,572  
Int. Cl. G01d 15/18

U.S. Cl. 346—75

1 Claim



An electrostatic, ink-jet printing apparatus wherein electrostatically charged ink is extracted from a nozzle in an axial direction by an electrostatic potential existing between the nozzle and a valving electrode. The droplets of ink are then deflected in orthogonal, lateral directions by two pairs of deflection electrodes in order to trace an indicium on the record medium. An additional pair of deflection electrodes is placed in the region upstream of the point in which droplet formation takes place. A sinusoidal voltage is applied between these additional deflecting electrodes, shaking the stream of ink in a lateral direction in order to facilitate droplet formation and promote uniform droplet size and spacing.

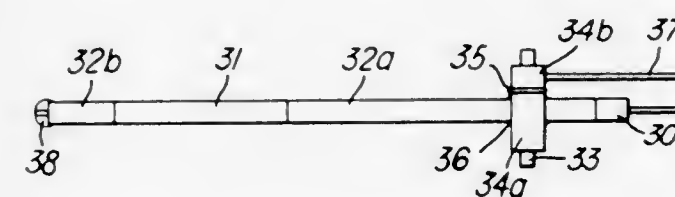
3,689,937

# RECORDING STYLI AND CONTROL CIRCUITS FOR STYLI

John Arnaud Phillips, Thames, and John William Cowlin, London, both of England, assignors to Evershed & Vignoles Limited, London, England  
Filed Nov. 9, 1970, Ser. No. 87,947  
Int. Cl. G01d 15/10

U.S. Cl. 346—76 R

8 Claims



A thermal stylus has as its heating element an electrically resistive coating on an elongate electrically insulating core, the two ends of the coating having electrical connections for establishing a current path longitudinally through the coating. Preferably, a hollow ceramic core is coated with tin oxide and one of the electrical connections passes through the hollow core.

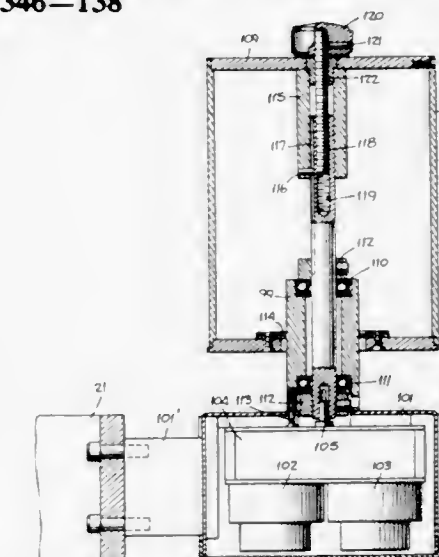
3,689,938

# CHRONOGRAPH FOR AN OSCILLOGRAPH

Felix L. Yezley, Verona, N.J., assignor to Yezley & Co., Newark, N.J.  
Division of Ser. No. 751,293, Aug. 8, 1968, Pat. No. 3,518,876.  
This application Feb. 9, 1970, Ser. No. 14,700  
Int. Cl. G01d 15/26

U.S. Cl. 346—138

4 Claims



The chronograph drum is mounted in fixed bearings at top and bottom so as to rotate in a fixed vertical axis. The drum can be driven at high or low speed by a motor.



# DESIGNS

SEPTEMBER 5, 1972

224,700

## SHIRT OR SIMILAR ARTICLE

Myron Bienenfeld, Lawrence, N.Y., assignor to Magic Mold, Inc., Freeport, N.Y.  
Filed Apr. 26, 1971, Ser. No. 137,725  
Term of patent 14 years  
Int. Cl. D2—01

U.S. Cl. D2—1

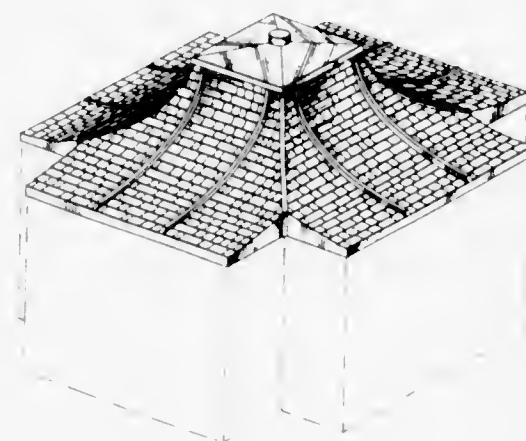


224,702

## PREFABRICATED ROOF

Donald W. Gordon, 124 E. Princeton Road, Bala Cynwyd, Pa. 19004  
Filed Mar. 22, 1971, Ser. No. 127,079  
Term of patent 14 years  
Int. Cl. D25—02

U.S. Cl. D13—1



224,701

## COMBINED BOTTLE AND CAP THEREFOR

Kent M. Wright, Sudbury, Mass., assignor to The Gillette Company, Boston, Mass.  
Filed May 13, 1971, Ser. No. 143,289  
Term of patent 14 years  
Int. Cl. D9—01

U.S. Cl. D9—71

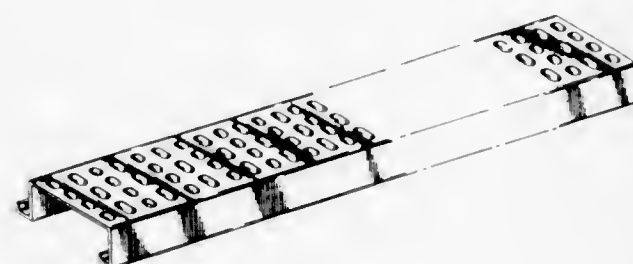


224,703

## INTERLOCKING FLOORING PANEL

David L. Kiner, Columbus, Ohio, assignor to United McGill Corporation, Columbus, Ohio  
Filed Apr. 1, 1971, Ser. No. 130,177  
Term of patent 14 years  
Int. Cl. D25—02

U.S. Cl. D13—1



SEPTEMBER 5, 1972

U. S. PATENT OFFICE

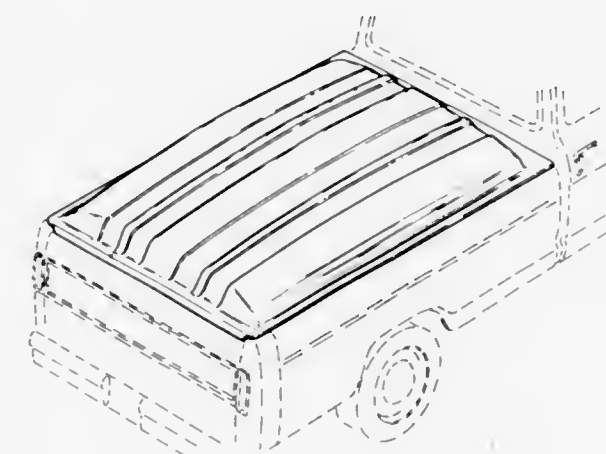
369

224,704

## COVER FOR TRUCK BED

John E. Hill, Scottsdale, and Richard W. Henes, Phoenix, Ariz., and William H. Dean, 1516 E. Griswald St., Phoenix, Ariz. 85020; said Hill and said Henes assignors to said Dean  
Filed Dec. 28, 1970, Ser. No. 26,680  
Term of patent 14 years  
Int. Cl. D12—16

U.S. Cl. D14—27



224,706

## INSECT ELECTROCUTING TRAP

Steward L. Stafford, Boxford, Mass. (3510 NW. 33rd Place, Gainesville, Fla. 32601)  
Filed Dec. 9, 1970, Ser. No. 26,370  
Term of patent 14 years  
Int. Cl. D22—06

U.S. Cl. D22—19

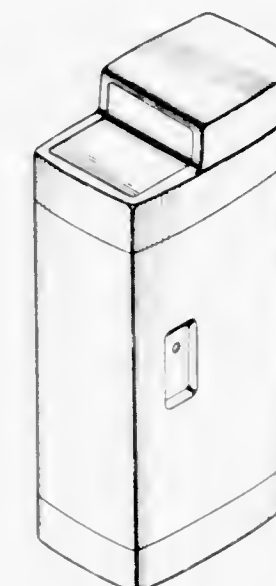


224,707

## WATER SOFTENER CABINET

William J. Marsh, Garden Grove, Calif., assignor to Robert Marsh Enterprises, Inc., Santa Ana, Calif.  
Filed July 8, 1971, Ser. No. 160,986  
Term of patent 14 years  
Int. Cl. D23—01

U.S. Cl. D23—3

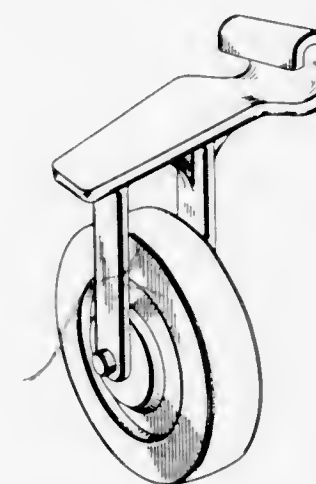


224,705

## AUXILIARY WHEEL FOR SNOWMOBILE

Martin L. Mattson, 10 Drake Road, Duluth, Minn. 55803  
Filed July 20, 1971, Ser. No. 164,489  
Term of patent 14 years  
Int. Cl. D12—16

U.S. Cl. D14—6



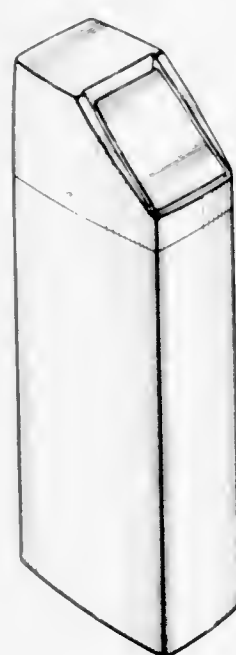


224,708

## WATER SOFTENER CABINET

William J. Marsh, Garden Grove, Calif., assignor to  
Laurtech International Company, Santa Ana, Calif.  
Filed Oct. 21, 1971, Ser. No. 191,568  
Term of patent 14 years  
Int. Cl. D23—01

U.S. Cl. D23—3



224,710

## CABINET FOR ELECTRONIC EQUIPMENT

Leon Gordon Miller, Shaker Heights, Ohio, assignor to  
Bud Radio, Incorporated, Willoughby, Ohio  
Filed Aug. 28, 1970, Ser. No. 24,751  
Term of patent 14 years  
Int. Cl. D14—02

U.S. Cl. D26—5

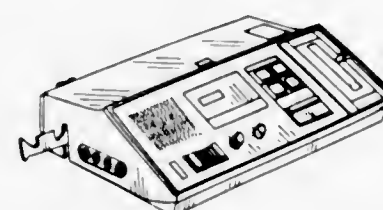


224,711

## DICTATING MACHINE

Rebertus van de Poel, Eindhoven, Netherlands, assignor  
to United States Philips Corporation  
Filed Feb. 4, 1971, Ser. No. 112,842  
Claims priority, application Switzerland Aug. 12, 1970  
Term of patent 14 years  
Int. Cl. D14—01

U.S. Cl. D26—14

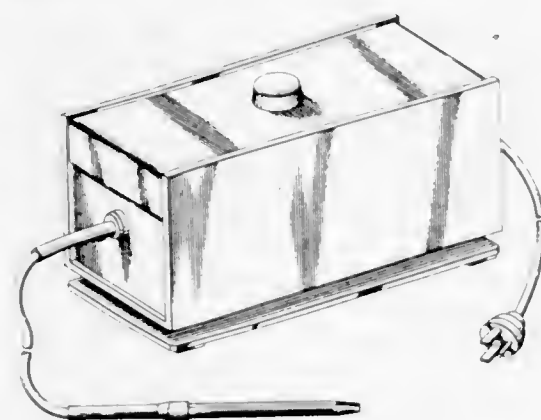


224,709

## DENTIST'S LIGHTING INSTRUMENT

John E. Coolidge, Joe W. Liesner, and James H. Murray,  
Upper Arlington, Ohio, and Robert A. O'Neil, Glen  
Ellyn, Ill., assignors to The Columbus Dental Manu-  
facturing Company, Columbus, Ohio  
Filed Apr. 20, 1971, Ser. No. 135,820  
Term of patent 14 years  
Int. Cl. D24—02

U.S. Cl. D24—1



224,712

## DICTATING MACHINE

Rebertus van de Poel, Eindhoven, Netherlands, assignor  
to United States Philips Corporation  
Filed Feb. 4, 1971, Ser. No. 112,843  
Claims priority, application Switzerland Aug. 12, 1970  
Term of patent 14 years  
Int. Cl. D14—01

U.S. Cl. D26—14



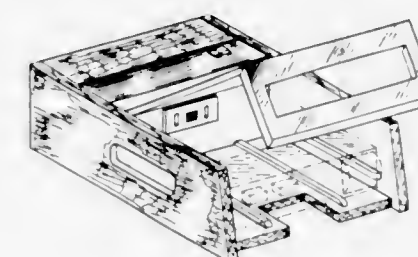
224,713

CABINET HOUSING FOR SIDE-LOADING TAPE  
PLAYER OR SIMILAR ARTICLE

Raymond J. Schmitz, Prospect Heights, and James F.  
Sellars, Jr., Addison, Ill., assignors to Motorola, Inc.,  
Franklin Park, Ill.

Filed Feb. 11, 1971, Ser. No. 114,753  
Term of patent 14 years  
Int. Cl. D14—01

U.S. Cl. D26—14



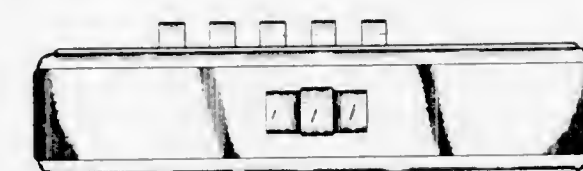
224,714

## TELEPHONE KEY SET CONFERENCE CALLER

Leopold A. Wenzler, 1008 Gordon Drive,  
Decatur, Ala. 35601

Filed Apr. 19, 1971, Ser. No. 135,515  
Term of patent 14 years  
Int. Cl. D14—03

U.S. Cl. D26—14



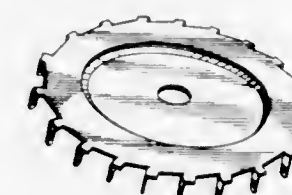
224,715

TRACTION DEVICE FOR A SNOW THROWER OR  
SIMILAR ARTICLE

Robert W. Dickgiesser, Bloomington, Minn., assignor to  
Toro Manufacturing Corporation, Minneapolis, Minn.

Filed Mar. 22, 1971, Ser. No. 127,090  
Term of patent 14 years  
Int. Cl. D15—03, 99

U.S. Cl. D35—2



224,716

## SWIZZLE STICK

Norbert Leslie Silvas, Greenwich, Conn., assignor to  
Sign & Marketing Corporation  
Filed Mar. 9, 1971, Ser. No. 122,644  
Term of patent 14 years  
Int. Cl. D7—04

U.S. Cl. D94—3



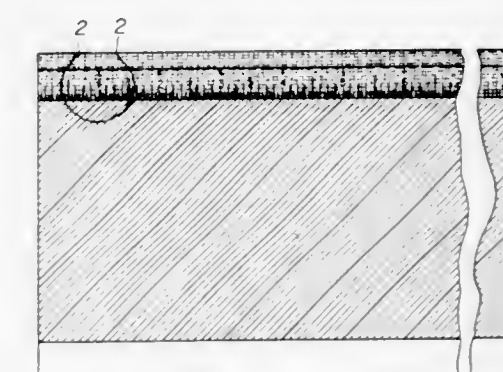
224,717

## MACHINE TOOL GAUGE

Albert C. Pistorius, Dix Hills, Huntington, and Robert  
T. Pistorius, Lake Ronkonkoma, N.Y., assignors to  
Pistorius Machine Co. Inc., Hicksville, N.Y.

Filed May 3, 1971, Ser. No. 140,016  
Term of patent 14 years  
Int. Cl. D10—04

U.S. Cl. D52—6



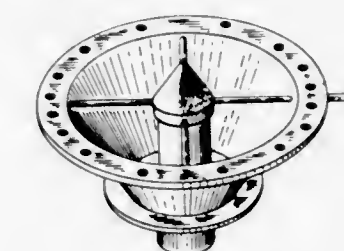
224,718

PNEUMATIC VALVE FOR CONTROLLING FLOW  
OF MATERIAL FROM A HOPPER

Eugene A. Wahl, 460 Ridgewood Ave.,  
Glen Ridge, N.J. 07028

Filed Dec. 14, 1970, Ser. No. 26,443  
Term of patent 14 years  
Int. Cl. D15—99; D23—01

U.S. Cl. D55—1

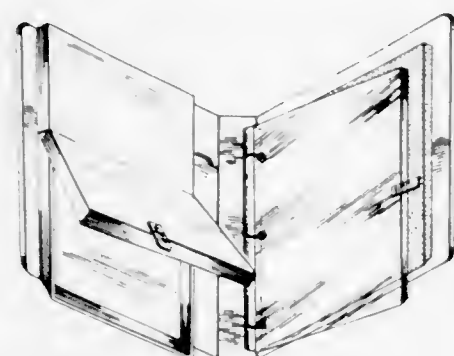




**224,719**  
**COMBINED CONTACT PRINTER AND PAPER SAFE**

Robert Nast, 942 Glenridge Ave.,  
North Woodmere, N.Y. 11598  
Filed Sept. 9, 1970, Ser. No. 24,905  
Term of patent 14 years  
Int. Cl. D16—04

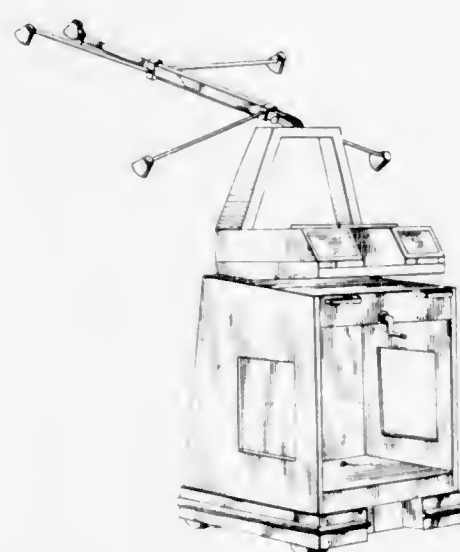
U.S. Cl. D61—1



**224,720**  
**COMBINED CAMERA AND LIGHT SUPPORT DOLLY**

Richard C. Crete, 16 S. School St., Lodi, Calif. 95240  
Filed Sept. 14, 1970, Ser. No. 24,975  
Term of patent 14 years  
Int. Cl. D16—05

U.S. Cl. D61—1



**224,721**  
**ELECTRONIC PRINTING CALCULATOR**

Elmer J. Stoltz, Castro Valley, and Richard A. Nyquist,  
Menlo Park, Calif., assignors to The Singer Company,  
New York, N.Y.  
Filed Aug. 13, 1971, Ser. No. 171,795  
Term of patent 14 years  
Int. Cl. D18—01

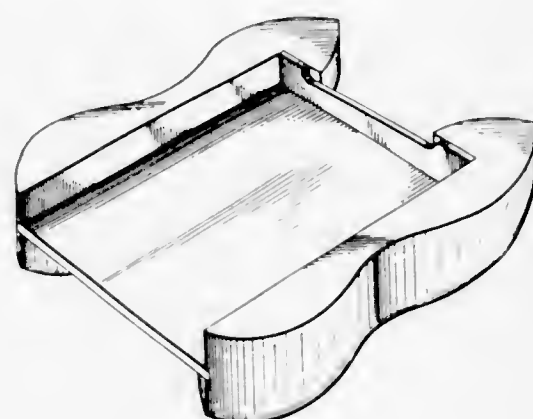
U.S. Cl. D64—11



**224,722**  
**MULTIHULL BOAT**

Herman Sydney Heyman, 2737 Devonshire Place,  
Washington, D.C. 20008  
Filed Jan. 18, 1971, Ser. No. 107,606  
Term of patent 14 years  
Int. Cl. D12—06

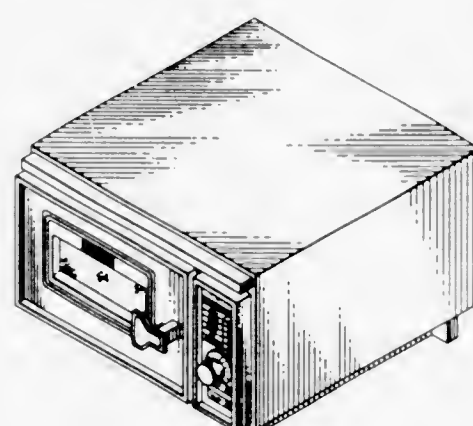
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**224,723**  
**MICROWAVE OVEN**

Calvin A. Hagberg, Minneapolis, Minn., assignor to  
Litton Systems, Inc., Beverly Hills, Calif.  
Filed June 14, 1971, Ser. No. 153,148  
Term of patent 14 years  
Int. Cl. D7—02

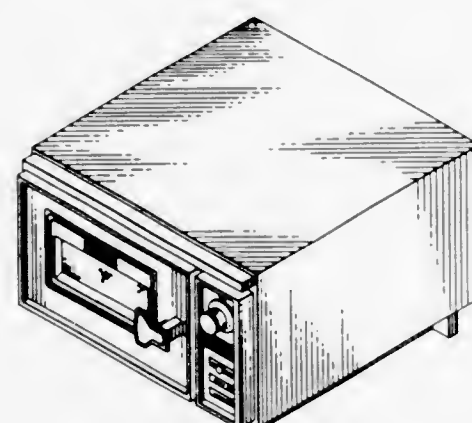
U.S. Cl. D81—4



**224,724**  
**MICROWAVE OVEN**

Calvin A. Hagberg, Minneapolis, Minn., assignor to  
Litton Systems, Inc., Beverly Hills, Calif.  
Filed June 14, 1971, Ser. No. 153,164  
Term of patent 14 years  
Int. Cl. D7—02

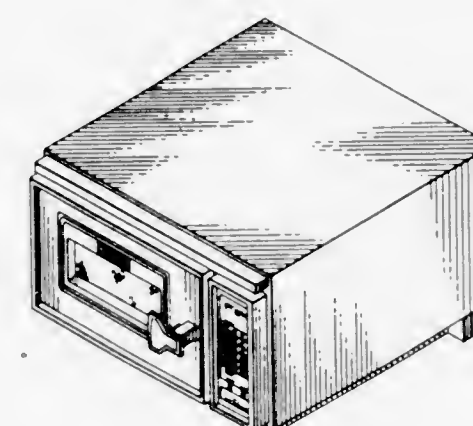
U.S. Cl. D81—4



**224,725**  
**MICROWAVE OVEN**

Calvin A. Hagberg, Minneapolis, Minn., assignor to  
Litton Systems, Inc., Beverly Hills, Calif.  
Filed June 14, 1971, Ser. No. 153,165  
Term of patent 14 years  
Int. Cl. D7—02

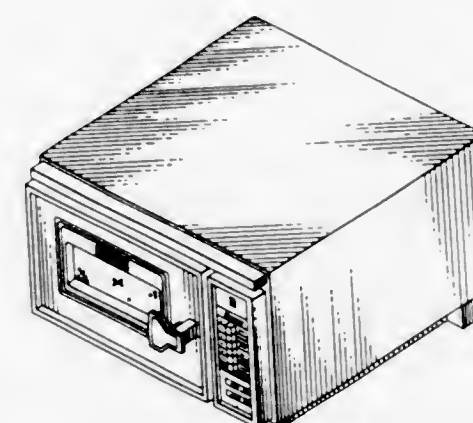
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**224,726**  
**MICROWAVE OVEN**

Calvin A. Hagberg, Minneapolis, Minn., assignor to  
Litton Systems, Inc., Beverly Hills, Calif.  
Filed June 14, 1971, Ser. No. 153,166  
Term of patent 14 years  
Int. Cl. D7—02

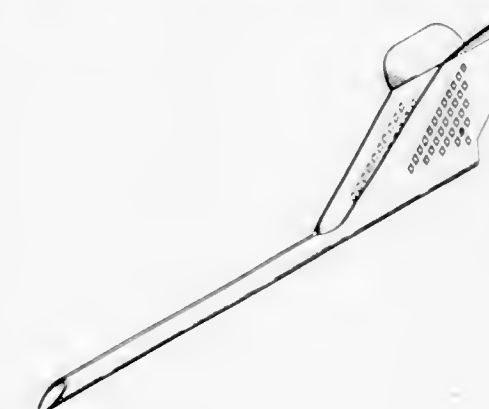
U.S. Cl. D81—4



**224,727**  
**DISPOSABLE CANNULA**

Frank J. Rychlik, Northbrook, Ill., assignor to Illinois  
Tool Works Inc., Chicago, Ill.  
Filed Jan. 4, 1971, Ser. No. 103,932  
Term of patent 14 years  
Int. Cl. D24—02

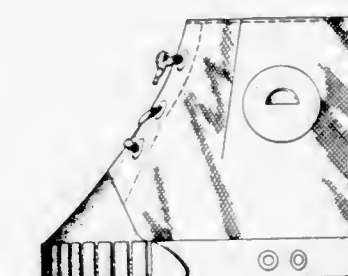
U.S. Cl. D83—12



**224,728**  
**HANDBAG**

Paul F. Franitza, 3152 N. 90th St.,  
Milwaukee, Wis. 53222  
Filed July 21, 1970, Ser. No. 24,053  
Term of patent 14 years  
Int. Cl. D3—01

U.S. Cl. D87—3



**224,729**  
**ELECTRIC SHAVER**

Maarten Willem van Lelyveld, Drachten, Netherlands,  
assignor to United States Philips Corporation  
Filed Nov. 20, 1970, Ser. No. 26,086  
Claims priority, application Switzerland May 21, 1970  
Term of patent 14 years  
Int. Cl. D28—03

U.S. Cl. D95—3





# LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF SEPTEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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- Abell, Richard S.; and Prvon, George T., to Carrier Corporation. Motor compressor unit. 3,689,207, Cl. 417-363.000.
- Aberer, James B.; Mead, Bill G.; and Farkas, Joseph J., to Rival Manufacturing Company. Can opener with removable hand lever. 3,688,400, Cl. 30-4.00r.
- Aberer, Leo F., to Rival Manufacturing Company. Can opener with cutting element carrying hand lever and push button operated mechanism for removing same. 3,688,398, Cl. 30-4.00r.
- Abex Corporation: *See—*  
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- Abildgaard Laboratories: *See—*  
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- Acker, John N.; and Ulbrich, Carl H., to Warwick, O. H., Company. Apparatus for controlling dispensing of molten metal. 3,689,050, Cl. 266-38.000.
- Acme General Corporation: *See—*  
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- Adelsohn, Louis. Three-dimensional puzzles. 3,689,075, Cl. 273-157.00r.
- Adressograph-Multigraph Corporation: *See—*  
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- Aga Aktiebolag: *See—*  
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- Aglitsky, Vladimir Efimovich: *See—*  
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- Agnew, Frank R.; Byrne, Francis P.; Kaczmarek, Thomas D.; Kriege, Owen H.; Gainer, Gordon C.; and Luck, Russell M., to Westinghouse Electric Corporation. Chemical contaminant detection sampler. 3,689,224, Cl. 23-253.01p.
- Agrawala, Ashok K.; Dixon, Samuel J.; and Sollman, George H., to Honeywell Inc. Voltage controlled oscillator with constrained period of frequency change. 3,689,903, Cl. 340-174.10h.
- Ahlmann-Carlshutte KG: *See—*  
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- Air Factors, Inc.: *See—*  
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- Air Reduction Company, Incorporated: *See—*  
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- Aisin Seiki Kabushiki Kaisha: *See—*  
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- Aizawa, Hiroshi: *See—*  
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- Ajax Magnethermic Corporation: *See—*  
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- Ajax Manufacturing Company, The: *See—*  
Mersek, Leo D.; and Backus, Robert G., 3,688,545.
- Akashi, Goro; and Yamada, Odawara, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 3,689,317, Cl. 117-249.000.
- Akiyama, Shunichi: *See—*  
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- Akiyama, Taichiro. Tracheotomy cannula and supporter thereof. 3,688,774, Cl. 128-351.000.
- Aktiebolaget Bofors: *See—*  
Bergqvist, Erik Arne, 3,689,850.
- Aktiebolaget Bors & Penselfabriken: *See—*  
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- Aktiebolaget Forenade Superfosfatfabriker: *See—*  
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- Aktiebolaget Kalle-Regulatorer: *See—*  
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- Aktiengesellschaft Brown, Boveri & Cie: *See—*  
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- Aktieselskabet Laur, Knudsen, Nordisk Elektricitets Selskal: *See—*  
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- Akzona Incorporated: *See—*  
Mamok, Herbert; Hejl, Rainer; and Korner, Joachim, 3,689,354.
- Alcor Chemical Company, Inc.: *See—*  
Treiber, Robert L., 3,689,379.
- Aldridge, Clyde L.; and Buben, David, to Esso Research and Engineer-ing Company. Production of methane rich gases. 3,689,240, Cl. 48-202.000.
- Alexander, James; and Higgins, Lester A., to Scandia Packaging Machinery Company. Apparatus for detecting and preventing ir-regular conditions in article handling machine. 3,688,467, Cl. 53-77.000.
- Alexandrov, Adolf Moritsovich; Suladze, Ippolit Davidovich; Aglitsky, Vladimir Efimovich; Kakhniashvili, Avtandil Semenovich; Tsimbler, Jury Abramovich; Kantor, Ilia Solomonovich; Lachinov, Alexandr Alexandrovich; Dz-hanelidze, Vazna Venediktovich; Topolyanky, Jury Arnol-dovich; Kolbechenkov, Alexandr Dmitrievich; and Chizhikov, Vladimir Maiorovich, 3,689,010, Cl. 243-38.000.
- Alfano, Louis J., to Intraspex, Inc. Methods and articles for preventing clotting of blood. 3,688,318, Cl. 3-1.000.
- Alix, Hans: *See—*  
Preuss, Friedrich; and Alix, Hans, 3,688,694.
- Allan, Donald William: *See—*  
Sharp, Alexander; and Allan, Donald William, 3,689,771.
- Allard, Charles E.: *See—*  
Snow, Gerald A.; Doughty, Harold A.; Allard, Charles E.; and Noonan, Charles B., 3,688,963.
- Allegheny Ludlum Industries, Inc.: *See—*  
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- Allen & Hansburys Limited: *See—*  
Jack, David; Hartley, David; and Lunts, Lawrence Henry Charles, 3,689,524.
- Allen, Larry Carl; and Romero, Roderic, to Bell Telephone Laborato-ries, Incorporated. Information recording system. 3,689,703, Cl. 179-18.00b.
- Allen, Wallace B.: *See—*  
Blount, Floyd E.; and Allen, Wallace B., 3,689,395.
- Allied Chemical Corporation: *See—*  
Balint, Laszlo J.; Lazarus, Stanley D.; and Russell, William N., 3,689,461.  
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- Young, David E.; Anderson, Lowell R.; and Fox, William B., 3,689,563.
- Allied Control Company, Inc.: *See—*  
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- Allmanna Svenska Elektriska Aktiebolaget: *See—*  
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- Alm, Gerald F. Hydraulic blind rivet gun, 3,688,551, Cl. 72-391.000.
- Alnor Instrument Company: *See—*  
Obermaier, Alfred A.; and Pierman, Martin J., 3,688,576.
- Alpha Portland Cement Company: *See—*  
Hersey, Arthur Theodore; and Tonry, James Richard, 3,689,295.
- Alter, Vladimir Fedorovich: *See—*  
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- Aluminum Company of America: *See—*  
Knepp, James E., 3,688,904.  
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- Alza Corporation: *See—*  
Weinschenker, Ned M.; and Andersen, Niels H., 3,689,569.
- Amann, Charles A.; and Rucins, Erik H. Turbine control method, 3,688,605, Cl. 74-860.000.
- AMBAC Industries, Inc.: *See—*  
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- American Can Company: *See—*  
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- American Cyanamid Company: *See—*  
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- American Home Products Corporation: *See—*  
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- American Pipe and Construction Co.: *See—*  
Hausmann, Delbert A., 3,689,305.
- American Precision Industries, Inc.: *See—*  
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Saltzstein, Julian I., 3,688,331.
- Ames, Ward A., to Tridan Tool & Machine, Inc. Tube expansion apparatus, 3,688,533, Cl. 72-22.000.
- Amirikian, Arsham. Lift pontoon and dock, 3,688,719, Cl. 114-500.
- Amoco Production Company: *See—*  
Jones, Loyd W., 3,688,829.
- Amori, Joseph A. Fruit cutting and de-pitting system, 3,688,826, Cl. 146-17.00r.
- AMP Incorporated: *See—*  
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- Armsted Industries Incorporated: *See—*  
Armstrong, Adna A., 3,689,241.  
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- Anda Limited: *See—*  
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- Andermo, Ingvar, to Institutet For Mikrovagsteknik Stockholm. Device for measuring the relative movement between an object and the environment of the object, 3,689,157, Cl. 356-28.000.
- Andersen, Niels H.: *See—*  
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- Anderson, George de Wenter; and Watts, Ronald E., to Minnesota Mining and Manufacturing Company. Light-sensitive compositions comprising a silver salt of a tetraazaindene, 3,689,270, Cl. 96-76.000.
- Anderson, Gunnar R., to United Aircraft Corporation. Bent tube inspection method and apparatus, 3,688,534, Cl. 72-32.000.
- Anderson, Lowell R.: *See—*  
Young, David E.; Anderson, Lowell R.; and Fox, William B., 3,689,563.
- Anderson, Ronald E.: *See—*  
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- Ando, Shigeru: *See—*  
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- Andreini, John; Borchard, Edwin Harley; Pohl, Karl-Heinz; and Puccio, Joseph Anthony, to Bell Telephone Laboratories, Incorporated. Quick-mounting hardware, 3,689,115, Cl. 292-87.000.
- Andreini, John; Borchard, Edwin Harley; Pohl, Karl-Heinz; and Puccio, Joseph Anthony, to Bell Telephone Laboratories, Incorporated. Cabinet unit employing a frame which can be moved out of a stationery frame, 3,689,128, Cl. 312-320.000.
- Andreoli, Robert M.; and Stupell, Leo K., to Stupell Industries, Ltd., Inc. Article of jewelry and method of assembling same, 3,688,426, Cl. 40-140.000.
- Andrews, Norwood H. Jet and anvil comminuting apparatus and method, 3,688,991, Cl. 241-5.000.
- Andrikanis, Vladimir Konstantinovich: *See—*  
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- tinovich; Ilichev, Valery Alexandrovich; Gavrin, Mikhail Grigorievich; and Binkou, Georgy Aronovich, 3,689,351.
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- Applegarth, John C.; Carroll, Kevin; and Hyland, Donald D., to Lift-All Company, Inc. Portable barricade, 3,688,440, Cl. 49-34.000.
- Applequist, James E.; Johnson, James E.; Okers, Clifford B.; Daniels, Donald V.; James, Richard N.; Roberts, Daniel M.; and Guzy, Daniel James, to Image Products Corporation. Microfilm printer, 3,688,656, Cl. 95-4.500.
- Aragbright, Perry A.; Erwin, Virgel G.; and Phillips, Brian L., to Marathon Oil Company. Treatment of mammal with disubstituted isocyanuric acid and their salts, 3,689,651, Cl. 424-249.000.
- Arai, Risaburo: *See—*  
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- Arikawa, Masayasu; and Sioyama, Hitosi, to Kobe Steel Ltd. Solid composite backing structure for single welding, 3,688,967, Cl. 228-50.000.
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- Armstrong, Adna A., to Armsted Industries Incorporated. Method of abrasive application to straight sleeves, 3,689,241, Cl. 51-293.000.
- Arnaud, Gaston, to Societe Industrielle de Brevets et d'Etudes S.I.B.E. Fuel feed devices for internal engines, 3,688,756, Cl. 123-139.0aw.
- Arutunian, Gregory; and Wilburn, David K., to United States of America, Army. Fluid flowmeter, 3,688,574, Cl. 73-194.00e.
- Asada, Mitsuo: *See—*  
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- Ashcroft, Thomas Brian; Betteridge, Walter; and Tracey, Victor Allen, to International Nickel Company, Inc. The Method for making a battery plate using cellulosic material, 3,689,320, Cl. 136-75.000.
- Aspden, Robert G.: *See—*  
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- Atkins, Anthony G.; Estes, Bay E., III; and Renner, Richard L., to United States Steel Corporation. Apparatus for determining flatness deviation in sheet or strip, 3,688,571, Cl. 73-144.000.
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- Automation Industries, Inc.: *See—*  
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- Ayer, Donald E.; and White, David R. Process for production of ex-gasta-4,22-dien-3-one from ergosterol, 3,689,511, Cl. 260-397.200.
- Baader, Herbert; Sennewald, Kurt; Reis, Helmut; and Viertel, Gunther, to Knapsack Aktiengesellschaft. Process for the manufacture of 2-chlorobutadiene-(1,3), 3,689,579, Cl. 260-655.000.
- Baba, Nobuyoshi; Adachi, Makoto; and Nagata, Hideo, to Asahi Kasei Kogyo Kabushiki Kaisha. Jointing composite materials for steel and aluminum, 3,689,232, Cl. 29-196.000.
- Bach, Lloyd G.; Ewald, Jerome T.; and Fulmer, Keith H., to Bendix Corporation. The. Auxiliary fluid supply for brake booster, 3,688,498, Cl. 60-52.00b.
- Bachman, Gustave Bryant; and Biermann, Theodore F., to Purdue Research Foundation. Preparation of nitroalkanes by thermal decomposition of acyl nitrate, 3,689,576, Cl. 260-644.000.
- Backlund, Peter Stanley, to Union Oil Company. Urea prilling, 3,689,607, Cl. 264-13.000.
- Backus, Charles Henry. Frame straightening machine for vehicles and the like, 3,689,030, Cl. 254-93.00r.
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- Bafza, Armando M.: *See—*  
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- Baisod-Atomic, Inc.: *See—*  
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- Baker, Theodore H.; and Tuman, Daniel, to International Business Machines Corporation. Integrated circuit structure having a unique surface metallization layout, 3,689,803, Cl. 317-101.00a.
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- Balducci, Agostino; Baradel, Agostino; and Massino, Marena, to Snam Progetti S.p.A. Process for removing catalyst metal residues from high density polyethylenes, 3,689,473, Cl. 260-94.90f.
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- Bamford, Charles Raymond, to Pilkington Brothers Limited. Treating glass, 3,689,304, Cl. 117-54.000.
- Ban, Yasujiro. Colored recording discs, 3,689,078, Cl. 274-42.00p.
- Barabas, Andrew A., to Castro Convertible Corporation. Convertible table, 3,688,705, Cl. 108-17.000.
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- Barlow, Conrad R.; and Fergusson, Alexander H. B., to Transland Aircraft, Inc. Spreader, 3,688,952, Cl. 222-333.000.
- Barmasse, Edmund E., to Houdaille Industries, Inc. Multiple disk fail-safe brake for rotary hydraulic motors, 3,688,878, Cl. 188-170.000.
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- Baudry, Jean, to Institut Francais du Petrole des Carburants et Lubrifiants. Device for reducing the emission of pollution responsible products by external carburation engines during the deceleration periods, 3,688,752, Cl. 123-97.00b.
- Bauer, Johannes. Infinitely variable chain-engaged gearing, 3,688,595, Cl. 74-230.170.
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- Baugh, Benton F., to Vetco Offshore Industries, Inc. Orienting tubing hanger apparatus, 3,688,841, Cl. 166-85.000.
- Bauman, Joseph F.; and Elson, Arthur M., to Acme-Hamilton Manufacturing Corporation. Method and apparatus for handling waste material, refuse and the like, 3,688,802, Cl. 138-109.000.
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- Becker, James F., to Downingtown Division, Beloit Corporation. Wrapper selector and dispenser, 3,688,961, Cl. 226-92.000.
- Beckers, Hans, to Hamac-Hansells GmbH. Container, 3,688,939, Cl. 220-9.00r.
- Beckman Instruments, Inc.: *See—*  
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- Becton, Dickinson Electronics Company: *See—*  
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- Beddoe, Brian; and Hackling, David Charles, to Imperial Chemical Industries, Limited. Entrainment means, 3,688,957, Cl. 226-7.000.
- Bedenk, William T., to Procter & Gamble Company. The. High protein ready-to-eat breakfast cereals containing soy isolate, 3,689,279, Cl. 99-83.000.
- Beesch, Otto; Wolf, Karl; and Ziegler, Bodo, to Bosch, Robert, GmbH. Glow plug, 3,689,195, Cl. 431-208.000.
- Bell, Charles C.; and Niederer, Kurt W., to Leesona Corporation. Textile machine, 3,688,486, Cl. 57-34.00r.
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- Benitez, Ramon; and Oneto, Augusto Luis. Automatic machinery for manufacturing moist towelette packets. 3,688,465, Cl. 53-64.000.
- Benk, Claus, to Edelmann & Ridder. Ski catching belt. 3,688,349, Cl. 24-73.00r.
- Bennett, John D. Subsea towing vessel. 3,688,721, Cl. 114-16.00r.
- Bennett, John T. Tool holder with provisions for accurately positioning cutting inserts and an improved chip breaking indexible insert. 3,688,367, Cl. 29-105.000.
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- Bergqvist, Erik Arne, to Aktiebolaget Bofors. Device for neutralizing temperature dependent gain variations in an optically pumped laser rod. 3,689,850, Cl. 331-94.500.
- Bergy, Malcolm E.; Coats, John H.; and Reusser, Fritz. Antibiotic berninamycin and process for making same. 3,689,639, Cl. 424-117.000.
- Berle, Axel Gunnar; Nilsson, Lars Gunnar; and Olofsson, Hans Kristoffer, to Atlas Copco Aktiebolag. Control device for a motor-compressor. 3,689,197, Cl. 417-18.000.
- Bernhardt, Heinz Lamm, to Daimler-Benz Aktiengesellschaft. Mixture-compressing rotary piston internal combustion engine of trochoidal construction. 3,688,748, Cl. 123-8.090.
- Berni, Rene P.; and Grifo, Richard A., to GAF Corporation. Detergency compositions containing a synergistic mixture of PVP and PVA. 3,689,435, Cl. 252-524.000.
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- Bertin & Cie: See—  
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- Black, Robert B. Transparency copying attachment. 3,689,148, Cl. 335-18.000.
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- Blaschke, Kurt, 25% to Hochstrasser, Elisabeth Geb. Wack, 25% to Hochstrasser, Jurgen and 50% to Stahl-und Apparatel Bau Hant Leffer G.m.b.H., Firma. Coupling for pipes. 3,689,113, Cl. 285-90.000.
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- Bohner, Beat; and Gubler, Kurt, to Ciba-Geigy Corporation. O,O-diethyl-O-[1-methyl-3-phenyl-s-triazyl-(5)] phosphorothioate. 3,689,500, Cl. 260-308.00r.
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- Bosch, James D. Insulator arm support device. 3,689,687, Cl. 174-161.00r.
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- Boston, Robert T. Radio-controlled decoy. 3,689,927, Cl. 343-225.000.
- Bothne, Ralph Edward, to Mobil Oil Corporation. Pneumatic multiplexer method and apparatus. 3,689,748, Cl. 235-151.300.
- Bourat, Guy; and Margraff, Rodolphe, to Rhone-Poulenc S.A. Cation exchange membranes and their preparation. 3,689,438, Cl. 260-2.20r.
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- Boyme, Theodore, to National Can Corporation. Soldering flux. 3,689,327, Cl. 148-23.000.
- BP Chemicals Limited: See—  
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- Bracken, Joseph W., Jr.; Davidson, Roger A.; and Thebert, Glenn W., to General Motors Corporation. Gas turbine fuel atomizing system. 3,688,497, Cl. 60-39.74r.
- Braden, Rudolf: See—  
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- Bradley, Ronnie A.: See—  
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- Brandenburg, Helmut: See—  
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- Brastow, Edgar R.; and Lee, Tai Y., to Transco Products, Inc. Switching means. 3,689,854, Cl. 335-5.000.
- Braude, George L.; and Coglian, Joseph A. Reversible agglomeration of powders for aerial dissemination. 3,689,661, Cl. 424-304.000.
- Brech, Kilian H., to Sonie Instruments, Incorporated. Ultrasonic thickness gauge. 3,688,565, Cl. 73-67.900.
- Breitfuss, Roman, to Enteco Establishment. Apparatus for forming a tube socket on a tube consisting of thermoplastic synthetic material. 3,689,190, Cl. 425-392.000.
- Brenig, Theodore; Smith, James S., Jr.; and Woodie, Paul E., Jr., to General Electric Company. Synchronizing system. 3,689,699, Cl. 179-15.0bs.
- Brenner, Lawrence A., to Beloit Corporation. Apparatus for applying glue to leading and trailing edges of a wrapper sheet. 3,688,735, Cl. 118-2.
- Bridgeford, Douglas J.; Turbak, Albin F.; and Burke, Noel I., to Tee-Pak, Inc. Sulfonated polymeric alcohols. 3,689,466, Cl. 260-79.30r.
- Bridgestone Liquefied Gas Company Ltd.: See—  
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- Bridgestone Tire Company Limited: See—  
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- Briggs, Benjamin R., to Purex Corporation, Ltd. Household hypochlorite bleach with stable latex opacifier. 3,689,421, Cl. 252-95.000.
- Briggs, George E., Jr., to Halliburton Company. Method and apparatus for releasing a perforation and sealing tool from a well bore. 3,688,849, Cl. 175-4.520.
- Bristol-Myers Company: See—  
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- Harvey, Peter; Greene, David James; and Kaczmariski, Edward Zbigniew, 3,689,002.
- Nicholson, Peter, 3,689,610.
- Brockman, Edwin. Paint and enamel touch-up tool. 3,688,450, Cl. 51-161.000.
- Brockmuller, Friedrich Franz, to Wildmoller & Holscher. Apparatus for piling tube portions for the manufacture of bags or sacks. 3,688,890, Cl. 198-35.000.
- Brockway, Richard J.: See—  
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- Brodeck, Hulmuth, to Efka-Werke Firtz Keihn GmbH. Apparatus for making cigarette filters. 3,688,652, Cl. 93-77.0ft.
- Brokke, Mervin E.; Williamson, Thomas B.; and Lukes, George E.; deceased (Jaeschke, Wayne C.; special administrator), to Stauffer Chemical Company. Nematocidal use of 3,4,4-trifluoro-3-butenylthio methylidene compounds. 3,689,662, Cl. 424-301.000.
- Broman, Carl L.; and Schwieterman, Richard A., to General Electric Company. Gas turbine engine with improved auxiliary power take-off mechanism. 3,688,560, Cl. 74-15.630.
- Brophy, Jere Hall: See—  
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- Brother Kogyo Kabushiki Kaisha: See—  
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- Brown, Earl Franklin; and Kaminski, William, to Bell Telephone Laboratories, Incorporated. Coding of sign information in DPCM systems. 3,689,840, Cl. 325-38.00b.
- Brown, Jerald L.; and Harlan, William O., to Fife Corporation. Method for web guiding of carpet material. 3,688,804, Cl. 139-1.000.
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- Brown, Martin A.; and Stoutenberg, Carl C., to Stanley Works, The. Replacement cartridge for a coillable rule. 3,689,004, Cl. 242-107.00r.
- Brown, Omar L., to Frazee, Ermal C., mesne. Method of making a riveted jointure. 3,688,385, Cl. 29-509.000.
- Brown, Richard E.; and Shavel, John, Jr., to Warner-Lambert Company. Substituted benzopyrano (3,4-B) pyridines and process for their preparation. 3,689,497, Cl. 260-295.00t.
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- Brumagin, Thomas H.; Dickson, John M.; Northrop, Harley E.; Campbell, Lynn W.; Brown, Stanley H.; and Friesz, Elmo W. Method and apparatus for separating metal from dross. 3,689,049, Cl. 266-37.000.
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- Brunie, Jean-Claude; Constantini, Michel; Crenne, Noel; and Joffret, Michel, to Rhone-Poulenc S.A. Formoxalynals and process for their preparation. 3,689,534, Cl. 260-488.00f.
- Bryant, Charles Brate. Aquatic harvesting apparatus with air borne discharge. 3,688,478, Cl. 56-1.000.
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- Budman, Richard R.; and Myer, David. Hair rod. 3,688,778, Cl. 132-9.000.
- Buletti, Arnold A. Auxiliary brake system. 3,688,879, Cl. 188-353.000.
- Bunch, Charles B. Foldable article and latch mechanism therefor. 3,688,789, Cl. 135-45.00a.
- Bundy, Gordon L.; and Nelson, Norman A., to Upjohn Company. The Organic compounds and processes. 3,689,521, Cl. 260-468.00s.
- Bunger, Fred Lee; and Levitsky, Michael, to Du Pont de Nemours, E. I., and Company. Coupling agent formulations. 3,689,300, Cl. 106-287.000.
- Buning, Robert: See—  
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- Bunting, Leslie J. Device for adjusting a web-advancing mechanism. 3,689,008, Cl. 242-192.
- Bunyard, Alan Donald. Pilot actuated fluid control valve. 3,688,799, Cl. 137-625.640.
- Burdick, Thomas H., to Baxter Laboratories, Inc. Conservation of transient pulses in analog to digital conversion. 3,689,879, Cl. 340-347.0ad.
- Burger, William H., to Kimberly-Clark Corporation. Apparatus for crosslaying fiber webs. 3,689,349, Cl. 156-439.000.
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- Burke, Oliver W., Jr. Elastomer-silica pigment masterbatches and production processes relating thereto. 3,689,452, Cl. 260-33.6ao.
- Burks, Albert Edward: See—  
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- Buzzard, Clair A.; and Saltzberg, Burton R., to Bell Telephone Laboratories, Incorporated. Digital filter receiver for frequency-shift data signals. 3,689,844, Cl. 325-320.000.
- Bykov, Vladimir Alexandrovich; Varaxin, Alexei Ivanovich; Gelfenbein, Evgeny Jukhimovich; Karlinsky, Stanislav Evgenievich; Niskovskikh, Vitaly Maximovich; Polyakov, Boris Nikolaevich; Sokolovskiy, Oleg Petrovich; and Khimich, Georgy Lukich, to Ural'sky zavod tyazhelego mashinostroenia im. S. Ordzhonikidze. Secondary cooling system for continuous casting plants. 3,688,833, Cl. 164-283.000.
- Byrne, Francis P.: See—  
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- Cahill, Lysle D.; Feller, John; Marshall, William W.; Thomas, Edward R.; and Thompson, Harold P., to Mead Corporation. The Multiple head ink drop graphic generator. 3,689,693, Cl. 178-6.60r.
- Cain, Maurice Edward; Saville, Brian; and Knight, Geoffrey Thomas, to Natural Rubber Producers Research Association, The. Inhibitors of oxidative degradation. 3,689,513, Cl. 260-404.500.
- Caldwell, James M.; Day, William R.; and Keating, Thomas J., to United States of America, Army. Exploding bridgewire tester with square wave generator. 3,689,830, Cl. 324-51.000.
- Caleffi, Abele, to Nora International Company. Automatic anode raising device. 3,689,398, Cl. .
- Calgon Corporation: See—  
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- Clauss, Karl; and Jensen, Harald, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. 3,4-Dihydro-1,2,3-oxathiazin-4-ones and their preparation. 3,689,486, Cl. 260-243.00r.
- Clauss, Richard J.; and Adamowicz, Norman C., to Udyllite Corporation. Process for acid copper plating of steel. 3,689,380, Cl. 204-38.00b.
- Cleaver, John Stephen; Guilford, Pete.; Kimpton, Frederick James; Page, Thomas John; and Steinberg, Norman Richard, to British Insulated Callender's Cables Limited. Method of jointing and terminating electric cables. 3,688,397, Cl. 29-62.00b.
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- Colardelle, Joel Serge; Girard, Pierre; and Henri, Claude Paul, to International Standard Electric Corporation. Two-wire to four-wire conversion circuit for a data switching center. 3,689,710, Cl. 179-170.00d.
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- Connell, John M., to Foster Wheeler Corporation. Furnace burner arrangement. 3,688,747, Cl. 122-333.000.
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- Cooksey, William Harold. Ignition distributors. 3,688,392, Cl. 29-598.000.
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- Coterill, Joseph Hobson. Hydrodynamic torque converters. 3,688,493, Cl. 60-12.000.
- Cotey, John. Viscous governor device. 3,688,626, Cl. 84-95.000.
- Cother, Robert H., to Becton, Dickinson Electronics Company. Machine tool monitoring system. 3,689,839, Cl. 324-181.000.
- Cotter, Anthony P. Product depletion indicator for refrigerators. 3,689,909, Cl. 340-272.000.
- Coulter, Earl E.; Hemker, Fritz L.; and Kazmierski, Elias A. Pulverized fuel delivery system for a blast furnace. 3,689,045, Cl. 266-28.000.
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- Covey, Gordon W. Cutter assembly. 3,688,624, Cl. 83-596.000.
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- Cox, John J., Jr.; and Fisher, Richard G., to Du Pont de Nemours, E. I., and Company. Lead frame connector and electronic packages containing same. 3,689,684, Cl. 174-68.500.
- Craig, Sam N.; Warner, Ellis R., Jr.; and Buckman, Wayne T., to Wascon Systems, Inc. Press. 3,688,687, Cl. 100-117.000.
- Craig, William L., to Vanderbilt, R. T., Company Inc. Process of precipitating  $H_2TiO_3$ . 3,689,219, Cl. 23-202.00r.
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- Cromarty, Raymond. Diagnostic device and method. 3,688,763, Cl. 128-2.00b.
- Crounse, Nathan N., to Sterling Drug Inc. Detergent compositions containing novel optical brightening agents. 3,689,425, Cl. 252-117.000.
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- Csurgay, Gregory, to U.S. Textile Machine Company. Magnetic stop motion device. 3,689,716, Cl. 200-61.180.
- Cummings, Harold K., to Bunker-Ramo Corporation. The. Construction and method of making electrical connection. 3,688,395, Cl. 29-605.000.
- Cummings, John G., to Oak Electro/Netics Corporation. Multiple clutches for a TV tuner. 3,688,885, Cl. 192-95.000.
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- Curran, William Vincent; Ross, Adma Schneller; and Tomcufcik, Andrew Stephen, to American Cyanamid Company. Method of lowering blood pressure in mammals. 3,689,652, Cl. 424-250.000.
- Curtis, George F.; and Tatro, Henry J., Jr., to Colts Inc. Machine gun. 3,688,641, Cl. 89-198.000.
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- Dach, Hansjorg, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Automotive transmission with dual planet carrier. 3,688,601, Cl. 74-753.000.
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- Dalen, Merle L., to Signetics Corporation. Photographic roll film processing apparatus. 3,688,678, Cl. 95-96.000.
- D'Amato, Michael A., Jr. Automatic control valve system for hydraulic motor. 3,688,648, Cl. 91-412.000.
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- Das, Nalini R.; and Strain, Edwin H., to Caloric Corporation. Direct burner ignition system. 3,689,194, Cl. 431-80.000.

- Daum, John I.; and Spurgin, Ray B., to Delta Manufacturing and Engineering Corporation. Vehicle washing apparatus. 3,688,784, Cl. 134-123.000.
- David, Melvin J. Merchandise display apparatus. 3,688,917, Cl. 211-174.000.
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- Davis, David Frank; Dickinson, Thomas; and Foord, Arthur David. Oxygen sensors. 3,689,394, Cl. 204-195.00p.
- Davis, Buell L.; and Pulliam, Richard D. Bag drawstring threader. 3,688,379, Cl. 29-241.000.
- Davis, George M.; and Lander, William M. Inversion or tilt indicator. 3,688,734, Cl. 116-114.0ah.
- Davis, Merlin. Blood diagnostic instruments. 3,689,393, Cl. 204-195.00b.
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- De Caro, Charles J., to Speed Fastener, Inc. Fastener drive tool for caseless loads. 3,688,964, Cl. 227-10.000.
- De Clerck, Robert D.; and Smith, Glenn D., to Xerox Corporation. Encoding system. 3,689,915, Cl. 340-347.pdd.
- De Corso, Serafino M.; and Wallace, James M., to Westinghouse Electric Corporation. Arc heater apparatus employing fluid-cooled electrodes having permanent magnets to drive the arc therefrom. 3,689,740, Cl. 219-383.000.
- De Hoff, Edward J.; and Schaefer, Ernest D., to General Motors Corporation. Disc brake caliper with integral parking brake. 3,688,875, Cl. 188-71.900.
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- De Vries, Jan Roelof, to Industriële Onderneming Wavin N.V. Method for manufacturing a block bag. 3,688,650, Cl. 93-35.00r.
- De Witt, Bernard J., to PPG Industries, Inc. Method of coating an electrode. 3,689,383, Cl. 204-95.000.
- Deeter, Paul E. Mounting frame assembly for all terrain vehicle. 3,688,847, Cl. 172-804.000.
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- Demler, Henry William, Sr. Tube coupling. 3,688,553, Cl. 72-410.000.
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- Denss, Rolf; Clauson-Kaas; and Ostermayer, Franz, to Ciba-Geigy Corporation. Substituted phenylacetic acids and esters thereof in the treatment of pain and inflammation. 3,689,656, Cl. 424-274.000.
- Dermody, William J., to ESB Incorporated. Method of bonding metal to polymers with melt adhesive. 3,689,334, Cl. 156-73.000.
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- Deubel, Reinhold; Schinzel, Erich; Hemmerling, Volker; and Rosch, Gunter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Dispersions of optical brighteners containing salt-forming solubilizing groups. 3,689,429, Cl. 252-303.20w.
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- Dieterich, Dieter; and Braden, Rudolf, to Farbenfabrik Bayer Aktiengesellschaft. Manufacture of dialkyl pyridines. 3,689,496, Cl. 260-290.00p.
- Dietrich, Henri, to Ciba-Geigy Corporation. N'-Substituted N-arylsulfonyl ureas for producing a hypoglycaemic effect. 3,689,649, Cl. 424-229.000.
- Dietrich, Manfred; Eger, Helmut; Neubert, Eckart; and Kruger, Wolfgang, to Siemens Aktiengesellschaft. Method of producing semiconductor circuits with conductance paths. 3,689,332, Cl. 156-11.000.
- Dill, Hans Rudolf, to A.G. Elektron. Underwater searchlight. 3,689,759, Cl. 240-10.690.
- Dimmick, James Owen, to Bell Telephone Laboratories, Incorporated. Time division switching system. 3,689,896, Cl. 340-172.500.
- Dion, Donald F., to United States of America, mesne. Exposure control circuit for an electrically shuttered image tube. 3,689,770, Cl. 250-206.000.
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Dukes, Michael, to Imperial Chemical Industries Limited. Certain S-triazolo 1,5-a pyrimidines. 3,689,488, Cl. 260-256.40f.  
Dunaevsky, July Nekhemievich; Tartakovsky, Boris Nusimovich; Zhukov, Nikolai Arsentievich; and Potapenko, Viktor Viktorovich. Excavator. 3,689,090, Cl. 280-6.100.  
Dunlap, Harold E.: *See—*  
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Dunlavey, Robert J., to Teletype Corporation. Lateral oscillation to form ink droplets. 3,689,936, Cl. 346-75.000.  
Dunn, Howard E., to Phillips Petroleum Company. Process for dimerization of olefins. 3,689,588, Cl. 260-683.15d.  
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Duren, Jesse Thomas, to Ralston Purina Company. High protein pudding. 3,689,288, Cl. 99-139.000.  
Durkee, John E., to Thomas Industries, Inc. Control system having transmitter-receiver sets for operating functional device over power lines. 3,689,886, Cl. 340-163.000.  
Durr, Alfred W.; Gunsser, Otto; and Heller, Hubert H., to Gebrüder Heller Maschinenfabrik GmbH. Machine tool with additional tool magazine. 3,688,362, Cl. 29-26.000.  
Dutra, Joseph G., Jr. Pruning shears. 3,688,405, Cl. 30-135.000.  
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- Dybalski, Jack N.; and Timmons, Robert D., to Armour Industrial Chemical Company, mesne. Method of incorporating fillers in cationic bituminous emulsions and products produced thereby. 3,689,298, Cl. 106-280.000.  
Dyla, John F.; Moore, William M.; and Attfield, Robin A., to Lodge-Cottrell Limited. Electro-precipitation. 3,688,475, Cl. 55-148.000.  
Dymont, John C.; and Ripper, Jose' E., to Bell Telephone Laboratories, Incorporated. Method of making Q-switched diode laser. 3,688,388, Cl. 29-569.000.  
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Dynamit Nobel Aktiengesellschaft: *See—*  
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Earle, Harold Westly; and Shelton, Douglas Sidney, to Bell Telephone Laboratories, Incorporated. Call diverter repeater. 3,689,711, Cl. 179-170.600.  
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Eckert, Konrad; to Bosch, Robert, G.m.b.H. Fuel injection system for externally ignited internal combustion engines. 3,688,754, Cl. 123-119.00r.  
Eckles, Paul N.; and Ryan, Edwin B., to Aerojet-General Corporation. Radiant heat gun. 3,689,737, Cl. 219-346.000.  
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Edwards, William J., to Singer Company, The. Walking presser devices for sewing machines. 3,688,712, Cl. 112-212.000.  
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Eichenlaub, John E. Heat seal method. 3,689,335, Cl. 156-73.000.  
Eichler, Wolfgang; and Bruck, Rolf, to Agfa-Gevaert Aktiengesellschaft. Casting apparatus with flexible wiper film. 3,688,738, Cl. 118-62.000.  
Eisele, Max. Generator-fed motor control with dynamic braking for vehicle propulsion. 3,689,812, Cl. 318-151.000.  
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Emmons, William D.; and Frank, George A., to Rohm and Haas Company. Process for polyoxoalkylation. 3,689,532, Cl. 260-485.00g.  
Enarsson, Knut; and Kitsnik, Henrik M., to Aktiebolaget Kalle-Regulator. Device for measuring the beating degree of pulp flowing through a conduit. 3,688,563, Cl. 73-63.000.  
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Engel, Joseph C.; and Elms, Robert T., to Westinghouse Electric Corporation. Circuit breaker including improved current auctioneering circuit. 3,689,801, Cl. 317-26.000.  
Engelhart, John E., to Esso Research and Engineering Company. 3,4,5-Trimethylcyclohexanol. 3,689,574, Cl. 260-631.00r.  
Engelsmann, Dieter; Hackenberg, Hubert; and Prummer, Helmut, to Agfa-Gevaert Aktiengesellschaft. Photographic apparatus with automatically and manually adjustable shutter means. 3,688,661, Cl. 95-11.00r.  
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Epsztajn, Bernard, to Thomson-CSF. Electronic transducer for a piezoelectric line. 3,689,782, Cl. 310-8.100.  
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Erekson, Arthur B., to Borden Inc. Apparatus for extruding and wrapping comestible. 3,688,468, Cl. 53-122.000.  
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Erickson, Walter C.; and Pon, Harry. Modular steel building with internal air flow passages. 3,688,983, Cl. 237-50.  
Eriksson, Erik Torvald, to Aga Aktiebolag. Flash-back arrestor. 3,689,239, Cl. 48-192.000.  
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Esperson, James Ronald, to General Motors Corporation. Inertial power transmissions. 3,688,499, Cl. 60-53.00c.  
Espoy, Henry Marti, to Daylin Laboratories, Inc. Detoxification of oil-seed meal with calcium hydroxide. 3,689,275, Cl. 99-2.00e.  
Esser, Leonard Jan Maria, to U.S. Philips Corporation. Phase-independent digital correlator for use in radar system. 3,689,750, Cl. 235-181.000.  
Esso Production Research Company: *See—*  
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- Evand, Lyle W.; and Slobbe, Walter W., to Sylvania Electric Products Inc. Method of forming a color cathode ray tube screen. 3,689,265, Cl. 96-36.100.  
Evans, David G., to United States of America, Army. Isolation of parallel cell stacks in thermal batteries by a squib switch. 3,689,776, Cl. 307-66.000.  
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Faber, Guy; and Maggi, Carlo, to Aktiengesellschaft Brown, Boveri & Cie. Apparatus for protection of rotor vanes against surface erosion caused by impingement of high speed liquid drops. 3,689,178, Cl. 416-224.000.  
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Fehler, Adolf; Greune, Christian; and Holzhauer, Hilbert. Control system for metering the fuel flow in gas turbine engines. 3,688,495, Cl. 60-39.280.  
Feinberg, Bernard, to United States of America, Agriculture. Preparation of a baked potato product. 3,689,282, Cl. 99-100.00p.  
Feldman, Samuel. Cuff link protector. 3,688,350, Cl. 24-90.500.  
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- Cahill, Lysle D.; Feller, John; Marshall, William W.; Thomas, Edward R.; and Thompson, Harold P., 3,689,693.
- Fellows, Charles T.; Hermann, Stanley R.; and Hochwalt, Norman C., to National Cash Register Company. The Transfer medium for producing scratch and smudge resistant marks. 3,689,316, Cl. 117-234,000.
- Felsenheld, Robert A., to International Telephone and Telegraph Corporation. Multi-band tunable halfwave whip antenna. 3,689,928, Cl. 343-703,000.
- Fenner, Ralph L.; and Martin, Mary F. Xeric element and method of preparing the same. 3,688,579, Cl. 73-337,000.
- Fensch, Walter, to BASF Wyandotte Corporation. Thermoplastically processable polyurethane elastomers. 3,689,443, Cl. 260-18,00n.
- Ferenc, Joseph W. Apparatus for shuttering poured concrete structures. 3,689,019, Cl. 249-13,000.
- Ferguson, Eric Tapley. Apparatus for the relative positioning of two objects by means of a beam of radiation. 3,689,162, Cl. 356-169,000.
- Fergusson, William B. Fluid line coupling. 3,689,110, Cl. 285-15,000.
- Fergusson, Alexander H. B.: See—
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- Ferrara, Achille K. Centrifugal dryers. 3,688,906, Cl. 210-152,000.
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- Fetty, Joan H.: See—
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- Feucht, Hermann; and Korber, Ulrich, to Siemens Aktiengesellschaft. Switching matrix for relay couplers with threshold value switches. 3,689,889, Cl. 340-166,000.
- Field, Nathan D.; and Williams, Earl P., to GAF Corporation. Process for preparing a crosslinked porous polyvinyl-pyrrolidone granule. 3,689,439, Cl. 260-151,000.
- Fields, Ellis K., to Standard Oil Company. Novel carboxylic acids and process for synthesizing carboxylic acids. 3,689,538, Cl. 260-151,000.
- Fierle, Robert J.; Mott, James A.; Oles, Herbert E.; and Reed, George A., to American Precision Industries, Inc. Refuse compactor. 3,688,689, Cl. 100-218,000.
- Fife Corporation: See—
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- Figge, Irving E.; and Karp, Bernard L., to United States of America, Army. Method of making a quasi-isotropic sandwich core. 3,689,345, Cl. 156-219,000.
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- Johnson, Olin B.; and Labana, Santokh S., 3,689,308.
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- Foret, Pierre G.; and Donohoe, John W., to Foret, P. G., Inc. Ticket reader. 3,689,065, Cl. 271-74,000.
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- Chandross, Edwin Arthur; Fork, Richard Lynn; Kaminow, Ivan Paul; and Tomlinson, Walter John, III, 3,689,264.
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- Fox, Charles; and Tassoff, James, to Warner-Lambert Company. Solid bath oil composition containing a clathrate. 3,689,678, Cl. 424-365,000.
- Fox, Homer N.; and Ruehlen, Forrest N., to Huyck Corporation. Electrochemical reductive coupling. 3,689,382, Cl. 204-73,00a.
- Fox, James F., to Continental Can Company, Inc. Method of and apparatus for closing container. 3,688,464, Cl. 53-24,000.
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- Fredericks, Alan D., to Oceanography International Corporation. Method for sealing ampoules. 3,688,812, Cl. 141-4,000.
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- Frick, Hans-Dieter; Geyken, Erwin; Dawidowitsch, Peter; and Schausberger, Helmut, to Agfa-Gevaert Aktiengesellschaft. Apparatus for processing photographic material or the like. 3,688,677, Cl. 95-94,00r.
- Friedline, Kenneth L., to Borg-Warner Corporation. Overdrive electronic control system. 3,688,609, Cl. 74-866,000.
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- Haigh, Richard Wolliscroft, to Lucas, Joseph, (Industries) Limited. Electro-mechanical function generator. 3,689,756, Cl. 235-197.000.
- Hailey, Robert W., to Wheeling-Pittsburgh Steel Corporation. Method of consolidating metallic bodies. 3,689,259, Cl. 175-226.000.
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- Hanna, Delbert L., to Velsicol Chemical Corporation. Process for esterification of tetrachloroterephthalic acid. 3,689,527, Cl. 260-475.00r.
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- Harmstorf, Rudolf. Method of and apparatus for flush-jet embedding structural elements and for sucking off ground material. 3,688,511, Cl. 61-72,400.
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- Hori, Yasuaki; Yoneda, Kazuo; and Kobayashi, Takahiko, to Showa Denko Kabushiki Kaisha. Coating compositions for arresting the surface lubricity of polyolefin shaped articles. 3,689,441, Cl. 260-5,000.
- Horn, Darrell C., to Up-Right, Inc. Striker rod mounting. 3,688,482, Cl. 56-30,000.
- Horn, William B.; Merritt, Edward E.; and Schmidt, Delbert D., to Federal Cartridge Corporation. Self-retaining reload capsule for shotgun shells. 3,688,699, Cl. 102-42,00c.
- Hornbaker, Edwin D.; Sparks, Bryan; and Orloff, Harold D., to Ethyl Corporation. Flame-resistant carpet backing. 3,689,355, Cl. 161-92,000.



- Horrom, Bruce Wayne, to Abbott Laboratories. N-substituted-alphamethyl-3,4u(methylenedioxy) phenethylamines. 3,689,504, Cl. 260-340.00s.
- Horstmann, Harald: *See—*  
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- Horton Manufacturing Company, Inc.: *See—*  
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- Horton, Robert A., to Precision Metalsmiths, Inc. Refractory cores. 3,688,832, Cl. 164-72.000.
- Hosteller, William Lester. Hydraulic endgate apparatus. 3,688,649, Cl. 92-110.000.
- Houdaille Industries, Inc.: *See—*  
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Slawson, Kenneth Leonard, and Houdaille Industries, Inc., 3,689,821.
- Houle, Guy J., to Hebert, Maurice E. Water propelling means for vehicles. 3,688,731, Cl. 115-1.00r.
- Howard, John, to International Telephone and Telegraph Corporation. Crystalline plicatin. 3,689,505, Cl. 260-343.300.
- Howell, Charles N., to Ajax Magnethermic Corporation. Scanning type induction heating. 3,689,726, Cl. 219-10.710.
- Howell, Thomas G., and Koff, Bernard L., to General Electric Company. Turbomachinery rotor construction. 3,689,176, Cl. 416-96.000.
- Howtson, James F., and Friend, Chester A., Jr., to United States of America, Army, mesne. Disposable rocket motor nozzle. 3,688,988, Cl. 239-265.150.
- Hoy, Daniel J.: *See—*  
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- Hoyne, Benjamin Luke, to American Can Company. Apparatus for necking-in and flanging can bodies. 3,688,538, Cl. 72-94.000.
- Hubach, OS E., to Tyler, W. S., Incorporated. Grain cleaner. 3,688,902, Cl. 209-240.000.
- Hubbell, Harvey, Incorporated: *See—*  
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- Hudspeth, Steve A., and Lunsford, John B., to FMA, Inc. Vehicular air compression system. 3,688,859, Cl. 180-66.00b.
- Huebner, Charles Ferdinand, to Ciba-Geigy Corporation. Bicyclopkanes in treating depression. 3,689,676, Cl. 424-330.000.
- Hughes Aircraft Company: *See—*  
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- Hules, Conrad G., to Minnesota Mining and Manufacturing Company. Method for making a neutralizing device. 3,689,117, Cl. 300-21.000.
- Huletts Sugar Corporation Limited: *See—*  
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- Hull, Graham Rodney, to Porvair Limited. Solvent surface treatment of microporous polyurethane elastomer. 3,689,629, Cl. 264-341.000.
- Hulland, Burton L., to Dynell Electronics Corporation. Receiver for omega navigation system. 3,689,925, Cl. 343-105.000.
- Humes, Carl E. Steering assembly for trailers. 3,689,107, Cl. 280-426.000.
- Hunt, Archie F.: *See—*  
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- Hunt, Peter, to Rotax Limited. Dynamo electric machines. 3,689,786, Cl. 310-58.000.
- Hunter, William Hubert, and Harbridge, John Barry, to Fisons Pharmaceuticals Limited. 5-, 6- and 7-azachromones. 3,689,493, Cl. 260-295.00f.
- Hurley, Ed, Jr.: *See—*  
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- Hutchinson, Charles A., Henderson, Richard L., and Schilling, Thomas L., to General Electric Company. Bypass valve control. 3,688,504, Cl. 60-226.00r.
- Hutchinson, William M., to Phillips Petroleum Company. Process for separating halogenated hydrocarbons by gas-liquid separation with a solvent. 3,689,373, Cl. 203-58.000.
- Hutchinson, William M., to Phillips Petroleum Company. Process for separating halogenated hydrocarbons from a halogenated hydrocarbon-acetone mixture by water extractive distillation. 3,689,376, Cl. 203-95.000.
- Huwylar, Sebastian, and Schmidt-Hatting, Wolfgang, to Swiss Aluminium Ltd. Method for testing heat insulating lining materials for aluminum electrolysis cells. 3,688,559, Cl. 73-15.600.
- Huyck Corporation: *See—*  
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- Hycel, Inc., mesne: *See—*  
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- Inmon, Aubrey W., and Sanderford, Moses Vincent, to U. S. Plywood-Champion Paper, Inc. Structural joint. 3,688,458, Cl. 52-280.000.
- Inoue, Kiyoshi; and Kaneko, Hideo, to Ishifuku Kinzoki Kogyo K.K., a/k/a Ishifuku Metal Industry Co., Ltd. Magnetic material. 3,689,254, Cl. 75-172.000.
- Inoue, Kiyoshi. Speech synthesis from a spectrographic trace. 3,689,696, Cl. 179-1.0sa.
- Inoue, Noboru: *See—*  
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- Inskip, Harold Kirkwood, to Du Pont de Nemours, E. I., & Company. Copolymers of vinyl alcohol and methyl methacrylate and uses therefor. 3,689,469, Cl. 260-86.100.
- Institut elektrosvarki imeni E.O. Patona Akademii Nauk Ukrainskoi SSR: *See—*  
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- Irwin, Arthur S., to TRW Inc. Linear motion anti-friction bearing and method of manufacturing. 3,689,124, Cl. 308-6.00c.
- Irwin, George, to Imperial Camera Corporation. Double exposure mechanism for cameras. 3,688,671, Cl. 95-31.00f.
- Ishifuku Kinzoki Kogyo K.K.; a/k/a Ishifuku Metal Industry Co., Ltd. *See—*  
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- Ishihama, Masaru; and Kobayashi, Yukio, to Nippondenso Co., Ltd. Hybrid circuit device. 3,689,804, Cl. 317-100.000.
- Ishikawajima Harima Jukogyo Kabushiki Kaisha: *See—*  
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- Ismail, Rosdhy, to Dynamit Nobel Aktiengesellschaft. Halogenated esters of the phosphoric acids. 3,689,602, Cl. 260-936.000.
- Ito, Tadashi: *See—*  
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- Iversen, Christian Eduard, to Nordisk Ventilator Co., Aktieselskab. Ventilating apparatus. 3,688,681, Cl. 98-62.000.
- Iwase, Kenji: *See—*  
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- Jack, David; Hartley, David; and Lunt, Lawrence Henry Charles, to Allen & Hansbrys Limited. Phenethylamine derivatives. 3,689,524, Cl. 260-471.00a.
- Jackson, Bruce W., to Du Pont de Nemours, E. I., and Company. Chain transfer linked urethane graft copolymers. 3,689,593, Cl. 260-859.000.
- Jackson, David H. Pitch-changing tuning device for string instruments. 3,688,631, Cl. 84-312.000.
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- Jacob, Harry J., Jr., to Warner & Swasey Company. The. Machine tool spindle and control therefor. 3,689,166, Cl. 408-11.000.
- Jaconette, Frank C., to Hubbell, Harvey, Incorporated. Electrical receptacle having an improved contact terminal arrangement. 3,689,870, Cl. 339-217.00r.
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- James, David Richard, to Murray Curves Printing Limited. Method of offset printing or decorating an article with thermoplastic color. 3,688,695, Cl. 101-211.000.
- James, John W.; and Stevens, Robert, to Aspro-Nicholas Limited. Phloretic acid derivatives. 3,689,540, Cl. 260-521.00r.
- James, Richard N.: *See—*  
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- Jeffcoat, Keith, to Courtaulds Limited. Flat bed knitting machines. 3,688,525, Cl. 66-146.000.
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- Johnson, Bruce K., to Polaroid Corporation. Safety override for flash lamp indexing components of an exposure mechanism. 3,688,660, Cl. 95-11.00l.
- Johnson, Fielding G.; and Green, James A., to Hydrodata, Inc. Hand pump. 3,688,910, Cl. 210-233.000.
- Johnson, James E.: *See—*  
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- Johnson, Olin B.; and Labana, Santokh S., to Ford Motor Company. Graded rubber-urethane-acrylate paint and painting process. 3,689,307, Cl. 117-93.310.
- Johnson, Olin B.; and Labana, Santokh S., to Ford Motor Company. Unsaturated polyester-hydroxy functional, grade rubber paint and process. 3,689,308, Cl. 117-93.310.
- Johnson, Olin B.; and Labana, Santokh S., to Ford Motors Company. Epoxy-vinyl copolymer and graded-rubber paint and process. 3,689,309, Cl. 117-93.310.
- Johnson, Olin B.; and Labana, Santokh S., to Ford Motor Company. Polyester and acrylic rubber-urethane-acrylate paint and painting process. 3,689,310, Cl. 117-93.310.
- Johnson, Richard C.: *See—*  
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- Johnson, Rubein V. Acoustic ear mold for hearing aid. 3,688,863, Cl. 181-23.000.
- Johnston, David B. R.; Maag, Theodore A.; and Shen, Tsung-Ying, to Merck & Co., Inc. p-Amino-p'-ureidodiphenyl sulfone in treating Marek's disease. 3,689,671, Cl. 424-322.000.
- Johnston, Reed H., to Veeder Industries, Inc., mesne. Digital multiplier useful in multiple product dispensing apparatus. 3,689,749, Cl. 235-156.000.
- Johst, Wolfgang; and Etz, Herbert, to Hahn, Carl, Dr., KG. Apparatus for manufacturing tampons. 3,688,346, Cl. 19-144.500.
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- Jommi, Giancarlo; Mauri, Francesco; and Riva, Giovanna, to Ravizza S.A. Process for the preparation of optically active 3-alkoxy benzodiazepine derivatives. 3,689,478, Cl. 260-239.30d.
- Jones, Dennis Glyn, to Kennametal Inc. Cutting tool. 3,688,366, Cl. 29-96.000.
- Jones, James A. Teaching device. 3,688,417, Cl. 35-31.00a.
- Jones, John Leslie, Sr. Menstrual napkin support waist belt. 3,688,772, Cl. 128-291.000.
- Jones, Loyd W., to Amoco Production Company. Removing scale from oil wells. 3,688,829, Cl. 166-305.00r.
- Jones, R. A., & Co., Inc.: *See—*  
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- Jorgenson, Leroy D. Automatic transmission for a vehicle. 3,688,602, Cl. 74-754.000.
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- Joug, Roland; and Ragout, Bernard, to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes and Ateliers Mecaniques du Douais. Fluid supported conveyor. 3,688,894, Cl. 198-184.000.
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- Judd, Leonard R., to Cities Service Company. Method of pelletizing using copper-containing siliceous waste materials. 3,689,249, Cl. 75-3,000.
- Judy, William Allen, to Goodyear Tire & Rubber Company. The. Ternary catalyst systems for the polymerization of cyclic olefins. 3,689,471, Cl. 260-88.20e.
- Jumer, John F. Method for electropolishing spark gap machined parts. 3,689,387, Cl. 204-140.500.
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- Kagan, Fred; and Magerlein, Barney J., to Upjohn Company. The. 7-mercapto-7-deoxylincomycins and process for preparing the same. 3,689,474, Cl. 260-210.00r.
- Kagari, Yoshiharu; Ogawa, Toshiya; and Hirokawa, Koichi, to Ricoh Co., Ltd. Printed copy sheet number read-out device. 3,689,742, Cl. 235-61.11e.
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- Kamena, Fred; and Sgambati, Anthony P., to Wean Industries, Inc. Extrusion presses. 3,688,543, Cl. 72-253.000.
- Kamimura, Masato; Arai, Risaburo; and Fukui, Saburo, to Nippon Electric Company Limited. Mechanism for simultaneous X-Y positioning on two opposing vertically disposed work surfaces. 3,689,819, Cl. 318-575.000.
- Kaminow, Ivan Paul: *See—*
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- Kampfer, John G., to Texaco Inc. Scale selection circuit. 3,689,876, Cl. 340-18.00p.
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- Suvorov, Boris V.; Kagarlitsky, Alfred Davydovich; Kan, Iskra Ivanovna; and Lebedeva, Olga Borisovna, 3,689,491.
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- Kantor, Ilia Solomonovich: *See—*
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- Kaplan, Eric S. Automatic fish feeding apparatus. 3,688,744, Cl. 119-51.110.
- Kaplan, Leon M.; and Kriofsky, Thomas A., to Transitag Corporation. Inductively coupled passive responder and interrogator unit having multidimension electromagnetic field capabilities. 3,689,885, Cl. 340-152.00t.
- Kaplienko, Igor Prokofievich: *See—*
- Pokhodnya, Igor Konstantinovich; Alter, Vladimir Fedorovich; Kaplienko, Igor Prokofievich; Suprun, Sergei Alexandrovich; Shlepakov, Mikhailovich; and Shlepakov, Valery Nikolaevich, 3,688,376.
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- Karp, Bernard L.: *See—*
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- Karper, Paul W.; and Porter, John P., to Goodrich, B. F., Company. The. Viscurometer. 3,688,568, Cl. 74-101.000.
- Kashima, Hiroshi; Tomizuka, Katsushige; and Uozumi, Yoshinobu, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing bulky yarn from multifilament yarn. 3,688,358, Cl. 28-72.120.
- Kassat, Harry; and Kissel, Ernst, to Gea Luftkühlergesellschaft Happel GmbH, & Co., KG. Air-cooled condenser for head fractions in rectifying or distilling columns. 3,689,367, Cl. 202-185.00b.
- Kastner, Arnold. Cigarette making machines. 3,688,777, Cl. 131-70.000.
- Katakabe, Kyoku: *See—*
- Miyazaki, Toshio; Omura, Etouzou; Katakabe, Kyoku; Makita, Minoru; Iwase, Kenji; Tsutsumi, Hideo; Yotsumoto, Takashi; Ikeda, Fumiaki; Takashima, Yoshiro; Sueyoshi, Hiromu; and Maesaka, Tomio, 3,689,620.
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- Katsuyama, Yoshihisa, to Nippon Kogaku K.K. Light receiving means in automatic focusing device. 3,688,673, Cl. 95-44.00r.
- Kaufman, Arthur L. Electrostatic copying apparatus employing development on side of the imaging sheet opposite the photoconductive coating. 3,689,144, Cl. 355-3.000.
- Kaufman, Harold A.: *See—*
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- Kawabe, Tsuneo; Suzuki, Kouichi; and Miyake, Hirotaka, to Aisin Seiki Kabushiki Kaisha. Apparatus for controlling braking force in a wheel brake system on a powered vehicle. 3,689,121, Cl. 303-21.0ch.
- Kawada, Takehiko, to Denki Onkyo Company, Limited. Voltage transforming devices utilizing piezoelectric elements. 3,689,781, Cl. 310-8.100.
- Kawaguchi, Shigenori; Toi, Yoshioki, and Suyama, Shiyozo, to Mitsubishi Aluminum Company Limited. Apparatus for the manufacture of aluminum strip conductors. 3,688,548, Cl. 72-234.000.
- Kawai, Atsushi; and Suzuki, Migaku, to Mitsubishi Rayon Co., Ltd. Method for producing highly crimped regenerated cellulose fibers by solvent stretching. 3,689,622, Cl. 264-197.000.
- Kawakubo, Kazuo; and Kurahashi, Akira, to Canon Kabushiki Kaisha. Slit exposure type copying. 3,689,145, Cl. 355-8.000.
- Kawamura, Takao, to Hitachi, Ltd. Method of manufacturing fluorescent screens of color picture tubes. 3,689,266, Cl. 96-36.100.
- Kawano, Shigeyoshi: *See—*
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- Kazuhiro, Asai; and Kazuo, Makabe, to Daiichi Yakuhin Sangyo Kabushiki Kaisha. Bis-carboxyethyl germanium sesquioxide and process for preparing same. 3,689,516, Cl. 260-429.00r.
- Kazuo, Makabe: *See—*
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- Chang, Hsu; Keefe, George E.; Lin, Yeong S.; and Rosier, Laurence L., 3,689,902.
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- Keinanen, Henry J.; and Pearson, John B., to Continental Can Company, Inc. Apparatus for electrohydraulic pressure arc control. 3,688,535, Cl. 72-56.000.
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- Kelley, Bernard B., 1/2 to Vergeer, Joseph and 1/2 to Paramatic Corporation. Cold wax process for forming candles. 3,689,616, Cl. 264-68.000.
- Kellner, Raymond M.; and Gee, Minor E. Machine for fabricating walls. 3,688,965, Cl. 227-45.000.
- Kelly, William. Heavy duty cable connector. 3,689,866, Cl. 339-59.00r.
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- Kern, Neil C., to Motorola, Inc. Command fuse. 3,688,701, Cl. 102-70.20p.
- Kern, Roy F., to Caterpillar Tractor Company. Carbon steel spring elements. 3,689,329, Cl. 148-36.000.
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- Kerpchar, Michael, to Ocean Metrics, Inc. Range gated image systems using pulsed illuminators. 3,689,156, Cl. 356-5.000.
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- Kieffaber, Clarence A., to Marion Corporation. Dough conveyor. 3,688,892, Cl. 198-84.000.
- Kiene, Wilfried, to Fischer & Porter Company. Magnetic flowmeter having a non-homogeneous magnetic field. 3,688,575, Cl. 73-194.0em.
- Kiewit, Peter, Sons' Company: *See—*
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- Kihara, Nobutoshi; and Miura, Yotaro, to Sony Corporation. Cassette having means thereon to vary its size. 3,689,007, Cl. 242-199.000.
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- Kiley, John S.; and Jason, Robert C., to General Motors Corporation. Tape having transverse slits and method of slitting the same. 3,688,617, Cl. 83-7.000.
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- Killigrew, Daniel L., Jr., to Corning Glass Works. Pouring vessel. 3,688,936, Cl. 215-100.00a.
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- Kinney, John F., to Bendix Corporation. The. Mechanical clutch-brake. 3,688,881, Cl. 192-8.00r.
- Kipnis, Aron Mikhailovich; and Kesselman, Stella Mikhailovna. Apparatus for testing manometric instruments. 3,688,554, Cl. 73-4.00r.
- Kirch, Lawrence S., to Rohm & Haas Company. Preparation of aryl halides. 3,689,546, Cl. 260-544.00m.
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- Kirkpatrick, Burnard M., to Teledyne Industries, Inc. Adjustable free-period seismometer. 3,688,583, Cl. 73-382.000.
- Kirschner, Robert F.; Morgan, Lemuel J.; and Clark, John A., Jr., to Patterson-Kelley Co., Inc. Water heating and storage system. 3,688,839, Cl. 165-108.000.
- Kiser, Elmer P. Air loaded valve. 3,689,025, Cl. 251-25.000.
- Kishino, Shigeo; Shiokawa, Kozo; Kudamatsu, Akio; and Yamada, Yasuo, to Farbenfabriken Bayer Aktiengesellschaft. O-alkyl-O-phenyl-S-alkoxyethyl-phosphoro-thiolates. 3,689,603, Cl. 260-950.000.
- Kissel, Ernst: *See—*
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- Kitanoosono, Hidehiro: *See—*
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- Klassen, David Dubble, to General Electric Company. Blade constraining structure. 3,689,177, Cl. 416-198.000.
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- Kleffmann, Gunter, to Anker-Werke Aktiengesellschaft. Control device for a registering business machine. 3,688,979, Cl. 235-62.00f.
- Klein, Alfons; and Wedemeyer, Karlfried, to Farbenfabriken Bayer Aktiengesellschaft. Process for the preparation of cyclopent-2-enyl phenols. 3,689,573, Cl. 260-621.00r.
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- Kliment, Karel; Vacik, Jiri; Ott, Zdenek; Majkus, Vladimir; Stol, Miroslav; Stoy, Vladimir; and Wichterle, Otto, to Ceskoslovenska Akademie ved. Protracted activity oral hydrogel bead. 3,689,634, Cl. 424-21.000.
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- Klostermann, Frits Theodoor; Jentjens, Andreas Petrus Theodorus Hermanus; and Bouwer, Adrianus Gerardus, to U.S. Philips Corporation. Method of, and apparatus for, writing mask patterns on photographic material by means of light. 3,688,655, Cl. 95-1.00r.
- Klothen, Irving: *See—*
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- Knight, Howard Richard James, to Carrier Engineering Company Limited. Controlling spray guns. 3,688,987, Cl. 239-112.000.
- Knight, William Roy; and Delamere, Richard William, to De Laval Company Limited. Heat-transfer fermenting and aging vessel. 3,688,940, Cl. 220-13.000.
- Knorr, Gordon Dayton, to Global Marine, Inc. Air cushion vehicle. 3,688,850, Cl. 175-5.000.
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- Knowles, Richard N. 4'-Cycloalkylmethyl acetophenone. 3,689,566, Cl. 260-592.000.
- Knowles, Richard N. Method of repelling animals using cyclohexyloxy-cyclohexylamines. 3,689,670, Cl. 424-320.000.
- Knowles, Richard N., to Du Pont de Nemours, E. I., and Company. Irritant composition comprising certain substituted formandines. 3,689,675, Cl. 424-326.000.
- Kobayashi, Hidehiko; Sasaguri, Kiichiro; Oimachi, Irumagun; Neki, Kazuya; and Tanimura, Noboru, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for preparing fibers of polyethylene-1, 2-diphenox-ythane-4-, 4-dicarboxylate. 3,689,623, Cl. 264-210.00f.
- Kobayashi, Takahiko: *See—*  
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- Koch, Hermann. Measuring instrument with a bourdon spring. 3,688,586, Cl. 73-418.000.
- Kochs Adlermaschinenwerke AG: *See—*  
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- Koenig, Barbara; and Pfannkuche, Christopher E. Arithmetical teaching aid. 3,688,416, Cl. 35-31.00f.
- Koff, Bernard L.: *See—*  
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- Koff, Bernard L., to General Electric Company. Method of manufacturing compositely formed rotors. 3,688,371, Cl. 29-156.80b.
- Kogure, Tomio: *See—*  
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- Kollar, John, to Halcon International, Inc. Process for preparing ethylene glycol esters. 3,689,535, Cl. 260-497.00f.
- Kolliker, Hans-Peter; Staub, Alfred; and Hindermann, Peter. Dispersible anthraquinone dyestuffs. 3,689,510, Cl. 260-376.000.
- Kominam, Naoya; Tamura, Nobuhiro; and Yamamoto, Etsuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Production of dimethylstyrenes. 3,689,583, Cl. 260-669.00f.
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- Koppers Company, Inc.: *See—*  
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- Koptelow, Leonid. Wall Painting machine. 3,688,739, Cl. 118-207.000.
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- Kovacs, Lloyd, to Midland-Ross Corporation. Extruder providing radial and axial melt removal. 3,689,182, Cl. 425-208.000.
- Kowa Company, Limited: *See—*  
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- Krauch, Carl Heinrich: *See—*  
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- Krestan, Rudolf; and Kenngott, Kurt, to Daimler-Benz Aktiengesellschaft. Oil pan for a multi-cylinder reciprocating piston internal combustion engine. 3,688,871, Cl. 184-6.500.
- Kriege, Owen H.: *See—*  
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- Kril, Russell S., to Texas Instruments, Incorporated. Memory system. 3,689,891, Cl. 340-172.500.
- Kriofsky, Thomas A.: *See—*  
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- Kroll, Wolfram R.; and Doyle, Gerald, to Esso Research and Engineering Company. Process for preparing olefin disproportionation catalysts. 3,689,433, Cl. 252-429.00f.
- Kruger, Wolfgang: *See—*  
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- Kruglikov, Anatoly Abramovich; Nikolaeva, Militina; Vilker, Simon Borisovich; and Detkov, Viktor Vasilievich. Method of producing liquid water-soluble urea-formaldehyde resins employing an aryl or alkyl sulfonic acid. 3,689,463, Cl. 260-70.00f.
- Kubo, Hideyo: *See—*  
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- Kubo, Keishi; Sakai, Kiyoshi; Sato, Takashi; and Kuniaki, Hakamada, to Ricoh Co., Ltd. Thermographically color-developable composition. 3,689,302, Cl. 117-36.800.
- Kucer, George F. Blackjack or 21 game simulator. 3,689,071, Cl. 273-130.00f.
- Kudamatsu, Akio: *See—*  
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- Kuder, Robert C., to General Mills, Inc. 33-Dimethyl-2-norbornane propionic acid. 3,689,537, Cl. 260-574.00b.
- Kuenenman, Don; and Kenville, Cyril P. Gyrotory crusher adjusting mechanisms. 3,688,995, Cl. 241-207.000.
- Kuest, Johnnie. Flour mill. 3,688,996, Cl. 241-239.000.
- Kuksa, Henry R., to SCM Corporation. Paper feed arrangement. 3,689,064, Cl. 271-62.00a.
- Kummer, Charles Karl; Walters, Roger E.; and White, Gary Wayne, to Ralston Purina Company. Derma fiber machine. 3,689,276, Cl. 99-234.00f.
- Kuniaki, Hakamada: *See—*  
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- Kuraoto, Yoshio; and Kobori, Toshio, to Minolta Camera Kabushiki Kaisha. Electronic shutter device. 3,688,674, Cl. 95-53.00e.
- Kuraray Co., Ltd.: *See—*  
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- Kurata, Etsuo: *See—*  
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- Kurokawa, Takaaki; Inoue, Noboru; and Fukuda, Mitsugu. Mould operating mechanism of a glass bulb manufacturing machine. 3,689,244, Cl. 65-159.000.
- Kurose, Tadashi; Kagaya, Ryuichi; Ono, Kunio; and Kanda, Kimio, to Hitachi, Ltd. Manually controlled case depth measuring instrument with indicators to guide its use. 3,689,828, Cl. 324-34.00f.
- Kurtz, Leonard D., to Sutures Inc. Vascular prosthetic. 3,688,317, Cl. 3-1.000.
- Kustom Signal, Inc.: *See—*  
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- Kyowa Hakko Kogyo Co., Ltd.: *See—*  
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- Kytta, Oswald O., to Bendix Corporation. The. Clip retainer. 3,688,647, Cl. 91-369.00a.
- La Falce, Robert A.; and Spencer, William M., to Bendix Corporation. The. Information transfer system. 3,689,887, Cl. 340-163.000.
- La Groux, Johannes: *See—*  
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- La Monica, Daniel A.: *See—*  
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- Lausser, Richard P. Clamping apparatus. 3,688,353, Cl. 24-263.00j.
- Labana, Santokh S.: *See—*  
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- Johnson, Olin B.; and Labana, Santokh S., 3,689,308.
- Johnson, Olin B.; and Labana, Santokh S., 3,689,309.
- Johnson, Olin B.; and Labana, Santokh S., 3,689,310.
- Labude, Wolfgang; and Bauer, Karl-Heinz. Channel selection apparatus for high frequency receivers with variable capacitance diode tuning. 3,689,724, Cl. 200-172.00a.
- Lachinov, Alexandr Alexandrovich: *See—*  
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- Lagrange, Jean; and Letournel, Emile. Total knee joint prosthesis. 3,688,316, Cl. 3-1.000.
- Laing, Nikolaus. Rotating heat exchanger with flow transmission. 3,688,836, Cl. 165-86.000.
- Laing, Nikolaus. Vessel for meltable heat storage masses. 3,689,738, Cl. 219-378.000.
- L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude: *See—*  
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- L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude: *See—*  
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- Prost, Roger, 3,688,514.
- Lake, Gary F. Snow and water skimming device. 3,689,092, Cl. 280-11.130.
- Lambert, James B.; Seiden, Lewis J.; and Morgan, Henry A., to T-Bar Incorporated. Switch having opposed dome and flexible bifurcated contacts. 3,689,856, Cl. 335-133.000.
- Lambert, Robert R., to Air Factors, Inc. Spaced parallel panel air diffuser assembly. 3,688,680, Cl. 98-40.00d.
- Lancaster, Larry N. Spindle plumbing device. 3,688,485, Cl. 57-1.00f.
- Lander, William M.: *See—*  
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- Landry, Jean-Guy. Cement composition containing alkanolaminolignosulfonateformaldehyde setting retarder. 3,689,296, Cl. 106-90.000.
- Lane, Robert E., and Stoddard, Xerxes T., to Allied Chemical Corporation. Hot water sulfur melter. 3,689,229, Cl. 23-308.00s.
- Lanfranco, Giovanni: *See—*  
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- Langhammer, Carl M., to Du Pont de Nemours, E. I., and Company. Pharmaceutical composition comprising certain  $\alpha\beta$ -unsaturated ketones. 3,689,659, Cl. 424-275.000.
- Lapointe, Gilbert: *See—*  
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- Lau, Waldemar; and Schaffernak, Anton, to Aktiengesellschaft Brown, Boveri & Cie. Arrangement for disconnecting consumers from a direct current voltage supply source. 3,689,800, Cl. 317-16.000.
- Laub, Henry William: *See—*  
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- Laura, James F.; and Eng, Albert, to Foto-Mem, Inc. Image storage and retrieval system. 3,689,894, Cl. 340-172.500.
- Laurent, Francois, 1/2 to C.O.C.E.I. SA. Method of and apparatus for sorting crystals according to size. 3,688,901, Cl. 209-157.000.
- Lavigne, William J., Jr., to Carrier Corporation. Method and apparatus for removing water and noncondensable gases from certain refrigerants. 3,688,515, Cl. 62-85.000.
- Lawrence, Charles H.: *See—*  
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- Le Febvre, David A., to Sperry Rand Corporation. Function generator. 3,689,754, Cl. 235-197.000.
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- Le Vau, Walter H., 49% to Anderson, Ronald E. Snagless fishing apparatus. 3,688,434, Cl. 43-44.970.
- Leach, Michael E. H., to Borg-Warner Limited. Transmission control mechanism. 3,688,608, Cl. 74-869.000.
- Leanza, William J.: *See—*  
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- Lease, William D. Fire suppression system for heavy mobile machines. 3,688,846, Cl. 169-2.00a.
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- Lederer, Milton Ronald, Jr. Bumper assembly for boats. 3,688,728, Cl. 114-219.000.
- Ledergerber, Alfred, to Werkzeugmaschinenfabrik Gildemeister & Comp., Akt.-Ges. Multiple-spindle machine tool. 3,688,364, Cl. 29-38.00d.
- Lee, Kwan-Hua, to University of California, The Regents of the. C22 acid and its salts to promote wound healing. 3,689,667, Cl. 424-318.000.
- Lee, Richard J.; and Karll, Robert E., to Standard Oil Company (Indiana). Preparation of alkane nitro-amines. 3,689,561, Cl. 260-583.00f.
- Lee, Tai Y.: *See—*  
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- Leesona Corporation: *See—*  
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- Lefort, Marcel, to Rhone-Poulenc S.A. Preparation of chlorosilanes from disiloxanes. 3,689,519, Cl. 260-448.20e.
- Legacy, Lloyd W.; McAvoy, Thomas R.; and Nelson, Leonard E., to Minnesota Mining and Manufacturing Company. Abrasive articles. 3,688,453, Cl. 51-400.000.
- Lehman, Albert L.: *See—*  
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- Leidl, Max: *See—*  
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- Leimgruber, Willy; and Weigle, Manfred, to Hoffmann-La Roche, Inc. Halide and sulfate salts of 5-amino isoxazolylmethylene dialkylamine. 3,689,498, Cl. 260-307.00h.
- Leitmeier, Franz X.; Saller, Franz; and John, Neusubing B. Two-part optical components with air space. 3,689,134, Cl. 350-252.000.
- Lemieux, George E.; and Smalinskas, Stepas, to Ford Motor Company. Throttle valve actuator for an automatic vehicle transmission having engine back pressure compensation. 3,688,606, Cl. 74-863.000.
- Lenane, Denis L., to Ethyl Corporation. Exhaust system. 3,688,476, Cl. 55-276.000.
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- Ler-Son Company, Incorporated: *See—*  
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- Leto, Alfonso; and Davis, William R., to Western Technical Products, Inc. Resistance tester for producing an audible tone that varies with the resistance. 3,689,832, Cl. 324-65.00r.
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- Liester, Arvin F. Apparatus for concrete wall construction. 3,689,021, Cl. 249-35.000.
- Lift-All Company, Inc. *See—*  
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- Ligh, David R. Refuse compacting apparatus. 3,688,686, Cl. 100-52.000.
- Lill, Melvin H.; and Graham, Edward P., to FMC Corporation. Optical unit for wheel aligner. 3,689,161, Cl. 356-155.000.
- Lilkvist, Salomo, to Oy Wih Schauman AB. Carrying and closing device for bags and sacks. 3,688,973, Cl. 229-54.00r.
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- Linder, Fritz. Plastic container and method of manufacturing the same. 3,688,934, Cl. 215-32.000.
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- Links, Heinz, to Bosch, Robert, G.m.b.H. Pump-and-nozzle assembly for injecting fuel into internal combustion engines. 3,689,205, Cl. 417-401.000.
- Lipschutz, Paul; and Lercy, Jean-Pierre, to Societe d'Exploitation des Brevets Neiman S.A. Anti-theft devices. 3,688,861, Cl. 180-114.000.
- Lipton, Morris A. *See—*  
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- Little, Carl H., to Weber-Knapp Company. Hinge latch. 3,688,342, Cl. 16-144.000.
- Little, William S., Jr.; and Lennon, John H., to Xerox Corporation. Screen making process utilizing rotation of optical plate. 3,689,267, Cl. 96-38.300.
- Liton Systems Inc. *See—*  
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- Loeffler, Robert W.; Loeffler, Walter W., Jr.; and Stubbs, Edward L., to Ler-Son Company, Incorporated. Method for external coating of cylindrical objects. 3,689,311, Cl. 117-94.000.
- Loeffler, Walter W., Jr. *See—*  
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- Lok, Hermannus Henderikus, to Nereid N.V. Bathyal unit. 3,688,720, Cl. 114-16.00e.
- Long, Arthur H.; and Lyden, Edward M., to Stamets, Wm. K., Company. Conveyor. 3,688,891, Cl. 198-41.000.
- Long, Bernard C., to Mobil Oil Corporation. FCC catalyst section control. 3,689,403, Cl. 208-164.000.
- Long, George E., III, and Bartch, Donald Walter, to RCA Corporation. Spray method for producing a glare-reducing coating. 3,689,312, Cl. 117-94.000.
- Long, Kenneth H. *See—*  
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- Long, William W., III, to Carborundum Company, The. Last cleaning arrangement. 3,688,445, Cl. 51-14.000.
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- Lorenz, Walter; Fest, Christa; Hammann, Ingeborg; Federmann, Manfred; Flucke, Winfried, and Stendel, Wilhelm, to Farbenfabriken Bayer Aktiengesellschaft. Phosphonic acid ester containing pesticidal composition and methods of combating pests. 3,689,648, Cl. 424-210.000.
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- Ludwig, Louis. Line cord switch. 3,689,723, Cl. 200-168.00e.
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- Lundblom, Robert E. Edger saw guide. 3,688,820, Cl. 143-160.00g.
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- Lusti, John; and Reid, William Paul, to Otis Elevator Company. Elevator motor control system employing power amplifier with output current limiting arrangement. 3,688,874, Cl. 187-29.00r.
- Lutz, Allen L. *See—*  
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- Magerlein, Barney J. *See—*  
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- Maggi, Carlo. *See—*  
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- Maguire, Eileen; and Kadison, Leon A., to Crown City Plating Company. Process for electroless plating of ABS resins. 3,689,303, Cl. 117-47.00a.
- Mahlm, Bert H., to Hercules Incorporated. Polyphase compositions and process for their preparation. 3,689,597, Cl. 260-897.00r.
- Mahon, John V., to Container Corporation of America. Opening feature for bottle carrier. 3,688,972, Cl. 229-51.0ts.
- Mahoney, Thomas P. *See—*  
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- Maier, Ludwig, to Monsanto Company. Process for preparing organic phosphinic acid anhydrides. 3,689,548, Cl. 260-543.00p.
- Majewski, Theodore E.; and Easterly, James P. Salicylic acid and halo-substituted salicylic acid salts of oxydianiline. 3,689,536, Cl. 260-501.180.
- Majkus, Vladimir. *See—*  
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- Makihara, Tsutomu, and Yoneji, Satoshige, to Brother Kogyo Kabushiki Kaisha. Control system for a sewing machine. 3,688,710, Cl. 112-219.00a.
- Makihara, Tsutomu; and Yoneji, Satoshige, to Brother Kogyo Kabushiki Kaisha. Control system for a sewing machine. 3,688,714, Cl. 112-219.00a.
- Makita, Minoru. *See—*  
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- Makower, Samuel J.; and Cautilli, Philip A. Process for preparing emulsion interpolymers containing vinyl chloride and ethylene, having improved heat stability. 3,689,447, Cl. 260-29.6rb.
- Malcolm, Ian, to Guildline Instruments Limited. Circuit for conversion from (RMS) A.C. to D.C. 3,689,824, Cl. 321-1.500.
- Maling, George C., Jr. *See—*  
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- Maloney, Thomas O. *See—*  
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- Mamok, Herbert; Hejl, Rainer; and Korner, Joachim, to Akzona Incorporated. Elastomerically-reinforced polyamide strapping and method. 3,689,354, Cl. 161-92.000.
- Mannino, Albert A.; and Wolbert, Charles N. Carburetor for gaseous fuel. 3,689,236, Cl. 48-180.00p.
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- Hall, David W.; and Hurley, Ed, Jr., 3,689,580.
- Olson, Danford H.; and Bailey, George M., 3,689,578.
- Roselle, Wayne O., 3,688,844.
- Marcocchie, Alphonso E. Apparatus for removing oil slick from water surfaces. 3,688,506, Cl. 61-1.00f.
- Margraff, Rodolphe. *See—*  
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- Marini, Aldo M., to Willcox & Gibbs, Inc. Continuous production dielectric heating apparatus. 3,689,728, Cl. 219-10.810.
- Marinus, Victor Alois, to Gevaert-Agfa N.V. Testing of a chain link-mechanism. 3,688,557, Cl. 73-9.000.
- Marion Corporation. *See—*  
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- Marker, Hannes. *See—*  
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- Marker, Hannes; and Biermann, Peter, to Marker, Hannes. Safety ski binding. 3,689,094, Cl. 280-11.35c.
- Marlabs, Inc. *See—*  
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- Marlow, Jerry R., to General Motors Corporation. Transmission and control. 3,688,607, Cl. 74-866.000.
- Marsch, Hans-Dieter. *See—*  
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- Marshall, Rolf F. Cellular building structure. 3,688,327, Cl. 14-1.000.
- Marshall, William W. *See—*  
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- Martin, Aaron J.; and Marlabs, Inc., to Dynamic gas flow apparatus. 3,689,038, Cl. 263-2.000.
- Martin, Albert Michael, to Berea Road Auto Body, Inc. Method of disassembling sheet metal assemblies. 3,688,383, Cl. 29-427.000.
- Martin, Donald J. *See—*  
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- Martin, Paul B., Jr.; and Spencer, Gilbert W., to Reynolds, R. J., Tobacco Company. Self propelled sewage sludge excavator. 3,688,924, Cl. 214-17.0db.
- Martin, Sidney L. Device useful informing concrete structural slabs. 3,689,020, Cl. 249-25.000.
- Martin-Marietta Corporation. *See—*  
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- Martinson, Milton B.; and Risbrudt, Glenn A. Leaf comminuting apparatus. 3,688,479, Cl. 56-13.200.
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- Mashimo, Yukio, to Canon Kabushiki Kaisha. Flash device for a camera. 3,688,664, Cl. 95-11.50r.
- Mason, Edwin E.; and Libby, Ross C., to Design Elements, Inc. Inverter drive circuit. 3,689,825, Cl. 321-45.00r.
- Mason, Jerry E. *See—*  
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- Mason, Paul J.; Moore, William R.; and Ulmer, Harry E. Triazinylamino substituted dimethyl ethers. 3,689,487, Cl. 260-249.800.
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- Matsuda, Hiroyoshi. *See—*  
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- Matsuda, Hitoshi; Hayashi, Hideaki; Araki, Tetsuro; and Kooa, Shinichi, to Nippon Columbia Kabushiki Kaisha (Nippon Columbia Co., Ltd.). Detector for phonograph utilizing a rotational angle sound track selection. 3,689,079, Cl. 274-9.0ra.
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 Mc Dicken, William Norman, to National Research Development Corporation. Ultrasonic scanning apparatus, 3,688,564, Cl. 73-67.800.  
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 Mc Queen, John; and Minuttilo, Leonard D., to Griffith Electronics, Inc. Convergence assembly, 3,689,791, Cl. 313-77.000.  
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 Mitchell, Jack H., Jr. Process for making peanut flakes, 3,689,287, Cl. 99-126.000.  
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 Miyata, Yoshihiko, to Hitachi, Ltd. Method of manufacturing color picture tubes, 3,688,360, Cl. 29-25.180.  
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 Mizushima, Kyohei; and Yada, Yukio, to Mitsubishi Rayon Company Ltd. Method of producing a synthetic resin box with double wall structure, 3,688,384, Cl. 29-455.000.  
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 Negro, Guido, to Bielomatik Leuze & Co. Method and apparatus for producing and threading a helix into a stack of sheets, 3,688,809, Cl. 140-92.400.  
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 Newell, Strohm. Card case, 3,688,896, Cl. 206-39.000.  
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Oberkircher, Frederick D., Jr.: See—  
Mitchell, Robert M.; and Oberkircher, Frederick D., Jr., 3,688,942.

Obermaier, Alfred A.; and Piernan, Martin J., to Alnor Instrument Company. Air velocity measuring system and method for its calibration. 3,688,576, Cl. 73-202.000.

Obsarny, Theodore J., to Guardian Electric Manufacturing Company. Sequence relay. 3,689,857, Cl. 335-165.000.

Ocean Metrics, Inc.: See—  
Kerpchar, Michael, 3,689,156.

Oceanography International Corporation: See—  
Fredericks, Alan D., 3,688,812.

Ocker, Herbert, to Werner & Pfeleiderer. Screw-type heat exchanger. 3,688,837, Cl. 165-87.000.

Oda, Teishiro; and Daikoku, Takashi, to Mitsubishi Jukogyo Kabushiki Kaisha. Method of producing sintered ferrous materials. 3,689,257, Cl. 75-214.000.

Office Technique des Trefiles: See—  
Tranier, Jean, 3,688,546.

Ogawa, Toshiya: See—  
Kagari, Yoshiharu; Ogawa, Toshiya; and Hirokawa, Koichi, 3,689,742.

Ogiso, Mitsutoshi; and Aizawa, Hiroshi; to Canon Kabushiki Kaisha. Camera control system. 3,688,669, Cl. 95-31.00c.

O'Hare, Louis Richard. Shock plasma hydrolic ram. 3,689,198, Cl. 417-207.000.

Ohira, Tsunehisa, to Victor Company of Japan, Limited. Operation device for cassette type tape recorder. 3,689,077, Cl. 274.4.00c.

Ohkubo, Hiroyuki; and Saotome, Shigeo, to Ishikawajima Harima Jukogyo Kabushiki Kaisha and Daido Seiko Kabushiki Kaisha. Stripper guide. 3,688,541, Cl. 72-250.000.

Ohnishi, Toshimi; Suzuki, Takamitsu; Takahashi, Akio; Yagi, Hiroshi; and Ohya, Shunichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Process for cold plastic forming of spaced tooth-like projections on a ring or similarly shaped member. 3,688,549, Cl. 72-33.000.

Ohta, Masanori. Method for separating oils from water. 3,689,406, Cl. 210-23.000.

Ohtsu, Masao: See—  
Asano, Hiroaki; and Ohtsu, Masao, 3,688,411.

Ohya, Shunichi: See—  
Ohnishi, Toshimi; Suzuki, Takamitsu; Takahashi, Akio; Yagi, Hiroshi; and Ohya, Shunichi, 3,688,549.

Oikawa, Mitsuru; Tamura, Shozo; and Okabe, Tadao, to Hitachi, Ltd. Method for producing a composite shadow mask. 3,688,359, Cl. 29-25.140.

Oikawa, Takashi; and Fujimoto, Takeshi, to Showa Denko Kabushiki Kaisha. Powderless etching bath. 3,689,417, Cl. 252-79.300.

Oil Mop, Inc.: See—  
Rhodes, Herbert M., 3,689,407.

Oimachi, Irumagun: See—  
Kobayashi, Hidehiko; Sasaguri, Kiichiro; Oimachi, Irumagun; Neki, Kazuya; and Tanimura, Noboru, 3,689,623.

Okabe, Tadao: See—  
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Okagami, Akio: See—  
Gomi, Shinpei; Takahashi, Masaaki; Ishiguro, Tadashi; Okagami, Akio; Uemoto, Kunihiko; and Kuribayashi, Hiroshi, 3,689,401.

Okamoto, Takanori: See—  
Matsuda, Hideaki; Okamoto, Takanori; and Dohim Hidemi, 3,689,427.

Okazaki, Masahide; and Endo, Tutosi, to Kuraray Co., Ltd. Method and apparatus for preparing non-woven fibrous materials. 3,688,355, Cl. 28-1.400.

Okers, Clifford B.: See—  
Applequist, James E.; Johnson, James E.; Okers, Clifford B.; Daniels, Donald V.; James, Richard N.; Roberts, Daniel M.; and Guzy, Daniel James, 3,688,656.

Oki, Kazuo: See—  
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Okura Kogyo Kabushiki Kaisha: See—  
Matsuda, Hideaki; Okamoto, Takanori; and Dohim Hidemi, 3,689,427.

Oldberg, John Erik Edward, to Sala Maskinfabriks Aktiebolag. Plant for processing bulky masses, especially pelletized materials in autoclaves. 3,688,925, Cl. 214-18.00r.

Oldenburg, Dorrance: See—  
Gutman, Nathan; and Oldenburg, Dorrance, 3,688,822.

Oles, Herbert E.: See—  
Fierle, Robert J.; Mott, James A.; Oles, Herbert E.; and Reed, George A., 3,688,689.

Olin Corporation: See—  
Morris, Jack, 3,689,727.

Olin Mathieson Chemical Corporation: See—  
Smith, Eric, 3,689,520.

Oliver, Helmut. Garment with a removable secret pocket flap. 3,688,315, Cl. 2-252.000.

Olivetti, Ing. C., & C., S.p.A.: See—  
Taddei, Romano, 3,689,893.

Olmstead, Ival L.: See—  
Paul, Ben E.; and Olmstead, Ival L., 3,688,697.

Olofsson, Hans Kristoffer: See—  
Berle, Axel Gunnar; Nilsson, Lars Gunnar; and Olofsson, Hans Kristoffer, 3,689,197.

Olson, Danford H.; and Bailey, George M., to Marathon Oil Company. Process for the production of vinylically chlorinated olefins. 3,689,578, Cl. 260-654.00r.

Olympia Werke A.G.: See—  
van der Werff, Chien, 3,688,888.

O'Malley, John J., to General Motors Corporation. Fluid operated clutch with one way engager. 3,688,882, Cl. 192-85.00a.

Omura, Etuzou: See—  
Miyazaki, Toshio; Omura, Etuzou; Katakabe, Kyoku; Makita, Minoru; Iwase, Kenji; Tsutsumi, Hideo; Yotsumoto, Takashi; Ikeda, Fumiaki; Takashima, Yoshiro; Sueyoshi, Hiromu; and Maesaka, Tomio, 3,689,620.

O'Neill, Cormac G., to Physics International Company. Mass flow metered fuel injection system. 3,688,750, Cl. 123-32.00a.

O'Neill, Wilbur J., to Westinghouse Electric Corporation. High pressure gas pressurization system. 3,688,770, Cl. 128-204.000.

Oneto, Augusto Luis: See—  
Benitez, Ramon; and Oneto, Augusto Luis, 3,688,465.

Ono, Kunio: See—  
Kurose, Tadashi; Kagaya, Ryuichi; Ono, Kunio; and Kanda, Kimio, 3,689,828.

Ono, Takeo: See—  
Sugano, Seiroku; Arai, Tomio; Hayami, Seinoshin; Watanabe, Sadao; Fujishiro, Shigeru; and Ono, Takeo, 3,689,372.

Onozawa, Tatsugoro. Instantaneously ignitable solid fuel. 3,689,234, Cl. 44-17.000.

Oravec, August J. Automatically self-cleaning self-aerating tropical fish aquarium. 3,688,907, Cl. 210-169.000.

Orloff, Harold D.: See—  
Hornbaker, Edwin D.; Sparks, Bryan; and Orloff, Harold D., 3,689,355.

Ort, Wolfgang, to Eastman Kodak Company. Film transport indicator in a camera. 3,688,668, Cl. 95-31.00f.

Ortlieb, Dieter; Thomas, Joachim; Stockburger, Horst; Birkhold, Erich; and Kling, Horst, to Dornier System GmbH. Towable underwater vessel. 3,688,730, Cl. 114-235.00b.

Osaka, Yonosuke; Watanabe, Kinya; Tamura, Kohji; Sonoyama, Heikitsu; Matsuda, Satoru; Haruhana, Masao; and Matoba, Hideo, to Daikin Kogyo Kabushiki Kaisha. Process for purifying hydrofluoric acid by distillation with an oxidizing agent and a ferrous salt. 3,689,370, Cl. 203-31.000.

Osborne, Herbert L.; and Haley, Kenneth R., to Armco Steel Corporation. Runner system for cast house, and method of separating iron and slag. 3,689,252, Cl. 75-46.000.

Osmun, Dean W.; and Slator, Damon T., to Bowen Tools, Inc. Tubing connection having means for distributing axially applied forces. 3,689,111, Cl. 285-39.000.

Ostbergs Fabriks AB: See—  
Runeson, Stig Olof, 3,688,816.

Runeson, Stig Olof, 3,688,823.

Ostermayer, Franz: See—  
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Ota, Isao, to Matsushita Electric Industrial Co., Ltd. Photoelectrophoretic image reproduction device. 3,689,399, Cl. 204-299.000.

Ota, Isao; and Otsuka, Tetsuro, to Matsushita Electric Industrial Co., Ltd. Color image reproduction device. 3,689,400, Cl. 204-300.000.

Otis Elevator Company: See—  
Lusti, John; and Reid, William Paul, 3,688,874.

Otrok, Anatoly Ilich: See—  
Vinogradov, Gleb Andreevich; Katus, Oleg Alexandrovich; and Otrok, Anatoly Ilich, 3,689,209.

Otsuka, Tetsuro: See—  
Ota, Isao; and Otsuka, Tetsuro, 3,689,400.

Ott, Zdenek: See—  
Kliment, Karel; Vacik, Jiri; Ott, Zdenek; Majkus, Vladimir; Stol, Miroslav; Stoy, Vladimir; and Wichterle, Otto, 3,689,634.

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Outboard Marine Corporation: See—  
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Owen, Ian Thornton, to Imperial Chemical Industries Limited. Laminated building boards. 3,688,623, Cl. 83-294.000.

Owen, Ronald C.; and Cunningham, Ernest R. One-piece container carrier. 3,688,935, Cl. 215-100.00a.

Owens, John Edward: See—  
Hollberg, Herbert John; and Owens, John Edward, 3,689,608.

Owens, William E. Sanitizing apparatus. 3,688,783, Cl. 134-99.000.

Owens-Illinois, Inc.: See—  
Denlinger, Carl E., 3,689,183.

Oy With Schauman AB: See—  
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Pabinger, Gerhard: See—  
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Pabst, Russell F.: See—  
Flick, Francis S.; and Pabst, Russell F., 3,688,646.

Packaging Corporation of America: See—  
Rathfon, Norman L., III, 3,688,968.

Pader, Morton, to Lever Brothers Company. Dentifrice composition. 3,689,637, Cl. 424-52.000.

Page, Thomas John: See—  
Cleaver, John Stephen; Guilford, Peter; Kimpton, Frederick James; Page, Thomas John; and Steinberg, Norman Richard, 3,688,397.

Paglia, Richard, to Polaroid Corporation. Film retaining apparatus. 3,688,667, Cl. 95-13.000.

Paitanyus, Tamas L., to Westinghouse Electric Corporation. Channel equalization for differencing pre-recorded and live video signals. 3,689,691, Cl. 178-6.800.

Paletto, Raimondo; and Cossuta, Giuseppe, to Ates Componenti Eletttronici S.p.A. Module for integrated circuits and method of making same. 3,689,683, Cl. 174-52.00e.

Paltier Corporation, The: See—  
Ellison, Herbert E., 3,688,937.

Palynchuk, Alexander. Process for making continuous metal members such as sucker rod strings. 3,689,326, Cl. 148-12.300.

Panter, Peter D.; Denis, Claude P.E.; and Kaempfer, Gerhard P., to Wolverine World Wide, Inc. Torsion action cutting and marking die. 3,688,325, Cl. 12-52.500.

Paolucci, Paride: See—  
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Paper Converting Machine Company, Inc.: See—  
Nystrand, Ernst Daniel, 3,689,061.

Paquette, Omer E. Dental cutting tool. 3,688,407, Cl. 32-40.00r.

Paramatic Corporation: See—  
Kelley, Bernard B., 3,689,616.

Parent, Jean-Claude: See—  
Petit, Roland; Louise, Jean; Parent, Jean-Claude; and Hay, Leon, 3,689,212.

Parish, Laurence P. Adapter for a water cooler. 3,688,950, Cl. 222-146.00r.

Parolini, Andrea, to Somet Societa Meccanica Tessile S.p.A. Weft drawing gripper for looms. 3,688,807, Cl. 139-122.00n.

Partridge, Harvie C., to Smithpac Canada Ltd. Vertical packer assembly and guide frame thereof for refuse carrier. 3,688,928, Cl. 214-83.300.

Pascuzzo, Albert L.: See—  
Antonetti, Vincent W.; Maling, George C., Jr.; Pascuzzo, Albert L.; and Wise, Russell E., 3,688,867.

Patel, Nagar J., to Westinghouse Electric Corporation. Circuit breaker including spring closing means with means for moving a charging pawl out of engagement with a ratchet wheel when the spring means are charged. 3,689,720, Cl. 200-153.00c.

Patmore, Edwin L.; Siegart, William R.; and Chafetz, Harry, to Texaco Inc. Carboxylation of acetylenic compounds. 3,689,539, Cl. 260-515.00r.

Patok, Stan: See—  
Rosen, Cyril; and Patok, Stan, 3,689,761.

Patterson, David D., to Garkan, Herschal F. Baby strollers. 3,689,099, Cl. 280-38.000.

Patterson, Paul Raymond; Fry, Darryl Diamond; and Kloth, Irving. Odor free non-caking conditioned urea composition and process of preparing same. 3,689,551, Cl. 260-555.00c.

Patterson-Kelley Co., Inc.: See—  
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Pattison, Roy: See—  
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Pattullo, John Patrick: See—  
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Paul, Ben E.; and Olmstead, Ival L., to Aerojet-General Corporation. Solid grain caseless ammunition propellant. 3,688,697, Cl. 102-38.000.

Pavia, Robert J. Ducting. 3,688,803, Cl. 138-173.000.

Payne, Charles C., to Nalco Chemical Company. Silica sol compositions. 3,689,431, Cl. 252-313.00s.

Payne, Francis M., to Spra-Kleen Company, Inc., The. Humidifier unit for warm air heating systems. 3,689,037, Cl. 261-105.000.

Payne, Nigel: See—  
Nightingale, Douglas Daniel; and Payne, Nigel, 3,688,798.

Pearson, John B.: See—  
Keinanen, Henry J.; and Pearson, John B., 3,688,535.

Pechin, William H.; Bradley, Ronnie A.; and Sease, John D., to United States of America, Atomic Energy Commission. Nuclear fuel having minimum-gas-release properties. 3,689,428, Cl. 252-301.10r.

Peck, Richard Otis, to Amsted Industries Incorporated. Mold with tie rod assembly for slotted block. 3,689,023, Cl. 249-82.000.

Peckham, Augustus W. Slidable snap fastener device for supporting drapes or curtains. 3,688,341, Cl. 16-93.00d.

Peil, Archie W.: See—  
Slator, Damon T.; Bishop, Thomas R.; and Peil, Archie W., 3,689,112.

Peille, Jean Marie Raymond Albert. Process for continuous production of composite plates whose faces can be given a profile or a fixed impression. 3,689,348, Cl. 156-292.000.

Pelle, Jozsef; and Varga, Laszlo, to Heves Megyei Beruhazasi Vallalat. Formwork assembly. 3,689,018, Cl. 249-13.000.

Pennwalt Corporation: See—  
Groepner, Jurgen, 3,689,594.

Pepl, Inc.: See—  
Haas, David J.; and Pichert, Jerome, 3,689,790.

Pere, Carlo; and Tornich, Fulvio. Method of heating steel ingots in soaking pits and combustion system for performing said method. 3,689,041, Cl. 263-40.00r.

Pere, Carlo; Tornich, Fulvio; and Macor, Tranquillo. Automatic control apparatus for soaking pit furnaces. 3,689,042, Cl. 263-40.00r.

Pereira, Adolfo J. Method for fenestration of contact lenses. 3,688,386, Cl. 29-558.000.

Perez, Henry C., to Hall, Francis C. Stringed musical instrument. 3,688,632, Cl. 84-314.000.

Perkins, Garry R.; and Goode, James K., to Spotnails, Inc. Magazine and feed assembly for a fastener-driving tool. 3,688,966, Cl. 227-127.000.

Perona, Giovanni. Coherent dispersion hardened. 3,689,328, Cl. 148-31.500.

Perov, Alexandr Vasilievich: See—  
Brukovsky, Igor Pavlovich; Yakovlev, Pavel Borisovich; Gutterman, Kirill Davidovich; Perov, Alexandr Vasilievich; Zhukov, Vladimir Fedorovich; Nekrasova, Larisa Petrovna; and Ivanovsky, Jury Dmitrievich, 3,689,798.

Perret, Marcel Andre. Chicken flavor and process for preparing the same. 3,689,289, Cl. 99-140.00n.

Perrin, Gunter; and Pabinger, Gerhard, to Daimler-Benz Aktiengesellschaft. Viscosity coupling, especially for coupling a fan to its drive in an internal combustion engine. 3,688,884, Cl. 192-58.00b.

Persson, Henry. Mountable chip breaker and flute cleaner for rotating twist drills. 3,689,168, Cl. 408-61.000.

Peschl, Ervin; and Skrepek, Jan, to Schlafhorst, W., & Co. and Vyzkumny Ustav Pletarsky. Warp knitting machine. 3,688,524, Cl. 66-86.00r.

Pesterfield, Enos C., to Ciba-Geigy Corporation. Compositions and method for reducing blood pressure with 2-phenyl-2-(1-naphenyl)acetamides. 3,689,672, Cl. 424-324.000.

Petersen, Siegfried: See—  
Kebbe, Hans Joachim; Horstmann, Harald; Plumpe, Hans; Puls, Walter; and Petersen, Siegfried, 3,689,674.

Peterson, Donald W., to General Motors Corporation. Windshield wiper blade having horizontal path. 3,688,334, Cl. 15-250.210.

Peterson, Orrin Martel: See—  
Hardy, Paul Wilson; and Peterson, Orrin Martel, 3,689,611.

Peterson, Richard H. Electrically operated rhythm instrument. 3,688,627, Cl. 84-171.000.

Peterson, Scren E. Potato-seed cutting machines. 3,688,828, Cl. 146-164.000.

Petit, Roland; Louise, Jean; Parent, Jean-Claude; and Hay, Leon, to L'Air Liquide, Societe Anonyme pour L'Etude et L'Exploitation des Procedes Georges Claude. Method of purifying gaseous mixtures. 3,689,212, Cl. 423-239.000.

Pfannkuche, Christopher E.: See—  
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Pfeifer, Josef: See—  
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Pfizer Inc.: See—  
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Phares, Russell E., Jr., to Barnes-Hind Pharmaceuticals Inc. Process of soaking and sterilizing hydrophilic soft contact lenses with chlorohexidine. 3,689,673, Cl. 424-326.000.

Phillips, Brian L.: See—  
Aragbright, Perry A.; Erwin, Virgel G.; and Phillips, Brian L., 3,689,651.

Phillips, Calvert F., Jr., to United States of America, Air Force. Radar system logic circuit. 3,689,922, Cl. 343-17.00r.

Phillips, Calvin C., to Safeway Stores, Incorporated. Apparatus and method for washing trailer interiors. 3,689,318, Cl. 134-23.000.

Phillips, James W.; and Winter, James R., to Dwyer Instruments, Inc. Fluid pressure operated diaphragm switch with improved adjustment means and contact structure. 3,689,719, Cl. 200-83.00p.

Phillips, John Arnaud; and Cowlin, John William, to Evershed & Vignoles Limited. Recording styli and control circuits for styli. 3,689,937, Cl. 346-76.00r.

Phillips Petroleum Company: See—  
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Gwinn, J. S., 3,689,595.

Hanson, Donald O., 3,689,374.

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 Turk, Stanley D., 3,689,465.  
 Warner, Paul F., 3,689,450.  
 Williams, Ralph P., 3,689,549.  
 Phillips, Robert James; Reasor, Robert L.; and Wiley, Donald F. Egg carton latching design. 3,688,971, Cl. 229-44.00r.  
 Phone-Poulenc S.A.: See—  
 Lefort, Marcel, 3,689,519.  
 Physics International Company: See—  
 O'Neill, Cormac G., 3,688,750.  
 Pichert, Jerome: See—  
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 Piedallu, Marcel M. Oscillating deep fryer. 3,688,684, Cl. 99-409.000.  
 Pierce, Everette M., to United States of America, Army. Nitrocellulose base compositions and method for making same. 3,689,331, Cl. 149-18.000.  
 Pierini, John M.; Sarazen, John C.; and Larsen, Reidar G., to Texas Instruments, Incorporated. Connector. 3,689,865, Cl. 339-172.000.  
 Pierman, Martin J.: See—  
 Obermaier, Alfred A.; and Pierman, Martin J., 3,688,576.  
 Piette, Emile Leon. Method of alleviating wrinkles on skin. 3,689,668, Cl. 424-319.000.  
 Pilkington Brothers Limited: See—  
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 Pinede, Edouard; and De Kam, Abraham, to International Standard Electric Corporation. System for party line signalling using re-encoded ringing signals. 3,689,705, Cl. 179-17.00e.  
 Piqua Aircraft Co. (Inc.): See—  
 Hartzell, James R.; and Reas, Arley J., 3,689,175.  
 Plastic Innovations Limited: See—  
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 Plastic Rotational Moulding Limited: See—  
 Westbrook, Aubrey Joseph; Mac Knight, Ian David, and Thomson, Ian David MacKnight, 3,689,191.  
 Platakis, Nicholas S.; Gatos, Harry C.; and Witt, August F., to Massachusetts Institute of Technology. Method of preparing electrically and optically active vitreous and polycrystalline materials. 3,689,242, Cl. 65-32.000.  
 Plakto, John M., to United States Steel Corporation. Device for adjustably supporting a rod guide tube. 3,688,542, Cl. 72-250.000.  
 Plattner, Robert F.; and Coleman, Bestor P., to Interlake, Inc. Unreeler. 3,688,999, Cl. 242-75.430.  
 Plotnikoff, Nicholas Peter, to Abbott Laboratories. Combination of L-dopa, 2-imino-5-phenyl-4-oxazolidinone and an aluminum or alkaline earth metal salt or base used to treat Parkinson's disease. 3,689,643, Cl. 424-157.000.  
 Plotnikoff, Nicholas Peter, to Abbott Laboratories. 2-Imino-5-phenyl-4-oxazolidinone and a potentiating agent to treat Parkinson's disease. 3,689,644, Cl. 424-157.000.  
 Plumpe, Hans: See—  
 Kabbe, Hans Joachim; Horstmann, Harald; Plumpe, Hans; Puls, Walter; and Petersen, Siegfried, 3,689,674.  
 Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes: See—  
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 Pohl, Karl-Heinz: See—  
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 Polaroid Corporation: See—  
 Baker, James G., 3,689,132.  
 Burke, Edward F., Jr., 3,688,570.  
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 Polyakov, Boris Nikolaevich: See—  
 Bykov, Vladimir Alexandrovich; Varaxin, Alexei Ivanovich; Gel'fenbein, Evgeny Jukhimovich; Karinsky, Stanislav Evgenievich; Niskovskikh, Vitaly Maximovich; Polyakov, Boris Nikolaevich; Sokolovsky, Oleg Petrovich; and Khimich, Georgy Lukich, 3,688,833.  
 Pon, Harry: See—  
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 Porsche, Dr.-Ing. H.-C.F., K.G., Firma: See—  
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 Porter, John P.: See—  
 Karper, Paul W.; and Porter, John P., 3,688,568.  
 Porter, William I.: See—  
 Porter, William I.; Hindsley, Frank W.; and Hesse, James E. (said Hindsley and said Hesse assor. to said), 3,688,406.  
 Porter, William I.; Hindsley, Frank W.; and Hesse, James E., said Hindsley and said Hesse assor. to said Porter, William I. Apparatus for and method of applying decay retardant compositions to teeth. 3,688,406, Cl. 32-40.00r.  
 Porvair Limited: See—  
 Hull, Graham Rodney, 3,689,629.  
 Potapenko, Viktor Viktorovich: See—  
 Dunaevsky, Iuliy Nekhemievich, Tartakovsky, Boris Nusimovich, Zhukov, Nikolai Arsentievich, and Potapenko, Viktor Viktorovich, 3,689,090.  
 Potrafke, Werner. Device for self-service stores. 3,688,873, Cl. 186-1.00a.  
 Power, Don W. Lighted earring. 3,689,758, Cl. 240-6.40w.  
 Power Flo Products Incorporated: See—  
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 Pozioemek, Edward J.; Hackey, Ethel B.; Hoy, Daniel J.; and Friedman, Harry George, Jr., to United States of America, Army. Detection method. 3,689,223, Cl. 23-230.00r.  
 PPG Industries, Inc.: See—  
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 Prange, Arthur J., Jr.; Wilson, Ian C.; and Lipton, Morris A., to North Carolina, The University of. Antidepressant method and composition. 3,689,669, Cl. 424-319.000.  
 Prast, Gijshert; and Rauwerdink, Hendrik Jan, to U.S. Philips Corporation. Cold-gas refrigerator, displacer seal to reduce frozen contaminants. 3,688,512, Cl. 62-6.000.  
 Precision Metalsmiths, Inc.: See—  
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 Precision Paper Tube Company: See—  
 Hilgers, Raymond H., 3,689,862.  
 Pressman, Gerald L.; and Casanova, John V., to Electro Print Inc. Electrostatic line printer. 3,689,935, Cl. 346-74.0es.  
 Preston, John M. Tin immersion plating bath and method. 3,689,292, Cl. 106-1.000.  
 Preuss, Friedrich, and Alix, Hans, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Dampening device for a printing press. 3,688,694, Cl. 101-148.000.  
 Prieur, Hubertus; Vom Dorp, Walter; and Zeunert, Fritz, to McKay Machine Company, The. Apparatus for forming pilgrim die grooves. 3,688,643, Cl. 90-24.300.  
 Prins, Jacob Matthys: See—  
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 Prior, Josef, and Florin, Aloys, to Dynamit Nobel Aktiengesellschaft. Detonator device for explosive charge exhibiting detonating effect capable of bridging gap between spaced charges. 3,688,702, Cl. 102-70.000.  
 Prisk, Bert C., to General Motors Corporation. Laminated liquid pump and method of making same. 3,689,204, Cl. 417-394.000.  
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 Progin, Bernard. Calculating rule. 3,688,980, Cl. 235-79.500.  
 Prost, Roger, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédés Georges Claude. Cryostats. 3,688,514, Cl. 62-45.000.  
 Protze, Josef; and Leidl, Max, to Messer Griesheim GmbH. Pipe cutting device. 3,688,615, Cl. 82-70.200.  
 Prummer, Helmut: See—  
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 Puccio, Joseph Anthony: See—  
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- eevich; Kirdo, Ivan Viktorovich; Dmitrenko, Georgy Viktorovich; Yagupov, Ivan Nikolaevich; Tsyrlin, Mark Irmovich; Novikov, Anatoly Petrovich; and Puzov, Filimon Efimovich, 3,688,382.  
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 Quentin, Jean-Pierre; and Ruau, Michel, to Rhone-Poulenc S. A. Coated electric conductor. 3,689,315, Cl. 117-228.000.  
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 Quinn, Halsey P., to Wagner Electric Corporation. Voltage and current regulated power supply circuit for gaseous discharge lamp. 3,689,827, Cl. 323-20.000.  
 Rack, Josef. Dry feed dispensers for fish. 3,688,743, Cl. 119-51.000.  
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 Rakow, Marvin S.; and Lockwood, William H., Jr., to Cities Service Oil Company. Sulfuric acid alkylation with p-phenylenediamine. 3,689,590, Cl. 260-683.630.  
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 Ramsey, Joe B., to Acme General Corporation. Combined shelf edge and hanger support. 3,688,915, Cl. 211-123.000.  
 Ramsey, Ronald L., to Dow Chemical Company, The. Film folding mechanism for a film rewinder. 3,689,001, Cl. 242-56.00a.  
 Randich, Erasmus A., to Allegheny Ludlum Industries, Inc. Apparatus for crop shearing with the use of flying shears. 3,688,621, Cl. 83-80.000.  
 Rathfon, Norman L., III, to Packaging Corporation of America. Composite package. 3,688,968, Cl. 229-23.00c.  
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 Lusti, John; and Reid, William Paul, 3,688,874.  
 Reimpel, Uwe; Schaidig, Helmut; Wolfgang, Hans Friedrich; and Schwartz, Domke, to Leybold-Heraeus Verwaltung GmbH. Electrode melting arrangement. 3,689,680, Cl. 13-9.000.  
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 Reinhold, Rolf Bertil; and Vardheim, Steiner, to Defibrator Aktiebolag. Method in the manufacture of boards of fibrous or/and plastic material. 3,689,347, Cl. 156-289.000.  
 Reis, Helmut: See—  
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 Renner, Richard L.: See—  
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 Moore, George G. I.; and Harrington, Joseph Kenneth, 3,689,553.  
 Trancik, Ronald J.; Moore, George G.; and Harrington, Joseph Kenneth, 3,689,523.  
 Riley, Clifford, to Vickers Limited. Apparatus including a multiple conduit path system for handling liquids to be tested. 3,689,164, Cl. 356-246.000.  
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Rogers, Howard G., to Polaroid Corporation. Photographic products and processes for color diffusion transfer. 3,689,262, Cl. 96-3.000.  
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Rogers, Murray K.; deceased (by Rogers, May B., executrix), to Multi-Line Pen Company, Incorporated. I-Square and guide means for drafting. 3,688,409, Cl. 33-81.000.  
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Rosch, Helmut; Neburg, Herbert; and Schlenz, Erich; deceased (by Schlenz, Frieda; heir), to Siemens Aktiengesellschaft. Remote-controlled magnetically operable switch. 3,689,858, Cl. 335-188.000.  
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Rosenberg, Franklin J.; and Miller, James G., to Sterling Drug, Inc. Rodenticidal and rodent repellent compositions. 3,689,655, Cl. 424-273.000.  
Rosenfield, Harry C.; and Chen, Chang C. Vehicle viewing system. 3,689,695, Cl. 178-7.810.  
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Runeson, Stig Olof, to Ostbergs Fabriks AB. Arrangement at tree felling unit. 3,688,816, Cl. 143-32.00n.  
Runeson, Stig Olof, to Ostbergs Fabriks AB. Suspension device for tree felling unit. 3,688,823, Cl. 144-34.00r.  
Ruppert, Heinrich, and Schnell, Hermann, to Farbenfabriken Bayer Aktiengesellschaft. Aromatic hydroxy compounds. 3,689,572, Cl. 260-619.00b.  
Russel, Richard E., to Superior Tube Company. Tube rolling mill employing a tapered mandrel and a cluster of rolls that each have specially designed tube contacting grooves. 3,688,540, Cl. 72-208.000.  
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Sahagian, Edward H. Rotary engine construction. 3,688,751, Cl. 123-44.00b.  
Saita, Toshikazu, to Mitsubishi Denki Kabushiki Kaisha. Time holding switch. 3,689,806, Cl. 317-141.00s.  
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Salomon, Georges P. J. Ski Boot Fixation device. 3,689,095, Cl. 280-11.35t.  
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Sample, Thomas E., Jr.; and Tate, Jack F., to Texaco Inc. Paraffin removal process. 3,689,319, Cl. 134-40.000.  
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Sander, Jiri, to TRW Inc. Method of making a semiconductor device. 3,689,392, Cl. 204-192.000.  
Sanderford, Moses Vincent: *See—*  
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Sandstrom, Stig: *See—*  
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Sapkus, Jurgis; and Bafza, Armando M., to Mattel, Inc. Extensible quick configuration-changing toy. 3,688,435, Cl. 46-119.000.  
Sarazen, John C.: *See—*  
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Sato, Masamichi; and Takahashi, Isaji, to Xerox Corporation. Method and apparatus for uniformly charging the surface of an insulating member. 3,689,767, Cl. 250-49.52c.  
Sato, Masamichi; Matsumoto, Seiji; Honjo, Satoru; and Hayakawa, Yoshizide, to Fuji Photo Film Co., Ltd. Electron beam recording materials. 3,689,768, Cl. 250-49.05e.  
Sato, Takashi: *See—*  
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Satterthwaite, James Glenn; and Macy, James B., Jr. Inflatable seal. 3,689,082, Cl. 277-34.000.  
Sausele, George J. H.: *See—*  
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Scacciati, Giovanni; and Lanfranco, Giovanni, to Centro Ricerche Metallurgiche S.p.A. Method for the surface treatment of aluminum electrodes for the electrolytic production of zinc, and electrodes thus treated. 3,689,385, Cl. 204-114.000.  
Scacciati, Giovanni; and Lanfranco, Giovanni, to Centro Ricerche Metallurgiche S.p.A. Method for the surface treatment of aluminum electrodes for the electrolytic production of zinc, and electrodes thus treated. 3,689,386, Cl. 204-114.000.  
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Scanlon, Patricia M.; and Thunberg, Jon C. Process for preparing chelating agents. 3,689,544, Cl. 260-534.00e.  
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Schellenbaum, Max; Duennenberger, Max; and Casagrande, Fulvio, to Ciba-Geigy AG. N-hydroxyphenyl-N-phenylureas. 3,689,550, Cl. 260-553.00c.  
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Schneider, Jury Gdaliyevich. Process for forming on surface of articles relief featuring projections and recesses of uniform height shape and disposition smoothly changing from one into the other, and devices for accomplishing same. 3,688,537, Cl. 72-74.00.  
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- Schoenewaldt, Edwin F., to Merck & Co., Inc. 2-Halo-1,2-epoxypropylphosphonic acid and derivatives. 3,689,508, Cl. 260-348.00r.
- Schrader, Gerhard; Lorenz, Walter; Unterstenhofer, Gunter; and Hammann, Ingeborg, to Farbenfabriken Bayer Aktiengesellschaft. Amido-thiolphosphoric acid-O,S-dimethyl ester. 3,689,604, Cl. 260-959.000.
- Schraner, Josef F., to General Motors Corporation. Toggle clamp. 3,689,058, Cl. 269-34.000.
- Schrecker, Howard D., to Aluminum Company of America. Method and apparatus for scoring metal container ends. 3,688,718, Cl. 113-15.00a.
- Schroeder, Hans-Detlef; Merz, Herbert; Langbein, Adolf; Freter, Kurt; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Wick, Helmut, to Boehringer Ingelheim G.m.b.H. 1-[4-oxo-4-(p-fluorophenyl)-n-butyl-1'-4-acetyl-40 (m-hydroxy-phenyl)-piperidine. 3,689,492, Cl. 260-293.800.
- Schroeder, Paul Herman, to FMC Corporation. Novel method of controlling nematodes. 3,689,647, Cl. 424-200.000.
- Schultz, Robert G., to Monsanto Company. Production of carboxylic acids and esters. 3,689,533, Cl. 260-488.00k.
- Schulz, Eckhard; See—Neisser, Rudolf; and Schulz, Eckhard, 3,689,514.
- Schulz, Gerhard; See—Berding, Christoph; Guenther, Paul; Schulz, Gerhard; and Koeher, Waldemar, 3,689,543.
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- Schut, Robert Norman; and Ward, Frederick Edmund, to Miles Laboratories, Inc. Derivatives of 2-(4-aryl-1-piperazyl)-bicyclo [3.3.1] nonan-9-ones. 3,689,490, Cl. 260-268.00c.
- Schwan, Judith A.; and Smith, Edward A., to Eastman Kodak Company. Photographic color processes which yield either positive or negative silver-transfer images. 3,689,272, Cl. 96-3.000.
- Schwartz, Domke; See—Reimpel, Uwe; Scheidig, Helmut; Wolfgang, Hans Friedrich; and Schwartz, Domke, 3,689,680.
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- Scott, Michael A., to Columbia Ribbon and Carbon Manufacturing Co., Inc. Transfer elements and process for preparing same. 3,689,301, Cl. 117-36.400.
- Scott, Ralph K., to Columbia Fabricators, Inc. Process for casting concrete members. 3,689,626, Cl. 264-317.000.
- Scowcroft, Hector; Cartledge, Albert J., and Greenwood, Frank, to T.M.M. (Research) Limited. Wad or plug control for stuffer-box crimping apparatus. 3,688,356, Cl. 28-1.700.
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- Sealol, Inc.; See—Greenawalt, Robert Gordon; and Sealol, Inc., 3,689,083.
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- Seccamp, Louis W., to Mossberg, O. F., & Sons, Incorporated. Repeating firearm with bolt-open latch. 3,688,640, Cl. 89-138.000.
- Segro, Nicholas Richard, to FMC Corporation. Dialkyl phthalate molding compositions. 3,689,453, Cl. 260-41.00a.
- Seiden, Lewis J.; See—Lambert, James B.; Seiden, Lewis J.; and Morgan, Henry A., 3,689,856.
- Seki, Koichi; See—Hayashi, Masahiro; Seki, Koichi; and Chinbe, Hiroshi, 3,689,126.
- Self, Richard E. Plug valve. 3,689,026, Cl. 251-160.000.
- Senft, Stephen P., to General Electric Company. Method of dosing lamps. 3,689,799, Cl. 316-4.000.
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- Setone, Isami; and Yoshino, Akira, to Matsuhita Electric Works, Ltd. Circuit protector. 3,689,855, Cl. 335-63.000.
- Sevag, Manasseh G., to University of Pennsylvania. The trustees of the. Antimutagenic treatment of bacteria. 3,689,646, Cl. 424-181.000.
- Sewell, Ernest, to Wabasso Limited. Crease-resistant woven cotton sheeting and a process for its production. 3,689,313, Cl. 117-139.400.
- Seyberlich, Rolf; See—Lindenberg, Hans-Georg; and Seyberlich, Rolf, 3,689,322.
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- Shah, Harshavadan C.; Buzby, George C., Jr.; and Smith, Herchel, to American Home Products Corporation. Novel 3-etherified-1,3,5(10)-triene-steroids and process thereof. 3,689,512, Cl. 260-397.400.
- Shahani, Khem M.; Vakil, Jayantkumar R.; and Chandan, Ramesh Chandra, to University of Nebraska, The. Antibiotic acidophilin and process of preparing the same. 3,689,640, Cl. 424-118.000.
- Shanahan, William J.; Zopf, Vincent R.; and Loshin, Albert M., to Skiatron Electronics & Television Corporation. Communications secrecy system. 3,689,688, Cl. 178-5.100.
- Shannon, Suel Grant, to AMP Incorporated. Disposable surgical scissors. 3,688,402, Cl. 30-260.000.
- Share, Nathan Norman; and McFarlane, Cyril Stephen. Indole derivatives in the treatment of stretched muscle fatigability. 3,689,657, Cl. 424-274.000.
- Sharp, Alexander; and Allan, Donald William, to Honeywell, Inc. Electrical switching apparatus with adjustable dualband. 3,689,771, Cl. 250-209.000.
- Sharp, Denis, to U.S. Philips Corporation. Electrical circuit arrangements for converting variable rate of pulse transmission into a related electrical output quantity. 3,689,778, Cl. 307-233.000.
- Shatan, David M. Modular table lamp. 3,689,762, Cl. 240-81.00c.
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- Sherlock, Margaret H., and Sperber, Nathan, to Schering Corporation. Compositions and methods for treating inflammation using substituted nicotinic acids. 3,689,653, Cl. 424-266.000.
- Shermo, Stanley A.; See—Shermo, Stanley A., 3,688,457.
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- Shimulenis, Juozas Juozo; and Shulsky, Petr-Vikenty Martynovich. Angle-reading device. 3,689,160, Cl. 356-152.000.
- Shiokawa, Kozo; See—Kishino, Shigeo; Shiokawa, Kozo; Kudamatsu, Akio; and Yamada, Yasuo, 3,689,603.
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- Siddons, Phillip Thomas; See—McCorquodale, Hugh; and Siddons, Phillip Thomas, 3,689,483.
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- Simmons, James Almy; and Bell, Robert Joseph. Method for controlling stripe smut. 3,689,677, Cl. 424-349.000.
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- Simpson, William R. J. N-pyridinealkyl-alkanolamine nitrates. 3,689,494, Cl. 260-296.00r.
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- Smedley, Richard W. Auxiliary oil seal. 3,689,084, Cl. 277-147.000.
- Smith, Bart A.; Lass, James L.; and Venier, Dominic A., to General Electric Company. Nuclear fuel assembly with leakage flow control member. 3,689,358, Cl. 176-78.000.
- Smith, Charles E. Washing apparatus for hollow containers. 3,688,782, Cl. 134-58.00r.
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- Smith, Edward A.; See—Schwan, Judith A.; and Smith, Edward A., 3,689,272.
- Smith, Eric, to Olin Mathieson Chemical Corporation. Catalytic preparation of aromatic isocyanates. 3,689,520, Cl. 260-453.00c.
- Smith, Gerald H. Photoflash mounting adapter for close-up photography. 3,688,662, Cl. 95-11.00r.
- Smith, Glenn D.; See—De Clerck, Robert D.; and Smith, Glenn D., 3,689,915.
- Smith, Henry Thomas; and Millward, Thomas Hughes, to G.K.N. Birdfield Transmissions Limited. Constant velocity universal joints. 3,688,521, Cl. 64-21.000.
- Smith, Herchel; See—Shah, Harshavadan C.; Buzby, George C., Jr.; and Smith, Herchel, 3,689,512.
- Smith, James P.; and Michelson, Erwin. Range and elevation determining device. 3,688,408, Cl. 33-64.00b.
- Smith, James S., Jr.; See—Brenig, Theodore; Smith, James S., Jr.; and Woodie, Paul E., Jr., 3,689,699.
- Smith, James S., Jr., to General Electric Company. Synchronizing system. 3,689,697, Cl. 179-15.00s.
- Smith, Jerry L.; and Mead, Robert B. Interlock control system. 3,689,775, Cl. 307-9.000.
- Smith, Stanley D.; and Hamilton, Stephen B., Jr., to General Electric Company. Curable compositions. 3,689,454, Cl. 260-46.50g.
- Smith, William Novis, Jr., to Foote Mineral Company. Vanadyl oxalate compounds and process for producing same. 3,689,515, Cl. 260-429.00r.
- Smithpac Canada Ltd.; See—Partridge, Harvie C., 3,688,928.
- Smolka, Thomas G.; and Zelinka, Johann. Ski binding. 3,689,097, Cl. 280-11.350.
- Smudski, Paul A., to Carborundum Company. The. Process for carbonizing fibrous cellulosic material. 3,689,220, Cl. 423-447.000.
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- Snider, George P., to Hydraslip, Inc. Hay bale vehicle. 3,688,919, Cl. 214-6.00b.
- Snow, Gerald A.; Doughty, Harold A.; Allard, Charles E.; and Noonan, Charles B. Indexing means and conveyors for use therewith. 3,688,963, Cl. 226-162.000.
- Snyder, Carl J., to Westinghouse Electric Corporation. Magnetodiode pulse initiator. 3,689,836, Cl. 324-117.00r.
- Snyder, Ernest L., to DTM Products Incorporated. Cord storing face plate. 3,689,868, Cl. 339-119.00c.
- Sobel, Johannes; Himmelmann, Wolfgang; and Meckl, Heinz, to Agfa-Gevaert Aktiengesellschaft. Process of hardening photographic gelatin layers with a sulfonyl ester or a sulfonamide. 3,689,274, Cl. 96-111.000.
- Societe Cnmp-Berthiez; See—Neuman, Marcel, 3,688,611.
- Societe d'Etudes & d'Application des Techniques Nouvelles NEOTEC; See—Honore, Etienne A. H.; and Torcheux, Emile, 3,689,926.
- Societe d'Etudes Ferroviaires; See—Sonneville, Roger Paul, 3,688,984.
- Societe d'Exploitation des Brevets Neiman S.A.; See—Lipschutz, Paul; and Leroy, Jean-Pierre, 3,688,861.
- Societe F. Beghin Thumeries; See—Goldstein, Guy, 3,688,767.
- Societe Industrielle de Brevets et d'Etudes S.I.B.E.; See—Arnaud, Gaston, 3,688,756.
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 Spiegelman, Solomon; and Levisohn, Reuben, to University of Illinois Foundation. Synthesized mutant RNA and methods of preparing same. 3,689,475, Cl. 260-211,500.  
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 Suzuki, Shigeru. Liquid-development type electrophotographic apparatus including paper drier means. 3,689,147, Cl. 355-10,000.  
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- Takasaki, Yoshiyuki, to Industrial Science and Technology, Agency of. Enzymatic method for manufacture of fructose. 3,689,362, Cl. 195-31.00r.
- Takashima, Yoshiro: *See—*  
Miyazaki, Toshio; Omura, Etuzou; Katakabe, Kyoku; Makita, Minoru; Iwase, Kenji; Tsutsumi, Hideo; Yotsumoto, Takashi; Ikeda, Fumiaki; Takashima, Yoshiro; Sueyoshi, Hiromu; and Maesaka, Tomio, 3,689,620.
- Takashima, Yuji: *See—*  
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- Takeda Chemical Industries, Ltd.: *See—*  
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- Hiraga, Kentaro, Asako, Tsunehiko; and Miki, Takuichi, 3,689,564.
- Takegawa, Hiroyasu, to Toyota Machine Works, Limited. Digital fine-coarse rapid indexing motor control including means to sense shortest distance. 3,689,820, Cl. 318-594.000.
- Takeuchi, Keisaku: *See—*  
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- Takimoto, Masaaki: *See—*  
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- Takishima, Yoshiyuki; and Mashimo, Yukio, to Canon Kabushiki Kaisha. Flash device with compensation for ambient conditions such as temperature. 3,688,659, Cl. 95-11.00r.
- Takuma, Yutaka: *See—*  
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- Talalay, Anselm. Glove making. 3,689,613, Cl. 264-83.000.
- Talbot American Corporation: *See—*  
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- Talley, William A., Jr., to Mobil Oil Corporation. Apparatus for treating drill cutting at offshore locations. 3,688,781, Cl. 134-56.00r.
- Tam, William A., to Chicago Bridge & Iron Company. Dynamic fendering system. 3,688,729, Cl. 114-230.000.
- Tamai, Yasuo: *See—*  
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- Tamura, Kohji: *See—*  
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- Tamura, Nobuhiro: *See—*  
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- Tamura, Shozo: *See—*  
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- Tan, Richard M., to General Electric Company. Multibarrel automatic weapon. 3,688,637, Cl. 89-12.000.
- Tan, Sing Liong; Bartels, Mathijs Willem; and Degger, Walter Wilhelmus, to U.S. Philips Corporation. Method of making a deflection coil. 3,688,394, Cl. 29-605.000.
- Tan, Sing Liong, to U.S. Philips Corporation. Colour television camera provided with one pick-up tube and a colour filter with means for converting a sequential output to a simultaneous output. 3,689,690, Cl. 178-5.4st.
- Tanaka, Eizi: *See—*  
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- Tanaka, Masaaki: *See—*  
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- Taniguchi, Ichiro; and Ando, Shigeru, to Mitsubishi Electric Corporation. Laser processing apparatus. 3,689,159, Cl. 356-123.000.
- Tanimura, Noboru: *See—*  
Kobayashi, Hidehiko; Sasaguri, Kiichiro; Oimachi, Irumagun; Neki, Kazuya; and Tanimura, Noboru, 3,689,623.
- Tarhan, Mehmet Orhan, to Bethlehem Steel Corporation. Methanol synthesis. 3,689,575, Cl. 260-632.00r.
- Tartaglia, John. Tailpiece for stringed musical instruments. 3,688,630, Cl. 84-302.000.
- Tartakovsky, Boris Nusimovich: *See—*  
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- Tasope' Limited: *See—*  
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- Tasoff, James: *See—*  
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- Tate, Jack F.: *See—*  
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- Tatro, Henry J., Jr.: *See—*  
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- Taub, Bernard, to Allied Chemical Corporation. Rigid, non-elastomeric non-cellular hot water resistant 4,4'-methylenebis(cyclohexylisocyanate) polyether polyol polyurethanes. 3,689,442, Cl. 29-38.00a.
- Tax, Hans: *See—*  
Tax, Hans; and Franke, Rudiger (said Franke assor. to said), 3,688,931.
- Tax, Hans; and Franke, Rudiger, said Franke assor. to said Tax, Hans. Straddle truck for containers. 3,688,931, Cl. 214-394.000.
- Taylor, Beverly W. Bingo marking board. 3,689,072, Cl. 273-135.0hc.
- Taylor, Carl C., to Rochester Gauges, Inc. Liquid level gauge and valve. 3,688,795, Cl. 137-558.000.
- Taylor, Edward C.; and McKillop, Alexander. Aromatic bromination process. 3,689,559, Cl. 260-562.00r.
- Taylor, Rene A., to United States Steel Corporation. Sheet piling connectors. 3,688,508, Cl. 61-62.000.
- Taylor, William M.: *See—*  
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- T.D.K. Electronics Co., Ltd.: *See—*  
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- Tee-Pak, Inc.: *See—*  
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- Teikoku Hormone Mfg. Company, Limited: *See—*  
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- Tektronix, Inc.: *See—*  
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- Teledyne Industries, Inc.: *See—*  
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- Teltschik, Walter: *See—*  
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- T.E.M.I. Techniques Modernes Internationales: *See—*  
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- Tenenbaum, Mircea M., to Allied Control Company, Inc. Put time delay relay. 3,689,807, Cl. 317-141.00s.
- Terrell, William H., to Diebold Incorporated. Pneumatic tube system substation terminal box construction. 3,689,009, Cl. 243-24.000.
- Tew, Walter Hosey, Jr., to General Electric Company. Digital correlator for calculating figure of merit of communications transmission system. 3,689,884, Cl. 340-146.10e.
- Texaco Inc.: *See—*  
Kampfer, John G., 3,689,876.
- Mayer, Edward A., 3,688,813.
- Patmore, Edwin L.; Siegert, William R.; and Chafetz, Harry, 3,689,539.
- Sample, Thomas E., Jr.; and Tate, Jack F., 3,689,319.
- Suggitt, Robert M.; Estes, John H.; and Kravitz, Stanley, 3,689,434.
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- Kril, Russell S., 3,689,891.
- Meyer, John V., 3,689,736.
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- Pierini, John M.; Sarazen, John C.; and Larsen, Reidar G., 3,689,865.
- Textron Inc.: *See—*  
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- Thebert, Glenn W.: *See—*  
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- Thexton, Graham Spencer: *See—*  
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- Thibaut, Yves Albert Daniel, to U.S. Philips Corporation. Method of switching a direct-current motor of a washing machine. 3,689,815, Cl. 318-281.000.
- Thiele, Horst: *See—*  
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- Thieroff, Keith L., to LTV Aerospace Corporation. Traffic monitoring system. 3,689,878, Cl. 340-31.00r.
- Thobroe, Eivind Christian. Indexing machine. 3,688,363, Cl. 29-38.00a.
- Thomas, Edward R.: *See—*  
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- Thomas Industries, Inc.: *See—*  
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- Thomas, Joachim: *See—*  
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- Thomas, Raymond J.; McDonald, William G.; and Dunning, Walter B., to Eastman Kodak Company. Cardboard box and method of making same. 3,688,625, Cl. 83-614.000.
- Thomasson, James T.: *See—*  
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- Thompson, David F.: *See—*  
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- Thompson, Earl A.: *See—*  
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- Thompson, Sam W.; and Holdingsworth, Roy B. Portable animal toilet. 3,688,741, Cl. 119-1.000.
- Thomson, Ian David MacKnight: *See—*  
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- Thomson-CSF: *See—*  
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- Thorpe, Eric Frederick James: *See—*  
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- Thorpe, Laurence Joseph, to RCA Corporation. Special effects generator. 3,689,694, Cl. 178-6.800.
- Thorwest, Harald; Lehmann, Helmut; Lange, Helmut; Schlossarek, Udo; Siefen, Jakob; and Mathner, Hermann, to Agfa-Gevaert Aktiengesellschaft. Method of and apparatus for checking the sealing of a film cassette. 3,688,567, Cl. 73-88.00b.
- Thunberg, Jon C.: *See—*  
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- Thurman, Milton E., Jr. Semiconductor tester having visual and audible display. 3,689,838, Cl. 324-158.00t.
- Timmons, Robert D.: *See—*  
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- Dybalski, Jack N.; and Timmons, Robert D., 3,689,298.
- Timmons, Terry K.: *See—*  
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- Titchenal, Oliver R., to Dow Chemical Company, The. Vacuum packaging system. 3,688,463, Cl. 53-22.000.
- Titus, Paul E.; and Hanson, James R., to Shell Oil Company. Floating self adjusting skimmer. 3,688,909, Cl. 210-242.000.
- Tixier, Michel, to Regie Nationale des Usines Renault and Automobiles Peugeot. Estimation of thermal feeling intensity on human skin. 3,688,558, Cl. 73-15.000.
- T.M.M. (Research) Limited: *See—*  
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- To, Yoshio; Katayama, Hajime; and Yamaguchi, Masaru, to Canon Kabushiki Kaisha. Electrophotographic copying machine. 3,689,146, Cl. 355-8.000.
- Toquec, Yves. Stabilised aerial. 3,689,923, Cl. 343-781.000.
- Toho Beslon Co., Ltd.: *See—*  
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- Pere, Carlo; Tornich, Fulvio; and Macor, Tranquillo, 3,689,042.
- Toshihiko, Oki, to Kabushiki Kaisha Suwa Seikosha. Jumper for a calendar watch mechanism. 3,688,490, Cl. 58-58.000.
- Tougarinoff, Boris: *See—*  
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- Toyo Soda Manufacturing Co., Ltd.: *See—*  
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- Traber, Walter; and Weiss, Anton G., to Ciba-Geigy Corporation. Antibacterial unsymmetrical diphenyl carbonates. 3,689,665, Cl. 424-301.000.
- Tracey, Victor Allen: *See—*  
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- Trancik, Ronald J.; Moore, George G.; and Harrington, Joseph Kenneth, to Riker Laboratories, Inc. Substituted haloalkanesulfonamides. 3,689,523, Cl. 260-470.000.
- Tranier, Jean, to Office Technique des Trefiles. Apparatus for presetting the rotational speeds of parts used to create the deformation of a metal in order to obtain wires or strips, such machine blocks. 3,688,546, Cl. 72-289.000.
- Transco Products, Inc.: *See—*  
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- Transland Aircraft, Inc.: *See—*  
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- Trapp, Arthur Hubert, to Imperial Metal Industries (Kynoch) Limited. Ignition device for rocket motors. 3,688,700, Cl. 102-49.700.
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- Treff, Ernest H., to Harris-Intertype Corporation. Motorized ductor roll. 3,688,696, Cl. 101-350.000.
- Treiber, Robert L., to Alcor Chemical Company, Inc. Composition and method for sealing anodized surfaces. 3,689,379, Cl. 204-35.00n.
- Tridan Tool & Machine, Inc.: *See—*  
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- Turk, Stanley D., to Phillips Petroleum Company. Sulfur-containing polyamide, 3,689,465, Cl. 260-78.00a.
- Turner, Richard C.; and Stanton, Ronald J., to Hulett Sugar Corporation Limited. Attachment of elements to rotational members, 3,688,369, Cl. 29-110.000.
- Tuttle, Eleanor Porter: *See—*
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- Tuttle, Fordyce E.; deceased (by Tuttle, Eleanor Porter; executrix). Underwater reconnaissance system, 3,688,666, Cl. 95-12.500.
- Tweet, Ole E.: *See—*
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- Tyler, W. S., Incorporated: *See—*
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- Uchiyama, Takashi; Ito, Tadashi; and Matsuda, Mutsuhide, to Canon Kabushiki Kaisha. Shutter device, 3,688,663, Cl. 95-11.50r.
- Udenfriend, Sidney, to Hoffmann-La Roche Inc. Fluorometric assay of primary amines, 3,689,221, Cl. 23-230.00r.
- Udylite Corporation: *See—*
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- Ueda, Hiroshi, to Minolta Camera Co., Ltd. Automatic exposure indication apparatus for a camera, 3,688,657, Cl. 95-10.0ct.
- Uehara, Yasunori, to Nissan Motor Company, Limited. Method of preventing a dent from being damaged by a weft yarn during beating and the device for accomplishing the same, 3,688,808, Cl. 139-190.000.
- Uemoto, Kunihiko: *See—*
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- Uhtenwoldt, Herbert R.; Hohler, Frederick A.; and Wlodyka, Edmund E., to Cincinnati Milacron Heald Corporation. Grinding machine, 3,688,444, Cl. 51-5.000.
- Uhtenwoldt, Herbert R.; and Lynch, James M., to Heald Machine Company, The. Grinding machine, 3,688,447, Cl. 51-96.000.
- Ulbrich, Carl H.: *See—*
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- Ullman, Edwin F., to Synvar Associates. Method for chemically initiating photochemical reactions, 3,689,391, Cl. 204-159.000.
- Ullner, Klaus, to Miag Muehlenbau und Industrie GmbH. Grinder for wood pieces, particularly sticks, 3,688,997, Cl. 241-282.000.
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- Ultronic Systems Corporation: *See—*
- Sieracki, Frank W., 3,689,872.
- Ulvesand, Sture; and Bonthelius, Bo Bengt Urban. Hydrofoil system for water craft, 3,688,723, Cl. 114-66.50h.
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- Wakimura, Kazuo, to Nomura Toys, Ltd. Track and vehicle with means for propelling both track and vehicle. 3,688,436, Cl. 46-243.0lv.
- Wakiyama, Satoshi; and Hori, Kyoichi, to Toyo Soda Manufacturing Co., Ltd. Process for recovering dichloroethane in oxychlorination process. 3,689,582, Cl. 260-659.00a.
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- Walker, Brooks. Engine spark timer. 3,688,753, Cl. 123-117.00a.
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- Wallace, Walter J., Jr., to Wallace, W. J., Systems, Inc. Material handling machine. 3,688,893, Cl. 198-93 000.
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- Walter, Richard T., to Container Corporation of America. Article group carrier. 3,688,899, Cl. 206-65.00c.
- Walters, John, to American Science & Engineering Inc. Tape suspended balance. 3,688,855, Cl. 177-196 000.
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- Weller, Charles E., to Shell Oil Company. Directional filtering of seismic data. 3,689,873, Cl. 340-15.5td.
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- Wick, Helmut: *See—*
- Schroeder, Hans-Detlef; Merz, Herbert; Langhein, Adolf; Freter, Kurt; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Wick, Helmut, 3,689,492.
- Wicks, William H.: *See—*
- Swanson, Elston H.; Fahnestock, James D.; and Wicks, William H., 3,689,849.
- Wideroe, Rolf, to Aktiengesellschaft Brown, Boveri & Cie. Electromagnetic lens for high speed electron beams. 3,689,796, Cl. 315-14 000.
- Wiener, George W.; Reynolds, William R.; and Aspden, Robert G. Process for obtaining preferred orientation in zirconium and its alloy. 3,689,324, Cl. 148-11.500.
- Wilburn, David K.: *See—*
- Arutunian, Gregory; and Wilburn, David K., 3,688,574.
- Wild, Michael M.: *See—*
- Van Deberg, Walter H.; and Thompson, Earl A., 3,688,830.
- Wildhaber, Ernest. Method and apparatus for scanning characters. 3,689,744, Cl. 235-61.11e.
- Wiley, Donald F.: *See—*
- Phillips, Robert James; Reasor, Robert L.; and Wiley, Donald F., 3,688,971.
- Wilhelm, Gunter: *See—*
- Spaeth, Claus; and Wilhelm, Gunter, 3,688,448.
- Wilhelm, Larry A., to FMC Corporation. Wheel balancing probe. 3,688,589, Cl. 73-457 000.
- Wilkins, Larry C. Side brush assembly for car wash apparatus. 3,688,328, Cl. 15-21 00d.
- Willcox & Gibbs, Inc.: *See—*
- Marini, Aldo M., 3,689,728.
- Willems, Jozef Frans; Berendsen, Jules Robert; Pollet, Robert Joseph; and Vandenberghie, Antoon Leon, to Gevaert-Agfa N.V. Silver halide emulsion containing sulfur or selenium sensitizer and hydroxy tetra-azaindene stabilizer. 3,689,273, Cl. 96-109 000.
- Williams, David A., to Eastman Kodak Company. Ultrasonic transducer with half-wave separator between piezoelectric crystal means. 3,689,783, Cl. 310-8 300.
- Williams, Earl P.: *See—*
- Field, Nathan D.; and Williams, Earl P., 3,689,439.
- Williams, Malcolm: *See—*
- Hodgson, Duncan Barry; and Williams, Malcolm, 3,689,755.
- Williams, Malcolm; Hodgson, Duncan Barry; and Bertoli, Michael Murray. Engine control systems. 3,689,753, Cl. 235-197 000.
- Williams, Ralph P., to Phillips Petroleum Company. Production of sulfonyl isocyanates from sulfonamides in a sulfonane solvent. 3,689,549, Cl. 260-545 00r.
- Williamson, Thomas B.: *See—*
- Brokke, Mervin E.; Williamson, Thomas B.; and Lukes, George E., 3,689,662.
- Wilmoth, Frankie W. Tack and saddle rack. 3,688,912, Cl. 211-3 000.
- Wilson, Henry Allen. Manual computing device. 3,688,418, Cl. 35-33 00s.
- Wilson, Henry Allen. Combined soap cake dish and container. 3,688,895, Cl. 206-37 00r.
- Wilson, Ian C.: *See—*
- Prange, Arthur J., Jr.; Wilson, Ian C.; and Lipton, Morris A., 3,689,669.
- Wilson, Robert M., to Dare Products, Incorporated. Integral electrical insulator and supporting member for electrical wire fence. 3,689,686, Cl. 174-166 00r.
- Wilson, Ronald C.: *See—*
- Yeager, Charles C.; and Wilson, Ronald C., 3,689,449.
- Wiltgen, Ervin J. Jig for working on watchhands. 3,689,056, Cl. 269-10 000.
- Windings, Inc.: *See—*
- Newman, James W., 3,689,005.
- Windmoller & Holscher: *See—*
- Brockmuller, Friedrich Franz, 3,688,890.
- Genwerich, Max; Wagner, Siegfried; and Schwarzkopf, August, 3,688,974.
- Upmeyer, Hartmut, 3,689,191.
- Winter, Ernst Jakob; and Stelzmüller, Franz, to Von Roll AG. Apparatus for manufacturing blocks or the like. 3,689,186, Cl. 425-352 000.
- Winter, James R.: *See—*
- Phillips, James W.; and Winter, James R., 3,689,719.
- Wirth, Manfred: *See—*
- Giampalmi, John J., Jr.; Telegdy, Istvan K.; and Wirth, Manfred, 3,689,211.
- Wise, Russell E.: *See—*
- Antonetti, Vincent W.; Maling, George C., Jr.; Pascuzzo, Albert L.; and Wise, Russell E., 3,688,867.
- Wishart, Andrew: *See—*
- Mitchell, Colin Campbell, 3,688,726.
- Witt, August F.: *See—*
- Platakis, Nicholas S.; Gatos, Harry C.; and Witt, August F., 3,689,242.
- Wittneben, Hermann, to Continental Gummi-Werke Aktiengesellschaft. Tire having carcass section below the belt free from pulling tension. 3,689,338, Cl. 156-133 000.
- Wlodyka, Edmund E.: *See—*
- Uhtenwoldt, Herbert R.; Hohler, Frederick A.; and Wlodyka, Edmund E., 3,688,444.
- Wolbert, Charles N.: *See—*
- Mannino, Albert A.; and Wolbert, Charles N., 3,689,236.
- Wolf, Karl: *See—*
- Beesch, Otto; Wolf, Karl; and Ziegler, Bodo, 3,689,195.
- Wolfcartus, Serge. Landmark. 3,688,454, Cl. 52-103 000.
- Wolfe, Norman Gilbert, to Celanese Coatings Company. Latent catalysts for one-component epoxy resin/anhydride compositions. 3,689,444, Cl. 260-18 0ep.
- Wolfgang, Hans Friedrich: *See—*
- Reimpel, Uwe; Scheidig, Helmut; Wolfgang, Hans Friedrich; and Schwartz, Domke, 3,689,680.
- Wolverine World Wide, Inc.: *See—*
- Panter, Peter D.; Denis, Claude P.-E.; and Kaempfer, Gerhard P., 3,688,325.
- Wong, Peter J.; Ross, Dale W.; and Gardiner, Kenneth W., to Southern Pacific Transportation Company. Rollability prediction system. 3,689,788, Cl. 246-182 00a.
- Woodhouse, Fred N.; and Smith, Craig F., to Eastman Kodak Company. Motion picture projector apparatus. 3,689,138, Cl. 352-92 000.
- Woodie, Paul E., Jr.: *See—*
- Brenig, Theodore; Smith, James S., Jr.; and Woodie, Paul E., Jr., 3,689,699.
- Woolman, Myron. Perception convergence device for paired learning. 3,688,419, Cl. 35-60 000.
- Wootton, Thomas S., to Baldwin Electronics, Inc. Pulse position modulated alarm system. 3,689,888, Cl. 340-164 00r.
- Worner, Walter, to Stoll, H., & Company. Arrangements in flat jacquard knitting machines for avoiding damage in the event of faulty positioning of needles or jacks. 3,688,526, Cl. 66-165 000.
- Wrench, R. F. Electric broiler for simultaneously broiling a plurality of large viands. 3,688,685, Cl. 99-427 000.
- Wright, Charles D.; and Zollinger, Joseph La Mar, to Minnesota Mining and Manufacturing Company. Certain difluoramine compounds. 3,689,560, Cl. 260-583 00h.
- Xerox Corporation: *See—*
- Cae, Raymond D.; Maloney, Thomas O.; and Warren, Larry H., 3,689,143.
- De Clerck, Robert D.; and Smith, Glenn D., 3,689,915.
- Little, William S., Jr.; and Lennon, John H., 3,689,267.
- Sato, Masamichi; and Takahashi, Isoji, 3,689,767.
- Stehl, George, 3,688,415.
- Xomox Corporation: *See—*
- Reaves, Henry V., 3,688,645.
- Yabana, Yakamori, to Kabushiki Kaisha Suwa Seikosha. Bezel, crystal and case assembly in a water-proof watch. 3,688,492, Cl. 58-91 000.
- Yabuta, Yukio, to Fuji Photo Film Co., Ltd. Method of and apparatus for cutting a metal web utilizing an electro-magnetic induction type feeding apparatus. 3,688,619, Cl. 83-35 000.
- Yada, Yukio: *See—*
- Mizushima, Kyohei; and Yada, Yukio, 3,688,384.
- Yagi, Hiroshi: *See—*
- Ohnishi, Toshimi; Suzuki, Takamitsu; Takahashi, Akio; Yagi, Hiroshi; and Ohya, Shunichi, 3,688,549.
- Yagi, Yoshiyuki: *See—*
- Watanabe, Hideo; and Yagi, Yoshiyuki, 3,689,414.
- Yagupov, Ivan Nikolaevich: *See—*
- Khrenov, Konstantin Konstantinovich; Gursky, Pavel Ivanovich; Shulman, Grigory Alexandrovich; Klimenko, Gennady Alexeevich; Kirdo, Ivan Viktorovich; Dmitrenko, Georgy Viktorovich; Yagupov, Ivan Nikolaevich; Tsyrlin, Mark Irmovich; Novikov, Anatoly Petrovich; and Puzov, Filimon Efimovich, 3,688,382.
- Yakovlev, Pavel Borisovich: *See—*
- Brukovsky, Igor Pavlovich; Yakovlev, Pavel Borisovich; Gutterman, Kirill Davidovich; Perov, Alexandr Vasilievich; Zhukov, Vladimir Fedorovich; Nekrasova, Larisa Petrovna; and Ivanovsky, Jury Dmitrievich, 3,689,798.
- Yamada, Kozo: *See—*
- Fujii, Saburo; Saji, Yasuo; Yamada, Kozo; Makita, Zenji; and Ikegami, Shigeru, 3,689,621.
- Yamada, Odawara: *See—*
- Akashi, Goro; and Yamada, Odawara, 3,689,317.
- Yamada, Yasuo: *See—*
- Kishino, Shigeo; Shiokawa, Kozo; Kudamatsu, Akio; and Yamada, Yasuo, 3,689,603.
- Yamaguchi, Masaru: *See—*
- To, Yoshio; Katayama, Hajime; and Yamaguchi, Masaru, 3,689,146.
- Yamaguchi, Shunzo; and Tanaka, Eizi, to Nippondenso Kabushiki Kaisha. Heat exchanger with rotary heat accumulator. 3,688,835, Cl. 165-8 000.



- Yamamoto, Etsuo: *See*—  
Kominam, Naoya; Tamura, Nobuhiro; and Yamamoto, Etsuo, 3,689,583.
- Yamamoto, Hideaki: *See*—  
Yamashita, Keizo; Yokozato, Junichi; and Yamamoto, Hideaki, 3,688,675.
- Yamamoto, Kaisuro; Obata, Kuniyoshi; and Nakagawa, Shinji, to Bridgestone Liquefied Gas Company Ltd. Heat insulating wall structure for a low temperature liquefied gas tank of the membrane type. 3,688,938, Cl. 220-9.01g.
- Yamanori, Yorio, to Minolta Camera Kabushiki Kaisha. Exposure window of an electrostatic copying machine. 3,689,142, Cl. 355-3.000.
- Yamashita, Keizo; Yokozato, Junichi; and Yamamoto, Hideaki, to Renza Bronica Kogyo Kabushiki Kaisha. Shutter mechanism in a camera. 3,688,675, Cl. 95-51.000.
- Yanaka, Yuzuru: *See*—  
Kikuchi, Kunio; and Yanaka, Yuzuru, 3,689,036.
- Yates, Paul C.: *See*—  
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- Yates, Paul C., to Du Pont de Nemours, E. I., and Company. Surface ion exchanged asbestos compositions. 3,689,430, Cl. 252-309.000.
- Yawata Iron & Steel Co., Ltd.: *See*—  
Minami, Tohru; Nishio, Mikio; Toyama, Ichiro; Kawano, Shigeyoshi; Imai, Masumi; Takuma, Yutaka; and Kitano, Shiro, 3,688,555.
- Yeager, Charles C.; and Wilson, Ronald C., to Ventron Corporation. Composition for imparting anti-bacterial characteristics to vinyl resins. 3,689,449, Cl. 260-33.40p.
- Yerzley & Co.: *See*—  
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- Yokozato, Junichi: *See*—  
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- Yoneji, Satoshige: *See*—  
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- Yoneju, Satoshige: *See*—  
Makihara, Tsutomu; and Yoneju, Satoshige, 3,688,714.
- Yoneya, Tooru: *See*—  
Fujita, Isamu; and Yoneya, Tooru, 3,689,477.
- Yoshida, Shigeaki, to Kabushiki Kaisha Ricoh. Method of making light sensitive diazo paper for black line image. 3,689,268, Cl. 96-49.000.
- Yoshino, Akira: *See*—  
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- Yotsumoto, Takashi: *See*—  
Miyazaki, Toshio; Omura, Etuzou; Katakabe, Kyoku; Makita, Minoru; Iwase, Kenji; Tsutsumi, Hideo; Yotsumoto, Takashi; Ikeda, Fumiaki; Takashima, Yoshiro; Sueyoshi, Hiromu; and Maesaka, Tomio, 3,689,620.
- Young, David E.; Anderson, Lowell R.; and Fox, William B., to Allied Chemical Corporation. Preparation of perhaloalkyl nitrogen-chlorine compounds. 3,689,563, Cl. 260-583.0nh.
- Young, Donald C., to Union Oil Company of California. Solutions of ammonium nitrate sulfate and chloride containing a thiosulfate as defoamers and desiccants. 3,689,246, Cl. 71-69.000.
- Young, Laurence R.; and Newman, Joel S. Method for monetizing movement of a subject eye. 3,689,135, Cl. 351-39.000.
- Young, Richard S., to Saginaw Products Corporation. Baggage cart. 3,689,106, Cl. 280-179.00r.
- Youngblood, Douglas J.; and Weiss, John M. Furnace oil from waxy gas oils. 3,689,402, Cl. 208-93.000.
- Yozo, Iida, to Nippon Kogaku K. K. Film rewind device for compact cinecameras. 3,689,137, Cl. 352-91.000.
- Yueh, Mao H., to General Mills, Inc. Toilet bar. 3,689,419, Cl. 252-90.000.
- Zaha, Abe. Method and apparatus for automatic storage and retrieval of automobiles. 3,688,921, Cl. 214-16.100.
- Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See*—  
Dach, Hansjorg, 3,688,601.
- Zanetti, Joseph R., to National Steel Corporation. Low carbon high tensile strength alloy steel. 3,689,258, Cl. 75-126.00f.
- Zebuhr, William Henry, to Sanders Associates, Inc. Telescoping support with double acting piston and latch and retaining means. 3,688,455, Cl. 52-115.000.
- Zeidler, Herman Rudolf; and Aurnou, Ronald M., to Linear Motion Technology, Inc. Measuring and display system. 3,688,410, Cl. 33-142.000.
- Zeile, Karl: *See*—  
Schroeder, Hans-Detlef; Merz, Herbert; Langbein, Adolf; Freter, Kurt; Zeile, Karl; Danneberg, Peter; Giesemann, Rolf; and Wick, Helmut, 3,689,492.
- Zelinka, Johann: *See*—  
Smolka, Thomas G.; and Zelinka, Johann, 3,689,097.
- Zettler, William D., to Giddings & Lewis, Inc. Shuttle type automatic tool changer. 3,688,387, Cl. 29-568.000.
- Zeunert, Fritz: *See*—  
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- Zhlabis, Sauljus Bonoventuro: *See*—  
Bauzhis, Albertas Vatslovovich; Damiénaitis, Petras-Kestutis Petrovich; Zhlabis, Sauljus Bonoventuro; and Shlenas, Petras-Alvidas Petro, 3,689,860.
- Zhukov, Nikolai Arsentievich: *See*—  
Dunaevsky, Iuliy Nekhemievich; Tartakovsky, Boris Nusimovich; Zhukov, Nikolai Arsentievich; and Potapenko, Viktor Viktorovich, 3,689,090.
- Zhukov, Vladimir Fedorovich: *See*—  
Brukovsky, Igor Pavlovich; Yakovlev, Pavel Borisovich; Gutterman, Kirill Davidovich; Perov, Alexandr Vasilievich; Zhukov, Vladimir Fedorovich; Nekrasova, Larisa Petrovna; and Ivanovsky, Iury Dmitrievich, 3,689,798.
- Ziegler, Bodo: *See*—  
Beesch, Otto; Wolf, Karl; and Ziegler, Bodo, 3,689,195.
- Ziolk, Francis J. Shurring apparatus. 3,688,343, Cl. 17-42.000.
- Zipper, Donald H., to Continental Can Company. Method of forming a molded ring gasket. 3,689,625, Cl. 264-268.000.
- Zipper, Walter J. Glass washing device. 3,688,330, Cl. 15-76.000.
- Zollinger, Joseph La Mar: *See*—  
Wright, Charles D.; and Zollinger, Joseph La Mar, 3,689,560.
- Zopf, Vincent R.: *See*—  
Shanahan, William J.; Zopf, Vincent R.; and Loshin, Albert M., 3,689,688.
- Zurbuchen, Louis E.: *See*—  
De Vol, Forrest E.; Eberhardt, George J.; and Zurbuchen, Louis E., 3,688,691.

## LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF SEPTEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Bode, Charles H., Jr., to United States Steel Corp. Quick-change mounting for water-cooled mold. Re. 27,469, 9-5-72, Cl. 164-283.
- Chha-Gelgy Ag.: *See*—  
Weber, Kurt; Staebble, Ulrich; and Kern, Re. 27,470.
- Coleman, Richard L.: *See*—  
Cooper, Thomas A.; Coleman, Port, Morris, and Nixon. Re. 27,476.
- Cooper, Thomas A., R. L. Coleman, A. Port, H. C. Morris, J. I. Nixon deceased by R. L. Nixon, administratrix, by Texaco, Inc. Separation of long chain normal paraffin hydrocarbons. Re. 27,476, 9-5-72, Cl. 208-308.
- Deering Milliken Research Corp.: *See*—  
Thomas, Manuel A. Re. 27,474.
- Eastman Kodak Co.: *See*—  
Mauer, Paul B. Re. 27,473.
- Kern, Walter: *See*—  
Weber, Kurt; Staebble, Ulrich; and Kern, Re. 27,470.
- Land, Edwin H., to Polaroid Corp. Camera with exposure control and flash apparatus. Re. 27,468, 9-5-72, Cl. 95-11.
- Mauer, Paul B., to Eastman Kodak Co. Thin film coating for sunglasses. Re. 27,473, 9-5-72, Cl. 350-2.
- Morris, Herbert C.: *See*—  
Cooper, Thomas A.; Coleman, Port, Morris, and Nixon. Re. 27,467.
- Mundinger, William D., to Pullman Inc. Pneumatic outlet assembly for hoppers. Re. 27,471, 9-5-72, Cl. 302-52.
- Nixon, John I.: *See*—  
Cooper, Thomas A.; Coleman, Port, Morris, and Nixon. Re. 27,467.
- Nixon, Robert L.: *See*—  
Cooper, Thomas A.; Coleman, Port, Morris, and Nixon. Re. 27,467.
- Polaroid Corp.: *See*—  
Land, Edwin H. Re. 27,468.
- Port, Arthur: *See*—  
Cooper, Thomas A.; Coleman, Port, Morris, and Nixon. Re. 27,467.
- Pullman Inc.: *See*—  
Mundinger, William D. Re. 27,471.
- Staebble, Max: *See*—  
Weber, Kurt; Staebble, Ulrich; and Kern, Re. 27,470.
- Texaco, Inc.: *See*—  
Cooper, Thomas A.; Coleman, Port, Morris, and Nixon. Re. 27,476.
- Thomas, Manuel A., to Deering Milliken Research Corp. Collar and cuff-like garment member and method of making it. Re. 27,474, 9-5-72, Cl. 2-143.
- Thorne-Booth, George M., to Westinghouse Electric Corp. Signal system for determining the presence of a train vehicle. Re. 27,472, 9-5-72, Cl. 246-34.
- Ulrich, Paul: *See*—  
Weber, Kurt; Staebble, Ulrich; and Kern, Re. 27,470.
- United States Steel Corp.: *See*—  
Bode, Charles H., Jr. Re. 27,469.
- Volk, David. Method for measurement of the shape and curvature of a cornea. Re. 27,475, 9-5-72, Cl. 351-39.
- Weber, Kurt; Staebble, Ulrich; and W. Kern, to Chha-Gelgy AG. Vat dyeing with sulfonated benzoyliminodithranthraquinone vat dyes or vat dyes with five fused rings. Re. 27,470, 9-5-72, Cl. 8-34.
- Westinghouse Electric Corp.: *See*—  
Thorne-Booth, George M. Re. 27,472.

## LIST OF DESIGN PATENTEES

- Blenefeld, Myron, to Magle Mold, Inc. Shirt or similar article. 224,700, 9-5-72, Cl. D2-1.
- Bud Radio, Inc.: *See*—  
Miller, Leon G. 224,710.
- Columbus Dental Mfg. Co.: *See*—  
Coolidge, John E.; Liesner, Murray, and O'Neill, 224,709.
- Coolidge, John E.; J. W. Liesner, J. H. Murray, and R. A. O'Neill, to The Columbus Dental Mfg. Co. Dentist's lighting instrument. 224,709, 9-5-72, Cl. D24-1.
- Crete, Richard C. Combined camera and light support dolly. 224,720, 9-5-72, Cl. D61-1.
- Dean, William H.: *See*—  
Hill, John E.; Henes, and Dean, 224,704.
- Dickgiesser, Robert W., to Toro Mfg. Corp. Traction device for a snow thrower or similar article. 224,715, 9-5-72, Cl. D35-2.
- Franklin, Paul F. Handbag. 224,728, 9-5-72, Cl. D87-3.
- Gillette Co., The: *See*—  
Wright, Kent M. 224,701.
- Gordan, Donald W. Prefabricated roof. 224,702, 9-5-72, Cl. D13-1.
- Hagberg, Calvin A., to Litton Systems, Inc. Microwave oven. 224,723, 9-5-72, Cl. D81-4.
- Hagberg, Calvin A., to Litton Systems, Inc. Microwave oven. 224,724, 9-5-72, Cl. D81-4.
- Hagberg, Calvin A., to Litton Systems, Inc. Microwave oven. 224,725, 9-5-72, Cl. D81-4.
- Hagberg, Calvin A., to Litton Systems, Inc. Microwave oven. 224,726, 9-5-72, Cl. D81-4.
- Henes, Richard W.: *See*—  
Hill, John E.; Henes, and Dean, 224,704.
- Heyman, Herman Sydney. Multihull boat. 224,722, 9-5-72, Cl. D71-1.
- Hill, John E.; R. W. Henes, and W. H. Dean, said Henes and said Hill assors, to said Dean. Cover for truck bed. 224,704, 9-5-72, Cl. D14-27.
- Illinois Tool Works Inc.: *See*—  
Rychlik, Frank J. 224,727.
- Kiner, David L., to United McGill Corp. Interlocking flooring panel. 224,703, 9-5-72, Cl. D13-1.
- Laurtech International Co.: *See*—  
Marsh, William J. 224,708.
- Liesner, Joe W.: *See*—  
Coolidge, John E.; Liesner, Murray, and O'Neill, 224,709.
- Litton Systems, Inc.: *See*—  
Hagberg, Calvin A. 224,723.
- Hagberg, Calvin A. 224,724.
- Hagberg, Calvin A. 224,725.
- Hagberg, Calvin A. 224,726.
- Magle Mold, Inc.: *See*—  
Blenefeld, Myron. 224,700.
- Marsh, Robert Enterprises, Inc.: *See*—  
Marsh, William J. 224,707.
- Marsh, William J., to Robert Marsh Enterprises, Inc. Water softener cabinet. 224,707, 9-5-72, Cl. D23-3.
- Marsh, William J., to Laurtech International Co. Water softener cabinet. 224,708, 9-5-72, Cl. D23-3.
- Matteson, Martin L. Auxiliary wheel for snowmobile. 224,705, 9-5-72, Cl. D14-6.
- Miller, Leon Gordon, to Bud Radio Inc. Cabinet for electronic equipment. 224,710, 9-5-72, Cl. D26-5.
- Motorola, Inc.: *See*—  
Schultz, Raymond J., Sellars, 224,713.
- Murray, James H.: *See*—  
Coolidge, John E.; Liesner, Murray, and O'Neill, 224,709.
- Nast, Robert. Combined contact printer and paper safe. 224,719, 9-5-72, Cl. D61-1.
- Nyquist, Richard A.: *See*—  
Stoltz, Elmer J.; Nyquist, 224,721.
- O'Neill, Robert A.: *See*—  
Coolidge, John E.; Liesner, Murray, and O'Neill, 224,709.
- Pistorius, Albert C. and R. T., to Pistorius Machine Co., Inc. Machine tool gauge. 224,717, 9-5-72, Cl. D52-6.
- Pistorius Machine Co., Inc.: *See*—  
Pistorius, Albert C. and R. T. 224,717.
- Pistorius, Robert T.: *See*—  
Pistorius, Albert C. and R. T. 224,717.
- Rychlik, Frank J., to Illinois Tool Works, Inc. Disposable cannula. 224,727, 9-5-72, Cl. D83-12.
- Schultz, Raymond J., and J. F. Sellars, Jr., to Motorola, Inc. Cabinet housing for side-loading tape player or similar article. 224,713, 9-5-72, Cl. D26-14.
- Sellars, James F.: *See*—  
Schultz, Raymond J., and Sellars, 224,713.
- Sign & Marketing Corp.: *See*—  
Silvas, Norbert Leslie, 224,716.
- Singer Co., The: *See*—  
Stoltz, Elmer J.; and Nyquist, 224,721.
- Silvas, Norbert Leslie, to Sign & Marketing Corp. Swizzle stick. 224,716, 9-5-72, Cl. D94-3.
- Stallard, Steward L. Insect electrocuting trap. 224,706, 9-5-72, Cl. D22-19.
- Stoltz, Elmer J., and R. A. Nyquist, to The Singer Co. Electronic printing calculator. 224,721, 9-5-72, Cl. D64-11.
- Toro Mfg. Corp.: *See*—  
Dickgiesser, Robert W. 224,715.
- United McGill Corp.: *See*—  
Kiner, David L. 224,703.
- U.S. Phillips Corp.: *See*—  
Van Lelvel, Maarten W. 224,729.
- Van de Poel, Robertus, 224,711.
- Van de Poel, Robertus, 224,712.
- Van de Poel, Robertus, to U.S. Phillips Corp. Dictating machine. 224,711, 9-5-72, Cl. D26-14.
- Van de Poel, Robertus, to U.S. Phillips Corp. Dictating machine. 224,712, 9-5-72, Cl. D26-14.
- Van Lelvel, Maarten W., to U.S. Phillips Corp. Electric shaver. 224,729, 9-5-72, Cl. D95-3.
- Wahl, Eugene A. Pneumatic valve for controlling flow or material from a hopper. 224,718, 9-5-72, Cl. D55-1.
- Wenzler, Leopold A. Telephone key set conference caller. 224,714, 9-5-72, Cl. D26-14.
- Wright, Kent M., to The Gillette Co. Combined bottle and cap therefor. 224,701, 9-5-72, Cl. D9-11.



# CLASSIFICATION OF PATENTS

ISSUED SEPTEMBER 5, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	103C	3,688,368	CLASS 48	CLASS 61	202	3,688,576	189	3,688,641
2 1A	105	3,688,367	180P	1F	299	3,688,577	CLASS 90	
143	Re 27,474	3,688,369	190	36	3,688,578	313	13C	3,688,642
252	3,688,315	3,688,370	116R	62	3,688,508	337	24.3	3,688,643
CLASS 3	156.8B	3,688,371	192	3,688,509	361	3,688,580	CLASS 91	
1	157.3C	3,688,372	202	3,688,510	362AR	3,688,581	369A	3,688,647
	159R	3,688,373	215	3,688,511	371	3,688,582	412	3,688,648
	159.2	3,688,374	CLASS 49	CLASS 62	382	3,688,583	420	3,688,644
CLASS 5	195	3,689,231	34	6	3,688,512	3,688,584	CLASS 92	
66	196	3,689,232	35	22	3,688,513	3,688,585	3,688,645	
260	202D	3,688,375	446	45	3,688,514	3,688,586	110	3,688,649
317	202.5	3,688,376	501	85	3,688,515	3,688,587	161	3,688,646
CLASS 8	211	3,688,377	CLASS 51	205	3,688,516	3,688,588	CLASS 93	
34	237	3,688,378	5	209	3,688,517	3,688,589	35R	3,688,650
142	Re 27,470	3,688,379	14	374	3,688,518	3,688,590	77FT	3,688,651
	243.56	3,688,380	35	475	3,688,519	3,688,591	CLASS 94	
CLASS 10	263	3,688,381	96	15.5	3,688,520	3,688,592	46R	3,688,653
1B	427	3,688,382	105R	21	3,688,521	3,688,593	CLASS 95	
12R	455	3,688,383	216ND	29	3,688,522	3,688,594	1R	3,688,655
141H	470.1	3,688,384	32F	32F	3,688,523	3,688,595	1.1	3,688,654
CLASS 12	509	3,688,385	32F	32F	3,688,524	3,688,596	4.5R	3,688,656
52.5	558	3,688,386	CLASS 65	32	3,689,242	3,688,597	10CT	3,688,672
146C	568	3,688,387	32F	42	3,689,243	3,688,598	Re 27,468	3,688,658
CLASS 13	569	3,688,388	32F	159	3,689,244	3,688,599	11L	3,688,660
6	571	3,688,389	CLASS 52	86R	3,688,524	3,688,600	11R	3,688,659
9	598	3,688,391	103	165	3,688,525	3,688,601	11.5R	3,688,662
CLASS 14	605	3,688,392	115	355	3,688,526	3,688,602	12	3,688,663
1	626	3,688,393	121	150	3,688,527	3,688,603	12.5	3,688,664
CLASS 15	627	3,688,394	146	205R	3,688,528	3,688,604	13	3,688,665
21D	628B	3,688,395	165	3,688,529	3,688,605	3,688,606	31AC	3,688,667
21E	4R	3,688,396	CLASS 30	3,688,530	3,688,607	3,688,608	3,688,669	
76	16	3,688,397	21FW	151	3,688,531	3,688,609	3,688,670	
182	91.2	3,688,400	22B	151	3,688,532	3,688,610	3,688,671	
229A	135	3,688,401	64	151	3,688,533	3,688,611	3,688,672	
250.16	171	3,688,402	67	151	3,688,534	3,688,612	3,688,673	
250.21	260	3,688,403	77	151	3,688,535	3,688,613	3,688,674	
256.51	276	3,688,404	122	151	3,688,536	3,688,614	3,688,675	
256.53	40R	3,688,405	187	151	3,688,537	3,688,615	3,688,676	
364	CLASS 32	3,688,406	188	151	3,688,538	3,688,616	3,688,677	
387	122	3,688,407	196	151	3,688,539	3,688,617	3,688,678	
91	CLASS 33	3,688,408	225	151	3,688,540	3,688,618	3,688,679	
93D	81	3,688,409	CLASS 55	151	3,688,541	3,688,619	3,688,680	
144	142	3,688,410	5	151	3,688,542	3,688,620	3,688,681	
42	143L	3,688,411	38	151	3,688,543	3,688,621	3,688,682	
53	174M	3,688,412	48	151	3,688,544	3,688,622	3,688,683	
CLASS 19	277	3,688,408	148	151	3,688,545	3,688,623	3,688,684	
7	CLASS 35	3,688,413	276	151	3,688,546	3,688,624	3,688,685	
144.5	9E	3,688,414	418	151	3,688,547	3,688,625	3,688,686	
221	13	3,688,415	CLASS 56	151	3,688,548	3,688,626	3,688,687	
CLASS 23	19R	3,688,416	1	151	3,688,549	3,688,627	3,688,688	
230R	31A	3,688,417	13.2	151	3,688,550	3,688,628	3,688,689	
	31R	3,688,418	27.5	151	3,688,551	3,688,629	3,688,690	
	335	3,688,419	119	151	3,688,552	3,688,630	3,688,691	
253PC	60	3,688,420	330	151	3,688,553	3,688,631	3,688,692	
253TP	127	3,688,421	400.11	151	3,688,554	3,688,632	3,688,693	
280	102.1	3,688,422	400.12	151	3,688,555	3,688,633	3,688,694	
293	CLASS 40	3,688,423	CLASS 57	151	3,688,556	3,688,634	3,688,695	
301SP	63	3,688,424	1R	151	3,688,557	3,688,635	3,688,696	
308S	104.02	3,688,425	34R	151	3,688,558	3,688,636	3,688,697	
CLASS 24	106.53	3,688,426	58.95	151	3,688,559	3,688,637	3,688,698	
16	132D	3,688,427	CLASS 58	151	3,688,560	3,688,638	3,688,699	
73R	140	3,688,428	28A	151	3,688,561	3,688,639	3,688,700	
90.5	CLASS 43	3,688,429	28R	151	3,688,562	3,688,640	3,688,701	
123	3	3,688,430	58	151	3,688,563	3,688,641	3,688,702	
221A	5	3,688,431	74	151	3,688,564	3,688,642	3,688,703	
263PJ	17.2	3,688,432	91	151	3,688,565	3,688,643	3,688,704	
CLASS 26	42.06	3,688,433	CLASS 60	151	3,688,566	3,688,644	3,688,705	
59	43.14	3,688,434	12	151	3,688,567	3,688,645	3,688,706	
CLASS 28	44.97	3,688,435	39.02	151	3,688,568	3,688,646	3,688,707	
1.4	61	3,688,436	39.28	151	3,688,569	3,688,647	3,688,708	
1.7	100	3,688,437	39.36	151	3,688,570	3,688,648	3,688,709	
15	CLASS 44	3,689,233	39.74R	151	3,688,571	3,688,649	3,688,710	
72.12	10C	3,689,234	52B	151	3,688,572	3,688,650	3,688,711	
CLASS 29	17	3,689,235	53C	151	3,688,573	3,688,651	3,688,712	
25.14	66	3,689,236	54.5R	151	3,688,574	3,688,652	3,688,713	
25.18	CLASS 46	3,688,435	54.6A	151	3,688,575	3,688,653	3,688,714	
25.42	119	3,688,436	56	151	3,688,576	3,688,654	3,688,715	
26A	243LV	3,688,437	94	151	3,688,577	3,688,655	3,688,716	
38A	57.6	3,688,438	226R	151	3,688,578	3,688,656	3,688,717	
38D				151	3,688,579	3,688,657	3,688,718	
95				151	3,688,580	3,688,658	3,688,719	
96				151	3,688,581	3,688,659	3,688,720	



52	CLASS 100	51.11	3,688,744	34R	3,688,823	CLASS 179	64	3,689,374	498	3,689,739		
117	3,688,686	52AF	3,688,745	309AC	3,688,824	15A	3,689,696	95	3,689,375	CLASS 220		
148	3,688,687	CLASS 122	3,688,746	CLASS 146	3,688,825	15B	3,689,697	96	3,689,376	7	3,688,937	
154	3,688,688	235G	3,688,747	16	3,688,825	15BW	3,689,698	97	3,689,377	9LG	3,688,938	
218	3,688,689	CLASS 123	3,688,748	17R	3,688,826	16F	3,689,700	98	3,689,378	9R	3,688,939	
35	3,688,690	8.09	3,688,749	106	3,688,827	17E	3,689,701	99	3,689,379	46R	3,688,941	
93C	3,688,691	32EA	3,688,750	164	3,688,828	18BE	3,689,702	100	3,689,380	60R	3,688,942	
122	3,688,692	44B	3,688,751	11.5	3,688,829	18B	3,689,703	101	3,689,381	93	3,688,943	
148	3,688,693	97B	3,688,752	12	3,688,830	18J	3,689,704	102	3,689,382	95	3,688,944	
211	3,688,694	117A	3,688,753	12.3	3,688,831	90R	3,689,705	103	3,689,383	99	3,688,945	
350	3,688,695	119R	3,688,754	23	3,688,832	100.2C	3,689,706	104	3,689,384	114	3,688,946	
38	3,688,697	139AW	3,688,755	31.5	3,688,833	100.2Z	3,689,707	105	3,689,385	11	3,688,947	
42C	3,688,698	CLASS 126	3,688,756	36	3,688,834	111R	3,689,709	106	3,689,386	27	3,688,948	
49.7	3,688,699	9R	3,688,757	171	3,688,835	170D	3,689,710	107	3,689,387	27	3,688,949	
70	3,688,702	41R	3,688,758	18	3,688,836	170E	3,689,711	108	3,689,388	146R	3,688,950	
70.2P	3,688,701	82B	3,688,759	11	3,688,837	175.2R	3,689,712	109	3,689,389	166	3,688,951	
453	3,688,703	91A	3,688,760	11	3,688,838	CLASS 156	3,689,713	110	3,689,390	333	3,688,952	
1	3,688,704	92B	3,688,761	14	3,688,839	5	3,688,856	111	3,689,391	71	3,688,948	
39DV	3,689,292	204	3,688,762	89	3,688,840	6.5	3,688,857	112	3,689,392	2B	3,688,953	
90	3,689,293	CLASS 128	3,688,763	95	3,688,841	9.62	3,688,858	113	3,689,393	42.2A	3,688,954	
280	3,689,294	2R	3,688,764	133	3,688,842	66B	3,688,859	114	3,689,394	CLASS 226	7	3,688,956
284	3,689,295	146.2	3,688,765	148	3,688,843	79.2B	3,688,860	115	3,689,395	11	3,688,957	
287	3,689,296	173R	3,688,766	159	3,688,844	116	3,688,861	116	3,689,396	7	3,688,958	
288	3,689,297	204	3,688,767	167	3,688,845	CLASS 181	3,688,862	117	3,689,397	75	3,688,959	
289	3,689,298	232	3,688,768	179	3,688,846	23	3,688,863	118	3,689,398	95	3,688,960	
291	3,689,299	287	3,688,769	181	3,688,847	31B	3,688,864	119	3,689,399	101	3,688,961	
305	3,689,300	290R	3,688,770	219	3,688,848	33R	3,688,865	120	3,689,400	127	3,688,962	
351	3,689,301	291	3,688,771	245	3,688,849	36A	3,688,866	121	3,689,401	162	3,688,963	
366	3,689,302	305	3,688,772	289	3,688,850	40	3,688,867	122	3,689,402	10	3,688,964	
419P	3,689,303	351	3,688,773	292	3,688,851	55	3,688,868	123	3,689,403	45	3,688,965	
17	3,688,705	366	3,688,774	293	3,688,852	CLASS 184	3,688,869	124	3,689,404	127	3,688,966	
152	3,688,706	419P	3,688,775	294	3,688,853	6.28	3,688,870	125	3,689,405	50	3,688,967	
159	3,688,707	CLASS 131	3,688,776	540	3,688,854	6.5	3,688,871	126	3,689,406	23C	3,688,968	
29	3,688,708	70	3,688,777	556	3,688,855	CLASS 186	3,688,872	127	3,689,407	28R	3,688,969	
8R	3,688,709	CLASS 132	3,688,778	63	3,688,856	1A	3,688,873	128	3,689,408	49.5E	3,688,970	
162	3,688,711	9	3,688,779	92	3,688,857	CLASS 187	3,688,874	129	3,689,409	49.5F	3,688,971	
212	3,688,712	530	3,688,780	119	3,688,858	29R	3,688,875	130	3,689,410	49.5G	3,688,972	
219A	3,688,713	21	3,688,781	149	3,688,859	CLASS 188	3,688,876	131	3,689,411	49.5H	3,688,973	
219R	3,688,714	23	3,688,782	159	3,688,860	71.9	3,688,877	132	3,689,412	49.5I	3,688,974	
252	3,688,715	40	3,688,783	166	3,688,861	73.3	3,688,878	133	3,689,413	49.5J	3,688,975	
1G	3,688,718	56R	3,688,784	170	3,688,862	100	3,688,879	134	3,689,414	49.5K	3,688,976	
15A	3,688,719	58R	3,688,785	171	3,688,863	101	3,688,880	135	3,689,415	49.5L	3,688,977	
16E	3,688,720	59R	3,688,786	172	3,688,864	102	3,688,881	136	3,689,416	49.5M	3,688,978	
16R	3,688,721	60R	3,688,787	173	3,688,865	103	3,688,882	137	3,689,417	49.5N	3,688,979	
29	3,688,722	61R	3,688,788	174	3,688,866	104	3,688,883	138	3,689,418	49.5O	3,688,980	
66.5H	3,688,723	62R	3,688,789	175	3,688,867	105	3,688,884	139	3,689,419	49.5P	3,688,981	
67A	3,688,724	63R	3,688,790	176	3,688,868	106	3,688,885	140	3,689,420	49.5Q	3,688,982	
67R	3,688,725	64R	3,688,791	177	3,688,869	107	3,688,886	141	3,689,421	49.5R	3,688,983	
126	3,688,726	65R	3,688,792	178	3,688,870	108	3,688,887	142	3,689,422	49.5S	3,688,984	
144R	3,688,727	66R	3,688,793	179	3,688,871	109	3,688,888	143	3,689,423	49.5T	3,688,985	
219	3,688,728	67R	3,688,794	180	3,688,872	110	3,688,889	144	3,689,424	49.5U	3,688,986	
230	3,688,729	68R	3,688,795	181	3,688,873	111	3,688,890	145	3,689,425	49.5V	3,688,987	
235B	3,688,730	69R	3,688,796	182	3,688,874	112	3,688,891	146	3,689,426	49.5W	3,688,988	
1R	3,688,731	70R	3,688,797	183	3,688,875	113	3,688,892	147	3,689,427	49.5X	3,688,989	
37	3,688,732	71R	3,688,798	184	3,688,876	114	3,688,893	148	3,689,428	49.5Y	3,688,990	
41HT	3,688,733	72R	3,688,799	185	3,688,877	115	3,688,894	149	3,689,429	49.5Z	3,688,991	
114AH	3,688,734	73R	3,688,800	186	3,688,878	116	3,688,895	150	3,689,430	49.5AA	3,688,992	
36.4	3,689,301	74R	3,688,801	187	3,688,879	117	3,688,896	151	3,689,431	49.5AB	3,688,993	
36.8	3,689,302	75R	3,688,802	188	3,688,880	118	3,688,897	152	3,689,432	49.5AC	3,688,994	
47A	3,689,303	76R	3,688,803	189	3,688,881	119	3,688,898	153	3,689,433	49.5AD	3,688,995	
54	3,689,304	77R	3,688,804	190	3,688,882	120	3,688,899	154	3,689,434	49.5AE	3,688,996	
70C	3,689,305	78R	3,688,805	191	3,688,883	121	3,688,900	155	3,689,435	49.5AF	3,688,997	
72	3,689,306	79R	3,688,806	192	3,688,884	122	3,688,901	156	3,689,436	49.5AG	3,688,998	
93.31	3,689,307	80R	3,688,807	193	3,688,885	123	3,688,902	157	3,689,437	49.5AH	3,688,999	
139.4	3,689,308	81R	3,688,808	194	3,688,886	124	3,688,903	158	3,689,438	49.5AI	3,688,999	
140A	3,689,309	82R	3,688,809	195	3,688,887	125	3,688,904	159	3,689,439	49.5AJ	3,688,999	
228	3,689,310	83R	3,688,810	196	3,688,888	126	3,688,905	160	3,689,440	49.5AK	3,688,999	
234	3,689,311	84R	3,688,811	197	3,688,889	127	3,688,906	161	3,689,441	49.5AL	3,688,999	
240	3,689,312	85R	3,688,812	198	3,688,890	128	3,688,907	162	3,689,442	49.5AM	3,688,999	
2	3,688,735	86R	3,688,813	199	3,688,891	129	3,688,908	163	3,689,443	49.5AN	3,688,999	
48	3,688,736	87R	3,688,814	200	3,688,892	130	3,688,909	164	3,689,444	49.5AO	3,688,999	
62	3,688,737	88R	3,688,815	201	3,688,893	131	3,688,910	165	3,689,445	49.5AP	3,688,999	
207	3,688,738	89R	3,688,816	202	3,688,894	132	3,688,911	166	3,689,446	49.5AQ	3,688,999	
221	3,688,739	90R	3,688,817	203	3,688,895	133	3,688,912	167	3,689,447	49.5AR	3,688,999	
504	3,688,740	91R	3,688,818	204	3,688,896	134	3,688,913	168	3,689,448	49.5AS	3,688,999	
1	3,688,741	92R	3,688,819	205	3,688,897	135	3,688,914	169	3,689,449	49.5AT	3,688,999	
51R	3,688,742	93R	3,688,820	206	3,688,898	136	3,688,915	170	3,689,450	49.5AU	3,688,999	
	3,688,743	94R	3,688,821	207	3,688,899	137	3,688,916	171	3,689,451	49.5AV	3,688,999	
		95R	3,688,822	208	3,688,900	138	3,688,917	172	3,689,452	49.5AW	3,688,999	
				209	3,688,901	139	3,688,918	173	3,689,453	49.5AX	3,688,999	
				210	3,688,902	140	3,688,919	174	3,689,454	49.5AY	3,688,999	
				211	3,688,903	141	3,688,920	175	3,689,455	49.5AZ	3,688,999	
				212	3,688,904	142	3,688,921	176	3,689,456	49.5BA	3,688,999	
				213	3,688,905	143	3,688,922	177	3,689,457	49.5BB	3,688,999	
				214	3,688,906	144	3,688,923	178	3,689,458	49.5BC	3,688,999	
				215	3,688,907	145	3,688,924	179	3,689,459	49.5BD	3,688,999	
				216	3,688,908	146	3,688,925	180	3,689,460	49.5BE	3,688,999	
				217	3,688,909	147	3,688,926	181	3,689,461	49.5BF	3,688,999	
				218	3,688,910	148	3,688,927	182	3,689,462	49.5BG	3,688,999	
				219	3,688,911	149	3,688,928	183	3,689,463	49.5BH	3,688,999	
				220	3,688,912	150	3,688,929	184	3,689,464	49.		



## CLASSIFICATION OF PATENTS

10	3,689,147	53	3,689,167	353	3,689,202		3,689,633		3,689,674
18	3,689,148	61	3,689,168	363	3,689,207	21	3,689,634	274	3,689,675
46	3,689,149	112	3,689,171	371	3,689,203	47	3,689,635	330	3,689,676
64	3,689,150	150	3,689,169	394	3,689,204	49	3,689,636	349	3,689,677
	3,689,151	153	3,689,170	401	3,689,205	52	3,689,637	365	3,689,678
70	3,689,152	241	3,689,172	547	3,689,206	54	3,689,638		
89	3,689,153					117	3,689,639	79	CLASS 425
97	3,689,154					118	3,689,640	123	3,689,209
133	3,689,155					147	3,689,641	128	3,689,210
		CLASS 415		CLASS 418		153	3,689,642	161	3,689,179
						157	3,689,643	207	3,689,180
						181	3,689,644	208	3,689,181
						200	3,689,645	217	3,689,182
						210	3,689,646	289	3,689,183
						223	3,689,647	352	3,689,186
						229	3,689,648	363	3,689,187
						249	3,689,649	376	3,689,188
						250	3,689,650	425	3,689,189
						266	3,689,651	467	3,689,190
						273	3,689,652		CLASS 431
						326	3,689,653	42	3,689,193
							3,689,654	40	3,689,194
								208	3,689,195
								328	3,689,196

## CLASSIFICATION OF DESIGNS

D 2—	1	224,700	D22—	19	224,704	D26—	5	224,710	D35—	2	224,715	D64—	11	224,721	D83—	12	224,726
D 9—	71	224,701	D22—	19	224,706				D52—	6	224,717	D71—	1	224,722	D87—	3	224,727
D13—	1	224,702	D23—	3	224,707				D55—	1	224,718	D81—	4	224,723	D94—		
		224,703			224,708				D61—		224,719			224,724			
D14—	6	224,705	D24—	1	224,709						224,720			224,725	D95—		

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OF RESIDENCE OF INVENTORS

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

## PATENTS

1	3,688,442	3,688,869	3,689,392	3,688,534	3,688,452	3,688,885
	3,688,932	3,688,879	3,689,408	3,688,562	3,688,622	3,688,893
	3,688,988	3,688,896	3,689,410	3,688,569	3,688,666	3,688,906
	3,689,068	3,688,903	3,689,421	3,688,591	3,688,683	3,688,927
	3,689,331	3,688,910	3,689,440	3,688,640	3,688,727	3,688,933
	3,689,830	3,688,911	3,689,569	3,688,696	3,688,810	3,688,935
4	3,688,701	3,688,915	3,689,607	3,688,705	3,688,880	3,688,964
	3,688,733	3,688,917	3,689,660	3,688,978	3,688,895	3,688,966
	3,688,947	3,688,926	3,689,662	3,688,985	3,688,908	3,688,983
	3,689,754	3,688,942	3,689,667	3,689,004	3,689,020	3,688,999
6	Re 27,472	3,688,952	3,689,673	3,689,011	3,689,174	3,689,023
	3,688,318	3,688,953	3,689,695	3,689,052	3,689,451	3,689,050
	3,688,330	3,688,956	3,689,700	3,689,069	3,689,452	3,689,055
	3,688,381	3,688,965	3,689,713	3,689,144	3,689,655	3,689,064
	3,688,405	3,688,975	3,689,730	3,689,213	3,689,685	3,689,084
	3,688,418	3,688,981	3,689,734	3,689,219	3,689,716	3,689,108
	3,688,427	3,688,995	3,689,737	3,689,225	3,689,833	3,689,150
	3,688,428	3,689,015	3,689,746	3,689,278	3,689,851	3,689,163
	3,688,430	3,689,016	3,689,760	3,689,289	3,689,884	3,689,222
	3,688,435	3,689,025	3,689,772	3,689,346	3,688,441	3,689,235
	3,688,438	3,689,026	3,689,788	3,689,502	3,688,761	3,689,238
	3,688,466	3,689,030	3,689,789	3,689,520	3,688,914	3,689,241
	3,688,482	3,689,059	3,689,811	3,689,601	3,689,070	3,689,286
	3,688,484	3,689,063	3,689,813	3,689,703	3,688,551	3,689,288
	3,688,506	3,689,071	3,689,832	3,689,727	3,688,706	3,689,297
	3,688,510	3,689,074	3,689,839	3,689,807	3,688,794	3,689,298
	3,688,539	3,689,086	3,689,854	3,689,835	3,689,216	3,689,299
	3,688,579	3,689,089	3,689,861	3,689,856	3,688,416	3,689,327
	3,688,602	3,689,092	3,689,866	3,689,870	3,688,481	3,689,329
	3,688,628	3,689,110	3,689,885	3,689,932	3,688,483	3,689,339
	3,688,632	3,689,136	3,689,892	Re 27,467	3,688,501	3,689,379
	3,688,642	3,689,149	3,689,897	3,688,314	3,688,533	3,689,387
	3,688,654	3,689,158	3,689,907	3,688,582	3,688,535	3,689,405
	3,688,656	3,689,165	3,689,911	3,688,961	3,688,542	3,689,422
	3,688,680	3,689,167	3,689,924	3,689,039	3,688,566	3,689,423
	3,688,697	3,689,172	3,689,927	3,689,245	3,688,576	3,689,431
	3,688,707	3,689,173	3,689,930	3,689,300	3,688,578	3,689,449
	3,688,742	3,689,185	3,689,935	3,689,306	3,688,590	3,689,459
	3,688,750	3,689,196	3,688,377	3,689,430	3,688,627	3,689,466
	3,688,753	3,689,227	3,688,780	3,689,566	3,688,629	3,689,475
	3,688,765	3,689,246	3,688,844	3,689,593	3,688,635	3,689,504
	3,688,772	3,689,248	3,688,866	3,689,608	3,688,646	3,689,526
	3,688,773	3,689,259	3,689,021	3,689,659	3,688,671	3,689,527
	3,688,785	3,689,275	3,689,029	3,689,670	3,688,684	3,689,538
	3,688,786	3,689,282	3,689,318	3,689,675	3,688,711	3,689,561
	3,688,824	3,689,290	3,689,578	3,689,684	3,688,717	3,689,571
	3,688,826	3,689,303	3,689,651	3,689,934	3,688,729	3,689,606
	3,688,843	3,689,305	3,689,868	3,688,340	3,688,758	3,689,611
	3,688,850	3,689,358	3,689,896	3,688,341	3,688,817	3,689,614
	3,688,857	3,689,390	3,689,917	3,688,386	3,688,822	3,689,625
	3,688,865	3,689,391	9	3,688,401	3,688,433	3,689,643



# GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

3,689,644	3,689,200	3,689,397	35 : 3,689,198	3,689,803	3,688,553
3,689,733	3,689,228	3,689,413	36 : Re 27,473	3,689,805	3,688,573
3,689,769	3,689,242	3,689,418	3,688,315	3,689,821	3,688,577
3,689,774	3,689,262	3,689,717	3,688,317	3,689,849	3,688,804
3,689,785	3,689,263	3,689,909	3,688,324	3,689,877	3,688,829
3,689,809	3,689,544	30 : 3,689,123	3,688,327	3,689,899	3,688,863
3,689,826	3,689,736	31 : 3,688,610	3,688,348	3,689,900	3,689,028
3,689,857	3,689,749	3,688,787	3,688,350	3,689,902	3,689,080
3,689,862	3,689,770	3,688,827	3,688,352	3,689,906	3,689,373
3,689,879	3,689,841	3,688,858	3,688,353	3,689,915	3,689,374
3,689,880	3,689,865	3,689,099	3,688,354	3,689,925	3,689,376
3,689,936	3,689,894	3,689,640	3,688,399	3,688,458	3,689,382
3,689,898	3,689,898	3,689,859	3,688,404	3,688,462	3,689,465
3,688,323	3,689,903	33 : 3,688,455	3,688,408	3,688,471	3,689,549
3,688,328	3,689,916	34 : 3,688,343	3,688,410	3,688,480	3,689,589
3,688,432	3,688,325	3,688,344	3,688,415	3,688,614	3,689,595
3,688,439	3,688,334	3,688,361	3,688,419	3,688,685	3,689,609
3,688,498	3,688,335	3,688,388	3,688,450	3,688,791	3,689,702
3,688,505	3,688,342	3,688,431	3,688,468	3,688,846	3,688,996
3,688,607	3,688,373	3,688,465	3,688,515	3,688,924	3,688,792
3,688,609	3,688,412	3,688,467	3,688,519	3,689,031	3,688,859
3,688,613	3,688,429	3,688,477	3,688,520	3,689,082	3,688,921
3,688,639	3,688,446	3,688,538	3,688,527	3,689,562	3,689,616
3,688,647	3,688,476	3,688,556	3,688,592	3,689,669	3,689,752
3,688,801	3,688,497	3,688,593	3,688,625	3,689,836	Re 27,469
3,688,881	3,688,547	3,688,624	3,688,665	3,689,904	3,688,351
3,688,937	3,688,574	3,688,626	3,688,689	3,689,319	3,688,366
3,688,982	3,688,589	3,688,636	3,688,708	3,689,487	3,688,367
3,689,285	3,688,600	3,688,686	3,688,734	3,688,370	3,688,370
3,689,357	3,688,603	3,688,692	3,688,745	3,688,402	3,688,407
3,689,444	3,688,606	3,688,712	3,688,755	3,688,332	3,688,417
3,689,555	3,688,782	3,688,744	3,688,779	3,688,339	3,688,440
3,689,576	3,688,818	3,688,746	3,688,813	3,688,371	3,688,457
3,689,588	3,688,830	3,688,747	3,688,864	3,688,375	3,688,508
3,689,681	3,688,882	3,688,764	3,688,867	3,688,383	3,688,516
3,689,719	3,688,907	3,688,790	3,688,878	3,688,385	3,688,517
3,689,758	3,689,001	3,688,802	3,688,913	3,688,403	3,688,540
3,689,853	3,689,006	3,688,874	3,688,916	3,688,414	3,688,565
3,688,464	3,689,058	3,688,991	3,688,936	3,688,420	3,688,621
3,688,923	3,689,085	3,689,014	3,688,945	3,688,463	3,688,687
3,688,930	3,689,102	3,689,114	3,688,949	3,688,463	3,688,698
3,688,954	3,689,103	3,689,115	3,688,960	3,688,504	3,688,718
3,688,996	3,689,106	3,689,128	3,688,992	3,688,543	3,688,728
3,689,056	3,689,161	3,689,129	3,689,005	3,688,544	3,688,735
3,689,109	3,689,169	3,689,131	3,689,008	3,688,545	3,688,737
3,689,361	3,689,204	3,689,156	3,689,019	3,688,560	3,688,760
3,689,556	3,689,211	3,689,168	3,689,049	3,688,568	3,688,762
3,688,398	3,689,218	3,689,181	3,689,054	3,688,617	3,688,768
3,688,649	3,689,258	3,689,182	3,689,075	3,688,679	3,688,778
3,688,892	3,689,280	3,689,221	3,689,116	3,688,691	3,688,781
3,689,838	3,689,307	3,689,231	3,689,124	3,688,693	3,688,805
3,689,921	3,689,308	3,689,236	3,689,138	3,688,725	3,688,831
3,688,409	3,689,309	3,689,264	3,689,140	3,688,766	3,688,847
3,688,616	3,689,310	3,689,272	3,689,143	3,688,832	3,688,852
3,688,620	3,689,380	3,689,281	3,689,201	3,688,868	3,688,891
3,688,662	3,689,412	3,689,334	3,689,202	3,688,870	3,688,899
3,688,944	3,689,420	3,689,342	3,689,207	3,688,875	3,688,904
3,688,459	3,689,455	3,689,393	3,689,220	3,688,902	3,688,950
3,689,060	3,689,474	3,689,403	3,689,230	3,688,959	3,688,972
3,689,240	3,689,490	3,689,415	3,689,237	3,689,009	3,689,038
3,689,355	3,689,511	3,689,432	3,689,247	3,689,012	3,689,047
3,689,407	3,689,521	3,689,433	3,689,261	3,689,044	3,689,091
3,689,584	3,689,536	3,689,437	3,689,265	3,689,045	3,689,104
3,688,424	3,689,558	3,689,479	3,689,267	3,689,053	3,689,170
3,688,963	3,689,596	3,689,494	3,689,269	3,689,107	3,689,193
3,688,393	3,689,628	3,689,497	3,689,291	3,689,118	3,689,194
3,688,445	3,689,639	3,689,498	3,689,293	3,689,122	3,689,203
3,688,682	3,689,645	3,689,508	3,689,294	3,689,133	3,689,224
3,688,719	3,689,686	3,689,509	3,689,325	3,689,141	3,689,295
3,688,770	3,689,731	3,689,528	3,689,340	3,689,166	3,689,312
3,688,848	3,689,735	3,689,535	3,689,356	3,689,175	3,689,324
3,689,223	3,689,810	3,689,559	3,689,378	3,689,176	3,689,336
3,689,453	3,689,846	3,689,563	3,689,409	3,689,183	3,689,369
3,689,661	3,689,933	3,689,567	3,689,434	3,689,184	3,689,389
3,689,745	27 : 3,688,434	3,689,570	3,689,442	3,689,215	3,689,404
3,689,848	3,688,453	3,689,574	3,689,454	3,689,251	3,689,411
3,689,922	3,688,479	3,689,590	3,689,456	3,689,252	3,689,435
Re 27,468	3,688,531	3,689,635	3,689,464	3,689,256	3,689,439
3,688,336	3,688,587	3,689,637	3,689,469	3,689,279	3,689,447
3,688,443	3,688,630	3,689,652	3,689,472	3,689,316	3,689,458
3,688,444	3,688,678	3,689,653	3,689,480	3,689,321	3,689,468
3,688,447	3,688,699	3,689,658	3,689,495	3,689,323	3,689,470
3,688,518	3,688,877	3,689,671	3,689,517	3,689,383	3,689,484
3,688,570	3,688,900	3,689,676	3,689,530	3,689,384	3,689,503
3,688,584	3,688,968	3,689,678	3,689,539	3,689,425	3,689,512
3,688,641	3,689,093	3,689,692	3,689,568	3,689,426	3,689,515
3,688,660	3,689,117	3,689,694	3,689,618	3,689,436	3,689,532
3,688,667	3,689,253	3,689,711	3,689,711	3,689,462	3,689,546
3,688,672	3,689,335	3,689,712	3,689,723	3,689,467	3,689,557
3,688,709	3,689,419	3,689,751	3,689,776	3,689,471	3,689,575
3,688,751	3,689,523	3,689,776	3,689,780	3,689,613	3,689,577
3,688,769	3,689,537	3,689,791	3,689,791	3,689,672	3,689,597
3,688,775	3,689,552	3,689,827	3,689,827	3,689,688	3,689,617
3,688,800	3,689,553	3,689,837	3,689,837	3,689,698	3,689,641
3,688,839	3,689,560	3,689,840	3,689,840	3,689,723	3,689,646
3,688,855	3,689,864	3,689,844	3,689,844	3,689,728	3,689,666
3,688,862	28 : 3,689,283	3,689,869	3,689,869	3,689,729	3,689,682
3,688,872	29 : 3,688,400	3,689,887	3,689,887	3,689,732	3,689,691
3,689,003	3,688,413	3,689,901	3,689,901	3,689,739	3,689,709
3,689,027	3,688,783	3,689,910	3,689,910	3,689,744	3,689,720
3,689,065	3,689,051	3,689,912	3,689,912	3,689,747	3,689,721
3,689,098	3,689,072	3,689,913	3,689,913	3,689,762	3,689,740
3,689,132	3,689,276	3,689,914	3,689,914	3,689,763	3,689,784
3,689,135	3,689,292	3,689,928	3,689,928	3,689,787	3,689,801
3,689,154	3,689,311	3,689,938	3,689,938	3,688,379	3,689,822
3,689,177	3,689,333	3,689,938	3,689,938	3,688,475	

# GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

3,689,871	3,688,425	3,688,860	3,689,743	3,689,461	3,688,395
3,689,872	3,688,473	3,688,909	3,689,873	3,689,697	3,688,423
3,689,931	3,688,572	3,688,971	3,689,874	3,689,699	3,688,478
3,688,426	3,688,583	3,689,111	3,689,875	3,689,765	3,688,580
3,688,486	3,688,645	3,689,112	3,689,876	3,689,765	3,688,648
3,688,530	3,688,713	3,689,148	3,689,878	3,688,618	3,688,739
3,689,083	3,688,715	3,689,199	3,689,888	3,688,834	3,688,771
Re 27,474	3,688,721	3,689,206	3,689,891	3,688,912	3,688,920
3,688,485	3,688,757	3,689,226	3,689,908	3,688,919	3,689,040
3,688,825	3,688,784	3,689,229	49 : 3,688,793	3,688,929	3,689,061
3,689,287	3,688,795	3,689,243	3,688,828	3,689,505	3,689,066
3,688,331	3,688,796	3,689,249	50 : 3,689,057	3,689,626	3,689,076
3,688,631	3,688,812	3,689,249	3,689,867	3,689,748	3,689,179
3,688,741	3,688,840	3,689,377	51 : 3,688,422	3,689,277	3,689,314
3,688,789	3,688,841	3,689,395	3,688,637	54 : 3,689,487	3,689,349
3,689,428	3,688,842	3,689,402	3,688,815	55 : 3,689,531	3,689,353
3,689,501	3,688,845	3,689,416	3,688,943	3,688,378	3,689,886
3,689,704	3,688,849	3,689,440	3,688,998	3,688,378	3,689,533
Re 27,476	3,688,851	3,689,450	3,689,037	3,688,387	56 : 3,688,503
3,688,396	3,688,853	3,689,636	3,689,345		57 : 3,688,503

# DESIGN PATENTS

1 : 224,704	9 : 224,721	25 : 224,715	224,724	36 : 224,700	224,710
6 : 224,714	17 : 224,716	25 : 224,701	224,725	224,717	42 : 224,702
224,707	224,713	224,706	224,726	224,719	52 : 224,722
224,708	224,727	224,709	224,718	224,703	55 : 224,728
224,720	224,705	224,723			

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## PATENT OFFICE NOTICES

### Registration to Practice

The following list contains the names of former examiners who are applying for registration to practice before the Patent Office on the basis of 4 years or more service in the Examining Corps.

Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before Oct. 13, 1972.

Bronaugh, Frank H., 7417 Lynnhurst St., Chevy Chase, Md. 20015  
Chapuran, Ronald F., 1655 Brookwood Drive, Elkhart, Ind. 46514  
Henry, William A., II, 5245 Hayledge Court, Columbia, Md. 21045  
Mangan, Phillip E., 6305 Alcott Road, Bethesda, Md. 20034  
May, Roger L., 667 Barclay Drive, Troy, Mich. 48064  
Papuga, Donald Mark, 10911 Trafton Drive, Upper Marlboro, Md. 20870  
Pokotilow, Steven B., 185 E. 85th St., Apt. 32M, New York, N.Y. 10017

LUTRELLE F. PARKER,  
Chairman, Committee on Enrollment.

Aug. 10, 1972.

### Notice to Applicants, Attorneys and Agents Re Preliminary Classification of Patent Applications

The Patent Office is initiating a program for expediting newly filed applications through pre-examination steps. This program requires your cooperation to attain the desired result—a reduction in processing time.

We are, therefore, asking you to include a preliminary classification on newly filed applications. The preliminary classification, preferably class and subclass designations, should be identified in the upper right-hand corner of the letter of transmittal accompanying the application papers, for example, "Proposed class 2, subclass 129."

This program is voluntary and the classification submitted will be accepted as advisory in nature. The final class and subclass assignment remains the responsibility of the Patent Office.

RICHARD A. WAHL,  
Acting Commissioner of Patents.

Aug. 11, 1972.

### Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,734,225, E. A. Glynn, TREAD CENTERING DEVICE FOR TIRE MOLDS; 2,826,783, E. S. Robbins, QUICK ACTING TIRE RETREADING MOLD; 2,908,939, Eriksen and Roesch, BEAD ENGAGING PRESSURE RING UNIT, filed Sept. 15, 1971, D.C. Conn. (New Haven), Doc. 14627, *Super Mold Corporation v. J. E. Sheehan Tire Retreading, Inc.* Case dismissed on stipulation of parties, Feb. 23, 1972.

2,804,893, H. R. Carper, POWER ACTUATED BLOCK CLAMPING APPARATUS AND METHOD; 2,897,570, same, APPARATUS FOR MAKING COMPOSITE SLABS; 2,949,705, same, REINFORCED CONCRETE SLAB CONSTRUCTION, filed Mar. 13, 1972, D.C., W.D. Mich. (Grand Rapids), Doc. G58-72-CA, *Celdez Corporation v. Western Industries, Inc.*

2,826,783. (See 2,734,225.)

2,897,570. (See 2,804,893.)

2,908,939. (See 2,734,225.)

2,949,705. (See 2,804,893.)

2,974,426, H. C. McDonald, METHOD AND APPARATUS FOR MAKING IDENTIFICATIONS, filed July 19, 1971, D.C. Conn. (New Haven), Doc. 14534, *Colt's Inc. v. Bangor Punta Operations, Inc.* Case dismissed on stipulation of parties Feb. 3, 1972.

3,017,067, A. V. Bodeen, REGISTERING DEVICE, filed June 7, 1967, D.C., S.D.N.Y., Doc. 67-C-2210, *Ideal Toy Corp. v. Mattel Inc.* This action was closed in error on Feb. 23, 1972.

3,019,276, K. B. Harlow, COMBUSTION SYSTEMS FOR INTERNAL ENGINES, filed Apr. 19, 1972, D.C., N.D. Tex. (Dallas), Doc. CA-3-5785-B, *James E. Turner and James Turner & Assoc., Inc. v. Eugene Irvin, Jr. et al.*

3,029,477, Wildbolz, Binder, Stabell, AUTOMATIC CARD-ING PLANT, filed Oct. 8, 1969, D.C.S.C. (Charleston), Doc. 69-824, *Maschinenfabrik Rieter A.G. v. Greenwood Mills, Intervenor-Defendant: Continental/Moss-Gordin, Inc.* Order, patent valid; claims 1, 5, 6, 8 and 11 are infringed, Mar. 23, 1972.

3,036,884, D. W. Kaufmann, TREATMENT OF BULK SALT, filed Apr. 24, 1972, D.C., N.D.N.Y. (Utica), Doc. 72-C-217, *Morton-Norwich Products, Inc. v. International Salt Company.*

3,052,081, M. Wallsheln, ORTHODONTIC ARCH WIRE CONSTRUCTION AND METHOD, filed May 1, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 72-C-551, *Melvin Wallsheln v. G.A.C. International, Inc.*

3,081,392. (See 2,831,952.)

3,096,801, Miles, Brown and Ward, SEED POTATO CUTTER, filed Apr. 11, 1972, D.C. Idaho (Boise), Doc. C-4-72-13, *Milestone, Inc. v. Lockwood Graders of Idaho, Inc. et al.*

3,158,424, R. Bowen, CONTACT MOUNTING; 3,165,369, J. W. Maston, RETENTION SYSTEM FOR ELECTRICAL CONTACTS, filed Mar. 14, 1972, D.C., N.D. Ill. (Chicago), Doc. 72C653, *Bunker-Ramo Corp. v. International Telephone & Tel. Corp.*

3,165,369. (See 3,158,424.)

3,190,395, M. H. Lill, VEHICLE SUPPORTING RACK; Re. 26,232, same, filed Aug. 5, 1968, D.C., E.D. Mo. (St. Louis), Doc. 68C355(A), *FMC Corporation v. Hunter Engineering Co.* Memo, opinion and judgment filed decreeing patents in suit invalid and void in law; denying defendant's prayer for attorneys' fees, defendant to recover from plaintiff its costs of this action, Mar. 28, 1972.

3,252,582, Keslman, Penn and Kravitz, MODULAR DISH WASHER RACK; D. 201,383, same, COMMERCIAL DISH WASHER RACK, filed Aug. 29, 1967, D.C., S.D.N.Y., Doc. 67-C-3307, *Green Valley Products, Inc. v. The General Tire & Rubber Company.* Order, complaint is dismissed with prejudice, Apr. 5, 1972.

3,257,522, A. F. Raab, LINK AND SWITCH DEVICE FOR AUTOMOTIVE BRAKING SYSTEMS, filed Apr. 24, 1972, D.C., E.D. Wis. (Milwaukee), Doc. 72-C-228, *Wells Mfg. Corp. v. Littlefuse, Inc.*

3,258,061, A. Udin, ADJUSTABLE WINDOW GRILLE WITH COLLAPSIBLE BOTTOM GUARD BARS, filed Aug. 2, 1966, D.C., S.D.N.Y., Doc. 66-C-2378, *Albert Udin v. J. Kaufman Iron Works, Inc.* Filed judgment—ordered that the defendant have judgment against the plaintiff, dismissing the complaint, Apr. 17, 1972. Opinion, complaint dismissed—as to the counterclaims defendant is entitled to a declaratory judgment of invalidity, Apr. 10, 1972.

3,275,316, G. V. Cleary, Jr., INSERT FOR NEWSPAPERS, filed Apr. 28, 1972, D.C., N.D. Ill. (Chicago), Doc. 72C1070, *Free Standing Stuffer, Inc. v. Holly Development Co.*

3,307,392, Owen and Isaacson, AUTOMATIC PROTHROMBIN TIMER APPARATUS AND METHOD, filed Apr. 28, 1972, D.C., S.D.N.Y., Doc. 72-C-1762, *Sherwood Medical Industries, Inc. & Research Corp. v. Medical Laboratory Automation, Inc.*

3,367,126. (See 3,474,723.)

3,474,723, Reimus and Saporito, BEVERAGE APPARATUS; 3,367,126, J. D. Howell, FLOATING AGITATOR; 3,495,522, J. G. Muller, BEVERAGE APPARATUS, filed Feb. 17, 1970, D.C. Del. (Wilmington), Doc. 3850, *Struthers Scientific & International Corporation v. General Foods Corporation.* Dismissed by consent of parties, Feb. 23, 1972.

3,495,522. (See 3,474,723.)

3,536,144, Hood and Osburn, ARTICULATED WHEELED FRAME FOR AGRICULTURAL IMPLEMENTS, filed July 15, 1971, D.C., W.D. Okla. (Oklahoma City), Doc. 71-446-C, *Blackwell Steel Products, Inc. v. Medford Steel Products, Inc.* Dismissed on stipulation of parties, Apr. 3, 1972.

SEPTEMBER 12, 1972

U. S. PATENT OFFICE

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3,570,748, Coyle and Marsella, COMPOSITE FILM AND METHOD, filed Apr. 26, 1972, D.C., S.D.N.Y., Doc. 72-C-1716, *Standard Packaging Corporation v. Milprint, Inc.*

3,618,044, W. G. Rarick, POWER SUPPLY CORD HATCH, filed Jan. 28, 1972, D.C., N.D. Ind. (Fort Wayne), Doc. 72-F-4, *Lyall Electric, Inc. v. Geisel Distributors, Inc. et al.*

3,622,980, F. R. Elledge, DIRECTIONAL WARNING SYSTEM, filed Apr. 20, 1972, D.C., S.D. Ohio (Cincinnati), Doc. 8380, *Casell Co., Inc. v. Baader-Brown Manufacturing Co.*

3,624,123, Lewis and Friedman, t-ALKYL PERESTERS OF t-HYDROPEROXIDES, filed May 1, 1972, D.C., S.D. Tex. (Houston), Doc. 72-H-570, *Argus Chemical Corporation v. Pennical Corporation.*

3,642,147, G. H. Voorhies, HANGER DEVICE, filed Apr. 21, 1972, D.C., S.D. Ohio (Dayton), Doc. 4232, *Gerald H. Voorhies v. A-1 Ornamental Iron, Inc. and Graves & Marshall Co.*

3,650,766, Y. Smadar, EXTRUDED FOOD PRODUCTS AND METHOD OF PRODUCING SAME, filed Mar. 21, 1972, D.C., N.D. Ill. (Chicago), Doc. 72C725, *DCA Food Industries Inc. v. Korlow Corp. et al.*

3,658,515, G. A. Saltzman, HARD WEAR-RESISTANT FERROUS ALLOY, filed Apr. 25, 1972, D.C., E.D. Wis. (Mil-

waukee), Doc. 72-C-232, *International Rectifier Corp. v. Donald P. Lomax.*

Re. 26,232. (See 3,190,395.)

Re. 27,018, Bolkcom and Knapp, SILICON CARBIDE FURNACES AND PLANTS, filed Apr. 24, 1972, D.C., E.D. Tenn. (Knoxville), Doc. 7840, *Wilbur T. Bolkcom and William E. Knapp v. The Carborundum Company.*

D. 201,383. (See 3,252,582.)

D. 210,015, R. D. Kahn, INSECT ELECTROCUTING TRAP, filed Apr. 11, 1968, D.C.N.J. (Newark), Doc. 341-68, *Fedtro, Inc. v. Spencer Gifts of Paramus, Inc. et al.* Consent order dismissing action, Apr. 28, 1972.

D. 222,198, M. H. Boldt, HAIR DRYER, filed Apr. 25, 1972, D.C. Mass. (Boston), Doc. 72-1359-G, *National Presto Industries, Inc. v. General Wholesale Supply Company.* Same, filed Apr. 25, 1972, D.C. Mass. (Boston), Doc. 72-1360-G, *National Presto Industries, Inc. v. Zayre Corporation.* Same, filed Apr. 25, 1972, D.C., N.D. Ohio (Cleveland), Doc. C-72-387, *National Presto Industries, Inc. v. Union Savings Assn.* Same, filed Apr. 26, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 72C535, *National Presto Industries, Inc. v. Merit Enterprises, Inc.*



## Patent Numbers For Which No Patents Exist

Issue of September 12, 1972

3,689,959	3,690,447	3,690,764	3,691,146
3,689,975	3,690,455	3,690,781	3,691,156
3,690,001	3,690,458	3,690,817	3,691,175
3,690,022	3,690,459	3,690,843	3,691,182
3,690,025	3,690,467	3,690,859	3,691,200
3,690,042	3,690,493	3,690,871	3,691,208
3,690,046	3,690,508	3,690,877	3,691,254
3,690,060	3,690,512	3,690,897	3,691,259
3,690,069	3,690,541	3,690,919	3,691,292
3,690,073	3,690,553	3,690,951	3,691,293
3,690,081	3,690,592	3,690,952	3,691,299
3,690,089	3,690,612	3,690,960	3,691,307
3,690,104	3,690,624	3,690,973	3,691,351
3,690,117	3,690,630	3,690,991	3,691,355
3,690,119	3,690,637	3,691,006	3,691,362
3,690,129	3,690,651	3,691,024	3,691,367
3,690,173	3,690,653	3,691,025	3,691,369
3,690,178	3,690,659	3,691,028	3,691,395
3,690,185	3,690,669	3,691,034	3,691,420
3,690,190	3,690,677	3,691,035	3,691,451
3,690,275	3,690,681	3,691,039	3,691,458
3,690,322	3,690,683	3,691,044	3,691,468
3,690,342	3,690,700	3,691,057	3,691,480
3,690,346	3,690,711	3,691,094	3,691,507
3,690,355	3,690,718	3,691,114	3,691,530
3,690,419	3,690,740	3,691,115	3,691,532
3,690,424	3,690,755	3,691,122	3,691,550
3,690,442	3,690,757	3,691,137	

## Dedications

3,033,988.—*Harold E. Edgerton*, Belmont, Mass. METHOD OF AND APPARATUS FOR THE CONTROL OF ELECTRIC IMPULSES. Patent dated May 8, 1962. Dedication filed, Apr. 13, 1972 by the assignee, *Honeywell Inc.*

Hereby dedicates to the Public the remaining term of said patent.

3,275,306.—*Bernard C. Phillips*, Toledo, Ohio. FUEL FEED AND CHARGE FORMING APPARATUS. Patent dated Sept. 27, 1966. Dedication filed July 3, 1972, by the assignee, *Borg-Warner Corporation*.

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,432,810.—*Humberto R. Cordero*, Endicott, N.Y. ADDRESSING SYSTEM FOR A COMPUTER EMPLOYING A PLURALITY OF LOCAL STORAGE UNITS IN ADDITION TO A MAIN MEMORY. Patent dated Mar. 11, 1969. Dedication filed Mar. 3, 1972, by the assignee, *International Business Machines Corporation*.

Hereby dedicates to the Public the entire term of said patent.

## Disclaimers

3,441,071.—*Peter T. Schurman*, Snyder, and *Raymond O. Confer*, Gasport, N.Y. PLASTIC CONTAINER. Patent dated Apr. 29, 1969. Disclaimer filed June 14, 1972, by the assignee, *W. R. Grace & Co.*

Hereby disclaims all that portion of the term of the patent subsequent to May 9, 1984.

3,565,931.—*Lawrence Robert Brecker*, Brooklyn, N.Y. PROCESS FOR PREPARING ORGANOTIN MERCAPTO CARBOXYLIC ACID ESTER SULFIDES CONTAINING MORE THAN 18% TIN. Patent dated Feb. 23, 1971. Disclaimer filed June 19, 1972, by the assignee, *Argus Chemical Corporation*.

Hereby enters this disclaimer to claims 10, 11, 15, 19, 20 and 21 of said patent.

3,575,686.—*John William Case*, *Norman Frederick Crowder*, and *Wilfred Arthur Stephen White*, Runcorn, England. TREATMENT OF TEXTILES. Patent dated Apr. 20, 1971. Disclaimer filed Dec. 15, 1969, by the assignee, *Imperial Chemical Industries Limited*.

Hereby disclaims the portion of the term of the patent subsequent to Nov. 4, 1986.

3,616,088.—*Stanley M. Weir*, Palo Alto, Calif. WAREHOUSE CARRIER WITH LABEL MEANS THEREON. Patent dated Oct. 26, 1971. Disclaimer filed June 21, 1971, by the assignee, *FMC Corporation*.

Hereby disclaims all that portion of the term of the patent subsequent to Apr. 23, 1985.

3,625,755.—*Earle M. Potrafke*, Wilmington, Del. SUPPORTED METAL SALT/PHOSPHINE COMPLEXES AND METALLIZED PRODUCTS THEREFROM. Patent dated Dec. 7, 1971. Disclaimer filed Aug. 20, 1970, by the assignee, *E. I. du Pont de Nemours and Company*.

Hereby disclaims all that portion of the term of the patent subsequent to Apr. 15, 1986.

## Certificates of Correction for the Week of Sept. 12, 1972

D. 220,920	3,611,417	3,642,569	3,655,568
D. 222,160	3,612,007	3,642,658	3,655,663
3,475,561	3,612,463	3,642,752	3,655,978
3,503,701	3,612,916	3,643,082	3,656,177
3,513,761	3,613,480	3,643,187	3,657,158
3,515,567	3,614,661	3,643,782	3,657,514
3,519,175	3,615,885	3,643,820	3,657,568
3,532,396	3,616,013	3,644,079	3,657,582
3,535,306	3,617,614	3,644,135	3,657,625
3,546,201	3,617,905	3,644,712	3,658,121
3,549,637	3,618,027	3,645,162	3,658,541
3,565,932	3,620,538	3,645,832	3,658,651
3,569,920	3,621,749	3,645,906	3,658,952
3,574,631	3,621,770	3,646,096	3,659,223
3,576,478	3,621,829	3,646,579	3,660,008
3,585,629	3,622,165	3,646,798	3,660,352
3,586,087	3,624,183	3,646,981	3,660,413
3,586,490	3,624,344	3,648,513	3,660,611
3,587,713	3,625,295	3,649,289	3,660,808
3,590,826	3,625,913	3,649,554	3,661,242
3,591,250	3,630,149	3,649,572	3,661,598
3,594,895	3,630,656	3,649,671	3,661,932
3,597,126	3,631,025	3,649,681	3,661,953
3,598,515	3,632,680	3,650,274	3,662,124
3,598,865	3,632,884	3,650,306	3,662,209
3,599,711	3,633,668	3,650,419	3,662,211
3,600,448	3,634,116	3,650,466	3,663,890
3,601,291	3,634,398	3,650,707	3,664,307
3,601,398	3,635,613	3,651,070	3,664,746
3,601,460	3,635,965	3,651,400	3,664,780
3,601,634	3,636,444	3,651,451	3,665,245
3,602,734	3,636,532	3,651,540	3,665,500
3,605,479	3,636,808	3,652,187	3,666,142
3,606,396	3,637,406	3,652,364	3,666,349
3,607,157	3,637,755	3,653,596	3,666,985
3,607,970	3,638,139	3,654,192	3,667,008
3,608,992	3,639,694	3,654,224	3,667,119
3,609,577	3,639,989	3,654,304	3,667,247
3,609,601	3,640,004	3,654,741	3,667,628
3,609,729	3,640,370	3,655,038	3,667,954
3,610,537	3,640,770	3,655,217	3,668,271
3,610,817	3,641,555	3,655,392	
3,611,171	3,641,755	3,655,478	

3,629,551.—*Masao Ando*, Yokohamashi, Japan. CONTROLLING HEAT GENERATION LOCALLY IN A HEAT-GENERATING PIPE UTILIZING SKIN-EFFECT CURRENT. Patent dated Dec. 21, 1971. Disclaimer filed June 22, 1971, by the assignee, *Chisso Corporation*.

Hereby disclaims the portion of the term of the patent subsequent to Dec. 20, 1983.

3,642,801.—*Ernst Seeger*, *Wolfhard Engel*, *Helmut Teufel*, *Hans Machleidt*, *Heinrich Ueberberg*, and *Hanna Ihrig*, Biberach an der Riss, Germany. N-SUBSTITUTED 1-PYRIDYL-2'-1,2,3,4-TETRAHYDRO-ISOQUINOLINES AND SALTS. Patent dated Feb. 15, 1972. Disclaimer filed Apr. 8, 1971, by the assignee, *Boehringer Ingelheim G.m.b.H.*

Hereby disclaims that portion of the term of the patent subsequent to July 22, 1986.



# PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner  
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 22, 1972

## PATENT EXAMINING GROUPS

Actual  
Filing Date  
of Oldest  
New Case  
Awaiting  
Action

### CHEMICAL EXAMINING GROUPS

GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director..... 7-09-71  
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro  
Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and  
Igniting Devices.  
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director..... 6-01-71  
Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids;  
Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.  
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director..... 8-02-71  
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins  
With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding;  
Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.  
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director... 7-02-71  
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical  
Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.  
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant)..... 4-02-71  
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas;  
Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation;  
Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.

### ELECTRICAL EXAMINING GROUPS

INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director..... 12-29-71  
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches;  
Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.  
SPECIAL LAW ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director..... 6-08-71  
Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes; Seismic Exploring, Radio-  
Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.  
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director..... 9-14-71  
Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and  
Related Arts.  
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant).... 5-17-71  
Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Adjoining; Cleaning; Pressing; Geometrical  
Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.  
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director..... 9-27-71  
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Net-  
works; Optics; Radiant Energy; Measuring.  
DESIGNS, GROUP 290—R. L. CAMPBELL, Director..... 2-23-71  
Industrial Arts; Household, Personal and Fine Arts.

### MECHANICAL EXAMINING GROUPS

HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director..... 7-23-71  
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling;  
Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics;  
Motor and Land Vehicles and Apparatuses; Brakes; Railways and Railway Equipment.  
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director..... 6-09-71  
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire  
Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and  
Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.  
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director.... 8-03-71  
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating;  
Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletary; Printing; Typewriters; Stationery;  
Information Dissemination.  
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director..... 8-23-71  
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and  
Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gear-  
ing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.  
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director..... 7-01-71  
Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators;  
Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations;  
Coating; Textiles; Apparel and Shoes; Sewing Machines.

Expiration of patents: The patents within the range of numbers indicated below expire during September 1972, except those which may have  
expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public  
Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of  
35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for  
the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,716,748 to 2,719,293, inclusive  
Plant Patents..... Numbers 1,417 to 1,422, inclusive

# PATENTS

SEPTEMBER 12, 1972

## GENERAL AND MECHANICAL

3,689,939

NECK CLOSING SMOCK OR GOWN  
Glenn N. Taylor, Barrington, Ill., assignor to The Kendall  
Company, Walpole, Mass.

Filed Nov. 16, 1970, Ser. No. 89,966

Int. Cl. A41b 9/00

U.S. Cl. 2—114

11 Claims



A back-opening smock or gown which may be worn as a protective garment generally but which is particularly useful as a hospital gown for patient examination, as a nurse's gown, a doctor's smock, or as a surgeon's operative gown. A feature is an overlapping neck closure in which two or more projecting studs engage female elements to close the gown opening. The studs, fastened to the underside of the overlap at the neck, readily mate by projecting partially through an equal number of a series of female elements in the overlying portion of the gown opening at the neck. The closure permits adjustment of the neck size and width of the opening overlap.

3,689,940

METHOD OF ASSEMBLING A FRAME AND PANEL  
Louis Sommerfeld, 165 West End Ave., New York, N.Y.

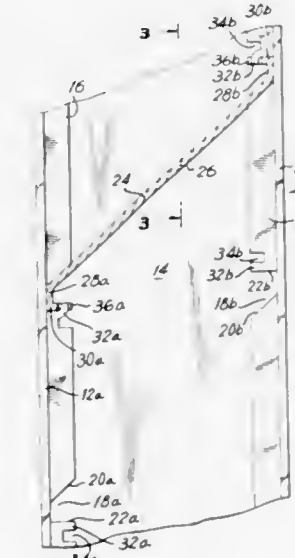
Division of Ser. No. 861,781, Sept. 29, 1969, Pat. No.

3,577,864. This application Aug. 24, 1970, Ser. No. 66,517

Int. Cl. B23p 15/26, 19/00

U.S. Cl. 29—157 R

4 Claims



An assembly which includes a frame and an air-guiding panel such as a louver. The frame has a pair of panel-carrying vertical ribs respectively formed with notches while the panel has opposed edge portions of a cross section matching that of the notches and received therein. Each of the ribs of the frame is provided next to its notch with a deformable locking nib while the edge portion of the panel adjacent to the locking nib is formed with a locking cutout. According to the method of the invention after the panel is situated within the notches of the ribs, the deformable locking nib is bent into the locking cutout to remain therein for providing a positive lock between the panel and the frame, thus preventing the panel from snapping or otherwise being removed out of the frame.

3,689,941

METHOD OF FABRICATING AND SOLDERING  
STAINLESS STEEL PARTS

Andre Chartier, Meudon, France, assignor to Societe Anonyme  
Des Usines Chausson, Asnieres, France

Filed June 23, 1970, Ser. No. 49,154

Claims priority, application France, June 30, 1969,  
6922044

Int. Cl. B21d 53/02

U.S. Cl. 29—157.3 R

6 Claims

The two faces of a sheet or thin strip of stainless steel are covered with a thin coating of lead, and is used for constituting the tubes, collector, water-boxes as well as the pipes of a radiator, and the parts thus made are soldered together with a tin-lead alloy by the same operational cycle as with corresponding parts made of brass or copper.

3,689,942

PROSTHETIC HEART VALVE

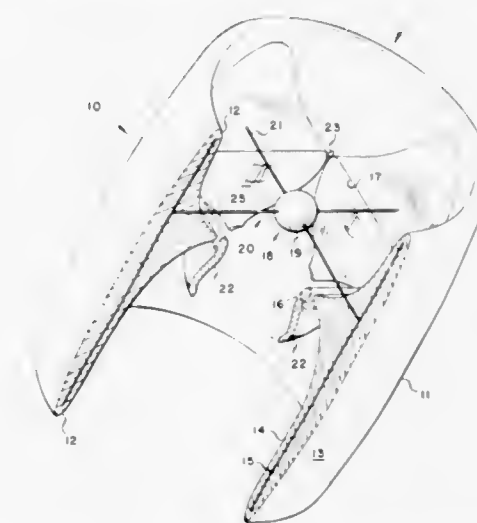
Richard K. Rapp, 1251 Imperial Dr., Glendale, Calif.

Continuation-in-part of Ser. No. 880,674, Nov. 28, 1969,  
abandoned. This application Sept. 15, 1970, Ser. No. 72,449

Int. Cl. A61f 1/22

U.S. Cl. 3—1

17 Claims



A prosthetic heart valve consisting of a cylindrical housing having a substantially rectangular opening therein and a plurality of triangular flaps pivotally secured to the housing within the opening. The flaps are adapted to pivot open in response to the flow of blood from the heart and pivot to a sealing position, in abutment to a sealing ball which controls the position of the flaps, in response to the back flow of the blood, thereby providing uni-directional flow.

3,689,943

RESERVOIR

David H. Sharp, 318 Linnert Crescent, Strathmore, Quebec,  
Canada

Filed March 30, 1970, Ser. No. 23,938

Claims priority, application Great Britain, March 31, 1969,  
16,818/69

Int. Cl. E03d 3/00

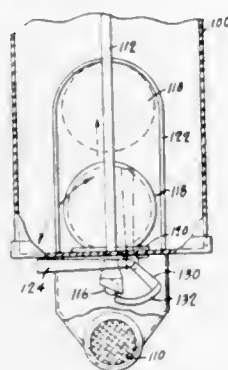
U.S. Cl. 4—28

5 Claims

The invention provides a liquid retaining and dispensing apparatus which has a reservoir adapted to retain a liquid therein, an inlet port, an outlet port, a valve adapted to mate in sealing engagement with said outlet port and movable valve



displacing means adapted to displace said valve from sealing engagement with said outlet port. In the various embodiments disclosed, the outlet valve is preferably a spherical valve, with



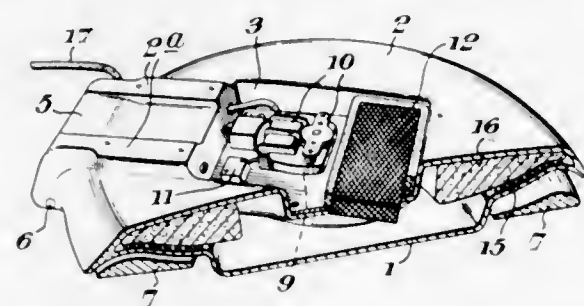
### 3,689,944 TOILET DEODORIZING APPARATUS

Cyril Reginald Clayton, 20 Branksom Road, St. Leonards-on-Sea, Sussex, England

Filed Nov. 2, 1970, Ser. No. 86,220  
Int. Cl. E03d 9/05

U.S. Cl. 4-213

5 Claims



Toilet seat unit comprising a casing having a chamber for housing a deodorizing agent and air impelling means such as an electric fan selectively operable, for example when the seat is raised, to induce odor laden air through an inlet on the underside of the casing and through the deodorant chamber, and expelling deodorized air through an outlet in said chamber which directs the air away from the unit.

### 3,689,945 STRETCHERS

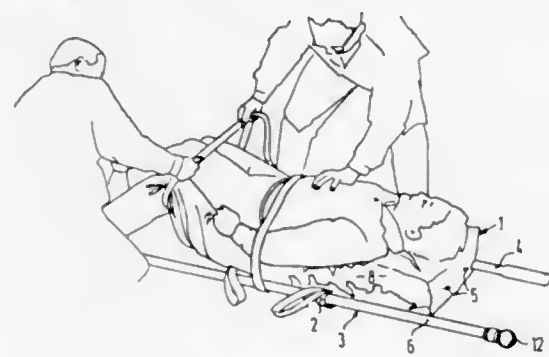
Asmund S. Laerdal, Stavanger, Norway

Filed Aug. 27, 1970, Ser. No. 67,504  
Claims priority, application Germany, Sept. 3, 1969, P 19 44 646.9

Int. Cl. A61g 1/00, 7/10

U.S. Cl. 5-82

10 Claims



A stretcher with a vacuum mattress and carrier poles for it, the vacuum mattress having an air impermeable cover enclosing

an interior which can alternatively be filled with air or evacuated by a vacuum pump, and which contains a granular material. In order that it should always be available, independent of human factors, when the stretcher is used, and should be capable of connection to the mattress as a preparatory measure, a vacuum pump is mounted in at least one tubular region of one or both carrier poles.

### 3,689,946

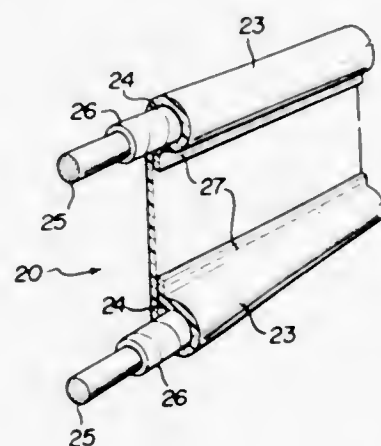
#### SEAT EDGE SPACER

Jere B. Ambrose, Pontiac, Mich., assignor to Northern Fibre Products Company, Birmingham, Mich.

Filed May 18, 1971, Ser. No. 144,098  
Int. Cl. A47c 23/02

U.S. Cl. 5-261

3 Claims



A box-spring type seat construction formed of an upper frame, a lower frame and interconnecting coil springs, with a horizontally elongated fabric strip having wire stiffened upper and lower edges secured to the upper and lower frames respectively at the forward edge of the seat construction, with the strip vertically extending between the frames for limiting the expansion of the springs. The strip is formed of fine strands of linearly oriented polypropylene felted into a randomly oriented non-woven, smooth sheet for roughly equal stretch resistance and equal tension absorption in all of its planar directions.

### 3,689,947

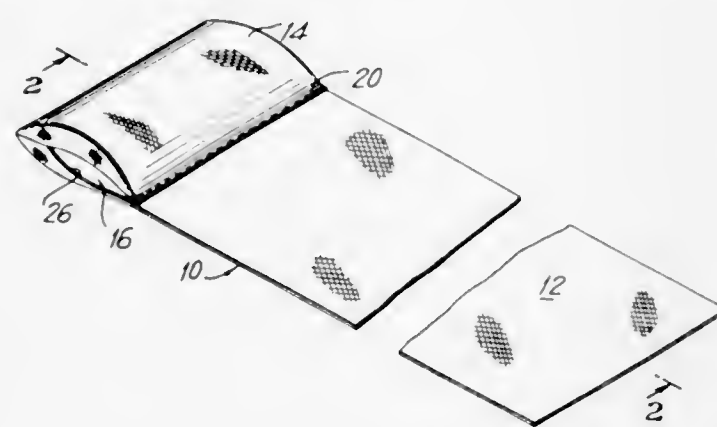
#### TOWEL-PILLOW COMBINATION

Barnet Wolf, Teaneck, N.J., assignor to Franco Manufacturing Co., Inc., New York, N.Y.

Filed June 30, 1970, Ser. No. 51,166  
Int. Cl. A47g 9/00

U.S. Cl. 5-344

2 Claims



A towel which is combined with a pillow so that a person may recline on the towel placing his head comfortably on a pillow. The towel is formed at one end with a pocket in which the pillow is removably located, and the pillow is preferably inflatable so that it can be deflated to facilitate storage while at the same time it can be removed to facilitate washing of the towel.

### 3,689,948

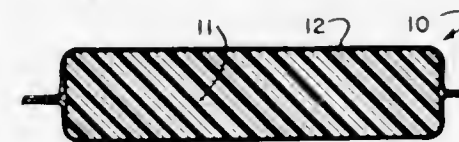
#### POLYVINYL ALCOHOL GEL SUPPORT PAD

David J. Graves, Ridley Park, Pa., and Charles R. Ritchey, Fort Sam Houston, Tex., assignors to The United States of America as represented by the Secretary of the Army

Filed June 9, 1970, Ser. No. 44,838  
Int. Cl. A47c 27/08, 27/00

U.S. Cl. 5-348

4 Claims



A polyvinyl alcohol gel pad. The gel pad has properties which make it useful as a support pad in the prevention and treatment of decubitus ulcers (also known as pressure sores) and for other purposes. The polyvinyl alcohol gel is made by cross-linking high molecular weight polyvinyl alcohol using a cross-linking agent, such as formaldehyde, in the presence of an acid catalyst, such as hydrochloric acid, and by incorporating at least one internal plasticizer, such as propylene glycol, in the gel. The support pad is completed by putting a thin-film envelope around the gel.

### 3,689,949

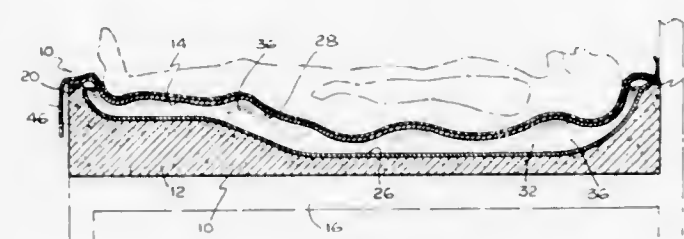
#### FLOTATION APPARATUS

James D. Weinstein, Philadelphia, Pa., and Barry A. Davidson, Boston, Mass., assignors to Scott Paper Company, Delaware County, Pa.

Filed Sept. 17, 1965, Ser. No. 488,202  
Int. Cl. A47c 27/08, 27/18

U.S. Cl. 5-348

1 Claim



This invention relates to improved flotation apparatus and, in particular, to beds and seats in which provision is made for buoyantly supporting the weight of the person on the bed or the seat, an object of this invention to provide improved flotation apparatus. This invention provides a flotation structure for buoyantly, or approximately buoyantly, supporting the weight of a patient's body by devices which weigh much less than previously known flotation devices.

### 3,689,950

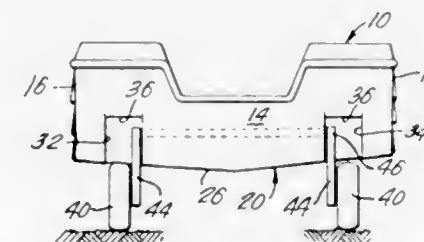
#### COMBINATION BOAT TRAILER

Jerzy George Jalowiecki, 1715 De Seve St., Montreal, Quebec, and Jan Metelski, 22, 58th Ave., Laval, Quebec, both of Canada

Filed March 31, 1970, Ser. No. 24,298  
Int. Cl. B63c 13/00

U.S. Cl. 9-1 T

7 Claims



A boat construction having a pair of spaced-apart slots near the stern open to the bottom of the boat and the stern wall of

the boat and a retractable running gear pivotally mounted in the slots between a land transport position and a retracted position. A detachable hitch having a three-point connection to the bow of the boat and a universal joint connection to a holding vehicle.

### 3,689,951

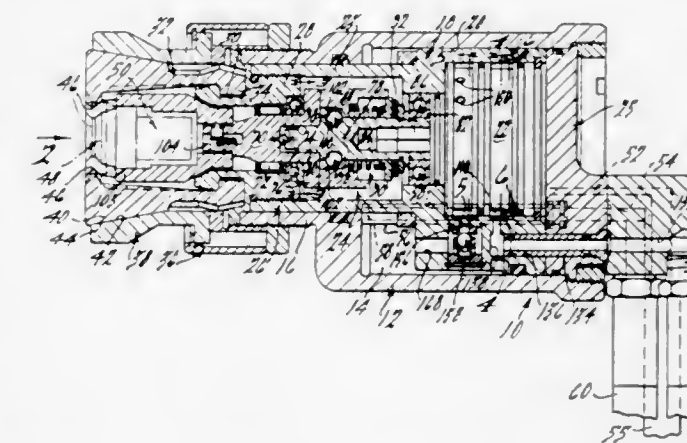
#### FASTENER INSTALLATION SYSTEM

George J. Van Hecke, Wayne County, and Robert D. Cassell, Oakland County, both of Mich., assignors to Huck Manufacturing Company, Detroit, Mich.

Filed May 7, 1970, Ser. No. 35,393  
Int. Cl. B23p 19/08; B21d 41/04; B21j 7/16

U.S. Cl. 10-155 R

12 Claims



In a two piece fastener of the type including a bolt and a nut adapted to be threaded onto the bolt and thereafter crimped to provide a desired preload a system for setting the fastener including tool means for torquing the nut onto the bolt with a preselected torque and thereafter crimping the nut to provide the desired preload and control means to sequentially control the tool.

### 3,689,952

#### HEEL MOULDING BANDS

Peter H. V. Dawson, and Norman S. Smith, both of Union Works, Belgrave Rd., Leicester, England

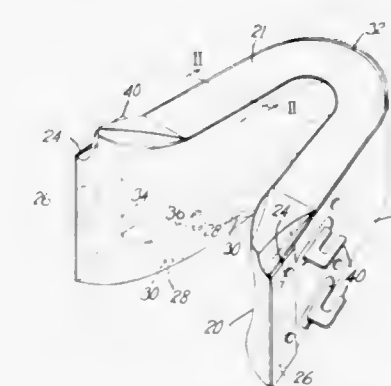
Filed April 13, 1970, Ser. No. 27,534

Claims priority, application Great Britain, April 16, 1969, 19,334/69

Int. Cl. A43d 21/12; B32b 5/16, 27/12

U.S. Cl. 12-14.4

4 Claims



A method of making moulding bands for shoemaking machines in which a thermoplastic lining material having a low coefficient of friction is secured to a resilient material forming the body of the moulding band through a fabric material. The band has a lining suitable for engagement with a shoe upper, the lining being bonded to a resilient body through a fabric and the body having a cavity filled with a particulate material so the band accommodates to various dimensions and contours of a shoe form.



3,689,953

**STABILIZED FLOATING STRUCTURE**

Costas E. Markakis, 12 Aravantinou St., Athens, Greece

Continuation of Ser. No. 751,463, Aug. 9, 1968,

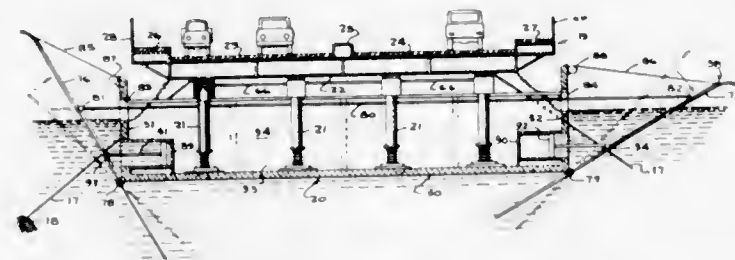
abandoned. This application March 19, 1971, Ser. No.

126,287

Int. Cl. E01d 15/08

U.S. Cl. 14—27

28 Claims



A floating structure adapted to maintain a predetermined orientation including a floating body at least partially immersed in a fluid, means mounted in the body at selected loci for varying the buoyant forces acting on the selected loci, means responsive to displacements of the floating body relative to the predetermined orientation for actuating the means for varying the buoyant forces whereby the buoyant forces are varied at selected loci to produce counteracting forces tending to return the floating body to the predetermined orientation and the actuating means including means for sensing displacements of the floating body relative to the predetermined orientation.

3,689,954

**AUTOMOBILE WASHING UNIT**

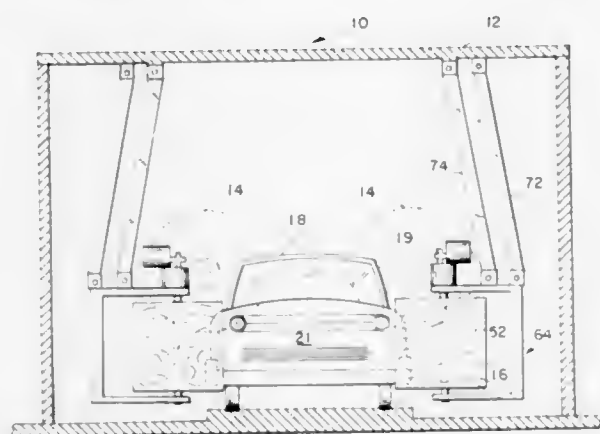
Howard E. Grant, c/o Trans-World Car Wash Systems, Inc., 65 Marine St., Farmingdale, N.Y.

Filed July 31, 1969, Ser. No. 846,481

Int. Cl. B60s 3/06

U.S. Cl. 15—21 E

8 Claims



For use in a car or automobile washing unit in the operation of which the washing unit surrounds the automobile and moves along a prescribed path, thereby associating the automobile with various apparatus contained on the washing unit for cleaning different parts of the automobile, a side window washer including at least one brush centrifugally mounted on a pivotable overhead support which yieldably extends into the automobile during its path of movement so that the brush, during a cleaning interval, makes cleaning contact with the automobile and, more particularly, as the washer moves past the automobile, the angular orientation of the brush is such that the brush has a wiping stroke diagonally across the automobile side window so that the successive portions of the window coming into contact with the brush are in complete contacting relation therewith, and a front, side panel, fender and rear body washer including at least one brush rotatably held in a support frame pivotally mounted on an overhead support

which is itself pivotable in dual cross-direction so that the brush is continuously moving in a plane vertical to the automobile and has a wiping stroke adjustable to the shape and dimensions of the automobile.

3,689,955

**WINDOW WIPER SYSTEM**

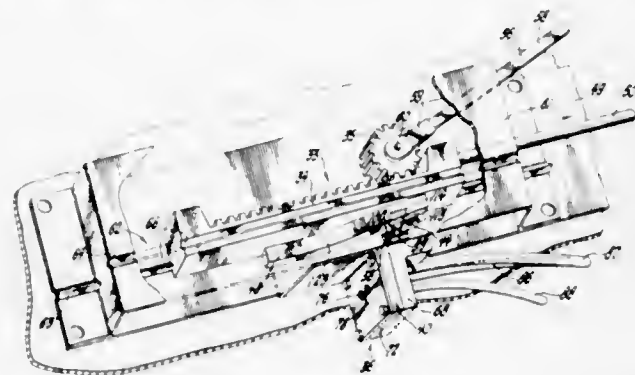
Herbert E. Winkelmann, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 12, 1971, Ser. No. 142,521

Int. Cl. B60s 1/10; F01l 15/00

U.S. Cl. 15—250.3

3 Claims



In a preferred form, this disclosure relates to a window wiper system for wiping a window of an automotive vehicle. The window wiper system includes a fluid motor having a cylinder and a piston reciprocable therein and which divides the cylinder into a first and second chambers; a wiper supported for movement in an oscillatory manner across the window, a drive transmission for oscillating the wiper in response to reciprocation of the piston; and a valve means which controls the operation of the fluid motor. The valve means includes a housing which defines a valve chamber and has apertures communicating the valve chamber with the atmosphere, a fluid pressure source, and the first and second chambers of the fluid motor. The valve means has a valve member which is shiftable between first and second positions to alternately communicate the atmosphere and the fluid pressure source to the first and second chambers of the fluid motor to effect reciprocation of the piston. The valve member is shiftable between its first and second positions by a valve actuator which comprises a Y-shaped actuator and a bowed leaf spring. The Y-shaped actuator is supported for pivotal movement and is engageable with the valve member. The bowed leaf spring effects rapid pivotal movement of the Y-shaped actuator when it is moved over center in response to reciprocation of the piston by a cam connected to the drive transmission.

3,689,956

**SUCTION CLEANER SHAG RUG NOZZLE CONVERTOR**

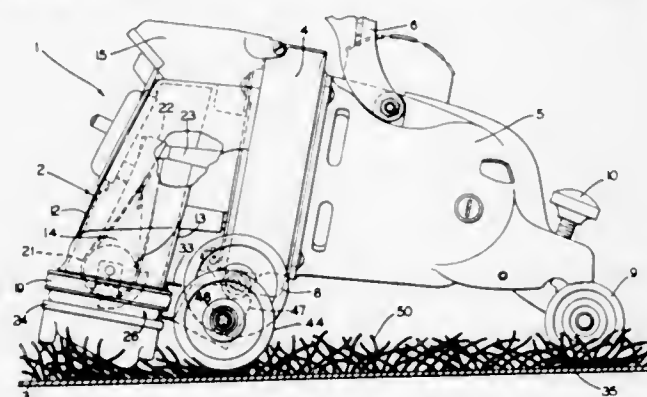
Robert V. Melreth, Gates Hills, Ohio, assignor to Royal Appliance Manufacturing Co., Inc., Highland Heights, Ohio

Filed April 5, 1971, Ser. No. 131,117

Int. Cl. A47l 9/02

U.S. Cl. 15—397

17 Claims



A shag rug cleaning nozzle convertor for a usual main suction cleaner nozzle connected to a usual source of cleaning

suction. The convertor comprises a wheeled carriage detachably mounted on the main nozzle having a plurality of subnozzles extending transversely beneath and communicating with the main nozzle, raising the main nozzle to a position spaced above the backing of a deep pile shag rug being cleaned. The subnozzles each are provided with a sloped bottom wall and rounded, tapered, streamlined sidewalls formed with an elongated opening extending rearwardly downwardly toward the rug backing and into the shag pile threads. The sloped bottoms prevent the pile from sealing the subnozzle openings and allow air to circulate through the shag pile threads and along the upper backing surface for removal of dirt. The wheeled carriage enables the main nozzle and subnozzles to be moved back and forth easily and freely through the shag rug for cleaning and the subnozzles comb the rug threads or fibers to prevent a neat cleaned appearance.

3,689,957

**DRAPERY HOOK**

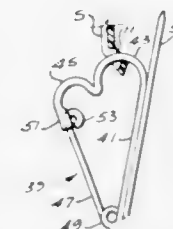
Rina M. Pizzurro, 3009 Arlmont Dr., Bel-Nor, Mo.

Filed Sept. 29, 1969, Ser. No. 861,621

Int. Cl. A47h 13/04

U.S. Cl. 16—87.2

10 Claims



Drapery hooks having safety means for hooking them on drapery rods or sliders of traverse rods in such manner as to preclude accidental disengagement of the hooks therefrom. In one form this is accomplished by a double loop arrangement; in another form by a finger and loop arrangement; and in still another form by a snap fastener which in some cases also comprises a double loop. In all forms the drapery hooks include one or more prongs for insertion or engagement into drapes or curtains near the upper margin thereof.

3,689,958

**FOWL PROCESSING SYSTEM**

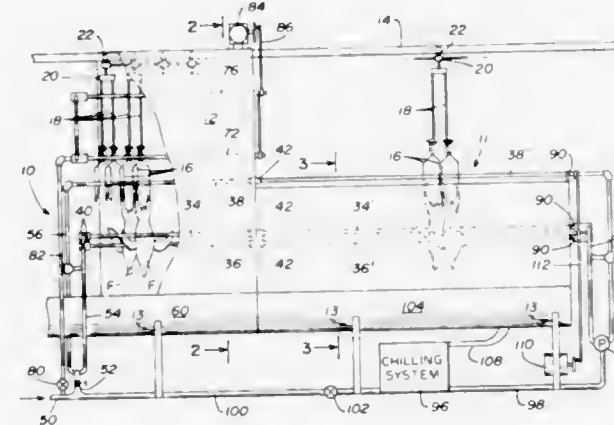
Janus J. Dillon, Irving, Tex., assignor to Food Equipment, Inc., Dallas, Tex.

Filed Dec. 11, 1970, Ser. No. 97,091

Int. Cl. A22c 21/00, 21/04

U.S. Cl. 17—11

2 Claims



The specification discloses a system for cleaning and chilling fowl carcasses and also for cleaning the fowl conveying shackles. The system includes a housing through which shackles are transported. Lower spray discharge nozzles are mounted in the housing for selectively applying a cleaning

fluid and then a chilling fluid to the fowl carcasses carried by the shackles. Upper spray discharge nozzles are also mounted in the housing for selectively applying pressurized cleaning fluid to the shackles.

3,689,959

Patent Not Issued For This Number

3,689,960

**METHOD AND APPARATUS FOR SHIRRING DELICATE AND FRAGILE FOOD CASINGS**

Algimantas Povilas Urbutis, Chicago, Ill., assignor to Union Carbide Corporation

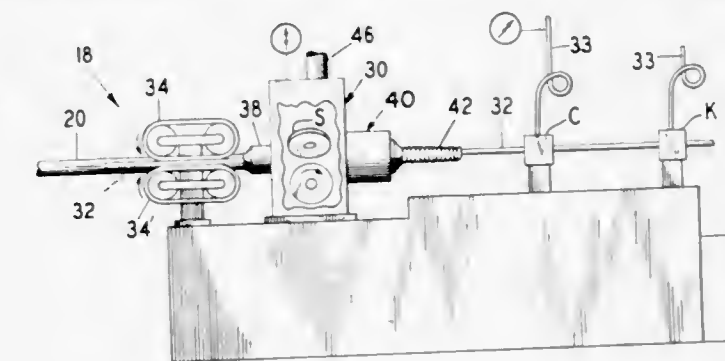
Continuation of Ser. No. 797,423, Feb. 7, 1969, abandoned.

This application Feb. 19, 1971, Ser. No. 117,070

Int. Cl. A22c 13/00

U.S. Cl. 17—51

11 Claims



Continuous lengths of delicate and fragile food casings can be obtained by providing an increased pressure differential between the interior and exterior of inflated lengths of the food casings as they are being shirred.

3,689,961

**METHOD AND APPARATUS FOR EVISCERATING POULTRY**

Edward J. Crane, Ottumwa, Iowa, assignor to International Agri-Systems, Inc., Madison, Ottumwa, Iowa

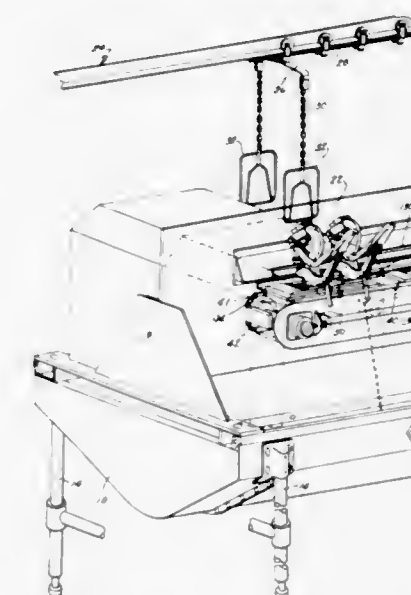
Continuation-in-part of Ser. No. 9,180, Feb. 6, 1970,

abandoned. This application Feb. 8, 1971, Ser. No. 113,276

Int. Cl. A22c 21/06

U.S. Cl. 17—45

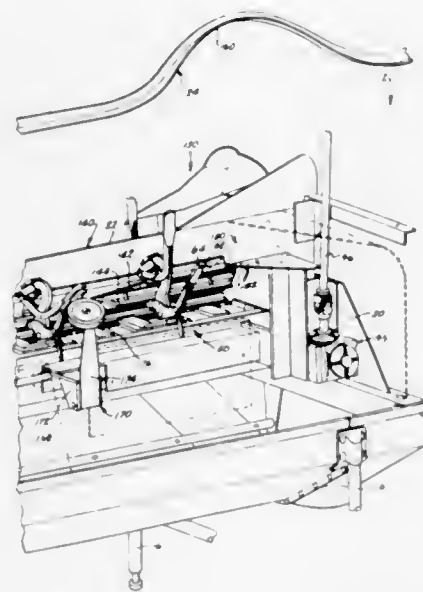
16 Claims



An eviscerating apparatus utilizing two opposed spoon members adapted for insertion into the body cavity of the bird to be eviscerated. The spoons are separately pivotally mounted for rotation in a vertical plane upon a carriage attached to a conveyor. Cam followers on the spoon members and associated cam tracks cause the spoons to separate, to



remove the viscera from the bird and then partially close to permit an overhead carrier to lift the now eviscerated fowl



from the spoons. A scraper pushes the viscera off the lower spoon and it is carried with the bird to the inspection station.

3,689,962

**RELEASABLE BUTTON-LIKE ELEMENT**

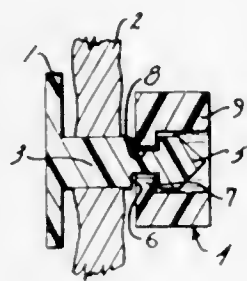
Marlin D. Erickson, Cedar Rapids, Iowa, assignor to Janet E. Erikson, Hiawatha, Iowa, a part interest

Filed Oct. 19, 1970, Ser. No. 81,810

Int. Cl. A44b 1/38

U.S. Cl. 24-108

6 Claims



A button is integrally formed with a square shaft having one or more axially spaced recesses. A grommet is provided with a lip which releasably mates with such recesses to form a fabric clamp. The grommet has an outer flange portion which extends axially of the shaft from the lip such that insertion in the diametrically opposite position provides a completely different spacing, for accommodating correspondingly different thicknesses of fabrics.

3,689,963

**THREAD SENSING ARRANGEMENT**

Karl Frei, Morickstr. 9, 7477 Onstmettingen, Germany

Filed Jan. 16, 1970, Ser. No. 3,385

Claims priority, application Germany, Jan. 23, 1969, P 19 03 195.9; Sept. 17, 1969, G 69 36 384.4; Nov. 7, 1969, G 69 43 236.6

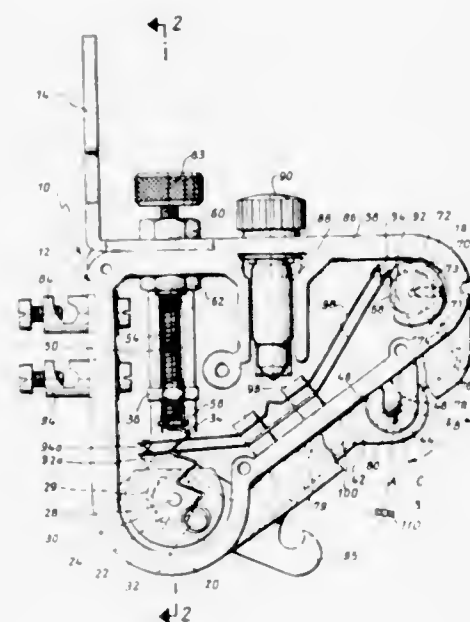
Int. Cl. D04b 35/14

U.S. Cl. 28-1 R

20 Claims

A thread sensing arrangement for controlling the stop motion of a textile machine has a sensing means which turns about an axis located on an imaginary straight line through the path of the thread, and extending substantially in the direction in which the thread is supplied to the path which

is formed by a pair of guide means mounted for angular movement about an other axis located on an other imaginary



straight line through the path which defines an acute angle with the direction in which the thread is supplied to the guide means.

**ERRATA**

For Classes 29-157 R and 29-157.3 R see: Patents Nos. 3,689,940 and 3,689,941

3,689,964

**MACHINING SINTERED POWDER METAL**

Orville W. Reen, Lower Burrell, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Feb. 25, 1971, Ser. No. 119,038

Int. Cl. B21f 3/24

U.S. Cl. 29-420.5

6 Claims

A method of providing a machined powder metal article, which comprises the steps of: pressing metal powder into a green compact; sintering the green compact in a substantially non-oxidizing atmosphere; substantially impregnating and coating the sintered compact with an aqueous alkali metal silicate solution; and machining the sintered compact, thereby forming a machined article.

3,689,965

**MACHINE FOR HIGH SPEED, EXTREMELY PRECISE MASS WORKING OF PIECES HAVING SMALL DIMENSIONS AND COMPLEX FORMS, IN PARTICULAR OF METALLIC SMALL ARTICLES**

Guido Bertoglio, Viganello, Switzerland, assignor to S. A. Albe, Agno, Switzerland

Filed July 31, 1970, Ser. No. 59,908

Claims priority, application Switzerland, April 10, 1970, 5406/70

Int. Cl. B23b 39/20, 39/22

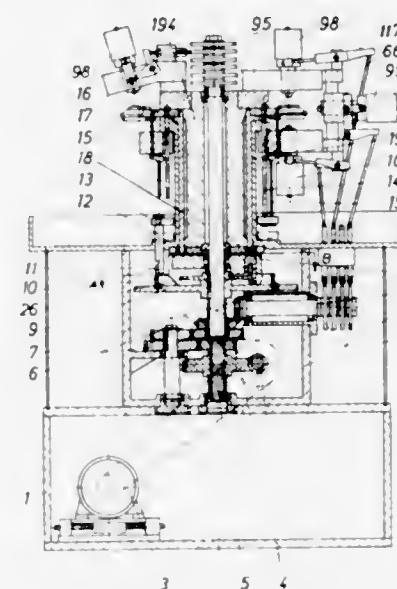
U.S. Cl. 29-38 C

19 Claims

Small metallic workpieces are subjected to a sequence of

work operations at a surrounding series of work stations, by mounting them on a rotary carrier that rotates intermittently

sufficient amount of resiliency so that stones, or the like, do not jam between the roller and adjacent packer head parts,



through predetermined equal angular increments successively to dispose each workpiece at each work station.

3,689,966

**ROTARY CUTTER WITH HELICALLY DIRECTED CUTTING TEETH ARRANGED IN A CIRCLE**

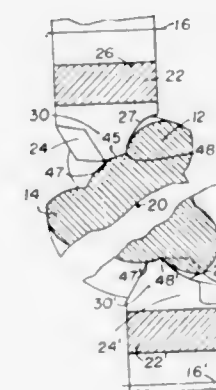
Ernest Wildhaber, 124 Summit Dr., Brighton, N.Y.

Filed June 8, 1970, Ser. No. 44,089

Int. Cl. B26d 1/12

U.S. Cl. 29-103 C

6 Claims



Cutters of the type referred to have cutting teeth inclined to the peripheral direction and arranged in a circle about the cutter axis. They require large amounts of relief for cutting clearance and produce a tooth shape depending also on the cutter diameter. The invention provides pairs of cutters, each cutter of the pair finish-cutting one side only of the teeth produced. Relief variation over the cutting profile is reduced and maximum relief angles are diminished with side surfaces of the cutting teeth that converge from front to rear. The tooth shape produced is maintained constant after sharpening, with cutting teeth that have a constant distance from the cutter axis from front to rear. The side surfaces of the cutting teeth are helical surface coaxial with the cutter.

3,689,967

**CONCRETE PIPE MAKING APPARATUS**

William Hurst, P.O. Box 239, Santa Barbara County, Calif.

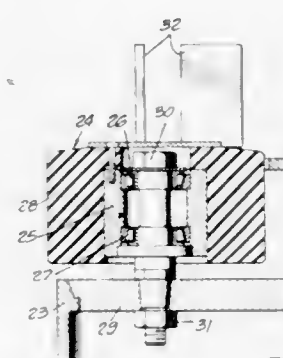
Filed June 5, 1970, Ser. No. 43,687

Int. Cl. B21b 13/02

U.S. Cl. 29-116 R

1 Claim

Each of the rollers in the packer head of concrete pipe making apparatus has rubber tires or rubber facings on their peripheral surfaces, which are brought into bearing contact with the concrete of a forming pipe. The tires or facings have a



but are merely rolled on through. Also, on eventual wear, the tires or roller facing parts may be quickly, easily, and relatively inexpensively replaced.

3,689,968

**METHOD OF ALIGNING BEARINGS OF SHAFTING SYSTEMS**

Ruffin G. Truxillo, New Orleans, La., assignors to Tru-Line, Inc., New Orleans, La.

Filed March 15, 1971, Ser. No. 124,555

Int. Cl. B23p 11/00

U.S. Cl. 27-149.5 R

2 Claims

Bearing support sleeves or bearings are aligned by any well known procedures and held by temporary holding means in their respective permanent support fittings fixed to a basic structure, said support fittings having annular openings large enough to easily receive the sleeves or bearings therein with annular space left therebetween. The annular space is then filled with a high strength casting material that is allowed to setup before the holding means are removed or left severed in place to leave the support sleeves or bearings permanently aligned and fixed in place relative to each other.

3,689,969

**METHOD OF FORMING A CLAW PORTION OF THE FRONT WHEEL JOURNAL FORK OF A BICYCLE**

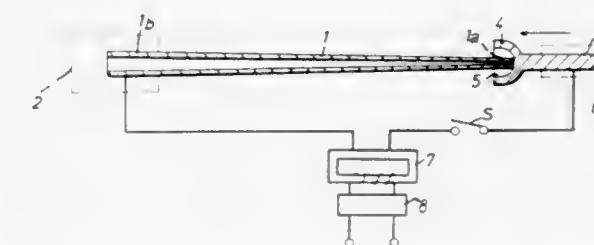
Masashi Tsunoda, Aichi-ken, Japan, assignor to Tsunoda Jitensha Kabushiki, Aichi-ken, Japan

Filed July 29, 1970, Ser. No. 59,297

Int. Cl. B23p 13/00

U.S. Cl. 29-150

8 Claims



A method of forming a claw portion of the front wheel journal fork of a bicycle, including the steps of axially squeezing a metal pipe, having one end of reduced section, between a pair of chuck electrodes, the electrode seating said reduced section end of the pipe having a die cavity of a desired shape for an intermediate form of the claw portion, while simultaneously applying an electric potential to said electrodes, whereby to soften and form said reduced section end of the pipe to a shape conforming to that of the die cavity, pressing said shaped end of the pipe to flatten said end, shearing said flattened end to a desired claw contour, and punching a hole and a slot in said flat and contoured claw portion.



3,689,970

**METHOD AND DEVICE FOR MAKING UP METAL BANDS INTO HOLLOW RAILS**

Raimund Falkner, Roppen/Tirol, Austria, assignor to Rapena Patent &amp; Verwaltungs AG, Vaduz, Liechtenstein

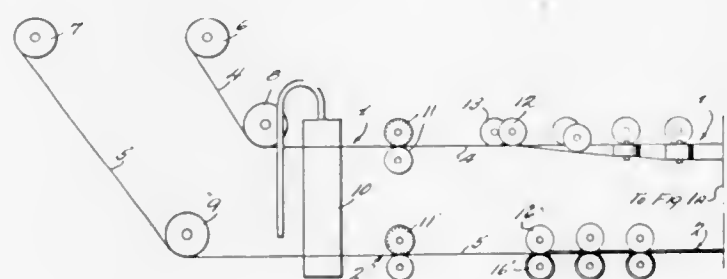
Filed Aug. 28, 1970, Ser. No. 67,801

Claims priority, application Germany, Aug. 28, 1969, P 19 43 826.7

Int. Cl. B23p 17/00, 19/00

U.S. Cl. 29—155 R

21 Claims



Apparatus and method for making at least two metal bands into a hollow rail, e.g. for door and window frames, wherein the bands are simultaneously drawn by a tractive force acting from the formed end, e.g. by a power-operated reciprocal clamp, through non-driven roll-type forming tools which shape the bands into profiles while under the tractive force so that the bands are strengthened and straightened in at least some longitudinal zones. While being drawn through the forming tools a non-metallic elastic shim liner is fed and applied to the edges of at least one of the bands and after both bands have been profiled, they are pressed together, by appropriate guiding and shaping tools, whereby the longitudinal edges of the bands are connected together by a folded welt that completely encloses the shim liner while the latter prevents friction metallic contact between the two bands.

3,689,971

**AXIAL FLOW FANS**

Eugene M. Davidson, P.O. Box 36100, Houston, Tex.

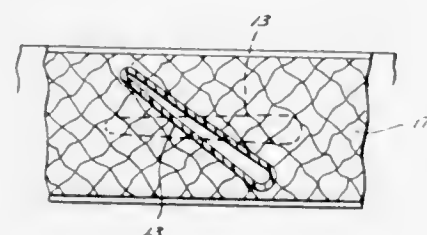
Division of Ser. No. 852,140, July 3, 1969, Pat. No. 3,588,271.

This application July 29, 1970, Ser. No. 64,839

Int. Cl. B23p 15/02, 15/04; B21k 3/04

U.S. Cl. 29—156.8 CF

3 Claims



An axial flow fan comprising a rolled fan ring, a blade rotatably mounted within the fan ring, and a lining of metal foil honeycomb about the inner periphery of the ring with the openings therethrough extending radially of the ring. At least a portion of the inner surface of the lining is crushed to provide a substantially uniform clearance about the tip of the blade. The honeycomb is constructed of sheets of the metal foil which are bent and joined together at spaced apart locations by an adhesive. A layer of the honeycomb is first annealed and then installed in the ring. Annealing renders the honeycomb soft and substantially destroys the bond so that the lining may be crushed to only a fraction of its original thickness.

3,689,972

**METHOD OF FABRICATING A HEAT EXCHANGER**

James A. Mosier, and Harold H. Dolister, both of Racine, Wis.,

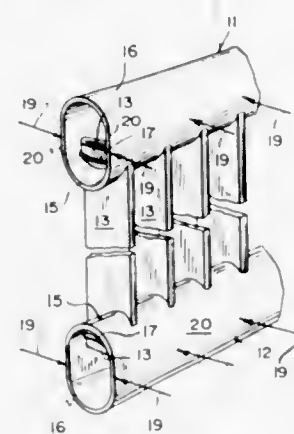
Assignors to Modine Manufacturing Company

Filed Nov. 19, 1970, Ser. No. 91,027

Int. Cl. B21d 53/02

U.S. Cl. 29—157.3 R

7 Claims



A heat exchanger and a method of making a heat exchanger comprising an elongated integral metal tank-header with spaced tubes interfitted in openings formed by displacing metal of the header portion to form flanges. The flanges are bonded to the tube ends and the tank-header before and after the bonding has a curved cross section including the flange areas. The method of forming the heat exchanger in which an integral metal tank-header is provided of rounded externally convex cross section including a longitudinal portion comprising an elongated convex header, providing spaced openings in this header each defined by a flange of metal displaced from the header in forming the opening and each flange having a curved bonding surface bonding the end of the tube in each opening with bonding material located between the tubes and the surface on the corresponding flange and then reshaping the tank-header after the bonding.

3,689,973

**APPARATUS FOR THE REMOVAL OF UNBROKEN OR INSUFFICIENTLY BROKEN PILFERPROOF RINGS OF SCREW-CAPS FROM THE NECK OF BOTTLES**

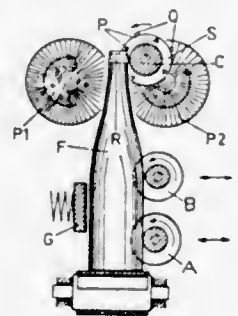
Joseph Jacques Leenaards, 6 Chomin de Primerose, Lausanne, Switzerland

Filed Oct. 8, 1970, Ser. No. 79,075

Int. Cl. B23p 19/00

U.S. Cl. 29—200 D

7 Claims



This invention relates to an apparatus and a process for removing unbroken or insufficiently broken pilferproof rings of screw-caps from the bottle-necks.

Therefor a bottle is applied and pressed during its transport against a guide which can give way in cross-direction. This bottle is treated by one or more protrusions displaced from the bottle-top downwards mainly in a plane through the center-line of the bottle.

Thanks said protrusions, the pilferproof ring remaining on the bottle-neck is pushed downwards and is broken in order to be removed from said bottle-neck.

3,689,974

**CABLE CLAMP AND APPARATUS FOR ATTACHING AND FOR DETACHING THE CLAMP**

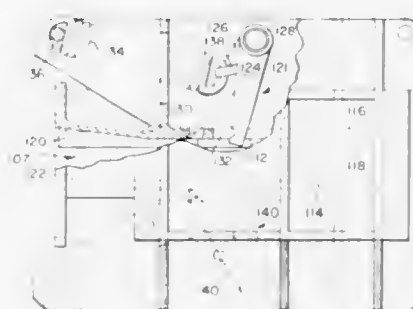
William D. Whipple, and Howard W. Gifford, both of Westport Point, Mass., assignors to Prelude Corporation, Westport Point, Mass.

Filed Nov. 2, 1970, Ser. No. 86,088

Int. Cl. B23p 19/04

U.S. Cl. 29—200 D

13 Claims



A releasable and lockably closing cable clamp has two clamp elements movable relative to each other between a release position and a cable-clamping closed position, and has a latch member movable between an unlatch position where the clamp elements are free for said relative movement and a latch position where it locks the clamp elements in the closed position.

An attacher of the clamp to a moving cable has a carriage for moving a clamp with the cable into engagement with a clamp-closing cam that closes the clamp onto the moving cable, and into engagement with a clamp-locking cam that moves the clamp latch element to the latch position.

A detacher for releasing the clamp from a moving cable has an aligner that selectively orients the cable-carried clamp and feeds it to a guide passage. A follower engages the clamp in this passage and is moved by the advancing clamp to move a latch-releasing member to shift the latch member on the moving clamp from the latch position to the unlatch position, thereby allowing the two clamp elements to separate from each other and release the cable.

3,689,975

Patent Not Issued For This Number

3,689,976

**COIL TRANSFER APPARATUS**

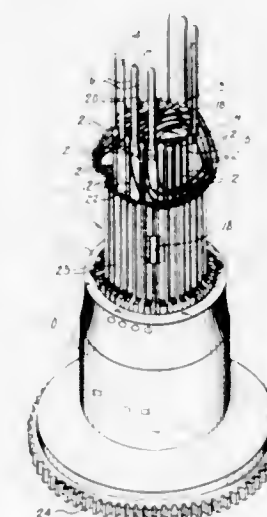
Glenn R. Donovan, Kettering, Ohio, assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed April 15, 1971, Ser. No. 134,182

Int. Cl. H02k 15/06

U.S. Cl. 29—205 D

5 Claims



Prewound coils are placed into stator slots of a dynamoelectric machine by an insertion apparatus which has a plurality of

fixed blades arranged in a circle within the inside diameter of the stator. The blades are spaced to provide blade gaps corresponding in position to the stator slots, and a piston driven stripper operating within the circle of blades inserts the coils through the gaps and into the stator slots. The stripper carries movable blades that alternate with the fixed blades, and the blade gaps are off-center between the movable and fixed blades. The movable blades are removably attached to the stripper.

3,689,977

**HINGE PIN REMOVER**

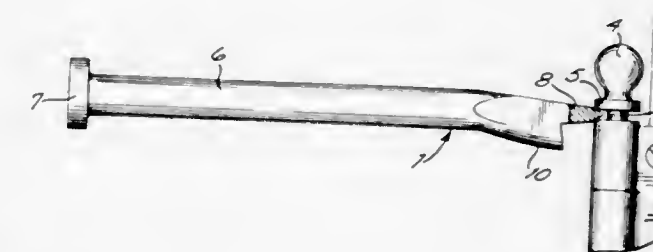
Harlis G. Crabbe, 3422 Sandwood St., Lakewood, Calif.

Filed May 6, 1970, Ser. No. 35,037

Int. Cl. B25p 19/04

U.S. Cl. 29—253

2 Claims



This invention relates to an effective means of removing the hinge pin, particularly of a plate type hinge, when it is necessary to remove the hinge pin in order that the door may be removed from its mounting. My hinge pin removing tool provides a sturdy driver type device which can be struck with a hammer in order to drive the hinge pin out of its socket, particularly when the hinge pin is rusted or has been painted while in place.

3,689,978

**WHEEL OR GEAR PULLER**

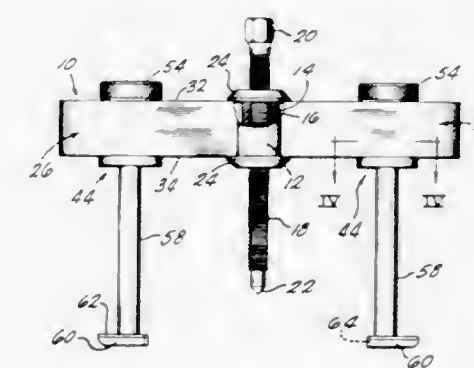
Robert E. Kelso, Jackson, Mich., assignor to Dowley Manufacturing, Inc., Spring Arbor, Mich.

Filed Nov. 26, 1969, Ser. No. 880,153

Int. Cl. B23p 19/04

U.S. Cl. 29—259

2 Claims



A tool of the wheel or gear puller type including a hub having a threaded jack shaft supported therein, and yoke arms radially extending from the hub. The yoke arms each consist of a pair of spaced, parallel portions having parallel lateral edges whereby the portions define a slot-like recess receiving hangers upon which pulling implements are mounted. The hangers are radially adjustable within the associated yoke arm and fastening means are defined on the hangers for fixing the radial position of each hanger with respect to the hub.



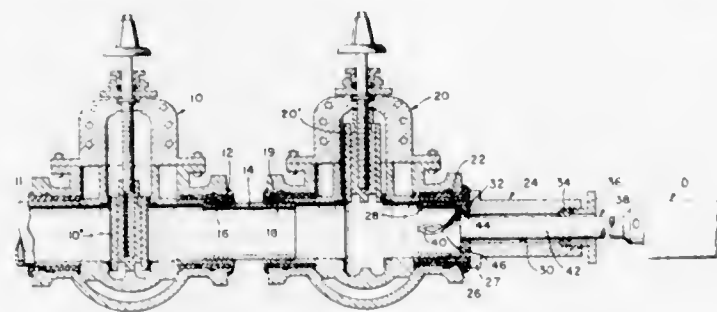
3,689,979

**APPARATUS AND METHOD FOR REPLACING A DEFECTIVE GATE VALVE**

William Palat, 166-25 12th Ave., Whitestone, N.Y.  
 Filed Aug. 19, 1970, Ser. No. 65,039  
 Int. Cl. B23p 7/00, 19/04

U.S. Cl. 29-401

7 Claims



A special cutting tool such as a drill is concentrically disposed within a sleeve having external threads at one end. The sleeve is threadably coupled to the downstream end of a new gate valve while the upstream end of the new gate valve is coupled by means of a nipple or the like to the downstream end of an old gate valve that is either stuck, broken or frozen in the closed position and which cannot be moved. With the gate of the new valve in the open position, the drill is axially extended and rotated to remove the gate of the old valve. The drill is then axially withdrawn and the new valve is closed. The sleeve is then unthreaded from the new valve and the pipe line is coupled to the new valve in a conventional manner.

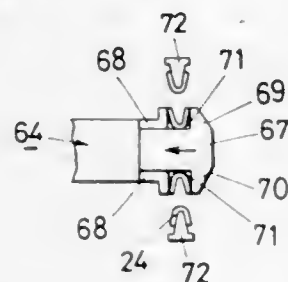
3,689,980

**METHOD AND APPARATUS FOR AUTOMATICALLY AFFIXING TOP STOPS ON SLIDER FASTENER CHAIN**

Yoshio Oyama, 111, Tomari, Asahi-cho, Shimoniikawa-gun, Toyama-ken, Japan  
 Filed Nov. 4, 1970, Ser. No. 86,663  
 Claims priority, application Japan, Nov. 12, 1969, 44/90574  
 Int. Cl. B23p 19/04, 11/00

U.S. Cl. 29-408

9 Claims



There is described a process for attaching top stops on so-called "gap chain" for slide fasteners and apparatus for carrying out the method, one mechanical cycle of the method consisting of a series of steps of stopping the chain at predetermined position, spreading the gap portions of the chain, delivering top stops on the opposing tape edges of the chain close to the leading elements of the element groups spaced along the length of the chain, and clamping the top stops.

3,689,981

**METHODS OF ASSEMBLING ELECTRICAL COMPONENTS**

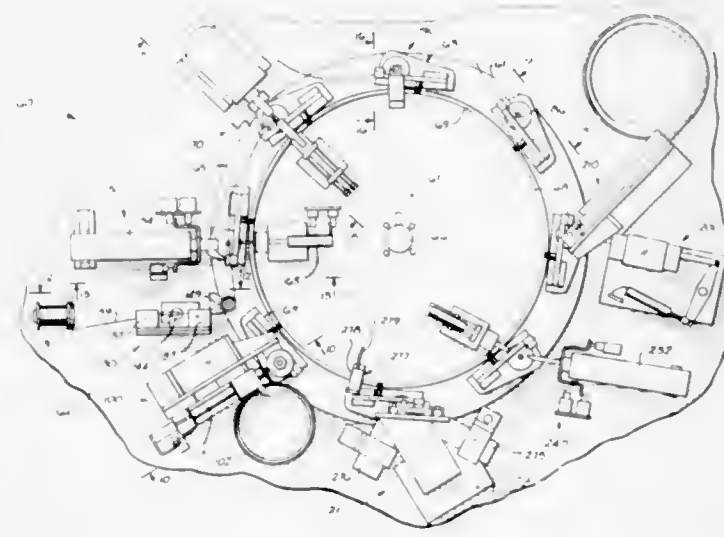
Thomas Alvin La Valle, Annapolis, Md., assignor to Western Electric Company, Incorporated, New York, N.Y.  
 Division of Ser. No. 878,017, Nov. 19, 1969, Pat. No. 3,618,204. This application Aug. 13, 1971, Ser. No. 171,439  
 Int. Cl. B23p 19/00; H05k 13/00; H01f 7/06

U.S. Cl. 29-430

2 Claims

A rotatable turntable having a plurality of workholders spaced about the periphery thereof is indexed to advance each

of the workholders successively through each of a plurality of work stations positioned adjacent the periphery of the turntable to assemble electrical components. A first part positioned in one of the workholders has the leading end of an insulated wire extending from a supply of wire welded thereto, after which the first part is indexed to another work station without severing the wire extending from the first part to the supply. A portion of the wire extending to the first part in the workholder is severed from the supply and the new leading end of the wire is attached to the first part in the next succeeding workholder. The first part is rotated in the first workholder



while tensioning the wire extending from and secured to the first part to wind the wire thereon as the workholder is advanced with the turntable. Facilities are provided for orienting the workholders prior to the winding of the wire on the first parts. Subsequently, a second part is assembled to the first part and, simultaneously, the insulation on a portion of the wire extending from the first part is stripped, whereafter the trailing portion of the wire is welded to a metal cap which is secured to the second part, the strength of the weld is tested, and the electrical component is advanced to a last work station, tested electrically, and then sorted.

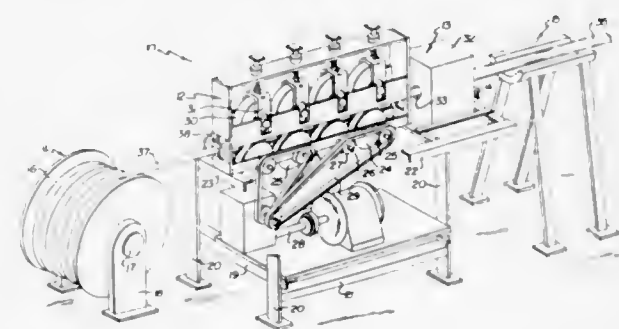
3,689,982

**APPARATUS AND METHOD FOR CABLE COVERING**

Ian Wallace Campbell, 2750 Tudor Ave., Victoria, British Columbia, Canada  
 Filed Oct. 27, 1970, Ser. No. 84,352  
 Int. Cl. B23p 19/00, 19/04

U.S. Cl. 29-430

6 Claims



Apparatus and method for covering cables with flexible thin-walled tubing for sliding fit, for use in such applications as pre-tensioning or post-tensioning concrete installations. The cable is coated with lubricant, and fed into a length of extended tubing from a nozzle to which the tubing is secured.

3,689,983

**METHOD OF BONDING**

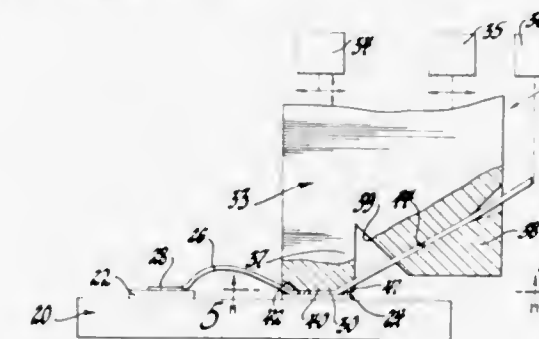
Richard E. Eltzroth, and Larry K. Fewell, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 11, 1970, Ser. No. 36,323

Int. Cl. B23k 21/00

U.S. Cl. 29-470.1

2 Claims



A bonding tip and method is disclosed for making an extremely strong tailless wire bond on a contact pad of a semiconductor device without significantly reducing the connected unbonded wire cross-section immediately adjacent the bond. One form of the tool includes an elongated member having a flat bonding surface on one end and a pair of oppositely disposed grooves which intersect opposite edges of said bonding surface. The connected unbonded wire adjacent a final bond of an interconnection is aligned with one of the grooves and separated from the bonded portion while the tip is in pressing engagement therewith by pulling thereby removing a preselected part of the bond under a groove producing a tailless bond.

3,689,984

**AIR OPERATED TERMINAL FEED DEVICE**

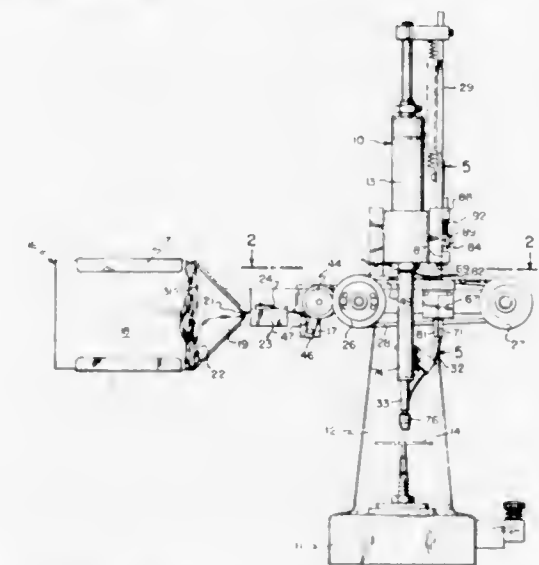
Stuart J. Biederman, Floral Park, and Walter E. Jezewski, Tuckahoe, both of N.Y.

Filed March 24, 1970, Ser. No. 22,352

Int. Cl. H05k 13/04; B23q 7/10

U.S. Cl. 29-203 B

5 Claims



An air operated terminal feed device, for use with an insertion machine, to transport prefabricated terminals into position for insertion in a workpiece, which includes a supply of terminals separately encapsulated in a continuous supply tape. The tape may be perforated to cooperate with sprockets on a cylindrical drive wheel actuated by a pawl and ratchet mechanism, to move the tape incrementally toward a reciprocating die or punch which separates the encapsulated terminals from the tape. A pneumatic cylinder is provided as a power source to actuate the pawl and ratchet mechanism. A take-up wheel, which is operably connected to the drive wheel and upon which the perforated tape is wound, may be provided as an aid in maintaining proper tension in the tape.

3,689,985

**METHOD OF MAKING A SEMICONDUCTOR UNIT**

Johannes Nier, Stuttgart, Germany, assignor to Robert Bosch GMBH, Stuttgart, Germany

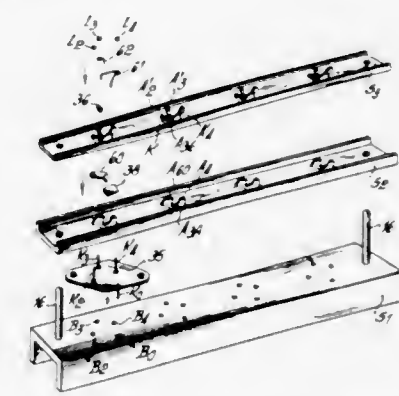
Division of Ser. No. 16,303, March 4, 1970, abandoned. This application July 15, 1971, Ser. No. 162,965

Claims priority, application Germany, March 8, 1969, P 19 11 915.4

Int. Cl. B23k 31/02

U.S. Cl. 29-471.3

7 Claims



A method of making a semiconductor element. A first semiconductor body has a pair of first major surfaces on opposite sides. A first contact is provided on and covers one of the first surfaces. A socket plate is conductively connected to the other of the first surfaces and has a first contact pin. A second semiconductor body has a pair of second major surfaces and a second contact provided on and covering one of these second major surfaces. A carrier is connected with the socket plate and the second semiconductor body and located between the two. A second contact pin is provided on the second body at a side thereof facing away from the carrier and a third contact pin is provided, both the second and third contact pins penetrating the socket in insulated relationship. A connecting wire has a straight first end portion conductively secured to the second contact pin, a helically convoluted second portion conductively secured to the third contact pin, and a center portion with respect to which each of the end portions extends at an angle. An additional contact pin is provided on the first semiconductor body at a side thereof facing away from the socket plate and is in direct electrically conductive engagement with the carrier.

3,689,986

**METHOD OF CASTING COMPOSITE CAM SHAFTS**

Kentaro Takahashi, Ohmiya, and Yoshihito Sato, Kawaguchi, both of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan  
 Filed Aug. 26, 1970, Ser. No. 67,285  
 Claims priority, application Japan, Apr. 1, 1967, 42/20820  
 Int. Cl. B22d 31/00

U.S. Cl. 29-527.6

4 Claims



A method of casting a cam shaft with an axial oil passage comprising inserting a core rod into a steel pipe in closely fitted relation, coating the solid core on its outer periphery with a releasing agent of low thermal conductivity, placing the core and pipe assembly in a mould with the solid core aligned with the axis of a cam shaft to be formed, and pouring molten metal around the core assembly in the mould. Thereafter, upon completion of the casting, the solid core is withdrawn from the pipe to thereby form the aligned oil passage, within the cam shaft.



3,689,987

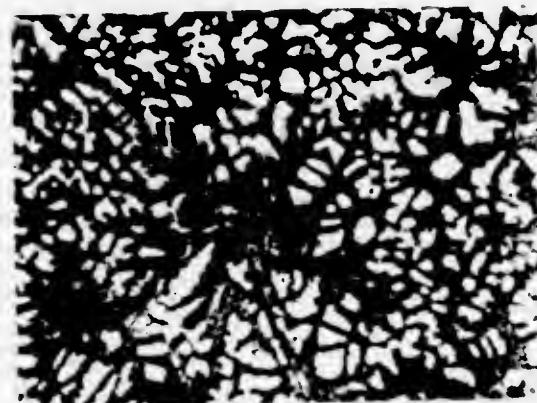
## METHOD OF MAKING METAL ARTICLES

Ernest Douglas Teague, Welwyn Garden City, England, assignor to Johnson, Matthey & Co. Limited  
Filed April 7, 1969, Ser. No. 822,815

Claims priority, application Great Britain, April 5, 1968, 16,639/68

Int. Cl. B44d 1/08

U.S. Cl. 29—527.2



This invention is concerned with the provision of an improved method of making metal articles in which the metal is prepared in a form suitable for spraying and is then sprayed on to a target in such a way that most of the droplets of the spray can be individually identified after the sprayed metal has solidified. In other words the spraying is carried out under such conditions that the majority of the droplets retain their identity.

3,689,988

## MACHINE TOOL WITH AUTOMATIC TOOL CHANGING MECHANISM

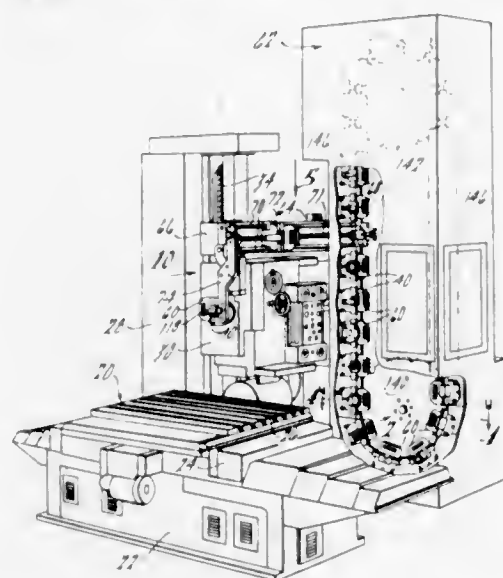
Richard A. Jerue, Birmingham, Mich., assignor to Devlieg Machine Company, Royal Oak, Mich.

Filed April 22, 1970, Ser. No. 30,630

Int. Cl. B23q 3/157

U.S. Cl. 29—568

13 Claims



An automatic tool changing machine tool in which tools are selected from a tool storage device and transported to a position adjacent the drive spindle of the machine. From this position, a selected tool is inserted automatically in the drive spindle of the machine when it is ready to be used. The tools are coupled to pallets or carriers having handles which are engaged by various tool gripping elements in transporting the tool from the storage device to the spindle. The carriers also serve to mount coding for identifying the tool and conveying certain dimensional characteristics of the tool. Each carrier remains with its tool at all times and is only rotationally uncoupled from its tool after the tool has been inserted in the drive spindle.

3,689,989

## PROCESS OF ASSEMBLING SOLID ELECTROLYTIC CAPACITORS USING VIBRATION STEP WITH BOTH LOW AND HIGH FREQUENCY COMPONENTS

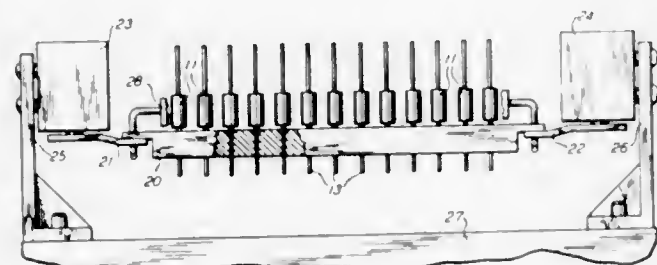
Grady L. McClamrock, Mocksville, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 2, 1970, Ser. No. 77,488

Int. Cl. B01j 17/00; H01g 13/00

U.S. Cl. 29—570

12 Claims



A solder preform slug and a processed anode are placed into a can. A glass end seal and an outer solder preform O-ring are placed on a lead extending from the anode. The assembled components are heated to the melting temperature of the solder preforms. The can is vibrated by applying high frequency vibrations to a bar supporting the can. The bar has a natural low frequency of vibration such that both the high frequency vibrations and the low frequency vibrations are applied to the can. The low frequency vibrations settle the anode into the can and release gases which are produced from rosin. The high frequency components produce rotation of the can which aids in the sealing of the end seal by the solder preform O-rings.

3,689,990

## METHOD OF MAKING AN ELECTRICAL CAPACITOR

Koreaki Nakata, 20 Ohata-cho, Nishinomiyashi, Hyogo-ken, and Yoshio Iida, 11-3 4-chome Fujishirodai, Suita-shi, Osaka-fu, both of Japan

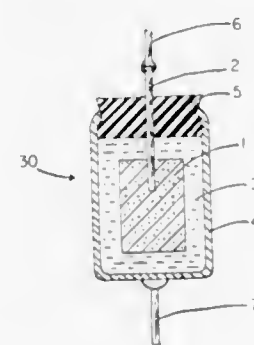
Division of Ser. No. 704,057, Feb. 8, 1968, abandoned. This application July 24, 1969, Ser. No. 870,941

Claims priority, application Japan, Apr. 21, 1967, 42/25937; July 19, 1967, 42/46934

Int. Cl. B01j 17/00; H01g 9/00

U.S. Cl. 29—570

4 Claims



An electrical capacitor according to the invention comprises a pair of electrodes and an electrically conductive material in contact therewith, at least one of the electrodes being of titanium-zirconium alloy, the electrode having an anodic dielectric oxide film thereon. The Ti-Zr electrode preferably comprises 40–90 atomic percent of Ti and 10–60 percent of Zr, and has a sintered porous structure. In one form, the electrically conductive material is  $MnO_2$ ; in another form, it is an aqueous solution of phosphoric acid, sulfuric acid, ammonium borate or potassium nitrite. A method of manufacture is also disclosed.

3,689,991

## METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE UTILIZING A FLEXIBLE CARRIER

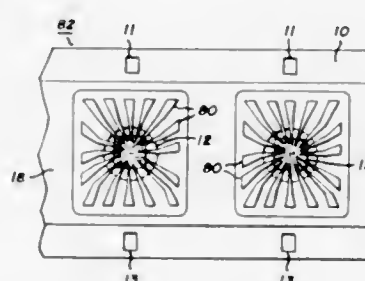
Alanson D. Ald, North Syracuse, N.Y., assignor to General Electric Company

Continuation of Ser. No. 709,651, March 1, 1968, abandoned. This application March 6, 1970, Ser. No. 17,012

Int. Cl. B01j 17/00; H01l 7/00

U.S. Cl. 29—577

8 Claims



Semiconductor devices such as transistors are manufactured by use of a longitudinally extending tape-like carrier including a metallic layer secured to a flexible insulative layer, with the insulative layer having centrally located longitudinally spaced apertures. These apertures are covered by the metallic layer and are dimensioned to encompass contact regions of a semiconductor body such as a transistor or monolithic integrated circuit pellet. Longitudinally spaced sets of finger-like leads are formed from the metallic layer with the inner portions of the leads of each set extending cantilever-wise within the periphery of a respective adjacent aperture for registry with the contact portions of a semiconductor pellet. The leads of each set are connected to the contacts of a pellet registered with the adjacent aperture, the respective pellets and portions of the leads connected thereto are encapsulated, and the carrier may be reeled or otherwise automatically handled, with individual devices obtainable by severance from the carrier.

3,689,992

## PRODUCTION OF CIRCUIT DEVICE

Hans-Jürgen Schütze, and Hennings Klaus, both of Ulm/Danube, Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm/Donau, Germany

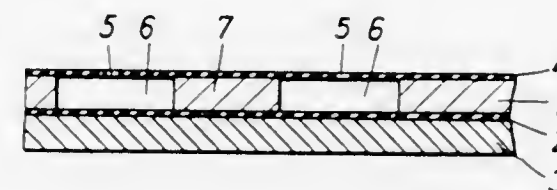
Filed Aug. 2, 1965, Ser. No. 476,536

Claims priority, application Germany, Aug. 8, 1964, T 26759; Oct. 3, 1964, T 27136; Nov. 14, 1964, T 27418

Int. Cl. B01j 17/00; H01l 1/16

U.S. Cl. 29—577

13 Claims



A solid state circuit arrangement having a semiconductor member and presenting reduced shunt capacitances as the result of the isolation of various regions of the member from each other and a method for fabricating such arrangement by forming a subassembly of two members, constituted by a first insulating layer and the semiconductor member, by depositing one of the members on the surface of the other thereof, depositing a second insulating layer on the side of the semiconductor member which is opposite from the surface upon which the first layer bears, forming apertures in at least one of the insulating layers to expose surface portions of the semiconductor member, and etching out the portions of the semiconductor member in the region of each aperture to create cavities which extend from one of the insulating layers to the other.

3,689,993

## FABRICATION OF SEMICONDUCTOR DEVICES HAVING LOW THERMAL IMPEDANCE BONDS TO HEAT SINKS

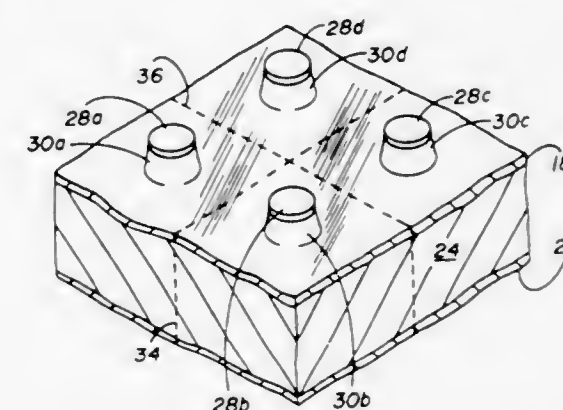
Neal Jay Tolar, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 855,639, Sept. 5, 1969, abandoned. This application July 26, 1971, Ser. No. 166,285

Int. Cl. B01j 17/00; H01l 7/66

U.S. Cl. 29—583

21 Claims



A layer of contact metallization is applied over the surface of a semiconductor slice having a P-N junction. A heat sink layer of high conductivity metal, such as copper, is applied over the contact metallization with a sufficient thickness to provide a predetermined heat dissipation for the P-N junction. A plurality of spaced apart discrete metal contacts are formed over the opposite surface of the semiconductor slice. Portions of the semiconductor slice are then removed between the metal contacts in order to form an array of discrete semiconductor devices, such as avalanche diodes, extending from the heat sink layer. The heat sink layer is then divided to provide a plurality of semiconductor devices attached to individual low thermal impedance heat sink members.

3,689,994

## FILTER STRUCTURE AND METHOD OF MAKING THE SAME

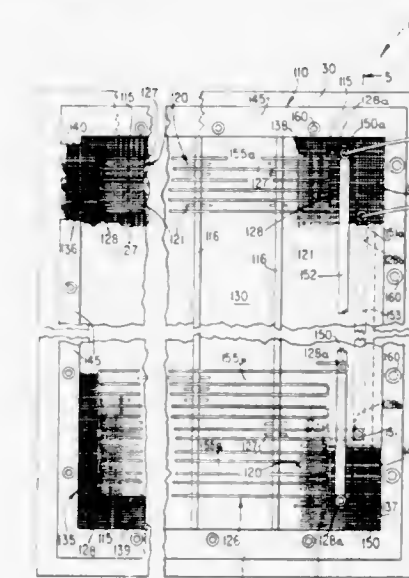
Edgar S. Stoddard, 626 S. Columbia St., Naperville, Ill.

Division of Ser. No. 759,606, Sept. 13, 1968, Pat. No. 3,524,303. This application June 25, 1970, Ser. No. 49,775

Int. Cl. H05b 3/00

U.S. Cl. 29—611

6 Claims



A method of continuously forming self-cleaning filter structures comprises the steps of continually withdrawing a plurality of laterally spaced-apart electrically insulating continuous warp fibers along a longitudinal path, continually interlacing an electrically insulating continuous wool fiber with the warp



fibers to form a fabric, continuously interlacing an electrically resistive continuous wool wire with the centrally disposed warp fibers in longitudinally spaced-apart areas in fabric to provide a plurality of longitudinally spaced-apart central areas each surrounded by an insulating border region, applying a rigidifying structure to the border regions completely to surround each central area, connecting a pair of electrical terminals to the portion of the wool wire disposed in each central area, and laterally severing the fabric and the wool wire in the laterally extending portions of the border regions to provide self-cleaning filter structures each including a filtering central area surrounded by a rigidified insulating border region.

3,689,995

## ELECTRIC FUSES

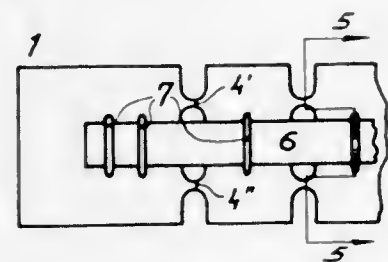
Karl Lerstrup, Klampenborg, Denmark, assignor to Aktieselskabet Lour. Knudsen Nordisk Elektricitets Selskab, Copenhagen, Denmark

Filed Aug. 17, 1970, Ser. No. 64,347

Int. Cl. H01h 69/02, 8 5/10, 8 5/14

U.S. Cl. 29—623

1 Claim



An electric fuse comprises a metal ribbon provided with indentations or openings to form zones of narrowed cross-section serving as fuse elements, the adjacent portions of the ribbon serving as heat sinks and cooling surfaces. According to the invention, one or more insulating stiffening members is/are attached to the ribbon to improve mechanical strength in the weakened zones without affecting arc formation. In a preferred method of manufacturing, the final formation of the fuse elements takes place after the stiffening member has been attached.

3,689,996

## MANUFACTURING A PLURALITY OF SEMICONDUCTOR DEVICE HEADERS

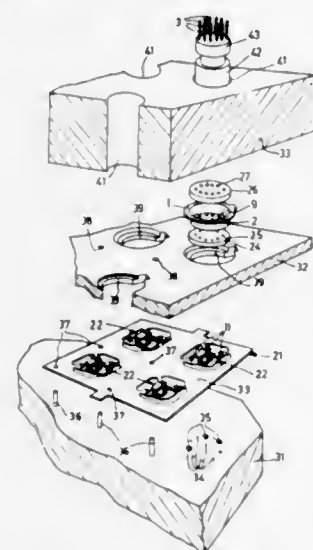
Geoffrey William Scholes, Totton, and Anthony Ronald Jones, Thornhill, both of England, assignors to U.S. Phillips Corporation, New York, N.Y.

Division of Ser. No. 639,746, May 19, 1967, abandoned. This application July 29, 1969, Ser. No. 850,310

Int. Cl. H01r 9/00

U.S. Cl. 29—630 R

5 Claims



A plurality of semiconductor device headers are manufactured by sandwiching an apertured glass preform between an

apertured metal shell and a single patterned metal foil with apertured web portions extending from a surrounding support part of the foil, placing a plurality of metal wires in a jig and through the metal shell, passing the glass preforms and at least one of the wires through the aperture in each of the web portions, locating a brazing ring on the wire adjacent the foil, and heating the jig with metal shell, glass preform, metal foil and wires therein to a temperature sufficient to fuse the glass preform to the metal shell, to the wires, to the metal foil, and the web part to the ring, and finally severing the web parts from the surrounding support part.

3,689,997

## ELECTRIC CAN OPENER WITH REMOVABLE HAND LEVER AND FRAME ENGAGING PIN ASSEMBLY

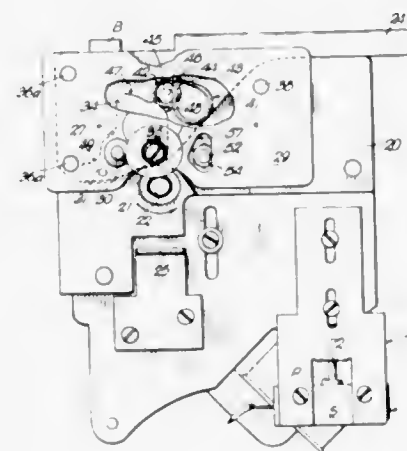
Robert E. McLean, Raytown, Mo., assignor to Rival Manufacturing Company, Kansas City, Mo.

Filed June 22, 1970, Ser. No. 47,937

Int. Cl. B76b 7/38

U.S. Cl. 30—4 R

11 Claims



An electrically powered can opener has suitable components for initiating power-pierce and automatic shutoff. At the same time, the selective removal of the can opener cutter mounting plate which carries the cutter element thereon is provided for. The can opener frame is apertured to movably receive a hand lever assembly which includes the cutter mounting plate, the hand lever and an interposed plate and spring combination to assist in the operative movement of the cutter mounting plate. A spring biased lever is pivoted to a portion of the can opener frame and operates in accordance with the manual movement of the cutting element against the end of the can to initiate power-pierce and to maintain the can opener motor on until the end of the can has been sheared therefrom. At this time, the lever pivotally moves to automatically shut off the power to the can opener motor.

A spring biased push button operated latch engages a pin member extending from the hand lever assembly. It permits the removal of same (along with the cutting element carried on the cutter mounting plate) by manipulation of the push button latch structure.

3,689,998

## CAN OPENER HAVING REMOVABLE CUTTER ASSEMBLY

James H. Hahn, Fort Lauderdale, Fla., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed Sept. 16, 1970, Ser. No. 72,620

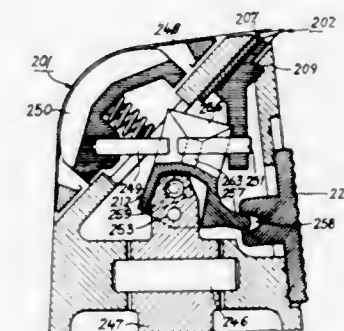
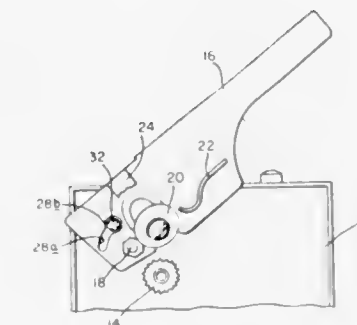
Int. Cl. B76b 7/38

U.S. Cl. 30—4 R

2 Claims

A can opener is provided on its lever arm with an arcuate

keyhole-shaped slot and the housing has a headed pin passing through the slot, the head keeping the lever arm against the housing until the opening and wide part of the keyhole align when the arm is raised in non-use, whereupon the arm can be removed.



housing until the opening and wide part of the keyhole align when the arm is raised in non-use, whereupon the arm can be removed.

3,689,999

## CAN OPENER

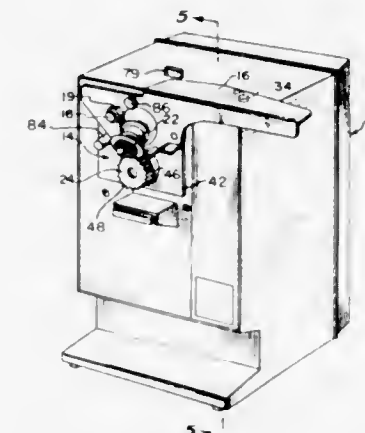
Roy L. Swanke, Newington; Bruno M. Valbona, Avon, and Maurice P. Samuelian, West Hartford, all of Conn., assignors to Dynamics Corporation of America, New York, N.Y.

Filed Nov. 3, 1970, Ser. No. 86,410

Int. Cl. B76b 7/38

U.S. Cl. 30—4 R

18 Claims



An electrically powered can opener for use as a household appliance in which all of the working parts that may become contaminated with the contents of opened cans are removable for cleaning as a unit for sanitary and safety reasons without disturbing the carefully adjusted assembly of a unitary self-camming cutter and feed wheel. The drive of the feed wheel can also be quickly interrupted for safety reasons and automatically re-established for operation.

3,690,000

## DRY SHAVE APPLIANCES

Aldo Loner, Klagenfurt, Carinthia, Austria, assignor to U. S. Phillips Corporation, New York, N.Y.

Filed June 8, 1970, Ser. No. 44,150

Claims priority, application Austria, June 10, 1969, A 5514/69

Int. Cl. B26b 19/00

U.S. Cl. 30—34.1

8 Claims

A dry shave appliance having a shaver part composed of at

least one long hair cutting part with upper and lower cutters and a motor with a drive member. A coupling piece and an operating element are also provided with the coupling piece displaceable by the operating element positionable in at least two working positions.

3,690,001

Patent Not Issued For This Number

3,690,002

## METHOD AND APPARATUS FOR WASHING CHEESE CURD

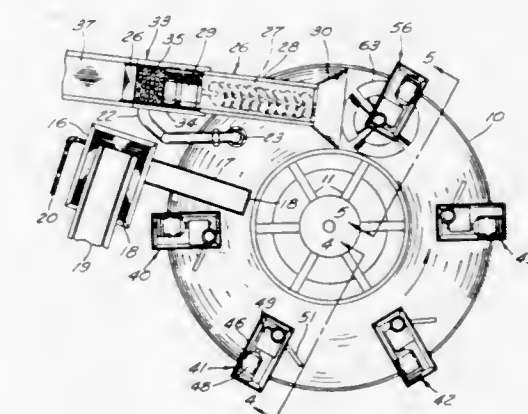
Charles D. Frederick, Western Springs, Ill.; Kenneth D. Dembny, Fort Atkinson, Wis., and Meredith C. Thomson, Oconomowoc, Wis., assignors to Swift & Company, Chicago, Ill., by said Frederick

Filed March 30, 1970, Ser. No. 23,828

Int. Cl. A01j 25/11; A23c 19/00

U.S. Cl. 31—89

21 Claims



Cheese curd is washed under controlled conditions to produce a desired moisture level therein by continuously feeding milled curd, and water at a selected temperature between 60°–85° F., into a rotating annular vessel wherein the curd and water are agitated while being carried on a circular course. The curd and a portion of water are continuously discharged prior to being carried a full rotation of the vessel; and the rate of rotation of the vessel is adjustable to limit the time that the curd is carried therein.



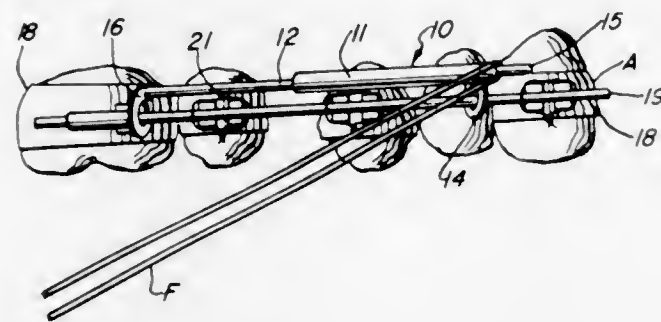
3,690,003

**ADJUSTABLE ORTHODONTIC YOKE**

Warren E. Gerber, 370 Berkeley Ave., Winnetka, Ill.  
Filed Aug. 26, 1971, Ser. No. 175,187  
Int. Cl. A61c 7/00

U.S. Cl. 32-14 A

3 Claims U.S. Cl. 32-40 R



An adjustable orthodontic yoke for use with means for distally driving teeth and for stabilizing anchorage.

3,690,004

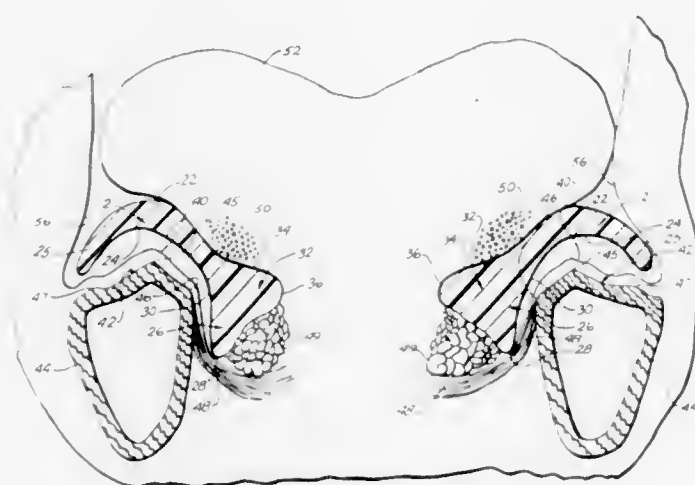
**IMPRESSION TRAY AND METHOD FOR MAKING IMPRESSIONS**

John P. Frush, 1650 Gardena Ave., Glendale, Calif.

Continuation-in-part of Ser. No. 80,269, Oct. 13, 1970, abandoned, which is a continuation-in-part of Ser. No. 15,652, March 2, 1970, abandoned. This application March 8, 1971, Ser. No. 121,754  
Int. Cl. A61c 9/00

U.S. Cl. 32-17

17 Claims



An impression tray for the lower mouth of an edentulous patient comprises a downwardly opening arch-shaped trough for holding impression material in contact with the gum tissue overlying the patient's mandible. The trough has a downwardly extending buccal flange along its outer side, and a downwardly extending lingual retaining wall along its inner side. The lingual retaining wall extends below the bottom edge of the buccal flange continuously for the length of the mouth away from the mylohyoid ridge while the impression material covers the gum tissue overlying the ridge. A shelf spans the inside of the lingual retaining wall and projects inwardly toward the patient's tongue in an elevated position away from the mylohyoid ridge while the impression is taken.

A single cast impression of the entire lower mouth is made from a first impression material carried in the impression tray, and a second impression material of a different color disposed in the mucobuccal and mucolabial folds and merged with the first impression material.

3,690,005

**TOOL FOR INSERTING DENTAL IMPLANTS**

Alfred E. Edelman, 2723 Federal St., Camden, N.J.  
Filed Nov. 24, 1970, Ser. No. 92,464  
Int. Cl. A61c 3/00

9 Claims



An elongated shank is provided in one end portion thereof with a socket for receiving the head portion of a wide vent dental implant so that the blade portion of the implant may be driven into the jaw by impacts delivered to the other end of the shank. The socket is provided with a notch for direct engagement with the blade portion of the implant in an alternative manner of use when the implant head portion is not in the socket. In place of impacting the shank directly, the shank may be separably attached to a socketed head on a laterally offset end portion of a handle which constitutes an extension for the shank.

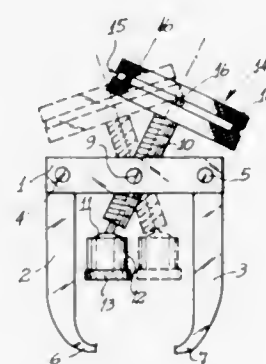
3,690,006

**EXTRACTOR FOR DENTAL CROWNS AND BRIDGES**

Gustavo Jimenez Lozano; Carlos Alberto Bosisio, and Alejandro Sise Weinbaum, all of Av. Roque Saenz Pena 760, of 719, Buenos Aires, Argentina  
Filed March 2, 1971, Ser. No. 120,221  
Int. Cl. A61c 3/16

U.S. Cl. 32-43

7 Claims



An extractor for dental crowns and bridges, of the type comprising an oblong mounting plate, to the ends of which are articulately connected two elongated arms, bearing on their free ends their corresponding claws, featured by the face that the central portion of said plate has an opening in which is oscillatingly located a nucleus, and through this goes a threaded stem that on its end adjacent to the claws, has connected in ball-joint, a support piece that on its free end bears a semirigid antiskid coating, while on its opposite end, it has a commanding disc with a knurled edge, where there is a peripheric groove from which, in angularly displaced positions, protrude towards the inside of the disc, several radial holes adapted to receive, alternately, the end of a removable fine stick, forming a pressing lever, which cooperates with the above-mentioned commanding disc.

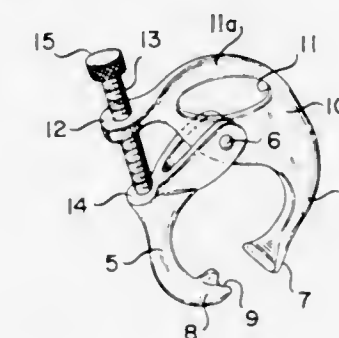
3,690,007

**DENTAL CROWN AND BRIDGE REMOVING ADAPTOR**

Lyda Darrell Curtis, Wheeling, W. Va., assignor to S. Arthur Rybeck, Jr., Wheeling, W. Va.  
Filed Aug. 13, 1971, Ser. No. 171,598  
Int. Cl. A61c 3/16

U.S. Cl. 32-43

5 Claims



A dental crown and bridge removing adaptor is provided with screw tightened arcuate jaw members having crown or bridge gripping faces for securely fastening to a crown or bridge to be removed and an engaging loop for application of removing force by a tapping tool or other force applying means to lift the crown or bridge without injury thereto.

3,690,008

**MULTI PATIENT DENTAL INSTRUCTION CONSOLE**

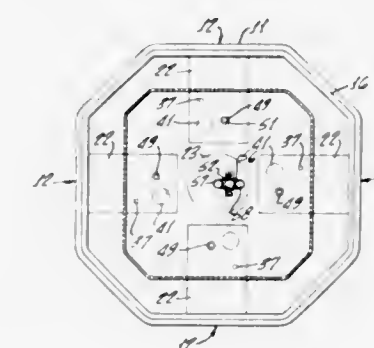
Gary G. Tuttle, 25381 Posada Lane, Mission Viejo, Calif., and Douglas H. Klick, 4042 Aladdin Dr., Huntington Beach, Calif.

Filed April 26, 1971, Ser. No. 137,147

Int. Cl. A61c 19/00

U.S. Cl. 32-71

6 Claims



A multi patient dental instruction console is disclosed comprised of a table top with a plurality of stations thereabout. Each station has a compartment with a lid forming a part of the table top when closed. Each compartment provides facilities and oral hygiene items required to enable a patient to be instructed in the proper caring for the teeth. When the lid is opened it is held at a desired angle to enable a patient to observe himself in a mirror attached to the underside of the lid. A cuspidor in the form of a funnel is provided in each compartment. The lower end of each of the funnels is connected by a length of flexible hose to a common manifold which has its outlet connected to a trap. A source of vacuum is connected to the trap to aid in withdrawing fluid from the flexible hoses into the trap.

3,690,009

**POSITION LOCATOR**

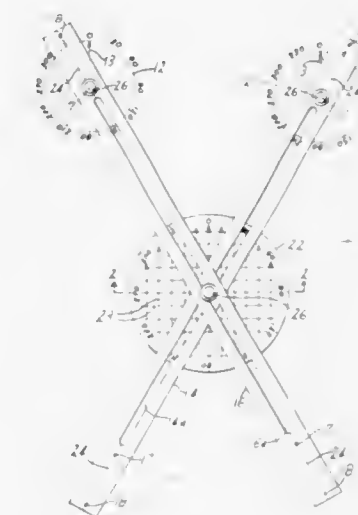
John C. Henley, III, 2345 Crest Rd, Birmingham, Ala.  
Filed June 8, 1970, Ser. No. 44,181  
Int. Cl. B43I 7/00

U.S. Cl. 33-1 MP

1 Claim

A simple and inexpensive position locator especially adapted for use by aviators in determining their location from two known fixes such as a pair of omni range navigation sta-

tions. The device includes a pair of pivoted and slotted straight edges with locator holes adjacent at least one end of each straight edge and a pin hole through the pivotal connection. Given the radials from two such stations shown on a chart, the



locator holes are centered over the stations and the straight edges are extended along the radials, whereupon the position of the aircraft is coincident with the pin hole in the pivot member.

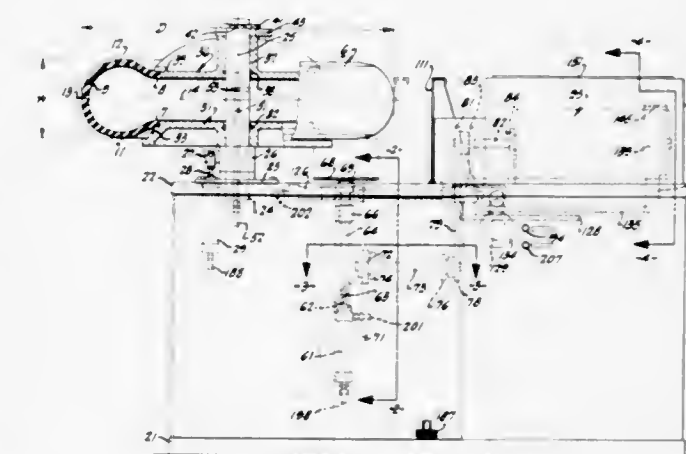
3,690,010

**MATRIX SELECTOR FOR TIRE CASINGS**

Hugh P. Kiedrowski, and Merrill K. Eriksen, both of Lodi, Calif., assignors to Super Mold Corporation  
Filed Oct. 6, 1967, Ser. No. 673,505  
Int. Cl. G01b 5/08

U.S. Cl. 33-174 R

11 Claims



A matrix selector measures tire casings both as to diameter and as to cross sectional width and has a mechanism for quickly mounting and sustaining a tire casing in a predetermined position and for then automatically contacting the tread surface and the side wall surface of the casing. This provides two coordinates which at their intersection afford an indication on a chart of the size of matrix to be utilized in recapping or retreading the tire casing.



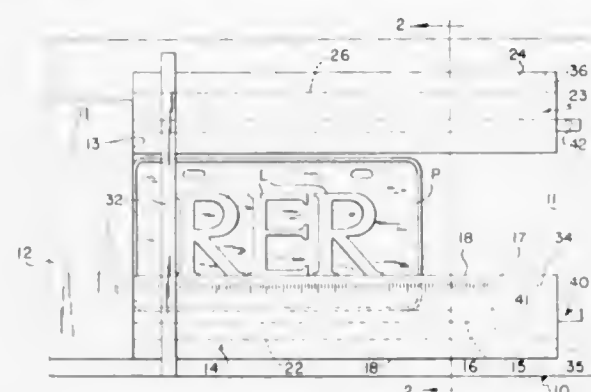
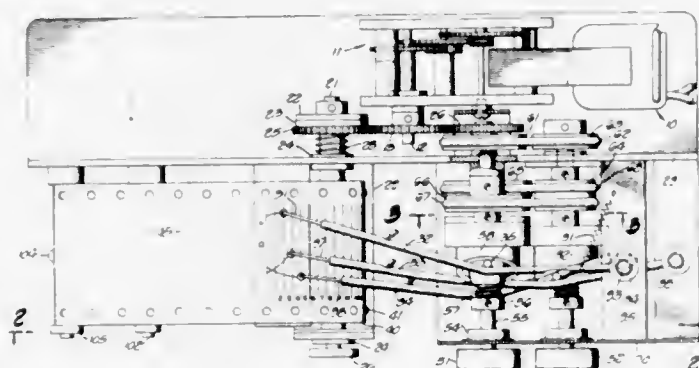
3,690,011

**VARIABLE PATTERN RECORDER**

Wesley Burchell, 17137 Seville, Fontana, Calif.  
 Filed Nov. 12, 1970, Ser. No. 88,836  
 Int. Cl. B43I 11/00

U.S. Cl. 33—27 J

4 Claims



locates one end of each letter. A sliding guide moves normal to the plate guide and cooperates with a scale to indicate lateral spacing of the letters.

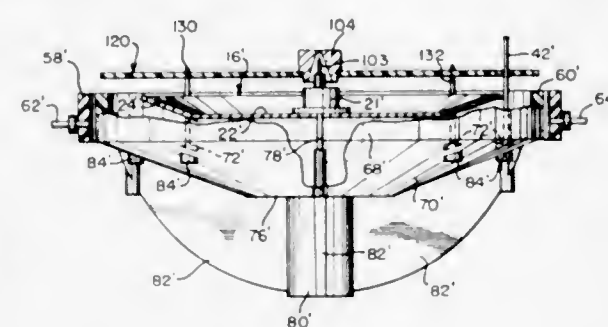
3,690,014

**TRANSPARENT GRID FOR COMPASS**

James Hunter Giltzow, Roseland, N.J., assignor to Aqua Meter Instrument Corporation, Roseland, N.J.  
 Filed March 18, 1970, Ser. No. 20,595  
 Int. Cl. G01c 17/08, 17/20

U.S. Cl. 33—346

21 Claims



A generally spherical compass for mounting on a boat has a transparent grid which is superimposed over a compass card with navigational markings. The grid has radial arms extending from a central hub to the outer rim of the grid upon which a heading line, a reciprocal line and two bearing lines are inscribed. Each bearing line is offset 45° from a side of the course line, which is aligned with the longitudinal axis of the boat, in order that the boat may be navigated from either side of the helm. In an alternate embodiment, a transparent disc with a heading line, a reciprocal line and offset bearing lines inscribed on it is superimposed over the compass card. The transparent disc is supported over the compass card by a set of pins whose vertical axis is substantially offset from corresponding holes positioned about the periphery of the disc. An apparent disappearance of the transparent members, leaving only the lines visible, results from the damping fluid having approximately the same index of refraction as the transparent members.

3,690,015

**HEATING DEVICE FOR SHEET-LIKE OBJECT**

Minoru Umahashi, Higashimatsuyama-shi; Hltoshi Yamakawa, Yokohama-shi, and Motoyuki Suzuki, Tokyo, all of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan  
 Filed Aug. 19, 1968, Ser. No. 753,440  
 Claims priority, application Japan, Aug. 23, 1967, 43/53759  
 Int. Cl. F26b 13/26

U.S. Cl. 34—95  
 11 Claims

A heating device is provided comprising a rotary transportation roller and pre-heated powder or granular bodies arranged

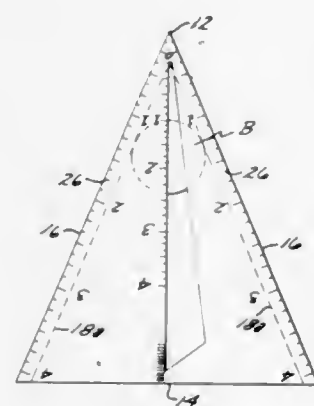
3,690,012

**CENTER, DIAMETER AND WALL THICKNESS DETERMINING DEVICE**

Peter Barna, Box 871, Wilmington, Calif.  
 Filed March 22, 1971, Ser. No. 126,651  
 Int. Cl. G01b 3/04, 5/08, 5/12

U.S. Cl. 33—178 B

4 Claims



A portable lightweight, compact device having no moving parts that may be used to determine the internal and external diameters of a tubular cylindrical member, the wall thickness of said tubular member, and the external diameter and longitudinal center of a solid cylindrical body.

3,690,013

**GUIDE FOR APPLICATION OF LETTERS OR THE LIKE TO PLATES**

Samuel Leprone, deceased, late of 1737 Robinhood Lane, Clearwater, Fla., Vivian M. Leprone, administratrix  
 Filed Dec. 17, 1970, Ser. No. 99,114  
 Int. Cl. B41b 1/00

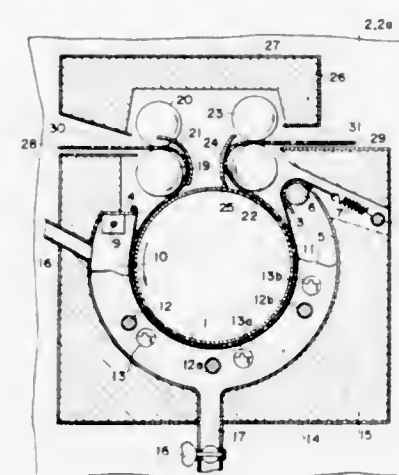
U.S. Cl. 33—184.5

1 Claim

A guide structure provides means to locate a plurality of individually formed letters on a sign plate, uniformly spaced relative to edges of the plate and from one another. One guide

abutment positions a side edge of the plate and a second guide abutment spaced from the plate and parallel to the first guide

and disposed around the periphery of said roller so that when a sheet-like, object to be processed is transported by said



roller, said powder or granular bodies make direct contact with said object so as to heat the same.

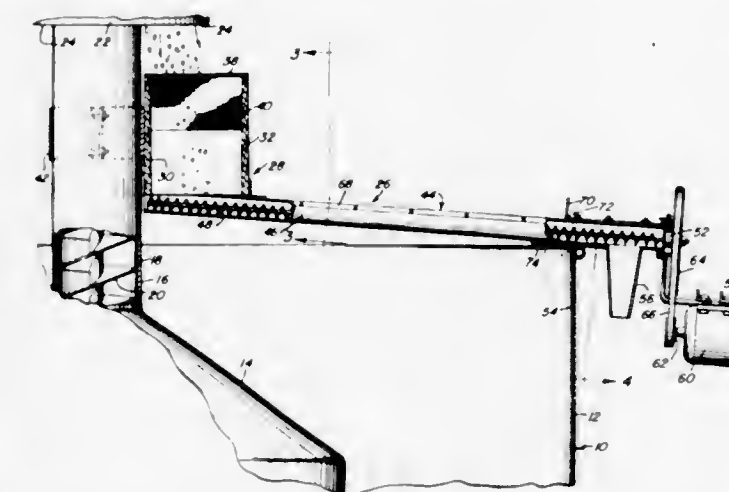
3,690,016

**SCREENING ATTACHMENT FOR GRAIN DRYER**

Peter A. Walhof, and Elmer T. Walhof, both of P.O. Box 248, Edgerton, Minn.  
 Filed May 4, 1971, Ser. No. 140,104  
 Int. Cl. B07b 1/00; F26b 17/18

U.S. Cl. 34—174

11 Claims



A screen covered hopper for disposition beneath the central elevated downwardly opening discharge head of a recirculating grain dryer such as the "Tox-O-Wik," "Grain Chies" and Mordge portable grain dryers. The hopper includes a discharge auger which extends generally radially outwardly from the central area of the upper end of the grain bin portion of the dryer beyond one side wall portion thereof and is provided with a downwardly opening outlet for discharging the chaff downwardly to a collection point therefor such as a ground area disposed alongside the grain dryer or a suitable tank or wagon positioned alongside the dryer.

**ERRATUM**

For Class 35—10 see:  
 Patent No. 3,691,284

3,690,017

**COIN VALUE TEACHING DEVICE**

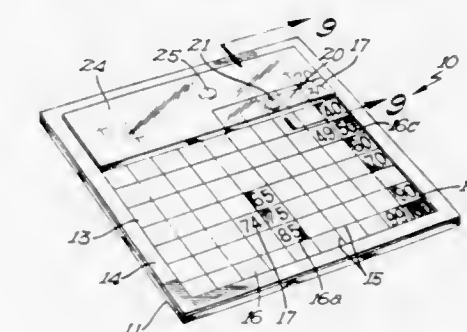
Larry M. Holmquist, 1526 Crawford St., St. Paul, Minn.  
 Filed July 2, 1971, Ser. No. 159,142  
 Int. Cl. G09b 19/18

U.S. Cl. 35—24 R

2 Claims

A coin value teaching device comprises a square number board having the square peripheral flange secured thereto,

and having its upper surface arranged in squares. The squares which are arranged in transverse rows each has a number therein, the numbers including the numbers one to one hundred. A plurality of transparent value members having coins secured thereto may be placed upon the board, singularly or in groups, so that the last square and number covered by the



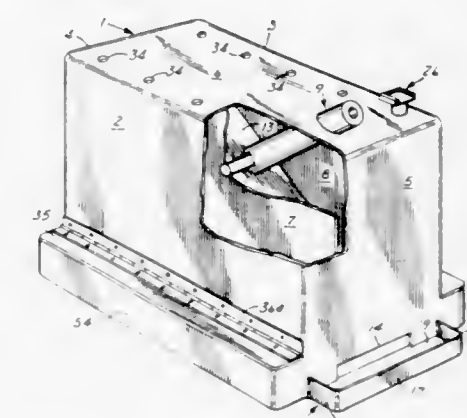
3,690,018

**MATHEMATICS TRAINING TOY**

John J. Arroyo, 3255 W. 65th Ave., Denver, Colo.  
 Filed Dec. 3, 1970, Ser. No. 94,686  
 Int. Cl. G09b 19/02

U.S. Cl. 35—31 C

11 Claims



An educational toy to teach arithmetic operations which have integer solutions; includes a sloping hollow cylinder, with a spring detent at the lower end, for filling with a predetermined number of marbles. When one peg, of a number of various length pegs, is inserted in the cylinder and pressed down on the column of marbles, the spring detent passes the number of marbles corresponding to the peg length. The marbles are displayed for counting and for re-insertion into the cylinder. The pegs are color coded to problem cards insertable into holders on the pegs, so that the number of marbles driven from the cylinder corresponds to the answer of a particular color.

3,690,019

**NUMBER SEQUENCE TEACHING AID**

Diana S. Fernandez, P.O. Box 446, Hebronville, Tex.  
 Filed Dec. 23, 1970, Ser. No. 101,022  
 Int. Cl. G09b 19/02

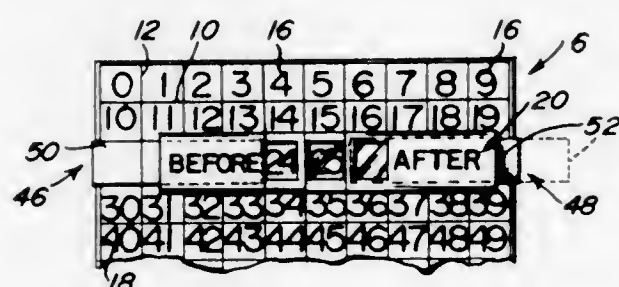
U.S. Cl. 35—31 R

6 Claims

A game-type teaching aid for use in a day school, kindergarten classroom, or similar place for child instruction and learning. It comprises a colorful chart which has psychological appeal and while it is such in construction that it could be used for teaching the meaning of symbolic characters, it is primarily



designed and adapted for number sequence assistance. It comprises an easy-to-handle printed chart whose playing surface is of a checkerboard-type and which as a result of intersecting horizontal and vertical lines provides columnized squares. Each square is provided with an individual character, a number for example. These numbers are confined within the

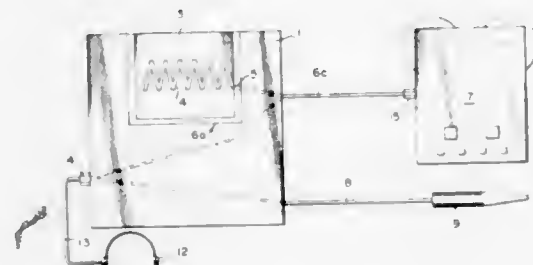


limits of the squares and are oriented and correlated and sequentially plotted for visual reference purposes. In addition to the chart there is a bodily applicable and removable unit described as a slide. This slide is manually shiftable and usable atop the characterized surface. The slide has a plurality of windows which are capable of being selectively aligned and informatively used in conjunction with the numbers.

**3,690,020**  
**INSTRUCTIONAL DEVICE FOR CHILDREN WITH LEARNING DISABILITIES**  
Karen Ann McBratnie, Portage, Mich., assignor to Gordon W. Hueschen, Kalamazoo, Mich.  
Filed Dec. 15, 1969, Ser. No. 885,211  
Int. Cl. G09b 11/04

U.S. Cl. 35—37

15 Claims

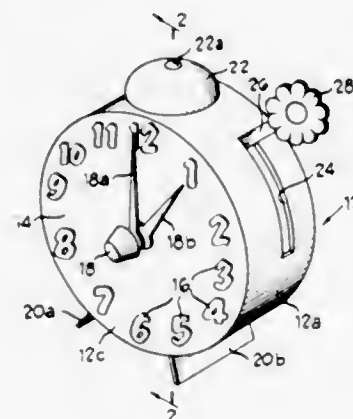


An educational device is provided for training children, especially children with learning disabilities, e.g., brain-injured children, to trace indicia such as forms, patterns, letters, numbers, and parts thereof, thereby assisting the child in learning to write and in how to go about learning to write. The indicia may be present on or in a surface in the form of an electrically conductive medium, e.g., a metal or metallic form, against a nonconductive background. The indicia may be traced by means of a stylus held by the child and associated with a sound source so that, as long as the stylus remains in contact with the indicia, a desired condition prevails, e.g., pleasant music is heard by the child. The educational device suitably comprises a stylus, a circuit board, a means for providing a reinforcing stimulus, such as a sound generating means and associated transducer means, and associated wiring, in which at least the circuit board bearing the educational indicia and the means for providing said reinforcing stimulus are electrically connected in such a manner that contact between the tip of said stylus and said indicia results in the production of said reinforcing stimulus indicating proper tracing of the educational indicia on said circuit board and whereby placement of said stylus out of contact with said indicia defeats said reinforcing stimulus, thereby indicating improper tracing, especially such a device comprising also a deskette having a recess for said circuit board and contact means for establishing electrical connection with the circuit board, and such combination of circuit board and deskette.

**3,690,021**  
**TOY CLOCK**  
Marvin I. Glass, Chicago, and Leonid Kripak, Villa Park, both of Ill., assignors to Marvin Glass & Associates  
Filed April 20, 1971, Ser. No. 135,554  
Int. Cl. G09b 19/12

U.S. Cl. 35—39

10 Claims



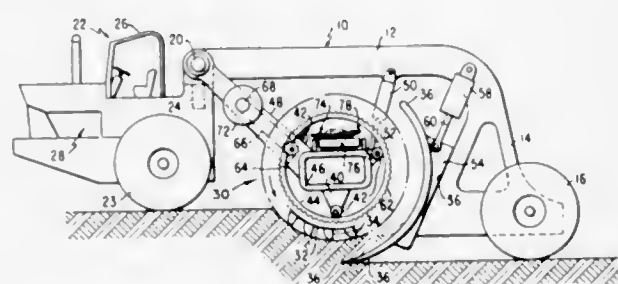
A toy clock intended for use by pre-school children, including a simulated clock face and simulated hands, and characterized by the provision of mechanism for producing repetitive audible signals corresponding to a time set on the face of the clock.

**3,690,022**  
Patent Not Issued For This Number

**3,690,023**  
**TRENCH-SCRAPER MACHINE**  
Carl Peterson, Boxford, Mass., assignor to Foster-Miller Associates, Inc., Waltham, Mass.  
Filed Jan. 16, 1970, Ser. No. 3,354  
Int. Cl. E02f 3/08, 3/18

U.S. Cl. 37—90

17 Claims



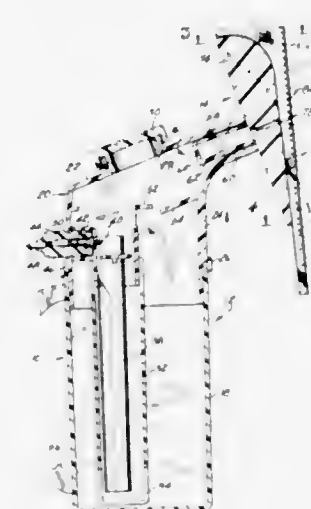
A method and apparatus for excavating earth with a vehicle having a wheel or endless chain to which is secured a plurality of excavation elements such as buckets or blades which excavate earth and also provide propulsion for the vehicle. The wheel or chain is supported from the vehicle frame so that the lowermost of the excavation elements engages and bites into the surface of the earth. The wheel or chain is driven in a direction which advances the vehicle forwardly with excavation elements providing the primary source of traction. The vehicle also includes a scraper blade which is located behind the wheel or chain. The leading edge of the scraper blade advances with the vehicle and cuts into the earth below the level of the excavation wheel chain to slice off a further layer of earth. The scraper blade, additionally, serves as a braking element to resist any tendency of the excavating wheel or chain to ride upwardly out of the excavated channel. The force of the excavated earth acting on the advancing scraper blade cooperates with the weight of the vehicle to maintain the excavating wheel or chain in the excavated channel. The vehicle is assisted by a powered tractor which is employed to provide

any supplemental traction necessary to overcome any resistance presented by the earth to the advancing blade which cannot be overcome by the traction of the excavating wheel or chain alone. As the vehicle advances the excavation elements fill with earth and are moved along an endless path to a conveyor which receives the earth and transports it away from the vehicle. The excavation elements remove continually a substantial portion of the upper layer of earth and the scraper blade excavates the remaining portion of the earth.

**3,690,024**  
**HAND STEAMER WITH IRONING SALE**  
Leonard Osrow, Great Neck, Long Island, N.Y., assignor to Osrow Products Company, Inc., Glen Cove, N.Y.  
Filed July 14, 1971, Ser. No. 162,404  
Int. Cl. A47j 51/00

U.S. Cl. 38—69

10 Claims



A lightweight portable electric hand steamer with a special sole plate having a prow that is uniquely shaped to spread the concealed short edges at the rear of a seam joining two plies of fabric which are to be pressed into planarity. The prow includes a leading beak for initiating separation of the short rear edges. Behind the prow the sole plate is provided with a flat pressing surface. Steam issues through the pressing surface to impinge upon the fabric plies being pressed as well as upon the short rear edges so as to render them pliant for pressing. The entire sole plate, but particularly the flat pressing surface, is formed of a synthetic plastic whereby the pressing surface has a low specific heat and a low coefficient of heat conductivity so that the pressing surface is relatively cool in comparison with a conventional metal pressing surface. This has the unusual effect of preventing the outline of the steamed-flat short rear edges from showing through the planar portions of the plies after the pressing/steaming operation has been completed.

**ERRATUM**  
For Class 40—104.04 see:  
Patent No. 3,690,261

**3,690,025**  
Patent Not Issued For This Number

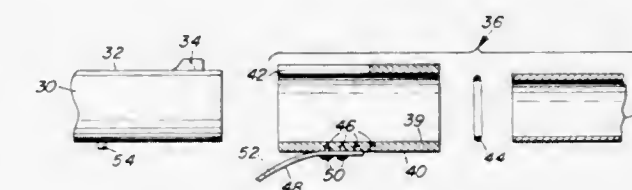
**3,690,026**  
**EXTENSION BARREL FOR USE IN FIRING PROJECTILES WITH FIREARM USING BLANK CARTRIDGES**

Larry A. Rose, Box 15, Darby, Mont.

Filed Oct. 30, 1970, Ser. No. 85,434  
Int. Cl. F41c 21/00, 27/06; F42b 11/30

U.S. Cl. 42—77

3 Claims

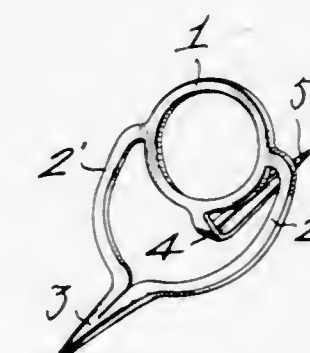


An auxiliary barrel which can be attached to the muzzle end of the barrel of a firearm such as a rifle or pistol for use in firing projectiles such as tranquilizer darts, tear gas projectiles, or the like when firing blank cartridges in the rifle. The auxiliary barrel comprises an extension barrel for receiving a projectile and directing the projectile toward a predetermined target, coupling sleeve for connecting the extension barrel to the barrel of the firearm and a locking mechanism for securing the coupling sleeve to the firearm barrel.

**3,690,027**  
**INTEGRAL GUIDE DEVICE FOR FISHING LINES**  
Ryuichi Ohmura, 19-3, Minami-cho, Shizuoka, Japan  
Filed Dec. 10, 1970, Ser. No. 96,952  
Int. Cl. A01k 87/04

U.S. Cl. 43—24

3 Claims



An integral guide device for fishing lines comprising a flat ring, a pair of first legs extending downwardly from the opposite peripheral sides of the ring at a gentle slope on one side of the plane of the ring and converging toward their lower ends, a first foot provided by the converging lower ends of the first legs and extending at substantially right angles with respect to the plane of the ring, a second leg extending downwardly from the lower periphery of the ring at a substantially midpoint between the first legs and sloping on the opposite side of the plane of the ring and a second foot provided by the lower end of the second leg and extending at substantially right angles with respect to the plane of the ring.



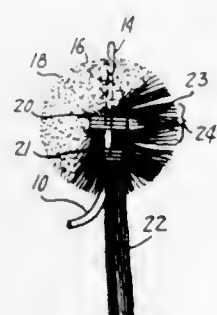
3,690,028  
LURE

Albert T. Walker, Jr., 3427 Ravenwood Rd., Anderson, Calif.  
Filed Oct. 28, 1970, Ser. No. 84,661

Int. Cl. A01k 85/08

U.S. Cl. 43—17.6

1 Claim



A hook and a hand tied ball of fluorescent yarns with or without a yarn tail extending therefrom secured to a longitudinal shaft of the hook by means of thread.

3,690,029  
FISHING FLY

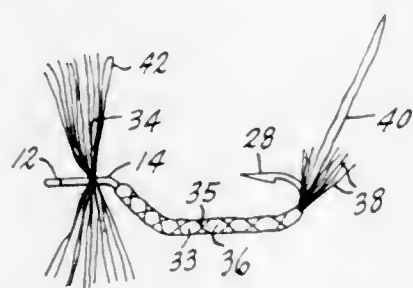
John R. Pobst, 1835 S. Walmont Dr., Jackson, Mich.  
Continuation-in-part of Ser. No. 757,319, Sept. 4, 1968, Pat.  
No. 3,605,317. This application March 26, 1971, Ser. No.

128,256

Int. Cl. A01k 85/08

U.S. Cl. 43—42.25

14 Claims



A fly fishing lure having a hook which includes a shank portion adjacent the eye and a sharp barbed end in substantial alignment with a projection of the aforementioned shank portion. Intermediate the eye and the sharp barbed end the hook shank includes portions offset downwardly from the eye and sharp end such that the majority of the weight of the hook and lure functions as a "keel" to orient the lure such that the barbed end is disposed upwardly. Fly material is disposed adjacent the eye, and additional fly material is mounted upon the arcuate hook portion contributing to the low center of gravity and "keel" action. As used in a dry fly fishing lure adapted to rest upon the water surface, the invention contemplates the use of two groups of fly material strands in angularly disposed relationship to each other to aid in the lure floatation. In a wet lure embodiment the inventive concept encompasses the use of an additional metallic weight, such as in the form of wound wire, upon the hook portion constituting the "keel" of the lure.

3,690,030

FLEXIBLE WAISTED DOLL UTILIZING ELASTOMERIC COUPLING MEMBER

Armando J. Garcia, Sylmar; Gregory M. Gunther, Palos Verdes Estates, and Juanito O. Villanueva, Lawndale, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.  
Filed Dec. 4, 1970, Ser. No. 95,219

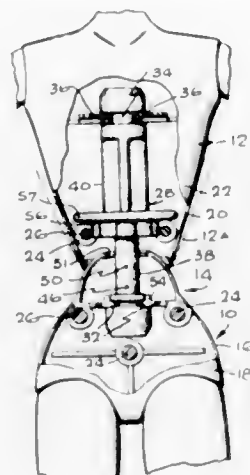
Int. Cl. A63h 3/20

U.S. Cl. 46—161

6 Claims

A doll which can pivot at the waist to perform a shaking dance movement, including an elongated rubber coupling

member that connects the upper and lower torso portions of the doll. The lower torso portion has a convexly rounded top while the upper torso portion partially encompasses the top of the lower torso. The coupling member is constructed to hold



the torso portions a small distance apart to prevent interference as they pivot on one another, and it has a narrowest diameter within the lower torso portion and near the center of curvature of the convexly rounded part thereof to allow pivoting thereabout.

3,690,031

TOY CONSTRUCTION BLOCK SET

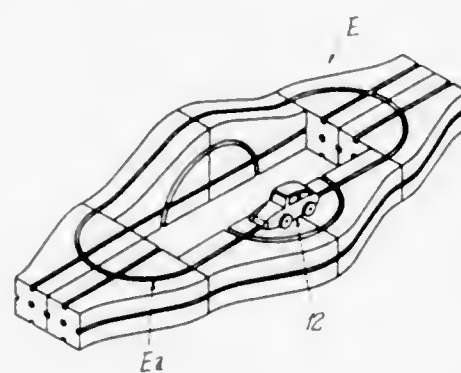
Yoshie Shinoda, c/o Tomy Kogyo Co., Ltd. No. 10, 9, 7-chome., Tateishi, Katsushika-ku, Tokyo, Japan

Filed Aug. 17, 1970, Ser. No. 64,289

Int. Cl. A63h 33/06

U.S. Cl. 46—17

4 Claims



A toy construction block set comprising a number of blocks and characterized in that all the blocks have the same configuration and dimensions and that a wide variety of toy assemblies may be assembled with the blocks. Each of the blocks is a hexahedron of a generally triangular configuration in side view and is adapted to be assembled with each other in wall-to-wall relationship.

3,690,032

TRELLIS OR LATTICE STRUCTURE DESIGNED TO BE MOUNTED BY SELF-ENGAGEMENT OR BY SLIDING

Gilbert Fornells, 38 rue Stendhal, Paris, France  
Filed April 24, 1970, Ser. No. 31,661

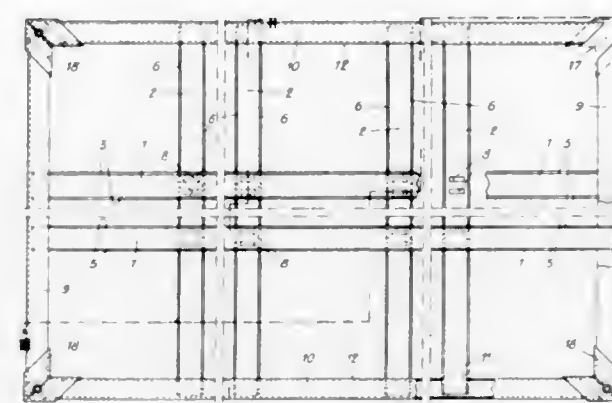
Int. Cl. A01g 17/06; F16b 1/00

U.S. Cl. 47—45

4 Claims

A trellis or lattice structure which is designed to constitute fencing for gardens or is intended for decorative purposes. The trellis or lattice is comprised of elongated thermoplastic elements which are "U-shaped" in cross section and which have on each side a longitudinally extending semispherical relief or boss. The elements are also provided with transversely

extending slots of a configuration corresponding to the external configuration of the elements, whereby the elements can



be removably assembled by vertical or horizontal sliding engagement so as to constitute a checkerwork structure.

3,690,033

TRELLIS ARM POST

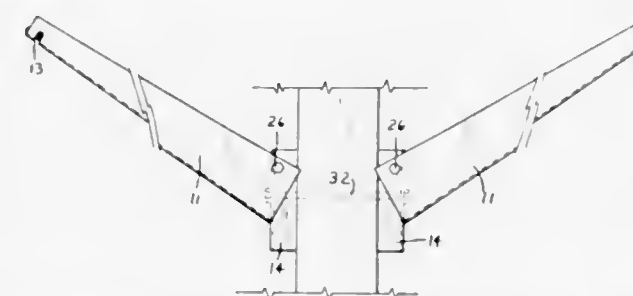
Leo J. Lewis; William L. Lewis, and Mark T. Lewis, all of R.D. 4, North East, Pa.

Continuation-in-part of Ser. No. 708,164, Feb. 26, 1968, abandoned. This application June 1, 1970, Ser. No. 41,960

Int. Cl. A01g 17/06

U.S. Cl. 47—46

2 Claims



Disclosed herein is a support for grape vines for use in a vineyard where a grape picking machine is to be used. The supports are for use on spaced rows of spaced posts. Each post has arms extending laterally outward from each side. The arms are swingably supported so that they can be swung up and down by grape picking machines, thereby shaking off the grapes onto a receiving member below the arms. The arms are made from sheet metal bent into the form of an inverted channel. The wires are received in slots in the distal end of the arm and are supported on the arms by means of hairpinlike clips in the arms that pass under the wires.

In the harvesting of grapes, machines are frequently used that pass under the grape vines and shake the vines to shake the berries off onto a conveyor belt or the like. The present invention provides an improved type of arm that can be easily swung up and down without being damaged and without damaging the grape vines.

3,690,034

ENVIRONMENTAL SEED CELL

Philip B. Knapp, Lynbrook, N.Y., assignor to Aptek Industries, Inc., Lynbrook, N.Y.

Continuation of Ser. No. 781,014, Dec. 4, 1968, abandoned.

This application March 8, 1971, Ser. No. 121,882

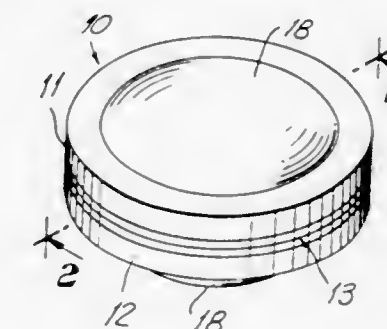
Int. Cl. A01c 1/06

U.S. Cl. 47—57.6

20 Claims

This invention relates to an environmental seed cell formed by compression to define a tablet, and method of making the same. The cell preferably includes two outer layers of particulate material of relatively large particle size and a central cushioning layer having a particle size substantially smaller

than the average particle size of the material of the outer layer. The seed is embedded within the central cushioning layer in advance of pressure being applied against the outer layers to form the tablet, whereby the likelihood of damage to the seed is greatly reduced. Preferably the material is subjected to a greater pressure at its periphery and a lesser pressure at its central portions, thereby to form a tablet in which the material density is substantially greater in the peripheral area than the central area, and the thickness is greater in the central area than at the periphery. The seed is disposed in the central area.



By this means there is defined an environmental seed cell which is capable of withstanding the rigors of shipment and planting by mechanical planting mechanisms without destruction, while at the same time the seed, being in registry with the softer, less compressed central areas, is less subject to damage.

Preferably the material forming the outer layers is comprised of vermiculite which is of a laminar particle configuration, the vermiculite being admixed with substantial quantities of non-laminar particulate organic matter to prevent stratification of the vermiculite when the latter is subjected to tablet forming pressures.

3,690,035

WINDOW OR DOOR

Karl Schindlauer, 11, Ferdinand Buchberggasse, Modling, Austria

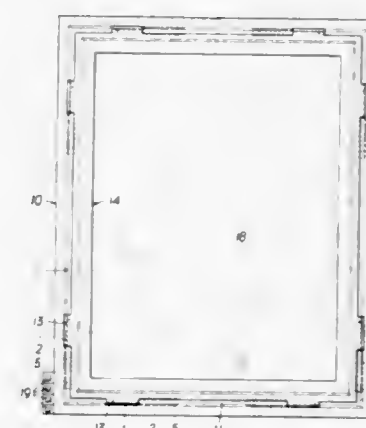
Filed March 30, 1971, Ser. No. 129,371

Claims priority, application Austria, April 3, 1970, 3042

Int. Cl. E05d 15/52

U.S. Cl. 49—192

7 Claims



The invention relates to a window or door with window wing or door wing and window case or door case made of plastics sections, the hinges comprising parts integrally connected with the wing and case, respectively, namely a hinge shell and an axially movable hinge pin, in which the improvement resides in that a plurality of hinges is arranged along the sides, preferably along all sides of the window or door, comprising hinge pins guided in sleeves inserted in bores in the wing section or case section, respectively, which hinge pins by means of an electric drive may selectively be pushed out into the respective shell-forming bore of the corresponding case section or corresponding wing section and retracted from said bore, whereby, when the hinge pins are pushed out on only one side of the window or door while at the same time the



hinge pins on all other sides of the window or door are retracted, a swinging axis is formed, whereas, when on more than one side of the window or door the hinge pins are pushed out, locks are formed. With this arrangement an excellent connection between the sections is achieved.

3,690,036

# CONTROL UNIT FOR WINDOW REGULATOR AND CLOSURE LATCH

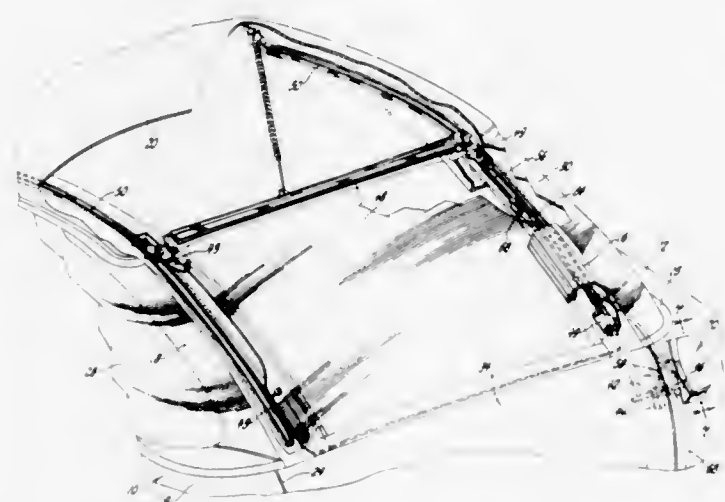
Alfonso Velavicius, and Bert R. Wanlass, both of Warren, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed April 29, 1971, Ser. No. 138,588

Int. Cl. E05F 11/38

U.S. Cl. 49—279

5 Claims



A self-contained control unit for a first vehicle body closure movable by a rotary input regulator and a second vehicle body closure manually movable and maintained in a closed position by a latch, the control unit including an escutcheon adapted for mounting on a vehicle body and rotatably supporting a regulator drive shaft and a release shaft, a drive member adapted to drive the regulator and rotatably supported on the drive shaft, a first sliding clutch on the drive shaft having a collar thereon, the first clutch being spring biased toward a coupling position coupling the drive shaft to the drive member, a second sliding clutch on the release shaft, the second clutch having an actuating arm adapted to release the closure latch when the second clutch is rotated and a collar engaging the collar on the first clutch, the second clutch being movable to a coupling position drivingly coupled to the release shaft for unitary rotation therewith while the two collars and the spring cooperate to synchronize movement of the two clutches, and a lock controlled cylinder cam rotatably supported on the escutcheon and operative to move the second clutch in and out of the coupling position thereof thereby to effect simultaneous isolation of both the latch and the regulator.

3,690,037

# PREFABRICATED DOOR AND FRAME ASSEMBLY

John J. Kempel, Pontiac, Mich., assignor to Taylor Garage Doors, Inc., Detroit, Mich.

Filed Jan. 14, 1970, Ser. No. 2,737

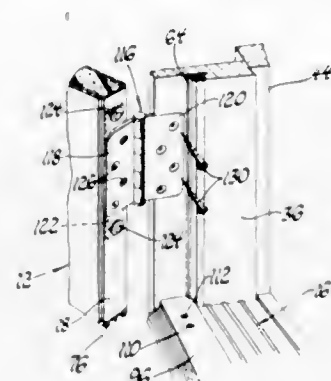
Int. Cl. E06B 1/70; E05D 7/04; E06B 3/32

U.S. Cl. 49—380

4 Claims

A preformed door, preferably of metal, with a frame, of wood, fitted to it for side clearance, and with magnetic

weather stripping of special design engaged in saw kerfs in the header bar and lock jamb, non-magnetic weather stripping at



the hinge jamb, an adjustable threshold member, and a floating hinge connection allowing the door to be adjusted relative to a tilted lock jamb, as and when necessary.

3,690,038

# RECESSED WEATHER STRIP BODY

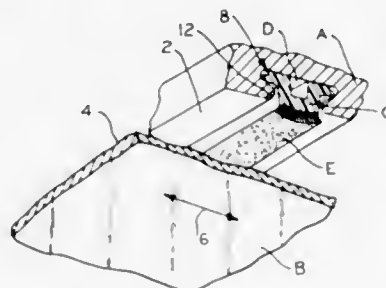
Melvin L. Dieterich, North Olmsted, Ohio, assignor to The Standard Products Co., Cleveland, Ohio

Filed Nov. 16, 1970, Ser. No. 89,657

Int. Cl. E06B 7/16

U.S. Cl. 49—489

3 Claims



A T-shaped weather strip adapted to fit into a T-shaped recess is made with a longitudinal cavity in the crossbar of the T. The free end of the upright of the T is provided with sealing means such as, for example, flocking which engages the surface of a cooperating closure element to form a seal against the passage of air which the weather strip is designed to prevent. The dimensions and structure are such that the strip can be squeezed transversely slightly to narrow the crossbar of the T sufficiently to enable lateral or longitudinal insertion of the strip into the slot.

3,690,039

# PORTABLE APPARATUS FOR REMOVING PARTICULATE MATERIAL FROM EXHAUST GASES

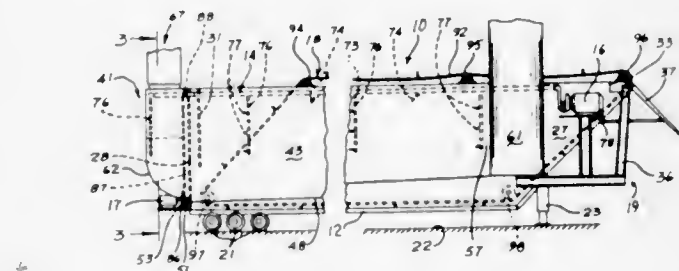
Willard L. Salemink, 209 W. 6th St., West Liberty, Iowa

Filed Aug. 17, 1970, Ser. No. 64,388

Int. Cl. B01D 47/00

U.S. Cl. 55—228

3 Claims



An apparatus to remove particulate material from exhausted gases comprising a washing chamber connected to a settling pond to form an integral portable unit. The apparatus

includes an elongated settling pond and a U-shaped gas washing chamber connected thereto, the chamber adapted to receive the particle-laden gases and subject the gases to a water spray which separates the material from the gases into a particle-water slurry which is pumped into the pond where the particles settle out and are removed therefrom by a scraper unit disposed therein, while the purified gases escape to the atmosphere.

3,690,040

# UNDERSEA LIFE SUPPORT SYSTEM

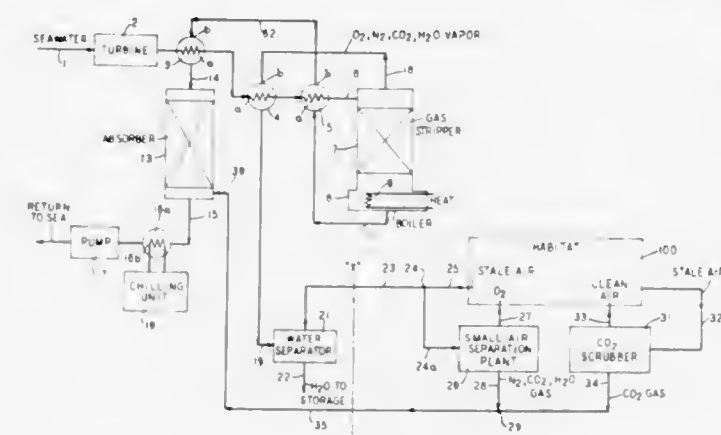
Albert Halfon, Niskayuna, N.Y., assignor to Air Reduction Company, Incorporated, New York, N.Y.

Filed April 16, 1970, Ser. No. 29,216

Int. Cl. B01D 19/00

U.S. Cl. 55—46

11 Claims



A life support system for an undersea habitat which derives oxygen and potable water directly from the sea, without connection to shore or supply ships. Dissolved gases including oxygen and nitrogen, are stripped from sea water by passing a stream thereof in counter-current with rising steam derived from sea water heated in the boiler of a rectification tower. Oxygen is then separated from the other desorbed gases and conveyed to the habitat. The exhaust gas from the habitat is passed through a carbon dioxide absorber before being recirculated in the habitat. The carbon dioxide from the absorber and the residue of desorbed gases from the stripper, including nitrogen, are reabsorbed in the sea water, which is ultimately cooled and returned to the ocean.

3,690,041

# SCRUBBING OF GASES CONTAINING $\text{TiCl}_4$

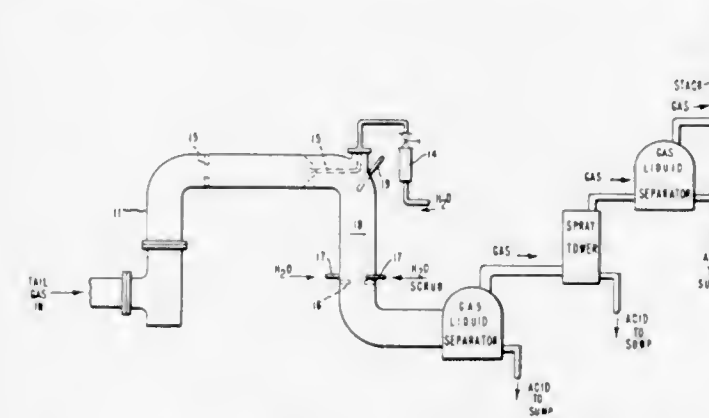
David N. Low, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 30, 1971, Ser. No. 185,254

Int. Cl. B01D 47/00

U.S. Cl. 55—71

3 Claims



Industrial gas streams containing sizable amounts of HCl have in the past been efficiently scrubbed by large amounts of water or water solutions. But when a gas stream has also contained  $\text{TiCl}_4$  vapor, as when  $\text{TiO}_2$  has been produced via the

"chloride" process, even scrubbing has not prevented an opaque plume from being vented to the atmosphere. The plume disappears or is markedly reduced in intensity, however, if a controlled amount of water is evaporated into the gas stream before scrubbing.

3,690,042

Patent Not Issued For This Number

3,690,043

# ELECTROFILTER FOR GASES

Bodo Futterer, Schonbuhrling 37, CH 6000 Luzern; Otto Stemme, Obwaldner Handelshof, CH 6060 Sarnen, and Jürgen Mayer, Bruggli, CH 6072 Sachseln, all of Switzerland

Filed Nov. 24, 1969, Ser. No. 879,196

Claims priority, application Germany, Nov. 25, 1968, P 18 10 842.4

Int. Cl. B03C 3/41

U.S. Cl. 55—150

2 Claims



A perforated electrode, for an electrofilter for gases which includes a sandwich-like arrangement of at least one electrically conductive support layer and a thinner spray discharge layer. The spray discharge layer is formed from a material which has a higher resistance to burning due to spray-discharge than the material of the support layer.

3,690,044

# ADJUSTABLE VENTURI GAS SCRUBBER

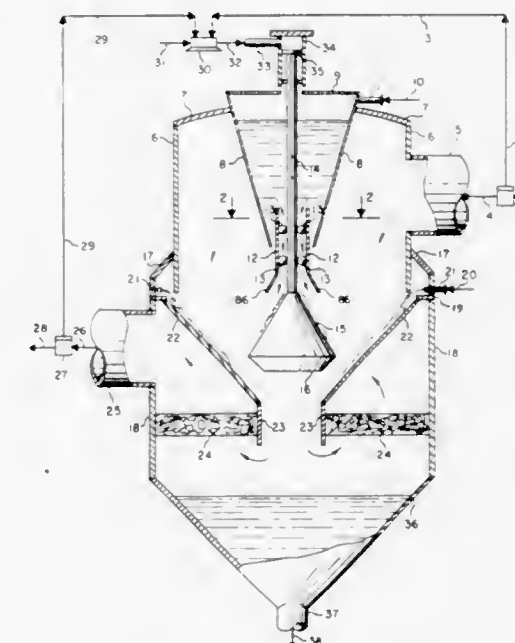
John G. Boresta, Teaneck, N.J., assignor to Chemical Construction Corporation, New York, N.Y.

Filed March 18, 1970, Ser. No. 20,579

Int. Cl. B01D 47/10

U.S. Cl. 55—223

14 Claims



An annular venturi gas scrubber in which the throat is adjusted to compensate for changes in gas flow rate by suspend-



ing the central conical baffle from a central vertical rod which extends upwards from the apex of the conical baffle and which is vertically movable. Two venturi gas scrubbers are also provided in series within a container and in vertical alignment, with the upper first scrubber having an adjustable throat. The first scrubber removes entrained solid particles from the gas stream and the second scrubber removes gaseous contaminants such as sulfur dioxide.

3,690,045

## AIR FILTER

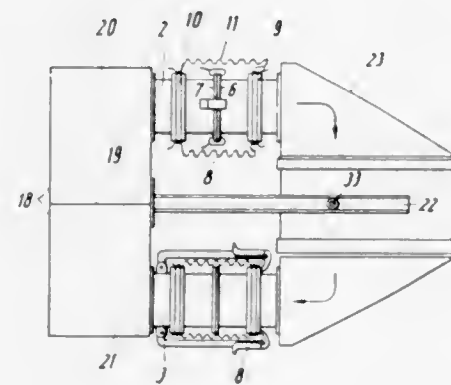
Gerhard Max Neumann, Lentzeallee 93, Berlin, 33, Germany  
Filed Feb. 5, 1969, Ser. No. 796,695

Claims priority, application Germany, May 3, 1968,  
P 17 57 388.5

Int. Cl. B01d 46/00

U.S. Cl. 55—356

7 Claims



A filter for separation of suspended substances from a flow of air or gas comprises a contaminated gas duct, a filtered-gas duct, each duct having a stub, a disposable filtering assembly having an inlet stub and an outlet stub intended to be attached to the contaminated-gas stub and the filtered stub respectively, and two tubes of flexible sheet material attached to the inlet and outlet stubs respectively. Each duct stub has two gas-tight securing means, the first securing means allowing attachment of the corresponding tube the second securing means allowing addition of successive replacement filtering assemblies, after sealing and cutting of the tube, in such a manner that the remnant of tube attached to the duct stub may be detached from the first securing means after being surrounded by a new tube attached to the second securing means. The new tube is subsequently secured by the first securing means and released from the second securing means.

3,690,046

Patent Not Issued For This Number

3,690,047

## COMBINATION LAWN MOWING AND SNOW THROWING MACHINE

Roy M. Thoen, 1313 Marsh St., and Leander Kassulke, 820 Sherman, both of Mankato, Minn.

Filed Sept. 21, 1971, Ser. No. 182,372

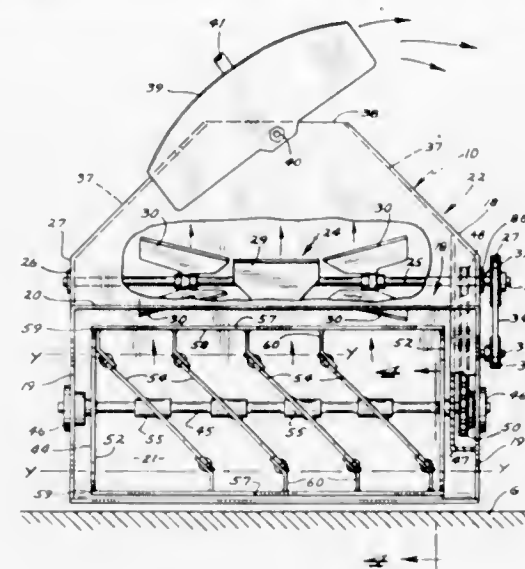
Int. Cl. A01d 35/24

U.S. Cl. 56—13.3

6 Claims

A combination lawn mower and snow blower wherein a rotary impeller member has a series of spaced disks axially mounted in spaced parallelism along a shaft with the disks being disposed at a substantially 45° angle to the shaft axis with diametrically opposing cutter bars mounted to extend

along the disk peripheries which are closest to the shaft so that during rotation of the member, the bars will cut through snow



or grass and the disks will move the material rearwardly under the shaft for upward ejection through a beater housing.

3,690,048

## AGRICULTURAL MACHINE

John Kilgour, Orchard House, 14 High St., Gravenhurst; Peter Charles John Payne, 34 High St., Clophill; John Stewart Reid, 4 Trinity Rd., Billericay, and Eric George Everett, "Billeigh" South Hanningford Rd., Rettendon, Chelmsford, all of England

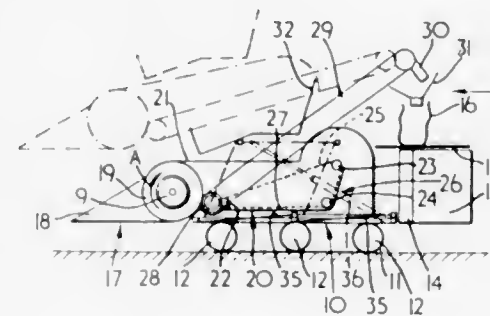
Filed May 14, 1971, Ser. No. 143,413

Claims priority, application Great Britain, May 21, 1970,  
24,538/70

Int. Cl. A01d 41/08, 45/30

U.S. Cl. 56—13.5

8 Claims



A harvesting machine has a base frame and a sub-frame. The sub-frame is moved up and down relative to the base frame by a parallel linkage arranged so that a grain gathering rotor on the sub-frame is moved forwards as it moves upwards. The operator's seat is on the sub-frame adjacent the rotor.

3,690,049

## BROCCOLI HARVESTER

Carlton E. Roberson, 204 North Thrd St., Patterson, Calif.

Filed Sept. 16, 1971, Ser. No. 180,982

Int. Cl. A01d 45/00, 45/26

U.S. Cl. 56—13.9

7 Claims

A row crop harvester with a plurality of pairs of resiliently faced elevator belts traveling at about ground speed, one pair for each row of broccoli. As the harvester advances, each pair of belts converges upon and grasps in sequence the standing broccoli stems between them as a sickle mounted below the belts severs them from the growing plants. The belts in each pair travel at slightly different speeds so as to rotate each severed stem about its axis as it is carried past leaf beaters that both remove the leaves from the rotating stem and simultane-

ously draw each downwardly until its flower resides adjacent the traveling belts. Rotary knives then trim the depending

The blades are positioned for cutting by centrifugal force but are pivotally retractable should they strike an obstruction. Novel means is provided to retain the blades in a retracted and



stems to a uniform length and the elevator belts deliver the trimmed stems to a chaff separator and subsequent inspection and loading stations.

3,690,050

## AGRICULTURAL MACHINE

John Kilgour, Orchard House, 14 High St., Gravenhurst; Peter Charles John Payne, 34 High St., Clophill; John Stewart Reid, 4 Trinity Rd., Billericay, and Eric George Everett, "Billeigh" South Hanningford Rd., Rettendon, Chelmsford, all of England

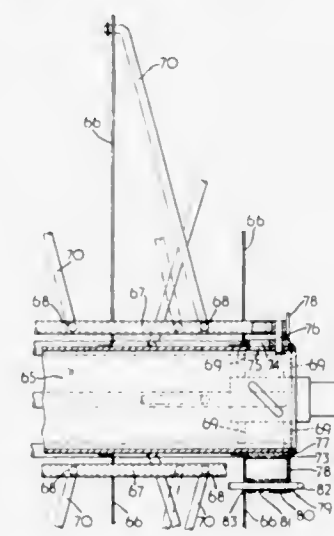
Filed May 14, 1971, Ser. No. 143,412

Claims priority, application Great Britain, May 21, 1970,  
24,357/70

Int. Cl. A01d 41/08, 45/30

U.S. Cl. 56—129

13 Claims



A combined harvesting and threshing machine carries a rotor with beater members which beat the grain from the heads of the standing crop. The rotor carries groups of beater members in the form of rods, each group being located between radial discs and the outer ends of the rods extending outwardly to the outer periphery of the discs.

3,690,051

## SAFETY LAWNMOWER BLADE

John W. Wood, 606 Meadow Ridge Rd., Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

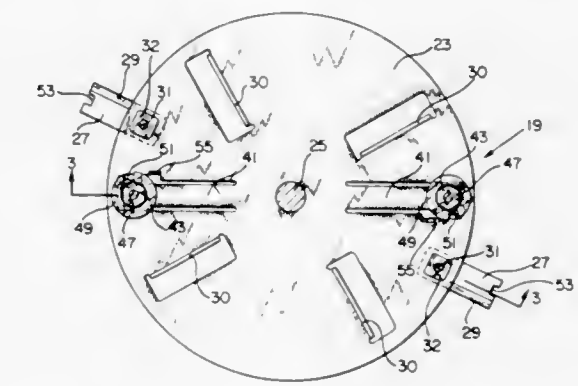
Filed Dec. 28, 1971, Ser. No. 213,039

Int. Cl. A01d 55/18

U.S. Cl. 56—295

10 Claims

A lawnmower blade construction comprising a disc having a plurality of radially disposed cutting blades pivoted thereto.



non-cutting position after striking an obstruction to reduce the likelihood of serious injury to a user and of damage to the mower or blade.

3,690,052

## LIMB HOLDER

Spencer B. Sitter, Box 415, McLean, Tex.  
Filed Feb. 9, 1971, Ser. No. 113,928

Int. Cl. H01g 19/00

U.S. Cl. 56—328

22 Claims



In harvesting fruit, individual limbs of a tree are vibrated at their natural frequency, or a harmonic, so the fruit is removed therefrom. The limb is clamped firmly in a V-notch holder with a gate resiliently held in place so the limb is not damaged when the vibrator is vibrating the limb, or when the limb, at its natural frequency, is vibrating the holder.

3,690,053

## MOBILE HYDRAULIC FRUIT PICKER

Roy B. Thorn, P.O. Box 711, Inverness, Fla.

Filed Aug. 26, 1971, Ser. No. 175,050

Int. Cl. A01g 19/00

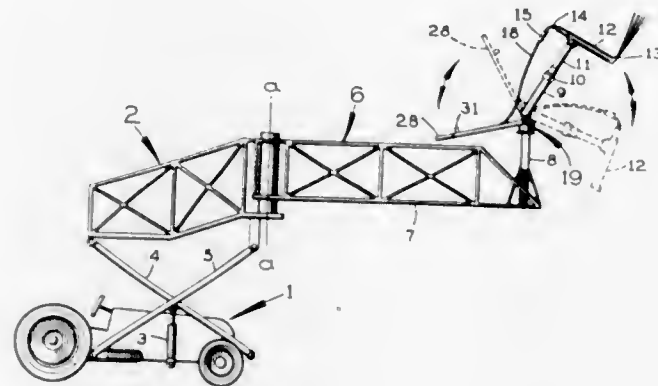
U.S. Cl. 56—328 R

10 Claims

A hydraulic fruit picker in which a vehicle is provided with a power operated elevator for raising and lowering a platform and operator with respect to the fruit area on a tree. The elevator includes a hydraulic device which mixes pressurized water and air into a bubble formation and ejects same at a high



velocity from a nozzle. The device includes swivels whereby the operator may direct the output nozzle and water-air stream through azimuthal and vertical angles with respect to



the tree. Thus the high velocity of the water-air mixture, when impinged upon ripe fruit, will detach same undamaged and permit it to gravitate for collection.

3,690,054

## CATCHER FRAME FOR HARVESTER

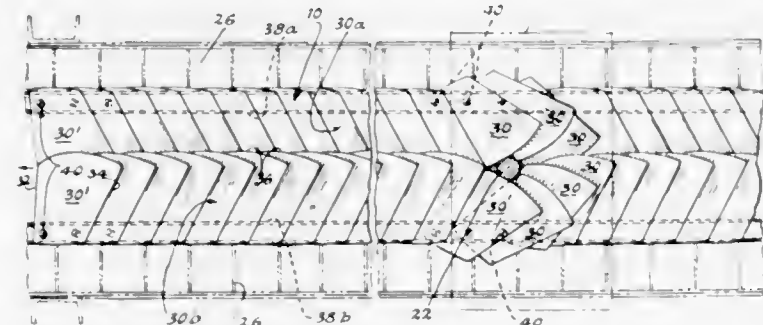
Angelo N. De Carlo, 10596A Main St., and Vito G. De Carlo, 11180 Mile Block Rd., both of Collins, N.Y.

Filed Aug. 11, 1970, Ser. No. 62,788

Int. Cl. A01g 19/00

U.S. Cl. 56—330

11 Claims



A harvester catcher frame including a plurality of flexible catcher plates individually mounted on the frame of the harvester for both pivotal and vertical swinging movement by coil springs.

The catcher plates are dimensioned and arranged such as to minimize the area of an opening created between the plates due to engagement thereof with an obstacle, such as a trellis post or the like.

3,690,055

## AGRICULTURAL MACHINE WITH ARTICULATED FRAME AND ROTARY IMPLEMENTS

Walter Reber, Saverne, France, assignor to Societe Dite: Kuhn Freres & Cie., Saverne (Bas-Rhin), France and Societe En Commandite Simple, Saverne (Bas-Rhin), France

Filed July 11, 1969, Ser. No. 841,035

Claims priority, application France, July 18, 1968, 689222

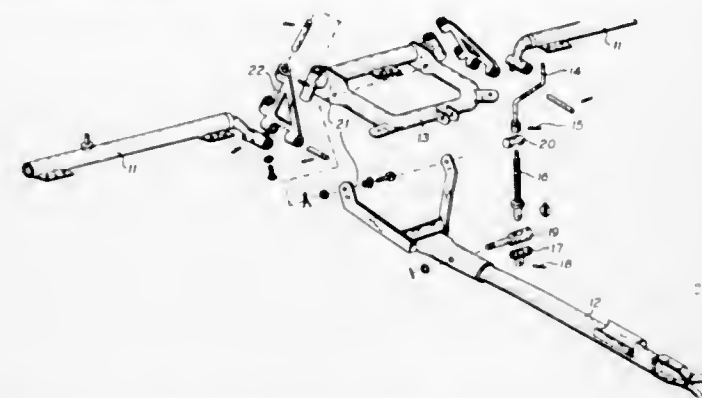
Int. Cl. A01d 79/02

U.S. Cl. 56—370

2 Claims

The disclosure is of an agricultural machine, for example a tedding or swath-turning machine, comprising an articulated frame for towing and rotary implements mounted upon wheels or rollers or sledges or other carrier elements and adapted to be towed by an agricultural tractor or other vehicle, charac-

terized in that the articulated frame has two articulations to permit the machine to follow the contours of the ground and



these two articulations are disposed between the two carrier elements which are closest to the middle of the machine.

3,690,056

## CABLED YARN

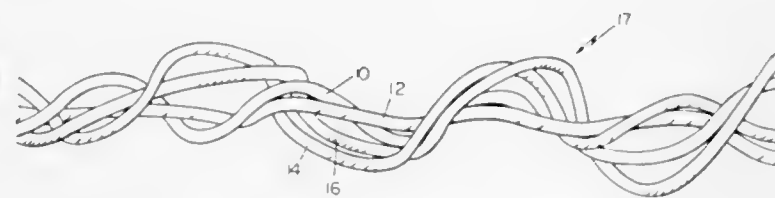
Robert I. Peters, Longmeadow, Mass., assignor to Bigelow-Sanford, Inc., Thompsonville, Conn.

Filed April 5, 1971, Ser. No. 131,074

Int. Cl. D02g 3/28, 3/38

U.S. Cl. 57—139

4 Claims



A cabled yarn, suitable for use in Moresque-type carpets, comprising at least two sets of ends of yarn, each set comprising at least two ends of yarn, corresponding ends of yarn of each set having the same visual characteristics. The ends of yarn of at least one of the sets have a number of turns per inch which is not a whole number multiple of the number of turns per inch of the ends of yarn of any other of the sets, at least one of the sets comprising ends of yarn which are plytwisted with respect to each other.

3,690,057

## ANTI-STATIC YARN AND FABRICS

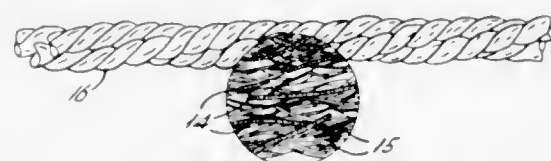
Alan H. Norris, Somers, Conn., assignor to Bigelow-Sanford, Inc., New York, N.Y.

Filed Jan. 22, 1970, Ser. No. 5,061

Int. Cl. D02g 3/12, 3/06, 3/02

U.S. Cl. 57—167

9 Claims



The invention relates to the production of an anti-static yarn, especially useful in the making of carpets. The anti-static yarn is made by fibrillating into fibers a web comprising a monoaxially oriented film of synthetic material faced with metal, such as aluminum. The metallized fibers are blended with other fibers, such as wool and/or nylon and converted into an anti-static yarn, which has utility in forming the pile elements of a carpet.

3,690,058

## ELECTRIC OR ELECTRONIC TIMEPIECE

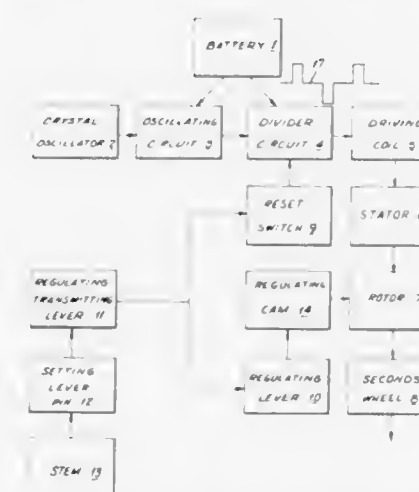
Masahiro Kurita, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Sept. 8, 1970, Ser. No. 70,189

Claims priority, application Japan, Sept. 25, 1969, 44/76098

Int. Cl. G04c 3/00; G04b 27/00

U.S. Cl. 58—23 R



An electric or electronic timepiece is provided with a mechanical regulating member coordinately actuated with a switch so that driving current for the electro-mechanical transducer of the timepiece is cut off before operative engagement by said regulating member and is not restored until after said regulating member is disengaged.

3,690,059

## CLOCK SYSTEM

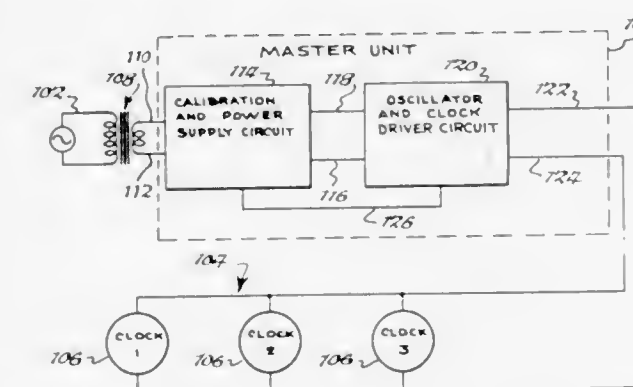
Arthur W. Haydon, Middlebury, Conn., assignor to Tri-Tech, Inc., Waterbury, Conn.

Continuation-in-part of Ser. No. 866,322, Oct. 14, 1969, Pat. No. 3,643,420, and a continuation-in-part of Ser. No. 45,609, June 12, 1970. This application Oct. 20, 1970, Ser. No. 82,405

Int. Cl. G04c 13/02

U.S. Cl. 58—24 R

9 Claims



A clock for use either with an external source of alternating current of uniform frequency or an internal, auxiliary, rechargeable power source. The clock is normally synchronized with the uniform frequency of the alternating current and has a solid state oscillator circuit. A time indicating device is operated by a small synchronous motor requiring a minimal power input from the oscillator. During interruptions of power from the external source of alternating current the time indicator synchronous motor is driven at a reduced voltage supplied by the auxiliary power source. A calibrating circuit is provided to allow adjustment, comparison, and synchronization of the output of the oscillator with the frequency of the external alternating current source. In some embodiments a plurality of time indicating devices are operated simultaneously by the oscillator.

3,690,060

Patent Not Issued For This Number

3,690,061

## WATCH HAVING A TWO-PIECE WINDING STEM

Jean Humbert, and Jean-Fred Studer, both of Bienne, Switzerland, assignors to OMEGA Louis Brandt & Frere S.A., Bienne, Bern, Switzerland

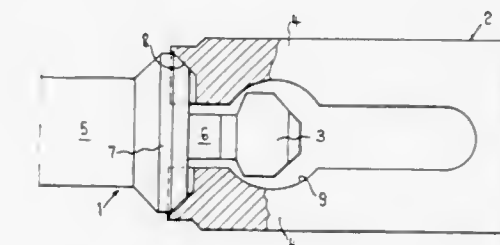
Filed Nov. 16, 1970, Ser. No. 89,759

Claims priority, application Switzerland, Dec. 5, 1969, 18161/69

Int. Cl. G04b 27/02

U.S. Cl. 58—63

3 Claims



A "broken" winding stem for a watch or the like comprises two sections respectively for driving relation with the winding crown and watch or like movement and having a head on one section elastically or resiliently held by a clip on the other section, has auxiliary clutch means releasably securing said sections together to prevent rotation of the watch movement, said means including a clutch element on each said section, said elements having clutch faces cooperative upon engagement.

3,690,062

## HARD WATCH CASE

Masami Kasai, and Yoshiaki Fujimori, both of Nagano, Japan, assignors to Kabushiki Kaisha Surva, Seirosha Tokyo, Japan

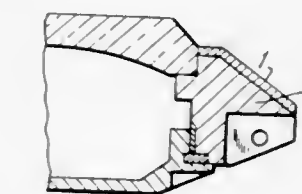
Filed Jan. 29, 1971, Ser. No. 110,960

Claims priority, application Japan, Jan. 30, 1970, 45/7674

Int. Cl. G04b 37/00

U.S. Cl. 58—88 R

11 Claims



A watch case resistant to mechanical defacement and corrosion, having an external pressed and sintered component at least a part of which comprises at least one material selected from the group consisting of  $Al_2O_3$ ,  $BeO$ ,  $CoO$ ,  $Cu_2O$ ,  $Cr_2O_3$ ,  $CoO$ ,  $Fe_2O_3$ ,  $Fe_3O_4$ ,  $MgO$ ,  $MnO$ ,  $NiO$ ,  $Nb_2O_5$ ,  $SiO_2$ ,  $Ta_2O_5$ ,  $ThO_2$ ,  $SnO_2$ ,  $TiO_2$ ,  $V_2O_5$ ,  $ZnO$ ,  $ZrO_2$ ,  $Al_2O_3 \cdot SiO_2$ ,  $Al_2O_3 \cdot TiO_2$ ,  $BeO \cdot Al_2O_3$ ,  $CoO \cdot Al_2O_3$ ,  $MgO \cdot Al_2O_3$ ,  $MgO \cdot ZrO_2 \cdot SiO_2$ ,  $ZnO \cdot Al_2O_3$  and  $ZrO_2 \cdot SiO_2$ .

3,690,063

DIGITAL CLOCK STRUCTURE AND PARTS THEREFOR  
Robert Strachan, Waccott, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 28, 1971, Ser. No. 213,085

Int. Cl. G04b 19/02

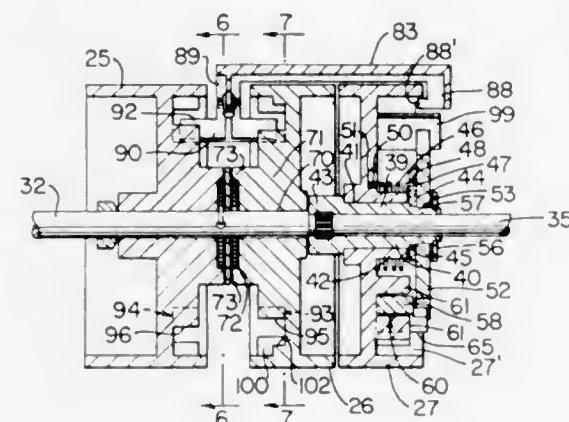
U.S. Cl. 58—125 C

18 Claims

A digital clock construction having a frame means carrying a rotatable shaft driven by a timer at a predetermined rate. A plurality of time indicating wheel means are rotatably mounted on the shaft. A first drive structure is carried by the



shaft and is operatively associated with one of the wheel means for incrementally rotating the one wheel means relative to the shaft on a time basis as the shaft rotates. Other drive structure is operatively associated with the shaft and the remaining wheel means to tend to rotate the remaining wheel means as the shaft rotates. Latch structure is operatively associated with the one wheel means and the remaining wheel



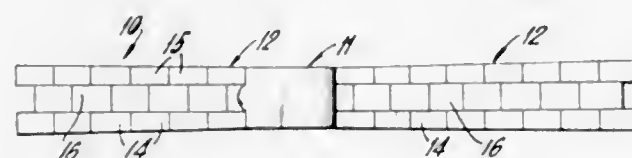
means for holding the remaining wheel means from rotating relative to the frame means except in a timed relation to the incremental movement of the one wheel means relative to the frame means. The latch structure and wheel means are so constructed and arranged that the latch structure will not unlatch the wheel means when the clock construction is jarred during at least part of the cycle of operation of the wheel means.

### 3,690,064 TAPERED WRIST BAND

Louis Pompeo, Bloomfield, N.J., assignor to Duchess Mfg. Corp., Hoboken, N.J.  
Filed April 28, 1971, Ser. No. 138,129  
Int. Cl. F16g 13/18

U.S. Cl. 59—35

8 Claims



A method of fabricating tapered link chains for watch bands, bracelets, and other items of jewelry. The method includes the step of arranging a series of end lug blanks in a straight line in side-by-side relationship. The blanks are cut at a slight angle to the straight line to provide two sets of tapered end lugs. In assembling the chain, each of the two sets of end lugs are arranged with the tapered portion facing to the outside of the chain so that the links of the chain will contain a continuous taper. Center link-halves are staggered between the tapered end lugs, and the chain links are secured by connecting rods extending through holes in the link-halves and fastened at each end to a perspective one of the tapered end lugs.

### 3,690,065

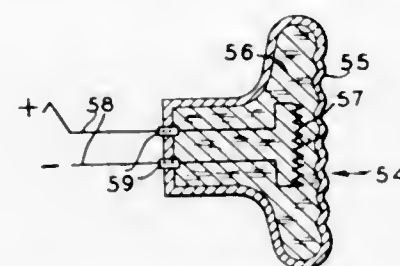
THERMAL ACTUATOR AND METHOD OF MAKING  
Louis Bucalo, 135 Roberts St., Holbrook, N.J.  
Continuation of Ser. No. 854,024, Aug. 25, 1969, abandoned, which is a continuation of Ser. No. 584,037, Sept. 12, 1966, abandoned, which is a continuation-in-part of Ser. No. 426,238, Jan. 18, 1965, abandoned. This application Oct. 12, 1970, Ser. No. 80,229  
Int. Cl. F01k 25/02

U.S. Cl. 60—23

5 Claims

An article of manufacture formed of a plurality of layers of deposited metal with the layers being separated by interface

layers which render the deposited metallic layers relatively movable under shear stress to effect damping and decreased force deflection rate. In one preferred embodiment of the in-

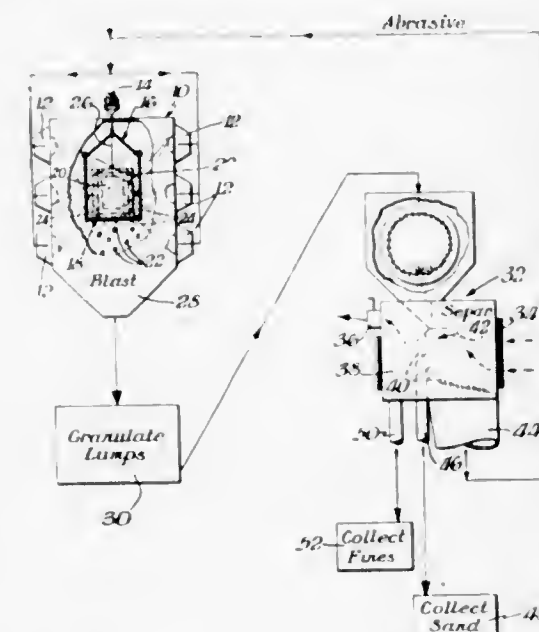


vention the article can take the form of a bellows defining a closed volume and having a core formed of thermal material having solid and liquid phases and affording substantially different displacements as a function of temperature.

3,690,066  
ABRASIVE BLAST CLEANING SYSTEM  
Russell L. Rowe, Hagerstown, Md., assignor to The Carborundum, Niagara Falls, N.Y.  
Filed Oct. 30, 1970, Ser. No. 85,645  
Int. Cl. B24c 3/08

U.S. Cl. 51—9

3 Claims

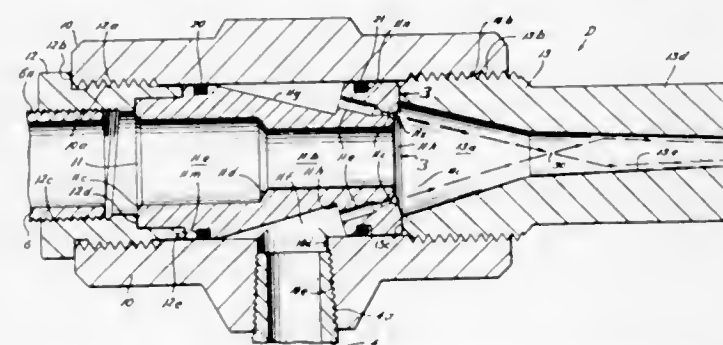


An abrasive blast cleaning system includes a blast chamber for blasting sand from a casting in a no-bake mold with the removed sand and spent abrasive thereafter being separated in an air wash separator.

3,690,067  
BLAST CLEANING SYSTEM  
John B. Goss, and John E. Stachowak, both of Houston, Tex., assignors to American Aero Engineering Company  
Filed Jan. 25, 1971, Ser. No. 109,123  
Int. Cl. B24c 5/04

U.S. Cl. 51—11

4 Claims



A scouring or blast cleaning system wherein a supply of flowable abrasive material is introduced into suspension in a

flowing stream of fluid within an injector device and the resulting stream then flows out of the injector device and is impinging upon the object to be scoured.

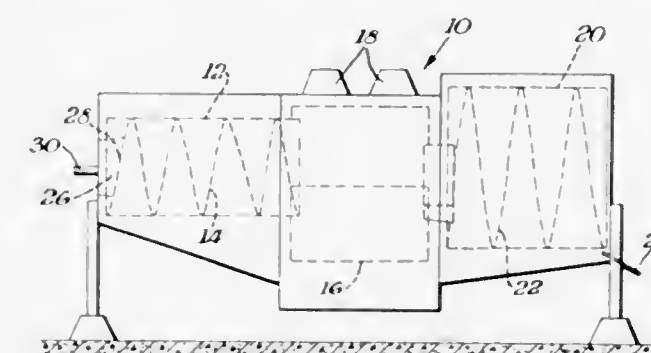
3,690,068  
CONTINUOUS TREATING APPARATUS  
Richard E. Coss, and Willard J. Harper, both of Hagerstown, Md., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Sept. 8, 1970, Ser. No. 70,315

Int. Cl. B24c 3/00; B24b 31/02

U.S. Cl. 51—13

10 Claims



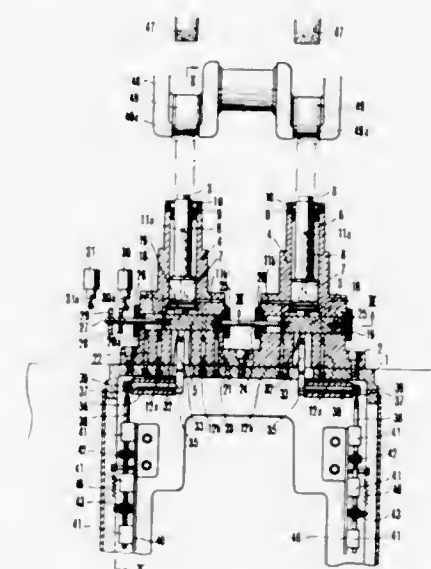
A continuous treating apparatus includes a tubular infeed chamber having a spiral conveyor therein with a feed tube connected to the first flight of the conveyor. A feed spout is disposed in the feed tube displaced from a vertical plane passing through the longitudinal axis of the tubular chamber.

3,690,069  
Patent Not Issued For This Number

3,690,070  
WORKPIECE LOCATING APPARATUS FOR USE IN  
MULTI-WHEEL GRINDING MACHINES  
Hiroshi Ohta, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan  
Filed Oct. 23, 1970, Ser. No. 83,505  
Int. Cl. B24b 5/42

U.S. Cl. 51—105

5 Claims



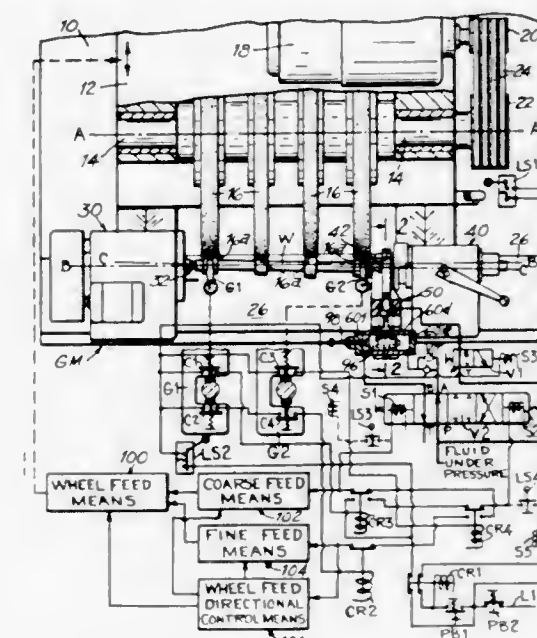
In a workpiece locating apparatus for working a plurality of spaced apart portions by means of a multi-wheel grinding machine, respectively defined between a pair of surfaces of said workpiece, for example crank-pins of a crankshaft there are provided a plurality of spaced apart locator heads respectively confronting the portions to be worked, mechanisms for

moving the locator heads towards and away from the portions to be worked and a mechanism for simultaneously rotating the locator heads. The locator heads are inserted between the surfaces of respective pairs when moved towards the portions to be worked and are urged against one of the surfaces when rotated.

3,690,071  
TAPER COMPENSATING METHOD AND APPARATUS  
Oiva E. Hill, Holden, Mass., assignor to The Warner & Swasey Company, Cleveland, Ohio  
Filed Dec. 24, 1970, Ser. No. 101,297  
Int. Cl. B24b 49/04

U.S. Cl. 51—165.91

25 Claims



Taper compensating apparatus and method for elastically deforming a work support supporting one end of a workpiece being ground in a cylindrical grinding machine controlled by at least two in-process gages engaging opposite end portions of the workpiece. The apparatus distorts and forces the work support and hence the axis of the workpiece away from the grinding wheel to intentionally grind a taper in the same direction. When one end portion of the tapered workpiece furthest away from the deformed work support is ground to a predetermined oversize diameter an in-process gage thereon stops the infeed and actuates reversing means to relieve and allow the deformed work support to spring back and feed, without lost motion, the workpiece into the grinding wheel at a controlled precision fine feed rate until the end portion of the workpiece nearest the deformed work support is ground to exactly the same amount oversize as is the one end portion. Thereafter, the in-process gage thereon resumes the grinding feed at a fine rate until at least the end portions are ground to the final diameter at which time the gages stop and reverse the feed mechanism.

3,690,072  
MEANS FOR ADJUSTING THE ANGULAR RELATION  
BETWEEN A WORKPIECE TO BE GROUND AND A TOOL  
Ralph E. Price, Waynesboro, Pa., assignor to Litton Industries, Inc., Los Angeles, Calif.  
Filed , Ser. No. 98,807  
Int. Cl. B24b 49/04

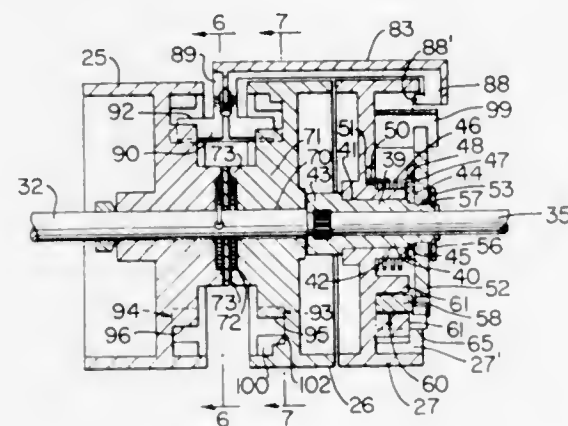
U.S. Cl. 51—165 R

8 Claims

An automatic taper compensator is used to maintain a parallel relationship between the axis of a wide grinding wheel or multiple grinding wheels (22-26) and the centerline of a cylindrical workpiece (W) on a grinding machine. Two gage heads (43, 44) are automatically advanced during the grinding cycle at the extreme ends of the workpiece portions being ground. A differential circuit (48) directly compares the volt-



shaft and is operatively associated with one of the wheel means for incrementally rotating the one wheel means relative to the shaft on a time basis as the shaft rotates. Other drive structure is operatively associated with the shaft and the remaining wheel means to tend to rotate the remaining wheel means as the shaft rotates. Latch structure is operatively associated with the one wheel means and the remaining wheel



means for holding the remaining wheel means from rotating relative to the frame means except in a timed relation to the incremental movement of the one wheel means relative to the frame means. The latch structure and wheel means are so constructed and arranged that the latch structure will not unlatch the wheel means when the clock construction is jarred during at least part of the cycle of operation of the wheel means.

3,690,064

## TAPERED WRIST BAND

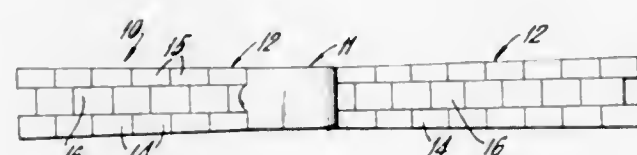
Louis Pompeo, Bloomfield, N.J., assignor to Duchess Mfg. Corp., Hoboken, N.J.

Filed April 28, 1971, Ser. No. 138,129

Int. Cl. F16g 13/18

U.S. Cl. 59—35

8 Claims



A method of fabricating tapered link chains for watch bands, bracelets, and other items of jewelry. The method includes the step of arranging a series of end lug blanks in a straight line in side-by-side relationship. The blanks are cut at a slight angle to the straight line to provide two sets of tapered end lugs. In assembling the chain, each of the two sets of end lugs are arranged with the tapered portion facing to the outside of the chain so that the links of the chain will contain a continuous taper. Center link-halves are staggered between the tapered end lugs, and the chain links are secured by connecting rods extending through holes in the link-halves and fastened at each end to a perspective one of the tapered end lugs.

3,690,065

## THERMAL ACTUATOR AND METHOD OF MAKING

Louis Bucalo, 135 Roberts St., Holbrook, N.J.

Continuation of Ser. No. 854,024, Aug. 25, 1969, abandoned,

which is a continuation of Ser. No. 584,037, Sept. 12, 1966,

abandoned, which is a continuation-in-part of Ser. No.

426,238, Jan. 18, 1965, abandoned. This application Oct. 12,

1970, Ser. No. 80,229

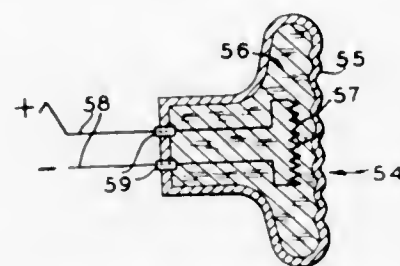
Int. Cl. F01k 25/02

U.S. Cl. 60—23

5 Claims

An article of manufacture formed of a plurality of layers of deposited metal with the layers being separated by interface

layers which render the deposited metallic layers relatively movable under shear stress to effect damping and decreased force deflection rate. In one preferred embodiment of the in-



vention the article can take the form of a bellows defining a closed volume and having a core formed of thermal material having solid and liquid phases and affording substantially different displacements as a function of temperature.

3,690,066

## ABRASIVE BLAST CLEANING SYSTEM

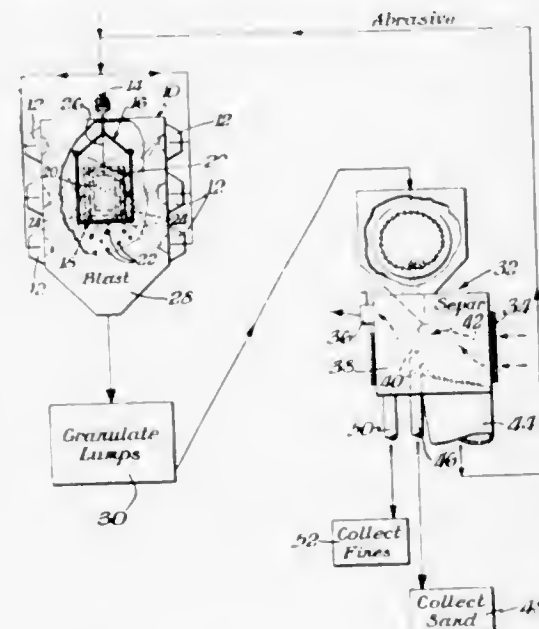
Russell L. Rowe, Hagerstown, Md., assignor to The Carborundum, Niagara Falls, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,645

Int. Cl. B24c 3/08

U.S. Cl. 51—9

3 Claims



An abrasive blast cleaning system includes a blast chamber for blasting sand from a casting in a no-bake mold with the removed sand and spent abrasive thereafter being separated in an air wash separator.

3,690,067

## BLAST CLEANING SYSTEM

John B. Goss, and John E. Stachowiak, both of Houston, Tex.,

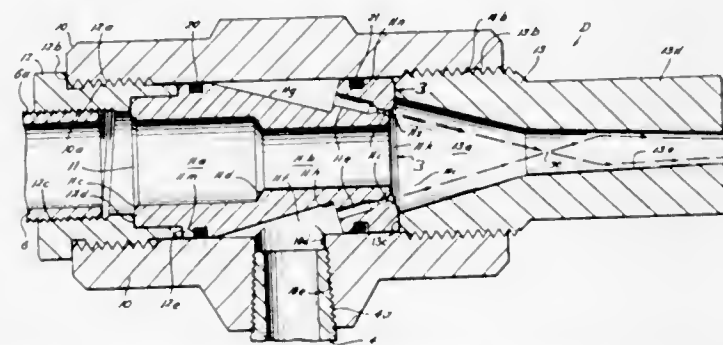
assignors to American Aero Engineering Company

Filed Jan. 25, 1971, Ser. No. 109,123

Int. Cl. B24c 5/04

U.S. Cl. 51—11

4 Claims



A scouring or blast cleaning system wherein a supply of flowable abrasive material is introduced into suspension in a

flowing stream of fluid within an injector device and the resulting stream then flows out of the injector device and is impinged upon the object to be scoured.

3,690,068

## CONTINUOUS TREATING APPARATUS

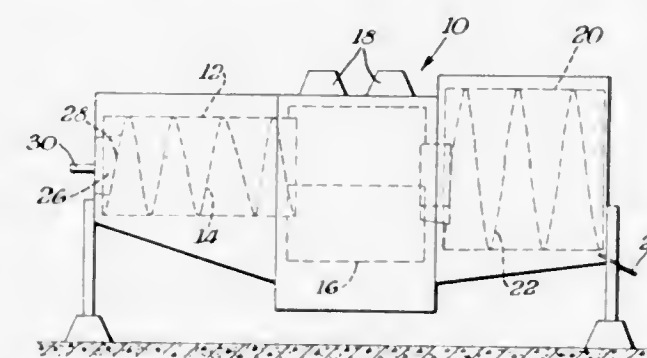
Richard E. Coss, and Willard J. Harper, both of Hagerstown, Md., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Sept. 8, 1970, Ser. No. 70,315

Int. Cl. B24c 3/00; B24b 31/02

U.S. Cl. 51—13

10 Claims



A continuous treating apparatus includes a tubular infeed chamber having a spiral conveyor therein with a feed tube connected to the first flight of the conveyor. A feed spout is disposed in the feed tube displaced from a vertical plane passing through the longitudinal axis of the tubular chamber.

3,690,069

Patent Not Issued For This Number

3,690,070

## WORKPIECE LOCATING APPARATUS FOR USE IN MULTI-WHEEL GRINDING MACHINES

Hiroshi Ohta, Kariya, Japan, assignor to Toyoda Koki

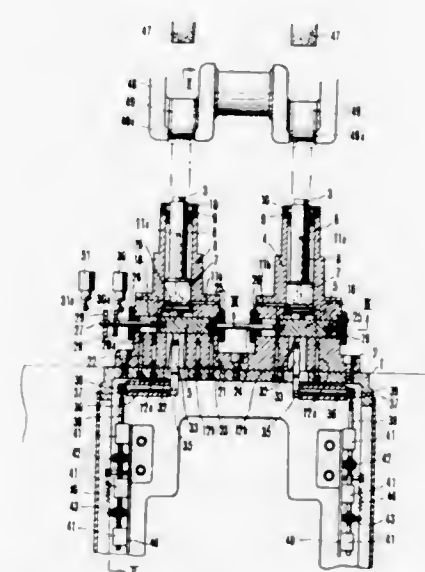
Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Oct. 23, 1970, Ser. No. 83,505

Int. Cl. B24b 5/42

U.S. Cl. 51—105

5 Claims



In a workpiece locating apparatus for working a plurality of spaced apart portions by means of a multi-wheel grinding machine, respectively defined between a pair of surfaces of said workpiece, for example crank-pins of a crankshaft there are provided a plurality of spaced apart locator heads respectively confronting the portions to be worked, mechanisms for

moving the locator heads towards and away from the portions to be worked and a mechanism for simultaneously rotating the locator heads. The locator heads are inserted between the surfaces of respective pairs when moved towards the portions to be worked and are urged against one of the surfaces when rotated.

3,690,071

## TAPER COMPENSATING METHOD AND APPARATUS

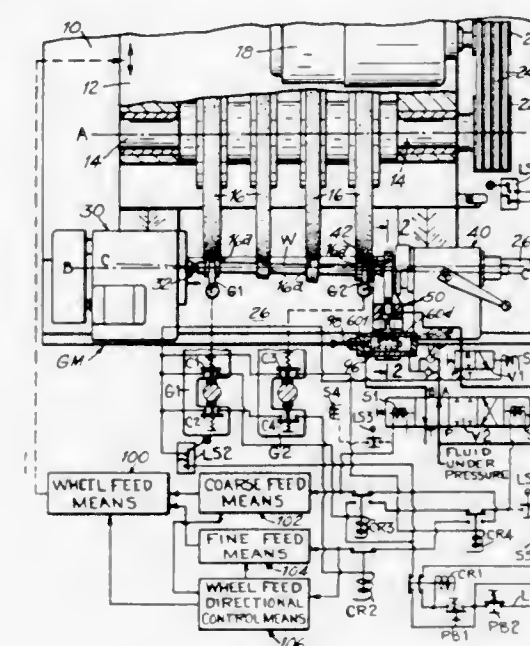
Oiva E. Hill, Holden, Mass., assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Dec. 24, 1970, Ser. No. 101,297

Int. Cl. B24b 49/04

U.S. Cl. 51—165.91

25 Claims



Taper compensating apparatus and method for elastically deforming a work support supporting one end of a workpiece being ground in a cylindrical grinding machine controlled by at least two in-process gages engaging opposite end portions of the workpiece. The apparatus distorts and forces the work support and hence the axis of the workpiece away from the grinding wheel to intentionally grind a taper in the same direction. When one end portion of the tapered workpiece furthest away from the deformed work support is ground to a predetermined oversize diameter an in-process gage thereon stops the infeed and actuates reversing means to relieve and allow the deformed work support to spring back and feed, without lost motion, the workpiece into the grinding wheel at a controlled precision fine feed rate until the end portion of the workpiece nearest the deformed work support is ground to exactly the same amount oversize as is the one end portion. Thereafter, the in-process gage thereon resumes the grinding feed at a fine rate until at least the end portions are ground to the final diameter at which time the gages stop and reverse the feed mechanism.

3,690,072

## MEANS FOR ADJUSTING THE ANGULAR RELATION BETWEEN A WORKPIECE TO BE GROUND AND A TOOL

Ralph E. Price, Waynesboro, Pa., assignor to Litton Industries, Inc., Los Angeles, Calif.

Filed , Ser. No. 98,807

Int. Cl. B24b 49/04

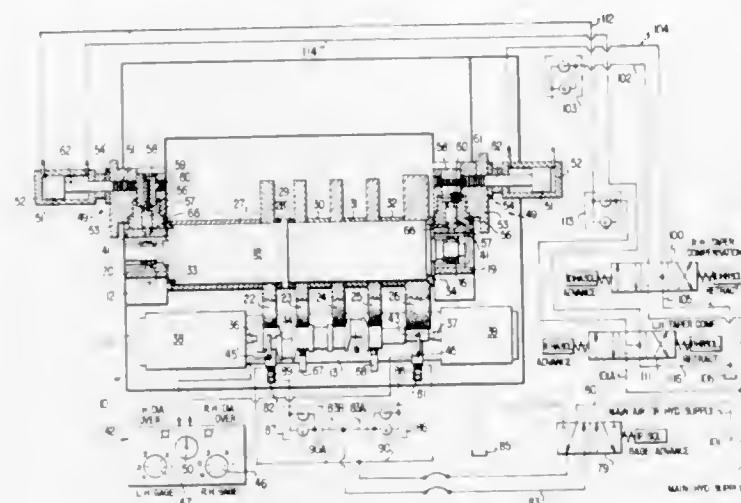
U.S. Cl. 51—165 R

8 Claims

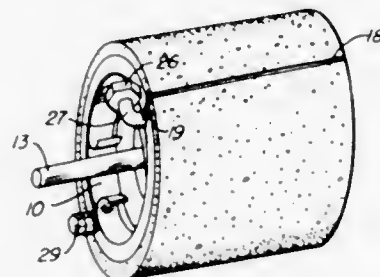
An automatic taper compensator is used to maintain a parallel relationship between the axis of a wide grinding wheel or multiple grinding wheels (22-26) and the centerline of a cylindrical workpiece (W) on a grinding machine. Two gage heads (43, 44) are automatically advanced during the grinding cycle at the extreme ends of the workpiece portions being ground. A differential circuit (48) directly compares the volt-



age output of the right hand (R.H.) and the left hand (L.H.) gage heads (43, 44) and generates a signal when the difference varies by more than a predetermined amount. Com-



**3,690,075**  
**DRUM HOLDER**  
Edward F. Schoonmaker, 501 Campbell Ave., White Bear Lake, Minn.  
Continuation-in-part of Ser. No. 870,229, July 28, 1969, abandoned. This application Dec. 20, 1971, Ser. No. 209,701  
Int. Cl. B24b 45/00, 23/00  
U.S. Cl. 51—368 8 Claims

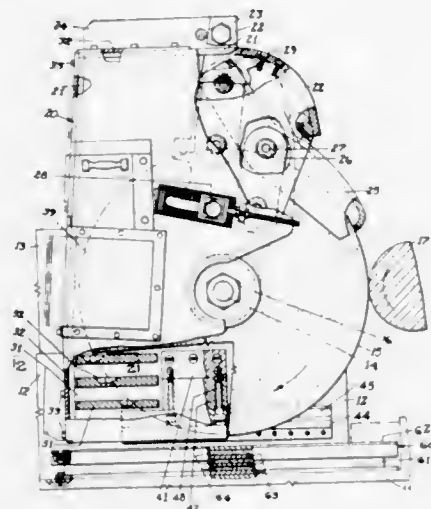


pensation is effected by deflecting the appropriate wheel spindle bearing support (41 or 41') in a forward direction, as separate force applying means (49, 49') are provided at each end of the wheel spindle (18) for that purpose.

Disclosed is a new drum holder adapted to receive upon its peripheral cylindrical surface a snug wrapping of a removable sheet material and adapted to substantially continually take up slack as generated in the wrapping during rotation of the holder in use applications. The holder comprises a drum rotatable about its axis, with axially-parallel elements as part of the drum. Those elements include a tightening key chamber, tightening key, and a passage from the key chamber to a slit in the periphery of the drum. The slit is radially advanced with respect to the key chamber during rotation of the drum in use applications. The key holds the trailing end of a sheet wrapped about the drum. The leading end of the sheet is held by pinching action between the key and a radially outward wall of the key chamber. A centrifugal weight on an arm off the key member serves to torque the key itself in a rotary direction opposite to that of the drum rotation in use applications; and this serves in turn to take up slack in the sheet wrapping and also contributes to the holding action on the leading and trailing portions of the sheet wrapping.

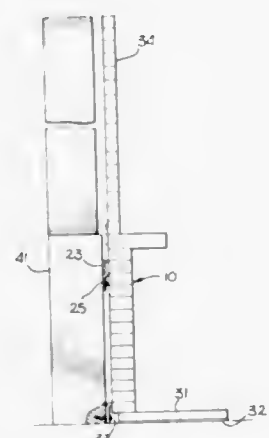
**3,690,073**  
Patent Not Issued For This Number

**3,690,074**  
**GRINDING WHEEL GUARD**  
Theodore A. Mrugala, Auburn, Mass., assignor to The Warner & Swasey Company, Cleveland, Ohio  
Filed Sept. 21, 1970, Ser. No. 74,051  
Int. Cl. B24b 55/04  
U.S. Cl. 51—269 5 Claims



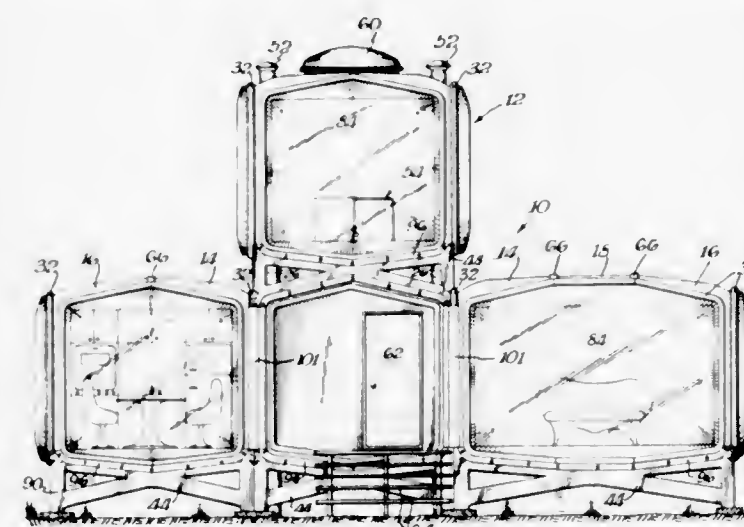
An arrangement for containing the grinding wheel fragments and the kinetic energy released therewith in the event of a grinding wheel failure in a high speed precision grinding machine, including a grinding wheel guard having a lower portion thereof of substantially constant U-shaped horizontal cross section open at its lower end and provided adjacent to its lower end with U-shaped sets of reinforcing ribs extending internally thereof toward the grinding wheel enclosed thereby, and including a distortion resisting and energy absorbing assembly fixedly mounted adjacent to and spanning the open lower end of the grinding wheel guard.

**3,690,076**  
**PRECAST FIREPLACE VENEER**  
Willard V. Harris, Jr., Cypress, Calif., assignor to Western Monolithic Concrete Products, Long Beach, Calif.  
Filed July 9, 1970, Ser. No. 53,431  
Int. Cl. E04f 17/02  
U.S. Cl. 52—36 2 Claims



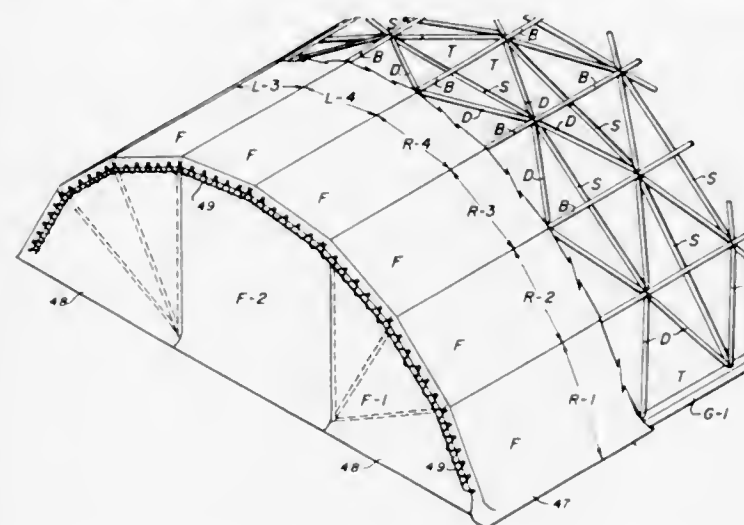
A one piece concrete cast fireplace veneer having a simulated masonry finish such as a brick or stone and with brackets or bolts cast in the veneer used for holding it to the fireplace. There may be provided a second precast section which also has a surface finish simulating conventional fireplace materials and which extends the facing up to the ceiling.

**3,690,077**  
**BUILDING CONSTRUCTION**  
John D. Dalglish, Jr., P.O. Box 47, Free Union, Va., and Clinton E. Kisner, Rt. 4, Box 163, Charlottesville, Va.  
Filed March 4, 1970, Ser. No. 16,463  
Int. Cl. E04b 1/348, 1/40  
U.S. Cl. 52—79 5 Claims



A prefabricated building particularly adaptable for low cost housing includes a core section which comprises a unitary one piece living unit having an opening on at least one side with a lip around the opening. A first module which comprises a partial living unit is disposed next to the core and includes a like opening having a peripheral lip juxtaposed to the core lip with a compression band being disposed around both lips to secure the module and core together. A complementary module is secured to the first module to form the remainder of its living unit.

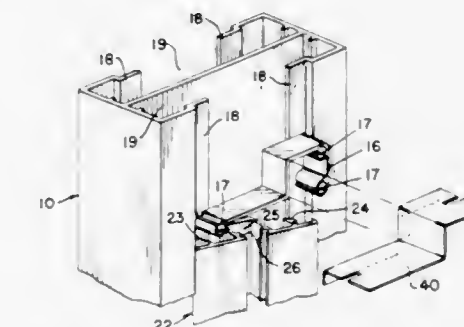
**3,690,078**  
**MODULAR TUBULAR-SKELETON BUILDING ADAPTED TO BE READILY ASSEMBLED AND DISASSEMBLED AND RE-ASSEMBLED**  
Baylor H. Maynard, Jr., Levittown, Pa., assignor to Versadome Corporation, Montgomeryville, Pa.  
Filed June 24, 1969, Ser. No. 835,971  
Int. Cl. E04b 1/32, 1/347  
U.S. Cl. 52—86 13 Claims



A generally semicylindrically shaped pre-fabricated modular building adapted to be readily assembled, disassembled and re-assembled, including a modular skeleton-frame and a thin limp sheathing thereover and detachably secured thereto, with each of the two halves of the frame (on opposite sides of a vertical median plane longitudinally thereof) being composed of successively higher contiguous longitudinal rows of co-planar triangles, with the planes of the successively higher rows inclined to the horizontal at successively lesser angles,

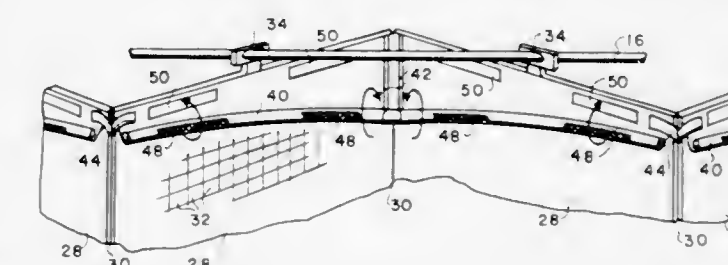
such triangles being formed of horizontal module-defining base members (arranged end-to-end in straight horizontal lines) and pairs of diagonal members, and internal brace members spanning pairs of commonly-based triangles in contiguous rows and having their ends secured to the opposite apices of such pairs of triangles; the base members, diagonals and brace members being individual pieces of metallic tubing having flattened integral coupling-flanges at their ends overlapping and secured to each other in the corners of the triangles, and the coupling-flanges of the base members being at right angles thereto and extending inwardly of the skeleton-frame and arranged to cause the base members to support the sheathing out of contact with the coupling-flanges of the diagonals and of the brace members.

**3,690,079**  
**MOISTURE DEFLECTOR**  
James W. Hemminger, Buchanan, Mass., assignor to American Metal Climax, Inc., New York, N.Y.  
Division of Ser. No. 815,633, April 14, 1969, Pat. No. 3,527,012. This application April 24, 1970, Ser. No. 43,292  
Int. Cl. E04b 2/88  
U.S. Cl. 52—97 2 Claims



There is provided an improved moisture deflector for use in wall construction of the type including a vertical mullion defining a frame pocket and interconnected horizontal members. The horizontal members are secured to the vertical by means of a shear block attached to the vertical mullion. A filler member snaps or secures to the vertical mullion and defines a glazing pocket for glass or other panels. A moisture deflector is positioned at each end of the horizontal structure member and extends over the upper end of the glazing pocket so as to direct moisture between the frame pocket and the filler member.

**3,690,080**  
**SOLAR ARRAY WITH SELF-ERECTING, SELF-RIGIDIZING ROLL-UP SHEETS**  
Paul A. Dillard, Littleton, Colo., assignor to TRW Inc., Redondo Beach, Calif.  
Filed Sept. 21, 1970, Ser. No. 73,758  
Int. Cl. E01q 15/20  
U.S. Cl. 52—108 20 Claims



A deployable panel for a spacecraft deployable solar array and other deployable structures. The panel has a number of panel sections hinged edge-to-edge for folding to a stowage configuration wherein the sections are disposed in confronting face-to-face relation and extension to a flat unfolded configuration.



ration wherein the panel sections are disposed in coplanar relation. Fixed to selected edges of the panels are sheets which are held flat between the panel sections in the folded configuration of the panel and curl into tubular beams for deploying the panel to unfolded configuration and/or rigidizing the panel when the latter is extended to unfolded configuration. In a solar array the sheets provide protection covers for the solar cells when the solar panel is folded. A deployable panel structure embodying the panel.

3,690,081

Patent Not Issued For This Number

3,690,082

DOOR FRAME

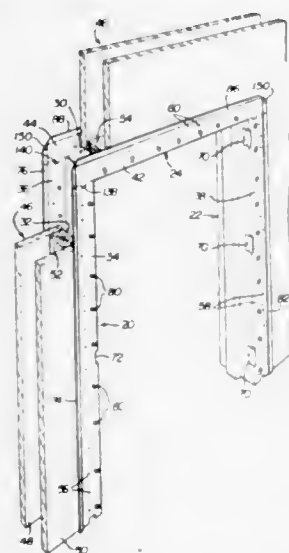
Henry L. Byland, Lighthouse Point, Fla., assignor to Futuristic Building Products, Inc., Northbrook, Ill.

Filed Feb. 24, 1970, Ser. No. 13,331

Int. Cl. E06b 1/52, 1/34, 1/12

U.S. Cl. 52-213

2 Claims



A door frame for framing an opening in a wall and including a pair of spaced stiles and a header bridging the stiles with the stiles and header each having spaced flanges fastened to the wall about the opening with fasteners, and a plurality of mold trim members retained on a continuous lip and separate tabs on each flange to cover the fasteners and provide a neat mold trim framing the door opening. The stiles and header have interlocking portions at their ends to accurately locate these parts relative to each other.

3,690,083

PANEL MOUNTING CONSTRUCTION

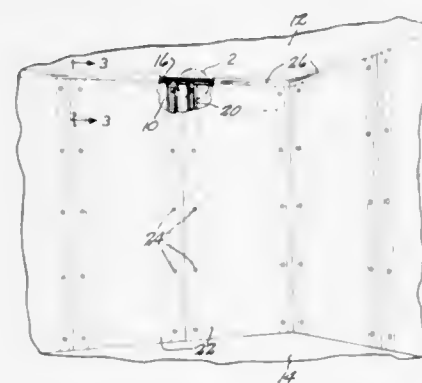
Mark A. Miller, 3575 Gordon Rd., Elkhart, Ind.

Filed Feb. 10, 1971, Ser. No. 114,254

Int. Cl. E04b 2/82

U.S. Cl. 52-481

10 Claims



A panel mounting construction having a horizontal support secured to a building and having a longitudinal track ad-

justably supporting a plurality of members suspending uprights adapted to be secured to the building and provide spaced anchorage for self-locking securing members inserted through openings in the vertical margins of wall-forming panels. Trim members are anchored to at least the upper horizontal edges of the panels.

3,690,084

FILLER BACKING

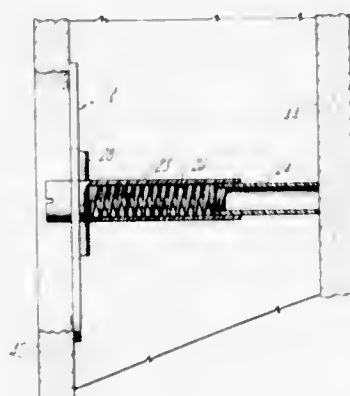
Placide N. Leblanc, 194 Jerry Rd., East Hartford, Conn.

Filed April 12, 1971, Ser. No. 133,029

Int. Cl. E04g 23/02

U.S. Cl. 52-514

10 Claims



A device for supporting patching compounds in its plastic state during the repair of holes in building walls of gypsum board construction. The backing device includes an apertured, foldable plate member which may be inserted through the hole to be patched and then erected so as to cover the hole. The invention is also characterized by a telescoping support member which passes through the aperture in the foldable plate and will retain the plate in position by acting against the plate and the inner surface of the opposing wall.

3,690,085

ROOFING AND SIDING SHEETS AND THE LIKE

William Cookson, Fareham, England, assignor to Cookson Sheet Metal Developments Limited

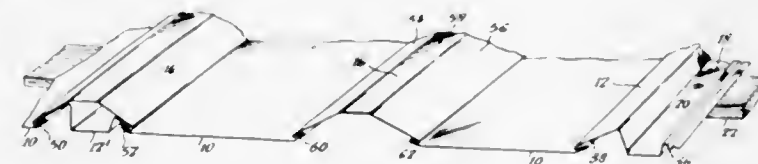
Division of Ser. No. 800,835, Feb. 17, 1969, Pat. No.

3,606,720. This application Nov. 13, 1970, Ser. No. 89,165

Int. Cl. E04d 1/06

U.S. Cl. 52-531

7 Claims



A roofing sheet having wide-based ribs, a lateral male rib having means for interlocking with an overlying lateral female rib of a neighboring sheet, the male rib having a fixing channel for securing the rib to a structural member. There are also described clips to act as concealed fixings for intermediate wide-based ribs, the clips having means to engage an internal pocket or pockets in the rib.

3,690,086

WALL CONSTRUCTION

Robert Templeman Cole; Frederick John Whitbread, both of Winchester, and John Colin Downer, Chandler's Ford, all of England, assignors to Conder International Limited, Winchester, Hampshire, England

Filed June 18, 1970, Ser. No. 47,363

Claims priority, application Great Britain, June 20, 1969, 31265/69

Int. Cl. E04g 21/00

U.S. Cl. 52-741

10 Claims



A method of erecting the whole or a portion of a building comprising erecting a temporarily weather-proof wall structure including wall members and glazing, and attaching water-proof outer cladding to the wall members so as to conceal the wall members. By attaching an outer cladding to wall members, wall members can be pre-fabricated and have larger tolerances than otherwise possible. Furthermore the appearance of walls having outer cladding is not effected by minor damage caused to wall members during transit and installation.

3,690,087

METHOD FOR PACKAGING TELEPHONE CABLE

Arnulf Moe Jacobsen, Lillehammer, Norway, assignor to A/S Norsk Kabelfabrik, Drammen, Norway

Division of Ser. No. 847,838, Aug. 6, 1969, Pat. No. 3,637,071.

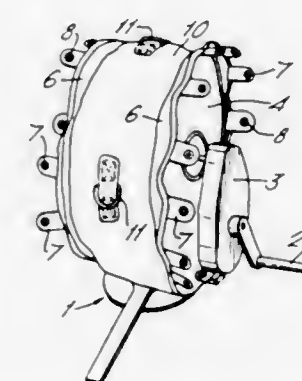
This application Sept. 13, 1971, Ser. No. 179,857

Claims priority, application Norway, Aug. 9, 1968, 3144

Int. Cl. B65b 63/04

U.S. Cl. 53-21 FW

6 Claims



The specification discloses a cable package or dispenser for army telephone cable, comprising a cable coil with a hollow center, two annular side members of strong, flexible material and a belt of strong, flexible material overlying the outer periphery of the coil. Holes are provided at the outer periphery of the side members, which are kept tightly together by a lacing extending through the holes and overlying the belt.

3,690,088

METHOD OF PACKAGING

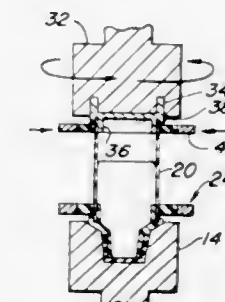
Douglas W. Anderson, Palatine, and Dave Chapman, Chicago, both of Ill., assignors to Dave Chapman and Goldsmith & Yamasaki, Inc., Chicago, Ill.

Filed Sept. 8, 1970, Ser. No. 70,149

Int. Cl. B65b 7/28

U.S. Cl. 53-29

12 Claims



Method an apparatus for sealably securing a plastic closure to a thin-walled flexible tube by spin-welding wherein the tube is held against the closure by resilient clamping means during rotation of the closure. In one form of the invention the closure may be welded to a tubular container after the tube is filled.

3,690,089

Patent Not Issued For This Number

3,690,090

APPARATUS FOR APPLYING, TENSIONING AND SEALING A SYNTHETIC BAND AROUND A PACKAGE  
Pieter Arnoldus van de Bilt, Duinweg 24, Zeist, Netherlands

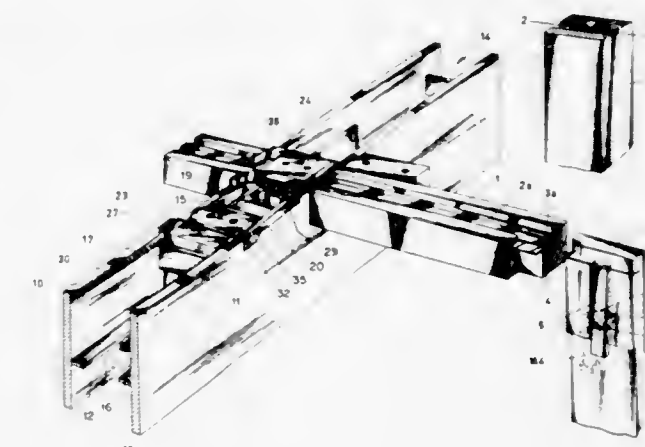
Filed Dec. 7, 1970, Ser. No. 95,686

Claims priority, application Netherlands, Dec. 10, 1969, 6918528

Int. Cl. B65b 13/04

U.S. Cl. 53-198 R

4 Claims



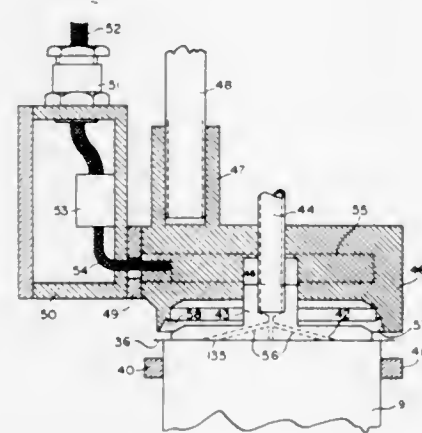
Apparatus for applying, tensioning and sealing a synthetic band in a looped path around a package has a hold-down clamp upstream of the loop to keep the band under tension. Closing mechanism is provided where the band portions forming the loop overlap each other, in the form of a part that is horizontally reciprocable and in one position communicates with the guiding passage for the band about the loop, and in another position cooperates with a vertically reciprocable sealing block which carries a cutting element. After the hold-down clamp is released and the sealing block has returned to its starting position, the horizontally reciprocable part returns to the position in which the guiding passage is connected through; and during this movement, the cutting of the band is completed.



3,690,091

**METHOD FOR THE PRODUCTION OF A PACKAGE, PREFERABLY FOR DRY AND FROZEN MATERIAL**  
 Od Wilkar Christensson, Bromma near Stockholm, Sweden, assignor to Christenssons Maskiner & Patentar Aktiebolag, Bromma near Stockholm, Sweden  
 Filed Aug. 20, 1970, Ser. No. 65,429  
 Int. Cl. B65b 7/28; B31b 1/52, 1/64  
 U.S. Cl. 53—42

6 Claims

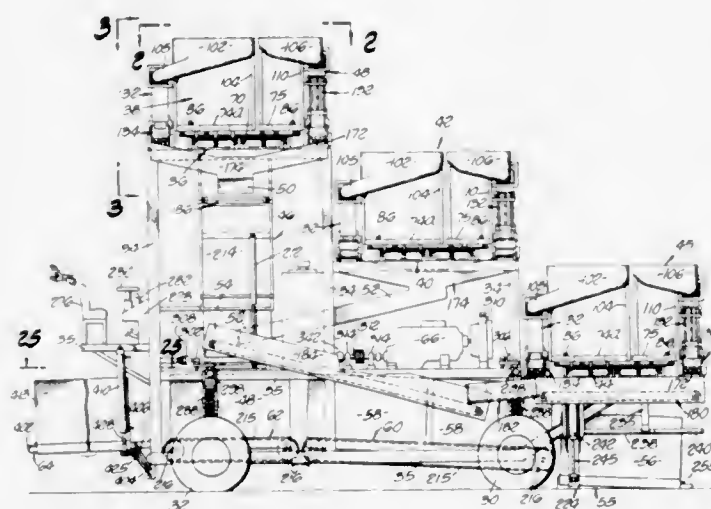


A method for forming a package having a stiff tubular base portion and flexible end closures over one or both ends. The end closure piece is engaged by a suction device mounted in and movable through a welding head, and when so held it is placed onto an open end of the base portion. The welding head then moves relative to the suction device to urge the end closure piece onto the end of the package and to heat seal the same.

3,690,092

**MOBILE PLATFORM STRUCTURE FOR FRUIT PICKERS**  
 John M. Ross, Upland, and Ronald T. Smith, Ontario, both of Calif., assignors to Sunkist Growers, Inc., Los Angeles, Calif.  
 Filed April 27, 1970, Ser. No. 31,924  
 Int. Cl. B65b 67/02; B60p 1/50; A01g 19/04  
 U.S. Cl. 53—391

18 Claims

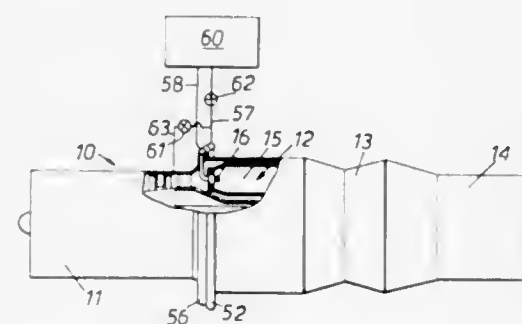


A self-propelled vehicle for travel between two rows of fruit trees has platforms for pickers at different levels that are extendable in opposite directions into the two rows of trees. Picked fruit is conveyed from the various platforms to successive field bins at a bin-filling station on the vehicle and a lift fork on the vehicle picks up empty bins as needed.

3,690,093

**FUEL INJECTOR FOR A GAS TURBINE ENGINE**  
 Dennis Richard Carlisle, Derby, England, assignor to Rolls-Royce Limited, Derby, Derbyshire, England  
 Filed Dec. 4, 1970, Ser. No. 95,124  
 Claims priority, application Great Britain, Dec. 9, 1969, 60,035/69  
 Int. Cl. F02c 3/22  
 U.S. Cl. 60—39.74 R

9 Claims

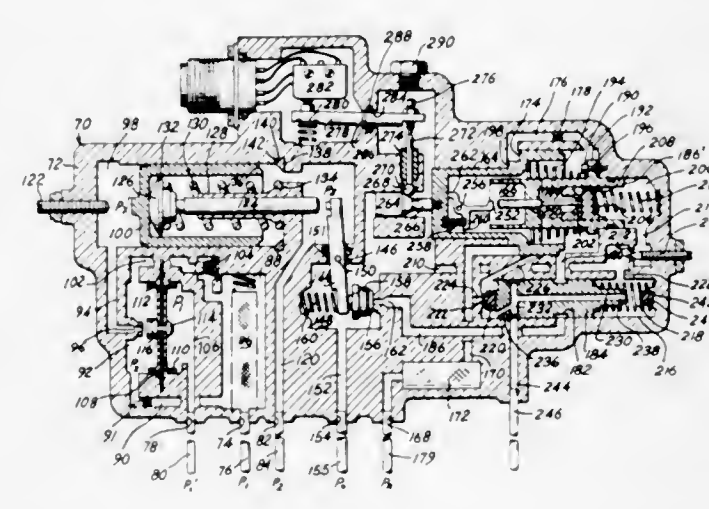


The invention comprises a gas turbine engine having a fuel injector comprising a main body having therein a plurality of ducts terminating in respective nozzles, fuel supply means for each of said nozzles, a hollow annular cowl mounted in a radially spaced relationship about the said main body so as to define therebetween an air inlet, baffle means disposed downstream of said nozzles, and valve means associated with a said duct for selectively connecting the latter to its respective fuel supply means or to a source of high pressure air, so that, in operation of the injector, the fuel, or fuel and air, emitted by said nozzles passes between said cowl and said baffle means, and simultaneously therewith a flow of high pressure air passes from the compressor stage of the gas turbine engine through said air inlet.

3,690,094

**AFTERBURNER FUEL MANIFOLD FLOW SENSOR AND IGNITER CONTROL**  
 Howard L. McCombs, Jr., 717 N. Bendix Dr., South Bend, Ind.  
 Filed July 15, 1971, Ser. No. 162,883  
 Int. Cl. F02c 7/26  
 U.S. Cl. 60—39.82 R

7 Claims

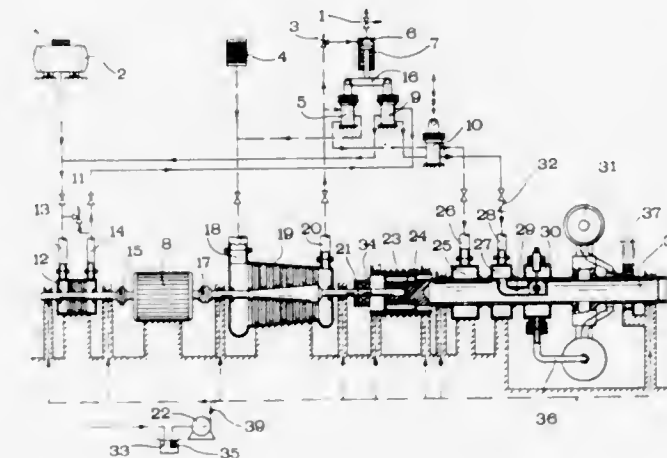


Apparatus for sensing the rate of fuel flow into an afterburner fuel manifold and energizing ignition apparatus for a predetermined time interval to ignite the afterburner fuel flow when the manifold is filled to a predetermined extent as well as providing a simultaneous output signal to release the gates of a variable area exhaust nozzle downstream from the afterburner.

3,690,095

**ROTARY ENGINE**  
 Antonio Ignelzi, and Orlando Monari, both of Lavinio, Roma, Italy  
 Filed April 28, 1971, Ser. No. 138,255  
 Int. Cl. F02c 9/04, 3/14  
 U.S. Cl. 60—39.27

4 Claims

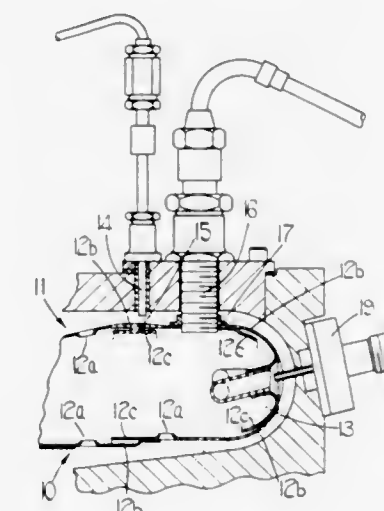


A rotary engine having reaction drive means mounted on a drive shaft in radially spaced positions. The combustible mixture is produced by the drive means and by igniting it a thrust is produced which is directed normal to the axis of the drive shaft and imparts a drive torque and thus rotary motion to the drive shaft.

3,690,096

**IGNITER ARRANGEMENT FOR A GAS TURBINE ENGINE**  
 Harry Munby, Lancashire, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England  
 Filed Dec. 31, 1970, Ser. No. 103,130  
 Int. Cl. F02k 3/10  
 U.S. Cl. 60—39.82 P

3 Claims

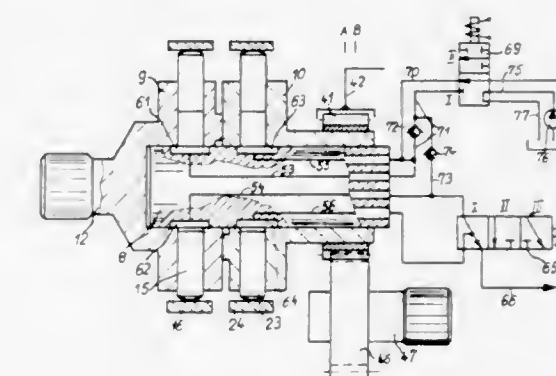


An igniter arrangement for a gas turbine engine combustion chamber has a nozzle adapted to direct a fine jet of fuel into the chamber through a port, the nozzle being spaced from the outside of the chamber wall. Air also enters the chamber through the port and the mixture is directed by a baffle towards an igniter plug in the chamber wall. In the absence of a fuel jet from the nozzle the air flow through the port serves to cool the igniter plug.

3,690,097

**APPARATUS HAVING INTERCONNECTED HYDRAULIC UNITS OPERABLE AS PUMPS, HYDRAULIC MOTORS, AND AS A HYDROSTATIC TRANSMISSION**  
 Dieter Widmaier, Fellbach, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany  
 Filed Oct. 2, 1970, Ser. No. 77,641  
 Claims priority, application Germany, Oct. 3, 1969, P 19 49 973.1  
 Int. Cl. F16d 33/00; F01b 1/06  
 U.S. Cl. 60—53 B

14 Claims

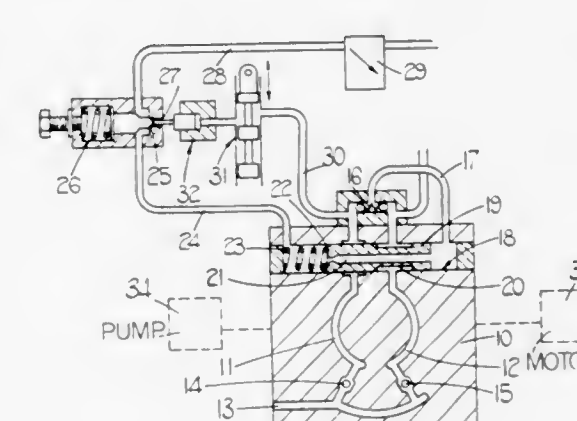


The rotors of two hydraulic radial piston units, one of which is driven by a prime mover, can be connected and disconnected by mechanical coupling means so that one, or both units pump pressure fluid to a hydraulic consumer motor, dependent on the required consumer load. A valve can be operated to hydraulically connect the units so that the driven pump unit delivers pressure fluid to the other hydraulic unit which operates as the motor of a hydrostatic transmission to rotate an output shaft.

3,690,098

**CONTROL ARRANGEMENT FOR HYDRAULIC TRANSMISSION SYSTEM**  
 Leonard William Eyles, Ormskirk, Lancs, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England  
 Filed Dec. 31, 1970, Ser. No. 103,122  
 Int. Cl. F15b 15/18  
 U.S. Cl. 60—53 R

6 Claims



A control arrangement for a hydraulic transmission system has a relief valve which operates to interconnect the pressure and return lines of the system. The relief valve is operable by a pilot valve controlled by the pressure in the return line. Rise in return line pressure due, for example, to an external torque applied to the output shaft of the transmission system, causes the pilot valve to operate the relief valve.



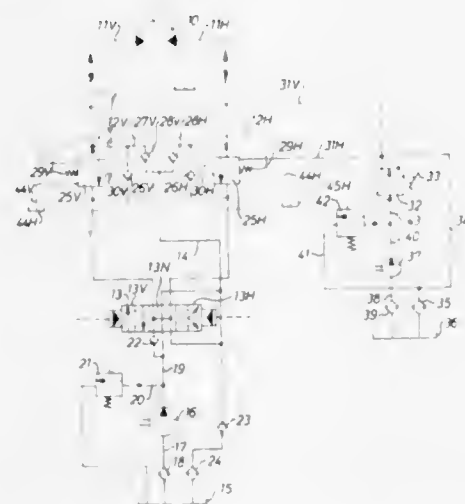
3,690,099

**BRAKE ARRANGEMENT FOR REVERSIBLE HYDRAULIC ENGINES**

Stanislaw Sarnik, Malmo, and Mans Olof Olofsson, Asmund-torr, both of Sweden, assignors to AB Kockum Landsverk, Landskrona, Sweden

Filed May 10, 1971, Ser. No. 141,638  
Int. Cl. F16d 31/06

U.S. Cl. 60—53 R



In a hydraulic system for operating a reversible hydraulic engine there is provided a directional valve by which an idling circuit for said engine may be established through inlet and outlet conduits thereof. Each of said conduits includes a throttle valve and a check valve connected in parallel to each throttle valve. The throttling action of such throttle valves is optionally controllable by the operator in order to provide a controlled braking of the hydraulic engine.

3,690,100

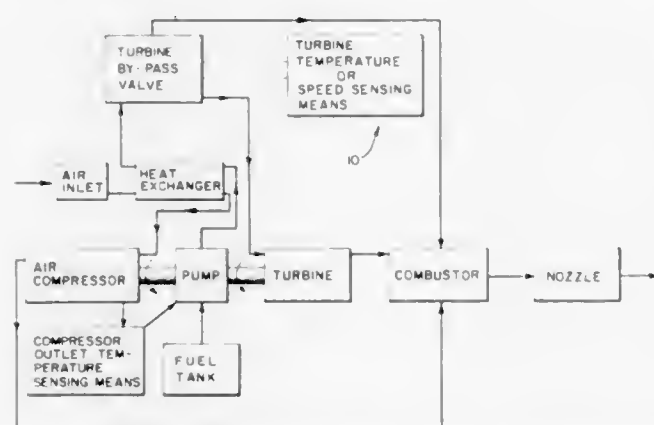
**METHOD OF OPERATING A REACTION PROPULSION ENGINE AND FUELS THEREFOR**

Robert L. Wolf, Chesterfield County, and Christopher J. Cowlin, Richmond, both of Va., assignors to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 325,352, Nov. 20, 1963, abandoned, which is a continuation-in-part of Ser. No. 152,097, Nov. 13, 1961. This application June 1, 1966, Ser. No. 544,597

Int. Cl. C06d 5/00

U.S. Cl. 60—206



1. The method of operating a ram air reaction propulsion system comprising: directing a fuel capable of endothermically dissociating at temperatures between about 200° to 2,000° F. into indirect heat exchange between the inlet ram air of the system and said fuel to bring about the endothermic dissociation of at least a portion of the fuel by the transfer, prior to mechanical compression of the ram air, of a portion of the heat energy from the ram air of the system to the fuel prior to combustion of the fuel in the ram air; utilizing a portion of the ram air heated fuel to mechanically compress the fuel cooled

ram air; burning the fuel exhausting from said further air compressing step in the said further compressed air; and thereafter expanding the combustion products through an outlet nozzle of the system.

3,690,101

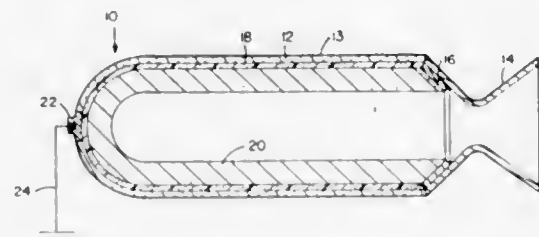
**GROUND FOR FIBERGLASS SOLID ROCKET MOTOR CASE**

Charles L. Lynch, Rockledge, Fla., assignor to The United States of America as represented by the Secretary of the Army

Filed Sept. 17, 1970, Ser. No. 72,915  
Int. Cl. F02k 9/04

U.S. Cl. 60—255

4 Claims



Means for grounding an electrostatic charge from within a fiberglass case of a solid propellant rocket motor are provided. The rocket motor utilizes a solid propellant grain within a fiberglass case which is provided with a metallic dome ring at the forward end of the case. A metallic aft retainer ring for the grain is positioned between the grain and an exhaust nozzle which is affixed to the aft-end of the case. The exhaust nozzle is in electrical contact with the retainer ring and the case. A conductive path to ground is established by a conductive material (e.g., conductive plastic or metallic screen) which is positioned between the propellant grain and the fiberglass case and in electrical contact with an aft-end metallic retainer ring and a forward end metallic-dome ring. The conductive path to ground is established through the fiberglass case itself by employing a conductive material (e.g., powdered carbon or powdered metal) in the epoxy resin used to coat the fiberglass threads in a filament wound fiberglass case. The outside of the motor case is coated with a conductive paint.

3,690,102

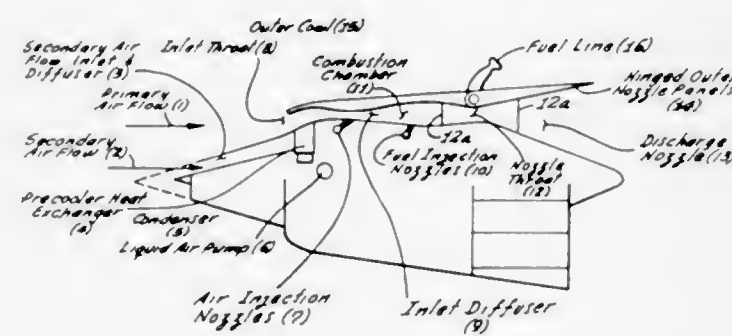
**EJECTOR RAM JET ENGINE**

Anthony A. Du Pont, 8 Georgeff Rd., Rolling Hills, Calif.

Filed Oct. 29, 1970, Ser. No. 85,134  
Int. Cl. F02k 7/10

U.S. Cl. 60—269

3 Claims



A hypersonic ram jet engine is provided which may be of the hydrogen fueled type and in which static and acceleration thrusts are provided as inherent features of the engine to accelerate the aircraft to speeds at which the ram jet engine can operate efficiently. The static and acceleration thrust is provided by the ram jet engine itself; this being achieved by injecting a secondary airflow into the engine at high pressure by the use of the engine's liquid hydrogen fuel to condense secondary air, as will be described.

3,690,103

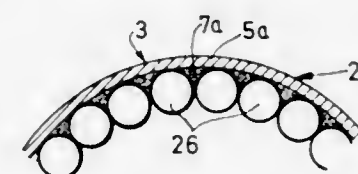
**STRUCTURAL ELEMENT CONSTRUCTION AND METHOD OF MANUFACTURING**

Carl-Helmut Dederra, Ottobrunn, and Karl Butter, Munich, both of Germany, assignors to BOLKOW Gesellschaft mit beschränkter Haftung, Ottobrunn, Germany

Filed Nov. 15, 1967, Ser. No. 683,176  
Int. Cl. F02k 11/02

U.S. Cl. 60—267

5 Claims



A structural part for use as a wall of a device subject to high temperatures, such as rocket combustion chamber, heat shield, nose cone of a missile etc., includes individual tubular form elements having either an opened or a closed cross section which are fitted together to form a wall and which are connected mechanically strong and pressure proof by a layer of material which is electroformed on either one or both sides thereof. Various structural configurations are possible and in some instances the resultant structure is reinforced by a reinforcing member such as a steel strip.

In the method of the invention, structural parts which are adapted to be liquid cooled are formed of small tubular elements which are arranged together and thereafter the cracks or joints between the elements are filled with a filling material which has an electrically conductive surface and subsequently a mechanically strong and pressure proof layer is electroformed over the wall formed by the tubular elements and the filling material. In some instances, the filling materials are fused out to leave the interiors void.

3,690,104

Patent Not Issued For This Number

3,690,105

**AFTER BURNING DEVICE FOR INTERNAL COMBUSTION ENGINES**

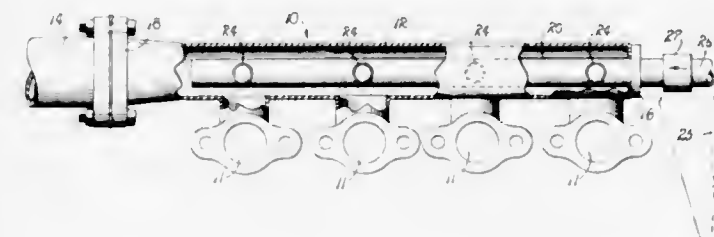
Bonnie G. Faulkner, 15818 Beechwood, Ivanhoe, Calif.

Continuation-in-part of Ser. No. 725,728, May 1, 1968, abandoned. This application April 8, 1971, Ser. No. 132,488

Int. Cl. F02b 75/10

U.S. Cl. 60—283

8 Claims



This disclosure described apparatus which substantially reduces the uncombusted hydrocarbons in the exhaust gases from an internal combustion engine by causing further combustion in the manifold of the engine adjacent the cylinder exhaust valves. The further combustion is derived by injecting additional oxygen into contact with the hot exhaust gases. The oxygen is injected by means of a supply tube inserted coaxially in the manifold collection chamber with venturi ports which draw in air from the outside. In alternate forms, air is drawn from the engine oil pan area through the oil breather cap, and from both the atmosphere and the oil pan area, simultaneously.

3,690,106

**METHOD OF TREATING PERMEABLE FORMATIONS**

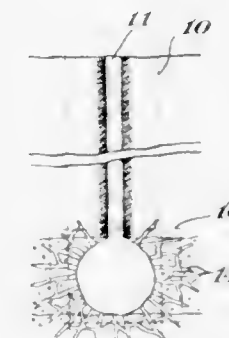
Rhoderio Tregembo, Grants, N. Mex.; Wayne R. Dolezal, Grants, N. Mex.; Lowell D. Boughton, Tulsa, Okla., and John D. Stewart, Littleton, Colo., assignors to the Dow Chemical Company, Midland, Mich., and Kern-McGee Corporation, Oklahoma City, Okla.

Filed Feb. 24, 1970, Ser. No. 13,452

Int. Cl. E02d 3/12

U.S. Cl. 61—36

16 Claims



A method is provided for grouting zones of permeable geologic formations to prevent the flow of fluid through the grouted zone. In this method the formation is penetrated by a borehole. A blasting agent is disposed in the borehole contiguous to the zone to be grouted. The blasting agent is detonated to provide fractures in the zone of the formation which extend radially away from the borehole. The fractures are grouted to prevent the flow of fluid through the grouted zone.

3,690,107

**METHOD OF IMPEDING THE GROWTH OF PLANTS ON NON-AGRICULTURAL SOILS**

Thale Dolfing, Winschoten, and Jan Lolkema, Hoozezand, both of Netherlands, assignors to Lolkema Scholten Honig Research N.V., Foxhol, Netherlands

Filed Sept. 9, 1970, Ser. No. 70,918

Claims priority, application Great Britain, Sept. 16, 1969, 45,480/69

Int. Cl. E02d 3/14

U.S. Cl. 61—36 R

19 Claims

Method of impeding the growth of plants on non-agricultural soils substantially completely by incorporating into said soils and homogeneously distributing therethrough, to a depth of at least one inch, a water-soluble or water-dispersible, preferably water-insoluble, natural or synthetic high polymeric substance in an amount of between 0.03 and 0.75 weight percent of the treated soil, wetting down the soil thoroughly with water and thereafter compacting the thus treated soil while still being in a wet state to a homogeneous, coherent and dense mass.

3,690,108

**STABLE OFFSHORE STRUCTURES**

William A. Tam, Westmont, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed June 15, 1970, Ser. No. 46,403

Int. Cl. E02b 3/22; B63b 43/18

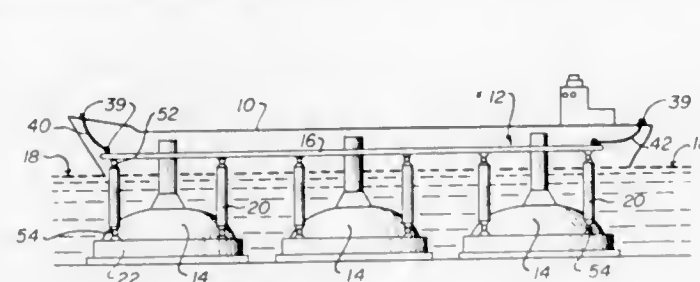
U.S. Cl. 61—46

10 Claims

Stable offshore structures especially suitable for use ad-



adjacent undersea storage facilities are provided having a horizontally extending buoyant member pivotally interconnecting them by universal joint means with stable sub-surface anchoring means by vertically extending support means.

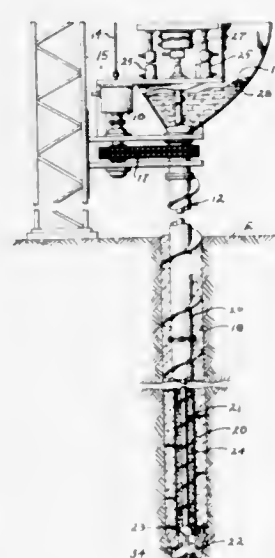


ected by universal joint means with stable sub-surface anchoring means by vertically extending support means.

3,690,109

# METHOD AND MEANS FOR PRODUCING PILE OR LIKE STRUCTURAL COLUMNS IN SITU

Lee A. Turzillo, 2078 Glengary Rd., Akron, Ohio  
Filed March 16, 1970, Ser. No. 19,906  
Int. Cl. E02d 5/34, 5/56; E02b 11/00  
U.S. Cl. 61—53.64



Pile or like structural column produced in earth situs by drilling with continuous flight auger to define cavity of requisite depth, withdrawing auger by successive incremental extents and maintaining auger affixed against axial movement at top of each said extent while feeding and compacting column-forming material, through hollow shaft of auger, into each respective cavity extent, until series of successively formed extents produce integrated column. Closure on inner end of hollow auger shaft operable to stop flow of material at any depth of cavity. For forming concrete pile, closure means operable to form enlarged base or bulb of self-hardening material at bottom of cavity to increase load-bearing capacity of the formed pile.

3,690,110

# REPAIRING OR REHABILITATING STEEL SUPPORTED H-PILES

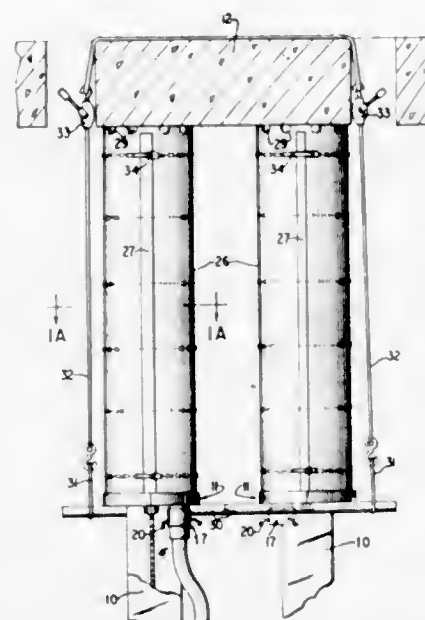
George C. Wiswell, Jr., 1014 Pequist Rd., Southport, Conn.  
Filed April 9, 1970, Ser. No. 26,962  
Int. Cl. E02d 5/40, 5/60

U.S. Cl. 61—54

7 Claims

In order to apply reinforced concrete to a portion of a steel pile, a reinforcing cage is attached to the pile surrounding that

portion and is enclosed by a two-piece cylindrical form pulled tightly upwardly against the undersurface of the pile cap and





The low pressure water vapor at pressures below triple point is either desublimed to form solid ice or absorbed into an aqueous solution at a temperature lower than 0° C. The separated ice crystals are melted under a high pressure to lower its melting point sufficiently so that the melting temperature becomes lower than the temperature at which the low pressure water vapor is either desublimed or absorbed in an aqueous solution. The low pressure water vapor and the separated ice crystals are in indirect heat exchange relation during these operations so that the heat released in the desublimation or absorption operation is utilized in the melting of ice crystals. The low pressure water vapor may also be brought into direct contact with a heat exchange medium which is at least partly in solid state to thereby simultaneously convert the water vapor into solid ice and melt the heat exchange medium.

3,690,117

Patent Not Issued For This Number

3,690,118

# OPEN REFRIGERATED DISPLAY CASE WITH ROLL-IN DISPLAY RACKS

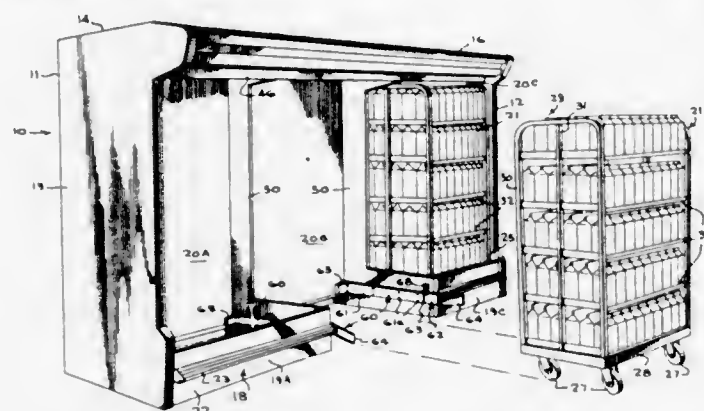
Julius H. Rainwater, Atlanta, Ga., assignor to Kysor Industrial Corporation, Cadillac, Mich.

Filed Aug. 6, 1970, Ser. No. 61,676

Int. Cl. A47F 3/04

U.S. Cl. 62—250

18 Claims



An open front refrigerated display case for storage and display of products on mobile rack carts, wherein a top wall, vertical end and rear walls, and interior divider walls paralleling the end walls define plural forwardly opening bays or stalls into which the rack carts may be rolled along the store floor. Removable lower front wall sections spaced forwardly of the carts in the stalls define air inlet ducts for leading return air beneath the carts into a rear return duct and to a refrigeration compartment above the stalls.

3,690,119

Patent Not Issued For This Number

3,690,120

# STATIONARY MOLD ICE MAKER WITH THE BOTTOM EJECTOR

Owen H. Scheldorf, Louisville, and James F. Gordon, Anchorage, both of Ky., assignors to General Electric Company

Filed June 1, 1971, Ser. No. 148,787

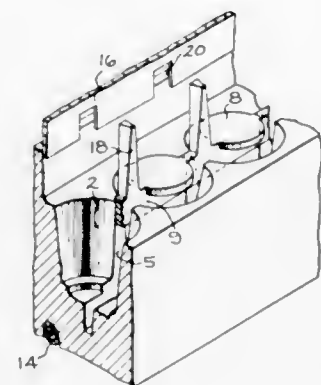
Int. Cl. F25c 1/04

U.S. Cl. 62—353

6 Claims

An ice maker comprising a mold containing a plurality of longitudinally spaced cavities connected by vertical passages

and a vertically movable ejection means including a member extending through the passages. The ejection means includes



upwardly extending dividers substantially filling the passages when the ejection means is in its normal or lower position to limit the formation of ice in the passages.

3,690,121

# ABSORPTION REFRIGERATION SYSTEM

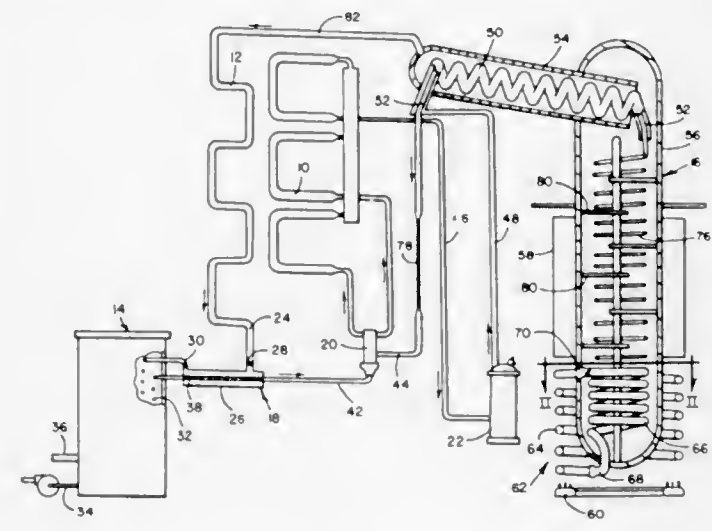
Jashwant D. Patel, 1025 James St. Apt. 32, Syracuse, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,577

Int. Cl. F22b 1/02; F25b 15/04

U.S. Cl. 62—476

4 Claims



An absorption refrigeration system employing a generator having a heat pipe associated therewith to transfer heat from a suitable burner to the interior of the generator to increase the capacity of the generator without a proportionate increase in the size thereof and to minimize the inside surface temperature of the generator wall.

3,690,122

# FLEXIBLE TOOL JOINT

James W. Kisting, III, Houston, and Benjamin P. Nutter, Bellville, both of Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 9, 1970, Ser. No. 96,499

Int. Cl. F16d 3/06; F21b 1/06

U.S. Cl. 64—23

11 Claims

A flexible tool joint for use in a drill string having a housing and a mandrel connected therein and providing a discontinuity in strength of the drill string, said tool joint comprising concentrically disposed tubular members having adjacent ends adapted for connection to the drill string, the inner one of said members having its other end adapted for connection to said mandrel, said members being laterally spaced throughout a

substantial portion of their lengths so that said inner member can bend independently of said outer member, and coengage-

reducing the friction load between the needles and the sinkers of such machines and the yarn knitted thereby. Such reduction of frictional loads is achieved by applying high frequency vibrations or oscillations, suitably in the high sonic to the ul-



able shoulder surfaces on said members for preventing separation thereof in the event of failure of said inner member.

3,690,123

# DEVICE FOR THE AUTOMATIC MEASUREMENT OF THE LENGTH OF YARN CONSUMED IN KNITTING MACHINES

Jean-Paul Delair, Saint Loubes, and Jean-pierre Raisin, Troyes, Aube, both of France, assignors to Institut Textile de France, Boulogne, France

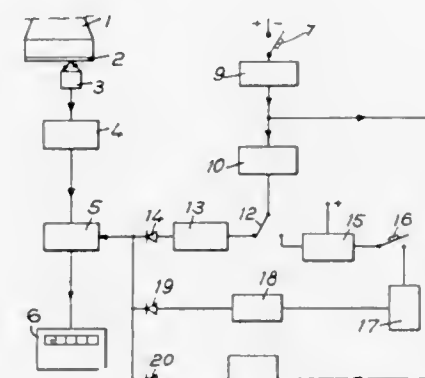
Filed March 9, 1970, Ser. No. 17,491

Claims priority; application France, March 17, 1969, 6907568

Int. Cl. D04b 9/00, 15/38, 11/00

U.S. Cl. 66—1 R

9 Claims



The invention relates to a method of and device for displaying the length of yarn used in making a given number of stitches on a knitting machine. With regard to the dimensions of the device microswitches are set to be activated at an interval of time during which the machine knits a selected number of stitches different from said given number. Electrical pulses are generated as the yarn is fed and are counted during the interval between activation of the microswitches. The length of yarn used in making the given number of stitches is displayed on the counter.

3,690,124

# INDEPENDENT NEEDLE KNITTING MACHINES

Jagmohan Singh, Hamburg, Pa., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

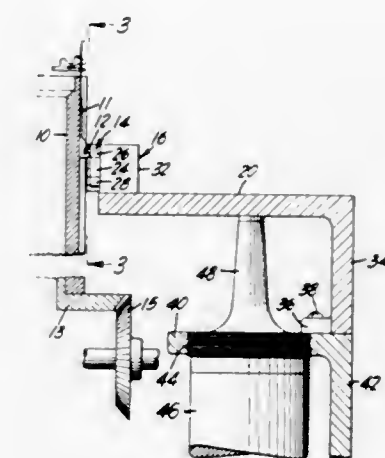
Filed Nov. 23, 1970, Ser. No. 91,772

Int. Cl. D04b 15/32

U.S. Cl. 66—8

5 Claims

The invention is directed to means for reducing the friction load between the butts of the needles and the needle operating cams of independent needle knitting machines and also for



3,690,125

# DEVICE FOR A MULTI-FEED CIRCULAR KNITTING MACHINE

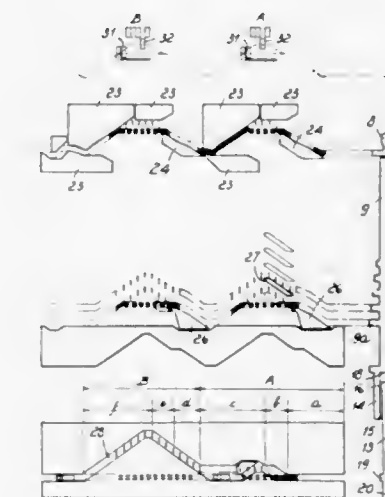
Riccardo Tenconi, Via della Tallera 19, Varese, Italy

Filed June 11, 1970, Ser. No. 45,334

Int. Cl. D04b 9/18

U.S. Cl. 66—42

2 Claims



A device for a multi-feed circular knitting machine, which permits the carrying out of fancy operations repeated at each feed with the aid of a single assembly of movable cams in connection with only one of said feeds. The device comprises jacks raised and lowered by common selection cams and lower jacks raised by cooperation with said jacks. The lower jacks have at their lower end a foot cooperating with a control ledge arranged on the needle cylinder in order to cause the lower jacks to project with a butt opposite to the foot and to engage with cam means provided for carrying out the fancy operation on the fabric.



3,690,126

## METHOD OF OPERATING A WARP KNITTING MACHINE

Walter Reiners, and Albert tho Pesch, both of 4050 Monchengladbach, Germany, assignors to W. Schlafhorst & Co., Monchengladbach, Germany

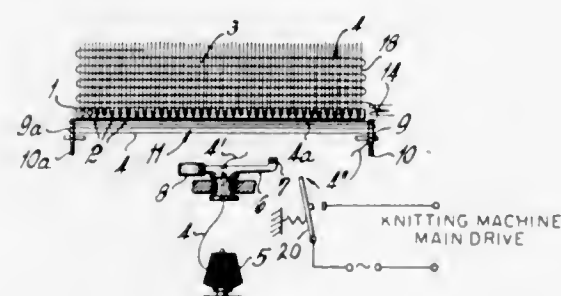
Filed May 14, 1971, Ser. No. 143,488

Claims priority, application Germany, May 16, 1970, P 20 24 087.3

Int. Cl. D04b 23/06

U.S. Cl. 66—84

3 Claims



Method of operating a warp knitting machine includes, after interruption of a weft running to the weft storage and after shut-down of the machine, severing the drive connection between the weft storage and the knitting instruments, removing the length of weft extending from the break thereof to the weft storage, thereafter placing the weft storage in filling position, automatically refilling the weft reserve remaining in the weft storage, and restoring the drive connection between the weft storage and the knitting instruments so as to resume the knitting process.

3,690,127

## DEFECTIVE LATCH NEEDLE DETECTOR AND CONTROL NETWORK THEREFOR

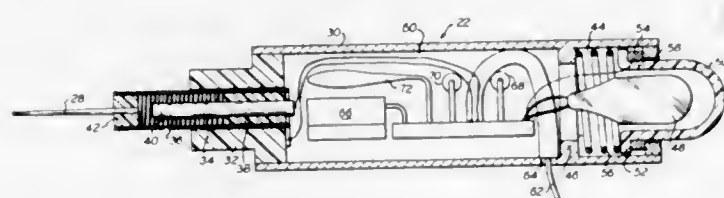
Edward M. Tellerman, East Rockaway, and Jose Castillo Deniega, Elmhurst, both of N.Y., assignors to Stop-Motion Devices Corporation, Plainview, N.Y.

Filed March 15, 1971, Ser. No. 124,321

Int. Cl. D04b 35/18

U.S. Cl. 66—157

23 Claims



Means for detecting defective latch needle condition in a knitting machine wherein an electrically non-conductive feeler is mounted in the path of movement of the needles so as to be deflected by any latches in defective condition. The feeler is insulatingly carried by a coil having a core mounted therewithin and insulated therefrom. The core and coil define a normally open electrical switch which is closed when the feeler is deflected by a defective latch needle. A control network is provided and is responsive to the closing of the switch for interrupting the energization of the drive means for the knitting machine. The control network provides sufficient power for lighting as many detector lamps as are activated at one time, while still providing the requisite power for interrupting the energization of the knitting machine drive means.

3,690,128

## APPARATUS FOR CONTINUOUSLY TREATING TEXTILE MATERIAL

Erwin Biesinger, Rottenburg, Neckarhalde 90, Germany

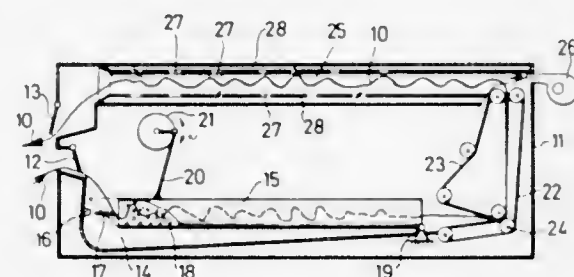
Filed Oct. 15, 1970, Ser. No. 80,970

Claims priority, application Germany, Oct. 27, 1969, P 19 53 960.7

Int. Cl. D06f 29/02; F26b 13/02; B05c 3/04

U.S. Cl. 68—20

13 Claims



A flat or tubular textile web is transported in a loose random condition through a tunnel by stream of a chemical treating fluid, such as a cleaning fluid, by which the web is treated and cleaned before being transported by an elastic conveyor to a second tunnel in which the web is transported in the loose random condition by streams of drying air. Drive means dip the tunnel into a bath of the treating liquid in a container.

3,690,129

Patent Not Issued For This Number

3,690,130

## DEVICE TO PREVENT PILFERAGE OF MERCHANDISE

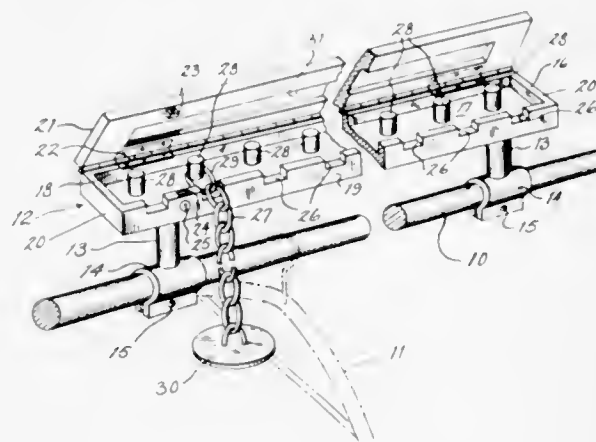
Betty J. Eutzler, 12860 W. Tulane, Brookfield, Wis.

Filed Dec. 2, 1970, Ser. No. 94,221

Int. Cl. E05b 69/00, 73/00

U.S. Cl. 70—18

8 Claims



A retainer box with a lockable cover has a row of pegs therein and has a slotted front wall whereby, when the cover is open, the link at one end of a chain may be passed through a slot and slipped over a peg to be locked to the box when the cover is closed. When used with a garment rack the other end of each chain passes through a buttonhole and has a stop element such as a button thereon which is sufficiently large to prevent withdrawal.

3,690,131

## AUTOMOBILE LOCKING DEVICE

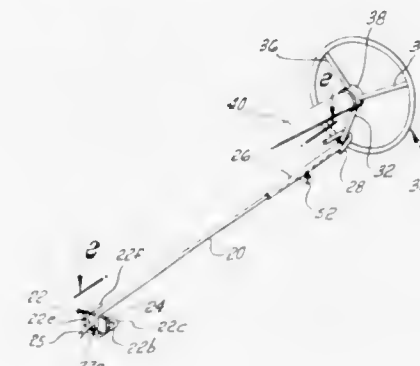
Gordon E. Davis, P.O. Box 1128, 9823 San Antonio St., Apt. E, South Gate, Calif.

Filed Aug. 17, 1970, Ser. No. 64,172

Int. Cl. B60r 25/02; E05b 65/12

U.S. Cl. 70—203

7 Claims



A steering wheel locking device for an automobile which includes an adjustable telescoping center rod section having a V-shaped end adapted to hook tightly around a steering wheel rim and connected spoke. The other end of the device has a U-shape adapted to securely engage a brake pedal so as to rigidly lock the steering wheel in place.

3,690,132

## LOCK PLUG SHELL

George L. Engstrom, 3558 Tyler St., N.E., Minneapolis, Minn.

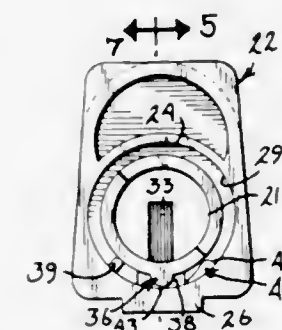
Continuation of Ser. No. 877, Jan. 6, 1970, abandoned. This

application Jan. 8, 1971, Ser. No. 105,118

Int. Cl. E05b 9/02

U.S. Cl. 70—373

8 Claims



A lock plug shell providing an unlatching button for push button equipped door latches. The shell is of hard flexible resilient material and includes a cam engagable with and displaced by the retaining lug of a cylinder lock plug during movement of the lock plug toward its normal operating position in the shell, the shell having sufficient resilience to dispose a portion of the cam in a position to prevent accidental removal of the lock plug from the shell when the lock plug is moved to its operating position in the shell.

3,690,133

## METHOD OF CONTROLLING A MACHINE TOOL OPERATED AT DIFFERENT WORKING SPEEDS AND CONTROL SYSTEM FOR PERFORMING THE SAME

Arnold Hilgers, Eschweiler, Germany, assignor to Schumacher Metallwerke GmbH, Aachen, Germany

Filed June 17, 1970, Ser. No. 46,995

Claims priority, application Germany, June 18, 1969, P 19 30 700.7

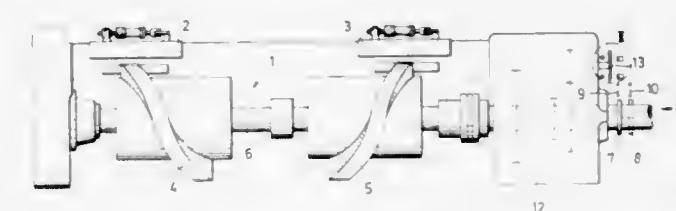
Int. Cl. B21c 1/30

U.S. Cl. 72—19

23 Claims

Method of controlling a machine tool operating at different working speeds includes triggering, by a fixed time interval, that is the same at all working speeds and is a characteristic of

the machine too, the start of an operating cycle of the machine tool each time a moving element of the machine tool reaches a given starting position that is the same at all working speeds; the triggering being preceded and controlled by an activating switching step each time the element reaches a given activating position spaced at a constant distance from the starting position thereof and selected so that the total time required by the element to traverse the constant distance from the activat-



ing to the starting position is not shorter, even at maximum working speed of the machine tool, than the fixed time interval; and interposing between the activating and triggering steps, when the total time exceeds the fixed time interval at a particular working speed, an additional time interval depending upon the particular working speed and equal to the difference between the total time and the fixed time interval; and control system for performing the method.

3,690,134

## APPARATUS FOR CONFINING COBBLES

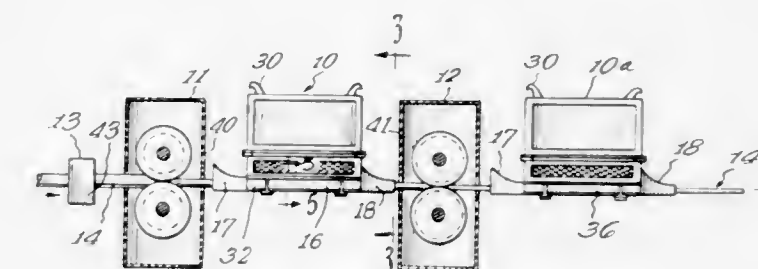
Edmund J. Valonis, Homewood, Ill., assignor to Inland Steel Company, Chicago, Ill.

Filed May 8, 1970, Ser. No. 35,634

Int. Cl. B21c 51/00; B21b 21/00

U.S. Cl. 72—37

8 Claims



Method and apparatus for the protection of rolling mill personnel and machinery and which localizes and confines wrecked metallic material (cobbles) and facilitates removal thereof. A rigid structure encloses at least part of the line between successive rolling mill stands and confines cobbles therewithin. Metallic material undergoing rolling is sheared upstream of an existing cobble permitting localization of both the cobble and its effects.

3,690,135

## DIE PAD FOR EXTRUDING HOT METALS

Lawrence Vincent Gaglin, and Glenn Ralph Hull, both of Toledo, Ohio, assignors to Johns-Manville Corporation, New York, N.Y.

Filed April 16, 1970, Ser. No. 29,089

Int. Cl. B21c 23/32

U.S. Cl. 72—42

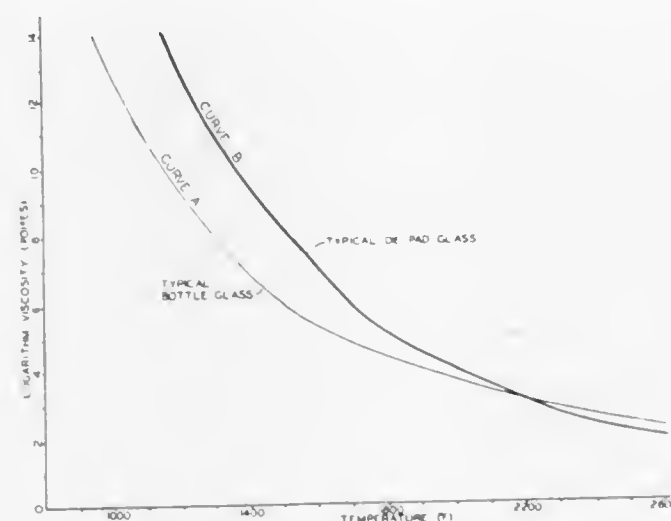
10 Claims

A die pad for lubricating an extruding die as a metal billet is extruded therethrough comprising felted glass fibers. Particularly advantageous results are achieved with glasses which soften and melt in a narrow range of temperatures near the extrusion temperatures. Omission of organic binders and avoidance



of undesirable side effects is possible with felted fibers. Densities in the pads of from 3 to 20 pounds per cubic foot have

method is repeated to one or both sides of the initial deformation to make further profiles, at least one further initial rib



been employed depending upon the amount of lubricating glass required and the pad thickness acceptable.

3,690,136

#### WELL TUBING GUIDE AND STRAIGHTENER APPARATUS

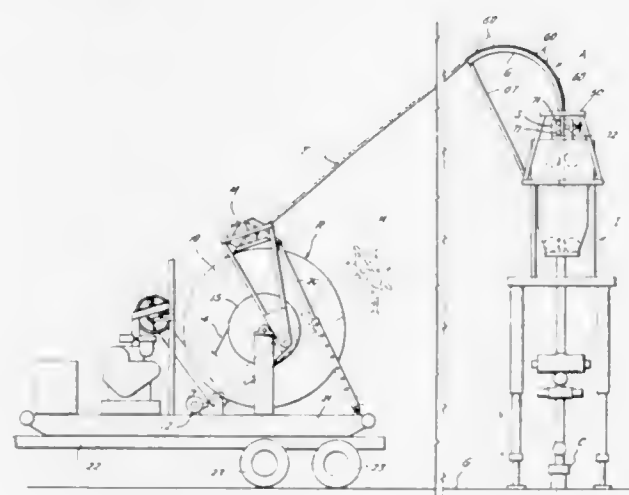
Damon T. Slator, and Archie R. Wilson, both of Houston, Tex., assignors to Bowen Tools, Inc.

Filed Oct. 27, 1970, Ser. No. 84,438

Int. Cl. B21d 7/08

U.S. Cl. 72-160

6 Claims



A well tubing guide and straightener apparatus for positioning between a reel and a tubing injector for feeding tubing from the reel to the injector, and vice versa, with a change in direction thereof and with a limited amount of permanent deformation of the tubing.

3,690,137

#### ROLL FORMING OF SHEET METAL

William Cookson, Fareham, England, assignor to Cookson Sheet Metal Developments Limited, Southampton, England

Filed June 17, 1970, Ser. No. 47,026

Claims priority, application Great Britain, June 20, 1969, 31,280/69

Int. Cl. B21d 5/16

U.S. Cl. 72-180

8 Claims

Method and apparatus for forming sheet metal to a desired profile in draw forming rolls in which in a first roll stand an easily drawn curved initial rib is produced and in a second roll stand the rib is reshaped, for example into a pair of ribs. The

being formed in the second roll stand to one side of the first initial rib.

3,690,138

#### PROCESS AND APPARATUS FOR STRETCH FORMING METAL

Hans Weber, Duisburg, Germany, assignor to Demag Aktiengesellschaft, Duisburg, Germany

Continuation of Ser. No. 734,591, June 5, 1968, abandoned.

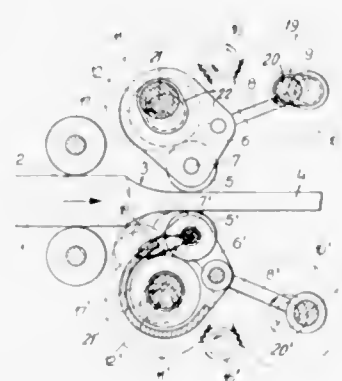
This application Nov. 19, 1970, Ser. No. 91,209

Claims priority, application Germany, July 23, 1967, D 53416

Int. Cl. B21b 1/42

U.S. Cl. 72-189

7 Claims



A device for stretch forming a metal particularly a steel piece which is still in the hot or cold working range and whose texture shows a casting or rolling structure comprises a support which carries a working roller and which is located on a respective side of the workpiece to be moved backwardly and forwardly therealong in a deformation path. The support is articulated by a thrust rod which is driven from a drive disk or shaft to which it is eccentrically connected in order to produce a reciprocating motion of the support. The support carries a shaft which eccentrically carries an eccentric disk which is rotated through an intermediate roller which is in contact with the drive disk. The eccentric disk moves around with its shaft to revolve the support with the working roller in respect to the workpiece.

The process of the invention is characterized by moving the working roller over a length of the deformation working path on a reducing surface of the workpiece and with varying velocity of the workpiece and with an adjustable movement of the working roller which is produced by the driving connection of its support. The movement is a swinging movement back and forth and a revolving movement is advantageously performed by single working rollers upon respective sides of the workpiece.

3,690,139

#### EDGE CONDITIONING MECHANISM

Francis P. Brennan, 1057 Rolling Dr., Lisle, Ill.

Continuation-in-part of Ser. No. 754,231, Aug. 21, 1968, Pat.

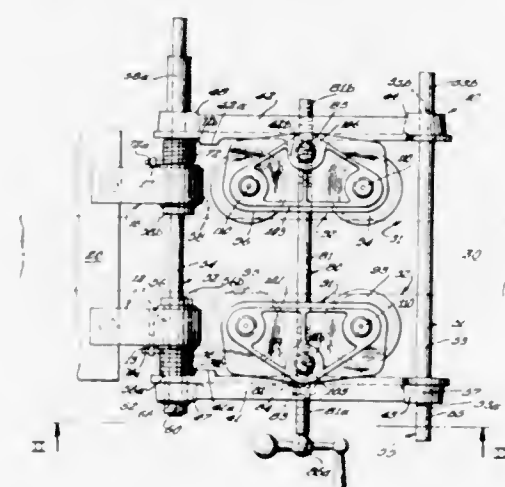
No. 3,587,275. This application Nov. 13, 1969, Ser. No.

876,336

Int. Cl. B21b 31/00, 39/00

U.S. Cl. 72-199

13 Claims



Edges of strip material are conditioned by an apparatus including two sets of opposed roller means pivotally mounted on respective side frame members adjustable toward and away from each other on transversely extending bars. Adjustment is effected by rotation of a bar threadedly engaging the side plates. One end of the apparatus is attached to a support usually a standard coil straightener common to most operations processing coil stock. The apparatus is counterbalanced in a free-floating position between a coil of material and the machine straightening the coiled material, whereby the stock material passing through the feed guide will automatically regulate the attitude of the apparatus with respect to its feed angle and lock it in position.

3,690,140

#### COMBINATION TUBE FORM BEND AND INFLATION APPLICATION

Richard A. Shive, 422 Serring, Madison, Ill.

Continuation of Ser. No. 823,219, Feb. 25, 1969, abandoned,

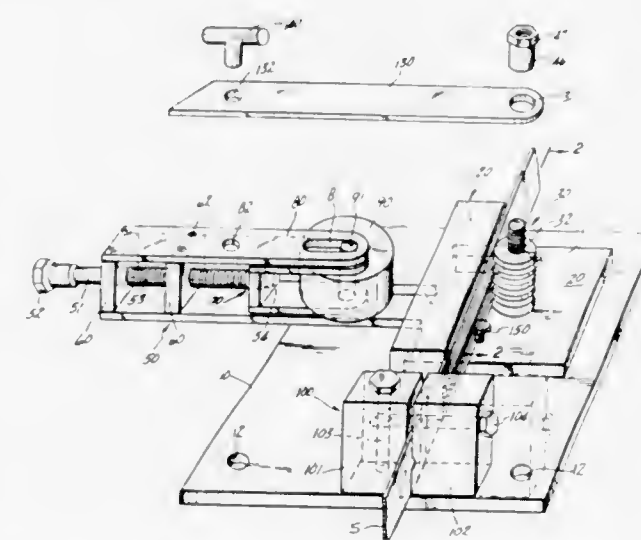
which is a division of Ser. No. 709,636, March 1, 1968, Pat.

No. 3,545,394. This application Feb. 1, 1971, Ser. No. 111,691

Int. Cl. B21d 1/00, 53/02

U.S. Cl. 72-293

11 Claims



An apparatus for embossing and bending metal strip having a pattern of stop-weld material sandwiched within it, with at least a portion of the stop-weld material corresponding to at least one inflatable fluid passageway. The apparatus comprises a spindle whose operative surface is contoured to provide the

desired bend radius. The apparatus further includes means for embossing the strip and means for bending the strip about the spindle. Alternative embodiments include the use of a rubber spindle and combined means for bending and embossing the strip.

3,690,141

#### TAPER-EXPANDING MANDREL

Thomas Duncan Brownbill, Uxbridge, England, assignor to John Dale Limited, London, England

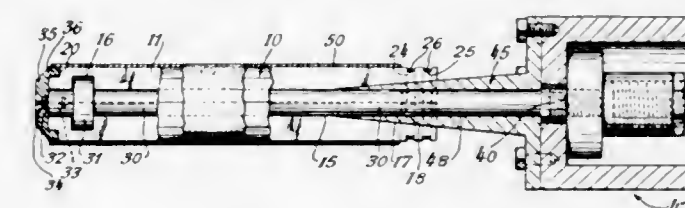
Filed Dec. 8, 1969, Ser. No. 883,129

Claims priority, application Great Britain, July 18, 1969, 36,371/69

Int. Cl. B21d 41/02

U.S. Cl. 72-370

6 Claims



The present disclosure relates to taper-expanding mandrels and in particular taper-expanding mandrels suitable for flaring or tapering collapsible tubes to permit stacking of one tube within another. The mandrel includes a plurality of discrete longitudinal segments defining a generally cylindrical mandrel surface with hinge means at one end. Expansion means urges the segments outwardly about the hinge means to define a taper to shape a tubular workpiece placed over the mandrel.

3,690,142

#### SWAGING MACHINE FOR A CONTINUOUS SWAGING OF ROD-SHAPED WORKPIECES

Gottfried Blaimschein, Steyr, Austria, assignor to GFM Gesellschaft für Fertigungstechnik und Maschinenbau Aktiengesellschaft, Steyr, Austria

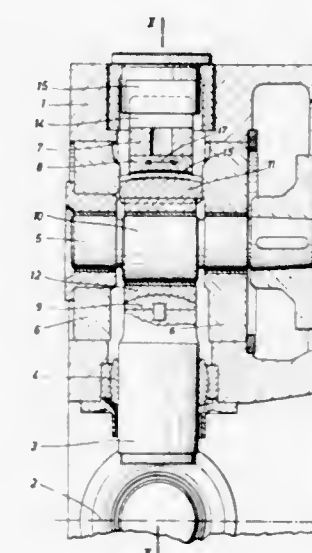
Filed Nov. 12, 1970, Ser. No. 88,946

Claims priority, application Austria, Dec. 19, 1969, 11818/69

Int. Cl. B21j 9/06

U.S. Cl. 72-402

2 Claims



The hammers of a swaging machine, which extend radially to the axis of the feeding path of a workpiece, are driven by eccentric shafts parallel to this path. Each hammer is slidably guided in the longitudinal direction thereof, and elliptic chucks transform the rotation of the shafts into a radial swaging motion of the hammers to and from the feeding path and into an oscillating rocking motion in a plane defined by the axes of the feeding path and the associated shaft. Each chuck



comprises a spider rigid with the associated hammer, a cylindrical link surrounding the eccentric of the associated shaft, a first guiding element carried by the spider, a second guiding element carried by the link, meshing helical teeth on the guiding elements, and the second guiding elements being held against displacement parallel to the shafts.

3,690,143

# SELF CALIBRATING TIDAL VOLUME IMPEDANCE PNEUMOGRAPH

Christopher C. Day, Newtonville, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Continuation-in-part of Ser. No. 28,442, April 14, 1970, Pat. No. 3,678,296, and a continuation-in-part of Ser. No. 25,353, April 3, 1970, Pat. No. 3,677,261. This application Nov. 27, 1970, Ser. No. 93,068

Int. Cl. G01127/00

U.S. Cl. 73-1 R

3 Claims



A method of automatically calibrating an electronic respiration monitoring system including a pneumograph responsive to changes in thoracic impedance of a breathing patient for providing an analog signal proportional to breath volume and a volume-calibrated inflatable bag. The method comprises the steps of: (a) operatively associating the pneumograph with the thorax of the patient; (b) positioning said bag in association with the patient with the bag being arranged to capture gases exhaled by the patient; (c) determining maximum filling of said bag; and (d) automatically calibrating said system upon the filling of the bag.

3,690,144

# PIEZOELECTRIC MICROPHONE

Jean-Pierre Bonny, La Chaux-de-Fonds, Switzerland, assignor to Portescop, Le. Porte-Echappement Universel S.A., La Chaux-de-Fonds, Switzerland

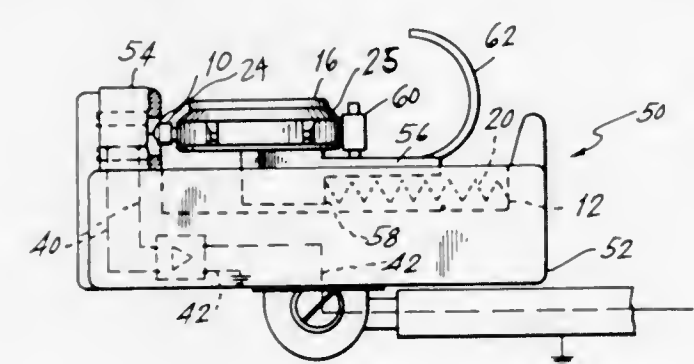
Filed Aug. 14, 1970, Ser. No. 63,710

Claims priority, application Switzerland, Aug. 27, 1969, 13101/69

Int. Cl. G04d 7/00

U.S. Cl. 73-6

12 Claims



In a device for inspecting watch movements, a piezoelectric contact microphone is supported for engagement with the stem of a watch movement which is urged into axial engage-

ment with the piezoelectric element of the microphone to transmit the vibrations of the watch movement to the element whereby the compressive stresses applied thereto are varied and an output voltage is produced which is adapted to be used in examining the accuracy of the watch movement.

3,690,145

# VEHICLE SUSPENSION TESTING APPARATUS

Gerard Brisard, Fontenay-sous-Bois, France, assignor to Etablissement Muller & Cie, Paris, France

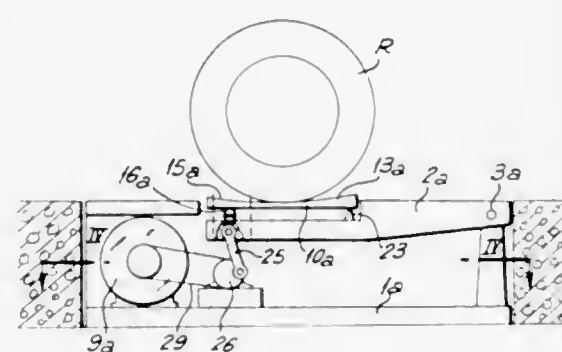
Filed Oct. 7, 1970, Ser. No. 78,670

Claims priority, application France, Oct. 15, 1969, 6935345

Int. Cl. G01m 17/04

U.S. Cl. 73-11

7 Claims



This apparatus for testing the suspension system of vehicles comprises a platform to which vertical vibrations are imparted possibly through a crank-and-rod mechanism driven from a motor having a flywheel and a clutch mounted on its output shaft, said platform supporting the wheel to be tested through a shaped plate pivoted at one end to said platform and bearing at the opposite end on one or a plurality of pressure detecting elements such as piezo-electric elements responsive to the stress variations caused by the wheel oscillations and to transmit same to a dial instrument and/or a recorder.

3,690,146

# DEVICE FOR METERING A PARTICULAR QUANTITY OF FLUID

Kurt Hofmann, Hergershausen, Germany, assignor to Hartmann & Braun, Aktiengesellschaft, Frankfurt/Main, Germany

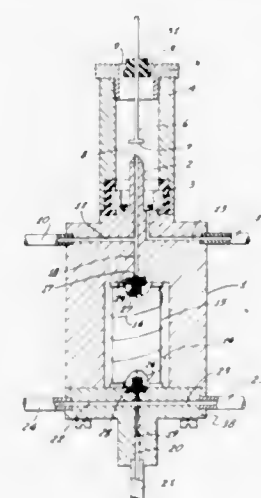
Filed Aug. 30, 1971, Ser. No. 175,918

Claims priority, application Germany, Sept. 10, 1970, P 20 44 772.7

Int. Cl. G01n 1/22, 31/08, 31/12

U.S. Cl. 73-23.1

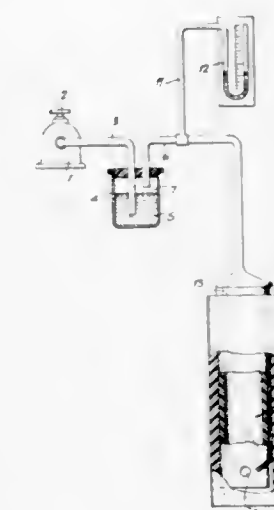
9 Claims



Device for metering a particular quantity of fluid flowing into a particular duct; a capillary tube having inlet extending into the duct; first and second duct means respectively leading to and from the particular duct downstream from the capillary inlet, an auxiliary fluid flows into the first duct means and is

discharged again through the second duct means together with fluid flowing in the particular duct and not having entered the capillary; and means are provided for obtaining pressure regulation of the auxiliary fluid as passing through the first and second duct means to obtain constant pressure head at inlet of the capillary tube.

flows continuously through the aperture. Since the aperture is otherwise effectively sealed by the two



3,690,147

# TORSIONAL VIBRATION DENSITOMETER

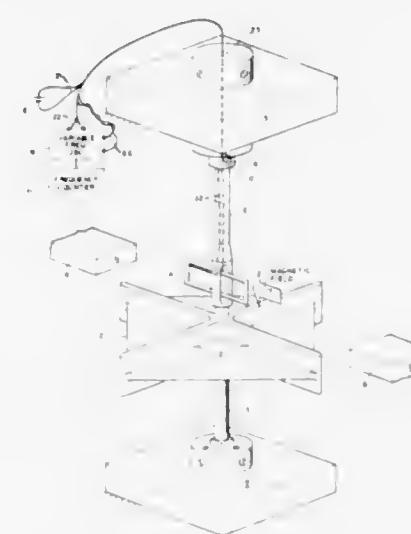
Howard W. Kuenzler, South Acton, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 15, 1969, Ser. No. 850,534

Int. Cl. G01n 9/00

U.S. Cl. 73-32

9 Claims



A direct measurement of density of a fluid is made by coupling the fluid to a rod under torsional oscillation. The frequency of torsional oscillation is maintained at the resonant frequency by sensing the phase difference between the stress in the rod and the current in a driving coil which produces the force to sustain torsional oscillation in the rod. The stress is measured by strain gauges which provide the electrical signal for phase comparison with the driving coil current. The frequency of the current is controlled by a voltage controlled oscillator whose input is derived from the phase comparison to provide a frequency which is at the resonant frequency of the oscillatory rod as modified by the density of the fluid to which it is coupled. The precise relationship between fluid density and resonant frequency is established by calibration.

3,690,148

# PRESSURE TRANSDUCERS

Charles Snowdon, Tudor Cottage, Lammas Lane, Esher, Surrey, England

Filed July 22, 1970, Ser. No. 57,294

Claims priority, application Great Britain, July 24, 1969, 37,374/69

Int. Cl. G01m 3/02

U.S. Cl. 73-37

9 Claims

Measurement of the pressure between two members in contact, where at least one of the members is compliant, involves the use of a flexible tube which is open at one end, closed at the other, and has an aperture spaced between its longitudinal edges at its closed end. The tube is inserted between the two members with the tube aperture located in the region where pressure measurement is required, and fluid applied to the tube open end at progressively varied pressure until the fluid

Cigarettes that are to be tested for defects are fed in succession, side by side, and equally interspaced, on a transfer means driven continuously and transversely to the cigarettes to temporarily drive each cigarette axially to position an end of each cigarette to be tested into a mouthpiece which communicates with a testing chamber containing a pressure transducer sensing element. The chamber communicates alternately and periodically with the atmosphere and with a pressurized gas source which establishes, in the chamber, a maximum value of pressure in relation with the condition of the cigarette being examined. A transducer responds to the maximum value of pressure with an electric signal that is correlated with a recurrence signal of constant frequency and a rejection signal is generated for the actuation of a device which expels, from the row of cigarettes tested, those cigarettes for which the maximum pressure value reached was less than a predetermined pressure value considered as a lower limit for the criterion of acceptance of the cigarettes under test.

3,690,150

# PIPE LINE LEAK DETECTION AND LOCATION SYSTEM

John S. Mullen, Florham Park, N.J., assignor to Esso Research and Engineering Company

Filed Aug. 19, 1971, Ser. No. 173,113

Int. Cl. G01m 3/02, 3/28

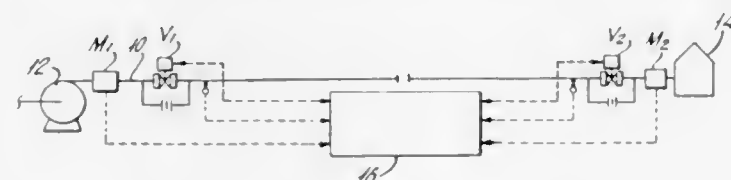
U.S. Cl. 73-40.5 R

7 Claims

A pipe line leak detection and location system including means for raising and lowering the pressure in a flowing pipe line, and metering the flow at the inlet and outlet of the pipe line at the different pressure levels, thus enabling pipe line leaks of very small magnitude to be detected. By determining



the increase in the rate of a leak at high pressure over that obtained at low pressure, pipe line leaks can be detected. Block valves paralleled by orifices, or control valves, located at spaced intervals along the pipe line permit the raising and lowering of the pressure in selected segments of the pipe line, and allow the particular location of the leak also to be determined. When a leak is present the difference between the in-



flow and outflow readings will be greater at the higher pressure than at the lower pressure and when there is no leak present, the difference between these readings will be the same at the high pressure and the low pressure. Electronic control means are provided to receive pressure and flow responsive signals from the pipe line and transmit these signals to further control equipment connected with the pipe line for controlling pressure and flow thereof.

### 3,690,151 LEAK DETECTOR

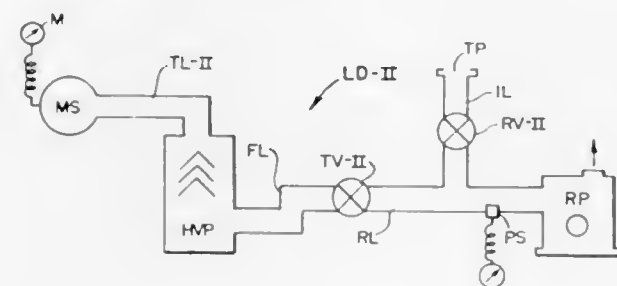
Walton E. Briggs, Lynnfield, Mass., assignor to Norton Company, Worcester, Mass.

Filed July 25, 1968, Ser. No. 747,505

Int. Cl. G01m 3/20

U.S. Cl. 73-40.7

14 Claims



Mass spectrometer leak detector and associated high vacuum pump and trace gas leak sample inlet connected so that the leak sample is fed to the outlet of the vacuum pump, backwards through the high vacuum pump and into the spectrometer. The invention is carried out through apparatus comprising a diffusion pump with a mass spectrometer connected to the pump inlet and a trace gas inlet connected to the diffusion pump foreline.

### 3,690,152

#### METHOD AND APPARATUS FOR BALANCING A BODY ABOUT AN AXIS

Walter J. Hirtreiter, 15 Ranch Trail, Williamsville, N.Y.

Filed April 20, 1970, Ser. No. 29,844

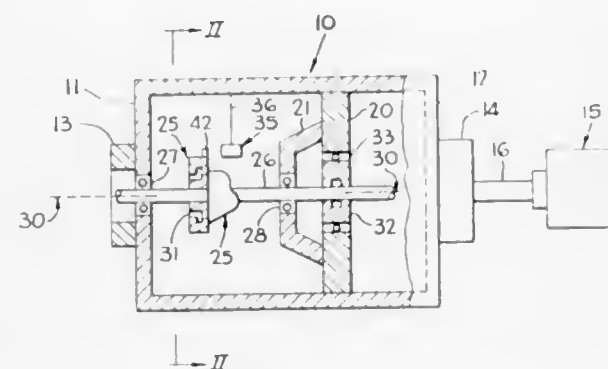
Int. Cl. G01m 1/00

U.S. Cl. 73-66

13 Claims

A body to be balanced about an axis is provided with an annular groove capable of retaining a liquid having a viscosity which increases with time to a point at which flow ceases. The amount of unbalance in the body is sensed and the indication thereof is utilized to operate a positioning motor or similar device to move the body relative to the axis to distribute the liquid while the flow tends to cease. When the flow has stopped, the body is accurately balanced about the axis. The pendulous mass of an accelerometer can be balanced about an axis to make the mass insensitive to linear acceleration when it is desired to measure angular acceleration. A balancing ring provided with a liquid retaining annular groove is attached to

the mass, and free rotation of the mass is restrained by operation of the accelerometer sensing means. Electrical signals indicative of movements of the mass about the axis activate a



motor which, in turn, rotates the accelerometer casing to distribute balancing liquid along the groove in the ring. When the flow of liquid stops, the mass and ring are accurately balanced about the axis.

### 3,690,153 ULTRASONIC DISTANCE AMPLITUDE CORRECTION UNIT

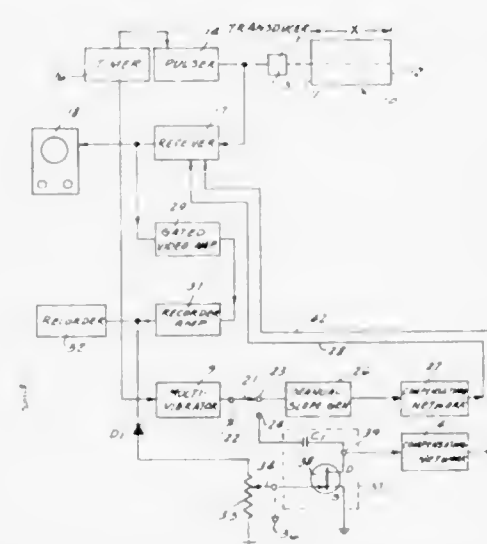
Istvan M. Matay, North Royalton, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Dec. 7, 1970, Ser. No. 95,538

Int. Cl. G01n 29/00

U.S. Cl. 73-67.8 R

4 Claims



An automatic distance amplitude correction device and circuit which automatically corrects for amplitude variations in signals such as caused by the attenuation of sound propagating through a test specimen. A signal is transmitted through a test specimen and the reflection is detected and used to control the time constant of an integrating circuit so that the signal applied to a compensating network for controlling the gain in the receiver is automatically adjusted as a function of the amplitude of the received signals.

### 3,690,154

#### APPARATUS FOR MEASURING THICKNESS

Frank Herbert Wells, Abingdon, and Roger Martin, Tilehurst, Reading, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed July 17, 1970, Ser. No. 55,739

Claims priority, application Great Britain, July 21, 1969, 36,657/69; Oct. 16, 1969, 50,983/69

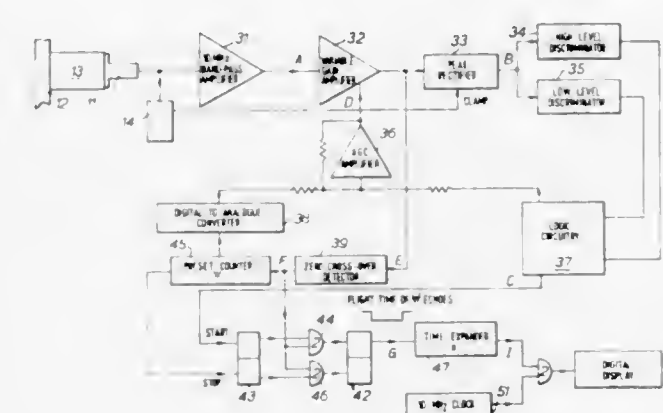
Int. Cl. G01n 29/04

U.S. Cl. 73-67.9

4 Claims

Improved accuracy in ultrasonic thickness measurement is achieved by interposing a polystyrene block between the

transducer and the metal. The echo signals are then well separated in time from the transmitted signal. Time measure-



### 3,690,155 APPARATUS FOR MEASURING SOUND VELOCITY IN A WORKPIECE

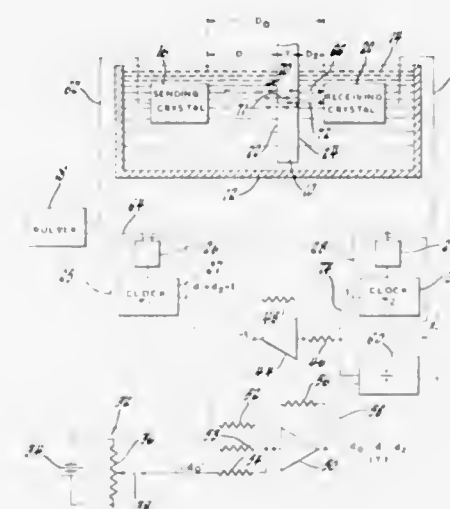
Richard H. Eichler, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 30, 1970, Ser. No. 85,558

Int. Cl. G01n 29/00; G01h 5/00

U.S. Cl. 73-67.5 R

6 Claims



A method and apparatus for determining the velocity of sound in a workpiece. The workpiece is placed between sending and receiving electroacoustic transducers that are spaced a predetermined distance in a sound transmitting medium. The sending electroacoustic transducer is pulsed so as to generate acoustic impulses directed toward the receiving electroacoustic transducer, which detects both the impulse and a delayed image of the impulse. A first signal that is proportional to the elapsed time between the generation and the detection of an impulse and a second signal that is proportional to the elapsed time between the detection of the impulse and the detection of the delayed image of the impulse are combined by a signal generating network with a third signal that is proportional to the time that is required for sound to travel the predetermined distance in the medium so as to produce an output signal which is proportional to the velocity of the impulse through the workpiece.

### 3,690,156

#### NOISE GATE FOR ULTRASONIC TEST APPARATUS

John A. Robinson, San Ramon, Calif., assignor to Automation Industries, Inc., Century City, Calif.

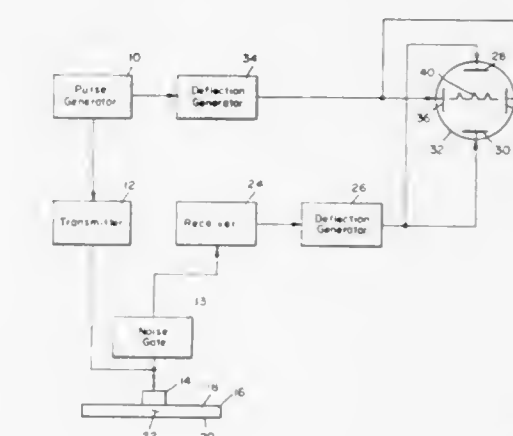
Continuation of Ser. No. 822,645, May 7, 1969, abandoned.

This application May 27, 1971, Ser. No. 147,662

Int. Cl. G01n 29/04

U.S. Cl. 73-67.9

4 Claims



An ultrasonic nondestructive test system is described which includes a noise gate which is capable of immediately removing noise signals from the input signals before they reach the receiver. The system includes a search unit, a transmitter and receiver unit for displaying on a display device the defects or other discontinuities on the workpiece. The noise gate includes a delay line and a coincident circuit. The return signal from the search unit is delayed a predetermined time and compared with the input signal in the coincident circuit to pass only coincident signals after a predetermined time has passed. This is because noise is characteristically a pulse of a short time duration and much less than the return pulse input from the search unit.

### 3,690,157

#### METHOD AND APPARATUS FOR HARDNESS TESTING

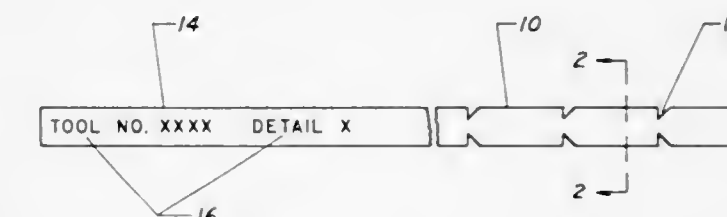
Robert E. Sepey, South Bend, Ind., assignor to The Bendix Corporation

Filed July 27, 1970, Ser. No. 62,216

Int. Cl. G01n 3/46

U.S. Cl. 73-78

4 Claims



A practical method of shop testing for the presence of a superficial hard case on metals consists of scratching the surface with an instrument made of a steel selected for its excellent heat treating and tempering qualities carefully hardened to one to three points below the minimum hardness specified for the case. The instrument consists of a square or rectangular bar with a multiplicity of opposed notches machined to provide square corners with a prescribed minimum radius. Whenever it appears that the corners which are being used have been worn to an unacceptably large radius, a section of the bar can be snapped off and thrown away to expose four new corners for use.



3,690,158

**MEANS AND METHOD FOR DETECTION OF GLAUCOMA**

Bernard Lichtenstein, 1825 Highbrook St., Yorktown Heights, N.Y., and Bruce G. Kroger, Purchase St., Rye, N.Y.

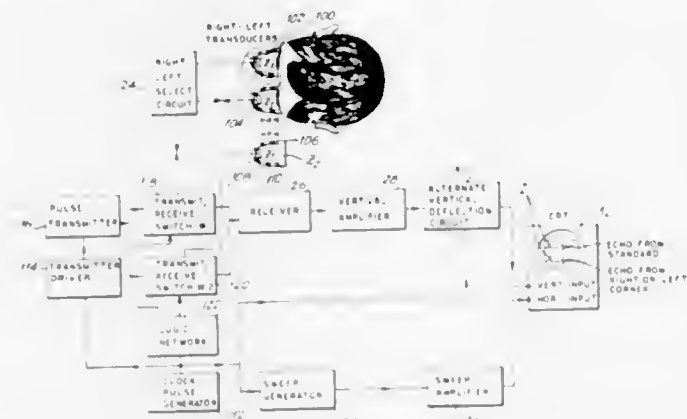
Division of Ser. No. 679,379, Oct. 31, 1967, Pat. No.

3,545,260. This application May 6, 1970, Ser. No. 34,952

Int. Cl. G01n 29/00; A61b 3/16

U.S. Cl. 73-80

2 Claims



The acoustic impedance of the cornea is measured by comparing the energy it reflects with the energy reflected by a calibrated, variable impedance member.

3,690,159

**HOLOGRAPHIC INTERFEROMETRY EMPLOYING IMAGE PLANE HOLOGRAMS**

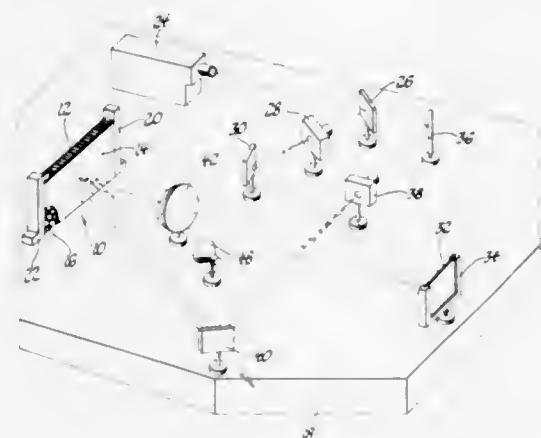
Leonard A. Kersch, and Edwin B. Champagne, both of Ann Arbor, Mich., assignors to GC Optonics, Inc., Ann Arbor, Mich.

Filed April 29, 1970, Ser. No. 32,941

Int. Cl. G01b 11/16; G01n 3/18

U.S. Cl. 73-88 A

11 Claims



A hologram of a test specimen is formed in an optical arrangement including a lens which focuses coherent light reflected by the object onto a photographic plate. A real-time interferometric analysis of the deformation of the object as a result of loading is made using the resulting image-plane hologram. The interference fringe frequency in particular area resulting from gross deformation of the object is decreased to allow the detection of fringe anomalies in that area by suitable translations of the hologram relative to the reconstruction beam.

In an alternate embodiment, a pair of image-plane holograms of the object at two states of loading are formed on the same photographic plate by a double-exposure technique using reference beams which bear different angles to the photographic plates during the two exposures. To reconstruct the holograms a pair of reconstruction beams are employed and motion of the beams relative to one another allows the fringe frequency on various areas of the object to be modified.

3,690,160

**APPARATUS FOR TESTING THE BLADE ANCHORAGE OF TURBINE BLADES**

Horst Kriesten, Raunheim, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany

Filed April 8, 1970, Ser. No. 26,513

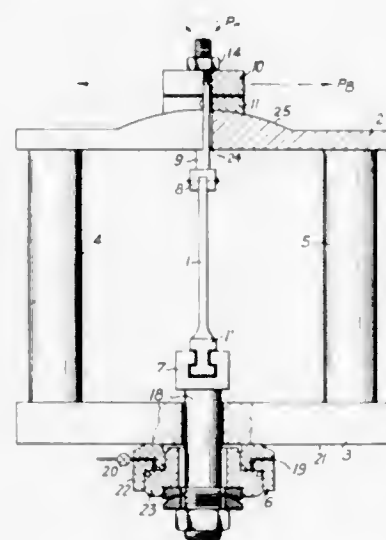
Claims priority, application Germany, April 9, 1969, P 19

18 052.0

Int. Cl. G01m 19/00

U.S. Cl. 73-95

5 Claims



An improved testing apparatus for determining tightness, deformations and weak points of the blade anchorage of a turbine blade. The apparatus operates by applying forces to a blade or portion thereof which includes a blade base, attached in the normal fashion to a simulated portion of a turbine rotor. A force in a direction corresponding to the radial direction in a turbine rotor and hence to the centrifugal force in a rotating rotor is applied by attaching the blade and rotor portion to respective first and second yokes and drawing the blade and rotor portions apart. A force corresponding to the damping forces in the axial and/or tangential directions of a turbine rotor is applied by an additional device while the blade and rotor portions are held in the yokes. At least one end of the blade is mounted on its respective yoke by means of fluid pressure bearing system whereby the various forces can be applied to the blade in a substantially frictionless manner.

3,690,161

**METHOD AND APPARATUS FOR TESTING THIN WEBS IN SHEAR**

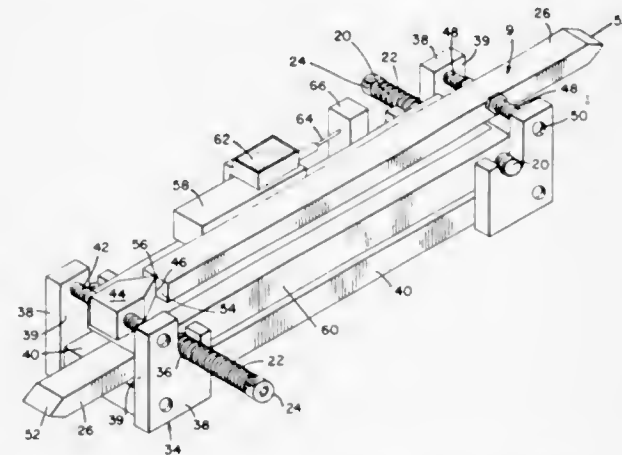
Wendell T. Jackson, and Martin M. Balaban, both of Dublin, Calif., assignors to Hexcel Corporation, Dublin, Calif.

Filed Dec. 30, 1970, Ser. No. 102,734

Int. Cl. G01n 3/24

U.S. Cl. 73-101

16 Claims



A method and apparatus for subjecting thin sheets, webs, foils, films and the like to in-plane shear stresses. A rectangular

larly shaped specimen is grasped at its long sides, opposing forces acting in the direction of the long sides are applied to the long sides and portions the sheet between the long sides are placed between stabilizing bars that maintain the web in its planar shape and prevent buckling of the web under the forces before its ultimate shear strength is reached.

3,690,162

**DEVICE FOR TESTING COMPONENTS WHICH ARE SUBJECTED TO ALTERNATING STRESSES**

Friedhelm Stecher, Burscheid, Germany, assignor to Goetzwerke Friedrich Goetze A.G., Burscheid, Germany

Filed Oct. 9, 1970, Ser. No. 79,603

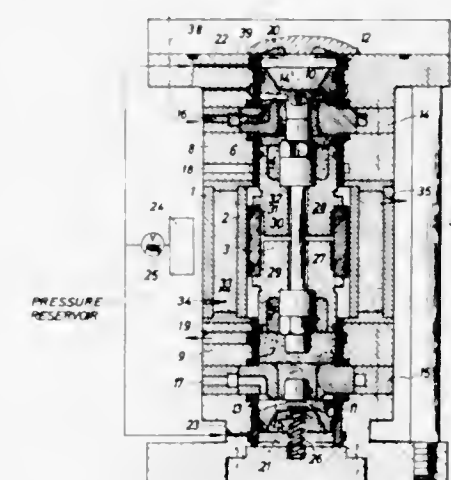
Claims priority, application Germany, Oct. 9, 1969, P 19 50

917.2

Int. Cl. G01m 15/00

U.S. Cl. 73-119 R

11 Claims



A device having a vibrating assembly driven by a free piston for testing components to be subjected to alternating stresses. A resilient abutment member is arranged adjacent each respective one of the opposed ends of the free piston for abutment thereby in one extreme position of the free piston.

3,690,163

**FREE POINT INDICATOR DOWNHOLE TOOL WITH AUTOMATIC CENTRALIZER**

John Louis Shannon, and Edward R. Basham, both of Fort Worth, Tex., assignors to Go International, Inc., Fort Worth, Tex.

Filed Dec. 10, 1970, Ser. No. 96,910

Int. Cl. E21b 47/00

U.S. Cl. 73-151

11 Claims



Apparatus for attaching to a conduit at a depth in a borehole, as in free point indicator tools, characterized by a plurality of aspects. In a first aspect, the apparatus has in-

dividual, non-flow restricting attachment members that are operable to engage the conduit any number of times on a trip into the well with a force sufficient to bear the weight of the tool and any sinker bars and cable resting thereon. In a second aspect, the force is controlled electrically from the surface with a current limiter and a downhole electric motor is run to stall. In a third aspect, the attachment members are connected with the downhole motor via a shear pin so the pin can be sheared to release the attachment members in the event of power failure. In a fourth aspect, the downhole, or borehole tool has a sensor section with an automatic centralizer for effecting a neutral position of the two movable portions for detecting small rotational or longitudinal movement therebetween. Also disclosed are specific structures and methods that are advantageously employed in measuring the depth at which a conduit such as drill pipe is stuck in the borehole.

3,690,164

**PROCESS FOR PROSPECTING OF THE GROUND LAYERS SURROUNDING A BOREHOLE**

Robert Gabillard; Francois Louage, both of Lille, and Robert Desbrandes, Sevrès, all of France, assignors to Institut Français du Pétrole, des Casburants et Lubrifiants, Hauts de Seine, France

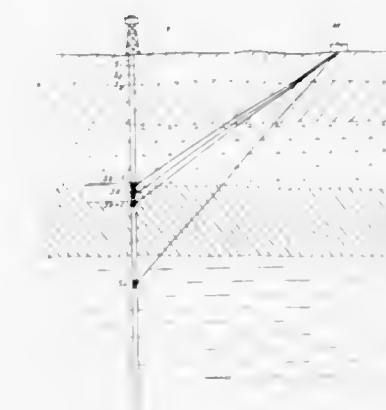
Filed June 24, 1969, Ser. No. 836,020

Claims priority, application France, June 24, 1968, 68156220; June 24, 1968, 68156232

Int. Cl. E21b 47/026

U.S. Cl. 73-151

14 Claims



To determine physical characteristics of successive ground strata, signals are transmitted from successive depth locations in a borehole and received at a surface location spaced from the location of the borehole. The successively transmitted and received signals are compared with signals indicative of the known characteristics of one of the strata layers to determine the characteristics of the other strata through which the successively transmitted signals have traveled.

3,690,165

**AUTOMOBILE TESTER**

Giuseppe Sturmo, Rome, and Mario Maran, Vicenza, both of Italy, assignors to F.A.V., S.r.l., Rome, Italy

Filed May 14, 1970, Ser. No. 37,129

Claims priority, application Italy, Aug. 28, 1969, 61621 A/69

Int. Cl. G01l 5/13

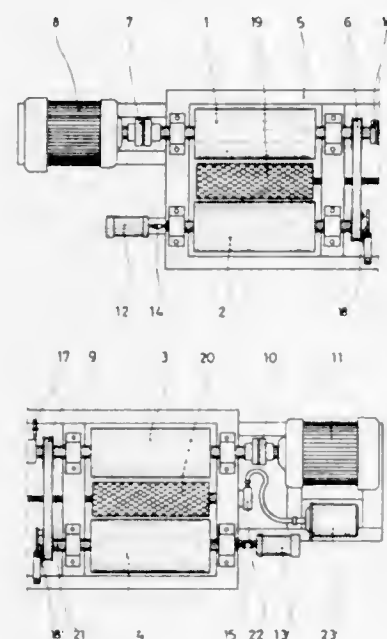
U.S. Cl. 73-117

5 Claims

A test-bed for automobile vehicles has pairs of coupled rollers to receive each of the wheels of the vehicle, with a tachymetric dynamo coupled to each pair. An electrical machine, capable of functioning selectively as a motor or as a generator is coupled to each pair of rollers. The circuitry of the electrical machines is such that the torque exerted (when they act as a motor) or the resistance coupled exerted (when they act as a generator) can be made to compensate exactly,



at various speeds, for the differences which exist between the equivalent moment of inertia of the vehicle and the effective



moment of inertia possessed by the rotating parts of the test-bed.

3,690,166

# APPARATUS FOR MEASURING SUBSURFACE SOIL CHARACTERISTICS

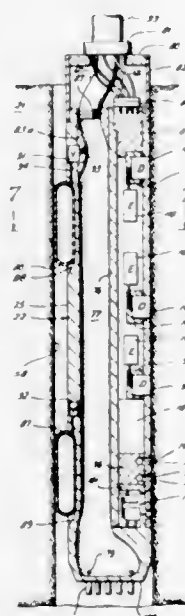
C. Fitzhugh Grice, c/o Grice Ocean Engineering, Inc. 7210 Hemlock, Houston, Tex.

Filed May 9, 1969, Ser. No. 823,275

Int. Cl. E21b 49/00, 47/022

U.S. Cl. 73-152

16 Claims



An instrument platform structure is lowered to the bottom of a body of water by means of a hoisting cable. A measuring instrument is lowered from the underwater platform structure by means of an instrument cable coupled to a spooling drum located on such underwater platform structure. The measuring instrument burrows its way into the water bottom soil by emitting water from water nozzles on the lower end of the instrument. The pressurized water is supplied to the nozzles by means of a water hose forming part of the instrument cable and a water pump mounted on the underwater platform structure. The measuring instrument includes various measuring devices such as penetrometers, nuclear radiation devices, etc., for making measurements indicative of physical characteristics of the soil adjacent the hole formed by the passage of the measuring instrument.

## 3,690,167 METHOD FOR DETERMINING THE RESERVOIR PROPERTIES OF A FORMATION

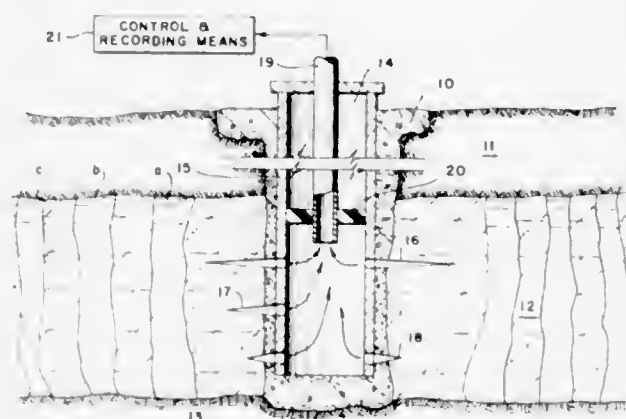
Curtis A. Chase, Jr., Pearland, Tex., and Michael Prats, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed Jan. 14, 1970, Ser. No. 2,766

Int. Cl. E21b 49/00

U.S. Cl. 73-155

4 Claims



A method for testing a well bore hold extending into a subterranean hydrocarbon-bearing earth formation to obtain a quantitative determination of the reservoir properties of the formation by injecting a fluid containing a radioactive isotope tracer down the well borehole and into the formation at a substantially constant rate. The fluid injection is followed by an injection into the formation of the fluid without such a tracer also at a substantially constant rate. Formation fluids are then backflowed from the formation and out the well borehole at a substantially constant rate and the tracer concentration with time in the backflow formation fluids is measured at a plurality of substantially equally spaced intervals.

3,690,168

## FOUR SQUARE TEST DEVICE WITH TORQUE STABILIZATION

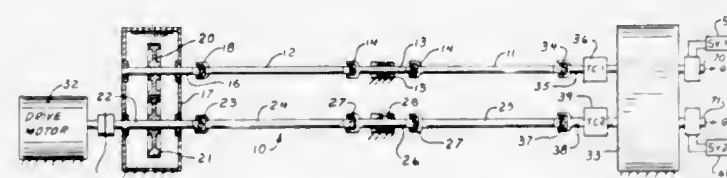
Niel R. Petersen, Hopkins, Minn., assignor to MTS Systems Corporation, Minneapolis, Minn.

Filed Dec. 31, 1970, Ser. No. 103,063

Int. Cl. G01m 13/02

U.S. Cl. 73-162

12 Claims



A test device using the "four square" principal of testing specimens which permits input of dynamic torque changes and being arranged to eliminate the inertia effects of the mass of connecting gears or mechanisms between the parallel members of the four square test device.

3,690,169

## SNOW MOISTURE INTEGRATOR

Henry S. Santeford, Jr., Fort Collins, Colo.; John G. Meier, Negaunee, and George R. Alger, Dollar Bay, both of Mich., assignors to Board of Control of Michigan Technological University, Houghton, Mich.

Filed April 16, 1971, Ser. No. 134,617

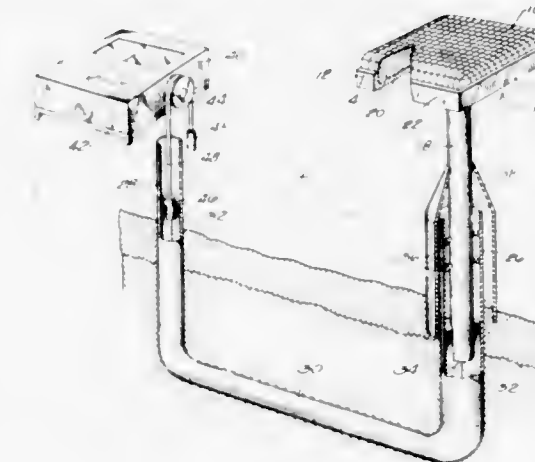
Int. Cl. G01w 1/14

U.S. Cl. 73-171

12 Claims

A snow moisture integrator for automatically measuring and recording changes in moisture content related to the surface of a snow pack includes two spaced vertical conduits interconnected by a horizontal conduit. The conduits are posi-

tioned in the vicinity of the snow pack and are substantially filled with a non-freezing liquid. A sample holding assembly, including an open top receptacle for holding snow and a float rod connected to the receptacle, floats in the column of liquid in one of the vertical conduits. A float is operatively connected to a continuous stage recorder and floats in the column



of liquid in the other vertical conduit. A sample of snow in the receptacle is exposed to the same ambient conditions as the snow pack. As the weight of the snow sample varies, either a loss of weight due to evaporation or a gain of weight due to condensation, the float rod rises or sinks in the liquid in the vertical conduit. The change in amount of liquid thus displaced by the sample holding assembly is reflected in a change in the liquid level in the other vertical conduit. The float responds to the liquid level changes in the conduit and this movement is recorded thereby providing a record of weight changes in the snow sample and, hence, the amount of evaporation and condensation.

3,690,170

## AUTOMATIC WIND DIRECTION READOUT DEVICE

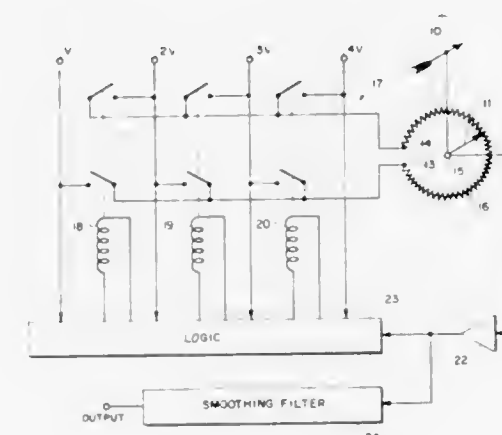
John H. Lane, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army

Filed July 30, 1971, Ser. No. 167,739

Int. Cl. G01p 13/02

U.S. Cl. 73-188

2 Claims



A wind vane rotates the arm of a potentiometer having a three-terminal voltage divider. The filtered output voltage of the potentiometer is an indication of wind direction. Avoidance of any discontinuities in the output voltage due to the potentiometer gap is accomplished by a logic device and a relay which switches the voltage range of the potentiometer whenever the arm crosses the gap. Therefore, the filtered output of the potentiometer will be a continuously varying voltage extending over three full revolutions of the wind vane.

3,690,171

## FLUID FLOW MEASUREMENT

John Russell Tippetts, Sheffield; Jack Alexander Golder, Appleton, and John Grant, Warrington, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

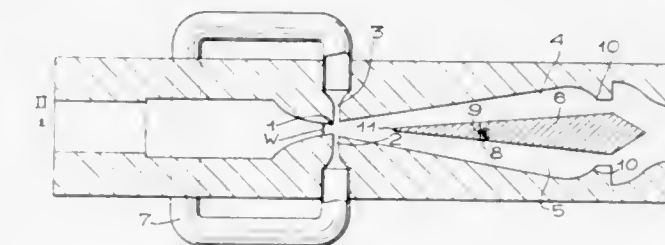
Filed Oct. 15, 1970, Ser. No. 80,938

Claims priority, application Great Britain, Oct. 29, 1969, 52,953/69

Int. Cl. G01f 1/00

U.S. Cl. 73-194 B

5 Claims



A fluidic oscillator may be used to measure the flow rate of fluids. In a flow meter in accordance with the invention a fluidic oscillator has its control ports cross-connected to induce oscillation and differential pressure sensing means housed in the connection between the fluid outlet channels of the oscillator for converting alternating pressure in those channels to an electrical signal.

3,690,172

## MAGNETIC FLOWMETER HAVING FERROUS FIELD ARMATURE

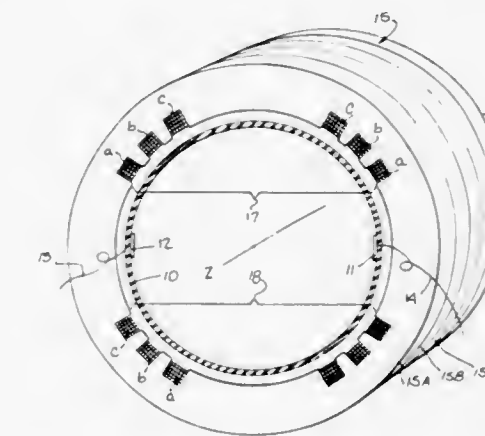
Broder Ketelsen, Settmarshausen; Wilfried Kiene, Hedemunden, and Hermann Grosch, Goettingen-Weende, all of Germany, assignors to Fisher & Porter Company, Warminster, Pa.

Filed Jan. 29, 1971, Ser. No. 111,003

Int. Cl. G01f 1/00; G01p 5/08

U.S. Cl. 73-194 EM

4 Claims



A magnetic flowmeter for measuring volumetric fluid flow rates, the meter including a pair of electrodes disposed at diametrically opposed points in a non-magnetic pipe section through which the fluid to be measured is conducted. A non-homogeneous magnetic field is established in the pipe section by a laminated ferrous field armature of cylindrical form encircling the pipe section and provided with longitudinally extending slots to accommodate the windings of two field coils symmetrically disposed relative to the electrodes.

3,690,173

Patent Not Issued For This Number



3,690,174

## LIQUID LEVEL GAGE

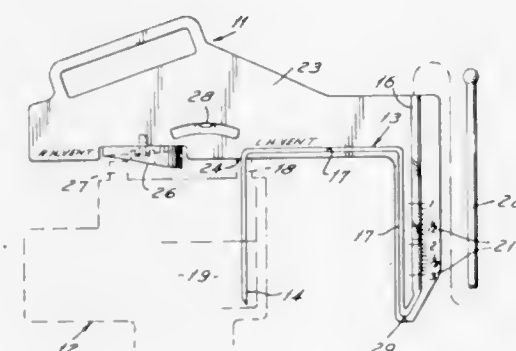
Ronald T. Denton, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 4, 1970, Ser. No. 86,878

Int. Cl. G01F 23/02

U.S. Cl. 73—323

6 Claims



A gage to indicate the level of liquid within an enclosed, vented container, such as a carburetor fuel bowl. The gage includes a double reversed tube, a depending end of which is inserted into the container and the other end of which is equipped with a suction device for drawing liquid from the container into the tube. Upon venting the drawn liquid within the tube to the atmosphere, the liquid level within the tube becomes identical to that within the container.

3,690,175

## MECHANISM FOR PREDICTING FOOD TEMPERATURES

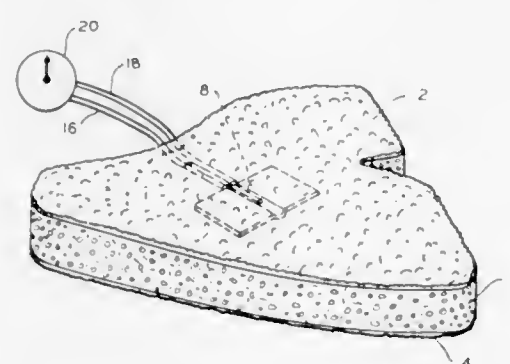
Earl E. Butts, Niles, Mich., assignor to Clark Equipment Company

Filed April 5, 1971, Ser. No. 131,008

Int. Cl. G01k 1/16, 7/04

U.S. Cl. 73—343 R

10 Claims



Apparatus for predicting the surface temperature of packaged foodstuff, particularly meat, when the packages are exposed to a refrigerated environment. In the preferred form, it utilizes a model of red beefsteak manufactured from two metallic plates with insulating material sandwiched therebetween. In this embodiment, the exterior surface of the panel is textured and coated the same color as the meat being simulated and the temperature of the surface of the plate matting with the insulating material is measured by utilizing a thermocouple connected to an electric meter.

3,690,176

## TEMPERATURE SENSING APPARATUS

Douglas P. Connolly, Webster, and Raymond E. Poehlein, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed April 26, 1971, Ser. No. 137,302

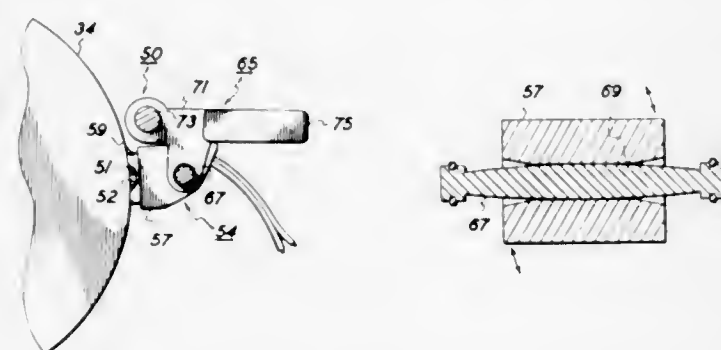
Int. Cl. G01k 1/14, 7/16, 13/08

U.S. Cl. 73—351

5 Claims

Temperature sensing apparatus in which a temperature responsive member is maintained in a self aligning position

with a predetermined force on the surface of a heated rotating or stationary roll surface. Support is given on a crowned pin member which enables the temperature responsive member to rock perpendicular and parallel to the heated roll axis. This



rocking action assures self alignment of the member with the roll surface. Also a counterweight is used to impart a predetermined moment about a second axis between the member and roll surface.

3,690,177

## THERMOCOUPLE REFERENCE JUNCTION

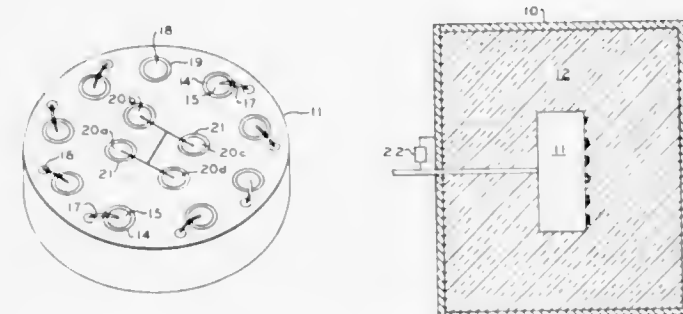
Dale A. Fluegel, c/o Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 16, 1970, Ser. No. 89,900

Int. Cl. G01k 7/12

U.S. Cl. 73—361

4 Claims



Reference thermocouple junctions are maintained at a constant temperature by an insulated housing which surrounds the junctions. A heating element is contained within the housing. Temperature sensing elements disposed within and outside the housing control the heating element. The thermocouple junctions, internal sensing element and heating element can be secured to a metal block within the housing.

3,690,178

Patent Not Issued For This Number

3,690,179

## ROTARY SAMPLERS

James F. Olson, 7310 East Montecito Dr., Tucson, Ariz.

Filed Sept. 16, 1970, Ser. No. 73,045

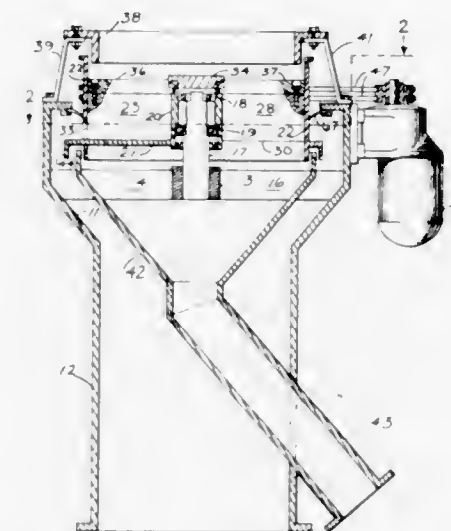
Int. Cl. G01n 1/20

U.S. Cl. 73—424

18 Claims

A sample disc assembly is divided into a number of equal sectors separated by vertical radial walls. This assembly is rotated around a vertical center axis in a stream of falling material, such as ore. In one embodiment, one of the sectors has no floor but has a peripheral vertical wall, so that the material falling on this sector falls through and constitutes the sample. All of the other sectors have floors and have no peripheral walls, so that material falling into them is thrown by centrifugal force into an annular space surrounding the disc assembly, where the material is collected as the reject material.

In a second embodiment the functions of the two kinds of sectors are reversed. The sample compartment has a floor but



has no peripheral wall, so that the sample is centrifuged out and is caught by the sample output chute, while the rejected material falls through the other, floorless compartments.

3,690,180

## DREDGER VESSEL AND A METHOD OF DETERMINING THE LOADED WEIGHT OF SEDIMENTED MATERIAL IN A DREDGER VESSEL

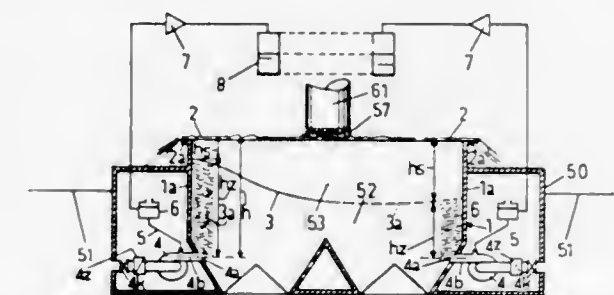
Romke Van Der Veer, Jutphaas, Netherlands, assignor to N.V. Ingenieursbureau voor Systemen en Octrooien "Spanstaal", Rotterdam, Netherlands

Filed Jan. 30, 1970, Ser. No. 7,012

Int. Cl. G01f 23/14; G01n 9/04

U.S. Cl. 73—432 R

30 Claims



When measuring the quantity of sand in a dredger vessel which sand is sedimented from a suspension of sand and water, the height of the sedimented sand is determined by means of inaccurate mechanical sensitive means acting on the surface of the sedimented sand. An accurate method of measuring is provided in which fluid, such as water, is so fed at pressure, into the hold at at least one measuring place provided in said hold, that the fluid fluidizes the compacted material sedimented at the measuring place, the pressure at the measuring place being picked up when said material is in fluidized state, so that the pressure picked up corresponds with the weight of the column of dredger spoil and water, from which the weight of the loaded material at the measuring place is derived.

3,690,181

## SEGMENT RANGE ADJUSTMENT CLAMP

Kenneth C. Kemmerer, Quakertown, Pa., assignor to Ametek, Inc., New York, N.Y.

Filed June 26, 1970, Ser. No. 50,183

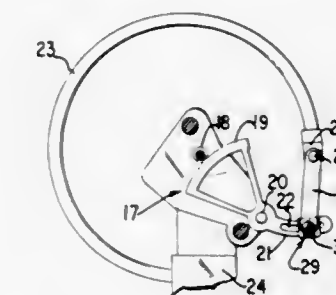
Int. Cl. G01l 7/04

U.S. Cl. 73—418

1 Claim

The slotted tail portion of a sector gear has slideably mounted thereon a substantially U-shaped clamp with one end of the clamp having a bent lip so that the clamp has a cross-

section substantially conforming to the cross-section of the tail member. A screw passes through an opening in one leg portion of the clamp, through the slot and is threaded into an



opening in the other leg portion. The screw may pass through a link and can be loosened with respect to the clamp to permit positioning of the clamp along the slotted tail portion without separating the screw from the clamp.

3,690,182

## MEASURING SCOOP AND SPOON COMBINATION

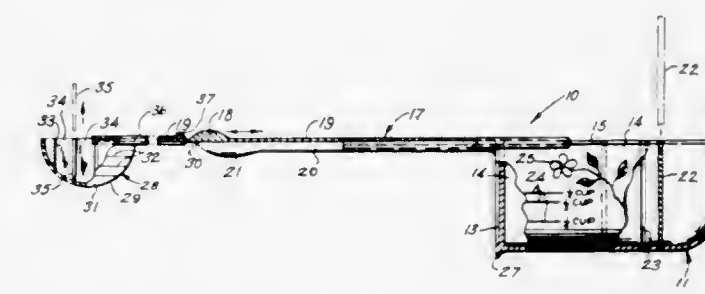
Mercedes Rodriguez, 2947 Nashville Dr., San Jose, Calif.

Filed Aug. 10, 1970, Ser. No. 62,554

Int. Cl. G01f 19/00

U.S. Cl. 73—429

5 Claims



A measuring device for household use. This device is provided with a cup portion which will receive a slide member which is held in place by the walls being grooved, the slide serving to define a definite unit of measurement. The device also includes a horizontal slide having a handle which may be used for leveling the contents of the cup and may be also used as a guide in measuring ingredients received within the cup portion of the device.

3,690,183

## METHOD AND APPARATUS FOR TESTING FINE AGGREGATE SAMPLES

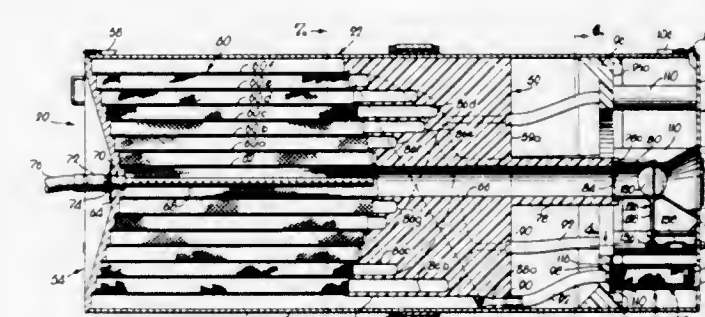
Harry Harlan Livingood, Overland Park, Kans., assignor to Builders Sand Company, Kansas City, Kans.

Filed Oct. 15, 1970, Ser. No. 80,914

Int. Cl. G01n 15/02

U.S. Cl. 73—432 PS

8 Claims



A method and apparatus for testing a fine aggregate sample wherein a measured quantity of the aggregate is introduced into the inner cylindrical sizing screen of a series thereof of decreasing mesh fineness and then liquid is introduced into



the interior of the inner screen while the series thereof along with a casing around the screens are constantly rotated to effect segregation of the particles of aggregate. Manifold structure at one end of the screens directs particles retained within a particular screen into a respective perforated volumetric measuring cup with the liquid introduced serving not only to facilitate segregation of the particles but also operating to flush all particles retained by each screen from the surface thereof. Since the web volume of each segregated sample collected bears a mathematical relationship to the amount thereof in the original dry sample, the percentage of each size range of particles in the aggregate composition being sampled can be quickly and easily determined using an empirically derived table or slide rule.

3,690,184

# APPARATUS FOR STATICALLY MEASURING THE AVERAGE DENSITY OF A LIQUID CIRCULATING IN A PIPELINE

Pierre Chadenson, La Tronche, France, assignor to Societe Generale De Constructions Electriques Et Mechaniques (Alstom), Grenoble, France

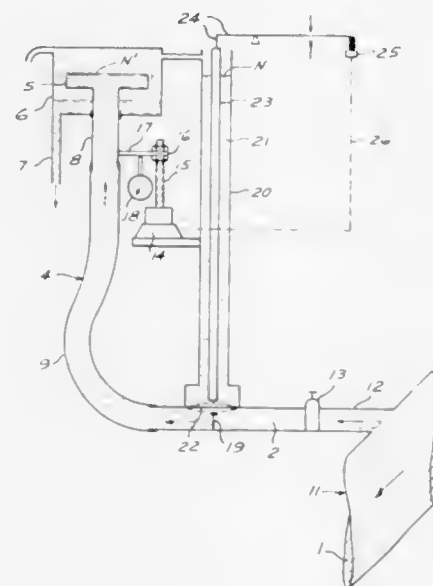
Filed June 24, 1970, Ser. No. 48,973

Claims priority, application France, June 27, 1969, 6921897

Int. Cl. G01n 9/26

U.S. Cl. 73-438

18 Claims



The apparatus comprises a first column in which a certain flow extracted from the pipeline circulates, and a second column containing a predetermined quantity of calibrating liquid, the second column being fitted at its base with a horizontal diaphragm whose outer face is subjected to the pressure of the liquid in the first column. An elongated vertically disposed float extends down in the second column almost to its base and is connected at its upper end to a control device forming part of a unit for maintaining the diaphragm in its horizontal position by regulating the height of the liquid in the first column so that the hydrostatic thrusts on both surfaces of the diaphragm are equal. The average density of the liquid is determined by measuring the height of the liquid in the first column from the horizontal position of the diaphragm.

3,690,185

Patent Not Issued For This Number

## 3,690,186 PROJECTOR FOR PHOTOGRAPHIC TRANSPARENCIES

Josef Fleissner, Kirchseon, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

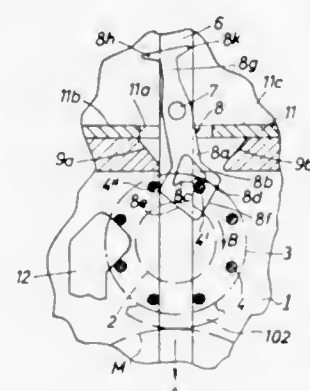
Filed March 20, 1970, Ser. No. 21,417

Claims priority, application Germany, March 21, 1969, G 69 11 413.2

Int. Cl. G03b 23/00

U.S. Cl. 353-103

9 Claims



A slide projector wherein the slide changer carries a two-armed lever which tends to resist pivotal movement and rotates a wheel to thereby index the magazine for slides while the slide changer continues to move upon completed return of a slide into the respective compartment. An adjustable selector can pivot the lever from a neutral position to one of two operative positions in which the lever respectively rotates the wheel in a clockwise and in a counterclockwise direction (forward and backward transport of the magazine). A resetting member pivots the lever to neutral position upon completion of each indexing step. The selector cooperates with cam faces on one arm and the resetting member cooperates with extensions on the other arm of the lever.

3,690,187

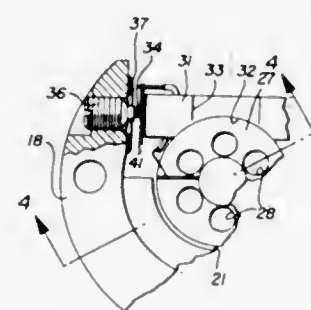
## SENSING MECHANISM FOR LINEAR SERVO ACCELEROMETER

Harold D. Morris, 11 Westover Court, Orinda, Calif.  
Continuation of Ser. No. 822,744, May 7, 1969, abandoned, which is a continuation of Ser. No. 559,284, June 21, 1966, abandoned. This application Jan. 27, 1971, Ser. No. 110,282

Int. Cl. G01p 15/08

U.S. Cl. 73-517 B

6 Claims



Sensing mechanism for a linear servo accelerometer having a rigid bar which is pivotally mounted on each end and having a restoring coil rigidly secured thereto and in which a non-magnetic conducting member is carried within the confines of the coil and in which a pick off coil is provided to sense the position of the member.

3,690,188

## ENGINE STARTER DRIVE ASSEMBLY

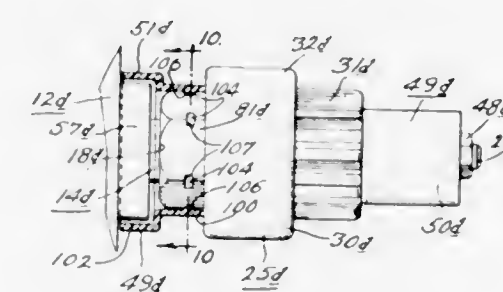
Bobby E. McMillen, Columbus, Miss., assignor to AMBAC Industries, Incorporated, Columbus, Miss.

Filed May 7, 1970, Ser. No. 35,518

Int. Cl. F02n 11/00

U.S. Cl. 74-7 R

8 Claims



A drive assembly for a starter motor used in starting an internal combustion engine is provided including a rotatable shaft extending from the motor housing with a threaded portion. A tubular driving member is employed having an internal threaded portion meshing with the threaded portion of the shaft, the driving member having an external toothed portion to cooperate with part of the engine to be started. Shielding means is provided supported by one of the motor housing and driving member or both to shield a portion of the shaft extending from the motor housing to prevent foreign matter from contacting the portion of the shaft.

3,690,189

## ENGINE STARTER

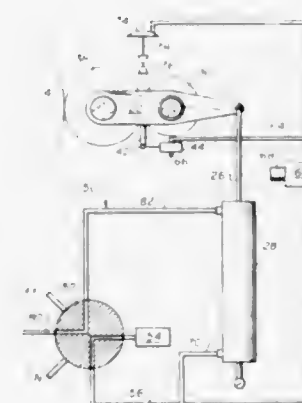
Paul D. Webb, Tioga, Pa., assignor to Fraser-Webb Corporation

Filed Sept. 23, 1970, Ser. No. 74,695

Int. Cl. F01n 7/08

U.S. Cl. 74-8

2 Claims



A device for applying a large torque to start a large engine. A member pivoting about the axis of a drive gear has an idler gear pivotally mounted on it which is in mesh with the drive gear so that when the member is rotated about the axis of the pinion gear, the idler gear is brought into contact with the fly wheel gear on the engine so that it can be turned by the drive gear to start the engine.

3,690,190

Patent Not Issued For This Number

3,690,191

## DEVICE FOR CONVERTING A RECIPROCATING MOTION INTO A STEPWISE ROTARY MOTION

Hanns Ott, Harsorferstr. 44, Nurnberg, Germany

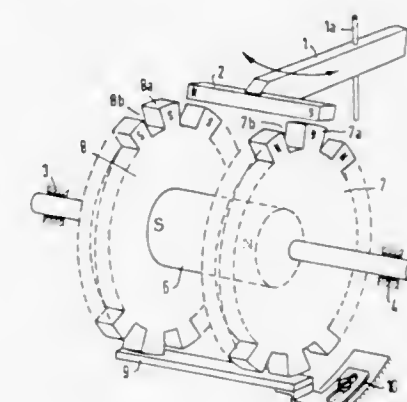
Filed Oct. 21, 1971, Ser. No. 191,209

Claims priority, application Germany, Oct. 22, 1970, P 20 51 764.0

Int. Cl. H02k 7/06

U.S. Cl. 74-142

5 Claims



A device for converting reciprocating motion into stepwise rotary motion has a rotatable shaft, a first pole wheel mounted on the shaft and having a plurality of north poles equally spaced one from the other so as to define a corresponding plurality of pole gaps, a second pole wheel mounted on the shaft axially of the first pole wheel and having a plurality of south poles equally spaced one from the other so as to also define a corresponding plurality of pole gaps, and a member for magnetically coupling the first pole wheel with the second pole wheel. An actuating magnet is provided as is also a drive device connected to the actuating magnet for imparting to the latter a reciprocating radial motion in a region outside the pole wheels and in a direction substantially parallel to the shaft.

3,690,192

## TRANSMISSION MECHANISMS FOR AUTOMOBILES AND OTHER VEHICLES

Pierre Bouthors, and Philippe Quemerais, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

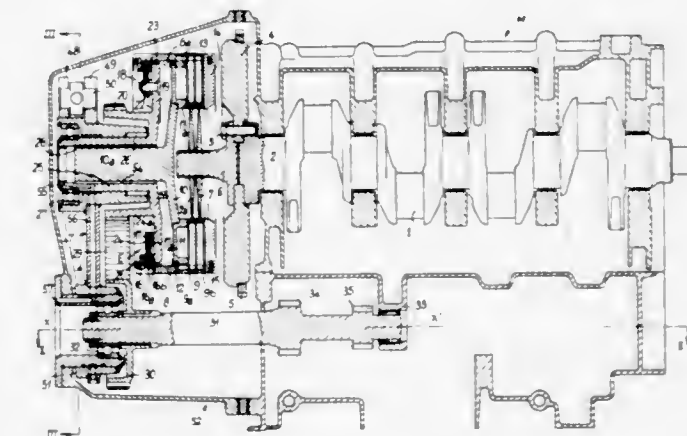
Filed Oct. 6, 1970, Ser. No. 78,506

Claims priority, application France, Oct. 29, 1969, 6936037

Int. Cl. F16h 15/08

U.S. Cl. 74-199

6 Claims



A transmission mechanism for automotive vehicles or other machines, which comprises a drive shaft, a friction-type, single-stage variable-speed system comprising internally tangent male and female disks adapted to be clamped together by means of a fluid-actuated piston, wherein at least one driving male disk rigid with the input shaft of the variable-speed system is interposed between female disks rotatably solid with the output shaft.



a drum adapted to rotate about the axis of said male and female disks, a disk clutch adapted to be engaged by the action of a plate, dog means permitting the change from forward motion to reverse motion of the vehicle, said transmission mechanism being characterized in that the piston for clamping the variable-speed disks is axially movable within the bore of said drum carrying the clutch disks and the driven disks of said variable-speed system, and that said drum is axially movable in relation to said clutch disk clamping plate.

**3,690,193**  
**FIVE-SPEED GEAR-TYPE CHANGE SPEED TRANSMISSION**

Fritz A. Naumann, Unterensingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Sept. 10, 1970, Ser. No. 70,991

Claims priority, application Germany, Sept. 12, 1969, P 19 46 219.2

Int. Cl. G05g 9/12

U.S. Cl. 74—473 R

10 Claims



A five-speed change-speed transmission, especially for sports-type vehicles, in which the shifting channels for fourth and fifth speed are disposed in one plane of rotation of the shifting shaft, the shifting channels for the second and third speeds are disposed in a second plane of rotation of the shifting shaft, the shifting channel for the first speed is disposed in a third plane of rotation adjacent to the second plane of rotation and the shifting channel for a reverse speed is disposed in a fourth plane of rotation of the shifting shaft, offset to the third plane of rotation in the axial direction of the shifting shaft; during a shifting down operation, the shifting shaft is normally prevented from reaching the third or fourth plane of rotation by a locking device which can be rendered ineffectual by operation of a push-button or the like at the shifting lever.

**3,690,194**  
**WORK DRIVE MECHANISM**

Ralph W. Edwards, Bellbrook, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 14, 1971, Ser. No. 143,534

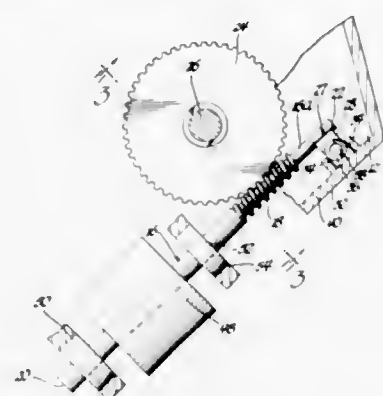
Int. Cl. F16h 1/16, 55/18

U.S. Cl. 74—427

3 Claims

In a preferred form, this disclosure relates to a worm drive mechanism which includes an electric motor which is carried by a housing and has a rotatable drive shaft with an end portion supported in a cantilever fashion and carrying a worm intermediate its ends. The worm drive mechanism also includes a worm wheel which is in meshed engagement with the worm and is fixedly supported upon a rotatably mounted output shaft. The worm drive mechanism further includes a stabilizer wedge which substantially prevents deflection of the drive shaft away from the worm wheel by engaging the cantilever supported end portion of the drive shaft with a tapered surface. The stabilizer wedge is slidably supported for movement toward and from the drive shaft to allow the tapered surface to

engage the end portion at a location diametrically opposite its engagement with the worm wheel, and a spring means biases



the stabilizer wedge toward the drive shaft to maintain the tapered surface in engagement with the drive shaft.

**3,690,195**  
**SAFETY CONTROL LEVER**

Thomas Wilfert, Friedhofstrasse 21, 7021 Stetten, Germany

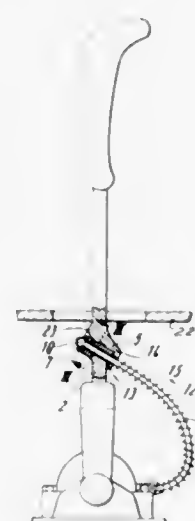
Filed Dec. 31, 1970, Ser. No. 103,058

Claims priority, application Germany, March 19, 1970, P 20 13 164.0

Int. Cl. G05g 9/00

U.S. Cl. 74—473 R

9 Claims



A safety control lever, especially for shift-stick controlled transmissions of motor vehicles, in which the control lever has two lever sections normally interconnected by coupling means which in response to the application of an excessive shifting force to the control lever permits a certain sliding movement of the coupling means relative to each other against a spring without disengagement of the coupling means, while the coupling means will, however, almost immediately disengage each other in response to a sudden shock-like excessive action upon the control lever.

**3,690,196**  
**GEARED DRIVES INCORPORATING FLUID COUPLINGS**

John Bilton, Hampton, England, assignor to Fluidrive Engineering Company Limited, Middlesex, England

Filed May 12, 1971, Ser. No. 142,682

Claims priority, application Great Britain, May 13, 1970, 23,240/70

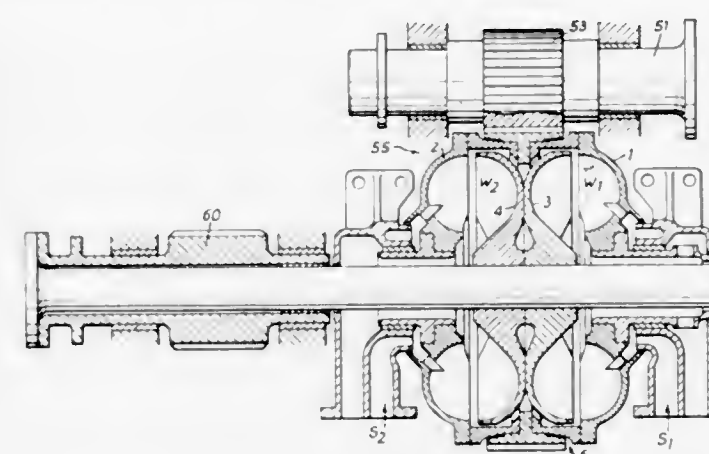
Int. Cl. F16h 47/06; F16d 33/00; F16h 57/04

U.S. Cl. 74—730

6 Claims

A double-circuit fluid coupling has a rotating outer casing formed in two similar halves between which is clamped an internal flange of a gear rim formed with wide external gear teeth. Only the middle portions of the gear rim and casing are in contact while the axially outer portions are spaced by air

gaps from the casing to form a much longer heat path from the coupling circuits to the gear rim and thereby prevent distortion of the gear rim as the result of uneven expansion due to sudden heat generation in the working circuits during maneuvering.



tion of the gear rim as the result of uneven expansion due to sudden heat generation in the working circuits during maneuvering.

**3,690,197**  
**AUTOMATIC TRANSMISSION**

Masaharu Sumiyoshi, Toyota; Shigeru Sakakibara, Chita-gun; Hisato Wakamatsu, Kariya, and Takaaki Kato, Toyohashi, all of Japan, assignors to Nippondenso Kabushiki Kaisha, Aichi-ken, Japan

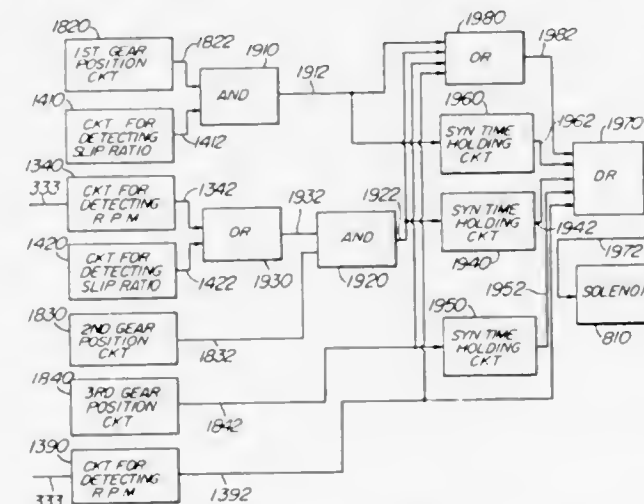
Filed June 12, 1970, Ser. No. 45,779

Claims priority, application Japan, July 18, 1969, 44/57186

Int. Cl. F16h 47/04, 5/42

U.S. Cl. 74—731

3 Claims



An automatic transmission for use in cars in combination with a torque-converter, gear transmission mechanism and frictional coupling means for establishing a required gear meshing relation of said gear transmission mechanism, said frictional coupling means being actuated by working oil supplied through a hydraulically actuating circuit including a regulating valve adapted to vary the pressure of said working oil, wherein said regulating valve is actuated to reduce the pressure of the working oil in response to a predetermined slip ratio of said torque-converter and/or a predetermined gear position of said transmission mechanism and/or a predetermined car-speed so that an impact due to variation of torque to be transmitted is eliminated.

**3,690,198**  
**FAST FORWARD TAPE ADVANCE**

William B. Huber, Park Forest, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 4, 1970, Ser. No. 86,791

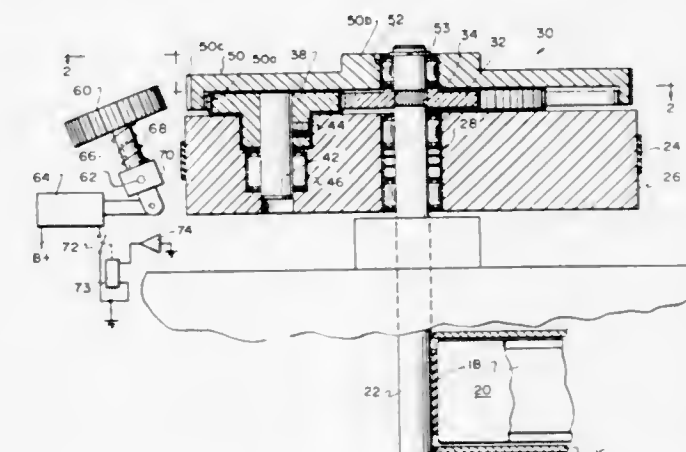
Int. Cl. F16h 3/44

U.S. Cl. 74—785

7 Claims

A cartridge type magnetic tape recorder has a planetary gearing mechanism for increasing the speed of rotation of the

capstan shaft, to increase the speed of transport of the tape within a cartridge without increasing the speed of rotation of the associated drive motor. The planetary gearing mechanism has a sun gear secured to the capstan shaft and together with a



ring gear is rotatable with the capstan shaft during normal operating conditions. By stopping rotation of the ring gear, the speed of rotation of the sun gear and, in turn, the capstan shaft, will increase to transport the tape at a faster rate.

**3,690,199**  
**CHEMICAL HONING OF DIES**

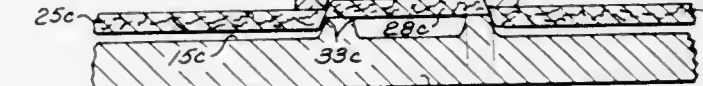
Albert J. Sarka, Fairview Park, Ohio, assignor to Harris-Inter-type Corporation, Cleveland, Ohio

Filed Oct. 15, 1970, Ser. No. 80,831

Int. Cl. B21k 5/20

U.S. Cl. 76—107 C

5 Claims



Cooperating male and female cutting and creasing dies for blanking cartons and the like are produced by a chemical milling process and which process includes a final honing step which removes the sharp corners on the lands of the dies prior to installation thereby readying the dies for immediate full speed use on the machine.

**3,690,200**  
**MACHINE CONTROL UTILIZING A PLURALITY OF CONTROL TEMPLATES AND TRACER MECHANISMS**

Paul J. Weaver, San Marino, Calif., assignor to Automatic Control Systems, Inc., El Monte, Calif.

Continuation-in-part of Ser. No. 872,492, Oct. 30, 1969. This application Dec. 24, 1970, Ser. No. 101,338

Int. Cl. B23b 3/28

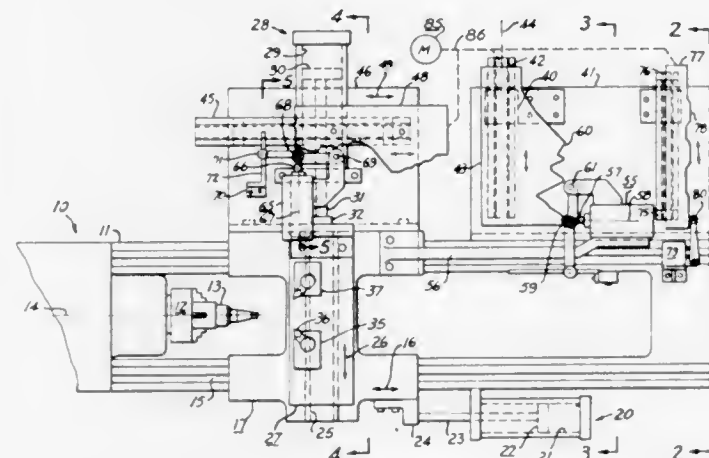
U.S. Cl. 82—14 A

23 Claims

A control system for controlling the movement of an element such as a cutting tool relative to a workpiece, maintaining the tool under continuous path control. The plane of the path relates to two non-parallel coordinate axes. The system includes a pair of working slides, one for each of said axes, and a pair of template support means for holding a template so that a reference surface bearing positioning information moves past a respective tracer mechanism on a path normal to the control motion of the tracer mechanism. Motor means under the control of respective tracer valves move the working slides so as to cause the cutting tool to form a desired contour in the workpiece. The templates are driven synchronously, and their reference surfaces are of indefinite length whereby a plurality of cutting passes can be made with



one set of templates. If desired, another synchronously driven template is provided to exert concurrent control over other machine functions such as spindle speeds, pumping actions,



and feed rate. The invention comprehends a means for designing the templates, and a machine controlled by the resulting templates.

3,690,201

### ADJUSTING APPARATUS FOR INDEXABLE TOOL TURRETS

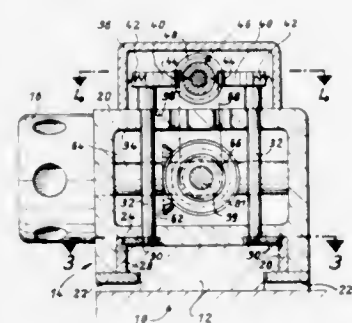
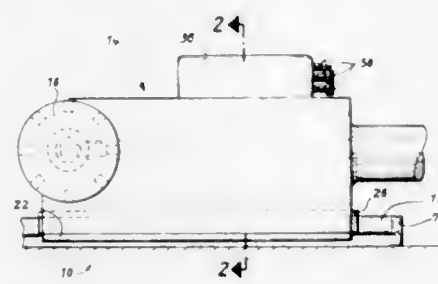
Helmut Link, Esslingen/Neckar, Germany, assignor to Index-Werke KG, Hahn & Tessky, Esslingen/Neckar, Germany  
Filed Sept. 17, 1970, Ser. No. 73,037

Claims priority, application Germany, Oct. 2, 1969, P 19 49 766.6

Int. Cl. B23b 25/06

U.S. Cl. 82-24 R

11 Claims



A machine tool wherein the frame supports a reciprocable carriage which in turn supports an indexable tool turret. The carriage is adjustable sideways with reference to the frame by means of two wedge-like shifting members which flank the ways for the carriage and normally share the movements of the carriage lengthwise of the ways. When the carriage is to be shifted sideways, the shifting members are caused to move relative to the carriage by means of a transmission which is mounted in the interior of the carriage and receives motion from an axially reciprocable sleeve which is movable into abutment with one of several axially adjustable bolts, one for each angular position of the turret.

3,690,202

### SENSOR CONTROL FOR TOOL BREAKAGE

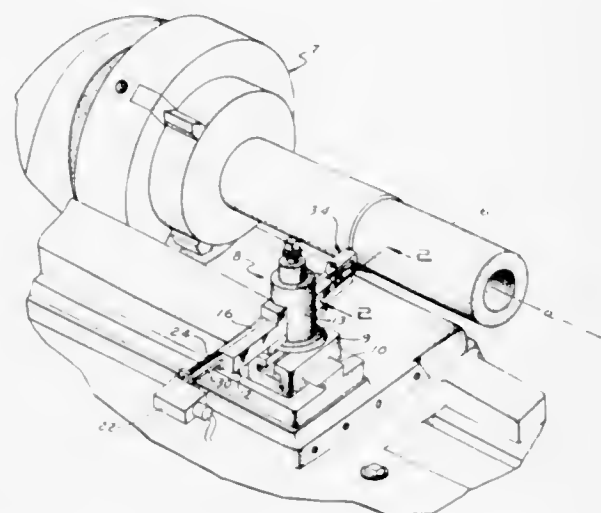
Walter J. Tebo, Chicopee Falls, Mass., assignor to Emhart Corporation, Bloomfield, Conn.

Filed March 15, 1971, Ser. No. 124,119

Int. Cl. B23b 3/38; B26d 1/00

U.S. Cl. 82-34 A

3 Claims



Mechanical sensor for stopping the operation of a cutting tool in the event of tool bit breakage, in which a pivotable tip is carried by a tool holder with its lower extremity adjacent the tip of the cutting bit. A spring releasably urges the pivotable tip in a given direction, and a rod carried by the holder with one end thereof engaged with the tip and movable in response to pivotable movement thereof. A spring urging said rod into engagement with the tip, the opposite end of the rod being positioned to actuate a switch to cut off the power to said cutting tool.

3,690,203

### CUTTING APPARATUS FOR FOAM MATERIAL AND THE LIKE

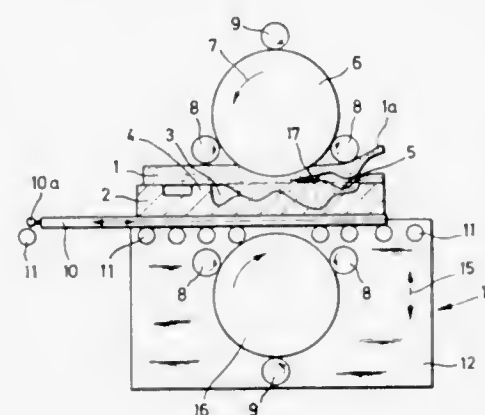
Helmut Huttemann, Krischerstrasse 80, 4019 Monheim, Germany

Filed Nov. 14, 1969, Ser. No. 876,805

Int. Cl. B26d 1/46

U.S. Cl. 83-1

3 Claims



Apparatus for cutting recesses into plates or the like of foam material having parallel top and bottom planar surfaces. The foam bodies are moved into a cutting area and compressed, with the compressing means including a pressure roller engaging the foam plate and pressing the same into recesses or openings formed in a vertically opposed counterpressure device, with cutting means cutting off the upper layer of the compressed foam material.

3,690,204

### TRANSFER MECHANISM

Gordon Asquith Deakin; Alan Eastwood, and Gordon Vinnucimbe, all of c/o W. R. Grace Ltd., Park Royal N. W. 10, England

Division of Ser. No. 771,203, Oct. 28, 1968, Pat. No.

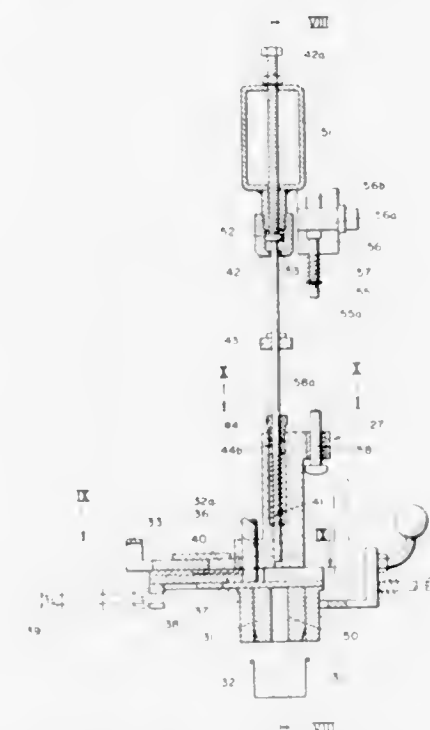
3,587,819. This application May 18, 1970, Ser. No. 35,616

Claims priority, application Great Britain, Oct. 30, 1967, 49,134/67

Int. Cl. B26d 7/06

U.S. Cl. 83-112

1 Claim



The specification discloses a mechanism for transferring articles from one conveyor to another at a point where the two conveyors are moving along non-parallel paths. Studs on each conveyor engage in respective apertures in the article to support and locate the article. Preferably the conveyors are arranged to carry container closures through a closure moulding device which may also include a combined tool for severing a pellet from a rod of thermoplastic material and placing the pellet in a closure ready for cold moulding.

3,690,205

### COMPOSITE PLASTIC PUNCH PRESS STRIPPER

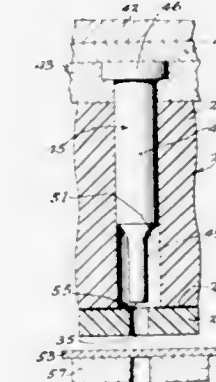
Richard H. Brown, Williamsville, N. Y., assignor to Pivot Punch Corporation, Lockport, N. Y.

Filed July 15, 1970, Ser. No. 54,920

Int. Cl. B26d 7/06

U.S. Cl. 83-139

9 Claims



A composite plastic stripper for stripping a punched workpiece from a punch of a punch press or similar machine as the punch is withdrawn, includes a hollow tubular polyurethane body portion, a nylon end cap and an adhesive fastening the

nylon and polyurethane parts together. The resiliency and flowability of the polyurethane tubular portion provides a spring effect which holds the work to a support while the punch is being withdrawn. The nylon cap, which is harder than the polyurethane, is a long lasting contact part which does not wear out despite repeated punching operations in which it is contacted with the workpiece. It also transmits the force of contact with the workpiece over substantially the entire end of the polyurethane tube to which it is sealed.

3,690,206

### CUTTING PRESS CONTROLS

Harry Pickles, Anstey, England, assignor to USM Corporation, Boston, Mass.

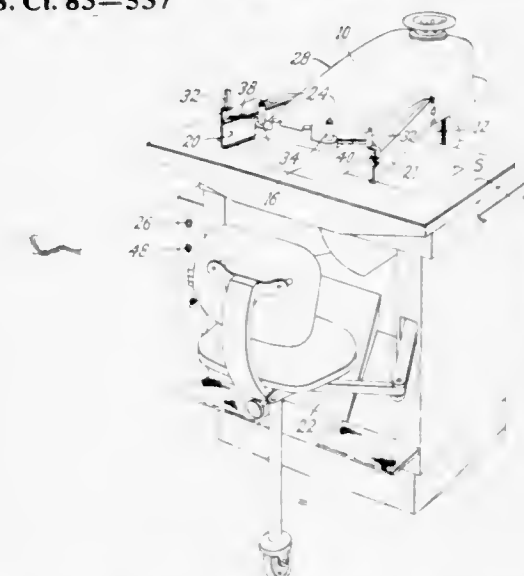
Filed Oct. 16, 1970, Ser. No. 81,252

Claims priority, application Great Britain, Oct. 22, 1969, 51,725/69

Int. Cl. B26d 7/24

U.S. Cl. 83-537

5 Claims



A cutting press having a head and a support transversely movable relative to each other and cooperative to cut material on the support is provided with a control for terminating the relative transverse movement of the head and support upon contact with an obstruction in the path of the movement. The control locates the head relative to the support over a desired area of the support and prevents damage to the obstruction or the press.

3,690,207

### PRESS

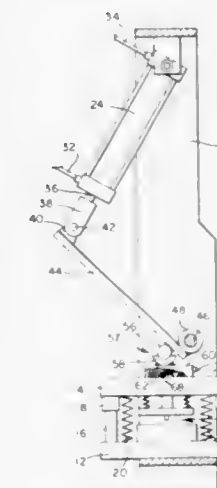
Francis J. McCabe, Regency Woods H-16, Doylestown, Pa.

Filed Aug. 31, 1970, Ser. No. 68,406

Int. Cl. B26d 5/08; B30b 1/08

U.S. Cl. 83-627

10 Claims



A fluid piston actuated press is provided with a lever arm and a bearing means for transmitting and amplifying the force



exerted by the piston to the movable parts of the press and the work piece.

3,690,208

## VARIABLE SPEED DRIVE MECHANISM

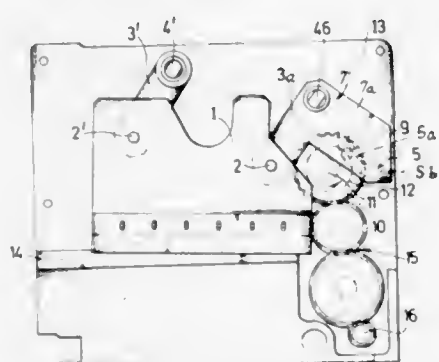
Hans Muller, Zofingen, Switzerland, assignor to Grapha Maschinefabrik Hans Muller A. G., Zofingen, Switzerland  
Filed Dec. 29, 1970, Ser. No. 102,485

Claims priority, application Switzerland, Dec. 29, 1969, 19332/69

Int. Cl. B26d 5/08

U.S. Cl. 83-643

9 Claims



A cutter is driven at a varying speed by a lever having a substantially part circular cam track engaged by a follower driven to rotate about a circular path. When the circular cam track coincides with the circular path of the follower, the speed of angular movement of the lever and cutter is reduced, if desired to a stop, while the cutter is in an inoperative position, so that the cutter speed is correspondingly increased in the cutting position assumed during each revolution of the follower.

3,690,209

## DIE-ASSEMBLY

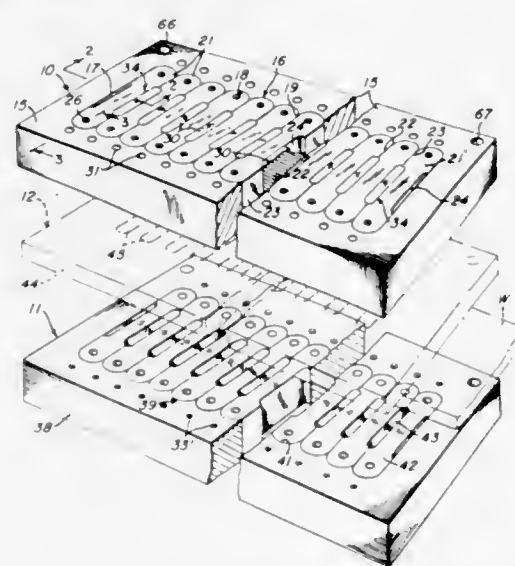
Robert J. Gargrave, 4714 James Hill Rd., Dayton, Ohio;  
Robert E. Greene, 4970 Harwich Dr., Dayton, Ohio, and  
Karl A. Keyes, 554 Torlage Dr., Dayton, Ohio

Filed Sept. 25, 1969, Ser. No. 861,030

Int. Cl. B26f 1/14

U.S. Cl. 83-687

23 Claims



A multiple tool holder providing a simple, easily serviced die assembly wherein the tools may be readily replaced without requiring a complete disassembly of the die unit. Preferred embodiments are characterized by a continuous frame having slip fit tool holding inserts which by reason of relating contoured surfaces are precisely positioned and together form the die or holding bed and define thereby the precise position of the respectively required tools.

3,690,210

## GUITAR

Masaru Imai, 22-4, 3-chome, Higashinakano, and Tokio Ohkawa, 11-10, 4-chome, Higashinakano, both of Nakano-ku, Tokyo, Japan

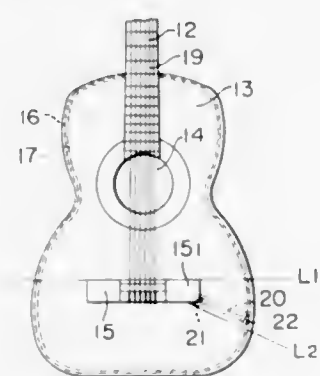
Filed Dec. 1, 1970, Ser. No. 93,948

Claims priority, application Japan, Dec. 10, 1969, 44/99287

Int. Cl. G10d 1/08, 3/02

U.S. Cl. 84-267

4 Claims



An improved construction for a guitar in which an elongated sound bar made of aluminum, copper, or silver is passed between a lining strip at the side board of the guitar and a part fixed to the top board directly beneath the high-pitch-tuned end of the bridge with the intermediate portion of the sound bar spaced from the top board, thereby making it possible for a comparatively low-priced, medium or low-grade guitar to produce the excellent sound, volume and balanced tones and sounds between strings comparable to those of an expensive high-grade guitar.

3,690,211

## LONG SHOULDER PAD

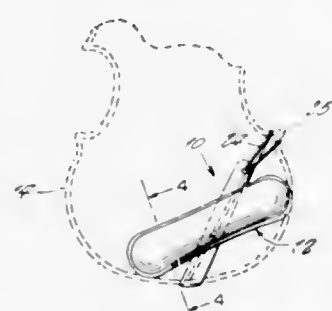
Dorothy Dolores Long, 1322 N. 22nd St., Phoenix, Ariz.

Filed Dec. 7, 1970, Ser. No. 95,608

Int. Cl. G01d 1/02

U.S. Cl. 84-280

1 Claim



An adjustable shoulder pad for a violin or viola, the pad being of a configuration and size so that it gives support not only at the shoulder but extends onto the chest so as to gain needed support in this area, the pad being comprised of an upper and lower panel of material secured together at their edges, a pocket formed there between being stuffed with Dacron material, the pad thus formed having a diagonally extending loop secured thereto through which a leather strap extends, the leather strap being attachable directly to the violin or viola.

3,690,212

## PIANO INSTRUCTION DEVICE

John P. Colburn, 360 Sherman Ave., Council Bluffs, Iowa

Filed Dec. 17, 1970, Ser. No. 99,027

Int. Cl. G09b 15/08

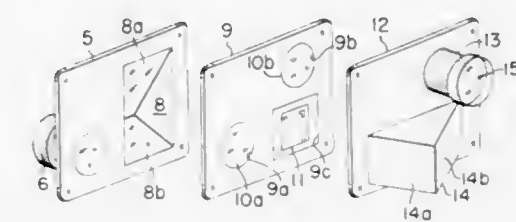
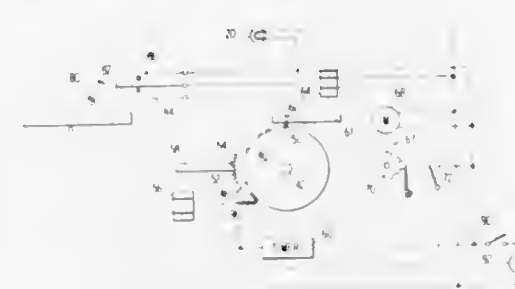
U.S. Cl. 84-478

7 Claims

A device for teaching pupils to read music and identify notes on a key-board instrument and to promote proficiency

in the performance of musical exercises is presented. The device includes a scale representation visually displaying notes as flashing lights, controlled by an electro-mechanical signal device for successively displaying pre-selected combinations

suitable apertured plates which are connected to an intermediate apertured plate so that the combinations of these as-



semblies may deviate the beam of light in a similar manner as the prisms. Wide and brilliant field and high magnification may be attained.

3,690,215

## BOLT LOCKING SYSTEM

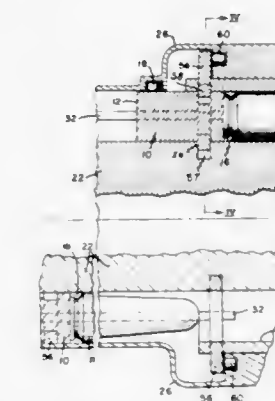
Burton P. Clark, Colchester, and James D. Scanlon, Burlington, both of Vt., assignors to General Electric Company

Filed Sept. 28, 1970, Ser. No. 75,980

Int. Cl. F41d 7/00

U.S. Cl. 89-12

8 Claims

3,690,213  
METHOD AND APPARATUS FOR DELIVERING THICKENED BLASTING AGENTS

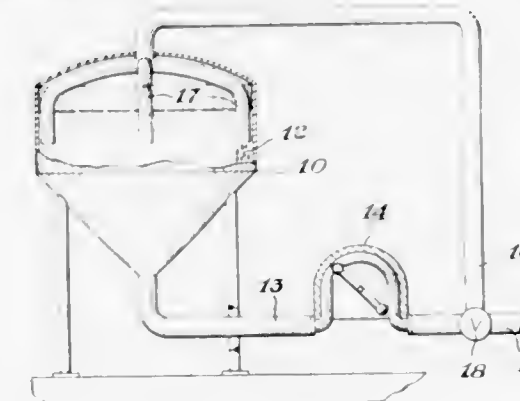
Charles H. Grant, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 29, 1969, Ser. No. 861,923

Int. Cl. F42b 3/00, 37/00

U.S. Cl. 86-20 C

3 Claims



A Gating type gun includes a plurality of bolts and respective cross-slides, each of which is cam controlled and entirely encircles the bolt in the lock position.

3,690,216

## LOADING MECHANISMS FOR GUNS

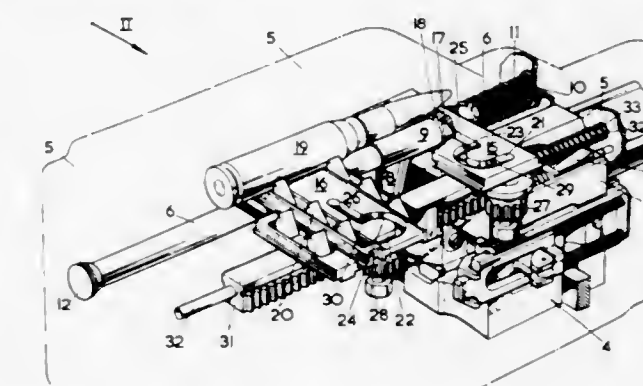
Norman Trevor Brint, Waltham Abbey, England, assignor to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, England

Filed Aug. 22, 1968, Ser. No. 754,748

Int. Cl. F41d 9/00

U.S. Cl. 89-33 A

12 Claims



Improved methods and apparatus are provided for pumping thickened slurry or liquid blasting agents through confining conduits for blasting geologic formations. Thickened slurry and liquid blasting agents are prepared containing gelling or thickening agents which produce thickened solutions having thixotropic properties. Increased shear is applied to the thickened blasting agents, e.g. they are kneaded, such as for example, in a pumper truck having means for mechanically disturbing the explosive, to temporarily produce a more flowable composition which is pumpable. The explosive is then immediately pumped into position, e.g. boreholes, wells. Upon standing under ambient conditions the blasting agent becomes more viscous thus providing the necessary properties of water resistance and settling stability.

3,690,214

## REAL IMAGE VIEWFINDER EMPLOYING ROOF-TYPE REFLECTING MIRROR ASSEMBLIES

Hisanori Ataka, Kawasaki, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Sept. 4, 1970, Ser. No. 69,535

Claims priority, application Japan, Sept. 5, 1969, 44/83927

Int. Cl. G03b 13/02

U.S. Cl. 88-1.5 R

10 Claims

A viewfinder utilizing two roof-type reflecting mirror assemblies as an erecting system to produce an erect image wherein the roof-type reflecting mirror assemblies are hollow right prisms whose inner hypotenuse face or two side faces are made into the reflecting surfaces and respectively mounted on

A feed mechanism for an automatic gun in which a feed tray is moved transversely of the gun axis, to deliver a round, by a pinion carrying an eccentrically located member engaging in a guideway carried by the tray; which pinion is actuated by a rack moved axially against a spring, by the gun during its run-out after recoil; the rack being then disengaged from the gun



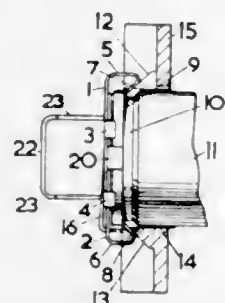
whereafter the mechanism is returned to its initial position by the action of the spring. A rammer claw, carried at the end of an arm rotatable about a shaft above and parallel to the gun axis, is moved to and fro between a ramming and a receiving position by means of a pinion carried on the shaft and actuated by rack teeth carried on a sliding member operated in a similar manner to, but out of phase with, the feed tray.

### 3,690,217 CARTRIDGE CLIPS

Norman Trevor Brint, Essex, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whitehall, London S.W. 1, England  
Filed Nov. 28, 1967, Ser. No. 686,355  
Int. Cl. F42d 9/00

U.S. Cl. 89—34

10 Claims



A cartridge clip having a pair of relatively slidable members with projections which, when the clip is in the loaded condition and the members are locked together, engage the rims or grooves of the cartridges to hold these in the clip, but, when the clip is used in presenting the cartridge to the gun or to an associated part of this, the members are unlocked from each other and are slid relatively into a position to release the cartridge from the clip.

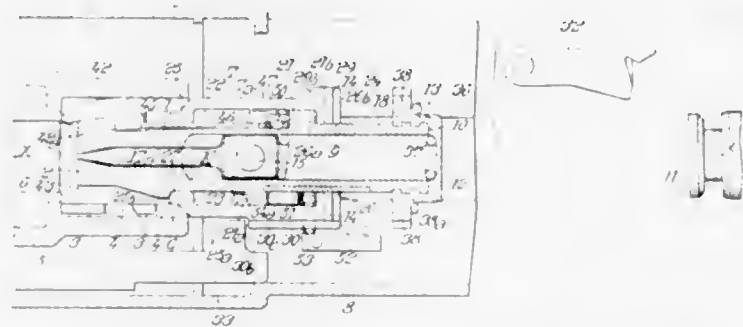
### 3,690,218

#### BREECH MECHANISM FOR AUTOMATIC OR SEMI-AUTOMATIC GUNS

Bernard Maillard, 14, Chateau Banquet, Geneva, Switzerland  
Division of Ser. No. 717,524, April 1, 1968, Pat. No. 3,447,418. This application Jan. 6, 1970, Ser. No. 928  
Int. Cl. F41d 3/06

U.S. Cl. 89—185

7 Claims



The breechblock slides in a casing which in turn slides non-rotatably in the breechcase. Mechanical means transform into rotary movement of the breechblock at least a part of the longitudinal movement of the casing, relative to the breechblock, when the breechblock has substantially reached its front closing position, for locking the breechblock by co-operation between the barrel and locking lugs formed on the breechblock. At least a portion of each one of (a) the external surface of the locking lugs, (b) the external surface of the casing and (c) the internal surface of the breechcase, lies on a common geometrical cylinder of revolution such that the breechblock is guided along the internal surface of the breechcase by the engagement both of the external surface of the lugs and of the external surface of the casing on the internal surface of the breechcase.

### 3,690,219 GAS-OPERATED AUTOMATIC FIREARM HAVING THERMAL FIRING RATE CONTROL

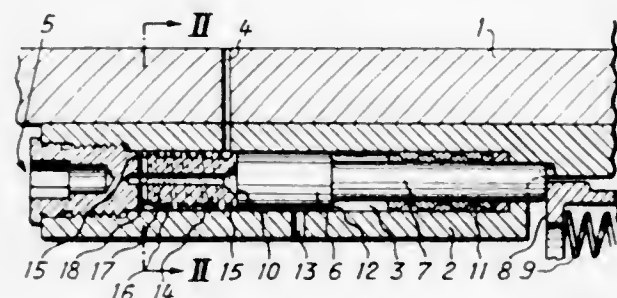
Ernst Muhlemann, Bruun, and Jean Eskild, Zurich, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland  
Filed June 26, 1970, Ser. No. 50,144

Claims priority, application Switzerland, July 1, 1969, 1004/69

Int. Cl. F41d 5/08

U.S. Cl. 89—193

3 Claims



A gas operated automatic firearm having a breech casing with a cylindrical chamber and a barrel having a gas passage communicating with the cylindrical chamber. A piston is in the chamber and an insert closes one end of the chamber. Means guide the combustion gas from the passage into the chamber at the end nearest the piston. Such means guide the gas along a path extending first towards the end of the insert remote from the piston and then guide the gas to the end of the insert adjacent the piston. Such guiding means are grooves and bores in the insert.

### 3,690,220

#### HELICALLY-TRACKING MILLING ASSEMBLY WITH TILTABLE THREAD CUTTING HEAD

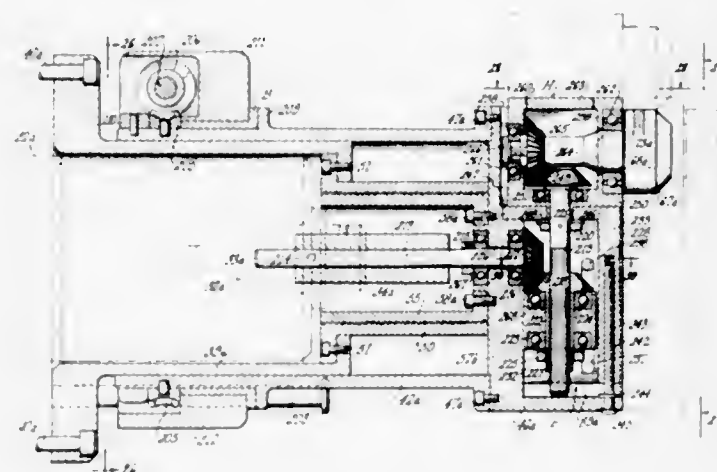
Francisco Escobedo, Inglewood, Calif., assignor to Fresco Industries, Inc., Gardena, Calif.

Continuation-in-part of Ser. No. 731,494, May 23, 1968, Pat. No. 3,526,167. This application April 29, 1970, Ser. No. 32,805

Int. Cl. B23g 1/32

U.S. Cl. 90—17

8 Claims



An assembly for positioning and operating a milling tool or thread-forming rotary cutter, either within or external to a workpiece such as a cylinder or tube, which positioning is of especial value when the workpiece itself is inconvenient to move or rotate due to size or shape. The cutting head can follow a helical path of selected pitch provided by interchangeable pairs of threadedly engaged guide cylinders carried by telescopic members, so as to transfer such thread pattern to the workpiece. By transversely extensible gear means (such as splined shaft-bevel gear units or split gear trains) a transverse carriage which carries the cutting-positioning head can adjust the latter to different internal or external radii of the workpiece. In addition, by adjustable tilting of the positioning head,

it can carry a rotary cutter of smaller diameter and hence greater cutting force; such head can be set at any angle within 360° rotation from the axis of the transverse carriage. Thus the rotary cutter can be set to the same inclination as the track of the thread being cut. The direction of rotary drive can be completely reversed, i.e., 180°. As one power source, the positioning assembly can be attached to a milling machine, or it can be operated independently thereof.

### 3,690,221

#### METHOD OF MANUFACTURING A BLOCK BOTTOM BAG

Herbert Schmedding, Lengerich of Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

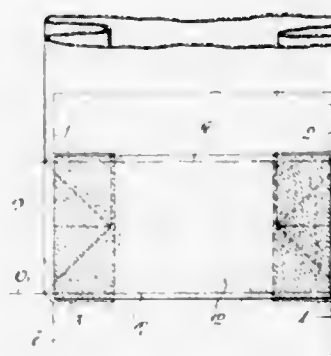
Filed July 2, 1970, Ser. No. 51,893

Claims priority, application Germany, July 8, 1969, P 19 34 642.0

Int. Cl. B31b 49/04

U.S. Cl. 93—35 RB

6 Claims



According to a method of manufacturing a cross bottom or block bottom bag or sack with a stuck bottom, a cross bottom or block bottom which is free of adhesive is folded on a tube portion, the side flaps of which bottom are not wider or are only a little wider than half the width of the bottom. A bottom sheet is fitted which extends with its end portions over the corner tucks and which, before fitting, is provided over the entire area of its side which is to be stuck to the bottom side flaps with an adhesive coating. This adhesive coating still has a moistening capacity sufficient to moisten the cooperating surfaces when the bottom sheet is fitted. Then the bottom side flaps and the bottom sheet are pressed against each other.

In a cross bottom or block bottom bag or sack with a bottom sheet and bottom side flaps which do not overlap or only overlap over a narrow region, the bottom sheet is arranged within the bottom. Said bottom sheet is stuck with its end portions to the outside of the corner tucks and extends at least from one bottom flap fold to the other and has an adhesive coating which was applied before insertion of the bottom sheet. The adhesive coating is transferred by moistening from the bottom sheet to the outside of the corner tucks and the insides of the bottom side flaps.

### 3,690,222

#### DEVICE FOR CLOSING AND SECURING CARTON FLAPS

Paul H. Schroeder, P.O. Box 455, Burlington, Wis.

Filed July 10, 1970, Ser. No. 53,868

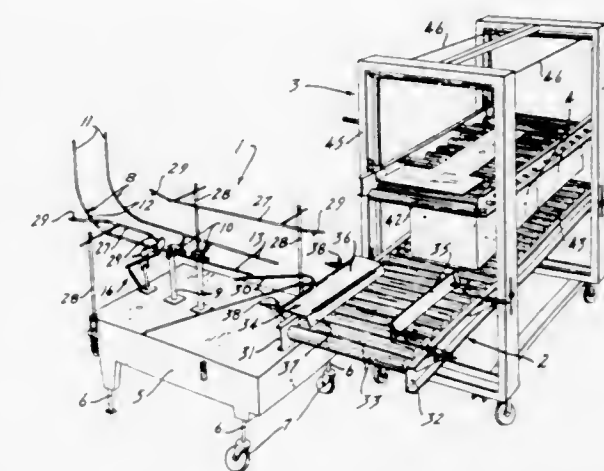
Int. Cl. B31b 1/36; B65b 43/00

U.S. Cl. 93—52

3 Claims

A device for use in manually handling shipping cartons include transfer rails having vertical entrance ends which curve into horizontal portions downstream for closing the transversely connected carton bottom flaps. A gluing assembly below the rails is actuatable, at a minimum, by the downward spring-back of said flaps to apply glue thereto. The glue applicator head is pivotally mounted to assure uniform glue application. A plow closes the longitudinally connected carton bottom flaps, and the still empty carton moves into a packing station

which includes gripping means for holding the carton against vertical movement due to spring-back of the bottom flaps. The



### 3,690,223

#### CARTON FEED MECHANISM FOR SPOUT INSERTING MACHINE

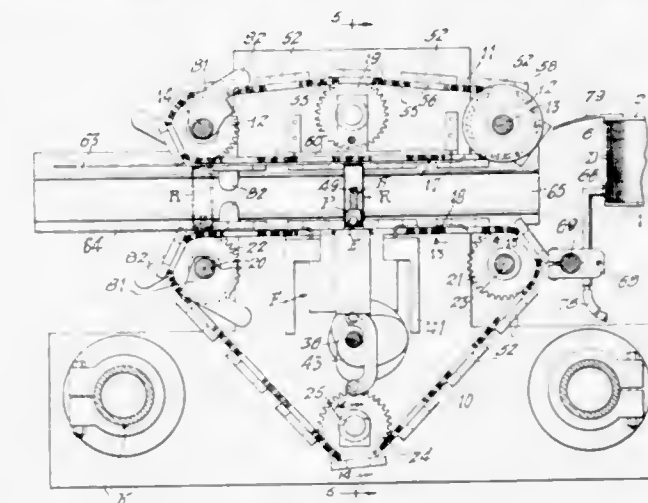
Milton H. Klausmann, Mendham, and Henry J. Brucker, Summit, both of N.J., assignors to Seal-Spout Corporation, Liberty Corner, N.J.

Filed March 1, 1971, Ser. No. 119,539

Int. Cl. B31b 1/76

U.S. Cl. 93—53 R

6 Claims



Combined with a magazine from which flat-folded carton blanks are advanced step-by-step, is a machine for withdrawing the leading blank from the magazine and simultaneously unfolding and erecting the blank into a carton body between juxtaposed conveyor elements which carry the carton bodies in succession past a predetermined station at which a pouring spout is inserted into a wall of each carton body. The machine is readily adaptable to handle different cartons and for use with magazines in different relations to the machine.

### 3,690,224

#### MACHINE FOR ERECTING LINED CONTAINERS

Edward J. Derderian, 4515 N. Wilson Ave., Fresno, Calif., and William Bridger, 5567 S. Locan Ave., Fowler, Calif.

Division of Ser. No. 696,263, Jan. 8, 1968, Pat. No. 3,537,361. This application April 22, 1970, Ser. No. 38,642

Int. Cl. B31b 7/26, 1/62; B65b 41/18

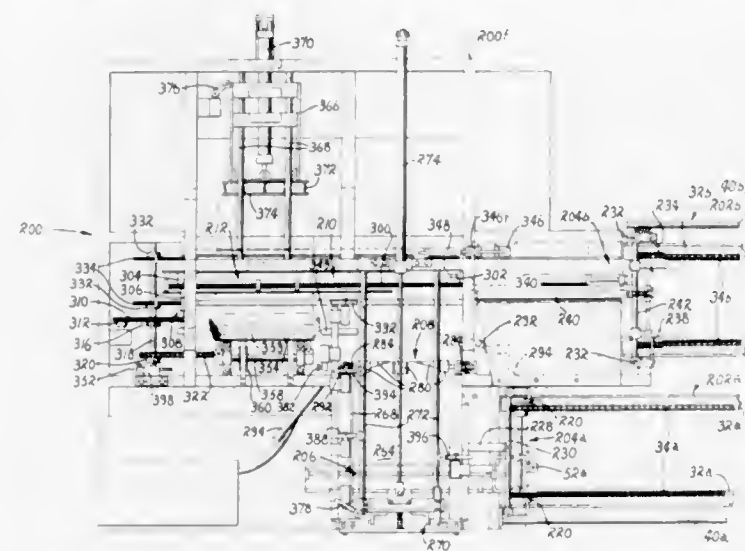
U.S. Cl. 93—36.01

4 Claims

A machine for assembling container forms in a telescoped relationship for providing lined containers. The machine is characterized by a plurality of magazines for feeding knocked-down, prescored container forms, in an on-edge orientation, pneumatically operable transport means for extracting the



forms from the magazines, erecting the forms into a tubular configuration, telescopically uniting said forms, and flap



manipulating means for closing at least one end of the forms for thus providing a lined container.

3,690,225

#### BOX PARTITION ASSEMBLY MACHINE

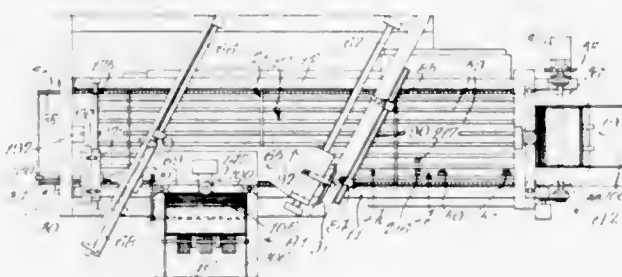
Alfred Monaco, Glenview, and Arthur L. Monaco, Norridge, both of Ill., assignors to Moser Box Partition Co., Inc.

Filed Feb. 22, 1971, Ser. No. 117,351

Int. Cl. B31b 1/00

U.S. Cl. 93—37 R

18 Claims



A box partition assembly machine having a first assembly station for depositing a plurality of longitudinal partition strips into channels of a structure and a second assembly station for inserting transverse partition strips into the longitudinal partition strips to form a box partition assembly. The first assembly station has a magazine supporting a supply of longitudinal partition strips and which moves from front to rear of the machine and intermittently deposits a longitudinal partition strip into each of a selected number of guide channels under the control of a template which may be a transverse partition strip. The magazine has a continuous, smooth motion for optimum operation. The machine is constructed for easy set-up to handle a variety of partition strips both as to the dimensions thereof as well as to the spacing of the slots in the partition strips and it is also constructed to provide for maximum speed of operation. The machine has partition ejecting structure associated with each magazine including bite elements which can be simply adjusted for the particular partition strips to be ejected.

3,690,226

#### ELASTOMERIC EXPANSION JOINT FOR BRIDGES AND OTHER STRUCTURES

Richard D. Hein, 179 Shady Lane Dr., Wabash, Ind.

Filed Sept. 9, 1970, Ser. No. 70,739

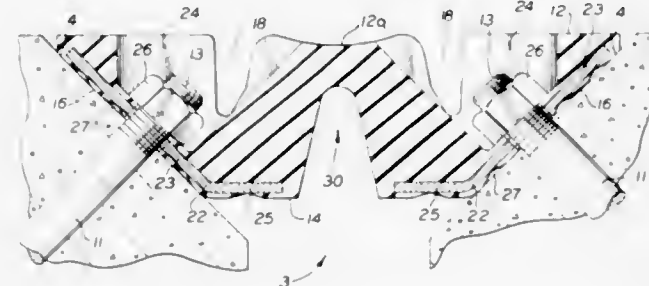
Int. Cl. E01c 11/10

U.S. Cl. 94—18

5 Claims

A roadway expansion joint is used in an expansion gap between adjacent sections of a bridge, parking deck, or other suitable structure to provide an uninterrupted road surface

while permitting the structure to expand and contract when subjected to thermal changes. The joint is composed of a suitable elastomeric material and has a generally flat top surface with one or more exposed, tapered longitudinally-extending expansion grooves extending toward the bottom. The sides of the joint converge from the top to the bottom at an angle of between about 30° and about 60°. The bottom of the joint is



parallel to and substantially narrower than the top and has one or more expansion grooves extending up therefrom, spaced laterally from the exposed grooves. Reinforcing plates are located along each side of the joint and bolt holes extend through the plate and the sides, and are spaced to coincide with studs or other fasteners extending out of the roadbed or bridge deck.

3,690,227

#### FRICTIONAL SELF-DRAINING STRUCTURE

Lloyd G. Welty, 410 S. Beverly Dr., Beverly Hills, Calif.

Filed July 14, 1970, Ser. No. 54,780

Int. Cl. E01c 11/24

U.S. Cl. 94—33

7 Claims



A frictional, in situ self-draining composite structure for runway and roadway structural docking and pathway surface. The composite structure has a solid base to which is bound a porous superstratum of aggregate and resinous binder. The composite structure is fabricated by applying a first mixture containing about two to about four parts by volume of aggregate particles of crushed rock, river gravel, crushed coral, coarse sand, slag, or crushed refractory material and one part by volume of a settable resinous binder to the base section and allowing it to set, and then by applying a second mixture containing about two to about four parts by volume of scoria and/or slag particles and one part by volume of a settable resinous binder to the first porous layer.

3,690,228

#### SHUTTER RELEASE DEVICE FOR AUTOMATIC EXPOSURE CAMERA

Maki Yamashita, Osaka, and Haruo Kobayashi, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed March 24, 1970, Ser. No. 22,216

Claims priority, application Japan, March 26, 1969, 44/22969

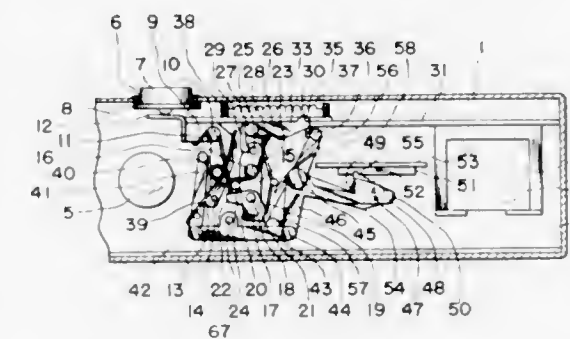
Int. Cl. G03b 7/12

U.S. Cl. 95—10 C

3 Claims

A shutter release device for an automatic exposure camera in which a shutter release member is interlocked with a restraining member provided for a shutter driving member. Such interlocking is effected through an interlocking member. The amount of displacement of an exposure meter

pointer detecting member, in the first stage of the release operation, maintains or interrupts the interlocking of the interlocking member for the shutter release member and the



restraining member for the shutter driving member, in accordance with whether the pointer is located in or out of the automatic exposure range.

3,690,229

#### EXPOSURE CONTROL APPARATUS FOR PHOTOGRAPHIC CAMERAS

Tomio Kikuchi, Tokorozawa, and Kiyoyuki Arai, Gyoda, both of Japan, assignors to Kabushiki Kaisha Kofaru, Itabashi-ku, Tokyo, Japan

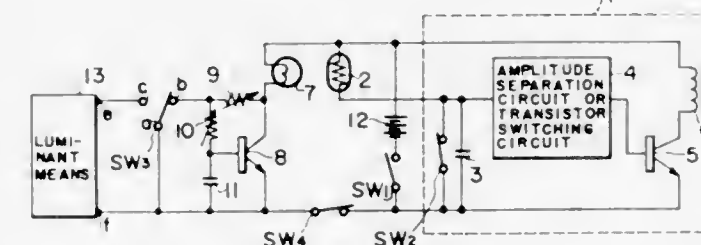
Filed May 25, 1970, Ser. No. 40,118

Claims priority, application Japan, May 30, 1969, 44/41668; June 6, 1969, 44/44411

Int. Cl. G03b 7/08, 15/03

U.S. Cl. 95—10 CT

8 Claims



A lamp is positioned to face a photoconductive cell contained in an electronic shutter mechanism of a camera. This lamp is adapted to be lighted up prior to the luminescing of a flash device attached to the camera, by utilizing the synchronizing contacts. This luminescence from the lamp preliminarily irradiates the photoconductive cell to enhance its ability to respond to light. This arrangement not only will permit the lamp to be lighted up in association with the proper working condition of the flash device but also will enable the lamp to luminesce again at the end of a predetermined length of time from the luminescing of the flash device and also to be put out at the end of another predetermined length of time.

3,690,230

#### ELECTRONIC CIRCUITS FOR AUTOMATIC CAMERA CONTROLS

Chiharu Mori, Tokyo-to, and Katsumi Ota, Fukuoka, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Oct. 30, 1970, Ser. No. 85,400

Claims priority, application Japan, Dec. 25, 1969, 44/10331; Feb. 21, 1970, 45/15079

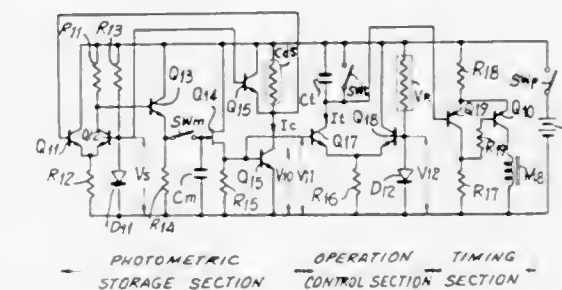
Int. Cl. G01j 1/44

U.S. Cl. 95—10 CT

10 Claims

A camera provided with electronic circuitry for automatically determining the extent to which film in the camera is exposed. The electrical circuitry includes a photosensitive element for converting light intensity into a given electrical signal. Also, the electrical circuitry includes a closed loop cir-

cuit which forms that part of the electrical circuitry which determines the influence of the light intensity on the extent of the exposure of film which is automatically obtained. This



closed loop circuit enables the exposure to be obtained in part according to the light intensity without any influence from the particular characteristics of the photosensitive element.

3,690,231

#### PHOTOCOMPOSITION ERROR CORRECTION SYSTEM

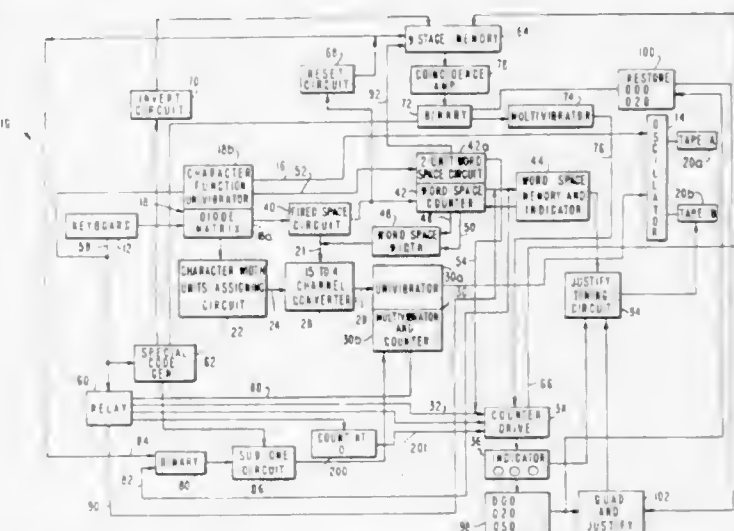
Leonard Storch, 175 W. 72nd St., New York, N.Y.

Filed April 15, 1971, Ser. No. 134,217

Int. Cl. B41b 23/00

U.S. Cl. 95—4.5 R

6 Claims



A photocomposing system wherein each character is assigned a character width as it is selected, with the character widths being accumulated in a line length memory as the line is composed to create a measure of the minimum length of the line, and with the minimum line length being deducted from the desired line length and the excess space distributed between words of the line to create lines of substantially uniform length, includes apparatus permitting errors in composition to be corrected on a word-by-word basis. The one word error system includes a word length memory for accumulating the widths of characters in each word including the width of the preceding word space as they are selected, with the word length memory being reset with the beginning of each word space. When an error in composition is detected in a word being typed, the word length memory is used to restore the line length memory to its condition prior to the previous word space, so that the errored word and space can be deleted and corrected without recomposing the entire line.

3,690,232

#### PHOTOGRAPHIC CAMERAS

Kiju Kodaira, Tatsuno, and Hirofumi Yoshimura, Kamo, both of Japan, assignors to Yashica Company, Limited, Tokyo, Japan

Filed March 24, 1971, Ser. No. 127,531

Claims priority, application Japan, March 27, 1970, 45/28718; March 27, 1970, 45/28719

Int. Cl. G03b 7/08

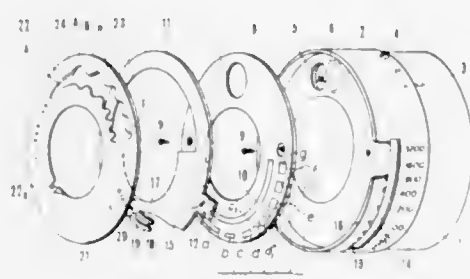
U.S. Cl. 95—10 CE

5 Claims

A camera having a photosensitive element connected in an electric circuit for calculating the quantity of light exposure, a



ring rotated with the desired exposure setting condition, a tear drop type light adjusting element adjustably connected to the ring in accordance with the photosensitivity of the photographic film used for varying the quantity of light received by the photosensitive element, a circuit constant setter in the calculation circuit, and successive contacts which are engaged in accordance with the relative position between the fixed portion of the camera and the tear drop type light adjusting element.



ment to control the circuit constant setter. The light adjusting element is provided with a tear drop shaped opening so shaped that when using a film having a photosensitivity less than a predetermined value, the circuit constants are not varied but only the quantity of the light impinging upon the photosensitive element is varied, whereas when using a film having a photosensitivity higher than the predetermined value, variation of the light quantity upon the photosensitive element and of the circuit constants are effected sequentially.

3,690,233

## PHOTOGRAPHING MEANS

James D. Billingsley, Arlington, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed July 29, 1970, Ser. No. 59,223

Int. Cl. G03b 19/00

U.S. Cl. 95—11

15 Claims



A detecting means is responsive to a passing car to produce an indicating signal. A camera and a flash lighting unit positioned down the road from the detecting means are activated simultaneously to illuminate and photograph the oncoming car. The illumination lies primarily in a spectrum including the visible deep red, the near infra-red and the intermediate infra-red. Only the visible deep red and the near infra-red radiations are able to penetrate the infra-red filtering windshield and then reflect back to the camera through an optical filter which passes only said visible deep red, near the infra-red and the small amount of intermediate infra-red radiations that pass back through the windshield. Thus the glare from ambient light is eliminated. A film sensitized to the visible deep red and to the near infra-red radiations is employed in the camera. The aforementioned system provides an identifiable photograph of the driver's facial features either during the day or at night and without causing impairment of his vision.

3,690,234  
APPARATUS FOR TAKING PHOTOGRAPHS AT TIMES OF MINIMUM IMAGE MOTION  
Peter J. Costianes, Rome, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force  
Filed Jan. 18, 1971, Ser. No. 107,303  
Int. Cl. G03b 19/00

U.S. Cl. 95—11

1 Claim

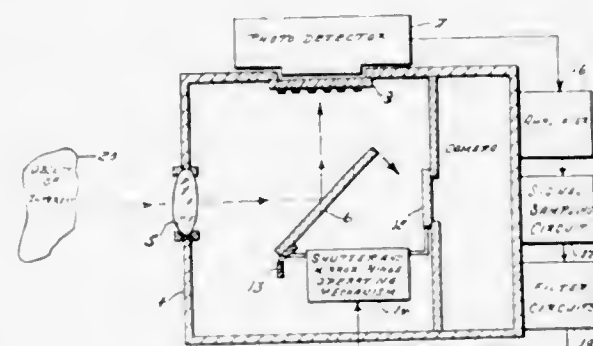


Image velocity detection means are incorporated into photographic apparatus and are utilized to activate the camera at a time of minimum image motion. Light from an object of interest passes through a photographic lens and is imaged on a mask having a periodic transmission. As the image moves across the mask, the total light reaching an integrating photodetector directly behind the mask varies as a function of time and image velocity. This variation sets up a proportional electric current which is analyzed to determine the instantaneous image velocity. When a minimum instantaneous velocity is detected a signal is generated which trips the camera shutter.

3,690,235

## CAMERA FORMAT

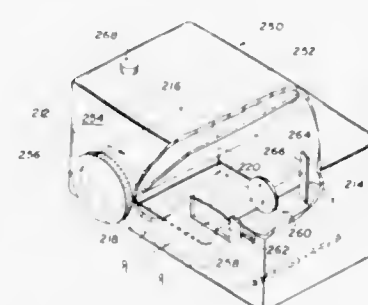
Dianne B. Ainslie, and Arthur H. Crapsey, Jr., both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 23, 1970, Ser. No. 57,663

Int. Cl. G03b 17/17, 17/02

U.S. Cl. 95—11 R

12 Claims



Motion picture and still cameras for use with (1) a film cartridge of the type having a rectangular parallelepiped shaped casing with a minor depth dimension substantially smaller than the major length and width dimensions, an exposure opening in one of the smallest walls of the casing, and coaxial take-up and supply film rolls having their common axes parallel to the plane of the exposure opening and with (2) a film cartridge of the type having generally cylindrical supply and take-up chambers and means defining a film plane across which filmstrip may be advanced from the supply chamber to the take-up chamber, respectively. Each camera includes a housing having a plurality of walls forming a light-tight enclosure which defines a volume of generally rectangular parallelepiped shape with a minor depth dimension substantially smaller than the major length and width dimensions, the enclosure being adapted to removably receive such respective film cartridges. The cameras further include an optical system including a lens system and light reflector means for folding

the light path from the scene along at least three optical axes to the film plane of a received cartridge. A zooming system may be imposed in at least one of the optical axes of the light path.

3,690,236  
SYNCHRONIZING MECHANISM FOR PHOTOGRAPHIC CAMERAS ADAPTED TO USE MECHANICALLY FIRED FLASH LAMPS

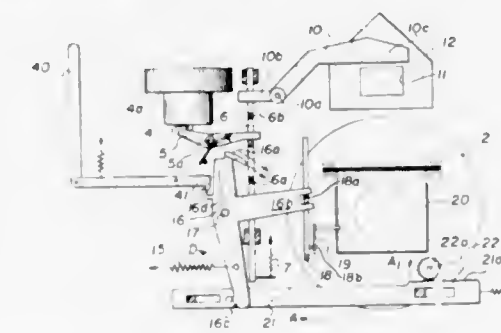
Helmut Ettischer, Stuttgart-Wagen, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,034

Int. Cl. G03b 15/04

U.S. Cl. 95—11.5

2 Claims



A photographic camera is provided with a three-legged member which rotates rapidly upon release to synchronize several or all of the following operations:

- initiation of automatic exposure control functioning;
  - actuation of the camera shutter;
  - displacement of the viewer mirror (single lens reflex cameras) from the camera's optical path; and
  - actuation of a percussively ignitable flashlamp.
- The three-legged member is energized prior to picture-taking and release is accomplished when the camera user depresses or otherwise actuates the camera release member.

3,690,237

## ELECTRONIC FLASHLIGHT DEVICE FOR FLASHLIGHT PHOTOGRAPHY

Zydzichl Fuwa, c/o Kabushiki Kaisha Ricoh 3-6, 1-chome, Naka Magome, Ohta-ku, Tokyo, Japan

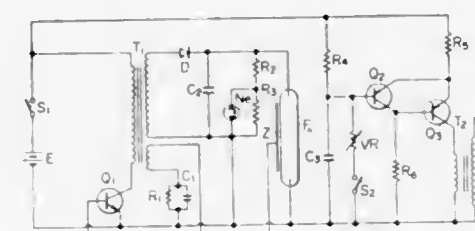
Continuation of Ser. No. 674,780, Oct. 12, 1967, abandoned.

This application Sept. 22, 1970, Ser. No. 74,532

Int. Cl. G03b 15/05; H05b 41/00

U.S. Cl. 95—11.5 R

3 Claims



A device particularly for use with a camera having an electronic flash and a shutter but no diaphragm control so that the flash will be produced at some time before the shutter has completely opened. In order to regulate the light passing through the shutter, in one embodiment a switch is closed when the shutter begins to open to permit a capacitor to discharge through a variable resistor until its voltage reaches a point where two transistors are switched to produce a signal which enables the capacitor to discharge through a discharge tube which then produces an electronic flash. In a second embodiment, when the switch is open, a capacitor begins to charge through a variable resistor and when the capacitor has charged to a given level, a transistor switching circuit is triggered to apply a trigger signal to the flash tube.

3,690,238

## STRIPPING MECHANISM

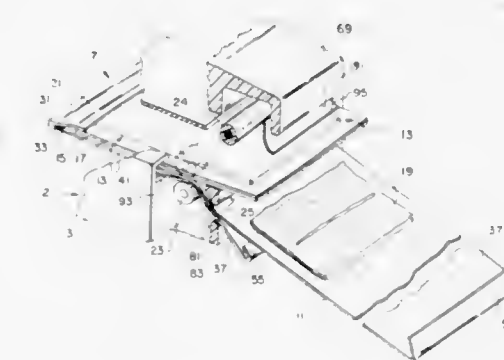
Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 2, 1970, Ser. No. 77,515

Int. Cl. G03b 17/52

U.S. Cl. 95—13

6 Claims



Photographic apparatus for stripping an image-recording unit of the self processing type from an associated carrier sheet, pod and trap. The image-recording unit includes integral photosensitive and process elements strippably mounted on a carrier sheet, with a cooperating pod (supply container for fluid processing composition) and trap (collector for excess fluid processing composition) permanently secured to the carrier sheet. The apparatus defines a first path along which the image-recording unit is adapted to be transported from the apparatus, and a second path, including a portion extending in a direction divergent to the first path, along which the carrier sheet is adapted to be transported from the apparatus. Movement of the above-mentioned elements along the respective first and second paths is effective to strip the recording unit from its associated carrier sheet, pod and trap, as the recording unit is transported from the apparatus.

3,690,239

## PRINT STRIPPING MECHANISMS

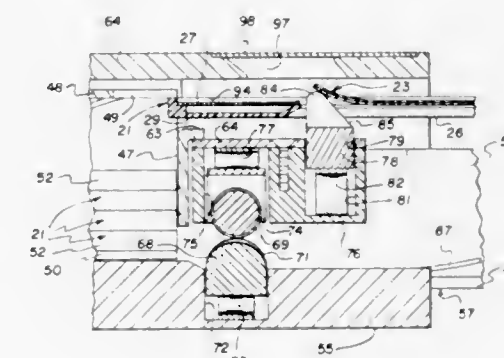
Guilford Edwin Kindig, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 2, 1971, Ser. No. 159,320

Int. Cl. G03b 17/52

U.S. Cl. 95—13

10 Claims



The disclosure relates to photographic cameras adapted to use self-processing film units comprising preregistered, integral image-recording portions strippably coupled to individual rigid frames. Each film unit is processed by movement between a pair of opposed pressure members in the camera, and then the image-recording portion is separated from the frame and expelled from the camera by a novel stripping mechanism that engages the recording portion and presses it out of engagement with the frame.



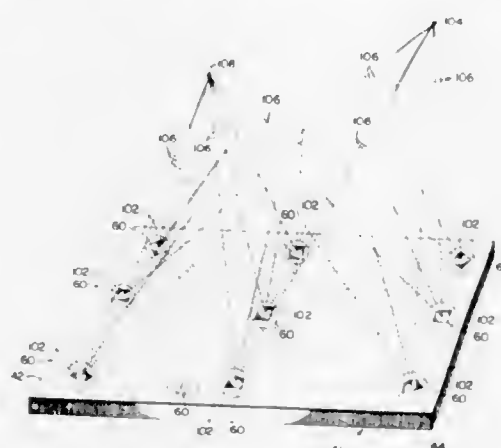
### 3,690,240 REFLECTIVE IMAGING APPARATUS

Nathan Gold, Framingham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 22, 1970, Ser. No. 83,030  
Int. Cl. G03b 19/12

U.S. Cl. 95—42

47 Claims



The subject invention provides a reflex camera having a novel means of image reflection for use in viewing an image, transmitted through an entrance pupil to said image reflection means, at an exit pupil remote from both said means and said entrance pupil.

### 3,690,241 CAMERA STRUCTURE FOR POSITIONING A PHOTOSENSITIVE COMPONENT

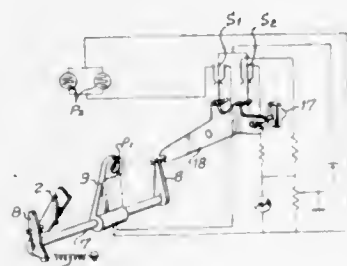
Katsuhiko Nomura, Kawagoe-shi, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed March 23, 1971, Ser. No. 127,240

Claims priority, application Japan, April 2, 1970, 45/27434  
Int. Cl. G031 19/12

U.S. Cl. 95—42

11 Claims



A camera which has a structure for determining the position of a photosensitive component capable of responding to light travelling toward a film plane where film is located to be exposed. The photosensitive component normally has a position located directly in front of the film plane in the path of light travelling to the latter for responding to the light intensity so as to participate in the determination of the exposure of film. The photosensitive component is supported for movement between an operative position situated in this path of light and an inoperative position displaced beyond the latter path of light. In response to tripping of the shutter, a transmission operates during the initial part of the shutter-tripping operations, prior to actual opening of the shutter, to displace the photosensitive component to an inoperative position situated beyond the path of light travelling to the film plane, so that during actual exposure the photosensitive component will not block travel of light to the film which is exposed. When the shutter is closed the photosensitive component normally is in its operative position in front of the film plane in the path of light travelling toward the latter.

### 3,690,242 PHOTO RECORDING ASSEMBLY

John S. Cruickshank, "Rosemount," Kintillo Road, Bridge of Earn, Perth, Scotland

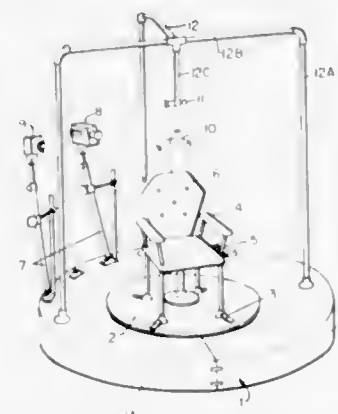
Filed June 22, 1970, Ser. No. 48,215

Claims priority, application Great Britain, June 20, 1969, 31,388/69

U.S. Cl. 95—82

Int. Cl. G03b 27/50

5 Claims



The assembly makes series of photographs of an object so as to record outline changes thereof through a preselected angular and/or longitudinal distance. It has a structure comprising an inner portion on which the object is placed, and an outer portion carrying a camera and a light projector. The inner and outer portions are rotatably relative to each other.

### 3,690,243 SUSPENDED CEILING FRAMEWORK SUPPORTED TROFFER AIR DISTRIBUTION SYSTEM

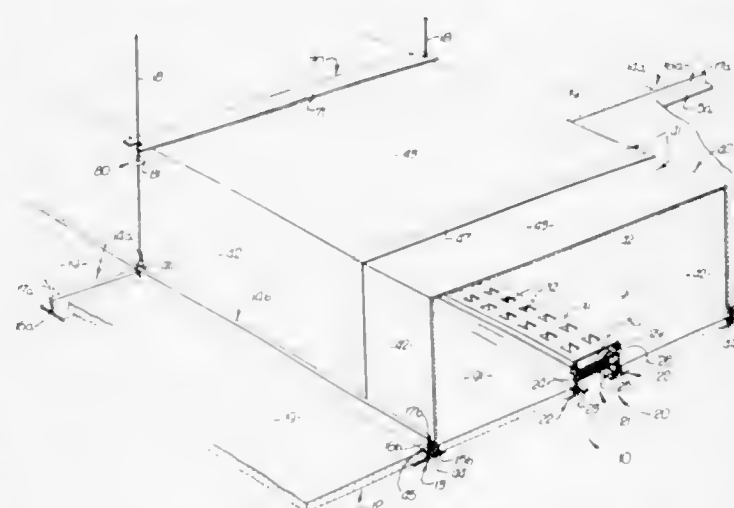
Robert R. Lambert, Glendora, Calif., assignor to Air Factors, Inc., Redlands, Calif.

Filed April 12, 1971, Ser. No. 133,284

Int. Cl. F24f 13/06

U.S. Cl. 98—40 D

39 Claims



The suspended ceiling framework supported troffer air distribution system has effectively continuous arrays or rows of resilient inverted channel members, each having the lower feet thereof separated in a natural state, and contracted for insertion on and between the runners of a suspended ceiling framework and over air control means extending between the runners; and has ceiling tile inserted between the runners and the air control means to close the channel members for conducting air therealong. The inverted channel members may be integral; assembled from separate sides, and a web; or folded from duct board which is longitudinally notched and which is with or without lower foot channels. The duct board may also be longitudinally notched to provide marginal side portions which extend from the runners to the air control means when the duct board is mounted on the suspended ceiling framework. As additional support and to relieve the weight on

the suspended ceiling framework, anchors and clamped longitudinal members may secure the channel members and transverse members to with and between the soffit wires hanging the framework. Each array or row may have channel members of uniform side heights or may have channel members of descending side heights from a cross duct. The cross ducts may be located in staggered relationship between the troffer rows.

### 3,690,244 AIR VALVE WITH FAN ACTUATOR

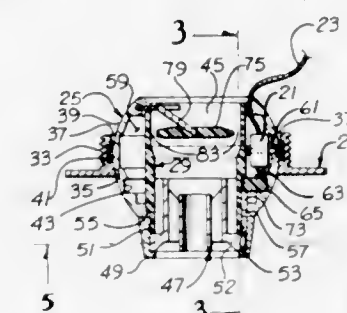
Allen Kallel, and Arthur F. Gowing, both of Santa Ana, Calif., assignors to Wemac Company, Santa Ana, Calif.

Filed April 22, 1971, Ser. No. 136,319

Int. Cl. F24f 13/06

U.S. Cl. 98—40 A

11 Claims



An air valve comprising a first valve member mounted for generally universal movement and having a passage therethrough, a second valve member having a passage therethrough and mounted in the passage of the first valve member for pivotal movement relative to the first valve member. Portions of the two valve members are spaced to define a substantially enclosed region within the air valve. An actuator is mounted on one of the valve members within the enclosed region and a switch is mounted on the other of the valve members within the enclosed region. Air is supplied to the passage of the second valve member by a fan which is driven by a motor. By turning of the second valve member, the switch can be opened and closed to thereby control the operation of the motor and of the fan. Air flow through the second valve member can be modulated by an appropriate valve element.

### 3,690,245 RANGE HOOD UNIT WITH FIRE SAFEGUARD FAN CONTROL SYSTEM

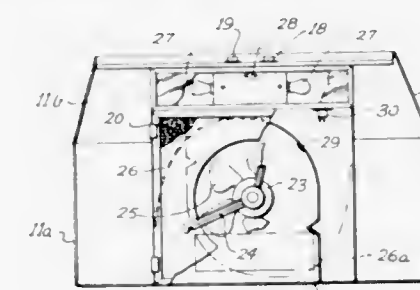
Louis Ferlise, and Ronald E. Duhamel, both of Middletown, Ohio, assignors to Panacorp Corporation, Cincinnati, Ohio

Filed Sept. 17, 1970, Ser. No. 73,121

Int. Cl. F23j 11/02

U.S. Cl. 98—115 K

6 Claims



A range hood for use over a cook stove, which may be either ducted or ductless, and is provided with filters as required by its being ducted or ductless, respectively. An electric motor driven fan within the hood may be manually controlled, but additionally a safety circuit is provided to energize said fan motor automatically when cooking is being done even

if said manual switch has not been actuated. Said safety circuit is also arranged automatically to shut off said fan motor, and if desired to energize a signal, in the event of a flash fire or the like. The automatic energization and de-energization of said fan motor is accomplished by means of self-resetting sensor-thermostats. The safety circuit does not interfere with fan speed control by means of said manual control.

### 3,690,246 APPARATUS FOR FRYING CHICKEN

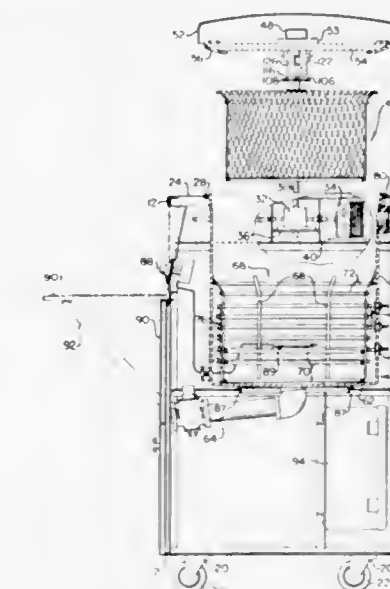
Clifton W. Guthrie, Sr., Richmond, Va., assignor to Golden Skillet Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 870,835, Aug. 26, 1969, abandoned, which is a division of Ser. No. 656,500, July 27, 1967, Pat. No. 3,501,316. This application Oct. 14, 1970, Ser. No. 80,563

Int. Cl. A47j 37/12

U.S. Cl. 99—336

8 Claims



An apparatus for frying chicken so as to produce the equivalent of a covered pan fried product. Chicken parts are marinated and breaded prior to cooking in a preheated apparatus. Following immersion in a cooking oil, the chicken parts are stirred, sealed and then cooked automatically according to a preselected cooking cycle. Pressure relief means insures that the pressure within a sealed cooking container is maintained either at atmospheric pressure or within one pound per square inch of atmospheric pressure. Motor driven screw means automatically lifts the chicken parts from the cooking apparatus at the conclusion of the cooking cycle.

### 3,690,247 POTATO CHIP DISPENSING APPARATUS

Rene Eugene Van Clevan, and Willy Emile Van Clevan, both of Hasselt, Belgium, assignors to Koelinstallaties Van Clevan Gebroeders, personenvennootschap met beferkte aanprakelijkheid, Hasselt, Belgium

Filed Dec. 28, 1970, Ser. No. 101,811

Claims priority, application Belgium, Oct. 29, 1970, 50563

Int. Cl. A47j 37/12

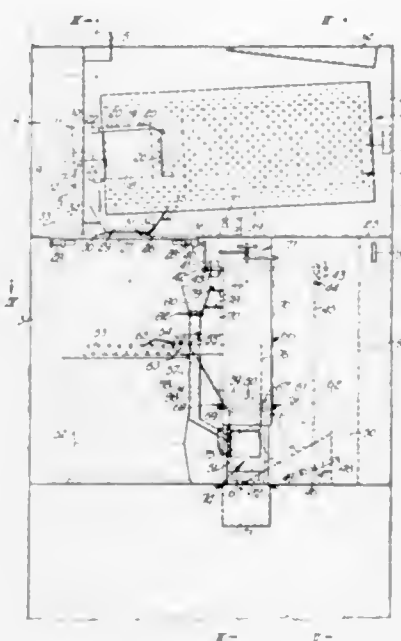
U.S. Cl. 99—355

5 Claims

The invention relates to a potato chip dispensing apparatus, i.e., a fully automatic device for the preparation and packing of (French-fried) potato chips, in which, after insertion of a certain number of coins into an appropriate slot, without any



human intervention a portion or helping of potato chips is



3,690,248

**SANITIZABLE PASTRY FOLDING MECHANISM**

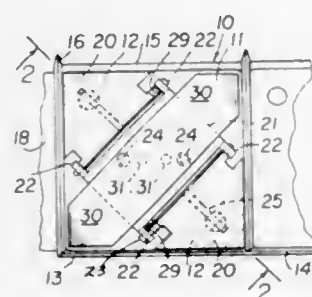
Leonhard Schafer, 2770 Briggs Ave., New York, N.Y.

Filed April 19, 1971, Ser. No. 135,039

Int. Cl. A21c 3/06

U.S. Cl. 99—450.2

5 Claims



3,690,250

**COMPACT LABEL PRINTER**

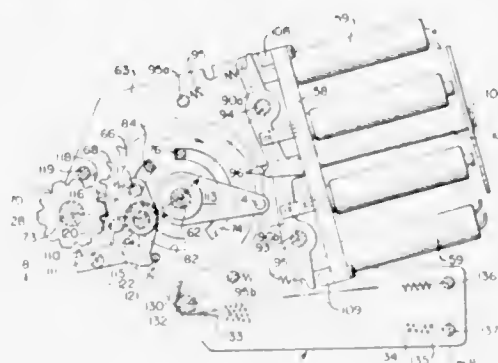
David F. Bremner, Bellbrook, and Stephen B. Smith, Centerville, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed July 16, 1970, Ser. No. 55,361

Int. Cl. B41j 7/48, 1/52

U.S. Cl. 101—95

3 Claims



This invention relates to a spring-loaded mechanism adapted to cut and fold a pastry blanket having an edible filling thereon to produce danish pastry having a filling thereon. The mechanism consists of three parts, preferably made of stainless steel and consists of a cage having preferably more than one cell; a pastry folding mechanism having separable spring-loaded flaps; and a lifter disposed over and partly through the folder mechanism for lifting the prepared folded-over danish pastry for removal. The cage is removably press fitted upon a slat of a conveyor chain consisting of a plurality of said slats, each having a cage thereon. The conveyor slats are not removable from the conveyor and are not a part of this invention. Each folder mechanism has a centrally disposed platform to which is fixed, preferably, two depending legs, which are disposed in frictional seizure relationship to co-acting apertures disposed in said slat to permit removal of the folder mechanism from the slat for cleaning. The lifter also is provided with a platform and two depending legs and is disposed over the folder mechanism platform and through apertures therein and thence into apertures in said slat for removal frictional seizure thereto.

A remotely-controlled print module for use in printing labels or the like wherein differential gears are aligned on a common drive shaft and oscillatably driven to a predetermined position controllable by means of a bail shaft extending through gear slots, the gears meshing with type wheels carried on a shaft parallel to the drive shaft. The gears are loaded in one direction by means of cables and springs and, during the remotely-controlled cycle of operation, are stopped at predetermined positions by means of indexing pawls which are selectively energized through electromagnetic solenoids, the stopped position of the type wheels being compatible for striking by print hammers. The differential gears and thus the type wheels are remotely selectively controlled by computer-type commands which allow for versatility of expansion and compactness of packaging of the print module.

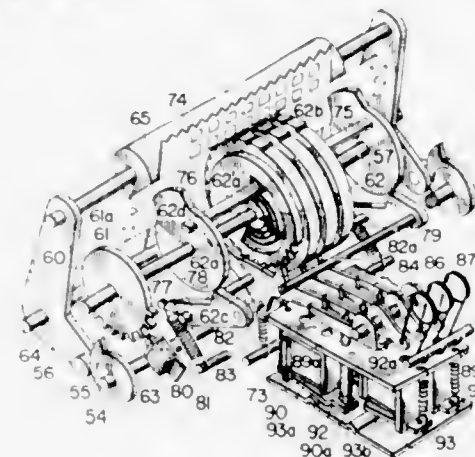
3,690,249  
**TYPE WHEEL SETTING AND RE-SETTING MEANS IN SELECTIVE BED AND PLATEN PRINTING MACHINES**  
Shohachi Nihira, Tokyo; Yasuo Okawara; Takehisa Naito, both of Hoya, and Mikio Moriya, Tokorozawa, all of Japan, assignors to Citizen Watch Co., Ltd., Shinjuku-ku, Tokyo, Japan

Filed April 24, 1970, Ser. No. 31,494

Int. Cl. B41j 1/48

U.S. Cl. 101—95

6 Claims



3,690,251  
**ETCHING SOLUTION APPLICATION DEVICE FOR OFFSET PRINTING MACHINES**  
Yoshiharu Kagari; Koichi Hirokawa, and Toru Hasegawa, all of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

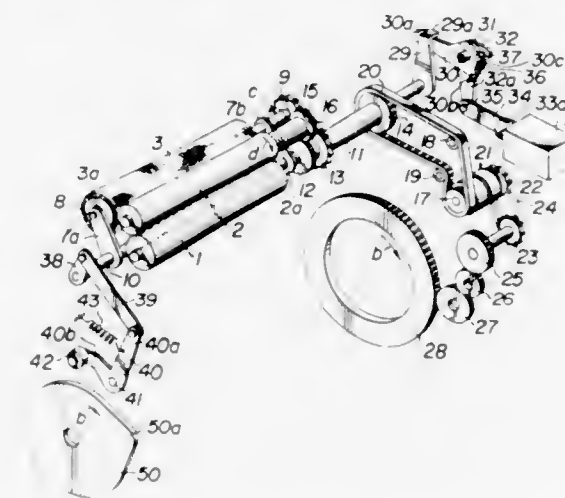
Filed Sept. 4, 1970, Ser. No. 69,568

Claims priority, application Japan, Sept. 9, 1969, 44/71486

Int. Cl. B41f 7/32, 7/40

U.S. Cl. 101—142

3 Claims



An etching solution application device for use with offset printing machines of the type wherein master plates are fed automatically to the master cylinder and comprising an etching solution applying roller mounted for rotary motion and adapted to be brought into and out of pressing contact with the master cylinder in synchronism with the automatic mounting of the master plate on the master cylinder to apply the etching solution to the surface of the master plate. The etching solution application device is rendered inoperative and locked automatically as the applying roller is released from engagement with the master plate upon completion of the etching solution application operation.

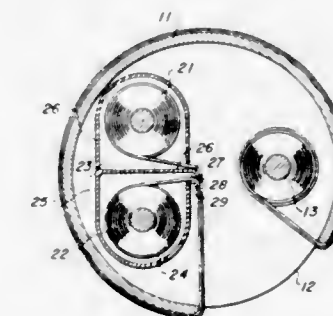
3,690,252  
**LITHOGRAPHIC INKING APPARATUS**  
David A. Sokolov, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Nov. 20, 1969, Ser. No. 878,492

Int. Cl. B41f 25/10, 25/14; B41f 31/24

U.S. Cl. 101—147

3 Claims



An apparatus for applying an ink and water fountain solution to a surface bearing areas of ink receptivity in image configuration and areas of water receptivity in non-image areas to provide a master for printing duplicate copies of subject matter. The ink and water fountain solution are respectively absorbed in separate diverse webs of material whereupon each of the webs may be separately stored in roll form until needed for printing. The material of the ink web and the water web is progressively unreel into pressure contact with the master surface to apply ink to the image configuration and water to the non-image areas.

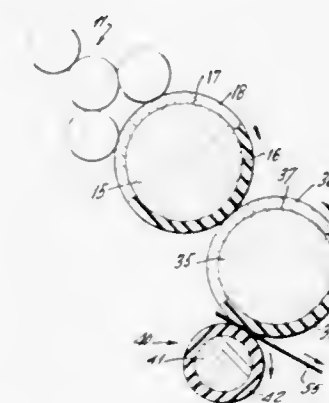
3,690,253  
**SHEET FEED PRESS FOR PRINTING SMALL SIZE SHEETS ON BOTH SIDES SIMULTANEOUSLY**  
Paul E. Dreyer, 46-10 61st St., Woodside, N.Y.

Filed June 10, 1971, Ser. No. 151,747

Int. Cl. B41f 5/02

U.S. Cl. 101—217

12 Claims



This press has three rubber rollers. Two contacting rubber rollers of same diameter have 180° cut-outs receiving printing plates of any angular extent up to 180° with the rubber of each one contacting the plate of the other as these two rollers roll in opposite directions by means of gearing. When the printing plate is a full 180°, the rubber layer on one roller always contacts the printing plate of the other. The third roller is rubber all around and has a circumference equal to half of the circumference of each of the first two rollers. A single inking system applies ink to the first of the two rollers. Thus, the first of the two rollers accomplishes a double function as plate and inkroller, the second of the first two rollers has the function of a plate and blanket roller and the third smaller roller acts as a blanket and impression roller, so that a sheet fed between the second of the two rollers and the smaller roller, is printed on both sides simultaneously.

3,690,254  
**INK FOUNTAIN ROLLER DEVICE FOR A PRINTING PRESS**

Karl-Heinz Krochert, Offenbach am Main, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Offenbach am Main, Germany

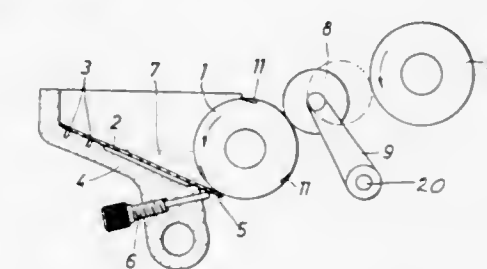
Filed April 9, 1970, Ser. No. 26,945

Claims priority, application Germany, April 15, 1969, P 19 18 987.8

Int. Cl. B41f 31/06, 31/14

U.S. Cl. 101—350

5 Claims



A fountain roller device for a printing press has a fountain roller with an axially elongate preferably spiral shaped groove in its peripheral wall and an ink knife coacting with the peripheral wall of the fountain roller to control the thickness of the ink layer on the same by the width of the gap between the knife and the roller. Fibers and paper particles as may be contained in the ink will accumulate in this groove and are removed therefrom as the roller rotates, assisted if desired by the sweeping action of a roller with an elastically soft surface intermittently engaging the fountain roller thereby obtaining a continuous self-cleaning of the gap.



3,690,255

## LIQUID PROPELLANT CARTRIDGE

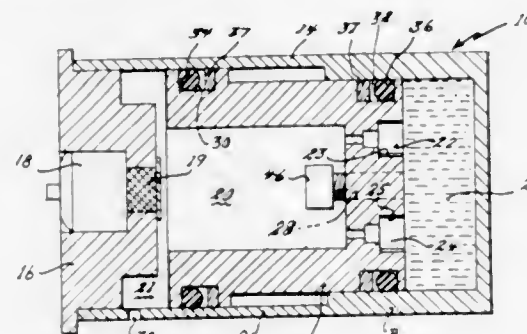
Edward J. Vass, Los Alamitos; Richard H. Braun, Downey, and Conrad R. Platt, Huntington Beach, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Oct. 1, 1970, Ser. No. 77,160

Int. Cl. F42b 3/04

U.S. Cl. 102-39

1 Claim



A system for controlled generation of high energy gas from a liquid propellant, based upon a differential area piston injecting liquid propellant into a combustion chamber in a regenerative cycle. One of its applications is for cartridge bomb ejection. Pressure of burning fuel fired by a primer ruptures seals in a piston wall and causes extrusion of liquid fuel from a reservoir area into the piston cavity which lies in the combustion area. Combustion of the extruded liquid carries on a regenerative process until all fuel in the reservoir has been consumed.

3,690,256

## CARTRIDGE CASE

Oskar Schnitzer, Lehmstrass 38, Furth/Bay, Germany

Filed Jan. 23, 1970, Ser. No. 5,287

Claims priority, application Germany, Feb. 1, 1969, P 19 05 103.7

Int. Cl. F42b 5/26, 7/00

U.S. Cl. 102-43 R

27 Claims



Pipe, casing, or the like having a fitting disposed at one end thereof. The fitting has an internal and an external section which are connected in a form-locking manner, and the end of the pipe, casing, or the like is held therebetween by means of a form-locking and/or frictional connection. In particular, the external section annularly surrounds the internal section and can be connected with the internal section by means of a snap connection, and at least one of the sections is made of a sufficiently elastic material. When used as a shot cartridge case, the internal section is provided with a primer cap support and an axial flash hole.

3,690,257

## CONTINUOUS ROD WARHEAD

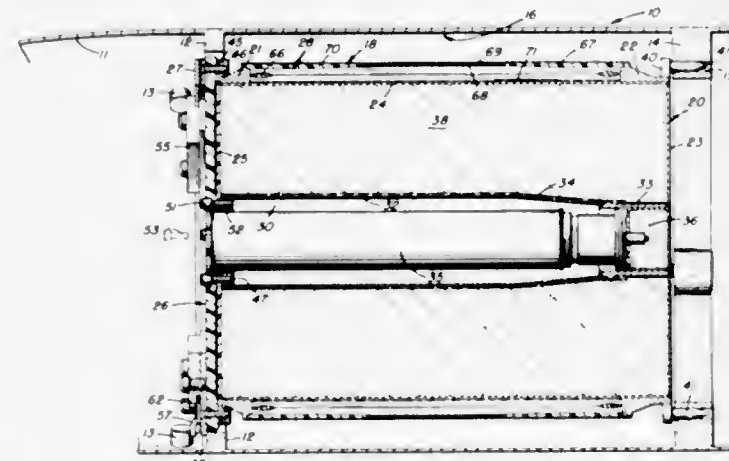
Eugene L. Nooker, Silver Spring; Luther G. Thompson, Gaithersburg, both of Md.; Glenn E. Varney, Cincinnati, Ohio, and Victor J. Dietz, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 30, 1967, Ser. No. 666,543

Int. Cl. F42b 13/18

U.S. Cl. 102-67

16 Claims



The present invention is a continuous rod warhead of more efficient design than previously devised warheads of this type. Its novel features include advanced casing and forward cover plate designs, a new weld for the rod ends, and more effective means for assuring good rod motion and continuity.

The case is designed to take the combined axial and longitudinal warhead load in flight, through the cover employed, and the forward plate functions to mount the safety and arming mechanism in place and to provide a temperature barrier to prevent excessive heating or melting of the high explosive during flight toward a target of a missile containing the warhead.

Rod motion and continuity control is effected by an improved filter and spacing arrangement and by a hinge weld of advanced design.

3,690,258

## PRIMER RETAINER BUSHING

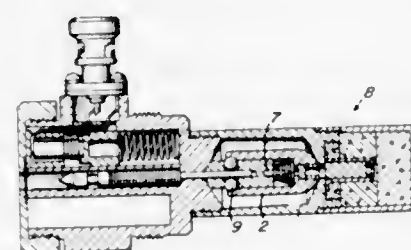
Aaron S. Berlin, Wilmington, Del.; Vincent C. Little, Fallston; Toney Leadore, Havre de Grace, both of Md., assignors to The United States of America as represented by the Secretary of the Army

Filed Sept. 24, 1970, Ser. No. 75,006

Int. Cl. F42c 19/08

U.S. Cl. 102-70 R

4 Claims



A primer mounting assembly and method of assembly for reliably and reproducibly fixedly mounting an initiator means such as a primer means or a detonator means within munitions by press fitting to avoid misfire and unsafe munitions.

3,690,259

## IGNITER FOR ELECTRIC PRIMER

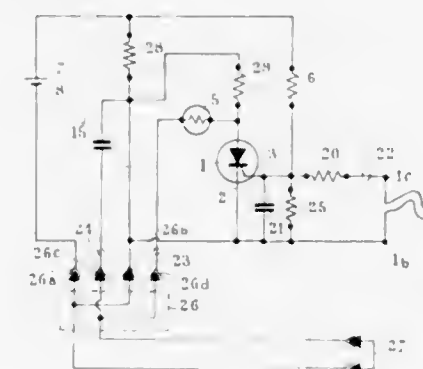
Henry Piazza, Toulouse, and Pierre Bach, Ferney-Voltaire, both of France, assignors to French State, represented by the Minister of Armed Forces, Ministerial Delegation for Weapons, Technical Direction of Land Weapons, Manufacturing Workshop of Toulouse, Paris, France

Filed April 3, 1969, Ser. No. 814,888

Int. Cl. F42b 23/26

U.S. Cl. 102-70.2

4 Claims



An igniter for an electric primer, applicable notably to the firing of mines, comprising a two-wire flexible trapping line disposed across the trapping area and short-circuited at one end, and a controlled semi-conductor element or "thyristor" connected in series with said electric primer and a source of electric current, said two-wire trapping line being connected to said controlled semi-conductor element so as to cause same to become conductive and thus fire the primer when the two-wire line is broken.

3,690,260

## FLAME SENSITIVE IGNITOR

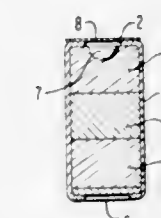
Josef Prior, Victoriastr. 11, Troisdorf, Germany

Filed July 3, 1969, Ser. No. 838,919

Int. Cl. F42c 19/08

U.S. Cl. 102-86.5

10 Claims



A flame-sensitive ignitor for an explosive charge, comprising a capsule containing a primer charge sensitive to flame ignition and a foil cover for retaining the charge within the capsule, wherein a recess is formed between the foil cover and the surface of the primer charge.

3,690,261

## DEVICE FOR MAKING LISTS BY COPYING PORTIONS OF DOCUMENTS IN AN INTEGRATED FORM

Junichi Yokoi, 11-20, 2-chome, Wakehonmachi, Higashi-Osaka, Japan

Filed Oct. 6, 1969, Ser. No. 863,980

Claims priority, application Japan, Oct. 5, 1968, 43/72696

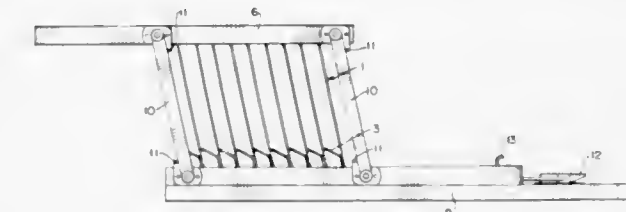
Int. Cl. B42f 15/00

U.S. Cl. 40-104.04

10 Claims

Device comprising replaceable holders for documents of which portions have to be copied in the form of an integrated list, an actuating frame, a base plate disposed under the frame, and links connecting the frame and the base plate. The document holders are mounted in recesses in both the frame and the base plate, with suitable spaces apart. When the frame is

folded down and fixed onto the base plate, the documents inserted in the holders are brought into orderly arrangement, in an overlapping manner, each exposing a definite marginal



index portion. Thus the original sheets or documents can be compiled into a list which can then be subjected to a conventional copying operation.

3,690,262

## TRACK CORRECTION AND TAMPING MACHINE

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, 1010 Vienna, Austria

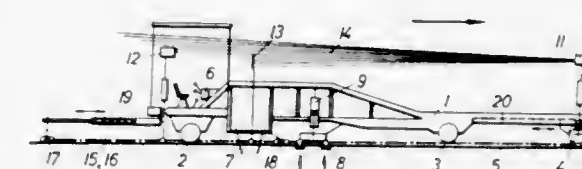
Filed Nov. 19, 1969, Ser. No. 878,133

Claims priority, application Austria, Dec. 2, 1968, 11727/68

Int. Cl. E01b 27/17

U.S. Cl. 104-7 R

20 Claims



A universal tamper comprises a track leveling and lining tool mounted between the front and rear axles of an elongated machine frame. The distance of the front axle from the track correction tool and the rear axle is variable. The tamper has a reference system for the track correction.

3,690,263

## TRACK LINING APPARATUS

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, 1010 Vienna, Austria

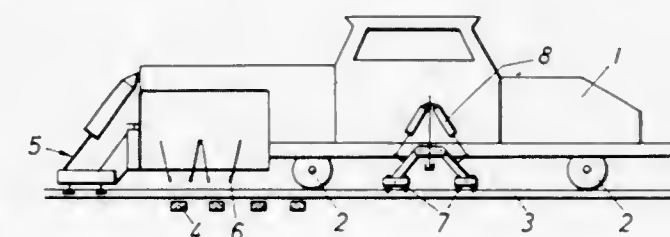
Filed March 13, 1970, Ser. No. 19,340

Claims priority, application Austria, April 3, 1969, A 3333/69

Int. Cl. E01b 33/02

U.S. Cl. 104-8

13 Claims



A track lining tool, which is hydraulically movable laterally to move a track engaged by the tool, comprises a flanged wheel running on the top surface of the rail head, and another rail engaging element adjacent the wheel which can be moved into and out of a position wherein it engages the side surface of the rail head.



3,690,264

**MOBILE TRACK WORKING APPARATUS**

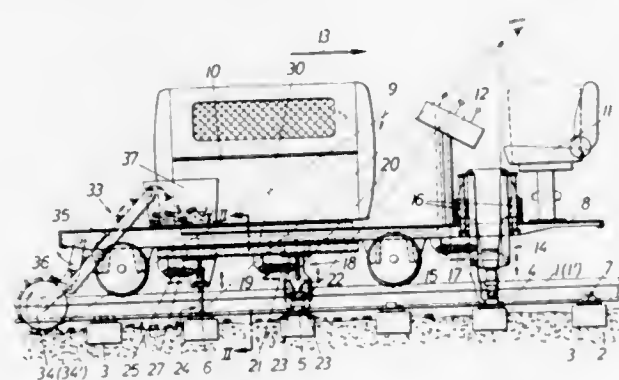
Franz Plasser, and Josef Theurer, both of Johannesgasse 3, Vienna 1., Austria

Filed Dec. 10, 1970, Ser. No. 96,707

Claims priority, application Austria, Dec. 17, 1969, 11756  
Int. Cl. E01b 29/26

U.S. Cl. 104—17 R

8 Claims



A mobile track working machine for assembling and disassembling tie plates comprises a car frame and a plurality of working tools mounted on and underneath the car frame, the tools being spaced from each other in the working direction of the machine, and each tool being associated with one of the connecting elements attaching the rails to the ties.

3,690,265

**AQUATIC SLED AND SHOOTING APPARATUS THEREOF**

Hiroshi Horibata, Akebono-So No. 3-7-15, Kichijoji Minami-machi, Musashino-shi, Tokyo, Japan

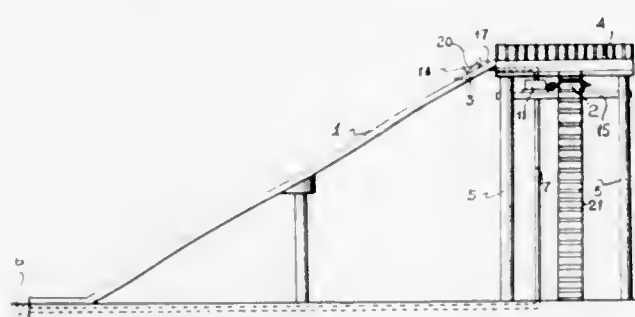
Filed Sept. 1, 1970, Ser. No. 68,659

Claims priority, application Japan, Sept. 3, 1969, 44/69330; Sept. 8, 1969, 44/70579; May 22, 1970, 45/43329

Int. Cl. A63g 21/18

U.S. Cl. 104—70

10 Claims



An amusement arrangement includes an inclined slide and a fluid supply means to supply lubricating fluid upon the slide. A sled is fabricated of a lighter material than the lubricating fluid and is adapted to ride in the slide. Brake means are provided to coact between the sled and the slide to control the sliding speed of sled on the slide by selective frictional contact therewith.

3,690,266

**RAIL SUSPENSION ARRANGEMENT**

Alfred M. Mayo, 14604 Las Flores, Dallas, Tex.

Filed June 2, 1970, Ser. No. 42,781

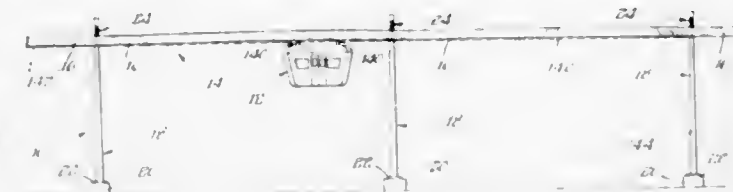
Int. Cl. E01b 25/22, 25/24

U.S. Cl. 104—123

7 Claims

An overhead monorail guideway arrangement for transportation vehicles comprises a suitable number of upright columns arranged in spaced relationship along a transporta-

tion route, an overhead rail, and a suspension which resiliently mounts the rail to the columns, the resilient mounting



minimizing differential vertical deflection of the rail under live loading so as to provide substantially level transit to a vehicle riding on the rail.

3,690,267

**PUBLIC TRANSPORTATION SYSTEM**

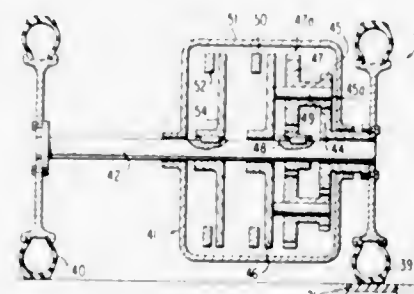
James F. Sutton, 107 Beverly Hills Dr., Marietta, Ga.

Filed Sept. 17, 1970, Ser. No. 72,993

Int. Cl. B61b 9/00, 13/00

U.S. Cl. 104—165

21 Claims



A public transportation system for use at an airport, shopping center or similar controlled area and which includes planned routes or roadways between various loading stations. Continuously driven belts extend between the loading stations along the roadways, and passenger and freight vehicles are movable with the belts. Each vehicle includes a wheel which is positioned out of alignment with the roadway wheels and engages the belt, and a variable speed transmission means is connected between the belt wheel and a roadway wheel to transmit the belt velocity through the belt wheel to the roadway wheel and propel the vehicle.

3,690,268

**CONVEYOR WITH STABILIZING MEANS**

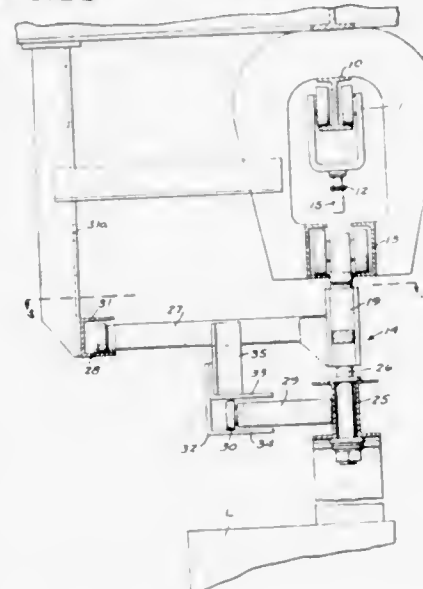
Albert Goldstein, Southfield, Mich., assignor to American Chain &amp; Cable Company, Inc., New York, N.Y.

Filed April 20, 1971, Ser. No. 135,646

Int. Cl. B65g 17/42

U.S. Cl. 104—172 S

17 Claims



A power and free conveyor system including a power track along which a conveyor is movable and a load track along

which carriers are movable. Each carrier comprises longitudinally spaced trolleys interconnected by a load bar pivoted thereto. A first guide bar is fixed to and extends laterally from at least one of the trolleys and a second guide bar is fixed to and extends laterally from the load bar. The first guide bar supports a second guide rail thereon which is engaged by the second guide bar. The first guide bar engages a guide rail along any portion of the track. In movement through a curved portion, the second guide bar is movable along the second guide rail to accommodate for the chordal movement of the load bar with respect to the arcuate movement of the trolleys of the carrier.

3,690,269

**CONVEYOR SYSTEMS**

Cyril Frank Hempstead, Stevenage, England, assignor to Geo W. King, Stevenage, England

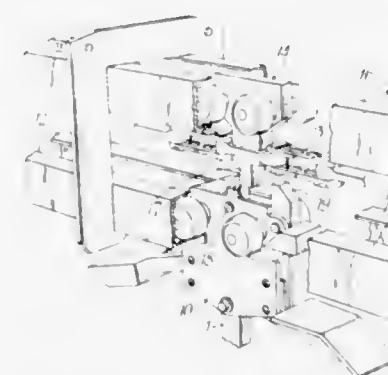
Filed May 24, 1971, Ser. No. 146,323

Claims priority, application Great Britain, May 22, 1970, 25,018/70

Int. Cl. B65g 17/42

U.S. Cl. 104—172 S

8 Claims



A power and free conveyor has a downwardly inclined section of its trolley track provided with a holding station at which is disposed a stop mechanism. The mechanism includes a stop arm which normally occupies an operative position in which it projects over the trolley track to depress into inoperative positions respective driving dogs and respective holdback dogs of trolleys on the track. In their operative positions, these driving dogs are engageable by pushers carried by an endless power chain running in a chain track spaced above the trolley track. The stop arm arrests a trolley by abutting the depressed holdback dog of the trolley. The mechanism also includes a second member which normally occupies an operative position in which it projects under the trolley track to restrain forward movement of a trolley at the holding station. On receipt of a signal from the next holding station along the track that the preceding trolley is clear of this next station, a pneumatic piston-and-cylinder device moves the stop arm into its inoperative position to cause a pusher to engage the driving dog of the detained trolley, and another such device allows the second member to move forwardly gradually into its inoperative position to cause a smooth forward movement of the trolley under the action of the pusher.

3,690,270

**RAILWAY TRUCK BOLSTER**

Paul F. Gutmann, Jr., and Thomas L. Mueller, both of St. Louis County, Mo., assignors to Scullian Steel Company, St. Louis, Mo.

Filed March 16, 1970, Ser. No. 19,711

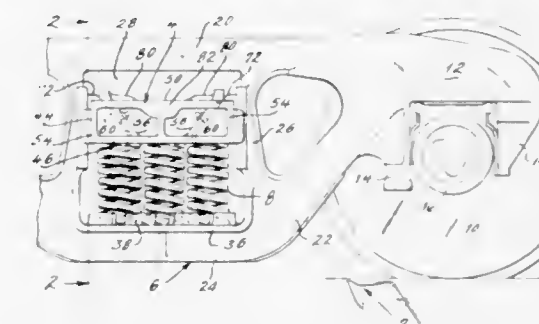
Int. Cl. B61f 5/06

U.S. Cl. 105—197 D

10 Claims

A railway truck has a cast bolster, the ends of which are substantially hollow and project through windows in side frames. The bolster ends are snubbed by wedge-shaped friction castings which are urged upwardly by side springs and have inclined friction surfaces which bear against wear plates at-

tached to the bolster ends. Access to the connecting devices for securing the wear plates to the bolster ends is gained through holes formed in the top walls of the bolster ends. The top walls are further embossed at the outer edges of the holes



to provide clearance around the connecting devices and are depressed at the inner ends of the holes so that a fastening tool can be inserted through the hole and advanced into engagement with each connecting device.

3,690,271

**DAMPENED RAILWAY CAR TRUCK**

Anthony Edward Walter Hobbs, London, England, assignor to British Railways Board, London, England

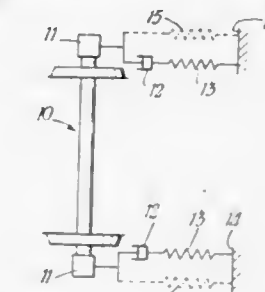
Filed Sept. 15, 1969, Ser. No. 858,093

Claims priority, application Great Britain, Sept. 17, 1968, 44171/68

Int. Cl. B61f 3/12, 5/24, 5/38

U.S. Cl. 105—199 R

7 Claims



This invention relates to a railway vehicle suspension in which the vehicle is supported on wheelsets or double axle bogies by way of a yaw suspension which allows relative yawing movements between the vehicle and the wheelsets or bogies. This yaw suspension includes a resilient arrangement, such as a series-connected damper and spring, whose dynamic stiffness increases with increase in the yaw velocity. In this way any high frequency yawing movements, such as are caused by track irregularities, are quickly damped out.

3,690,272

**RAILROAD CAR**

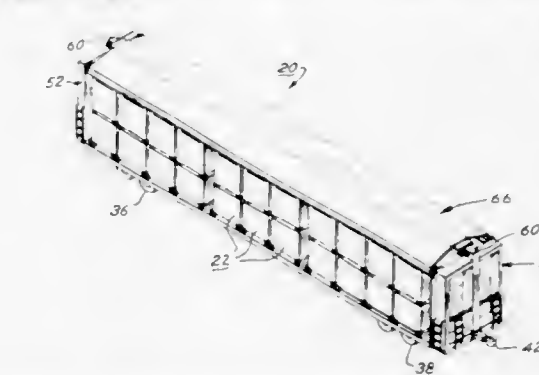
Paul E. Ogle, Elmwood Park; Kenneth L. Coleman, Chicago; Ross W. Wagner, Homewood, all of Ill., and Lynn J. Harter, Buford, Ga., assignors to O-T-D Corporations, by said Ogle and said Coleman

Filed May 17, 1971, Ser. No. 144,129

Int. Cl. B60p 7/10; B65j 1/22; B61d 45/00

U.S. Cl. 105—366 R

46 Claims



An improved railroad car for transporting a plurality of sets of containers, stacked one on top of the other, which are util-



ized for shipping relatively heavy materials, such as bales of synthetic rubber.

The railroad car includes a floor on which the lower ends of the sets of stacked containers rest during transport, upstanding bulkheads located at each end of the floor, and a vertically movable, upper assembly which overlies the upper ends of the sets of stacked containers and which in its lower or transport position, secures the upper ends of the sets of stacked containers against relative movement with respect to the railroad car. The floor includes a means for restraining relative movement between the lower ends of the sets of stacked containers and the floor during transport. When the upper assembly is in its upper position, containers can be loaded onto or unloaded from the car through the open sides of the car by, for example, fork lift trucks. The upper ends of the bulkheads are connected together by structural members during transport so that forces imposed on upper assembly by the containers, and particularly those occurring when the railroad car is bumped, are transmitted and distributed between both of the bulkheads. In some embodiments described herein, the upper assembly includes and carries these structural members; whereas, in other embodiments, the upper assembly carries a portion of the structural members while others of these structural members are stationary.

3,690,273

# MACHINE INSTALLATION FOR FORMING ON SUCCESSIVE FIELDS OF CONTINUOUS FLEXIBLE RIBBON COMPLEMENTAL PARTS OF DECORATIVE PATTERNS

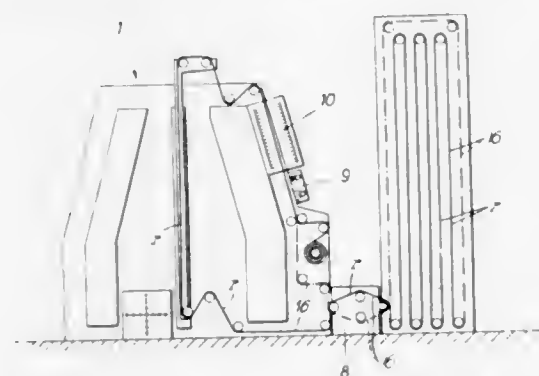
Rudolph Reich, An der Ringstr. 6, 545 Neuwied, Germany  
Filed Aug. 26, 1970, Ser. No. 66,959

Claims priority, application Germany, Aug. 27, 1969, P 19  
43 456.1

Int. Cl. D05b 19/00

U.S. Cl. 112—121.11

11 Claims



A machine installation providing a plurality of machines arranged in series and having operating cycles for producing complementary parts, respectively, of decorative patterns on therewith registering fields of a continuous flexible longitudinal ribbon, and endless conveyor chain means releasably holding longitudinally extended ribbon at its opposite side margins and taut across its width, and operative between successive operating cycles of the machines to step successive ribbon fields into register with the respective machines.

3,690,274

# ZIGZAG SEWING MACHINE WITH A CONTROL DEVICE FOR VARYING THE OVERSTITCH WIDTH

Atsuo Ohira, c/o Aisin Seiki Kabushiki Kaisha, 1, Asahi-mchi,  
2 chome, Kariya, Aichi Pref., Japan

Filed Dec. 7, 1970, Ser. No. 95,554

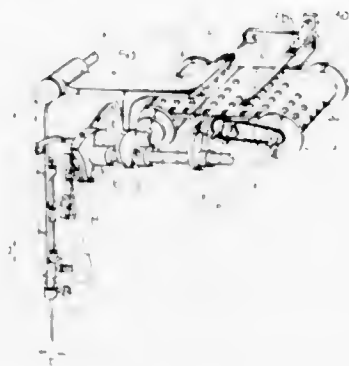
Claims priority, application Japan, Dec. 12, 1969, 44/100489  
Int. Cl. D05b 3/02

U.S. Cl. 112—158 R

5 Claims

In a zigzag sewing machine, the over stitch width is varied by a control device, the device includes a needle bar frame being oscillatable about an axis on the machine and reciprocally supporting a needle bar therein, a negative cam means is secured on the main drive shaft and engages said needle bar

frame, a tape means running in the device has a number of series of variable number of perforations and a series of varying length follower means on said needle bar frame is engageable



3,690,275

Patent Not Issued For This Number

3,690,276

# LABEL SEWING MACHINE WITH THREAD CUTTER

James Frank King, 925 Goodwood Rd., Winston-Salem, N.C.;

Howard L. Beamon, 2626 Dudley St., Winston-Salem, N.C.;

Willie M. Lathery, 1342 Tredwell Dr., Winston-Salem, N.C.;

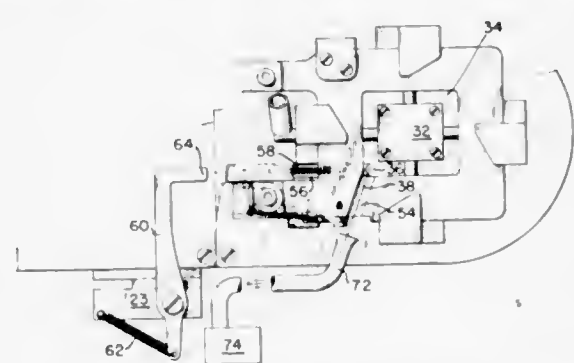
and Kenneth W. Newlen, 613 Runyon Dr., High Point, N.C.

Filed March 18, 1971, Ser. No. 125,504

Int. Cl. D05b 65/02, 65/06

U.S. Cl. 112—252

10 Claims



An improvement for a sewing machine used for barring and tacking operations which moves the work piece with respect to the sewing machine needle and produces a preselected number of stitches in programmed directions within the work piece. These machines inherently have a thread surplus extending from the thread source and through the work piece at the commencement of each sewing cycle. Specifically, this invention is a thread surplus separating apparatus which extends the thread surplus in a given manner, retains the thread surplus in this extended direction on the needle side of the work piece to avoid collection on the thread of dirt and grease from the shuttle of the machine and separates the thread surplus from the thread supply.

3,690,277

# METHODS OF HEMMING AND SEAMING FABRICS

Frederick J. Baxter, East Longmeadow, and Yvonne R. Benoit,

Springfield both of Mass., assignors to Johnson & Johnson

Filed April 21, 1971, Ser. No. 135,953

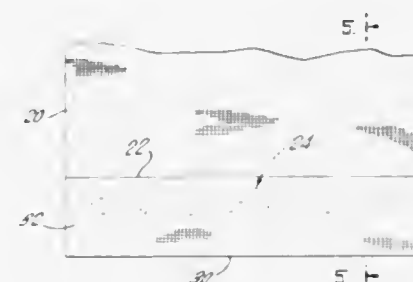
Int. Cl. D05b 1/24

U.S. Cl. 112—267

4 Claims

A method of joining two fabric surfaces together which comprises: sewing a synthetic, fusible, thermoplastic thread to

one of the fabric surfaces to be joined, the sewing taking the form of a blind sewing stitch which passes through only a portion of the full depth of the fabric and which interloops with itself or with one or more other threads on the surface of the fabric; bringing the surface of the fabric containing the interlooped thread stitch into contact with the other fabric surface



to be joined, whereby the interlooped thread stitch contacts both fabric surfaces; and applying heat and pressure to the fabric surfaces and the interposed, interlooped thread stitch, whereby the synthetic, fusible, thermoplastic thread softens and becomes adhered to both fabric surfaces, joining them together.

3,690,278

# METHOD AND DEVICE FOR THE MANUFACTURE OF SEAMLESS METAL BOTTLES

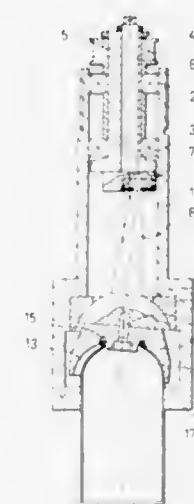
Juhani Rautava, Helsinki, Finland, assignor to Printal Oy,  
Helsinki, Finland

Filed Oct. 9, 1970, Ser. No. 79,425

Int. Cl. B21d 51/26; B21b

U.S. Cl. 113—1 G

4 Claims



A method for the manufacture of seamless metal bottles, particularly so-called aerosol bottles, which are made from a cold-molded, cylindrical blank, open at one end. The open end of the blank is shaped by compression into a bottleneck. The open end of the blank is pressed axially against a rotation surface brought into a conic pendulum motion so that the edges of the opening of the blank are evened and thickened to some extent, and then against another rotation surface, which has also been brought into a pendulum motion so that its axis of symmetry moves like a conic pendulum, at which time the pendulous pole of the conic pendulum is on the central axis of the completed bottle, and the shape of the second rotation surface is approximately that of the completed bottleneck. Only the diameter of its plane section is somewhat greater than the diameter of the respective area of the bottleneck.

# 3,690,279 NECKED-IN CAN BODY AND METHOD AND APPARATUS FOR MAKING SAME

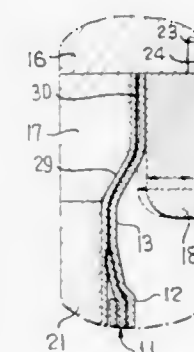
George W. Thompson, Orland Park, and John T. Hilgenbrink,  
Oak Lawn, both of Ill., assignors to Continental Can Com-  
pany, Inc., New York, N.Y.

Filed Oct. 2, 1970, Ser. No. 77,617

Int. Cl. B21d 41/04

U.S. Cl. 113—120 AA

3 Claims



This disclosure relates to the formation of a can body having at least one necked-in end portion wherein at least the end portion of the can body is of a lapped construction with a deformable bonding material therein. It is customary to neck-in ends of can bodies utilizing a necking die with a floating center post. The clearance in such die construction takes into consideration the extra thickness of the side seam. It is now proposed to make the clearance between the die ring and the center post such that when the necking in occurs, the side seam will be compressed, thereby assuring side seam end portions of a uniform thickness. It is also proposed to effect a reduction in the thickness of the deformable bonding material which will provide increased seam strength, better creep resistance, and last, but not least, superior double seaming latitude because of uniformity and consistency of dimensions.

3,690,280

# FENDER FOR LARGE SHIP

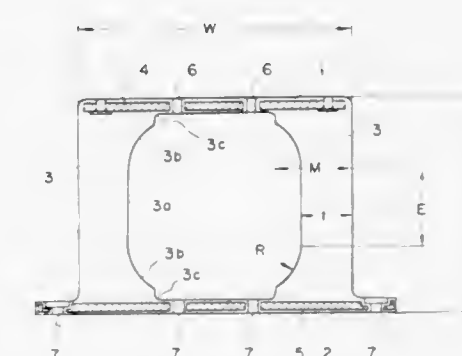
Jiro Narabu, Tokyo, Japan, assignor to Seibu Gomu Kogoku  
Kogyo Kaishiki Kaisha, Tokyo, Japan

Filed Sept. 14, 1970, Ser. No. 71,722

Int. Cl. B63b 21/00

U.S. Cl. 114—219

1 Claim



In a rectangular tubular fender for large ship, made of elastic material and composed of a buffer, a fixture and two supports provided between said buffer and said fixture, the present invention contemplates an improvement therein wherein the exterior surfaces of said supports being made parallel to each other, the interior surfaces of said supports being flat and parallel to said exterior surfaces in the middle portion, the adjacent parts of said middle portion to said buffer and said fixture being curved, and the junctions between said curved portion and said buffer or fixture being depressed with a notch.



3,690,281

**STERN CONSTRUCTION FOR ICEBREAKING VESSELS**

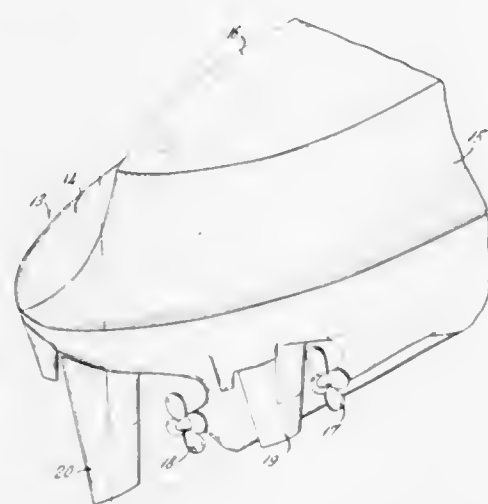
William O. Gray, Darien, Conn., assignor to Esso Research and Engineering Company

Filed Dec. 21, 1970, Ser. No. 100,171

Int. Cl. B63b 35/08

U.S. Cl. 114—41

6 Claims

**3,690,283  
METHODS OF AND APPARATUS FOR REDUCING  
RESISTANCE TO THE HULL OF A VESSEL**

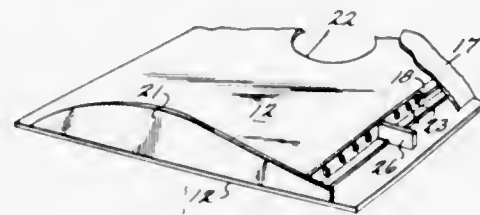
Joseph Harbit Pool, 5 The Anglers, Portsmouth Rd., Kingston upon Thames, England

Filed Oct. 7, 1970, Ser. No. 78,904

Int. Cl. B63b 1/38

U.S. Cl. 114—67 A

8 Claims



In order to reduce resistance to motion of a hull through water and/or to counteract marine growth on the hull pressurized air is discharged from a duct extending transversely of the hull into a diffuser chamber from which it is discharged through a slot in the form of a film flowing rearwardly over the submerged hull.

3,690,284

**RUDDER OR KEEL FOR A WIND AND/OR POWER  
PROPELLED VESSEL**

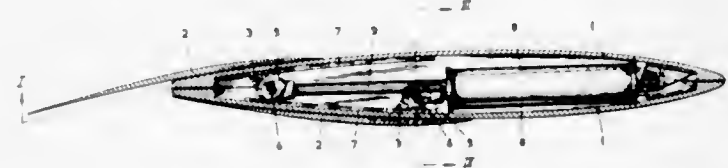
Ericus Gerhardus Van de Stadt, Beemster, Netherlands, assignor to Van de Stadt, E.G. Scheepwert N.V., Zaandam, Netherlands

Filed April 15, 1971, Ser. No. 134,322

Int. Cl. B63h 25/44

U.S. Cl. 114—152

7 Claims



A rudder or keel for a wind and/or power propelled vessel, the keel or rudder having at its rear part mounted thereon at least one extension blade which is adapted, from the hull of the vessel, to be rearwardly extended from or retracted to a position wherein its rear edge substantially does not project rearwardly of the trailing edge of the keel or rudder. This will enhance the maneuverability and rudder movement, or increase the required keel lift by reducing leeway and/or improving the trim.

3,690,285

**DRIFTING ANCHOR ALARM**

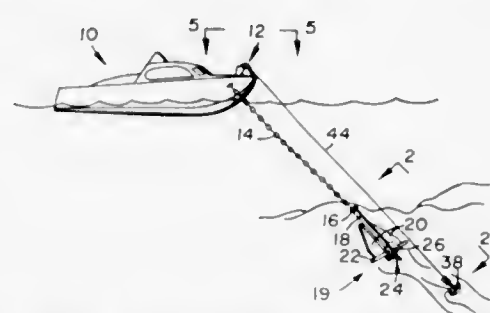
Edward F. Ellison, 1212 Sandcastle Dr., Corona del Mar, Calif.

Filed April 7, 1971, Ser. No. 131,984

Int. Cl. B63b 21/24

U.S. Cl. 114—206 R

10 Claims



A Drifting Anchor Alarm for detecting when a boat anchor is moving with respect to the general position in which it has

A construction for the stern of an icebreaking vessel wherein the stern is constructed and arranged to have a shape such that the vessel as it backs into its own broken channel filled with previously broken ice, effectively will shovel the ice pieces up and to the sides of the vessel, thereby clearing the channel so as to facilitate backing and simultaneously keep the ice away from the vessel's screw(s).

3,690,282

**COMBINATION LADDER AND HOIST APPARATUS**

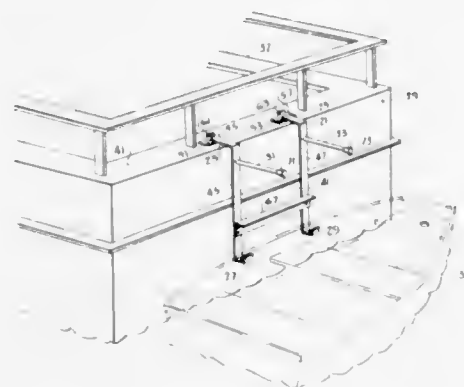
Lloyd H. Busby, 4175 Jacinto Way, Long Beach, Calif.

Filed Nov. 27, 1970, Ser. No. 46,790

Int. Cl. B63b 23/04

U.S. Cl. 114—43.5

7 Claims



A combination ladder and hoist apparatus for stowing a dinghy from the transom of a large boat and including a ladder which is mounted on its upper extremity from the transom. The hook means is formed on the lower portion of the ladder for hooking on the rail formed by the gunwale on one side of the dinghy. Abutment means is mounted on the upper extremity of the ladder for abutting the side of the dinghy opposite the one side whereby the apparatus may be mounted from the transom and the dinghy floated adjacent thereto to hook the dinghy rail on the hook means. The side of the dinghy remote from the hook means may then be hoisted upwardly to engage the abutment means and such dinghy lashed in place.

**ERRATUM**

For Class 116—119 see:  
Patent No. 3,690,295

3,690,288

**APPARATUS FOR PROCESSING COILED TUBING  
HAVING TURNS PRESENT TO VARYING RADII OF  
CURVATURE**

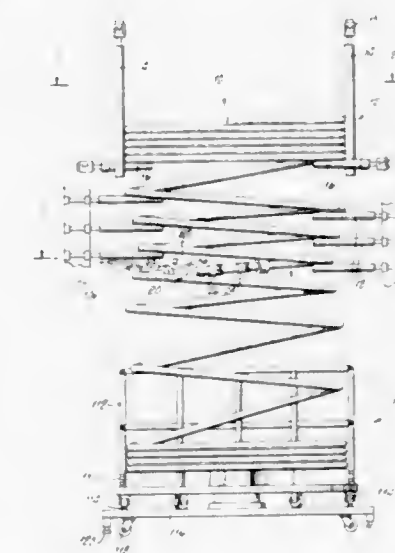
George Main, Garfield Heights, and Robert E. Jahnke, Fairview Park, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Feb. 3, 1970, Ser. No. 8,369

Int. Cl. B05c 11/12, 5/02

U.S. Cl. 118—6

13 Claims

**3,690,286  
HAIR TRIGGER BURGLAR ALARM**

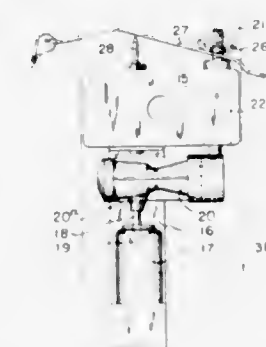
Kenneth T. Gantt, 4132 East 144th St., Cleveland, Ohio

Filed July 26, 1971, Ser. No. 165,470

Int. Cl. G08b 13/08

U.S. Cl. 116—86

6 Claims



A burglar alarm for detecting the unauthorized opening of a door or window in a building comprises a unitary, compact structure for attachment of the alarm with an actuating cable or chain connected in a manner to trigger the alarm upon very slight opening of the door or window. A horn and a can of pressurized fluid are mounted adjacent each other on a frame with a connection for the flow of pressurized fluid from the can to the horn when a normally closed valve is opened. A spring is biased in a manner to cause opening of the valve when the spring bias is released. A lever normally holds the spring in biased position with an arrangement whereby the slightest pull on the lever by the flexible connection to the door or window causes release of the spring and actuation of the horn.

3,690,287

**CONTROL KNOB FOR MULTITURN ROTARY SWITCH**

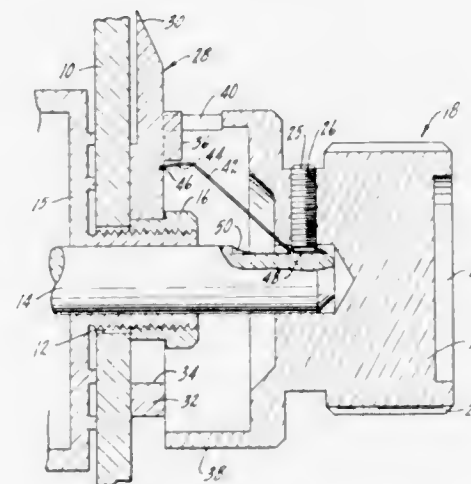
Leo Jedynak, and Vidas Gusaras, both of Madison, Wis., assignors to Oak Electro Netics Corp., Crystal Lake, Ill.

Filed Aug. 12, 1971, Ser. No. 171,061

Int. Cl. G09f 9/00

U.S. Cl. 116—124

9 Claims



A control knob for use with a multiturn rotary switch in which means are provided for moving an indicating member radially of the switch shaft to show switch positions over several turns of the shaft.

3,690,289

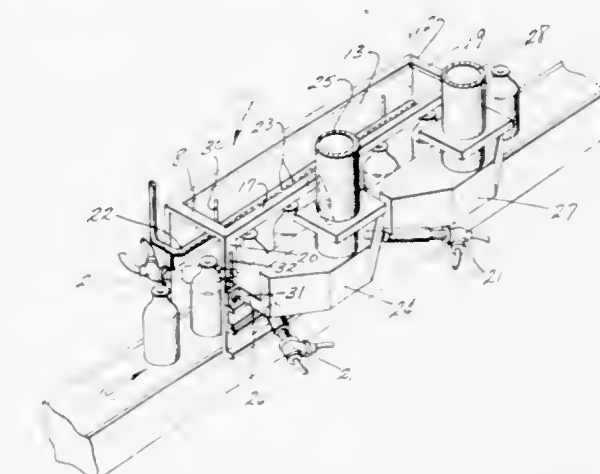
**VAPOR TREATMENT HOOD**

Charles A. Frank, 68 Summit Ave., Bridgeton, N.J. Division of Ser. No. 756,024, Aug. 28, 1968, Pat. No. 3,623,854. This application July 22, 1971, Ser. No. 165,164

Int. Cl. C23c 13/12

U.S. Cl. 118—48

3 Claims



A treatment hood designed to be used in conjunction with a conveyor on which bottles or like articles are moved in succession.



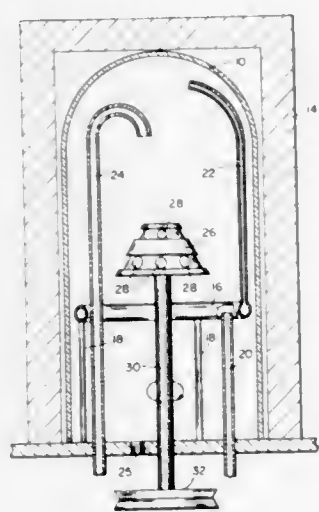
sion through the hood. Tin chloride or titanium chloride vapor is introduced into the hood at a point below the midpoint of the containers or articles to be coated and such treatment is prevented from impinging on the neck or finish of the container. A cross-air barrier is directed across the width of the hood to sweep just below the neck of the container and be directed toward an exhaust system positioned along the length of the conveyor.

**3,690,290**  
**APPARATUS FOR PROVIDING EPITAXIAL LAYERS ON A SUBSTRATE**  
Gary Nicholas Jarvela, and Howard Nassime Klink, both of Scottsdale, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed April 29, 1971, Ser. No. 138,601  
Int. Cl. C23c 13/12

U.S. Cl. 118—48

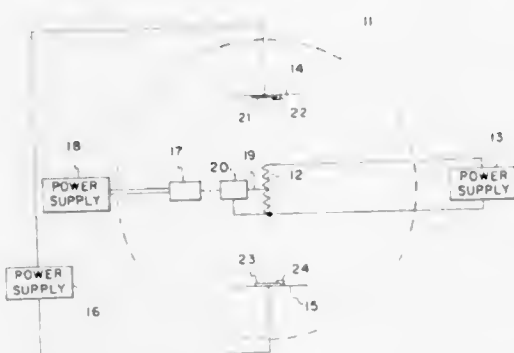
5 Claims



Epitaxial deposition apparatus includes a bell jar disposed within a furnace and having therein a closed annulus adapted to contain material to be vaporized when heated. First tubular means delivers gaseous reactant to the annulus and second tubular means delivers the reaction product, of the vaporized material and gaseous reactant, to a top portion of the bell jar. Means deliver a second gaseous reactant to said top portion. Means support a substrate at an intermediate portion of the bell jar.

**3,690,291**  
**DEPOSITION APPARATUS**  
Joseph H. Judd, Newport News, and Raymond L. Clark, Hampton, both of Va., assignors to The United States of America represented by the Administrator of the National Aeronautics and Space Administration  
Filed April 28, 1971, Ser. No. 138,229  
Int. Cl. C23c 13/12

U.S. Cl. 118—49.1

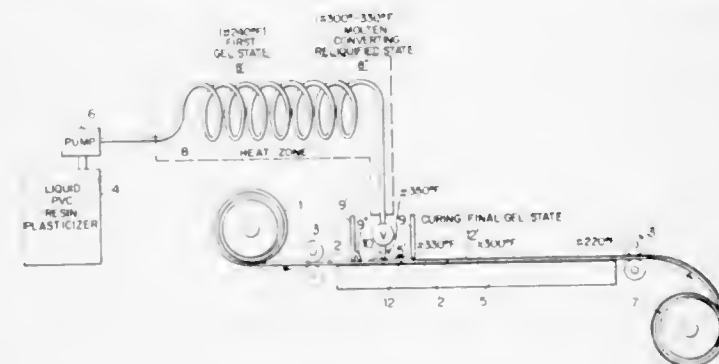


Means feed wire to be evaporated into contact with a central portion of an evaporator-filament having an electric current passing therethrough. An electrical potential difference is maintained between the wire and one side of said filament whereby the vapor is ionized.

**3,690,292**  
**APPARATUS FOR FABRICATING HIGHLY RESILIENT POLYVINYL CHLORIDE LAYERS AND THE LIKE**  
Robert H. Pasley, Sr., Coral Gables, Fla., assignor to Royalty Designs of Florida, Inc., Hialeah, Fla.  
Filed Aug. 3, 1970, Ser. No. 60,380  
Int. Cl. B05c 3/18

U.S. Cl. 118—59

4 Claims

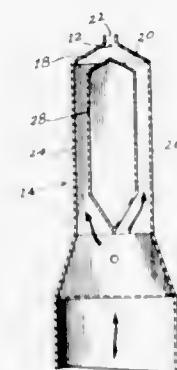


Apparatus for applying plastic material to carrier sheets. Pump means are provided for moving the plastic material from a reservoir through a tubular heat exchanger to a coating station bounded by doctor blade means. The carrier sheet passes over a coating table and beneath the doctor blade means to a wind up means.

**3,690,293**  
**APPARATUS FOR IMPROVING COATING CONNECTRICITY ON METALLIC COATED STRANDS**  
Marvin B. Pierson, Franklin, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio  
Division of Ser. No. 806,221, March 11, 1969, Pat. No. 3,632,392. This application July 6, 1971, Ser. No. 159,869  
Int. Cl. B05c 11/06

U.S. Cl. 118—63

8 Claims



Fluid nozzle of inverted Y-shape in cross section wherein coated strand is passed through the intersection of the arms and the vertical stem of the Y in a horizontal path of travel, and fluid under pressure is applied to the arms of the Y, the stem being vented to atmosphere.

**3,690,294**  
**LIQUID DISTRIBUTING DEVICE**  
Samuel E. Harper, Sale, England, assignor to the Dunlop Company Limited, London, England  
Filed July 8, 1970, Ser. No. 53,105  
Claims priority, application Great Britain, July 25, 1969, 37,513/69  
Int. Cl. B05c 5/00, 11/02

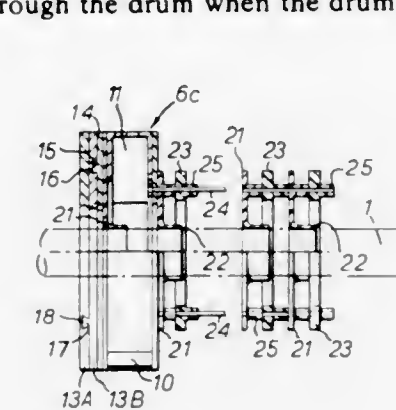
U.S. Cl. 118—112

4 Claims

A liquid distributing device, which is particularly suitable for the application of a viscous liquid to a rotating elongated object, consisting essentially of a rotatable annular drum provided on its external surface with scooping means to take up a

liquid from a container and in its interior with means to deposit liquid which is taken up by the scooping means and transferred to the interior on the surface of an object located in or passing through the drum when the drum is rotated. In

peripheral portion of which the coating is carried to the objects. A spreader projects between the discs contacting them



the production of fiberglass-resin pipe, glass fiber material is laid onto a rotating cylindrical support, and the glass fiber material is coated with a polyester resin by passing the rotating support through a liquid distributing device from which the resin is deposited.

inwardly of the zone of coating application and spreads the discs so that entry between the discs of the objects to be coated is facilitated.

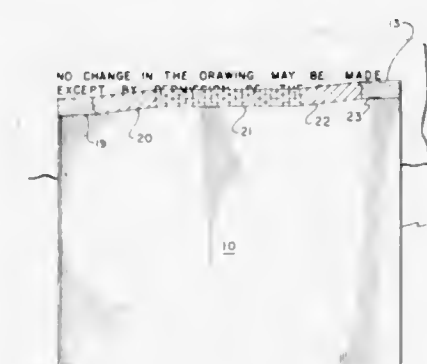
**3,690,297**  
**NON-AQUEOUS COATING OF WEBS**  
Milton P. Dentch, Northboro, Mass.; Robert M. Jodrey, Lake Oswego, Oreg.; Samuel L. Guastella, Westminster, Mass., and Jerry J. Larrivee, Gorham, Mass., assignors to Blandin Paper Company, Grand Rapids, Mich.  
Filed July 22, 1969, Ser. No. 843,677  
Int. Cl. B05c 5/02

**3,690,295**  
**COMBINATION BOOK MARK AND READING GUIDE**  
Jim Cammack, 72 Ustick Rd., Boise, Idaho  
Filed Jan. 11, 1971, Ser. No. 105,289  
Int. Cl. B42d 9/00

U.S. Cl. 116—119

3 Claims U.S. Cl. 118—410

16 Claims



A combination book mark and reading guide comprising a card-like body portion having an irregular reading line formed by a multiplicity of adjacent plain line segments along one of the terminal edges of the body portion. A multiplicity of embossed or printed border-like portions coincident with each of the respective line segments may be distally disposed on the card-like body adjacent each of the respective segments wherein each of said portions include an ornamental design or color different from that of an adjacent portion to produce a frame-like portion operable to optically emphasize fully exposed indicia on a printed page.

Apparatus for supplying molten coating through a narrow extruding gap in a distributor head to a pond confined between a supported web and a metering blade carried by the head downstream of the gap. The metering blade extends from the lower surface of the gap and supports the pond. A heat shield is mounted to the upper gap defining member and extends over the pond to prevent heat loss from the coating material.

**3,690,298**  
**APPARATUS FOR COATING ARTICLES WITH A DRY POWDERED MATERIAL**  
Enrico Venturi, Via Lorenteggio, 39, Milan, Italy  
Filed May 22, 1970, Ser. No. 39,909  
Int. Cl. B05c 5/02

U.S. Cl. 118—629

1 Claim

An apparatus is disclosed for coating an article of manufacture to be varnished by coating it with a powdered resin and then heat-cured. A localized powder-cloud is formed internally of a tunnel, the tunnel overlying a tub in which the powdered resin is contained. Means are provided for forming

**3,690,296**  
**APPARATUS FOR COATING CYLINDRICAL OBJECTS**  
Bruce A. Townsend, 4061 Western Dr., Oshkosh, Wis.  
Filed March 10, 1971, Ser. No. 122,774  
Int. Cl. B05c 1/02

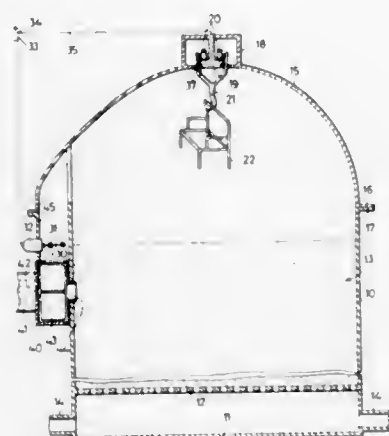
U.S. Cl. 118—227

5 Claims

A device for applying coating to a succession of traveling cylindrical objects includes a pair of discs on the outer



a fluidized bed with the powder particles and means are also provided to provide a temporary adhesion of the powder to



the articles (e.g. a glue or a system of electrostatic charges) prior to the final anchoring obtained by curing.

3,690,299

## PET DOOR APPARATUS

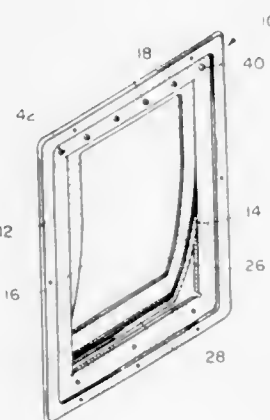
Frances H. Johnson, P.O. Box 643, Northridge, Calif.

Filed March 29, 1971, Ser. No. 129,063

Int. Cl. A01k 1/02

U.S. Cl. 119—1

7 Claims



A pet door apparatus having an open frame to which is swingably secured a door, the door being capable of swinging loose in either direction with respect to the frame, a substantially U-shaped border element attached to the frame adjacent the end of each leg of the border element, the border element to swing only in one direction along with the door and remain in contact with the frame during the swinging movement of the door in the opposite direction, a slot located within each leg in the area of the attachment to permit the border element to become disconnected from the frame upon application of sufficient force.

3,690,300

## APPARATUS FOR REMOVING TEAT CUPS

Guido Antonio Tonelli, Sodertalje, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Nov. 12, 1970, Ser. No. 88,877

Claims priority, application Sweden, Nov. 17, 1969, 15727/69

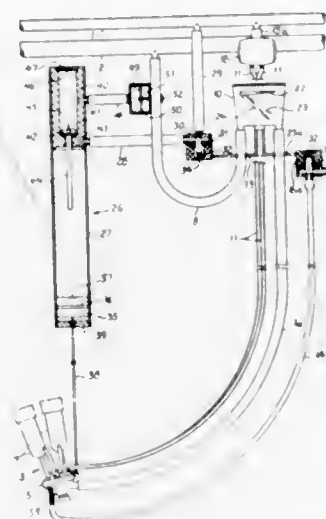
Int. Cl. A01j 05/04

U.S. Cl. 119—14.08

3 Claims

A milk flow indicator is inserted in the milk pipeline between the milk claw and a collection place for the milk; and upon cessation of the milk flow, the indicator actuates a means for reducing the vacuum in the milk claw and also ad-

mitting atmospheric air into the claw, prior to removal of the teat cup cluster. After the vacuum reduction, the indicator



preferably actuates means for pulling the teat cups from the teats so that such pulling effects an appreciable admission of air into the teat cup liners.

3,690,301

## CAGES FOR REARING ANIMALS

Frans Bruggeman, Kortrijk, and Fernand Schmidt, De Pinte, both of Belgium, assignors to N.V. Bekaert S.A., Zwenehem, Belgium

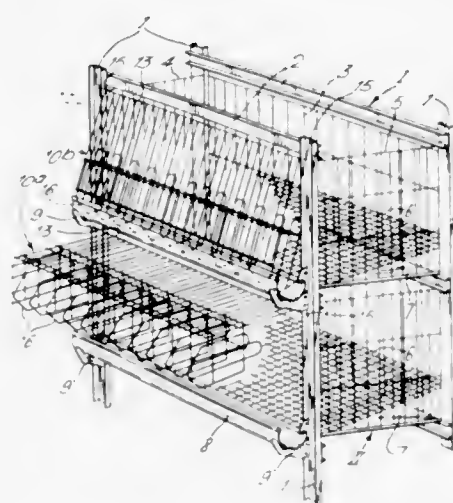
Filed May 28, 1970, Ser. No. 41,519

Claims priority, application France, June 2, 1969, 6917984

Int. Cl. A01k 05/00

U.S. Cl. 119—18

5 Claims



Cages or batteries for the rearing of a plurality of animals. The cage comprises a feed trough extending along one side of the cage in which a movable panel is disposed which constitutes an access door to the cage. The movable panel carries separating members which are removable engageable with the feed trough. The arrangement is such that with the separating members engaged with the feed trough, animals within the cage are enabled to feed from the feed trough with said members separating at least the heads of adjacent animals.

3,690,302

## ROTARY BOILERS

Philip J. Rennolds, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed March 25, 1971, Ser. No. 128,076

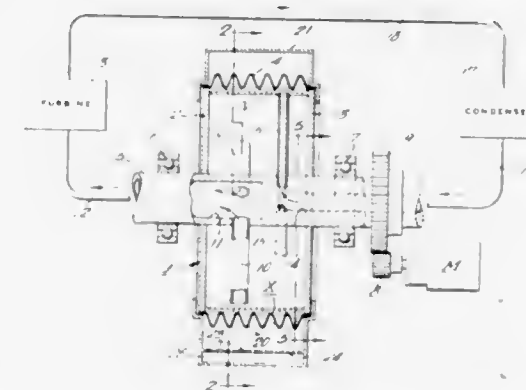
Int. Cl. F22b 5/00

U.S. Cl. 122—11

6 Claims

A rotary boiler comprising a boiler chamber defined by axially spaced side walls and radially spaced outer peripheral wall. The boiler is rotated about its axis at a speed to maintain

an annular body of organic liquid distributed circumferentially about the inner surface of the peripheral boiler wall with a cylindrical liquid/vapor interface disposed at a predetermined radius from the rotation axis. Combustion means is provided outwardly adjacent the boiler peripheral wall to heat and vaporize the liquid at high boiling heat fluxes greater than obtainable at ambient gravity. The boiler peripheral wall is configured, as by flutes or corrugations, in the circumferential



direction to provide transversely thereof in the axial direction a total length of wall heat conduction surface to the liquid that is substantially greater than the linear axial spacing of the boiler side walls at the liquid/vapor interface. The greater heat conduction surface of the peripheral wall reduces the heat flux at the wall and the temperature difference between the wall and the liquid/vapor interface to an extent that a compact boiler can be operated at high overall thermal flux with minimal decomposition of the boiler fluid.

3,690,303

## FORCED CIRCULATING STEAM GENERATOR AND METHOD OF GENERATING STEAM

Richard Dolezal, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

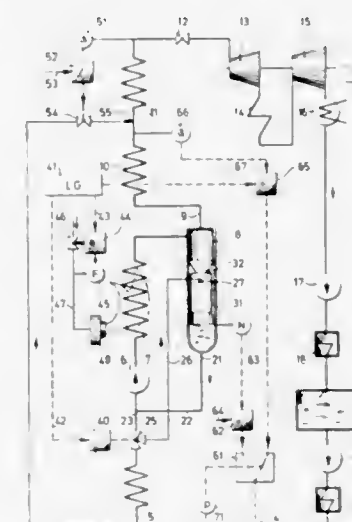
Filed Dec. 21, 1970, Ser. No. 99,845

Claims priority, application Switzerland, Dec. 24, 1969, 19211/69

Int. Cl. F22b 29/06

U.S. Cl. 122—406 S

5 Claims



The steam generator is operable at supercritical pressure at the upper end of the load range and is operable under sliding pressure control. At a pressure near critical, the working medium entering the evaporator is heated by heat obtained from the steam generated in the evaporator. This is accomplished by spraying a portion of the working medium into the separator to mix with all the working medium passing from the evaporator before passing to the evaporator or by spraying all the fresh working medium into a portion of the working medium passing from the evaporator prior to passage to the evaporator.

## ERRATUM

For Class 123—32 G see:  
Patent No. 3,690,768

3,690,304

## CARBURETOR CONSTRUCTION TO ELIMINATE FUEL ACCUMULATION AT THE REED VALVE

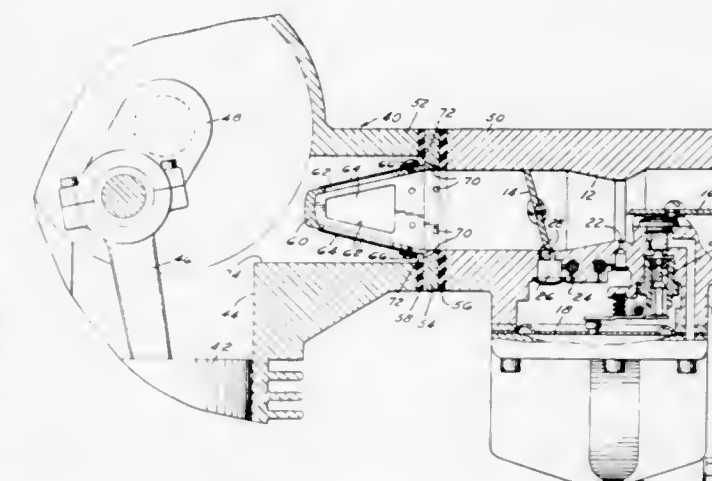
Kenneth C. Schneider, and Charles H. Tuckey, both of Cass City, Mich., assignors to Walbro Corporation, Cass City, Mich.

Filed Jan. 16, 1970, Ser. No. 3,437

Int. Cl. F02b 33/04

U.S. Cl. 123—73 V

1 Claim



A uni-directional valve arrangement for two-cycle internal combustion engines which eliminates undesirable collection of pockets of fuel in the carburetor system and the resultant undesirable running characteristics, this being accomplished by venting from the mixing chamber of the carburetor system directly to the areas surrounding the unidirectional or "reed" valves so that an air fuel mixture moves through the restricted and dead pocket areas to keep them clean of fuel collections, thus preventing overrich comedown when a throttle is closed and preventing flooding under other running conditions.

3,690,305

## FUEL SUPPLY CONTROL SYSTEM FOR AUTOMOBILE ENGINES

Hiroshi Shimada, Hiroshima-ken; Mitsuru Nagai, Hiroshima-shi; Mitsuo Ohfuji, Katsuta-shi, and Toshiyuki Sasaki, Hitachi-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo and Toyo Kogyo Company Limited, Aki-gun, Hiroshimaken, Japan

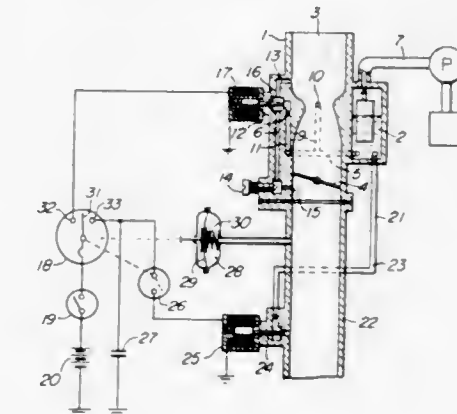
Filed Oct. 2, 1969, Ser. No. 863,175

Claims priority, application Japan, Oct. 4, 1968, 43/71806

Int. Cl. F02d 31/00, 11/10

U.S. Cl. 123—97 B

13 Claims



A fuel supply control system for automobile engines having a fuel cutoff means provided in the carburetor to prevent a



great deal of harmful exhaust gas from being discharged during the braking with the motor, and in which use is made of an auxiliary fuel supply system for correcting any delay in the recovery of fuel, in addition to the ordinary main and idle fuel supply systems provided to the carburetor, so as to ensure the automobile to shift from its coasting operation to its accelerating operation, whereby fuel may be supplied from the auxiliary fuel supply system for a predetermined time to shift the automobile from coasting to fast running and thus the engine can rotate smoothly in quick response to variations in the running condition of the vehicle.

3,690,306

# FLUIDIC CONTROL SYSTEM OF FUEL INJECTION DEVICE FOR INTERNAL COMBUSTION ENGINES

Kazuma Matsui, Toyohashi, and Hideo Tsubouchi, Kariya, both of Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

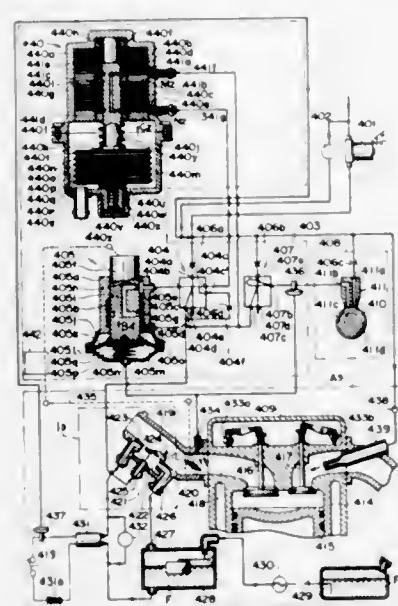
Filed March 30, 1971, Ser. No. 129,544

Claims priority, application Japan, April 1, 1970, 45/27654; May 15, 1970, 45/41793; May 20, 1970, 45/43091; May 20, 1970, 45/43092; Dec. 26, 1970, 45/129603; Dec. 26, 1970, 45/129604

Int. Cl. F02n 37/14; F15c 1/00; F02d 11/08

U.S. Cl. 123—119 R

7 Claims



A control system for a fuel injection device of internal combustion engine, which comprises trigger pulse generator for generating a trigger pulse in synchronism with the rotation of an internal combustion engine, a variable circuit-length device by which the length of a fluid passage can be varied according to the load on the engine and a fluidic control circuit for generating a fluidic pulse of a variable width in cooperation with said variable circuit-length device, and in which the trigger pulse generated by said trigger pulse generator is applied to the fluidic control circuit and said variable circuit-length device, whereby a fluidic pulse is generated by said fluidic control circuit and the fluidic pulse thus generated is used for controlling the quantity of fuel supplied to the engine.

3,690,307

# VAPOR VENTING AND PURGING SYSTEM FOR ENGINES

Cormac G. O'Neill, Lafayette, Calif., assignor to Physics International Company, San Leandro, Calif.

Filed Aug. 13, 1970, Ser. No. 63,463

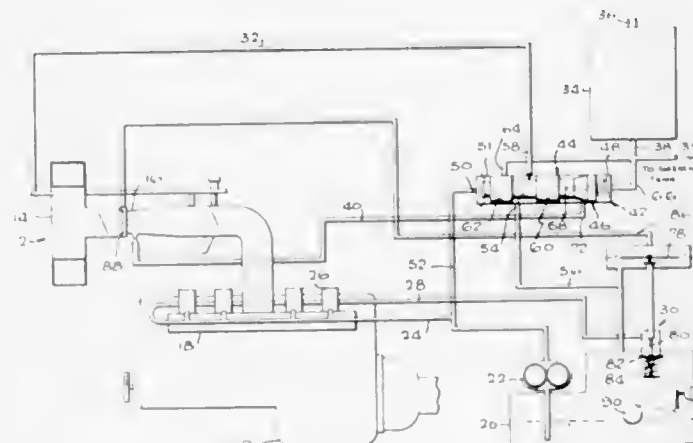
Int. Cl. F02m 59/00

U.S. Cl. 123—136

2 Claims

Apparatus for use with an internal combustion engine wherein a fuel float bowl and gasoline tank are connected through a vapor trap to the ambient atmosphere to prevent pollution by hydrocarbon vapors. The vapor trap is purged at

high engine loads by an air flow through the vapor trap and into the engine, the air flow being controlled by the use of a sensor stationed along the path of the fuel or air components prior to their entering the cylinders. In a fuel injection engine of the type wherein fuel pressure varies with engine load, the vapor trap is coupled to a venturi through a valve that is



opened only when the fuel pressure exceeds a predetermined value. The valve has a variable opening so that only small amounts of purge air flow through the vapor trap to the engine at moderate engine loads and large amounts of purge air flow only at very high engine loads, to provide a minimal change in the fuel-to-air ratio.

3,690,308

# HAND ERGOGRAPH WITH MARKING STYLUS

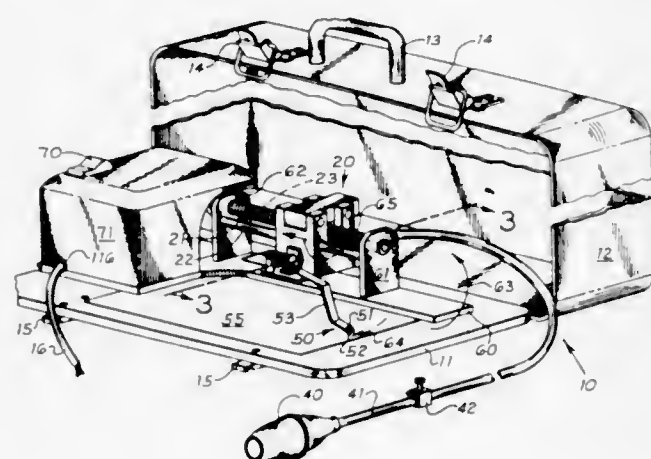
Thaddeus E. Daniels, 38 W. 56th St., Indianapolis, Ind.

Filed Sept. 16, 1970, Ser. No. 72,652

Int. Cl. A61b 5/10

U.S. Cl. 128—2 N

8 Claims



A device for measuring muscle fatigue. A squeezable air bulb is connected via an air hose to a carriage having an air piston operatively connected to a marking stylus. The stylus marks across the width of a tracing paper proportional to the pressure exerted on the air bulb. A threaded rod is rotatably mounted through the carriage and is driven and coupled to an electric motor. Rotation of the threaded rod causes the carriage and marking stylus to move the length of the tracing paper. A bell is automatically rung once every revolution of the threaded rod. The ergograph is packaged in a carrying case.

3,690,309

# RADIOCAPSULE FOR REGISTERING IONIZING RADIATION IN THE CAVITIES OF HUMAN BODIES

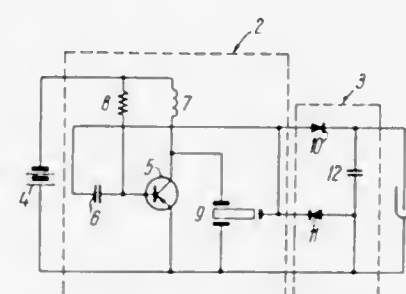
Viktor Mikhailovich Pluzhnikov, Studenchesky gorodok MIFI, Korpus 6, kv. 32; Karl Davidovich Kalantarov, ulitsa Serafimovicha, 2, kv. 469; Jury Yakovlevich Gugin, Timiryazevskaya ulitsa, 10/12, kv. 108; Valentin Sergeevich Semenov, ulitsa Garibaldi, 23/56, Korpus 1, kv. 79; Valentina Vasilievna Zelenina, Studenchesky gorodok MIFI, Korpus 9, kv. 15, and Albert Ivanovich Filatov, Nagornaya ulitsa, 64, 2a, kv. 61, all of Moscow, U.S.S.R.

Filed Aug. 5, 1970, Ser. No. 61,370

Int. Cl. A61b 5/07

U.S. Cl. 128—2 A

1 Claim



A radiocapsule for registration of ionizing radiation in the cavities of human body, comprising a detector to register ionizing particles in the cavities of human body and to modulate r.f. signals of an inverter of a d.c. voltage into an a.c. sine voltage at the moment when ionizing particles are being registered, said inverter having a piezo-electric transformer.

3,690,310

# METHOD OF BIOASSAY OF FERTILITY AND CONTRACEPTIVE DRUGS

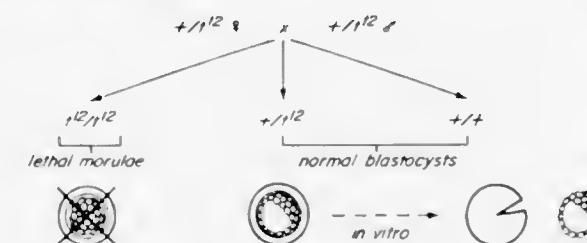
Beatrice Mintz, Huntingdon Valley, Pa., assignor to The Institute for Cancer Research, Philadelphia, Pa.

Filed March 15, 1971, Ser. No. 124,307

Int. Cl. A61b 10/00

U.S. Cl. 128—2 R

3 Claims



A method of bioassay including the mating of female and male mice, introducing a test drug into the females within a time which begins before mating and ends within a few days after mating, sacrificing the female at various times within a few days of mating, flushing out the contents of the oviducts and of the uterine horns separately and examining the flushed out contents.

3,690,311

# ULTRASONIC SCANNING APPARATUS WITH TRANSDUCER SCANNING RATE-RESPONSIVE TRANSMITTER

Stanley W. Schorum, Park Ridge, and Wonjin Song, Arlington Heights, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed May 27, 1971, Ser. No. 147,579

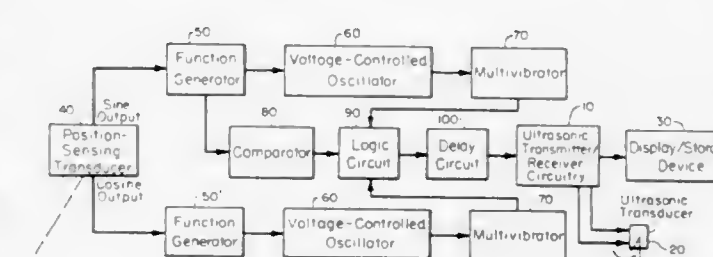
Int. Cl. A61b 5/00

U.S. Cl. 128—2 V

4 Claims

An ultrasonic medical diagnostic apparatus for scanning an object at a predetermined rate and generating a two-dimensional anatomical map of a plane section thereof. A position-

sensing transducer develops an electrical signal corresponding to the orientation of an ultrasonic transducer. A function generator is responsive to the electrical signal for generating a voltage proportional to the rate of change of position of the ultrasonic transducer. This voltage is applied to a voltage-con-



trolled oscillator which in turn varies the transmission rate of an ultrasonic transmitter-receiver in accordance with the scanning rate of the ultrasonic transducer. A second function generator and oscillator subsystem, together with a switch, are employed to switch to the more accurate of the two subsystems.

3,690,312

# VENOUS PRESSURE MANOMETRIC WITH LEVEL MAGNIFYING MEANS

Saul Leibinsohn, 11 Hagardom St., Rishon LeZion, Israel

Filed Dec. 16, 1969, Ser. No. 885,416

Int. Cl. A61b 5/02

U.S. Cl. 128—205 D

8 Claims



Venous pressures are easily and accurately measurable with a manometric device, closed at one end to substantially lessen the possibility of retrograde infection and having a sight glass affixed to a graduated ruler backing to align the zero level thereof with a patient's zero level. The reservoir of the device is comprised of a transparent plastic tube overlying a pattern imprinted along the length of the ruler, and is filled with a transparent liquid, the level of which provides the pressure indication. The transparent plastic tube by itself operates as a divergent lens to reduce the apparent size of the overlaid pattern in that portion of the tube filled with air, while the transparent tube and liquid operate as a convergent lens to increase the apparent size of the pattern beneath the liquid filled portion of the tube, thereby emphasizing the level to which the fluid surface extends.



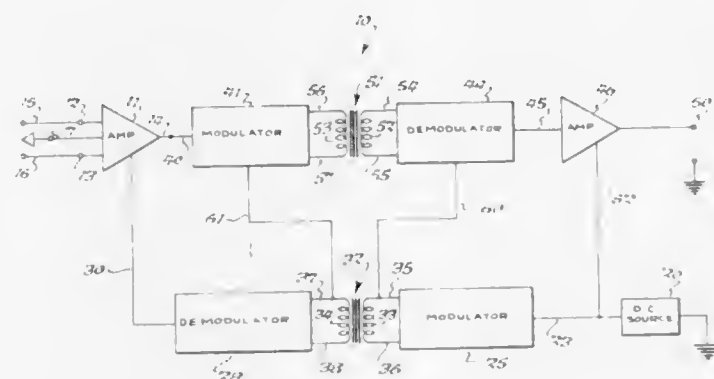
3,690,313

**ELECTRICALLY ISOLATED SIGNAL PATH MEANS FOR A PHYSIOLOGICAL MONITOR**

Benjamin H. Weppner, Snyder; Leo P. Lefebvre, Tonawanda, and Victor R. Miller, Clarence, all of N.Y., assignors to Men-nen-Greatbatch Electronics, Inc., Clarence, N.Y.  
Filed Oct. 9, 1970, Ser. No. 79,516  
Int. Cl. A61b 5/04

U.S. Cl. 128—2.06 B

16 Claims



A circuit for providing electrical isolation between a patient and physiological monitoring apparatus comprising an amplifier, having applied to the input thereof a physiological signal from the patient, and a first circuit branch including an isolation transformer connected between a modulator and a demodulator for connecting a d.c. voltage source of relatively low magnitude to the amplifier. Connected to the amplifier output is a second circuit branch comprising an isolation transformer connected between a modulator and a demodulator, and the output of the demodulator is coupled to the input of physiological monitoring apparatus. Each of the isolation transformers includes an extremely low capacitance between the primary and secondary windings thereof to present an extremely high reactance to low frequency, including line frequency, alternating current and each is capable of withstanding relatively high voltages without breakdown.

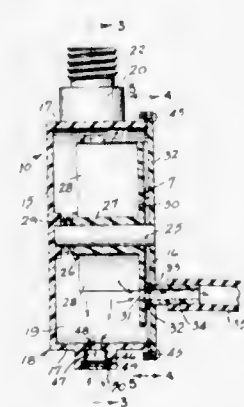
3,690,314

**FAUCET AND PLUMBING ATTACHMENT FOR INTERDENTAL MOUTH WASH DISPENSER**

Garrison G. Trupp, 4600 York Rd., Baltimore, Md., and Marc A. Trupp, 23 Stonehenge Circle, Pikesville, Md.  
Filed Nov. 6, 1970, Ser. No. 87,556  
Int. Cl. A61h 9/00

U.S. Cl. 128—66

6 Claims



An attachment for a faucet whereby water will be caused to pulsate as it is discharged or dispensed through an interdental point so that the pulsating water under pressure can be conveniently directed on to a person's teeth, gums, and the like.

3,690,315

**COMBINED CONTAINER AND PACKAGE PARTICULARLY ADAPTED FOR URINARY DRAINAGE ASSEMBLIES**

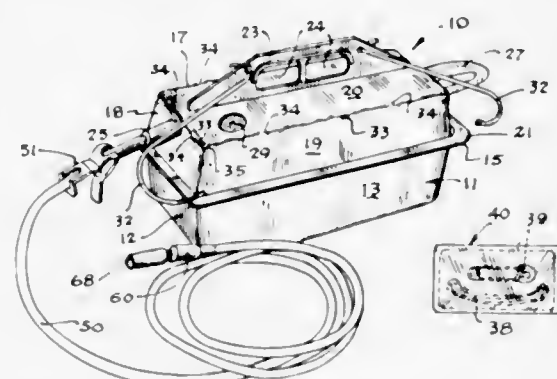
Richard Marion Chittenden, Grayslake; Aldean William Whitton, Northbrook; Fidel Villaluna Macalalad, Lake Forest; Richard Massman, Winnetka, and Earl David Wilson, Ingleside, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Aug. 26, 1970, Ser. No. 66,951

Int. Cl. A61h 5/44; B65d 1/02

U.S. Cl. 128—275

9 Claims



A combined container and package formed of a substantially rigid bottom portion of the general configuration of a tray and a foldable top portion having substantially the same configuration as the rigid portion and having fold lines coincidental with the end walls, side walls and top to enable the foldable portion to collapse under the action of a compressive force. The two portions are sealed together at the periphery of the openings thereof to so define a container, the foldable portion being collapsible within the rigid portion. With the foldable portion collapsed within the rigid portion other parts or portions ultimately to be attached to the container can be stored in the folds of the folded top half and a cover can be sealed around the edge of the opening. In this fashion a self-contained package is produced and upon use the cover can be opened, the stored parts removed and the foldable portion withdrawn to form the container. Such a container and packaging system has particular application for urinary drainage assemblies, human blood collection systems, and other applications wherein an empty container and accessory equipment is needed.

3,690,316

**CONTRACEPTIVE CERVICAL OBTURATOR**

Renee-Marie Haller, Rouen, France, assignor to Etablissement Prairial, Vaduz, Liechtenstein

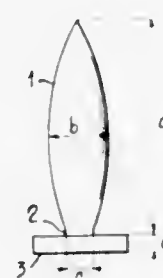
Filed Aug. 14, 1970, Ser. No. 63,866

Claims priority, application Switzerland, Sept. 2, 1969, 13263/69

Int. Cl. A61f 5/46, 15/00

U.S. Cl. 128—130

2 Claims



A cervical obturator for contraceptive use, containing an active substance, constituted by a fusiform shaped pastille terminating at one of its ends in an enlarged base, exercising an effect of obturation and having appropriate dimensions. The active substance is acetylsalicylic acid in powder.

3,690,317

**SONIC NEBULIZER**

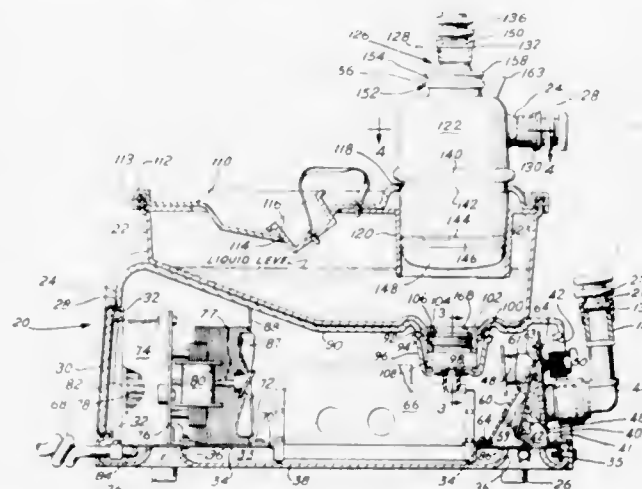
William V. Millman, Davenport, Iowa, assignor to The Bendix Corporation

Filed Oct. 29, 1970, Ser. No. 85,069

Int. Cl. A61h 1/00; A61m 15/00

U.S. Cl. 128—194

7 Claims



A sonic nebulizer having an electronic powered piezo-electric crystal to produce mechanical vibrations which are transmitted through a coupling fluid and focused on a second fluid contained in a chamber having a tangentially directed pressurized air inlet and a central opening whereby the nebulized second fluid is entrained by the vortex air flow generated in the chamber and the resulting fluid mixture carried through the outlet. The coupling fluid, electric power oscillator, piezo-electric crystal and associated control apparatus are contained by a portable casing which presents a compact, lightweight and rugged unit particularly adapted for short or long term use in supplying medicated air or oxygen to a patient undergoing medical care. The chamber containing the nebulized second fluid is made of an inexpensive, transparent material which is quickly and easily mounted to the casing and attached to inlet and outlet hoses. The inlet and outlet hoses, like the chamber, may be made from inexpensive material and together with the chamber constitute a disposable portion to avoid contamination between patients.

3,690,318

**APPARATUS FOR PARENTERAL FLUID INFUSION PROVIDED WITH VARIABLE FLOW CONTROL MEANS**

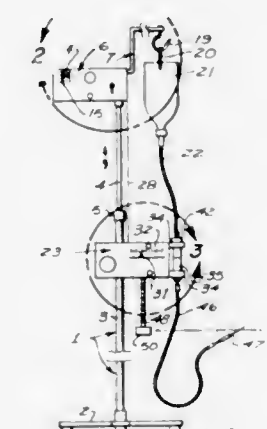
Reynolds G. Gorsuch, Thousand Oaks, Calif., assignor to Bourns, Inc., Riverside, Calif.

Filed April 16, 1970, Ser. No. 28,995

Int. Cl. A61m 05/14

U.S. Cl. 128—214 E

10 Claims



An apparatus, intended to be mounted adjacent a patient, which supports an inspection chamber at a predetermined elevation with respect to the patient, the chamber being connected to the patient through an infusion supply tube. A con-

3,690,319

**DOUCHE BAG**

John L. Marco, 601 Dow St., Oakhurst, N.J., and Irving Henry Saxe, 75 Central Park, W., New York, N.Y.

Filed July 6, 1970, Ser. No. 52,169

Int. Cl. A61m 7/02

U.S. Cl. 128—251

7 Claims



A douche bag provided with a reservoir for retaining a measured amount of liquid. A delivery chamber is connected to the reservoir and a syringe is positioned in the chamber which acts as a valve to direct the flow of the liquid from the reservoir into the delivery chamber. Outlets in the delivery chamber permit the outward flow of the liquid. The syringe is provided with means enabling it to be inserted into, and distend the vaginal cavity.

3,690,320

**OSTOMY BAG AND DEODORIZING PACKET THEREFOR**

Phyllis E. Riely, Warwick, N.Y., assignor to International Paper Company, New York, N.Y.

Filed Oct. 12, 1970, Ser. No. 79,826

Int. Cl. A61f 5/44

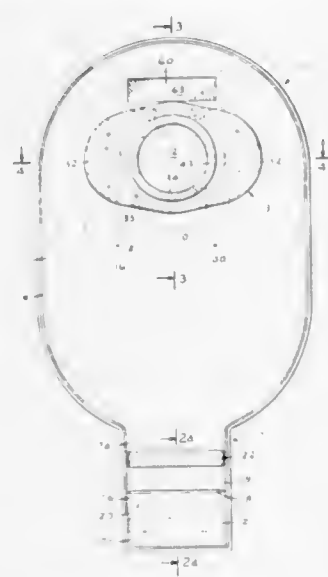
U.S. Cl. 128—283

24 Claims

The ostomy bag comprises a receptacle pouch containing an inlet aperture and means for providing communication between the pouch interior and the ostomy orifice on the surface of the wearer's body. This means comprises (a) a thin, flexible, essentially planar member containing a conduit which provides communication between the pouch inlet aperture and the ostomy orifice; (b) an upwardly projecting rim surrounding the conduit, over which the pouch inlet aperture is fitted; (c) a continuous groove in one surface of the planar member which surrounds the rim and in which the receptacle pouch is mounted, and (d) a recess in the surface of the planar member opposed to the grooved surface, this recess surrounding the conduit and adapted to receive a gasket or suitable means for sealing the ostomy bag to the body. The planar member is provided with means for affixing it to the body by use of a belt.

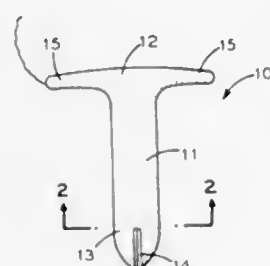


The ostomy bag contains a gas permeable section in the pouch wall to permit release of intestinal gas from the interior to the exterior of the pouch. The pouch also contains a deodorizing packet affixed to the inner pouch wall. This packet comprises an inner sealed envelope containing a volatile deodorizing composition and an outer sealed envelope



which contains the inner sealed envelope. The inner envelope is ruptured to discharge its contents into the inner space between the two envelopes. The outer envelope has microbial barrier properties and is permeable to the vapors emanating from the deodorizing composition. These deodorizing vapors pass through the outer envelope and into the environment surrounding the outer envelope.

**3,690,321**  
**CATAMENIAL DEVICE**  
Shalom Z. Hirschman, 110-11 Queens Blvd., Forest Hills, N.Y.  
Filed Oct. 15, 1970, Ser. No. 81,057  
Int. Cl. A61f 13/20  
U.S. Cl. 128—285  
7 Claims



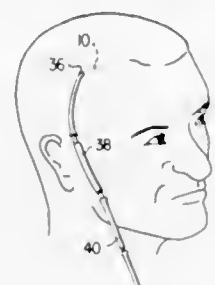
A catamenial device including a tampon portion for insertion into the vaginal canal, and a pad portion integral with the tampon portion and extending transversely thereof, the pad portion being seated between the labia majora of the vulva.

**3,690,322**  
Patent Not Issued For This Number

**3,690,323**  
**DEVICE FOR DRAINING VENTRICULAR FLUID IN CASES OF HYDROCEPHALUS**  
Donald E. Wortman, Rockville, Md., and Lawrence J. Mervis, Milwaukee, Wis., assignors to The United States of America as represented by the Secretary of the Army  
Filed Dec. 1, 1970, Ser. No. 94,069  
Int. Cl. A61m 27/00  
U.S. Cl. 128—350 R  
10 Claims

A modified ventricular end for a ventriculo-cardiac shunt used in the treatment of hydrocephalus and similar conditions

is provided for removing fluids which accumulate in the cavity of the brain and must be drained to the heart. An umbrella-shaped cover protects an apertured end of the shunt for preventing the same from becoming attached to the ventricu-



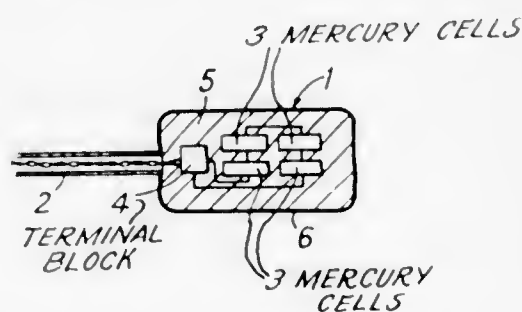
lar walls by growth of brain tissue thereon. The device, which is inserted into the brain in a closed position and is subsequently opened, has supporting rib structures which may carry various sensing elements for observing conditions in the brain.

**3,690,324**  
**BABY'S PACIFIER**  
Mayer D. Spivack, 53 Spruce St., Watertown, Mass.  
Filed Jan. 26, 1970, Ser. No. 5,680  
Int. Cl. A61j 17/00; A63h 5/00  
U.S. Cl. 128—359  
5 Claims



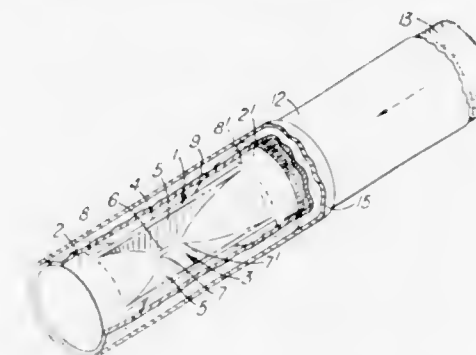
A baby's pacifier exercise or teething device including a tube of resilient flexible material. The tube may be formed in a ring having one or more intertwined loops. The tube also may be filled with a material, such as bunched or crumpled sheet plastic, which generates an audible crinkling sound as the tube is deformed.

**3,690,325**  
**IMPLANTABLE ELECTRIC DEVICE**  
John Kenny, Welwyn Garden City, England, assignor to Devices Limited, Welwyn Garden City, England  
Filed Nov. 2, 1970, Ser. No. 86,165  
Claims priority, application Great Britain, Nov. 3, 1969, 53,889/69  
Int. Cl. A61n 1/36  
U.S. Cl. 128—419 R  
9 Claims



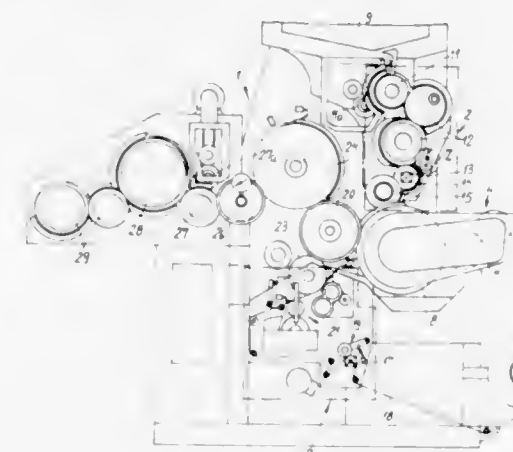
An implantable electric device which has at least one electric cell, a casing of epoxy resin encapsulating the electric cell, and a thin barrier layer of metal covering the casing, which layer is permeable to gas and relatively impermeable to liquid.

**3,690,326**  
**CIGARETTE FILTER**  
Francis Robert Davenport, Ashted, England, assignor to American Filtrona Corporation, Richmond, Va.  
Filed Oct. 1, 1970, Ser. No. 77,142  
Claims priority, application Great Britain, Nov. 7, 1969, 54,647/69; Jan. 24, 1970, 3,563/70  
Int. Cl. A24f 07/04; A24d 01/04  
U.S. Cl. 131—10.5  
16 Claims



Tobacco smoke filter having an axially extending tubular outer member and an axially extending air permeable inner member therewithin. The inner member is formed of filaments or fibers bonded to each other at their points of contact. At a first position the outer surface of the inner member is in engagement with the inner surface of the outer member to at least substantially preclude axial passage of smoke therebetween while at a second position, longitudinally spaced from the first, the filaments or fibers are formed into a portion of substantially smaller cross section to leave a hollow space through which smoke drawn through the filter may pass.

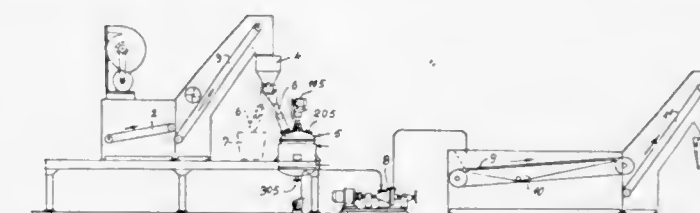
**3,690,327**  
**APPARATUS FOR REGULATING THE START AND TERMINATION OF DELIVERY OF COMPONENTS OF ROD-SHAPED ARTICLES IN FILTER CIGARETTE MACHINES OR THE LIKE**  
Bob Heilmann, Hamburg, Germany, assignor to Hauni-Werke Koerber & Co. K.G., Hamburg, Germany  
Filed March 25, 1970, Ser. No. 22,626  
Claims priority, application Germany, March 26, 1969, P 19 15 339.0  
Int. Cl. A24c 05/34, 05/52, 05/58  
U.S. Cl. 131—21 R  
9 Claims



A machine for the production and/or processing of tobacco-containing rod-shaped articles, particularly a filter cigarette machine, wherein the feeding units which supply components of rod-shaped articles (such as filter plugs and adhesive-coated uniting bands) can be arrested only when the components therein are located in a predetermined position with reference to other moving parts of the machine. The feeding units can resume the delivery of respective components only in certain predetermined positions of the movable parts. This reduces the number of rejects and insures that each com-

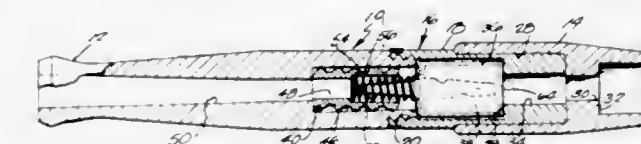
ponent can be properly assembled with other components or otherwise manipulated as soon as the respective feeding unit is started.

**3,690,328**  
**WET PROCESSING OF TOBACCO STEMS**  
Rodolfo Quarenghi, Bologna, Italy, assignor to American Machine & Foundry Company  
Filed April 20, 1970, Ser. No. 29,850  
Int. Cl. A24b 03/04, 05/10, 09/00  
U.S. Cl. 131—140 R  
2 Claims



In this invention tobacco stems and/or fragments of stems, and/or portions of tobacco leaves containing stems and veins are water soaked or wet softened by water and or steam to completely soak the stems and veins and dissolve part of their soluble organic and inorganic constituents. The wet softened stems and veins are then fed to a refiner where they are mechanically opened by crushing or rolling. Thereafter, the opened stems and/or veins are fed to a drier where the moisture content is reduced to the level of the cut tobacco with which they are to be mixed.

**3,690,329**  
**CIGARETTE HOLDER**  
Chu Siung Lin, No. 52, Lane 285 Chen-E Rd., Tainan, China /Taiwan  
Filed May 4, 1971, Ser. No. 140,045  
Int. Cl. A24f 13/06  
U.S. Cl. 131—201  
6 Claims



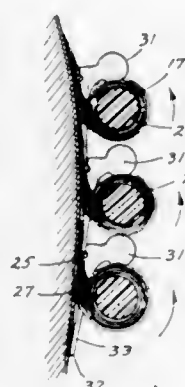
A cigarette holder having a disposable, plastic, transparent trap for tars, held in place by a spring, with a smoke-cooling, metallic element having wide spiral threads positioned between the trap and the mouthpiece. The trap is located downstream of a cigarette holding socket and includes a cylindrical body having substantially closed ends, the upstream end being closed by a centrally apertured disc and the downstream end being closed by a disc having an annular array of smoke passing holes surrounding a peg extending downstream therefrom and having a tapered boss extending in an upstream direction into the interior of the trap and spaced radially inwardly from the wall of the cylindrical body. The boss is provided with spiral flutes in its exterior surface.

**3,690,330**  
**HAIR WAVING PICK**  
Raymond J. Grismer, 110 E. Main, Mandan, N. Dak.  
Filed Oct. 5, 1970, Ser. No. 78,029  
Int. Cl. A45d 8/00  
U.S. Cl. 132—46  
1 Claim

A hair curl fastened near the scalp on a curler or roller by a flexible band extending from one end of the roller to the other is held in close proximity to the head by passing a flexible pick between the roller and the band and between the roller and the scalp. Such a pick can be made of white nylon and in-



cludes a soft, flexible shank having either a blunted or rounded or pointed outer end, a shoulder extending integrally normally from the other end of the shank, and a finger piece integral with the shoulder opposite the shank. The presence of the shoulder on the shank provides an increasing stiffness of



3,690,331

## COMBINED BRUSH AND COMB

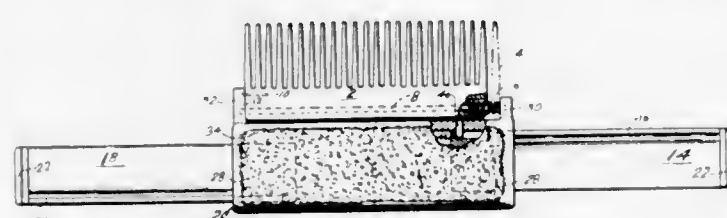
Thomas V. Messer, 747 Olympic Ave., Edmonds, Wash.

Filed Aug. 13, 1970, Ser. No. 63,359

Int. Cl. A45d 24/16; B25q 1/04

U.S. Cl. 132-120

3 Claims



A combined brush and comb having a body, brush tufts on an exterior surface of the body, a comb which may be adjusted for various angles with respect to the body of the brush and retractable handles for ease of gripping and positioning the brush and comb. The combination of the brush and comb has many practical advantages such as minimizing the possibility of losing the comb or not having it available when it is desired to use it with the brush, the advantage of having retractable handles which move into the body of the brush so as to save space, the advantage of packing one object, while traveling, instead of a separate brush and also a separate comb, the convenience of being able to keep the combined brush and comb in a desk drawer for a office worker or in a brief case for a person who visiting at another place of business and who wishes to freshen up immediately before entering the other place of business for an interview.

3,690,332

## BILL AND COIN CHANGER

David B. Dykehouse, Muskegon; Oliver G. Okkonen, and Norman J. Zoodsma, both of Grand Rapids, all of Mich., assignors to Rowe International, Inc., Whippany, N.J.

Filed Dec. 22, 1969, Ser. No. 887,063

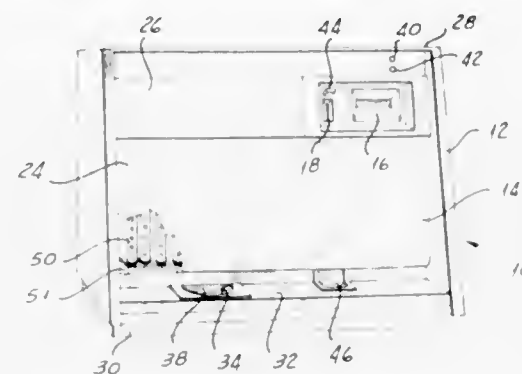
Int. Cl. G07d 1/06

U.S. Cl. 133-2

2 Claims

A machine for changing currency such as bills or coins of larger denomination for change in the form of coins of a lower denomination. When a bill is to be changed, a settable group

of coin ejectors is operated. When a coin is to be exchanged, for example a 50-cent piece, other groupings of coin ejectors are operated in combinations which can be varied at the option of the machine service personnel.



3,690,333

## MACHINE FOR CLEANING SMALL PARTS

Hans Kierner, Bajerhammerstrasse, Salzburg, Austria

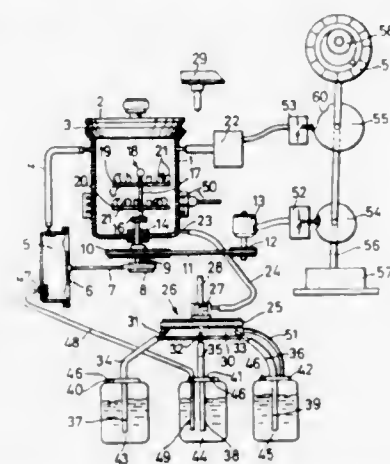
Division of Ser. No. 819,161, April 25, 1969, Pat. No.

3,594,230. This application May 17, 1971, Ser. No. 143,754

Int. Cl. B08b 3/04

U.S. Cl. 134-95

9 Claims



An apparatus for cleaning small parts wherein there is utilized or provided pumps, control valves, rinsing liquid, a cleaning liquid, and a vacuum arrangement.

3,690,334

## PORTABLE HUNTING BLIND

Herbert Boyd Miller, Taylor, Mich., assignor to The Raymond

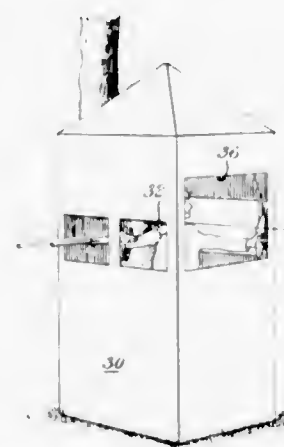
Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 16, 1970, Ser. No. 89,838

Int. Cl. A47f 1/00; E04b 1/347

U.S. Cl. 135-1 R

1 Claim



An opaque plastic housing with transparent windows and a plurality of elongated members adapted to be detachably secured together to form a frame which can be rolled up together when not in use. In use the frame is erected and enclosed by the housing.

3,690,335

## HYDRAULIC GOVERNOR VALVE ASSEMBLY

Hirohisa Ichimura, Yokohama, Japan, assignor to Nissan

Jidosha Kabushiki Kaisha, Yokohama, Japan

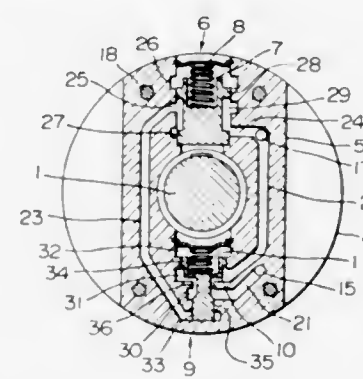
Continuation of Ser. No. 781,803, Dec. 6, 1968, abandoned.

This application Dec. 28, 1970, Ser. No. 102,151

Int. Cl. G05d 13/36

U.S. Cl. 137-54

4 Claims



A hydraulic governor valve assembly for hydraulic control system of automatic transmission for vehicles provides low governor pressure at low vehicle speed range, stepwise or steeply increasing pressure at predetermined speed range and then rather gradually increasing governor pressure over the speed range to output circuit, and utilizes the governed pressure as pilot pressure while the low speed range.

3,690,336

## CONDITION RESPONSIVE VALVE

Edward W. Drum, Indianapolis, Ind., assignor to Ransburg

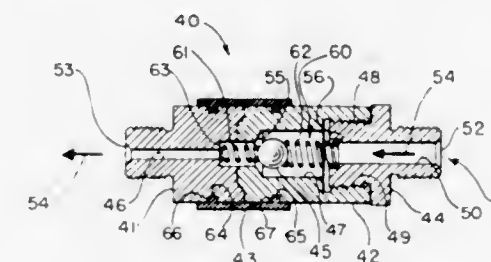
Electro-Coating Corp., Indianapolis, Ind.

Filed Sept. 8, 1970, Ser. No. 70,238

Int. Cl. F16k 17/36

U.S. Cl. 137-75

15 Claims



A condition responsive material flow control valve that reacts to the occurrence of the condition to terminate material flow through the valve. The valve is designed to activate only when the condition exists. The valve may be responsive to a condition such as exceeding a predetermined elevated temperature; the presence of such an elevated temperature causes adjacent body members to separate and a ball valve to engage with a valve seat so as to terminate the material flow through the valve. The valve has very few moving parts and is dependable.

3,690,337

## SUPERSONIC DIVERTER

Joseph A. Lagana, Meriden, Conn., assignor to Chandler

Evans Inc., West Hartford, Conn.

Filed Jan. 19, 1970, Ser. No. 3,834

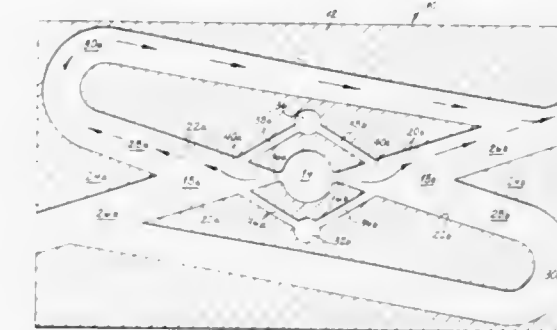
Int. Cl. F15c 1/08

U.S. Cl. 137-81.5

8 Claims

A supersonic diverter which provides supersonic streams of gas in either of two oppositely disposed power channels. Two oppositely directed supersonic fluid streams are both diverted into either a power channel or an augmentation channel by means of a supersonic fluidic switch. One supersonic stream is directed to a power channel and the oppositely directed fluid stream is directed into an augmentation channel where it is

ducted to join the stream passing through the power channel. A switching device is employed to simultaneously divert the oppositely directed streams from the power channel to the augmentation channel in the one nozzle and from the augmentation channel and to the power channel in the other nozzle.



The diversion of the supersonic streams in each nozzle is controlled by varying the transverse pressure gradients established near a recirculation region between separation and attachment points in the diverging portions of the supersonic nozzles.

3,690,338

## ONE SHOT FLUID GATE

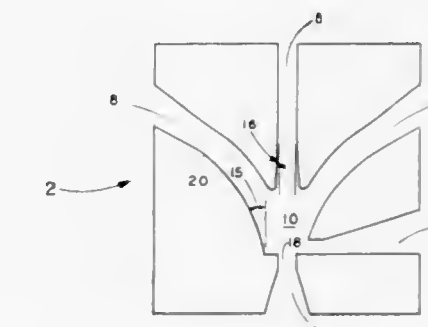
Elmer L. Swartz, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Army

Filed Jan. 21, 1971, Ser. No. 108,542

Int. Cl. F15c 1/08, 4/00

U.S. Cl. 137-81.5

6 Claims



A device having an input channel, a receiver channel, and a dump channel communicating with a reaction chamber wherein an input signal of any duration supplied to the input channel will cause only a single narrow pulse at the output of the receiver channel. After the termination of the narrow pulse the one shot gate isolates the flow entering the input channel from the receiver channel by dumping any continuing flow in the input channel to the atmosphere.

3,690,339

## FLUIDIC POSITION SENSOR

Murdoch G. McKinnon; James N. Wilson, and Robert W. Besant, all of Saskatoon, Saskatchewan, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada

Filed Oct. 24, 1969, Ser. No. 869,315

Int. Cl. F15c 1/08, 4/00

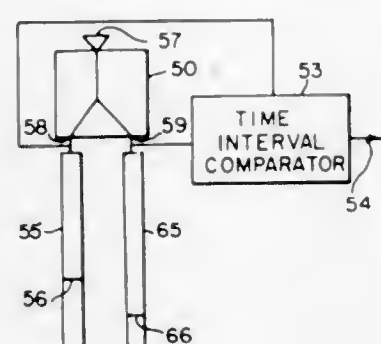
U.S. Cl. 137-81.5

1 Claim

A position sensing apparatus, particularly suitable for sensing the level of a liquid, comprising a tubular member disposed within the liquid to be measured, and a fluidic element having a fluid supply and a first and second outlet. The first outlet is pressure load sensitive and is connected to the tubular member. The fluidic element may be a monostable or bistable wall attachment amplifier or logic device which switches in response to pressure waves and expansion waves reflected from the liquid surface within the tubular member,



and oscillates at a rate dependent on the level of the liquid. The frequency or period of oscillation is converted to a mea-



sure of the level of the liquid. The apparatus may also be used to sense the position of a piston in a tube.

3,690,340

**FLUID PROPORTIONING SYSTEM**

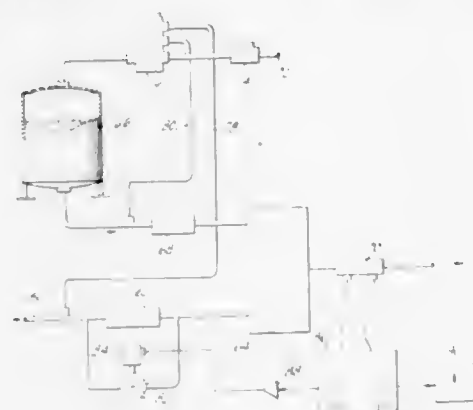
Anatole J. Siplin, 117 E. 77th St., New York, N.Y.

Filed March 5, 1970, Ser. No. 16,823

Int. Cl. E03d 9/03; E03b 7/07; G05d 11/00

U.S. Cl. 137-93

4 Claims



A dialysate proportioning system in which salt concentrate and water from two lines are combined in a mixing chamber, the pressure drops across a linear concentrate resistor in the concentrate line and a linear water resistor in the water line are maintained at equal values by pressurization of the concentrate in a reservoir, and the conductivity of the dialysate is maintained by an electrical conductivity control which varies a trim valve bypassing the water resistor.

3,690,341

**EQUAL FLOW DISTRIBUTOR**

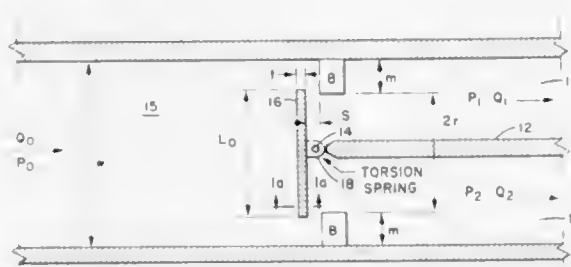
Adolph A. Sutko, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed April 21, 1971, Ser. No. 136,011

Int. Cl. G05d 11/00

U.S. Cl. 137-101

3 Claims



An equal flow distributor is adapted to take the flow from an inlet port and divide it equally between two outlet ports in such a manner that a deviation in pressure at either of the outlet ports will cause rotation of a butterfly valve and torsional spring combination to equal the flow between the outlet ports inspite of the change in pressure between the ports.

3,690,342

Patent Not Issued For This Number

3,690,343

**CIRCULAR IRRIGATION SYSTEM WITH HYDRAULIC DRIVE**

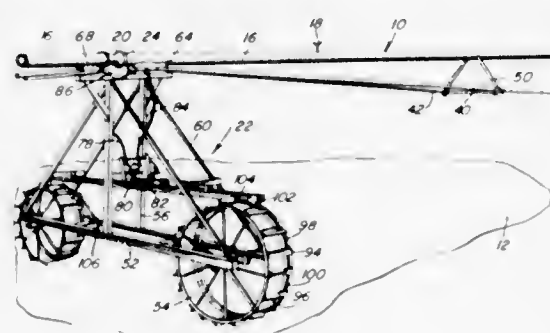
Elmer Earl Crane, Rt. 1, Box 16, Springfield, Colo.

Filed June 11, 1971, Ser. No. 152,159

Int. Cl. B05b 9/02; E01h 3/02

U.S. Cl. 137-344

10 Claims



An elongated irrigation pipe movable in a circular path about a stationary central supply pipe and being supported by a plurality of wheeled towers each being individually driven by a hydraulic motor of the orbit or piston and cylinder type and being supplied with pressurized hydraulic fluid through a hydraulic system independent of the irrigation system and which utilizes tension elements of a truss structure supporting the irrigation pipe for circulation of pressurized hydraulic fluid. A two-way valve is connected in the hydraulic circuit at each tower for controlling the operating speed of each tower in response to misalignment of one irrigation pipe section in relation to an adjacent irrigation pipe section.

3,690,344

**SILENT FLEXIBLE TUBE TYPE VALVE**

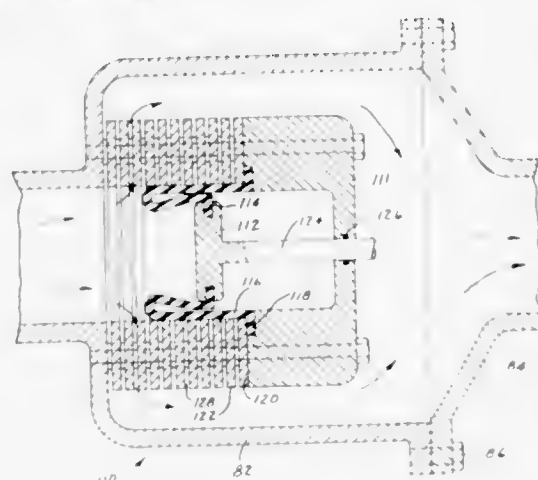
Richard S. Brumm, Orinda, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Feb. 8, 1971, Ser. No. 113,519

Int. Cl. F16k 7/07

U.S. Cl. 137-625.28

10 Claims



A valve including a flexible tube normally firmly engaged around a cylindrical member, as by means of a control pressure, to prevent fluid flow through radial openings through the member. When the tube is progressively forced away from the surface of the member, as by overcoming the control pressure, flow through the member to a downstream flow passage is initiated. The flow openings are formed by a series of closely axially spaced, thin annular members providing a high length-to-cross section ratio between them. The annular members may be formed non-planar to increase the length of the flow path within the radial space requirements.

3,690,345

**ELECTRO HYDRAULIC SERVO VALVE**

Donald W. Erickson, 185 Westwood Dr., Birmingham, Mich.

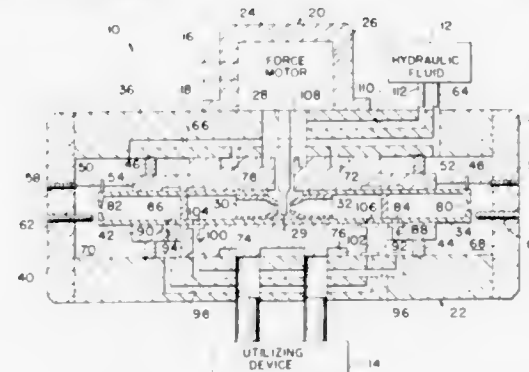
Continuation of Ser. No. 636,910, May 8, 1967, abandoned.

This application Sept. 8, 1970, Ser. No. 70,594 The portion of the term of this patent subsequent to Oct. 21, 1986, has been disclaimed.

Int. Cl. F15b 5/00; F16k 11/07

U.S. Cl. 137-625.62

16 Claims



An electro hydraulic servo valve having a nozzle tube movable in accordance with an electrical signal and a spool movable in accordance with differential pressure produced through the nozzle tube to meter a variable volume of hydraulic fluid through the valve and means including an abutment for restricting or changing the movement of the nozzle tube relative to the applied electric signal during movement thereof to provide the electro hydraulic servo valve with a variable gain characteristic in that the spool follows the movement of the nozzle tube in one proportion before the nozzle tube engages the abutment and in another proportion after the nozzle tube engages the abutment.

3,690,346

Patent Not Issued For This Number

3,690,347

**PRESSURE VESSEL**

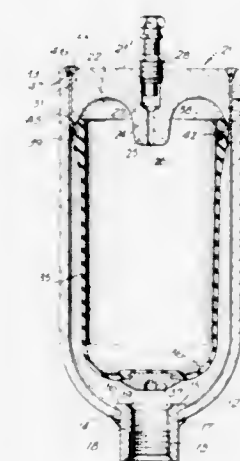
Abdus Zahid, Los Angeles, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Filed Dec. 16, 1970, Ser. No. 98,593

Int. Cl. F16l 55/04

U.S. Cl. 138-30

1 Claim



This invention relates to the art of pressure vessels of the type having a cylindrical container, one end of which is closed and has a port, and the other end of which defines an open mouth. The container has a deformable bladder of resilient material positioned therein, said bladder having a large mouth with an annular supporting member secured thereto and extending outwardly therefrom. The free edge portion of the supporting member which is longitudinally spaced from the

region where the bladder is secured thereto, extends into an annular groove defined between the inner surface of the open mouth of the container and the outer periphery of a cover member positioned in the upper portion of the supporting member, the opposed surfaces of the annular groove and the free edge portion of the supporting member being bonded together to seal the container.

3,690,348

**TRAVELING VALVE**

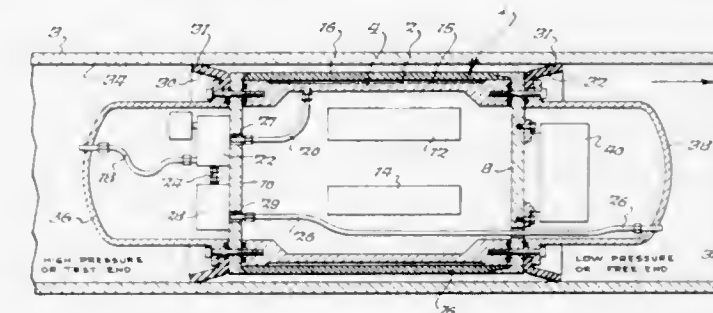
Billy R. Patterson, Diana, Tex., assignor to Lone Star Steel Company, Dallas, Tex.

Filed Oct. 26, 1970, Ser. No. 83,729

Int. Cl. F16l 55/18

U.S. Cl. 138-97

9 Claims



The present invention comprises a novel pipeline valve transportable by pipeline fluid adapted for isolating pipeline sections to permit location of a leak, and to stop the flow of pipeline fluid. The invention also concerns a novel process for isolating sections of a pipeline to permit location of a leak. The novel valve contains means for controlling the flow of the pipeline fluid in the valve and for stopping the valve when desired. A drop in pipeline fluid pressure shows a leak in the pipeline section traversed by the valve.

3,690,349

**REINFORCING ROD MACHINE**

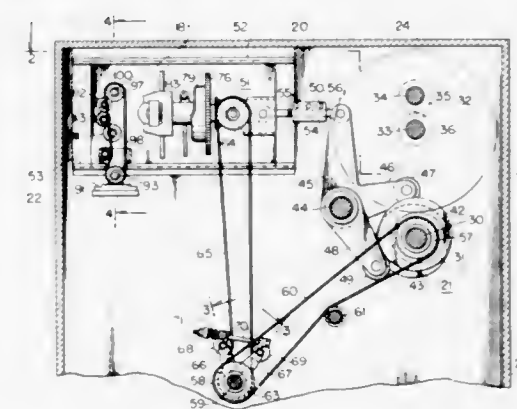
Pierre Donche-Gay, Buenos Aires, Argentina, assignor to American Engineering Company Limited

Filed March 15, 1971, Ser. No. 124,007

Int. Cl. B21f 25/00

U.S. Cl. 140-63

3 Claims



A machine for the manufacture of reinforcing rod having spaced apart flattened portions wound with turns of smaller diameter rod has a pair of constantly turning forming rollers which feed the rod between them and form the spaced apart flattened portions and the machine has a reciprocating winding head which winds turns about the flattened portions of the rod while advancing with the rod. A drive for the forming rollers rotates cams which oscillate a yoke which reciprocates the winding head. The drive for the forming rollers also, through sprockets and a chain, rotates the winding head arbor. The chain driving the winding head arbor incorporates a spring chain tightener to compensate for the oscillation of the wind-



ing head. The reciprocation of the winding head causes a sector gear on the winding head engaging a fixed rack to drive rod metering rollers which extend smaller diameter rods to be wound about the flattened portions of the reinforcing rod.

3,690,350

## PACKAGE STRAPPING TOOLS

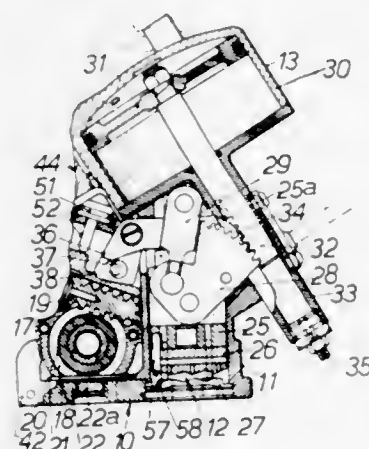
Robert David Sansum, Harpenden, England, assignor to Gerard Industries Limited, London, England  
Filed Oct. 20, 1970, Ser. No. 82,422

Claims priority, application Great Britain, Oct. 24, 1969, 52,096/69

Int. Cl. B21f 9/02

U.S. Cl. 140—93.2

10 Claims



A strapping tool by means of which the overlapped ends of a loop of strapping are secured together after that loop has been arranged and tightened around a package. A fluid pressure operated ram is coupled to a rack in mesh with an angularly movable toothed member connected by a toggle linkage to a linearly movable element of the jointing means.

3,690,351

## LIMB REMOVING APPARATUS

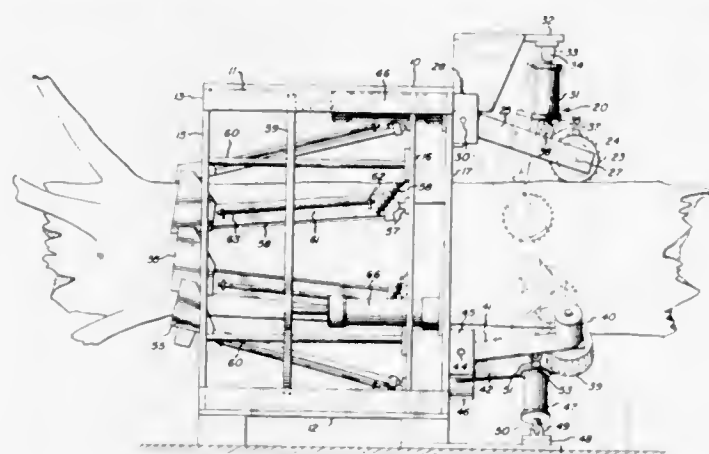
Carl G. Strickland, P.O. Box 592, Port Gibson, Miss., and Walter D. Clark, 1211 Lancaster Dr., Alexandria, La.

Filed Oct. 5, 1970, Ser. No. 77,974

Int. Cl. A01g 23/02

U.S. Cl. 144—2 Z

6 Claims



An apparatus for removing limbs from the trunk of a tree in which a hydraulically-activated compression ring operates to keep a segmented circular array of curved cutter blades in intimate branch-shearing contact with a tree trunk of variable size as said tree is fed endwise through the machine. The cutter knives are attached to the free ends of pivotally-mounted elongated support arms, and the compression ring is slidably attached to the outside of each of the support arms. The tree is pulled through the machine by hydraulically-powered, spiked rollers.

3,690,352

## APPARATUS FOR DELIMBING TREES

Kjell Olof Gunnar Herolf, Sundsbruk, Sweden, assignor to Kockum Soderhamn AB, Fack, Sweden

Filed Sept. 14, 1970, Ser. No. 71,929

Claims priority, application Sweden, Sept. 18, 1969, 12891/69

Int. Cl. A01g 23/02

U.S. Cl. 144—2 Z

17 Claims



A tree delimbing apparatus which includes elongated horizontally disposed members that are rotatable and which have cutting members disposed radially outwardly from the axis of rotation, said rotatable members also serving to space the tree trunks away from said cutting members.

3,690,353

## TREE CROSS-CUTTING BLADE ASSEMBLY

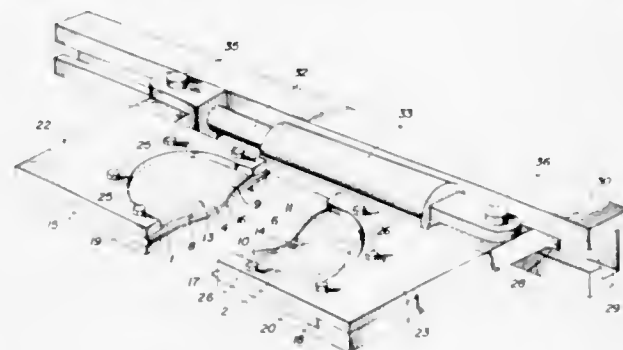
John S. Johnston, and Andre St-Laurent, both of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Oct. 19, 1970, Ser. No. 81,774

Int. Cl. A01g 23/02

U.S. Cl. 144—34 R

5 Claims



Tree cross-cutting blade assembly are each trough-shaped with outwardly inclining sides leading from a bottom of the trough which slopes downward and terminates as the blade cutting edges. The blades are mounted for movement towards one another along paths which are substantially straight when viewed in a horizontal direction so that a portion of the tree between the troughs is compressed to alleviate splitting while it is being cut.

3,690,354

## TREE HARVESTER CONTROL CIRCUIT

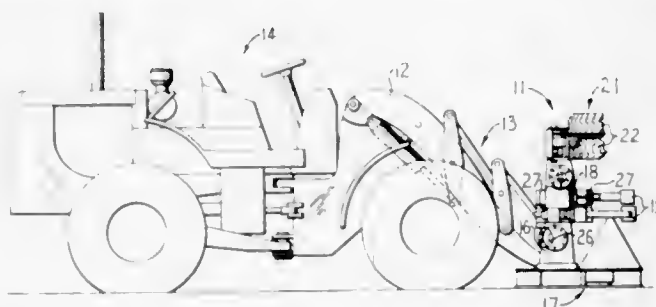
Raymond L. Moser, Tremont, Ill., assignor to Caterpillar Tractor, Peoria, Ill.

Filed Feb. 8, 1971, Ser. No. 113,327

Int. Cl. A01g 23/02

U.S. Cl. 144—34 R

19 Claims



A control circuit for a tree harvester having a processing implement and a shear assembly for cutting standing trees with a

drive mechanism for propelling the tree past the implement and grapples for maintaining the tree in engagement with the drive mechanism. A single control valve is operable into a first position for actuating the shear assembly and into a second position for retracting the shear assembly and operating the drive mechanism. A directional valve provides operating fluid for positioning the grapples and implement in engagement with the tree while the control valve is in either of its operating positions, the directional valve being selectively operable to retract the grapples and implement in order to release the tree from the harvester. A check valve for communicating fluid to the implement and grapples tends to maintain those components in engagement with the tree while also functioning to coordinate operating pressures for the grapples and drive mechanism and to permit floating operation of the implement in order to provide for effective and efficient operation of the tree harvester.

3,690,355

Patent Not Issued For This Number

3,690,356

## CUTTER ASSEMBLY FOR A WOODWORKING MACHINE

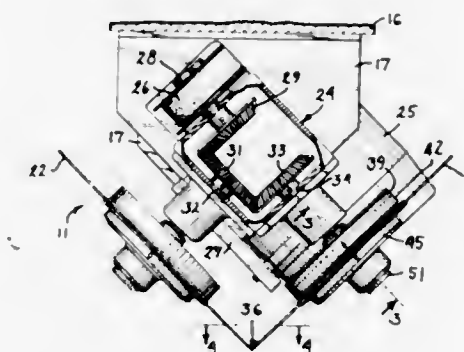
Leif A. Holan, Rt. 1, Chimney Rock, Winona, Minn.

Filed June 5, 1970, Ser. No. 43,673

Int. Cl. B27b 5/20, 5/32

U.S. Cl. 144—136 R

8 Claims



A woodworking machine for cutting a plurality of oriented V-grooves in a wood panel to effect simple cabinet fabrication. The grooves are formed by a cutting assembly having a pair of rotary cutters disposed at 45° with respect to the table and at 90° with respect to each other. The cutters have intermeshed teeth and are synchronously driven by a single electric motor through a gear transmission. The cutter assembly is carried on a track supported by an overhead frame and is arranged to pass over the wooden panel in cutting relation, which rests on a horizontal table. The machine includes means for lowering the cutting assembly to a desired position above the table and advancing the assembly with respect to the panel to form the groove. The cutting assembly is then elevated to a non-cutting position and returned to its initial position.

3,690,357

## ADJUSTABLE DEPTH GROOVE CUTTER AND SUPPORT THEREFOR

Roberto Lugo, Av. Nacional 45, Panama, Panama

Filed July 7, 1970, Ser. No. 52,847

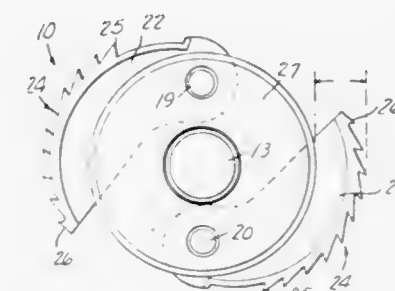
Int. Cl. B27b 33/12; B27g 13/14

U.S. Cl. 144—232

3 Claims

An adjustable depth groove cutter and support therefor for mounting on the spindle of a shaping machine. The cutter head includes a base plate having upstanding pivot pins formed thereon. A cutter having a plurality of groove cutting teeth is mounted on each pivot pin for eccentric adjustment with respect to the axis of rotation of the cutter head. The

cutting tooth arrangement on the cutting blades is such that each tooth removes a small portion of the total cut so that the



cutting work is divided among all of the teeth. As the cutter blades are adjusted eccentrically outwardly the depth of the cut is increased.

3,690,358

## APPARATUS FOR PROCESSING SUGARCANE

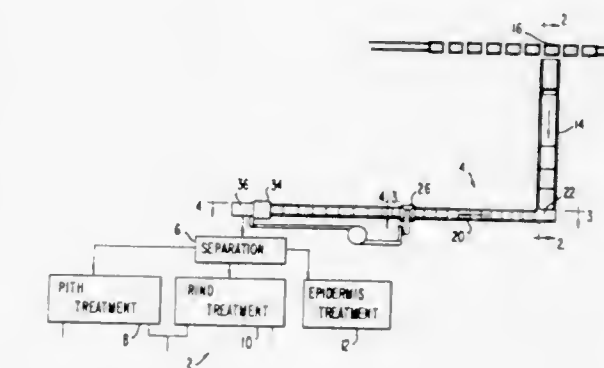
Sydney Edward Tilby, Winterburn, Alberta, Canada, assignor to Canadian Cane Equipment, Ltd., Montreal, Quebec, Canada

Division of Ser. No. 714,896, March 21, 1968, Pat. No. 3,567,511, Continuation-in-part of Ser. Nos. 692,185, Dec. 20, 1967, Pat. No. 3,509,293, and Ser. No. 692,237, Dec. 20, 1967, Pat. No. 3,566,944. This application Jan. 4, 1971, Ser. No. 103,364

Int. Cl. B02c 18/00; A01d 55/00; B07b 4/08

U.S. Cl. 146—119

3 Claims



A process is provided which transforms randomly oriented sugarcane stalks into their pith, rind and epidermis components which are then treated to obtain sugar juice, pith floc, cane fibers and other sugarcane commodities.

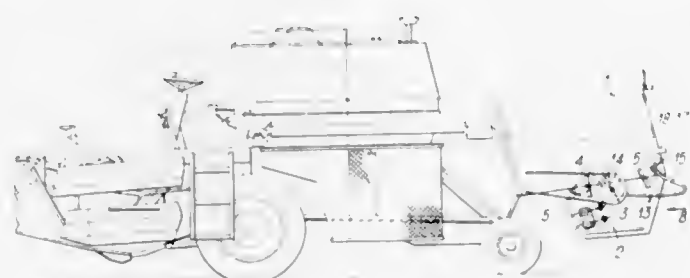
In delivering the sugarcane stalk material to the separating zone, the stalks are aligned longitudinally in their direction of travel and are chopped transversely thereof into shorter lengths. If the cane contains trash such as leaves and rocks, a fluid is directed through it to remove the trash.

At the separating zone the chopped stalks are separated into their pith, rind and epidermis components. This is done by opening up longitudinally each chopped stalk into separate portions which are then flattened. As the flattened stalk material is fed through the zone, pith is milled away from one side and epidermis material is milled away from the opposite side. The components are then recovered and can be further treated.

The treatment of the pith comprises a washing and pressing operation to extract the juice from the pith. The rind is reduced into smaller portions such as chips or shreds which are then contacted with water to extract water solubles from the rind. The epidermis can also be treated to separate wax bearing material from certain other epidermis material.

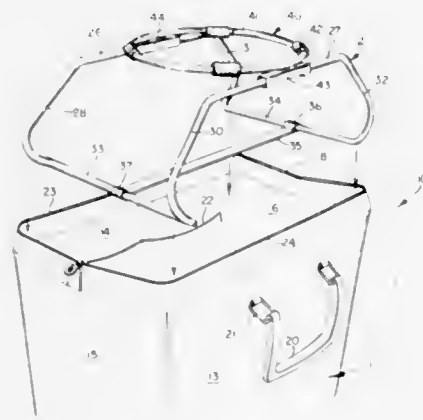


**3,690,359**  
**APPARATUS FOR MOUNTING AN ACCESSORY ON A COMBINE**  
 Alfred Johannes Wenzel, Obering, and Alwin Hantel, Schlehenweg, both of Germany, assignors to Massey-Ferguson G.m.b.H., Staendeplatz, Germany  
 Filed March 11, 1971, Ser. No. 123,206  
 Int. Cl. A01f 12/40  
 U.S. Cl. 146—123



Apparatus for mounting an accessory, for example a straw chopper, on a combine harvester so that the accessory can be moved manually by a single operator from an "in-use" position to an unobtrusive "out-of-use" position. The accessory is carried on rails mounted on opposite sides of the combine and having upturned ends. A pair of aligned support members are provided on opposite sides of the accessory and adjacent its center of gravity for engagement with the rails. The accessory is moved from its in-use position to its out-of-use position by sliding or rolling it along the rails and then pivoting it about the support members.

**3,690,360**  
**BOWLING BALL CARRIER**  
 Thomas J. Cahill, Jr., Wilmington, Del., assignor to Rapid-American Corporation, Clayton, Del.  
 Filed Sept. 23, 1970, Ser. No. 74,556  
 Int. Cl. B65d 65/02  
 U.S. Cl. 150—52 A



A carrying case is provided, which is adapted, among other things, to be used for the carrying of a bowling ball therein, in conjunction with the carrying of other items, such as bowling shoes, with apparatus for seating the bowling ball being movable in order to permit access to shoes also contained within the case.

**3,690,361**  
**ANTI-SKID ARRANGEMENT FOR WHEELED VEHICLES**  
 Herbert Waldmann, Dauchinger Str. 28, 722 Schwenningen, Germany  
 Filed July 27, 1970, Ser. No. 58,512  
 Claims priority, application Germany, July 28, 1969, P 19 38 182.9  
 Int. Cl. B60b 15/00; B60c 11/00  
 U.S. Cl. 152—216

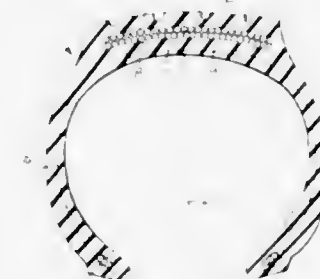


A rotatable vehicle wheel has two oppositely facing axial sides and is provided at each of these sides with a mounting ring which is displaceable circumferentially with reference to the wheel. A tire is mounted on the wheel and provided on its circumferentially extending tread face with at least one groove extending across the tread face inclined to the circumference thereof. An elongated anti-skid band is partially and slidably received in the groove and has two spaced end portions each of which is connected with one of the rings, and longitudinally adjacent spiked and non-spiked tread surface portions located intermediate the end portions. A displacing arrangement can be actuated for causing stepwise longitudinal sliding travel of the band in the groove so as to either expose the spiked or the non-spiked tread surface portion of the band in this groove depending upon whether the non-skid properties of the band are to be utilized or not. At least one actuating element is connected with the mounting rings and rotates with the wheel, moving during such rotation in a predetermined path and being operable for effecting actuation of the displacing arrangement. Operator-controllable triggering means is provided and is movable between a rest position and an actuating position. In the latter it extends into the predetermined path of movement of the actuating element and in response to contact with the same triggers operation of the actuating element at least once during each revolution of the wheel.

**3,690,362**  
**HIGH STRENGTH POLYETHYLENE TEREPHTHALATE YARN AND CORD PRODUCED THEREFROM**  
 Brij Mohan Mago, Richmond, and James Isaac Bruton, Colonial Heights, both of Va., assignors to Allied Chemical Corporation, New York, N.Y.  
 Filed Sept. 28, 1970, Ser. No. 76,290  
 Int. Cl. D02g 3/48; B60c 9/00; D02g 3/02

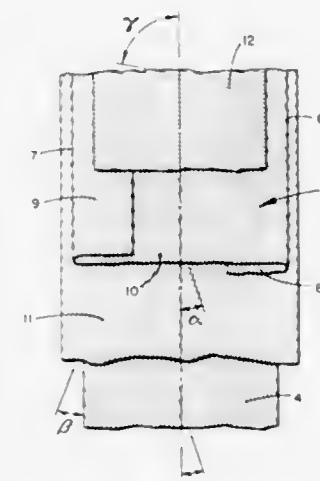
A product and process for the production of high strength polyethylene terephthalate tire cord by producing an ultra high strength polyethylene terephthalate fiber that is translatable into an improved high strength tire cord by using an improved tensilization process.

**3,690,363**  
**GLASS CORDS AND TIRES AND SIMILAR RUBBER ARTICLES REINFORCED THEREWITH**  
 Raymond Guyot, Paris, France, assignor to FIVEREL, Societe Civile d'Etudes et de Recherches, Paris, France  
 Filed Nov. 13, 1970, Ser. No. 89,293  
 Int. Cl. B60c 9/08  
 U.S. Cl. 152—359



Cords, particularly adapted for the reinforcement of tires as radial carcasses, composed of glass filaments individually coated with an elastomer sheath, such cords being characterized by a corrected primary twist factor greater than 90, a corrected secondary twist factor greater than 130 and an elongation at rupture of less and 3.5 percent. The glass cords constituting the radical carcass are preferably interrupted under the breaker of the tire at the level of the equatorial plane forming two half carcasses which are substantially symmetrical. A substructure reinforcement layer may be placed under the breaker under the ends of such two half carcasses, the reinforcing layer having a width at least equal to the distance that separates the two half carcasses.

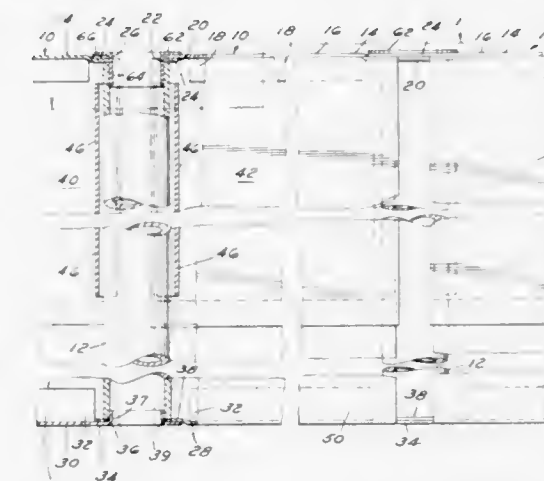
**3,690,364**  
**RADIAL TIRE HAVING BREAKER STRUCTURE**  
 Carlo Barassi; Giuseppe Lugli; Mario Mezzanotte, and Romano Guermandi, all of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy  
 Filed April 30, 1971, Ser. No. 138,895  
 Claims priority, application Italy, May 5, 1970, 24174 A/70  
 Int. Cl. B60c 9/18  
 U.S. Cl. 152—361



The invention relates to improvements in the breaker structure for radial type pneumatic tires. The structure according to the invention comprises at least two superposed strips of textile material having at least one strip of metallic material interposed therebetween and an additional metallic or

equivalent strip arranged radially outermost of the aforementioned strips. The improvement in the present invention resides in the fact that at least one of the textile strips is folded so as to provide a fold line along each edge of the structure.

**3,690,365**  
**PORTABLE PARTITION SYSTEM**  
 Walter W. Thompson, Hazelhurst, Ga., assignor to Emerson Electric Co., St. Louis, Mo.  
 Filed Nov. 25, 1970, Ser. No. 92,766  
 Int. Cl. A47g 5/00  
 U.S. Cl. 160—135



A portable partition system for subdividing an interior spaced comprising upright partition sections arranged edge to edge and pivotally connected by elongated vertical hinge members. The panel sections are constructed to visually close the joints between the partition sections.

**3,690,366**  
**PRODUCTION OF MOLDS**  
 Carl H. Schwartz, 4821 Pineridge, Toledo, Ohio  
 Filed Oct. 10, 1969, Ser. No. 865,514  
 Int. Cl. B22c 9/02

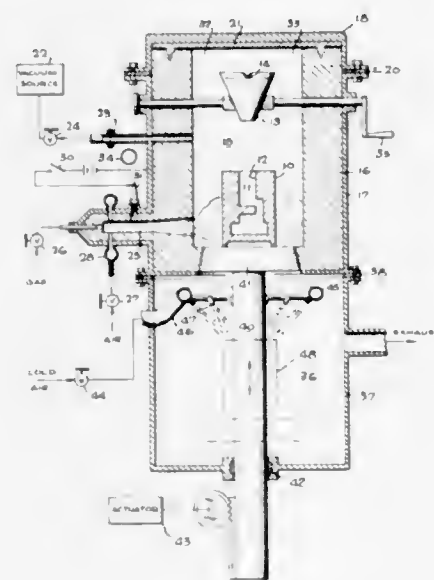
A method of producing precision casting molds from a mixture of a comminuted refractory material, a lower alkyl silicate binder and a gelling accelerator. The proportion of lower alkyl silicate used, and the mean effective particle size and particle size distribution of the refractory are both carefully controlled. Specifically, the proportion of lower alkyl silicate used is kept sufficiently low that the mixture, when placed against a pattern and allowed to gel, does not crack upon prolonged standing under ambient conditions, while a refractory is used substantially all of which is finer than 8 mesh and in which the particle size is graduated so that a substantial proportion is finer than 200 mesh and a substantial proportion is coarser than 100 mesh, while the bulk density is sufficiently high that, at the required low proportion of alkyl silicate, the mixture can be placed in mold-forming relationship with a pattern and, upon gelling of the alkyl silicate, will form a rigid mold. Apart from control of the proportion of lower alkyl silicate used and of particle size of the refractory, the process is conventional, and involves producing the mixture, applying the mixture in mold-forming relationship to a pattern, allowing the lower alkyl silicate to gel, and ultimately firing the mold.

**3,690,367**  
**APPARATUS FOR THE RESTRUCTURING OF METALS**  
 Floyd La Mar Daniels, Los Angeles, Calif., assignor to Anadite Incorporated, South Gate, Calif.  
 Filed July 5, 1968, Ser. No. 742,875  
 Int. Cl. B22d 41/00

The apparatus and method for effecting the restructuring of metals disclosed herein provides a container for holding mol-



ten metal in a controlled atmospheric or vacuum environment into which an open-ended shell mold is immersed so that the wall of the mold separates and confines molten metal intended to be formed from the surrounding molten mass. A chill means is placed in engagement with the confined molten metal at the



top opening of the mold which begins solidification thereof at the molten metal interface. Means are provided for moving the chill means so that the solidified portion of the formed part is withdrawn from the mold as required. Planned withdrawal of the solidified portion creates a continuously new interface area which then progressively solidifies until the formed part is completed.

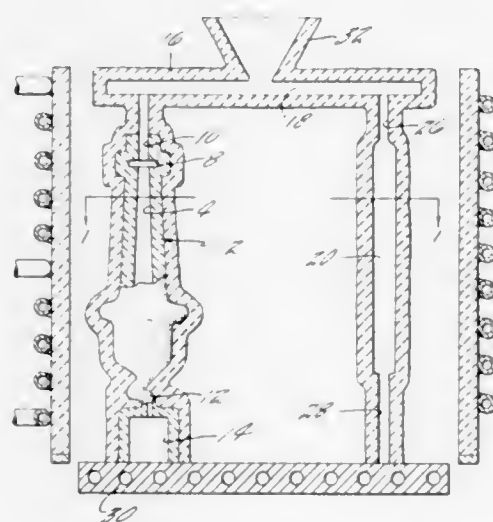
3,690,368

## CASTING SINGLE CRYSTAL ARTICLES

Stephen M. Copley, Madison; Anthony F. Giamei, Middletown; Merton F. Hornbecker, Woodbury, and Bernard H. Kear, Madison, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.  
Continuation-in-part of Ser. No. 714,722, March 20, 1968, abandoned. This application Aug. 14, 1970, Ser. No. 63,738  
Int. Cl. B22c 9/04, 9/22

U.S. Cl. 164—350

11 Claims

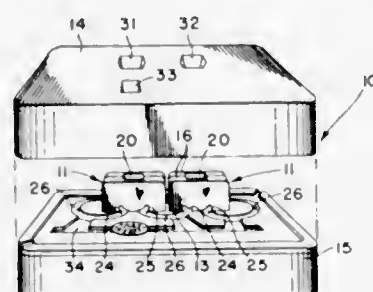


Apparatus for the formation of single crystal articles by directionally solidified casting techniques which substantially eliminates the formation of heterogeneous discontinuities in the casting.

3,690,369  
APPARATUS FOR MAKING CAST CHAIN  
J. Stanley Wheeler, Baltimore, Md., assignor to Unitec Industries, Inc., York, Pa.  
Filed Nov. 27, 1970, Ser. No. 93,261  
Int. Cl. B22c 9/22

U.S. Cl. 164—351

5 Claims



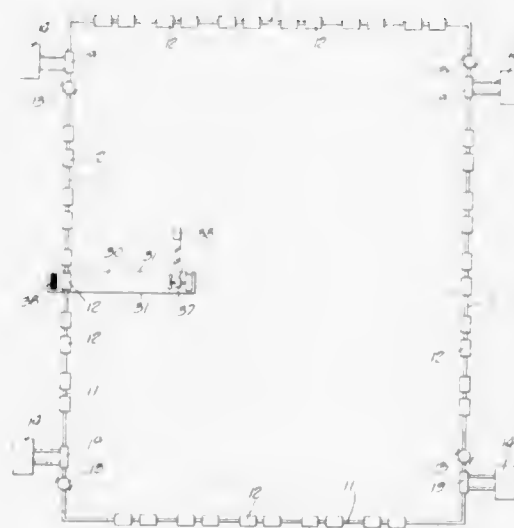
A method and apparatus for casting a plurality of spaced apart chain links and connecting links therebetween in the same molding apparatus. The molds for casting the spaced apart links are formed in the cope and drag portions of the molding apparatus, and the adjacent sides of the molds are intersected by elongated vertical recesses which receive upstanding core assemblies containing arcuate passages to complete the molds for the spaced apart links. The upstanding core assemblies also contain molds for casting vertical connecting links between the horizontally spaced apart links. After casting two or more such plural link chains, they may be connected together to provide a chain of any desired length by casting connecting links between the end links of each chain using other core assemblies.

3,690,370  
COOLING SYSTEM

James R. Piper, 6405 W. Chartres Dr., Palos Verdes, Calif.  
Filed Feb. 11, 1970, Ser. No. 10,418  
Int. Cl. B60h 1/00

U.S. Cl. 165—22

20 Claims



A series-loop cooling system for cooling individually several zones within a building or several buildings includes a closed circuit having for each zone and within series in the circuit the heat exchange coil of a heat exchange unit which utilizes and incorporates the standard structural members of a building or of several buildings. A cooling medium is circulated continually through the circuit and the heat exchange coil of each

heat exchange unit and thermostatically controlled fans in each heat exchange unit are adapted to pass air over the heat exchange coils and distribute the same into the temperature controlled zones.

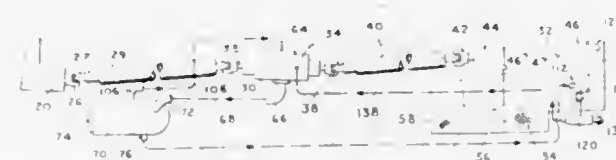
3,690,371

## LIQUID COOLER ASSEMBLY

Olin E. Potter, Wilbraham, and Biagio J. Tomasi, South Hadley Falls, both of Mass., assignors to Worthington Compressor and Engine International Division of Worthington Corporation, a Division of Worthington Corporation, Holyoke, Mass.  
Continuation of Ser. No. 809,187, March 21, 1969, Pat. No. 3,588,288. This application Aug. 21, 1970, Ser. No. 65,905  
Int. Cl. G25d 23/00

U.S. Cl. 165—35

4 Claims



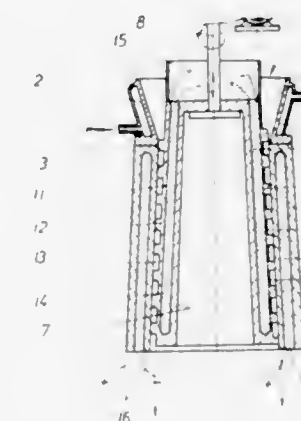
A compact oil cooling assembly suitable for a vehicle-mounted air compressor. Two oil cooling cores are operatively joined with a cooling fan by means of a shroud so that air flow generated by the fan passes serially through the cores for counter current flow cooling of the oil. The fan is disposed at one end of the shroud in a plane substantially perpendicular to the plane of the cooling cores at the other end of the shroud.

3,690,372

APPARATUS FOR CONTINUOUS MELTING OF SUGAR  
Gunter Niebisch, Hannover-Bemerode, Germany, assignor to Otto Hansel GmbH, Hannover, Germany  
Filed June 9, 1969, Ser. No. 831,679  
Int. Cl. F25b 29/00

U.S. Cl. 165—64

1 Claim



An apparatus for continuous melting of sugar of the sweet manufacturing, whereby sugar is fed continuously in a thin layer between heated faces maintained at a distance determining the thickness of the layer, which comprises two closed members formed as cylinders or cones defining two cylinder- or cone-jacket faces and disposed spaced apart from each other. Means are provided for rotating at least one of the members about its longitudinal axis and driver means extend from the faces into the space defined therebetween and are adapted to feed the sugar during its melting process from the entrance to the exit.

3,690,373

## PLATE HEAT EXCHANGERS

Felix William Wright, Copthorne Bank, NR. Crawley, England, assignor to The A.P.V. Company Limited, Crawley, England

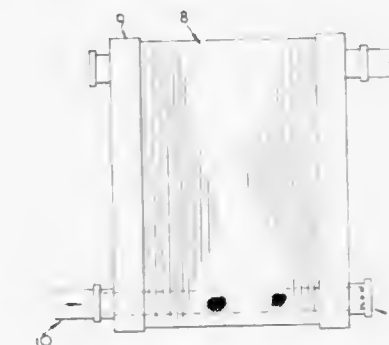
Filed Oct. 17, 1969, Ser. No. 867,278

Claims priority, application Great Britain, Oct. 29, 1968, 51,197/68

Int. Cl. F28f 19/06

U.S. Cl. 165—119

11 Claims



A plate type heat exchanger is provided with a permeable container in the inlet manifold formed by aligned holes in the plates. The container collects solid materials entrained in the feed liquid and may be withdrawn for emptying or replacement when full. The solids which may need to be removed before the liquid enters the heat exchanger flow passages include detached pipe line scale and live material grown in the pipework. The container may be open-topped or of closed section and means may be provided for spacing it from the edges of the holes forming the manifold.

3,690,374

## GAS COOLER, FOR COOLING SYNTHESIS GAS, FISSION GAS, AND SIMILAR GASES

Frohmut Vollhardt, Siegen-Burbach, Germany, assignor to Siegenger Aktiengesellschaft Geisweid, Huttental-Geisweid, Germany

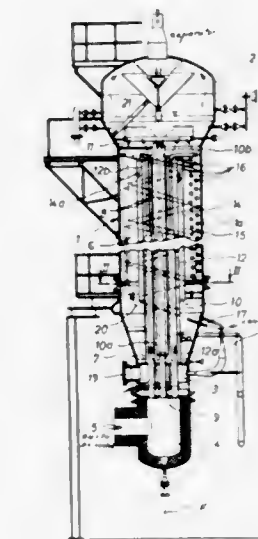
Filed April 8, 1970, Ser. No. 26,511

Claims priority, application Germany, April 10, 1969, P 18 171.6

Int. Cl. F24h 1/14

U.S. Cl. 165—157

6 Claims



An apparatus for cooling gases, especially fission gas and synthesis gas, which includes an upright tank in which gas conveying tubes are arranged around the tank axis while an inner cylinder is coaxially arranged in radially inwardly spaced relationship to said tubes which latter are surrounded by an outer cylinder coaxially arranged therewith, said outer cylinder forming together with said inner cylinder an annular space having a cross-section approximately equaling the free cross-section of said inner cylinder.



3,690,375

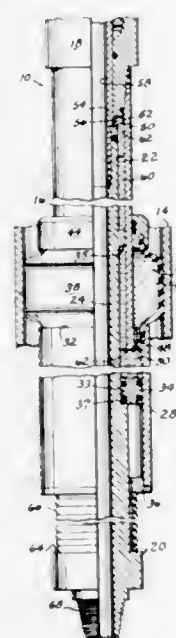
## INFLATABLE PACKER

Harold E. Shillander, 4 Plaza Escalante, 414½ Central S.E., Albuquerque, N. Mex.

Continuation-in-part of Ser. No. 847,060, Aug. 4, 1969, Pat. No. 3,575,238. This application April 5, 1971, Ser. No. 131,305

Int. Cl. E21b 33/127

U.S. Cl. 166—187



An elongated tubular body connected with a well string in a borehole telescopically receives a centrally bored mandrel having means forming pistons slidable in fluid containing reservoirs formed between the wall of the body and one end portion of the mandrel. A dilatible and collapsible member surrounding and connected to the body intermediate its ends defines an inflation chamber communicating with the fluid reservoirs. Spring means, surrounding the tubular mandrel, normally urges the mandrel and body in telescopic extended relation.

3,690,376

## OIL RECOVERY USING STEAM-CHEMICAL DRIVE FLUIDS

Robert W. Zwicky, 5152 Nesbitt Rd., Calgary 47, Alberta, and Robert M. Gies, 10 Vartown Pl., Calgary 45, Alberta, both of Canada

Filed Aug. 20, 1970, Ser. No. 65,669

Int. Cl. E21b 43/24

U.S. Cl. 166—272

3 Claims

An improved method for recovering hydrocarbons from underground formations which contain both hydrocarbons and a polyvalent salt formation water comprises injecting into said formation a steam composition containing a basic salt and a sequestering agent, the steam condensate of said steam composition having a pH of at least 8, said steam composition capable of forming an emulsion mobility front and a steam drive.

3,690,377

## THE CONSOLIDATION OF UNCONSOLIDATED FORMATIONS

Bruce L. Knight, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed April 5, 1971, Ser. No. 131,443

Int. Cl. E21b 33/138, 43/00

U.S. Cl. 166—288

7 Claims

Unconsolidated subterranean oil-bearing formations are consolidated by simultaneously injecting molten elemental sulfur and a gas into the formation in the immediate vicinity of the wellbore and allowing the molten sulfur to solidify. Op-

tionally, that portion of the formation to be solidified may be treated with a micellar dispersion to remove the formation fluids.

3,690,378

## WELL COMPLETION METHOD AND APPARATUS FOR EXPLOSIVE STIMULATION

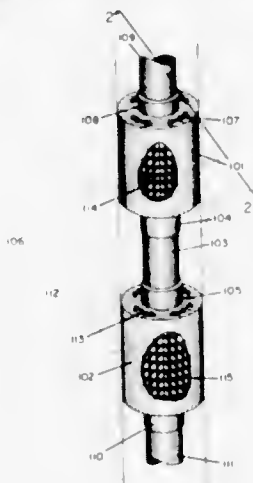
Karl M. Land, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed Sept. 30, 1970, Ser. No. 76,893

Int. Cl. E21b 33/13, 43/26

U.S. Cl. 166—299

5 Claims



Disclosed is a method and apparatus for preventing damage to the tubular goods and cement sheath of wells during an explosive stimulation treatment. The invention includes the use of honeycomb structured casing joints to absorb the damaging shock energy emanating from explosions, used to stimulate producing zones, by the placement of the honeycomb casing in the casing string above and below the wellbore zone to be stimulated.

3,690,379

## PLACEMENT AND DETONATION METHOD FOR EXPLOSIVE FRACTURING

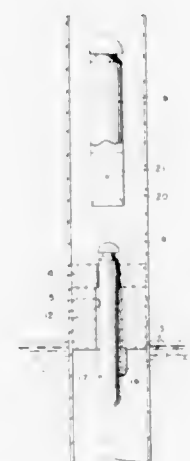
Ronald S. Bullen, Calgary, Alberta, Canada, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 21, 1970, Ser. No. 82,668

Int. Cl. E21b 43/00

U.S. Cl. 166—299

4 Claims



A method of oil or gas well stimulation wherein a liquid explosive is injected into the formations and subsequently detonated. An explosive charge is placed proximate the formations containing the liquid explosive and a detonating device is lowered to actuate the explosive charge and liquid explosive.

3,690,380

## WELL APPARATUS AND METHOD OF PLACING APERTURED INSERTS IN WELL PIPE

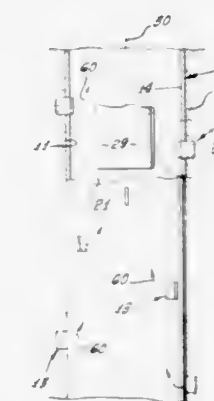
Donovan B. Grable, 2515 San Francisco Ave., Long Beach, Calif.

Filed June 22, 1970, Ser. No. 47,957

Int. Cl. E21b 43/11, 29/00

U.S. Cl. 166—298

16 Claims U.S. Cl. 171—56



A projection containing through porting is displaced endwise and relatively through a well casing wall to cause the projection to penetrate the surrounding formation. The displacement is completed when the through porting bridges the casing wall, thereby to channel the production flow through such porting.

3,690,381

## TUBING HANGER ASSEMBLY AND METHOD OF USING SAME FOR HANGING TUBING IN A WELL UNDER PRESSURE

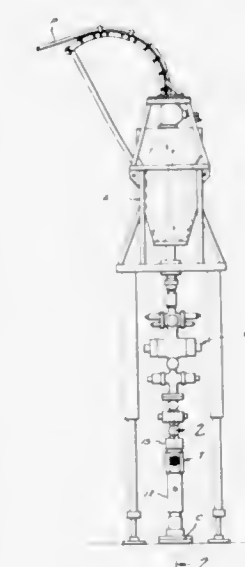
Damon T. Siator, and Archie W. Pell, both of Houston, Tex., assignors to Bowen Tools, Inc.

Filed Oct. 16, 1970, Ser. No. 81,313

Int. Cl. E21b 33/03, 43/00

U.S. Cl. 166—315

2 Claims



A tubing hanger assembly and method of using same for hanging tubing in a well under pressure, wherein tubing having a smooth external surface and a check valve at its lower end, is gripped and sealed off in the hanger and then the wellhead equipment above the tubing hanger is removed so that the tubing is thereafter available for injecting chemicals into the well and for performing similar well operations.

3,690,382

## APPARATUS FOR PULLING OUT ROW CROP PLANTS

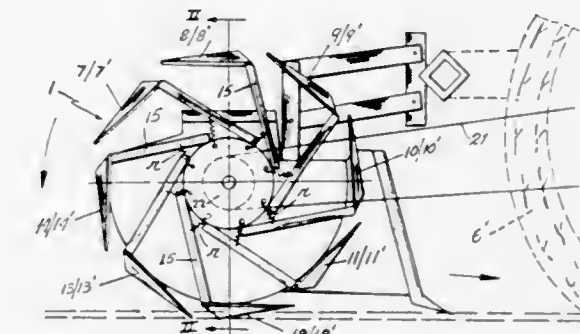
Kelth Douglas Bradbury, Juramento 3361, 7° "B", Buenos Aires, Argentina

Claims priority, application Brazil, Dec. 16, 1969, 215,207

Filed Dec. 8, 1970, Ser. No. 96,221

Int. Cl. A01d 25/04

1 Claim



A self-lubricating harvester machine for harvesting row crops that is connected to and powered by a tractor includes a plurality of pairs of grasper-cutter devices that are arranged circumferentially in a protruding fashion from the peripheral of a wheel-like structure. Power-driven mechanisms are associated with the two formed wheel-like structures and operate the grasper-cutter devices that grasp, cut and pull the row crop as the devices contact the ground and that move to an open position upon leaving the ground to discharge the row crops.

3,690,383

## SOIL MOLDING HARVESTER PICKUP

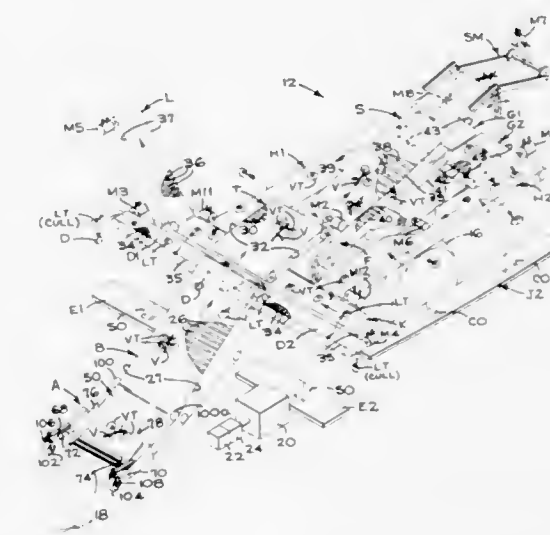
William G. Malley, San Jose, and David W. Cayton, Cupertino, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,046

Int. Cl. A01d 17/06

U.S. Cl. 171—126

3 Claims



A vine crop pickup or harvesting mechanism has a leading rotating cutter bar that is advanced along a planting ridge under the surface of the soil for uprooting the vines and a trailing rotating elevator bar that is advanced above the surface of the soil to transfer the severed vines, and any loose fruit from the vines, onto a trailing removal conveyor. To prevent loose fruit and the vines from falling off the sides of the normally rounded planting ridge, soil crowding plates are disposed at the ends of the bars to raise a ramp of soil extending fore and aft of the bars at each side of the ridge, and also form an entrance throat for the vines and loose fruit.



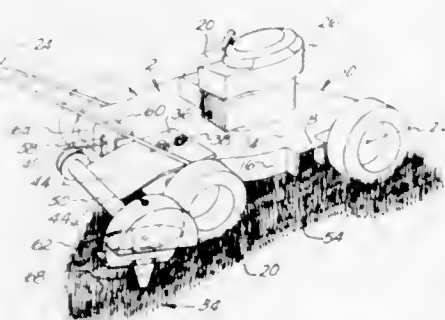
3,690,384

**COMBINED LAWN MOWER AND EDGER**Luther E. Patterson, 315 N. High St., Covington, Ohio  
Filed Nov. 3, 1971, Ser. No. 195,118

Int. Cl. A01b 45/00

U.S. Cl. 172—15

10 Claims



A combined lawn mower and edger, the edger providing means for edging or trimming along driveways, walks, curbs, flower beds, trees and the like, and being readily attached to or detached from a lawn mower. The edger blade assembly of the edger is secured to one end of an edger shaft rearwardly and laterally of the wheeled carriage of the lawn mower and arranged to rotate at all times in a substantially vertical plane clear of the ground when all wheels of the carriage are in contact with the ground and the edger is in a normally non-edging position spaced from the soil. The edger blade assembly is lowered, guided and raised, as desired, from a normally non-edging position, wherein the edger blade assembly is spaced from the soil, to an edging position, wherein the edger blade assembly engages the soil, while the motor is in operation, by pivoting the carriage of the lawn mower on its rear wheels.

3,690,385

**CULTIVATING IMPLEMENTS**

Stanley Marian Weiss, 9 Savage St., Geelong, Victoria, Australia

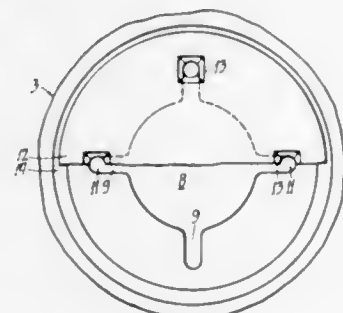
Filed Sept. 8, 1970, Ser. No. 70,459

Claims priority, application Australia, Sept. 9, 1969, 60648/69

Int. Cl. A01b 15/16, 23/06

U.S. Cl. 172—604

8 Claims



A cultivating disc having a central aperture and connected to a plurality of locations disposed around the central aperture to a mount member in such manner that at said locations localized radial movements of the disc are permitted. The aperture reduces stiffness of the central part of the disc and the permitted localized radial movements enable this central part to behave elastically whereby fractures are minimized.

3,690,386

**ANGLE AND TILT MECHANISM FOR DOZER BLADE**

Kenneth L. Magee, Racine, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Aug. 5, 1970, Ser. No. 61,179

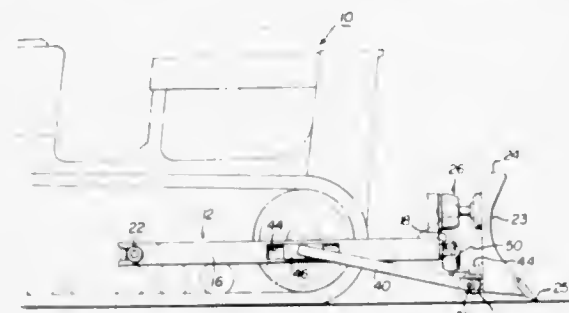
Int. Cl. A01b 3/76, 59/048

U.S. Cl. 172—804

10 Claims

A mechanism for an angling and tilting dozer blade in which the dozer is provided with a blade supporting frame and the

blade is universally pivotally connected to the front end of the frame within a vertical plane containing the longitudinal axis of the dozer; the opposite lower corners of the blade are pivotally connected by links to the blade supporting frame and the links are longitudinally slidably supported on the frame to thereby angularly reposition the blade when the links are ac-



tuated; an extendable link is provided positioned along the rear-side of the blade and towards one side of the blade from the blade center for pivotal connection of the blade to the front end of the frame to tilt the blade around an axis normal to the longitudinal axis of the dozer when the extendable link is actuated. Actuation of the links may be manual or by fluid power.

3,690,387

**BOOM ROTATION BRAKE RELEASE MEANS FOR DERRICKS**

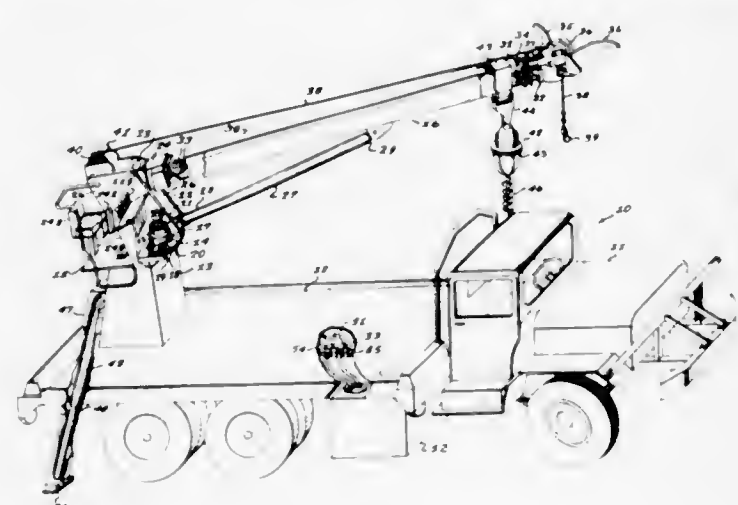
William Jennings Dixon, Charlotte, N.C., assignor to R. H. Bouigny, Inc.

Filed Feb. 16, 1971, Ser. No. 115,675

Int. Cl. E21c 5/00

U.S. Cl. 173—43

18 Claims



A derrick having boom rotation brake release means operable to allow the boom to be rotated by side loading above a predetermined magnitude and thereby relieve the extent of side loading so as to avoid damage to the derrick. The boom is rotated by a hydraulic motor with which is associated a double relief valve that allows reverse operation of the motor as an idler pump while imposing a limited resistance to rotation. The brake release means is hydraulically operated to release a brake mechanism that normally prevents boom rotation, with the brake release means being connected in the hydraulic system of the derrick for operation to release the brake mechanism in response to an increase in the hydraulic pressure in the system occurring during operation of the rotation motor and also during operation of other hydraulically operated derrick functions to allow the boom to rotate during operation of the rotation motor and to be rotated by side loading during operation of the other derrick functions, with the resistance of the rotation motor preventing rotation until a predetermined magnitude of side loading is imposed. Deac-

tuation of the rotation motor and all of the other derrick functions results in a pressure decrease that renders the brake release means inoperable to allow the brake mechanism to prevent further rotation of the boom when the derrick functions have been completed or at any time that it becomes necessary to stop boom rotation, e.g., to avoid damaging contact with an adjacent object.

3,690,388

**INSTALLATION OF SAND DRAINS**

Joseph Lawrence Hilton, Oakland, N.J.; Charles Russell Graff, Incline Village, Nev., and Lewis Fred Calvin, San Lorenzo, Calif., assignors to Raymond International Inc., New York, N.Y.

Filed July 20, 1970, Ser. No. 63,968

Int. Cl. E21b 11/00; E02d 17/142

U.S. Cl. 175—20

1 Claim



Methods and equipment for installing sand drains in water bearing earth; and an open ended tubular shell is lowered into the earth while allowing the water bearing earth to freely enter into the interior of the shell; a close fitting auger is used to remove the water bearing earth from the shell and then the shell is filled with sand and subsequently withdrawn from the earth thus leaving the sand to provide the desired sand drain.

3,690,389

**METHOD AND AN APPARATUS FOR TAKING AN UNDISTURBED SOIL SAMPLE**

Roelof van de Beld; Heinrich K.S.P. Begemann; Hendrikus J. Bos, and Adriaan B. Mann, all of Laboratorium voor Grondmechanica, Stieltjesweg 2, Delft, Netherlands

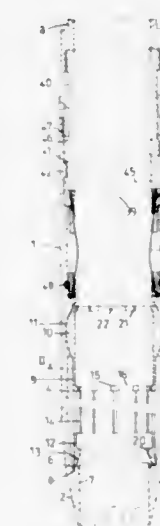
Filed Feb. 2, 1970, Ser. No. 7,789

Claims priority, application Netherlands, Feb. 7, 1969, 6902019

Int. Cl. E21b 9/20, 25/00, 49/02

U.S. Cl. 175—59

29 Claims



A method and an apparatus for taking an undisturbed soil sample are described, by means of which the soil sample,

which, during the introduction of a sampling tube into the soil, is surrounded by a hose, is supported substantially over its full length by means of a supporting tube which, after removing the sampling tube from the soil, is also used for transporting the sample to a laboratory. This supporting tube may consist of separate tube sections connected together by adhesive tape, so that the sample may be divided in easily transportable sections by cutting the adhesive tape and the sample. For facilitating the penetration of the sample into the sampling tube, a lubricating liquid may be used, and the sample may be supported near the lower end of the sampling tube by means of a supporting liquid, both liquids being immiscible. The lower part of the sampling tube is provided with means for pinching off the sample, and the corresponding section of the supporting tube is weakened so that it may be deformed correspondingly, said pinching means being provided with means for locking it in its extreme positions, and with means for transferring pressing and pulling forces. Means are provided for closing the upper end of the hose and for guiding this end coaxially with the supporting tube for allowing the lubricating liquid to be uniformly distributed around the hose.

3,690,390

**THREADED JOINT TYPE CONNECTION FOR A DRILL IN A HAMMER DRILL**

Franz Chromy, Gisingen, Austria, assignor to Hilti Aktiengesellschaft, Schaan, Fürstentum, Liechtenstein

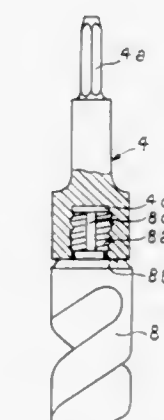
Filed Nov. 28, 1969, Ser. No. 880,748

Claims priority, application Germany, Dec. 2, 1968, P 18 12 229.7

Int. Cl. E21b 9/16, 17/042

U.S. Cl. 175—388

7 Claims



In a hammer drill a threaded joint type engagement is provided between the drill and the drill socket. Preferably, the drill is threaded into the drill socket and the threaded engagement is continuously tightened and loosened during operation and can be easily disassembled for replacement of the drill. The drill is arranged in the socket so that the impact energy from the hammer drill is transmitted without affecting the interengaged connection of the parts.

3,690,391

**APPARATUS AND METHOD FOR INCREMENTAL BATCH WEIGHING**

William Rust, Sale, England, assignor to Simon Handling Engineers Limited, Stockport, England

Filed April 22, 1971, Ser. No. 136,528

Claims priority, application Great Britain, May 2, 1970, 21,200/70

Int. Cl. G01g 13/04, 15/02, 17/00

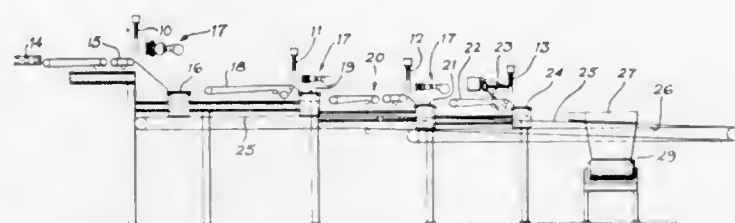
U.S. Cl. 177—1

10 Claims

A method of automatically preparing consecutive batches, each of predetermined weight, of material from large undivided masses of such material, comprising the steps of progressing the material through a plurality of stations at each of which pieces of approximately equal size and hence of ap-



proximately equal weight are cut from same, each succeeding station cutting smaller pieces than the preceding station, and



assembling each batch by selecting and collecting the required numbers of pieces from each of said stations to achieve said predetermined weight.

3,690,392

### CONTINUOUS FLOW SCALE WITH PRELIMINARY VOLUMETRIC MEASUREMENT

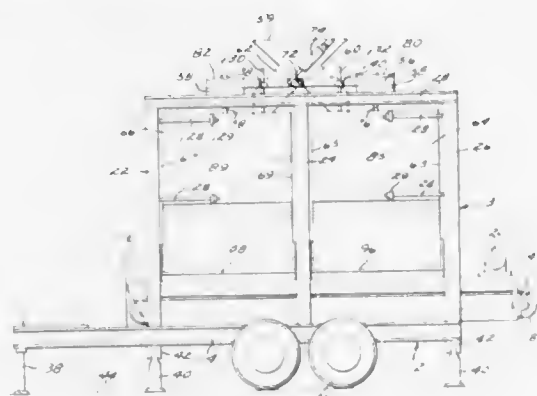
James M. Smith, Golden, Colo., assignor to The Great Western Sugar Company, Denver, Colo.

Filed Feb. 24, 1970, Ser. No. 14,264

Int. Cl. G01g 13/16

U.S. Cl. 177-59

4 Claims



Weighing feeder type apparatus which comprises two containers from one of which material is discharged while the other is charged and automatic control means responsive to the charging of a predetermined volume of material to cause the charging action to be shifted from it to the now empty container and to discharge the filled one.

3,690,393

### MAGNETIC WHEEL

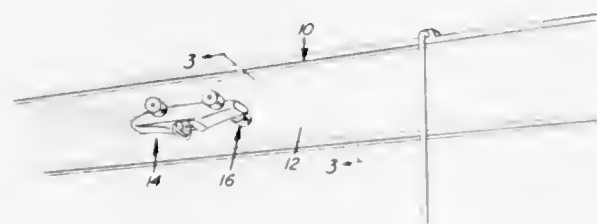
William K. Guy, Sunrise Golf Village, Fla., assignor to Donna Kramer, Plantation, Fla.

Filed March 19, 1971, Ser. No. 125,929

Int. Cl. B60b 39/00; B60i 11/00

U.S. Cl. 180-1

12 Claims



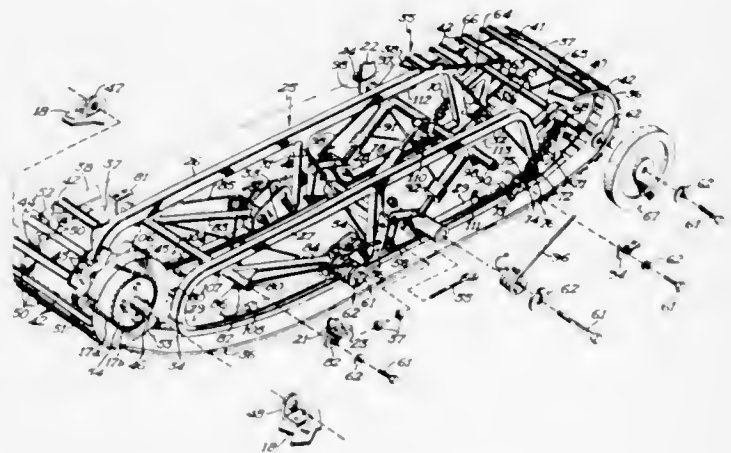
A magnetic wheel having axial end faces oppositely polarized magnetically, is maintained thereby in rolling contact with a magnetic flux conducting path. The wheel when driven propels a vehicle frame along the path without reliance on traction. Rolling contact is maintained by the magnetic field established by the flux extending between the end faces through the surface of the path producing contact holding forces acting on the non-polarized rim of the wheel.

### 3,690,394 SHOCK MOUNTED SUSPENSION SYSTEM

Roger H. Skime, Thief River Falls, Minn., assignor to Arctic Enterprises, Inc., Thief River Falls, Minn.  
Filed June 15, 1970, Ser. No. 46,065  
Int. Cl. B62m 27/02

U.S. Cl. 180-5 R

2 Claims



A slide rail snowmobile tread drive suspension system is disclosed which incorporates a shock absorber between the stems of the variable length lever arms which support the body frame apart from the slide rail frame. Individually adjustable spring biasing is provided to compensate for varying snow conditions.

3,690,395

### MOTOR VEHICLE WITH TWO DRIVING UNITS ESPECIALLY FOR AGRICULTURAL PURPOSES

Richard Spiller, Bensberg; Gottfried Moser, Bergisch-Gladbach, and Walter Berthold, Schildgen, all of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Deutz, Germany

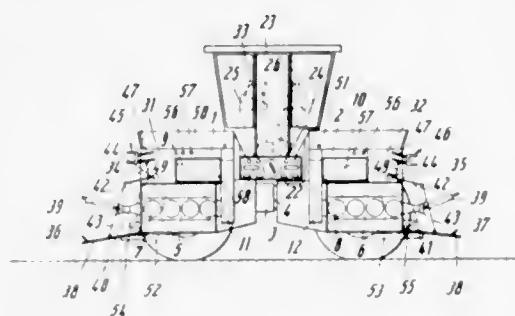
Filed July 18, 1969, Ser. No. 843,104

Claims priority, application Germany, July 27, 1968, P 17 80 052.1

Int. Cl. B62d 49/40; B60k 17/10

U.S. Cl. 180-6.48

34 Claims



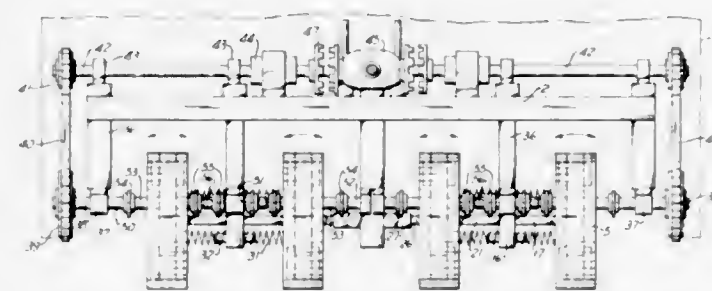
A vehicle, especially adapted for agricultural use, and having two engines in coaxial alignment in a frame and adapted for coupling together. Each engine drives the primary part of a torque transmitting arrangement, electrical or hydraulic, and secondary parts of the torque transmitting arrangement are connected to drive the vehicle wheels. Controls are provided to control the distribution of power from the primary parts to the secondary parts to determine the wheel, or wheels, to receive the power and the speed of rotation of the wheels. At both ends of the vehicle there are provided means for connection of implements to the vehicle and including lift type hitches and power take-off shafts.

### 3,690,396 FOUR-TRACK VEHICLE

Samuel R. Colosimo, 2304 Perricrest Dr., Pittsburgh, Pa.  
Filed Jan. 28, 1971, Ser. No. 110,470  
Int. Cl. B62d 55/10

U.S. Cl. 180-9.2 R

5 Claims



A vehicle is provided with four laterally spaced track units, each of which includes a travelling endless track. Above the track units there is a chassis floor, from which laterally spaced rigid members extend down between the track units. Means are provided for connecting the track units to these rigid members beside them to support the floor. Such means, which include horizontal pivots, are constructed and arranged to allow the track units to tilt laterally. The drive shafts for the endless tracks are so constructed as not to interfere with tilting of the track units. At the back of the vehicle, readily accessible means are provided for taking up slack in the endless tracks.

3,690,397

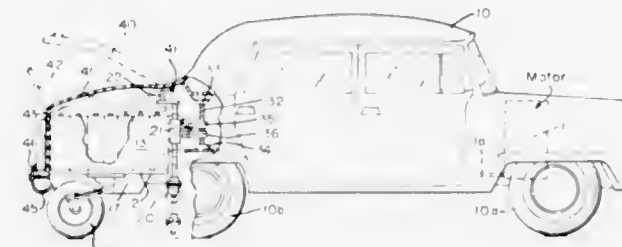
### ELECTRIC AUTOMOBILE

Louis W. Parker, 2408 Sunrise Key Blvd., Ft. Lauderdale, Fla.  
Continuation-in-part of Ser. No. 834,358, June 18, 1969, abandoned. This application Dec. 16, 1970, Ser. No. 98,721

Int. Cl. B60k 11/09; B50i 11/18

U.S. Cl. 180-65 R

15 Claims



An electrically propelled automobile is provided with a detachable wheeled trailer unit housed entirely within the confines of the automobile body and carrying battery units for energizing the automobile motor. The trailer unit is provided with its own motor adapted to be energized from said battery units, for self-propelling the trailer unit when it is detached from the automobile body.

3,690,398

### HYDROSTATIC DRIVE

Gilbert K. Hause, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 5, 1970, Ser. No. 77,941

Int. Cl. B60k 17/10

U.S. Cl. 180-66 R

2 Claims

A vehicle suspension and hydrostatic drive system in which the driving engine, the fluid pump, the fluid motors and the driven wheels are suspended from the vehicle frame as a unitary package. The engine pump unit is connected to each motor unit by a truss having the upper and lower horizontal truss members formed by rigid fluid conduits and the end truss members formed by the pump and motor housings and intermediate diagonal truss members. The trusses are bowed so the

center of weight of the engine pump unit and each motor unit are on a transverse axis. The fluid motors have a central spin-



3,690,399

### AXLE ASSEMBLY FOR AN AUTOMOTIVE VEHICLE

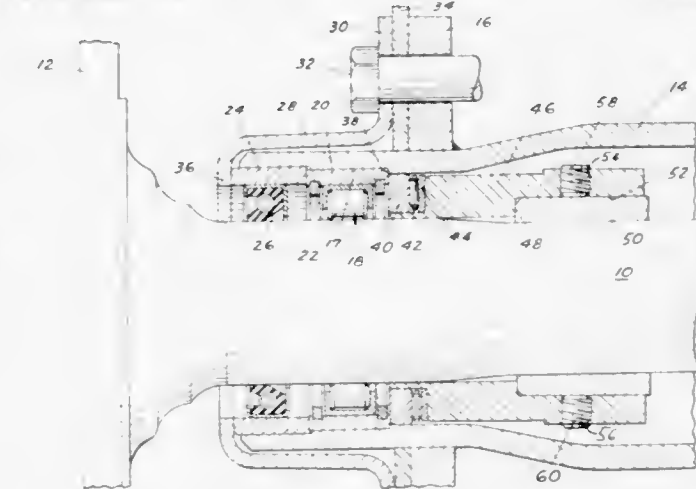
Ronald D. Bokovoy, Bloomfield Hills, and Roy G. Luvisotto, Warren, both of Mich., assignors to Boise Cascade Corporation, Boise, Idaho

Filed Jan. 25, 1971, Ser. No. 109,154

Int. Cl. B60b 35/12

U.S. Cl. 180-75

5 Claims



An axle shaft construction for an automotive vehicle having a drive shaft, two transversely disposed drive axles, differential gearing connecting the drive shaft to the inboard ends of the axles to establish a split torque delivery path and thrust bearings and bearing retainer means situated at each outboard end of the axle housing for establishing a thrust force reaction point and for retaining the axle shafts in assembled relationship, provision being made for establishing a desired adjustment of each axle with respect to its outboard thrust bearing and for effecting the desired spacing of the inboard ends of the axles.

3,690,400

### VEHICLE POWER STEERING CONTROL DEVICE

Hiromichi Uchiyama, Tokyo, and Naohiko Inoue, Yokohama, both of Japan, assignors to Nissan Motor Company, Ltd., Kanagawa-ku, Yokohama, Japan

Filed May 11, 1971, Ser. No. 142,201

Claims priority, application Japan, June 1, 1970, 45/46597; June 1, 1970, 45/46598; Aug. 11, 1970, 45/69837

Int. Cl. B62d 5/08

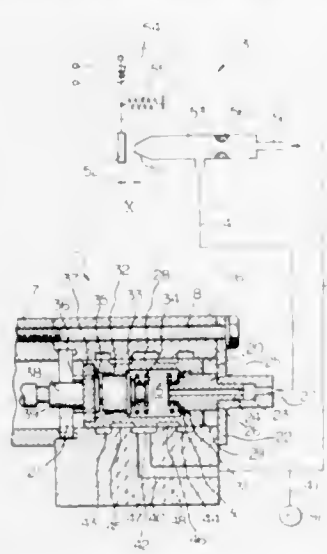
U.S. Cl. 180-79.2 R

7 Claims

A vehicle power steering control device including a reaction assembly which applies a reaction force on the steering wheel that depends on both steering effort and vehicle speed. The device comprises a vehicle speed responsive modulator valve



for controlling or modulating a pressure of fluid from a fluid pump in response to a signal from a vehicle speed sensor. Since the pressure of fluid from the fluid pump is proportional to the steering effort on the power cylinder, the output pressure of the modulator valve depends on both steering effort



and vehicle speed and is transmitted into a reaction chamber. Thus, for low vehicle speeds, the driver encounters a small resistance in turning the steering wheel and, on the other hand, for high vehicle speeds, a large turning resistance is provided to avoid the danger of too rapid turning of the steering wheel and the road wheels

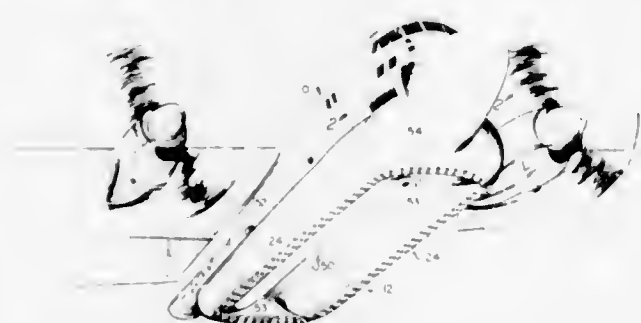
3,690,401

**AIR CUSHION SUPPORT SPACE DEFINING STRUCTURE AND STOCKSHEET FABRICATION THEREFOR**  
I. T. Desmond Earl, Buffalo, N.Y., assignor to Textron, Inc., Providence, R.I.

Filed Sept. 25, 1970, Ser. No. 75,608  
Int. Cl. B60v 1/16

U.S. Cl. 180—124

9 Claims



An improved base support or "undercarriage" of the inflatable trunk type for attachment to a machine such as an air-plane, air cushion vehicle, or the like, so as to render the machine supportable by means of an air film relative to a reaction surface. The trunk structure comprises a novel, elastic (within different limitations in different directions) sheet fabrication, which is patterned to incorporate within various areas of the sheet fabrication specifically prescribed elasticity characteristics (but only within prescribed limits); either omni-directionally or bi-directionally or uni-directionally, within the plane of the sheet, as dictated by the functional prerequisites of the system.

3,690,402

**VIBRATOR STABILIZATION SYSTEM**

Jay H. Stafford, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

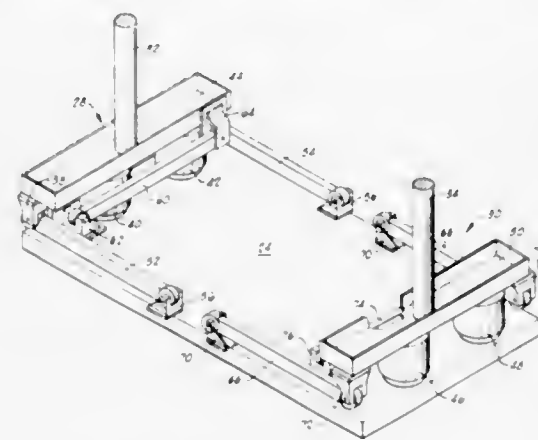
Filed Aug. 22, 1969, Ser. No. 852,277  
Int. Cl. G01v 1/04

U.S. Cl. 181—5 VM

9 Claims

Apparatus for providing stabilization of a geophysical vibrator in the horizontal plane. The apparatus is adapted for use

with geophysical vibrational energy sources of the type which transmit through an energy coupling baseplate into the earth, such as a baseplate being forced into a coupling by bearing a part of the weight of a support vehicle thereupon. The apparatus



provides a plurality of radius rods between the base plate and vertical support structure and extending in both the transverse and longitudinal directions to restrain movement of the support structure in the horizontal plane without noticeable interference to the vertical attitude of vibration.

3,690,403

**ACOUSTIC ENERGY SOURCE UTILIZING THE WATER-HAMMER PHENOMENON**

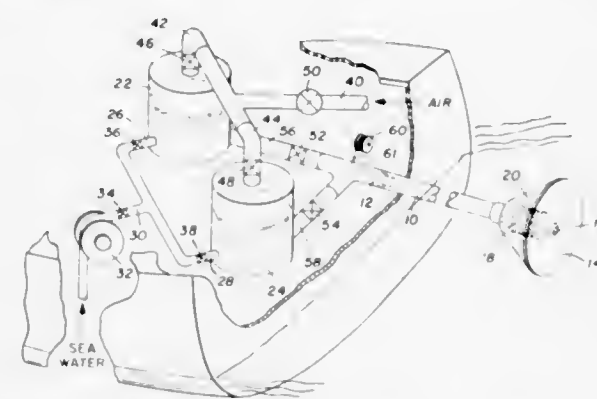
Billy W. Davis, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 2, 1970, Ser. No. 147

Int. Cl. G01v 1/14

U.S. Cl. 181—5 H

26 Claims



An elongated pipe is connected at an upper end to a pressurized fluid container and extends downwardly into water at the lower end. A valve is connected between the pressurized fluid container and the elongated pipe. A piston member is slidable within the elongated pipe. A diaphragm is connected at the submerged end of the pipe and includes seating structure for engaging the piston member. When the valve is opened, a high energy supply of fluid is directed against the piston member to force the piston member at high speed down the pipe into abutment with the seating structure. Compressional waves are thus created along the length of the elongated pipe, the diaphragm coupling the compressional waves into the adjacent water to create acoustic energy for use in marine exploration.

3,690,404

**SELECTIVE FREQUENCY STETHOSCOPE STRUCTURE**

Ronald J. Collins, Golden Valley, Minn., assignor to Bio Data, Inc., Minneapolis, Minn.

Filed July 30, 1971, Ser. No. 167,680

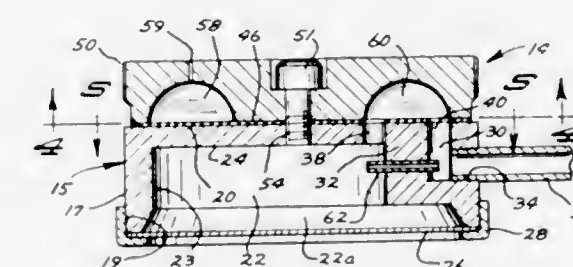
Int. Cl. A61b 7/02

U.S. Cl. 181—24

6 Claims

A selective frequency range stethoscope consisting of a housing embodying a sound producing chamber, a sound con-

ducting chamber or channel and a rotatable backing plate having passages both formed therein and operatively associated therewith for the selective passage of a frequency range of sound between said chambers. One of said passages is



particularly adapted to pass a predominantly low frequency range of sound, one of said passages is adapted to pass a predominantly high frequency range of sound and one of said passages is adapted to pass a full range of sound.

3,690,405

**LOUDSPEAKER SYSTEM HAVING BASS RESPONSE RANGE BELOW SYSTEM RESONANCE**

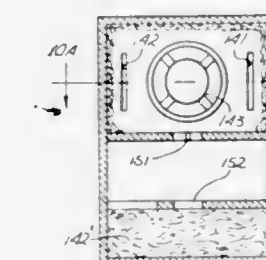
Edwin A. Hance, 3920 Foothill Rd., Santa Barbara, Calif.

Continuation of Ser. No. 744,574, July 12, 1968, abandoned, which is a continuation-in-part of Ser. No. 520,277, Jan. 12, 1966, abandoned. This application Feb. 24, 1971, Ser. No. 118,482

Int. Cl. G10k 13/00; H04r 1/28

U.S. Cl. 181—31 B

22 Claims



The subject patent application is concerned with improvements over prior art systems relative to the processing of the speaker back-wave by acoustic networks that include a part, and the use of the back-wave to produce supporting port radiation in a frequency band below the basic resonance frequency of the system.

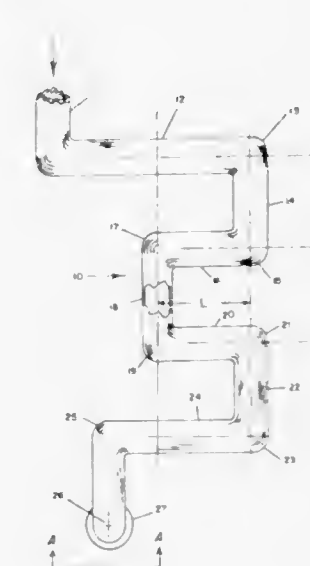
The structure includes essentially a pair of acoustic cavities, coupled by an aperture. The speaker is mounted in the first cavity. The second cavity may be subdivided and may include damping. A port aperture is included in one of the cavities. The improvements involve relationships between acoustic elements of inductance, capacitance and resistance that result in in-phase port radiation; and in relationships whereby smooth response is obtained while maintaining and improving the phase of port radiation relative to that of the speaker front-wave in the frequency region below system resonance.

The present invention concerns only the bass and lower midrange frequencies, and is intended for operation with 6 db/octave amplifier equalization in the bass range.

**3,690,406**  
**EXHAUST NOISE SILENCER**  
Leopold Weiss, 2830 N.W. 23rd Ave., Miami, Fla.  
Filed Dec. 4, 1970, Ser. No. 95,132  
Int. Cl. F01n 1/08, 7/08

U.S. Cl. 181—36 B

2 Claims



An exhaust noise silencer for use on a combustion engine or the like in which an open tube having a plurality of equilength segments disposed perpendicular to adjacent segments in a series in respect to the axial length of the tube is coupled to the exhaust pipe of the engine.

3,690,407

**EXTENSION SCAFFOLD**

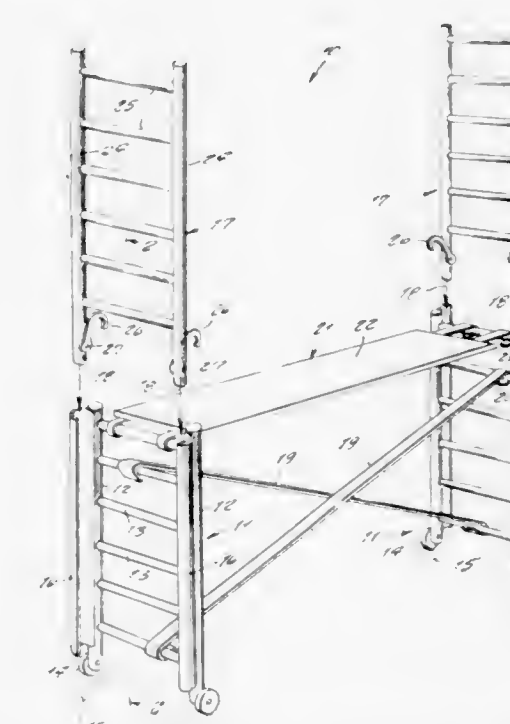
Eugene Francis Cullison, 5709 Yearly St., Fort Worth, Tex.

Filed March 15, 1971, Ser. No. 124,285

Int. Cl. E04g 1/14

U.S. Cl. 182—119

1 Claim



A portable scaffold which is extendable in height as well as length, the device being comprised of a pair of base ladder units held in upright vertical position by means of criss-crossing braces and a horizontal platform across the upper ends, and each of the base ladder units being adaptable for supporting thereon an extension at an adjustable elevation, and the horizontal platform in one form of the invention being telescopic in length.



3,690,408

## ROTATABLE AND EXTENSIBLE ELBOW

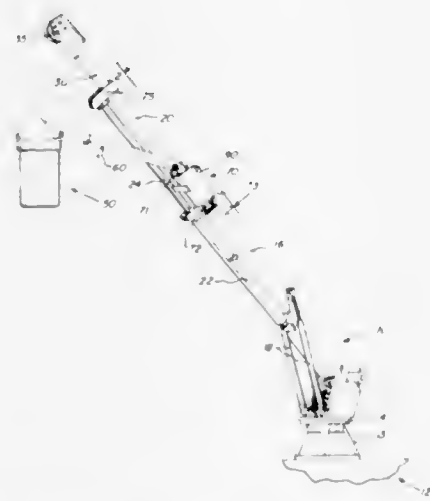
Albert E. Reske, Minneapolis, and Orlo J. Johnson, Lakeville, both of Mich., assignors to Tel-E-Lect, Inc., South Minneapolis, Mich.

Continuation-in-part of Ser. No. 3,944, Jan. 19, 1970. This application May 8, 1970, Ser. No. 35,849

Int. Cl. B66f 1/104

U.S. Cl. 182-141

11 Claims



A mobile aerial tower comprised of a mobile platform having a boom with an extensible section and a personnel-carrying platform or bucket mounted on an auxiliary elbow section which is pivoted on a bracket through various types of motive means and with the provisions for mounting the bracket selectively at either the end of the main boom section or the extensible portion of the same. The elbow section is also extendable to vary the length of the same.

3,690,409

## LEVEL WINDING WINCH MECHANISM AND HEAVY-DUTY DRIVE THEREFOR

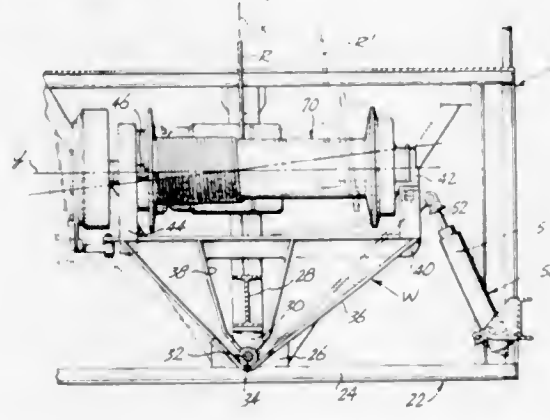
Albert Brauss, Redmond, Wash., assignor to Spider Staging, Inc., Seattle, Wash.

Filed Oct. 21, 1968, Ser. No. 769,326

Int. Cl. E04g 1/18

U.S. Cl. 182-142

7 Claims



A level winding winch mechanism for a suspending staging that includes a frame having an upper portion and a lower portion with a fairlead fixed on the upper portion and a rotatable winch pivotally mounted on the lower portion. The pivot for the winch is below the winch drum axis of rotation. As the wire rope passing through the fairlead approaches an end of the winch drum, that end of the winch drum will be pivoted toward an imaginary vertical perpendicular line between the fairlead and the winch drum. Thus the angle between the wire rope, as it approaches an end of the drum, and the imaginary perpendicular line is kept to a minimum, the effect of which is to maintain the "fleet angle" at approximately 90°. Also the pivot is remotely spaced from the winch drum axis of rotation to reduce the angle through which the winch drum must pivot and thus allow the use of winch drums of long lengths which

would otherwise strike the frame of the staging when pivoted.

A pivot control using a primary spring and a secondary spring energized only after the wire rope reaches a predetermined point on the winch drum is provided to counteract the increase in leverage when an extra long winch drum is used.

A low temperature-high capacity drive arrangement for a winch on a suspended staging. A pair of worms are driven through spur gears from a common pinion spur gear on a motor shaft. The worms engage two worm gears fixed on a common shaft. A beveled pinion gear is also fixed to an end of the worm gear. The beveled pinion gear meshes with a beveled ring gear which is secured to the winch drum. The distribution of the loading between the worms reduces the operating temperature of the drive arrangement for compliance with the rigid safety requirements for suspended staging. Oil from the worms is splashed against a vertical fin extending down from the top of the worm gear casing. The fin guides the oil into a trough through the walls between the spur and worm gear casing for lubricating the driven spur gears.

3,690,410

## COOLING AND LUBRICATING SYSTEM FOR BEARINGS

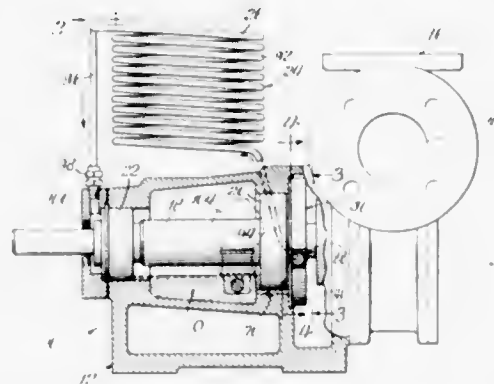
Leonard J. Sleghartner, Coal Valley, Ill., assignor to Roy E. Roth Company, Rock Island, Ill.

Filed Dec. 17, 1970, Ser. No. 99,060

Int. Cl. F16n 7/40, 39/02

U.S. Cl. 184-6.28

5 Claims



A cooling system for the bearings of a rotary machine designed to recirculate oil from the bearing housing through a heat exchanger unit and back through the bearings. A pumping unit contained in the housing provides sufficient pressure to recirculate the oil in a closed path. The pumping unit employs a turbine impeller fixed to the machine's shaft to develop the necessary pressure at standard motor speeds.

3,690,411

## DEVICE FOR SELF-SERVICE STORES

Werner Potrafke, Hufersenstr. 6, 432 Hattingen, Germany

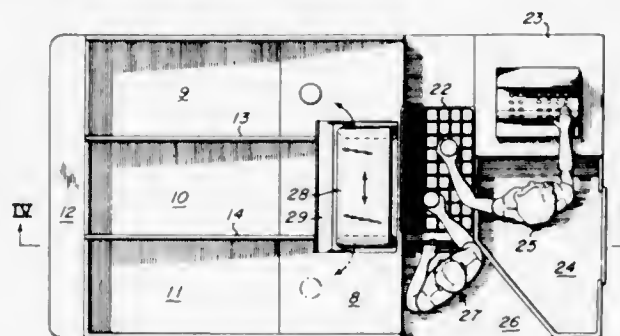
Filed Dec. 10, 1970, Ser. No. 96,898

Claims priority, application Germany, Dec. 12, 1969, P 19 62 319.9

Int. Cl. E04h 3/04

U.S. Cl. 186-1 A

2 Claims



An arrangement for self-service stores, especially for use in connection with shopping baskets and shopping carts, in

3,690,414

## VIBRATION ABSORBER FOR A SUPPORTED MEMBER

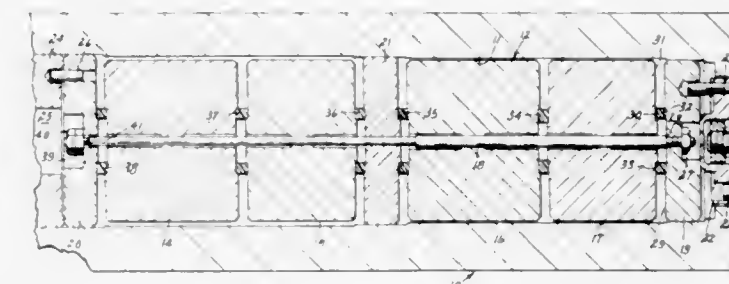
Trilok C. Aggarwal, Cincinnati, and John R. Hasz, Milford, both of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Nov. 4, 1970, Ser. No. 86,727

Int. Cl. F16f 7/08

U.S. Cl. 188-1 B

10 Claims



A series of damper dampens the vibrations in a bar extending from a quill of a bar milling machine with the damper damping each of a plurality of different natural frequencies of the extending bar depending upon the length of the extension of the bar from the quill. The damper includes a plurality of damper masses mounted on a rod with viscoelastic material between each of the adjacent damper masses and also between the supports for the rod and the adjacent damper masses. By selecting the weights of the masses and their locations on the rod, the length and diameter of the rod, and the stiffness of the viscoelastic material, the damper is designed to cover a wide frequency range, i.e., bar extension. The damper need not be tuned for each bar extension each time that the bar has a different extension since the plurality of damper masses permits the damper to dampen vibrations anywhere within the designed frequency range.

3,690,415

## WHEEL LOCK ASSEMBLY

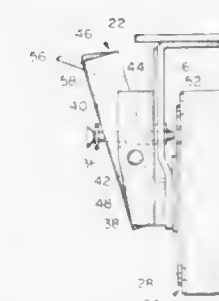
Robert A. Nordskog, Tarzana, Calif., assignor to Nordskog Company, Inc., Van Nuys, Calif.

Filed Nov. 4, 1970, Ser. No. 86,786

Int. Cl. B60t 1/02

U.S. Cl. 188-69

10 Claims



A wheel lock assembly for a serving cart to be normally employed within an aircraft in which a pin is under constant bias toward cooperation with an aperture of a group of apertures located in the hub of the wheel, the pin being movable against the bias by means of a manually operated actuator.

3,690,416

## PARKING BRAKE FOR AUTOMATIC TRANSMISSION

Katsuo Yamada, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed July 17, 1970, Ser. No. 55,670

Int. Cl. B60t 1/02

U.S. Cl. 188-69

26 Claims

which goods selected by a customer for purchase are checked out by a cashier and conveyed to one of preferably three withdrawal compartments through the intervention of either endless conveyor belt and an inclined slide table or through the latter only, depending on which withdrawal compartment is selected by the cashier for receiving the goods purchased by the customer.

3,690,417

## HOIST FOR MULTI-STORIED BUILDINGS UNDER CONSTRUCTION

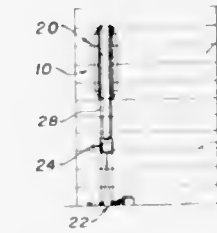
Donald R. Murray, North Vancouver, British Columbia; Cornelius J. M. Van Soest, Coquitlam, British Columbia, and Donald C. Moulson, Burnaby, British Columbia, all of Canada, assignors to Heede International Ltd., Vancouver, British Columbia, Canada

Filed Oct. 2, 1970, Ser. No. 77,629

Int. Cl. B66b 9/00

U.S. Cl. 187-2

13 Claims



A hoist having a support structure to be releasably secured to the building frame and having raising means for lifting it relative to the building frame. A hoisting cable extends between the support structure and a base positioned therebeneath at ground level. A lift unit is raised and lowered by the hoist cable, rides on the latter between the base and the support structure, enters the support structure and is guided thereby during the upper part of its course of travel. If the hoist is used for moving concrete, the lift unit includes a bucket which tips into a hopper at the support structure.

3,690,418

## MOTION DAMPER

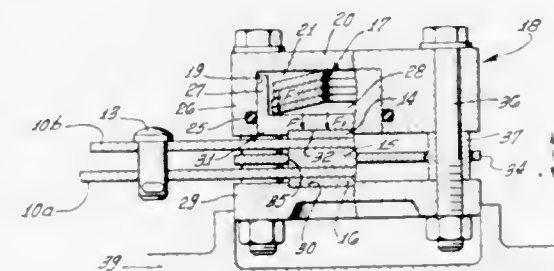
Franklin B. Airheart, Granada Hills, Calif., assignor to Airheart Products, Inc., Sylmar, Calif.

Filed Oct. 5, 1970, Ser. No. 77,942

Int. Cl. F16f 7/08

U.S. Cl. 188-1 B

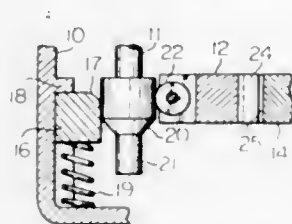
10 Claims



A two-stage motion damper comprises:  
(a) a member movable in opposite directions,  
(b) friction means engaging a side of said member to develop damping force restraining said movement,  
(c) yieldable means transmitting force urging said friction means into engagement with said member, and  
(d) a fluid pressure responsive actuator operable at selected times to develop additional force acting to urge said friction means relatively into engagement with said member.



moved to cause the brake pawl to engage and disengage in the parking position with a stationary housing. Intermediate members such as rollers or balls are situated in a spaced defined



between the brake pawl and the cam portion and/or between the cam portion and the stationary housing in order to minimize the driver's effort which is necessary to control the motion of the control rod.

3,690,417

### WEAR COMPENSATED, FORCE MULTIPLYING DISC BRAKE

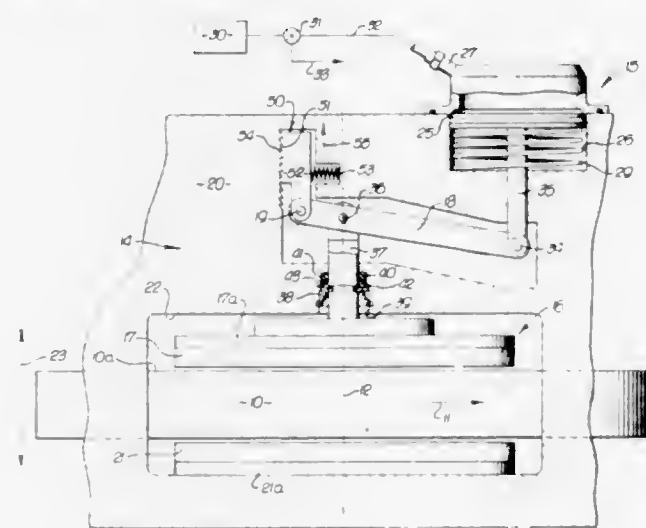
Franklin B. Airheart, Los Angeles, Calif., assignor to Airheart Products, Incorporated, Sylmar, Calif.

Filed Jan. 28, 1971, Ser. No. 110,384

Int. Cl. F16d 55/02

U.S. Cl. 188—71.8

29 Claims



A disc brake assembly includes, in combination:  
a. actuator means to apply external force,  
b. braking structure movable toward and away from a side of the disc, and  
c. force transmitting means including a lever having coupling to said braking structure to provide mechanical advantage of force transmission from the actuator means to the braking structure to urge said structure against the disc in response to lever pivoting,  
d. said means including a motion adjustor for shifting said coupling to compensate said force transmitting means for wear of the braking structure.

3,690,418

### ENCLOSED AUTOMATIC SLACK ADJUSTER FOR VEHICLE SHOE BRAKES

Lloyd Raymond Devitt, 30 Plymouth St., St. Catharines, Ontario, and Gordon Marvin Devitt, Allanport Rd., Allanburg, Ontario, both of Canada

Filed April 21, 1971, Ser. No. 136,034

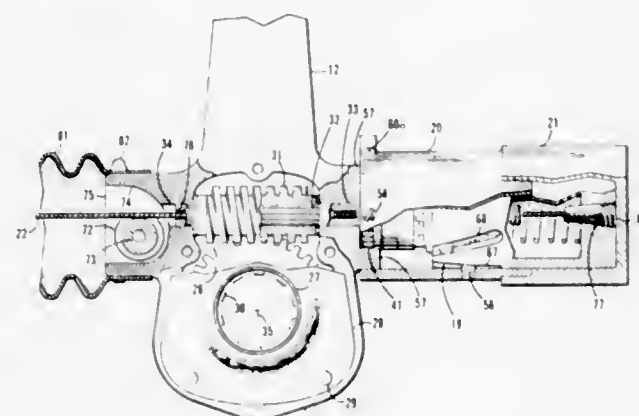
Int. Cl. F16d 65/56

U.S. Cl. 188—79.5 K

5 Claims

The specification discloses an automatic slack adjuster all moving parts of which are enclosed for connecting a brake rod to an actuating cam shaft for a shoe brake in which the adjuster body is mounted on the actuating camshaft by a worm gear rotatable within the body. A worm shaft which on rotation positions said worm gear in the body extends exteriorly thereof to mount a first ratchet part fixed to the shaft and a

second ratchet part rotatable thereon. A fixed housing extending from the body and about the worm shaft accommodates an axially slidable actuating member which develops relative rotational motion between the fixed housing and the second ratchet part when moved from an inner to an outer position or



3,690,419

Patent Not Issued For This Number

3,690,420

### EMPTY LOAD DEVICE FOR RAILROAD CARS

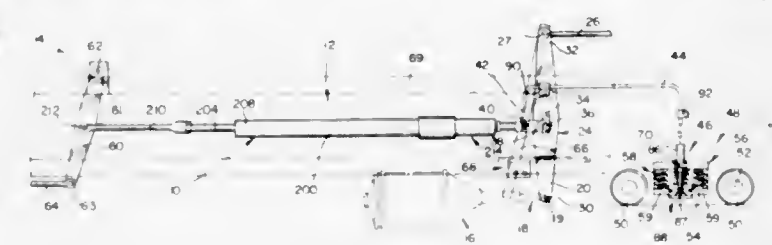
Eldred H. Natschke, Bourbonnais, Ill., assignor to Universal Railway Devices Company

Filed Oct. 15, 1970, Ser. No. 81,028

Int. Cl. B60t 8/18

U.S. Cl. 188—195

3 Claims



An empty load device for railroad cars in which the fulcrum employed to transmit braking forces to the car trunk, for instance, the brake rigging cylinder lever pivot pin, is mounted relative to the cylinder lever for shifting movement longitudinally thereof, and a cable is connected between the pivot pin and a movable member that is moved by means for sensing the load weight changes on the car to shift the pivot pin as required to maintain braking forces applied to the car wheels below that which will cause locking of the wheels.

3,690,421

### AUTOMATIC SINGLE-ACTING SLACK ADJUSTER FOR BRAKE ROD LINKAGE

Josef Franke, Hannover, and Erhard Lehnert, Dollbergen, Kries Burgdorf, both of Germany, assignors to Westinghouse Bremsen-und Apparatebau G.m.b.H., Hannover, Germany

Filed April 8, 1971, Ser. No. 132,363

Claims priority, application Germany, May 30, 1970, P 20 26 543.4

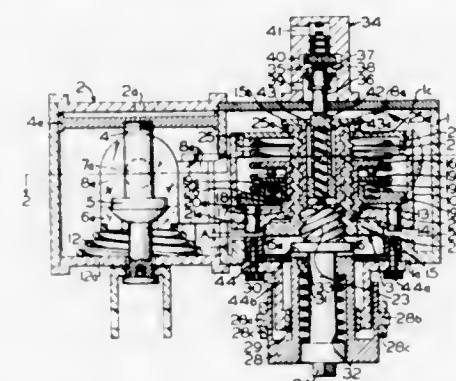
Int. Cl. F16d 65/56

U.S. Cl. 188—203

11 Claims

The invention concerns itself with an automatically operative and simple operating slack adjuster arrangement for

brake rigging for vehicles, especially railway vehicles. It consists of a tubular-shaped body that is axially guided in a fixed housing and in comparison to this cannot be rotated. The tubular body supports thereon two conical clutch surfaces by



which, through the means of the aid nut and the clutch nut, the brake as well as respectively the release travel as well as in working conjunction with the contact that is arranged in the fixed housing, the slack adjusting is transferred to the coaxially unrotatable threaded spindle.

3,690,422

### METHOD AND APPARATUS TO DELAY DETERIORATION OF BRAKE OIL

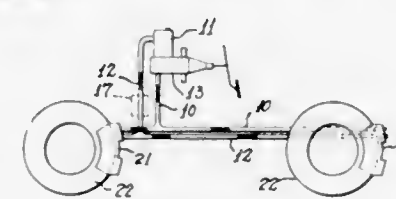
Akio Hayama, No. 1/7 Miyakojima-Hondori-5-chome, Miyakojima-ku, Osaka, Japan

Filed Nov. 23, 1970, Ser. No. 91,752

Int. Cl. F16d 65/78

U.S. Cl. 188—264 D

10 Claims



A method and apparatus for controlling the liquidity of brake actuation liquid and to delay deterioration of its original properties by means of operating one or more, opening and closing elements in response to actuation and release of the brake pedal at an appropriate place adjacent to a liquid pressure cylinder of a liquid pressure brake which brakes a rotating part of a wheel, and forcing the brake actuation liquid having been heated in said liquid pressure cylinder to flow back to a storage tank through a discharging part of the opening and closing element immediately when the fluid pressure induced into the liquid pressure cylinder is released.

3,690,423

### COMBINATION SILASTIC AND FRICTION SHOCK ABSORBER

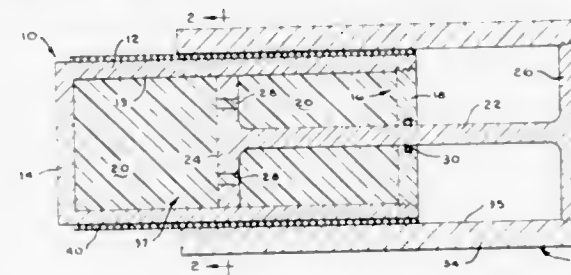
William J. Tronzeau, Chicago, Ill., assignor to Minner Enterprises, Inc., Chicago, Ill.

Filed March 31, 1971, Ser. No. 129,704

Int. Cl. F16f 9/30, 11/00

U.S. Cl. 188—271

6 Claims



A friction shock absorber having a thin wall cylinder filled with compressible solid, an outer sleeve fitted over and

slidably engaging the thin wall cylinder, with the wall thickness of the outer sleeve being approximately three times greater than the wall thickness of the thin wall cylinder, and a piston rod extending into the thin walled cylinder having a piston head in engagement with the inner surface of the cylinder, with the piston head being provided with a multiplicity of axially disposed orifices. When subject to relatively high impact forces, the wall of the cylinder expands radially into tighter frictional engagement with the wall of the outer sleeve and a peripheral orifice is thus obtained for additional throttling of the compressible solid, thereby increasing the shock dissipating capacity of the shock absorber.

3,690,424

Patent Not Issued For This Number

3,690,425

### HYDRAULICALLY DAMPED VEHICLE SUSPENSION DEVICE

Jean Herbert Willich, Am Hohlweg 17, Ennepetal-Altenvoerde, Germany; Walter Bruninghaus, deceased, late of Ennepetal-Voerde, Germany, and Gisela Bruninghaus, administratrix, Loher Str. 134, 2828 Ennepetal-Voerde, Germany

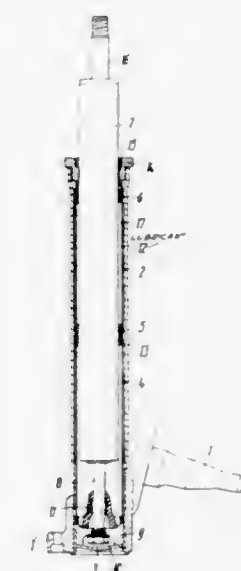
Filed Sept. 10, 1970, Ser. No. 71,085

Claims priority, application Germany, Sept. 10, 1969, P 19 45 674.7

Int. Cl. F16f 9/54

U.S. Cl. 188—321

8 Claims



A hydraulically damped vehicular suspension device comprises a self-contained damper unit which incorporates a shock absorber and which can be easily fitted into a pipe carrying a wheel-axle journal at its lower end. In order to replace the damper unit in the outer pipe it is only necessary to unscrew a lock nut and uncouple the damping cylinder of the inserted unit from the vehicle chassis. The device may also include means for cooling the damping cylinder in use.

3,690,426

### WHEEL LOCK CONTROL DIFFERENTIAL

Thomas W. Weisgerber, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 27, 1971, Ser. No. 173,504

Int. Cl. B60k 29/02; F16d 55/22

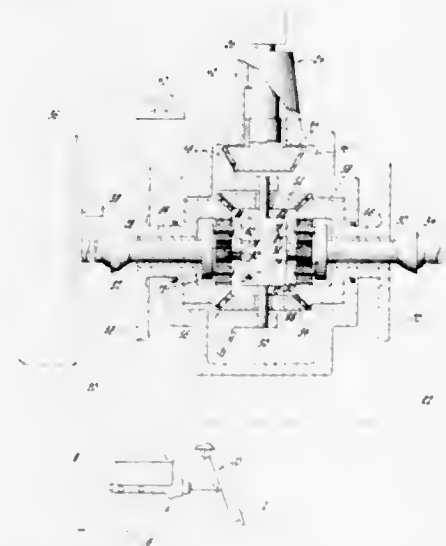
U.S. Cl. 192—4 A

9 Claims

A differential unit has ring gears formed on the inner diameters of the side gears, which are connected to inboard discs for vehicle braking. Planetary gears in the ring gears are rotatably mounted on carriers which transmit power to the axle shafts. The planetary gears also mesh with sun gears which are fastened to a modulator pump shaft. The modulator pump



housing is a part of the differential pinion gear axle. The pump includes an integral by-pass valve which is normally closed so as to hydraulically lock the pump. The valve is controlled through a wheel sensor and a logic box which may be of the type of wheel lock control currently in production on several automotive vehicles. During normal operation, the differential acts in the same manner as the usual differential. During brak-



ing, the brake torque is carried by the pump. When an incipient wheel lock condition is approached, the pump by-pass valve is opened. The pump is no longer hydraulically locked and therefore allows the sun gears to rotate. This also permits the planetary gears, the carrier axle shafts and the wheels connected thereto to rotate. When the valve is again closed, the system returns to the normal driving condition.

3,690,427

**POSITIVE SHIFTED JAW CLUTCH**

Arnold Zimmerman, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Sept. 10, 1970, Ser. No. 71,168

Int. Cl. F16d 11/04

U.S. Cl. 192—24

11 Claims



A positive drive clutch capable of being power shifted into a coupled and uncoupled operating mode by included shifting components which move relative to other clutch members only during the event of engagement and disengagement of the clutch.

3,690,428

**VISCOUS FLUID CLUTCH**

Frank E. LaFlame, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 28, 1970, Ser. No. 101,963

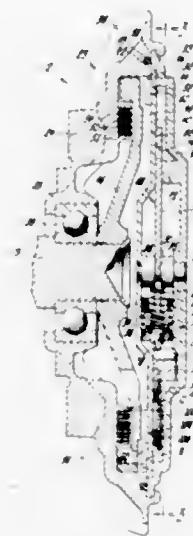
Int. Cl. F16d 31/00, 43/06

U.S. Cl. 192—58 B

5 Claims

A viscous fluid clutch including relatively rotatable first and second drive members having a fluid shear space

therebetween and which are cooperable with a fluid medium in the shear space to provide a shear-type fluid drive therebetween, an annular reservoir for at times storing the fluid medium, speed-responsive valve means for permitting



the flow of the fluid medium from the annular reservoir to the fluid shear space at an intermediate range of engine speeds and for preventing flow therebetween at all lower and higher engine speeds.

3,690,429

**CLUTCH WITH DUAL PISTONS AND SPRINGS**

Soichiro Honda, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

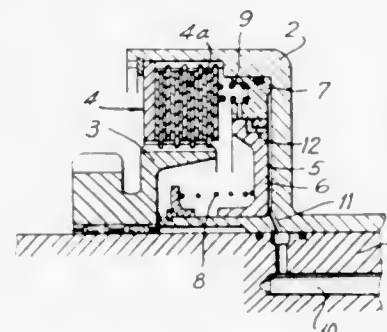
Division of Ser. No. 825,181, May 16, 1969, Pat. No.

3,612,237. This application July 15, 1971, Ser. No. 162,798

Int. Cl. F16d 25/00

U.S. Cl. 192—85 AA

3 Claims



A fluid pressure-operated friction clutch is provided with a piston operating within a pressure chamber and constituted by two piston members having respective return springs of different strengths so that the pressure chamber can be opened to the atmosphere through a small escape passageway by the advance movement of one piston member whereafter the passageway is closed by the relative movement of the other piston member, whereby the piston which is coupled to frictional clutch plates applies a weak initial force to engage the plates without shock and a subsequent strong force to fully engage the clutch plates.

3,690,430

**CABLE OPERATED ARTICLE RELEASER**

James B. Moreland, 476 Doremus Ave., Glen Rock, N.J.

Filed Nov. 22, 1971, Ser. No. 201,057

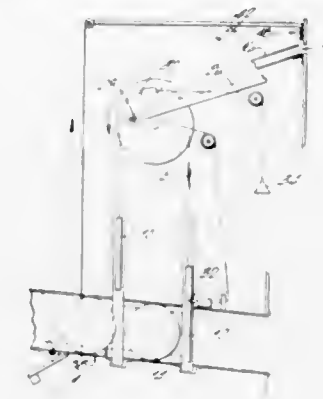
Int. Cl. G07f 5/08

U.S. Cl. 194—94

6 Claims

A coin operated automatic dispenser of cans, one at a time,

wherein a wheel rotated or counter rotated by weights of coins



or counter weights controls the positions of inner and outer gates to release cans one at a time.

3,690,431

**PRINT HEAD ASSEMBLY CONTAINING SOLENOIDS**

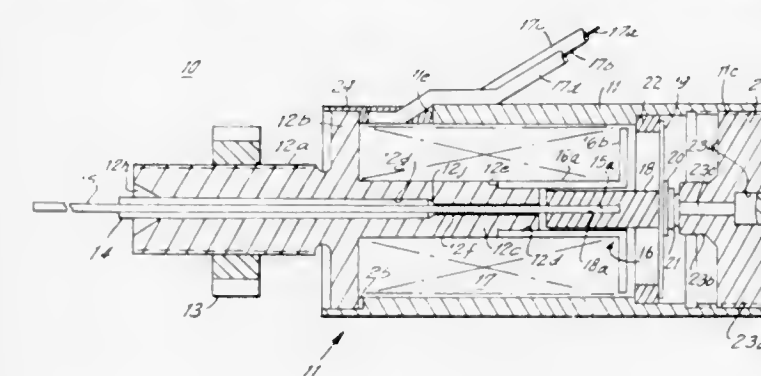
Robert Howard, Roslyn, N.Y., assignor to Centronics Data Computer Corp., Hudson, N.Y.

Continuation-in-part of Ser. No. 37,815, May 15, 1970, abandoned. This application June 14, 1971, Ser. No. 152,598

Int. Cl. B41j 3/10

U.S. Cl. 197—1 R

6 Claims



A solenoid for actuating a print wire normally biased against the impact direction by "wagon wheel" spring means. Energization of the solenoid coil rapidly moves the print wire in the impact direction against the bias of the spring. Release of the energy supplied to the solenoid coil causes very rapid return of the print wire to the non-printing position. The "wagon wheel" spring structure, which undergoes both bending and twisting in a predetermined sequence, allows for rapid initial acceleration of the print wire in the impact direction while providing for rapid return of the print wire to the non-print position while significantly reducing "bouncing" or "overshooting".

The components of the solenoid are so designed as to greatly simplify and facilitate assembly while providing highly precise adjustment of the solenoid assembly through the use of components whose tolerances need not be tightly controlled.

3,690,432

**MAGNETIC KEY DEVICE**

Sigehito Kikuchi; Hiroshi Takeuchi, and Norio Aman, all of Tokyo, Japan, assignors to Nakagima Precision Industries Ltd., Tokyo, Japan

Filed March 30, 1970, Ser. No. 23,865

Claims priority, application Japan, April 4, 1969, 44/30473; June 6, 1969, 44/44378; Aug. 29, 1969, 44/82831; Aug. 29, 1969, 44/82832

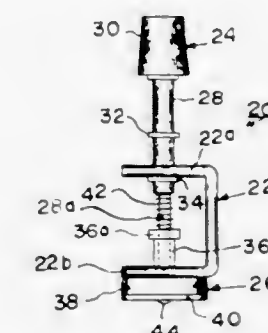
Int. Cl. B41j 5/08

U.S. Cl. 197—98

10 Claims

A key device for business machines and the like is provided which increases linearly the load smoothly when the key button or knob is depressed and can give a snap action, irrespec-

tive of the magnitude of force applied to the key device. The key device comprises a drive member slidably fixed to a retaining member and a follower member which is normally attracted to the retaining member by a permanent magnet. A spring is interposed between the drive and follower members.



When the drive member is depressed into the retaining member, the spring is compressed, thereby accumulating the energy. When the accumulated energy overcomes the strength of the permanent magnet, the follower member is immediately pushed outwardly from the retaining member by the spring.

3,690,433

**NONSYNCHRONOUS TRANSFER APPARATUS**

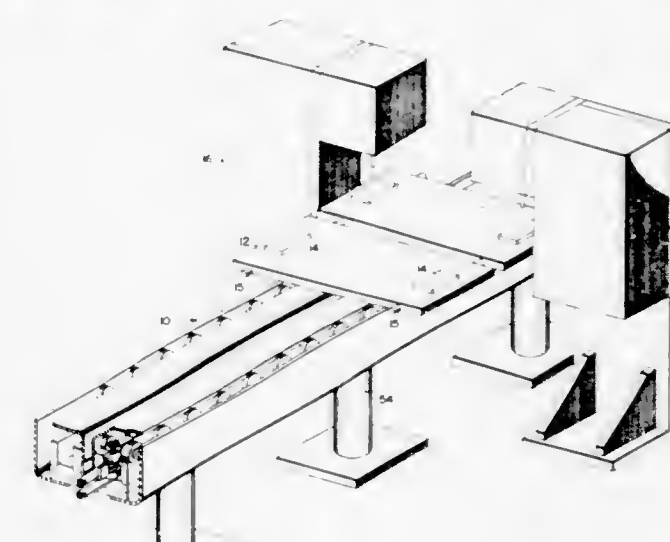
Daniel A. Buldini, Revere, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 16, 1970, Ser. No. 55,463

Int. Cl. B65g 15/10, 21/12; B23q 5/22

U.S. Cl. 198—19

5 Claims



Closed loop conveyor apparatus for moving pallet supported workpieces comprising a pair of endless chain conveyors having guide rollers engaging guide rails, and pallet support rollers contacting the underside of the pallets. As a work station is approached, the support rollers may be rotated to slow down the speed of the pallets relative to the conveyors so that indexing means may remove the pallets from the conveyors and properly align the pallets at the work station. After a machining or assembly operation is completed, the pallets are replaced on the support rollers which may be rotated to smoothly increase their speed relative to that of the conveyors.

3,690,434

**METHOD AND DEVICE FOR ORIENTING A SUCCESSION OF PARALLEL ROD-SHAPED OBJECTS**

Henri Anfossi, Orleans, France, assignor to Service D'Exploitation Industrielle Des Tabacs Et Des Allumettes, Paris, France

Filed July 7, 1970, Ser. No. 52,880

Int. Cl. B65g 47/24

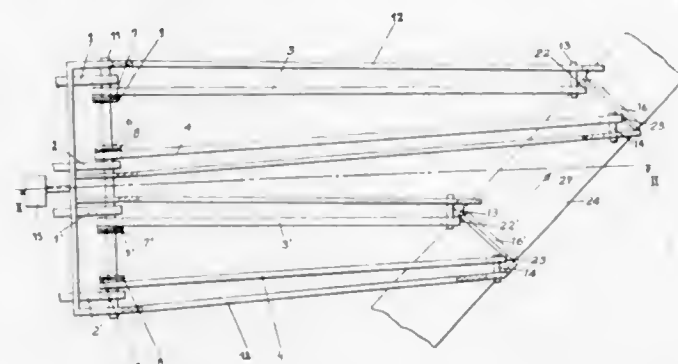
U.S. Cl. 198—20 R

5 Claims

A method for modifying to a desired angle the orientation of a succession of rod-shaped objects conveyed in continuous



motion in substantially parallel alignment comprising the step of displacing each object respectively at two points thereof located on the same side of its longitudinal axis, in directions



which make a small angle with each other, and with different respective speeds regulated as a function of the value of the said angle so as to cause the said object to pivot through the said desired angle.

3,690,435

## ARTICLE CONVEYOR SYSTEM

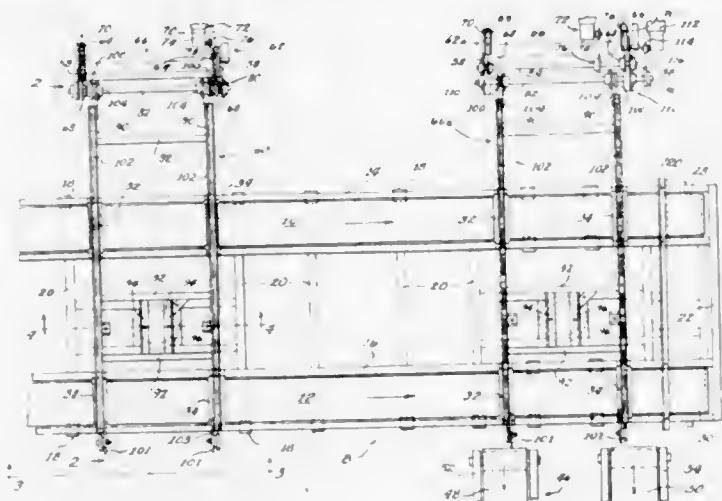
John W. King, 532 Cottage Grove, and John D. Sweeney, 1208 Shadow Lane, both of Green Bay, Wis.

Filed April 16, 1970, Ser. No. 29,146

Int. Cl. B65g 47/04

U.S. Cl. 198—20

10 Claims



An article conveying system including an elongated endless conveyor and one or more transverse endless conveyors intersecting the elongated conveyor. The transverse conveyors are swingable in relation to the elongated endless conveyor to move the respective conveying reaches above and below one another and provide for the transfer of articles moving in one direction on the transverse conveyor to be conveyed in a second direction on the elongated conveyor.

3,690,436

## INSERTER FOR PUTTING OBJECTS IN MOVING HOLES

Dennis E. Mead, Cazenovia, N.Y.

Filed June 1, 1970, Ser. No. 42,014

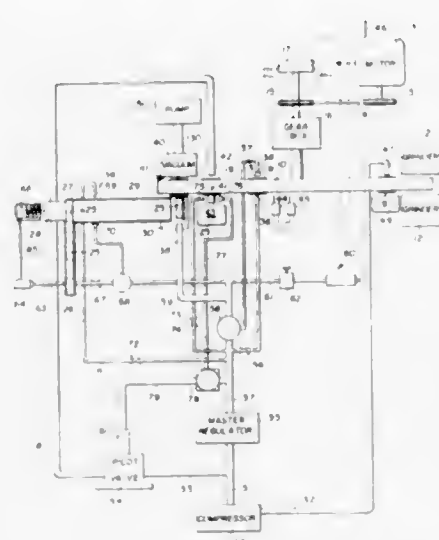
Int. Cl. B65g 47/00

U.S. Cl. 198—22

52 Claims

An inserter puts cylindrical rollers into the holes of bushings in a carrier disk that rotates between two grinding wheels for grinding the ends of the rollers. The inserter accomplishes this by feeding the rollers to a fixed inserting station adjacent the disk and thrusting the rollers pneumatically toward the holes in response to a timing device so that an air pressure differential created by a vacuum box on the other side of the disk forces the rollers into the holes. The timer is positioned rotationally ahead of the inserting station where the holes are normally empty and it includes a sender that directs an air stream against the disk along the hole path so that the air stream

passes through each of the holes in succession, and a receiver that triggers the thrusting of the pneumatic inserter when the air stream passes through a hole. The timer is adjustable for



timing the thrust with registry of one of the holes with the inserting station. The invention also includes many safety and convenience features and is adaptable to many sizes of rollers and disks, and many speeds of operation.

3,690,437

## APPARATUS FOR ALIGNING AND ARRANGING ARTICLES IN UPRIGHT POSITION

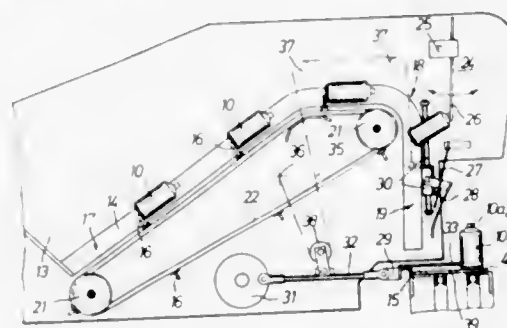
Wilfried Kammann, Buende-Suedlengern, Germany, assignor to Werner Kammann, Buende-Westfalen, Germany

Filed Jan. 6, 1971, Ser. No. 104,325

Int. Cl. B65g 47/24

U.S. Cl. 198—33 AA

9 Claims



The present invention relates to an improved apparatus for aligning and erecting articles, more particularly hollow articles such as bottles including

- a filling opening for introduction of articles to be set upright;
- a plurality of conveying channels rising from said filling opening and each with an arcuate portion in the longitudinal extensions thereof;
- conveyor means for said articles including a plurality of drivers engageable with and behind the articles in the region of each conveyor channel;
- a plurality of aligning devices provided in the area of transition between the rising receiving area and a descending aligning area said aligning devices each having a catch member which swings about a horizontal axis and is engageable with a neck provided on an end of the article for turning said article and which is swung out of the area of movement of the article by the pressure of the article when arriving with its bottom end first;
- an erecting surface provided below the said descending aligning area of the conveyor channel;
- a push member associated with all the conveyor channels below the descending aligning area, which push member acts simultaneously on all the articles deposited in upright position on said erecting surface and pushes the said arti-

cles onto a conveyor belt serving to remove them; and displaceable guide means in the region below the said aligning device associated with each conveyor channel, and forming with the descending aligning member of said conveyor channels, a dropping chute for each article descending in an upright position with its bottom directed downwardly.

3,690,438

## AUTOMATIC PACKAGING APPARATUS

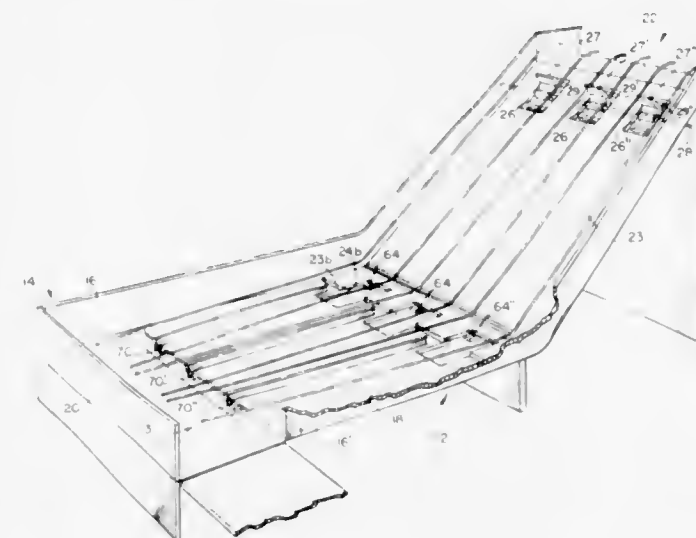
James A. Goodman, 9347 Springfield Ave., Evanston, Ill.

Filed Nov. 27, 1970, Ser. No. 93,296

Int. Cl. B65g 17/00, 15/00

U.S. Cl. 198—34

18 Claims



An apparatus for collating containers suitable for holding any quantity of a product packed in containers with heat sealed lids on flanged containers. The apparatus uses means for causing the vertical and lateral overlapping of the containers' flanges; said means comprising a plurality of suitably disposed guide rails and guide bars. The apparatus is both automatic and efficient.

3,690,439

## ACCUMULATING CONVEYOR

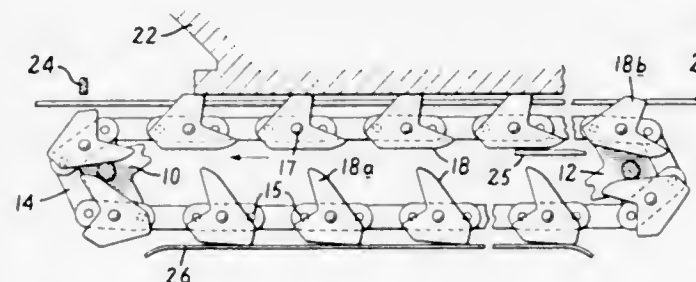
Guenther L. Kuehl, Peekskill, and Axel Coelln, Wappinger Falls, both of N.Y., assignors to Guenther Systems, Inc., Buchanan and Z-Loda Corporation, New York, N.Y.

Filed May 17, 1971, Ser. No. 143,887

Int. Cl. B65g 17/40, 21/12

U.S. Cl. 198—110

9 Claims



As disclosed herein, an accumulating conveyor comprises at least two spaced roller chains that travel in a prescribed endless loop below a storage surface. Aligned trigger cam members are selectively mounted on the chains. The cam members are displaceable between load supporting positions whereat the cam members support the unit loads of material and enable the loads to be transported by the chains between spaced locations and non-load supporting positions whereat the cam members travel beneath the unit loads of material without contacting the loads.

3,690,440

## SELF-ENERGIZING RETRACTABLE POWERED DRIVE ROLLER ASSEMBLY

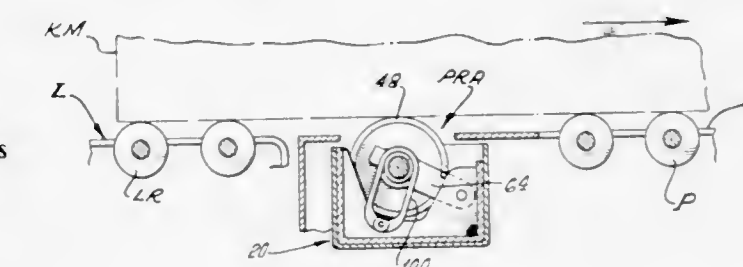
Duncan H. Macpherson, Edmonds, Wash., assignor to Western Gear Corporation, Lynwood, Calif.

Filed Oct. 9, 1970, Ser. No. 79,554

Int. Cl. B65g 13/02

U.S. Cl. 198—127 R

16 Claims



A drive roller assembly for propelling loads, in which a power driven roller or a plurality of rollers coupled universally in series are mounted independently at each end of a roller, each mounting including a cam to elevate the adjacent end of a roller, and each cam being operated by slip type clutch rings encircling a drum, the rings being continuously rotated by the same power source which drives the rollers, and yieldably transmitting power through the drum to rotate a cam with sufficient force to press a roller into driving traction with a load, at the same time automatically adjusting the attitude of the plane of the roller to generally match the plane of the bottom of the load engaged.

3,690,441

## CONVEYOR ARRANGEMENTS

Bernd Zippel, Langenhain, and Alfred Schlieckmann, Eschwege, both of Germany, assignors to Richard Zippel & Co. KG, Eschwege, Germany

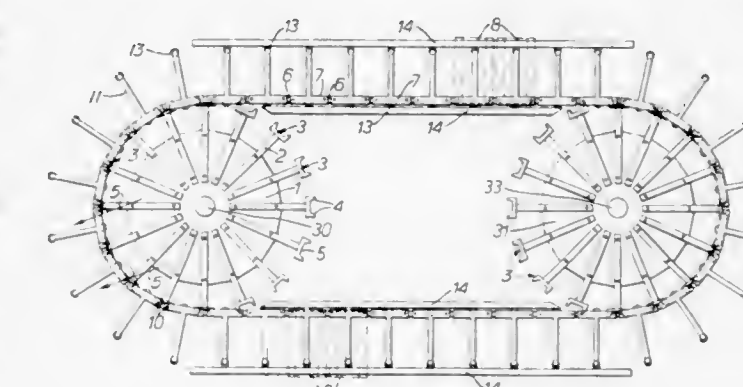
Filed Feb. 20, 1970, Ser. No. 12,918

Claims priority, application Germany, March 1, 1969, P 19 10 537.4

Int. Cl. B65g 17/00

U.S. Cl. 198—131

5 Claims



An endless conveyor arrangement for carrying moulds in a plant for producing shaped parts from multi-component plastics mould filling material, is disclosed. The arrangement comprises a chain having a plurality of first link members each arranged to carry a mould and a plurality of second link members intermediate the first link members and pivotally attached thereto. Each of the first link members comprises a pair of mutually spaced parallel plate members, between which the respective end portions of adjacent second link members project. The chain passes over two mutually spaced horizontal co-planar guide wheels, and the periphery of each guide wheel is formed by a plurality of forked members which are adapted to span the second link members of the chain. Linear support rails are disposed adjacent runs of the chain intermediate the guide wheels, and these support rails engage rollers or wheels mounted on the chain.



3,690,442

Patent Not Issued For This Number

3,690,443

TURN CONVEYOR

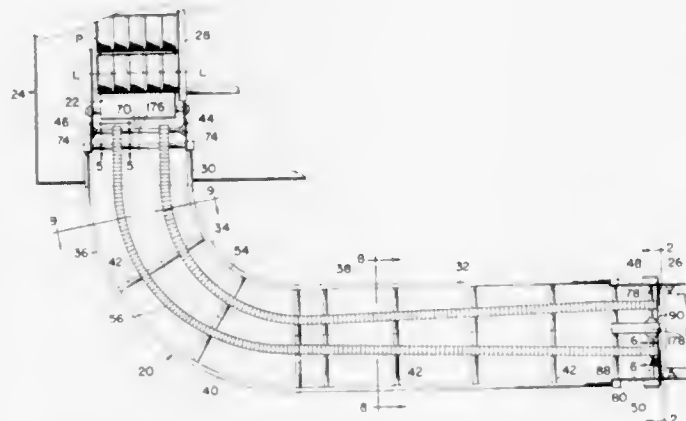
James R. Snyder, York, Pa., assignor to Teledyne, Inc., York, Pa.

Filed Oct. 12, 1970, Ser. No. 79,923

Int. Cl. B65g 15/02

U.S. Cl. 198—182

6 Claims



Article transporting apparatus having a rectilinear section at one or both ends of a curvilinear section, and including a plurality of laterally spaced endless conveyor elements extending the length of the transporting apparatus; operating said conveyor elements at relative speeds for turning the articles throughout their travel from one end to the other of the transporting apparatus to discharge them therefrom in the same orientation as they were delivered thereto, and means constraining the travel of the conveyor elements in particular paths coinciding with the pivotal axes of the articles on the conveyor elements.

3,690,444

PRESSER BELT FOR FIRMLY ENGAGING ARTICLES WITH A CONVEYOR

Pierre Robert Chassang, Val de Marne, France, assignor to Tissmetal Lionel-Dupont, Lyon, Rhone, France

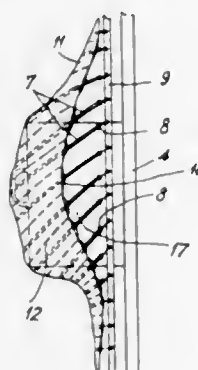
Filed May 11, 1971, Ser. No. 142,285

Claims priority, application France, May 14, 1970, 7017611

Int. Cl. B65g 15/14, 15/40

U.S. Cl. 198—165

8 Claims



A presser belt for firmly pressing articles such as luggage against a belt conveyor, comprising a plurality of transverse elastic cables and a flexible concertina-folded band secured to the cables on the conveyor side and which can extend as the cables are stretched over conveyed articles, to prevent the cables catching on corners or edges of the articles. There may be another such band on the other side of the cables, the two bands being connected together to form tubular pockets for the cables.

3,690,445  
APRON CONVEYOR

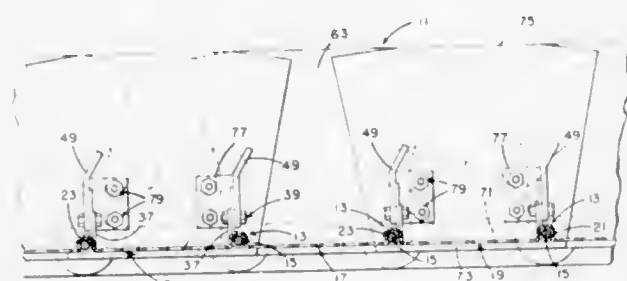
Ralph C. Ouska, Hinsdale, Ill., assignor to FMC Corporation, San Jose, Calif.

Filed May 18, 1971, Ser. No. 144,508

Int. Cl. B65g 15/30

U.S. Cl. 198—196

18 Claims



A conveyor having a plurality of juxtaposed apron pans pivotally interconnected by piano hinges which facilitate independent replacement of individual apron pans.

3,690,446

VEHICLE LITTER RECEPTACLE

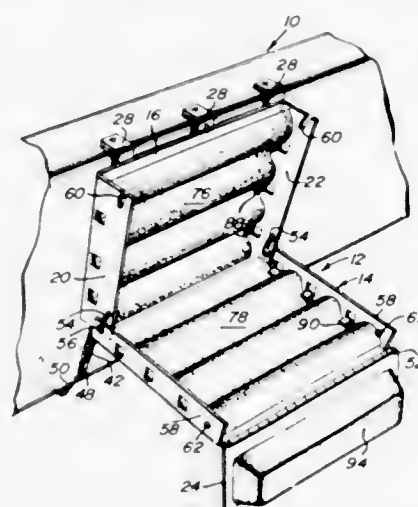
Bettye G. Spainhour, Box 124, and Jack B. Willis, General Delivery, both of Ringgold, La.

Filed Nov. 5, 1969, Ser. No. 874,298

Int. Cl. B65d 25/12, 51/18; B60n 3/08

U.S. Cl. 206—1

13 Claims



A trash receptacle including a housing having one open end provided with a closure therefor. The housing includes internal structure defining a cavity extending longitudinally of the housing and including alternating elongated zones of reduced and expanded width extending transversely of the housing and spaced longitudinally thereof. The portions of the internal structure defining at least the zones of reduced width are yieldingly supported within the housing for yielding to increase the dimensions of the reduced zones as wider articles of trash are forced into the housing.

3,690,447

Patent Not Issued For This Number

3,690,448

PAINT BRUSH STORING SEALABLE PLASTIC BAG

James A. Switzer, 311 1/2 Oak St., Paris, Ill.

Filed Sept. 28, 1970, Ser. No. 75,830

Int. Cl. A44b 7/00

U.S. Cl. 206—15.1

5 Claims

A readily openable, closable and sealable plastic bag provides an elongated pouch which enables a user to hang and store a wet paint brush therein for days—weeks if necessary. The mouth of the bag embodies quick separable and connecti-

ble top and bottom flaps. The top flap is provided with an elongated pliant male keying rib which snaps into a yieldable female keeper groove. When the rib is snapped into the groove the brush storing pouch is airtight. An eye fixed in one end of the bag permits hanging the bag on a fixed nail. This

downwardly along the sidewalls of the bottom portion. One of the side walls of the cover has a cut-out portion providing a window therein. A card having a fold-line dividing the card into two panels is positioned between the cover and the bottom receptacle portion so that one panel extends into the receptacle portion of the box while the other extends downwardly between the sidewall of the receptacle portion and the windowed sidewall of the cover so that indicia appearing on the second panel is exposed through the window.



eye is provided with a brush hanging wire which has a hook to suspend the apertured end of the brush handle. The narrow rib-equipped-flap has a red marker strip bordering its free edge. Lift the "red" flap to open the bag and press the rib into the groove to close and seal the bag. The wet brush is preserved for ready re-use whenever necessary or desired.

3,690,449

MATCH BOOK WITH ENCLOSED MATCH HEADS AND SAFETY FRICTION STRIP

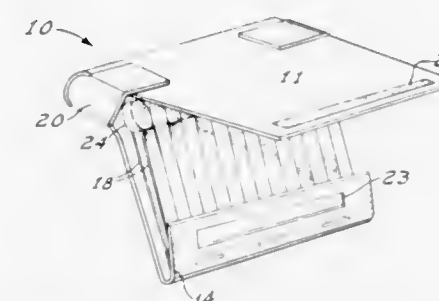
Morey Seldin, 2455 Via Lazo, Palm Springs, Calif.

Filed Aug. 12, 1970, Ser. No. 63,120

Int. Cl. A24f 27/00

U.S. Cl. 206—29

1 Claim



A match book with flaps enclosing the match heads, and with a safety friction strip mounted to the front cover. Two flaps integral with the back cover enclose the top side portion of the book and are secured to the front cover. A specially prepared friction strip is mounted to the lower portion of the front cover. A slot is provided in the cover retainer, and the strip is positioned under the slot.

3,690,450

PACKAGES

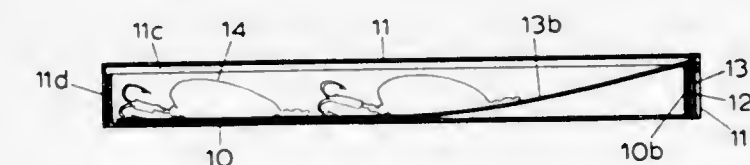
A. L. Sheldon, c/o Sheldon's Inc., P.O. Box 508, Antigo, Wis.

Filed Nov. 23, 1970, Ser. No. 92,020

Int. Cl. B65d 5/50

U.S. Cl. 206—45.19

1 Claim



A package having a bottom receptacle portion and an openable cover fitting over the bottom portion and extending

To counteract the tendency of film wound in a supply compartment from clockspringing and resisting initial unwinding, at least the outermost film convolution on the supply roll is transversely corrugated. As the film ages in the magazine, its inherent plasticity causes its clockspringing tendency to diminish and its corrugations to relax, thereby reducing the frictional contact pressure between the outermost film convolution and the compartment walls.

3,690,452

APPLICATOR ASSEMBLY

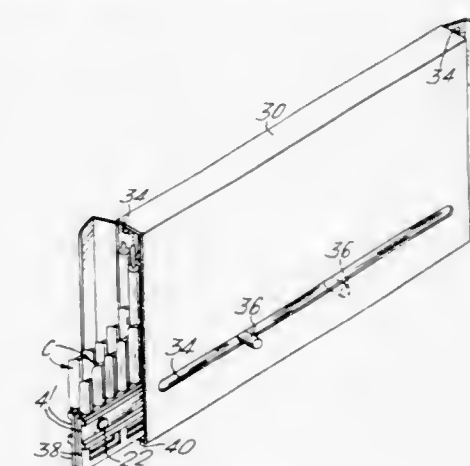
Leslie A. Ungar, 4415 Bathurst St., Downsview, Ontario, and Arthur Rosenthal, 67 Baycrest Ave., Toronto, 19 Ontario, both of Canada

Filed May 25, 1970, Ser. No. 39,995

Int. Cl. B65d 83/02

U.S. Cl. 206—56 C

4 Claims



A comb-shaped unitary plastic moulding in which a plurality of applicators constitute the "teeth" of the "comb;" a readily breakable connection between each applicator and the comb spine or holder being provided by a relatively frail fillet intervening therebetween. Each said applicator has a reduced end on which a soluble chemical is encrusted and each moulding has hermaphroditic connection facilities for attaching it to



a second identical moulding in collateral relation; packaging for these mouldings being also contemplated by the invention.

3,690,453

# METHOD OF COMBINING A PLURALITY OF TUB-SHAPED RECEPTACLES AS A UNITARY PACKAGE AND PACKAGE

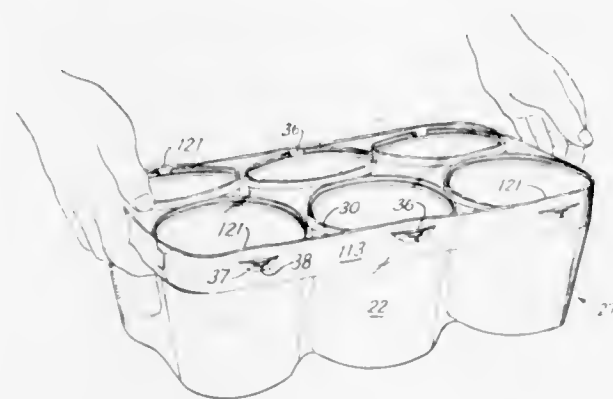
Arthur G. Dorall, Redwood City, Calif., assignor to Kliklok Corporation, New York, N.Y.

Filed Feb. 25, 1971, Ser. No. 118,784

Int. Cl. B65d 65/16, 71/00, 85/62

U.S. Cl. 206—65 S

12 Claims



A unitary package of a plurality of tub-shaped receptacles is formed by seating the upper portions of the receptacles in apertures in the bottom panel of a tray whose upstanding side walls have receptacle-rim engaging apertures, optionally fitted with downwardly extending receptacle-rim-retaining tabs. An enclosing shrink film extending over the top, sides, bottom and ends of the assembly receptacles and tray causes the receptacles to tilt, thereby increasing the spacing between adjacent receptacle rims and minimizing the danger of rim contact which might cause one receptacle to pry off a friction-fitted lid on the adjacent receptacle during transport and handling. If open-ended, the shrink enclosure leaves open grab apertures at the ends of the package.

3,690,454

# METHOD AND APPARATUS FOR MAGNETIC CONCENTRATION WITH FERROMAGNETIC SOFT IRON BODIES

Georgy Alexandrovich Bekhtle, Ljubertsy, ulitsa Kosmonarov, 19, kv. 50, Moscow; Nikolai Fedorovich Myasnikov, Belgorodskoi oblasti, ulitsa Frunze, 7a, kv. Gubkin; Jury Eremeevich Mitrofanov, Belgorodskoi oblasti, ulitsa Frunze, 7a, kv. 25, Gubkin; Evgeny Stepanovich Berestov, Belgorodskoi oblasti, ulitsa Frunze, 7a, kv. 27, Gubkin; Albert Frantsevich Kalvasinsky, Belgorodskoi oblasti, ulitsa Frunze 7a, kv. 10, Gubkin; Mark Lazarevich Letson, ulitsa Antonenko, 4, kv. 16, Leningrad, all of U.S.S.R., and Viktor Gershovich Derkach, deceased, late of ulitsa Gavanskaya, 16, kv. 33, Leningrad, U.S.S.R. (by Galina Nisonovna Budnitskaya, executrix)

Filed Nov. 18, 1969, Ser. No. 877,662

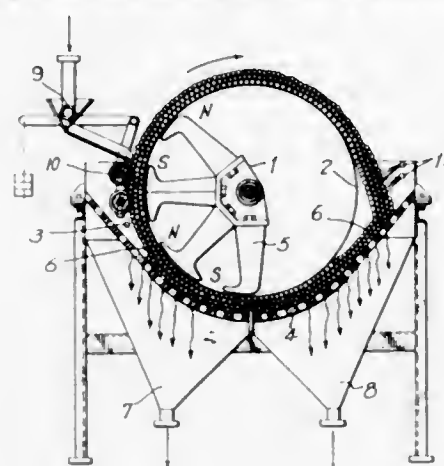
Int. Cl. B03c 1/30, 1/00

U.S. Cl. 209—38

8 Claims

A method for concentrating pulverized weakly magnetic materials which include magnetic and non-magnetic fractions, by filtering the particles thereof through soft iron bodies. This method includes introducing the soft iron bodies into a magnetic field for separation of the magnetic fraction from the non-magnetic fraction and attracting the bodies against a transportation element by means of the magnetic field. Then the transportation element is moved through the magnetic field to remove the bodies and magnetic fraction from the field for separation of the bodies from the magnetic fraction. These soft-iron bodies are loosely arranged along the path, along which the transportation element moves in the magnetic

field such that under the action of the magnetic field the bodies are attracted to the element and are carried by the latter through the magnetic field into a zone having no mag-



3,690,455

Patent Not Issued For This Number

3,690,456

# GLASS CONTAINER CRACK DETECTOR

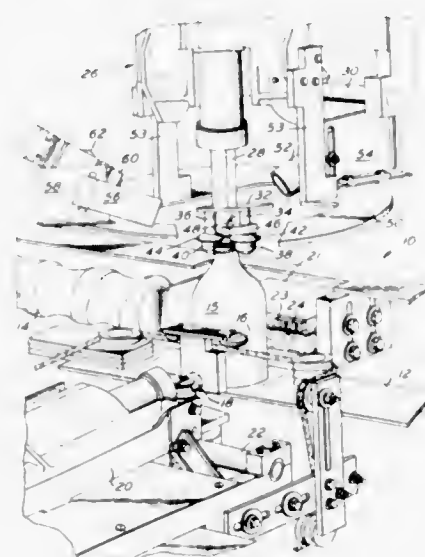
Whitney S. Powers, Jr., Pine City, N.Y., assignor to Powers Manufacturing, Inc., Elmira, N.Y.

Filed June 25, 1971, Ser. No. 156,769

Int. Cl. B07c 5/342

U.S. Cl. 209—73

7 Claims



Glass containers are inspected for cracks and similar defects by a machine which will rotate the container during inspection in a manner so that the finish will rotate true and will simultaneously hold the container down against any vertical forces resulting from rotation of a container body which is out of round or tapered.

3,690,457

# CARD SORTING DEVICE

John H. Lanahan, Whitesboro, and William W. Abraham, Utica, both of N.Y., assignors to Mohawk Industrial Laboratories, Inc., Vernon, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,526

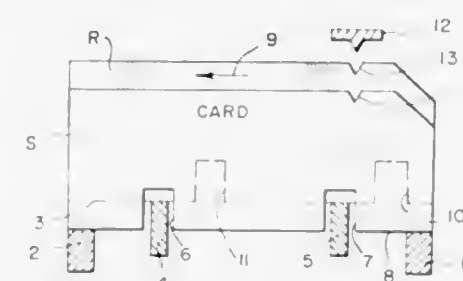
Int. Cl. B07c 3/00

U.S. Cl. 209—80.5

20 Claims

A card sorting device comprises a bay for a plurality of edge-aligned, vertically oriented cards having a bottom edge

notched in at least one position in accordance with information on the cards. The cards are supported by front and rear support members extending generally transverse to the cards underneath the lower edges adjacent the front and rear edges of the cards. The device includes means for moving one or more selected code bars into a position transverse to the bottom edge of the cards and in alignment with the notches in the selected cards. When one or both of the support members is moved downwardly, the selected cards can move downwardly due to the alignment of the notches and the code bars. The remaining, rejected cards, do not have notches in alignment with the selected code bars and are restrained from moving downwardly by contact between their lower edges and the code bars. The rejected cards are then moved as a unit relative to the selected cards to effect separation. In a device of this



type, it is possible that a rejected card is restrained from downward motion by a single code bar or by a plurality of code bars located towards one end of the card. In either event, it is possible for such rejected cards to pivot downwardly about a code bar and this spurious downward pivotal movement may interfere with card selection since, for proper operation, only the selected cards should undergo downward motion. According to the present invention, rejected cards are restrained from spurious downward pivoting action in at least one sense about a code bar engaging the lower edge thereof at a point where there is no edge-notch. This spurious pivoting motion of rejected cards is prevented by providing an elongate member above the cards having a lower surface engageable with the upper edges of the cards near one end thereof. The rejected cards are thus restrained from upward pivotal motion of that end about a code bar.

3,690,458

Patent Not Issued For This Number

3,690,459

Patent Not Issued For This Number

3,690,460

# RELIEF VALVE FOR OIL FILTERS OR THE LIKE

Clifford L. Lindboe, Palatine, Ill., assignor to Ross W. Lyon; Rosclare M. Lyon and Robert E. Lyon, d/b/a Lyon Industries, Addison, Ill.

Filed March 11, 1971, Ser. No. 123,359

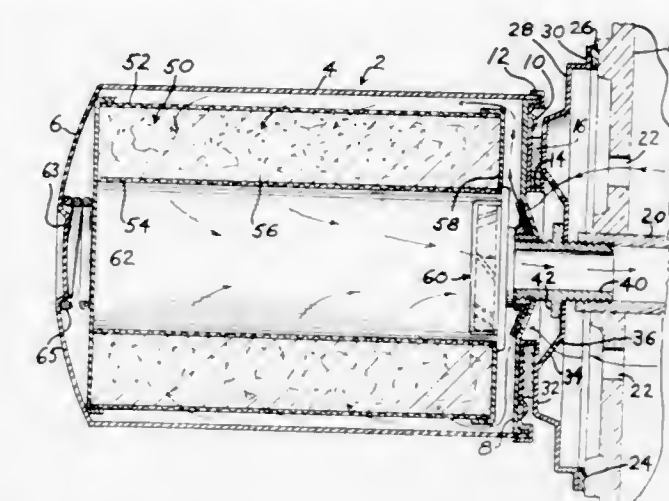
Int. Cl. B01d 35/14, 27/10

U.S. Cl. 210—130

3 Claims

An oil filter cartridge has a relief valve unit that shunts the oil flow from the inlet to the outlet of the cartridge when the filter element becomes clogged. The unit comprises a shell that telescopes within the tubular filter medium of the cartridge. The shell contains a valve disc with integral leaf springs that bias the valve disc against valve ports in a plate or wall

that is attached to an end of the shell so that when the valve disc is in open position, the oil flows from the inlet of the car-



3,690,461

# FILTER AND HOUSING FOR THE SAME

Heinrich Sommermeyer, Gera, Germany, assignor to Heinrich Sommermeyer KG, Gera, Germany

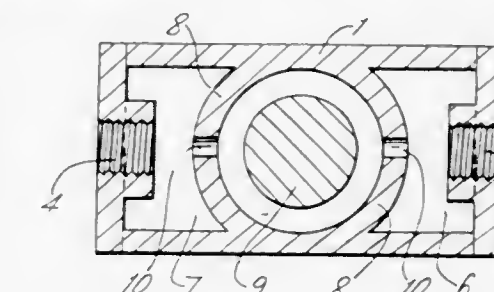
Filed Nov. 27, 1970, Ser. No. 93,317

Claims priority, application France, April 6, 1970, 7012397

Int. Cl. B01d 35/06

U.S. Cl. 210—222

3 Claims



A filter for removing impurities from fluids. The filter housing is generally rectangular in cross-section, or, more generally is of prismatic shape, facilitating combination with flat end surfaces of cabinets, appliances and devices cooperating with the filter.

3,690,462

# FILTER PRESS WITH ENDLESS FILTER CLOTH

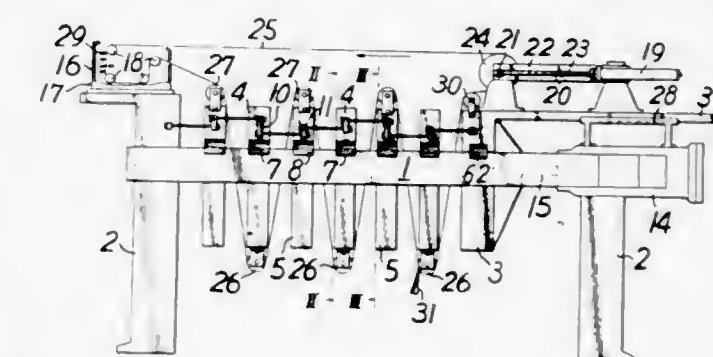
Ken-ichiro Kurita, 36-4, 5-chome, Senriyama-nishi, Suita, Japan

Filed March 11, 1970, Ser. No. 18,459

Int. Cl. B01d 25/32

U.S. Cl. 210—225

4 Claims



A filter press of plate-and-frame type or recessed plate type is provided with an endless filter cloth which is passed under



each of filter elements and over a filter element adjacent thereto in zigzag form. Rollers and drive means for moving the filter cloth in the zigzag form are also provided. The filter cloth is passed through a washing vessel disposed on the frame of the filter press in which the surface of the cloth is cleaned by washing means such as wash liquor ejecting pipes.

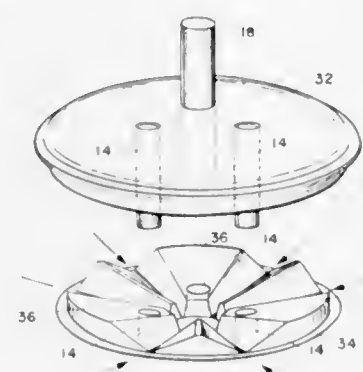
3,690,463

## FLOATING SUCTION HEAD

John A. O'Brien, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy  
Filed July 13, 1971, Ser. No. 162,108  
Int. Cl. C02b 9/02

U.S. Cl. 210—242

5 Claims



Apparatus used for collecting spilled oil from the surface of the sea including primarily a floating suction head connected to a pump by a flexible hose. The oil-water mixture enters the head through a suction port, the latter being protected from debris by a series of screens.

3,690,464

## OIL RECOVERY VESSEL FOR THE REMOVAL OF OIL AND OTHER POLLUTING MATTER FLOATING ON THE WATER SURFACE

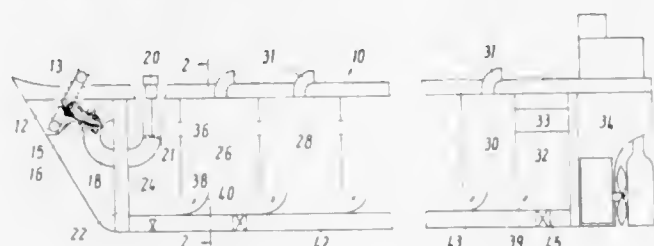
Karl Heinicke, An der Berner Au 1, 2000 Hamburg, 72, Germany

Filed June 15, 1970, Ser. No. 45,970

Int. Cl. C02b 9/02

U.S. Cl. 210—242

2 Claims



A novel oil recovery vessel for removing oil and other floating impurities from the water surface, is provided with means for collecting such impurities, means for conveying said collected liquid impurities through the vessel and means for the discharge of redundant water from the vessel the conveying means keeping the emulsification of the removed impurities to a minimum despite a rather high operational throughput.

3,690,465

## PERMEATION SEPARATION ELEMENT

Philip Roswell McGinnis, and Gerald Joseph O'Brien, both of Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 15, 1970, Ser. No. 81,060

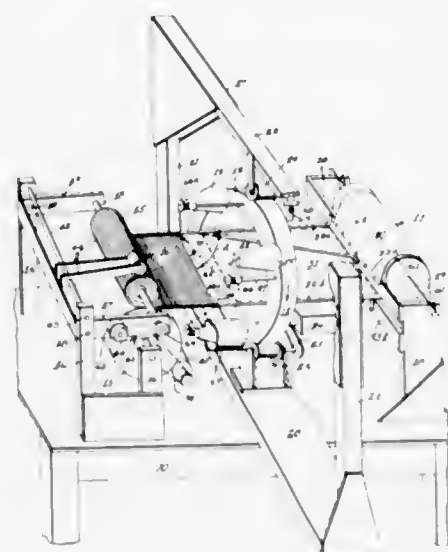
Int. Cl. B01d 31/00

U.S. Cl. 210—321

7 Claims

An improved element for the selective permeation separation of components of fluid mixtures comprises (1) thin layers

of substantially parallel hollow filaments separated by (2) thin foraminous materials which restrict movement and prevent nesting of the hollow filaments during use of the element, and (3) a resinous tube sheet structure encapsulating a portion of the hollow filaments, with open ends of the filaments extending through the tube sheet structure. A permeation separation device incorporates the improved element in a surrounding



shell with means for introducing into and removing a fluid mixture from the shell and means for removing separated components of the mixture from the open ends of the hollow filament membranes. Preferably the device also contains a foraminous tube in the center with the foraminous material and hollow filaments convolutely wrapped around the tube. Such devices are particularly useful for the reverse osmosis desalination of water.

3,690,466

## FILTER

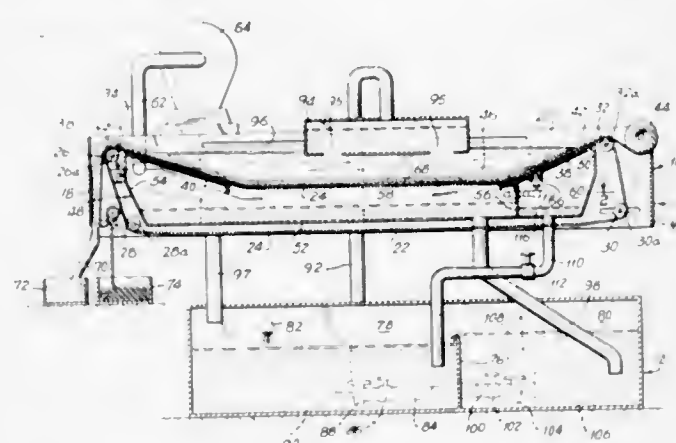
Wilfred J. Lee, East Syracuse, and Frank R. Kaess, Onelda, both of N.Y., assignors to Clarkson Industries, Inc., New York, N.Y.

Filed Nov. 18, 1970, Ser. No. 90,666

Int. Cl. B01d 29/04

U.S. Cl. 210—387

6 Claims



A flat bed filter in which a filter medium in strip form is supported on an endless conveyor and supports a pool of contaminated liquid to be filtered. The conveyor is periodically advanced to provide fresh filter medium for filtering the contaminated liquid. The underside of the conveyor communicates with an evacuated compartment which is separated into separate chambers by a transverse partition. The transverse partition is in sealing engagement with the underside of the conveyor that advances the filter medium, and a means is provided for maintaining the chamber nearest the supply of filter medium at a higher pressure than the adjacent chamber in order to reduce the flow rate of contaminated liquid through the portion of filter medium initially exposed to the pool of liquid to be filtered.

3,690,467

## Patent Not Issued For This Number

3,690,468

## ARTICLE TRANSFER APPARATUS

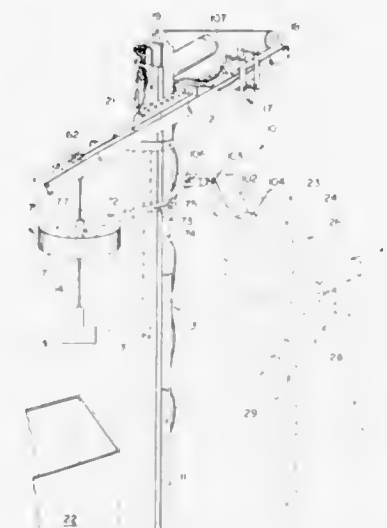
Robert W. Decker, and Robert F. Mole, both of Beltsville, Md., assignors to Agricultural Specialty Co., Inc.

Filed June 11, 1970, Ser. No. 45,518

Int. Cl. B66c 21/00

U.S. Cl. 212—84

13 Claims



Article transfer apparatus having a permanent magnet movable in a housing, the housing and magnet being supported by a cable which extends upwardly from the magnet and housing through a carriage movable in an inclined traverse arm between loading and discharge stations. An anti-slack cable system includes a pulley engaging the cable and mounted on an endless belt the opposite end of the cable carrying a deadweight engageable with a stop to limit its movement. At the discharge station, parallel arms carry a plate which engages the upper surface of the housing, to provide movement of the magnet in the housing to discharge articles and to prevent swing of the magnet, the housing and the load. The cable at the loading station passes through a resilient foam disc having radial slits, which brushes objects only loosely magnetically attracted to the magnet.

3,690,469

## SYSTEM FOR AUTOMATICALLY RELEASING CONNECTION BETWEEN CARS IN TRAIN

Yutaka Nagoya, Ashiya, and Toshio Toi, Amagasaki, both of Japan, assignors to Nippon Air Brake Company, Ltd., Kobe, Japan

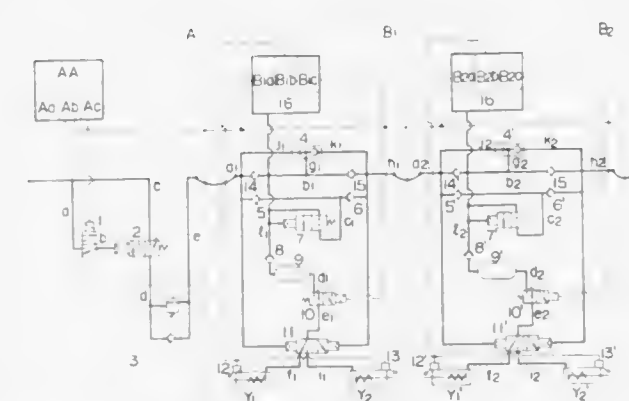
Filed Aug. 25, 1970, Ser. No. 66,834

Claims priority, application Japan, Dec. 8, 1969, 44/97804

Int. Cl. B61g 1/08, 1/16, 3/08

U.S. Cl. 213—212

7 Claims



A system for automatically releasing the connection between cars in a train by a combination of electrical and

pneumatic controls in which a line for supplying air under pressure extends from the locomotive to the cars so as to disconnect any desired car from the preceding or succeeding car by the force of air under pressure supplied from the locomotive, and a controller mounted in the locomotive and transmitters mounted in each car are used to designate the specific car to be disconnected, to instruct the disconnecting operation and to confirm the disconnection of the car.

3,690,470

## TUNNELING MACHINE WITH CONCRETE FORM TRANSFER APPARATUS

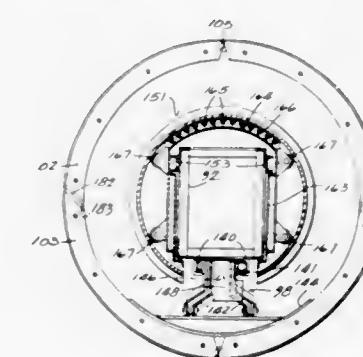
John R. Tabor, 3400 Spruce St., Racine, Wis.  
Division of Ser. No. 743,363, July 9, 1968, Pat. No. 3,561,223.

This application Feb. 24, 1970, Ser. No. 17,005

Int. Cl. E01g 5/06

U.S. Cl. 214—1 BB

3 Claims



A tunneling machine having a form transfer and handling device comprising a truss which extends longitudinally of the tunnel, said truss having legs which support the truss from the tunnel floor, the space about the truss being substantially unobstructed except in the vicinity of the legs, a trolley movable along the truss, and a form carrier on the trolley to pick up form sections from near the rear end of the truss and convey them in said unobstructed space toward the head end of the tunnel.

3,690,471

## APPARATUS FOR TRANSFERRING COMPONENTS OF A SEALED CONTACT SWITCH TO AN ASSEMBLY MACHINE

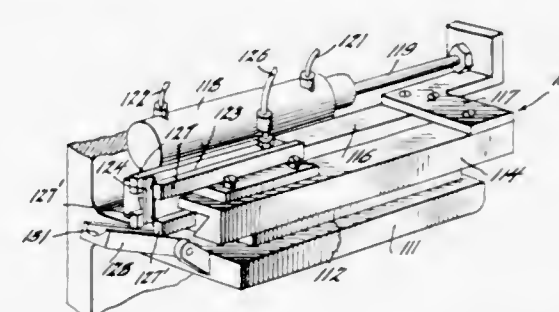
James C. McConnell, Samuel Pinnolis, and Wilhelm E. A. Schmidt, all of Winston-Salem, N.C., assignors to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 862,541, May 15, 1969, Pat. No. 3,583,577, which is a division of Ser. No. 620,320, March 3, 1967, Pat. No. 3,491,425. This application Jan. 26, 1971, Ser. No. 109,882

Int. Cl. B65g 59/06

U.S. Cl. 214—1 BT

6 Claims



A first transfer apparatus inserts a pair of elongated article components between upper and lower clamping jaws on a workholder mounted on a turret. The workholder is then moved adjacent to a second transfer apparatus which inserts a hollow article component into the workholder and moves the clamping jaws to insert the elongated components into the hollow component to assemble the article.



3,690,472

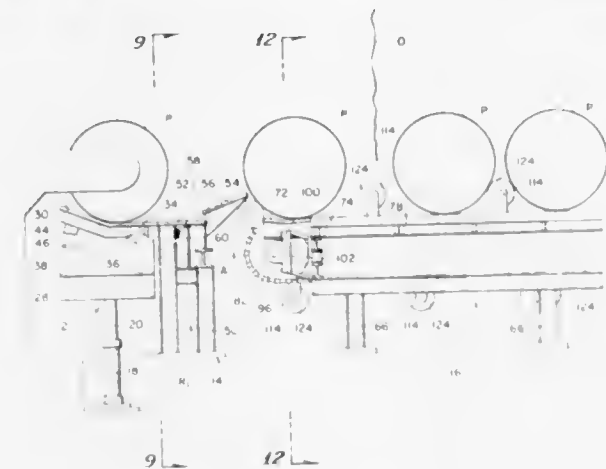
## PIPE HANDLING APPARATUS

**Ernest C. Poore, and John A. Goforth, Jr., both of Gadsden, Ala., assignors to Midwestern Specialties Ltd., Tulsa, Okla.**

Filed Feb. 26, 1971, Ser. No. 119,197  
Int. Cl. B65g 11/00

U.S. Cl. 214-1 P

15 Claims



An apparatus for moving relatively large diameter sections of coated pipe through a treating stage such as a heating chamber in a manner wherein the coated portions of the pipe sections are not engaged, thus protecting the coating during the treating operation. The coated pipe is initially received by an elevator apparatus which moves the pipe to an intermediate station for transfer to a conveyor apparatus which moves the coated pipe through the treatment area, such as an oven or the like for discharge therefrom subsequent to the treating or heating operation. The pipe is supported in a manner precluding damage to the beveled pipe ends and precluding engagement with the coated portions thus greatly facilitating the coating of large diameter pipe.

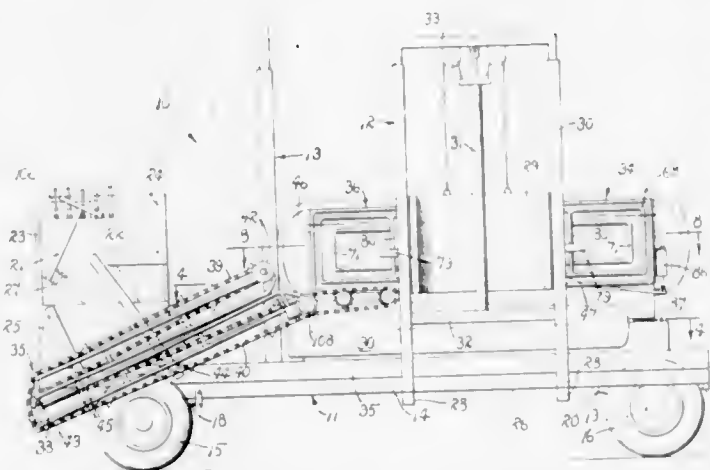
3,690,473

## BALE HANDLING DEVICE

**Marvin E. Miguel, 12691 S. 10th, Hanford, Calif.**  
Continuation-in-part of Ser. No. 717,533, April 1, 1968,  
abandoned. This application June 16, 1969, Ser. No. 843,890  
Int. Cl. B65g 57/24, 57/32

U.S. Cl. 214-6 B

17 Claims



This invention is a mobile, self-propelled machine for picking up bales in the field, and stacking them, and loading them for transport or storage. The stacking of bales for highway transport requires that alternate tiers be formed with the bales placed in different positions with respect to the bales in the adjacent tier, so that ties are formed between the tiers to hold the stack together. A tie is formed by placing the outside bales of one tier in such a position that they overlap the division between two bales of an adjacent tier. My bale stacker and loader picks up the bales from the field, arranges them in

seven tiers of eight bales each with the bales in alternate tiers positioned to form the necessary ties to form a transportable 56 bale stack. In addition, my bale stacker and loader is capable of unloading the 56 bale stack onto the ground, a truck bed, or into position in a larger storage stack, and of loading and transporting such a stack of bales.

3,690,474

## CONVEYING DEVICE WITH TWO END POSITIONS CONNECTED BY A CONVEYOR BELT AND INCLUDING A CONTROLLABLE DRIVE CONNECTION

**Karl Klappenecker, Constance, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany**

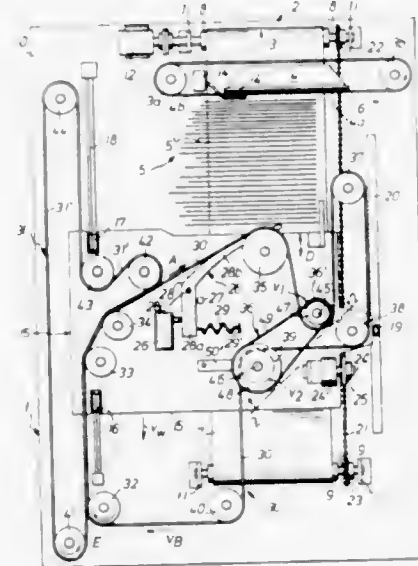
Filed July 28, 1971, Ser. No. 166,666

Claims priority, application Germany, July 30, 1970, P 20 37 741.7; July 30, 1970, P 70 28 610.1

Int. Cl. B65g 60/00

U.S. Cl. 214-7

6 Claims



In a conveying device of the stacker type including a linearly displaceable carriage and a conveyor belt from which the carriage derives a motive force, a controllable drive connection is provided between two movable rollers, which form part of the connection, and means are provided to connect the two movable rollers so that the translation ratio definable by the peripheral speeds of the two rollers can be greater or less than 1 depending on the desired direction of movement of the carriage, or a pair of controllable drive connections, one with a translation ratio greater than 1, and one with a translation ratio less than 1, are provided so that the carriage can be controlled in both directions of motion.

3,690,475

## MECHANISM FOR DIVIDING STACKS OF PAPER SHEETS

**Ernest Pfaffe, Neuffen, Germany, assignor to Hans Sickinger Company, Pontiac, Mich.**

Filed Jan. 20, 1971, Ser. No. 108,062

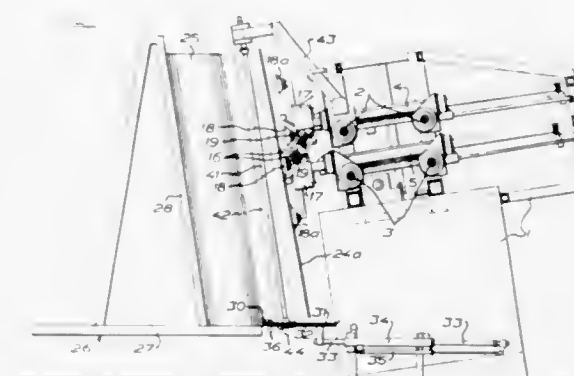
Int. Cl. B65h 3/32; B65g 59/06

U.S. Cl. 214-8.5 SS

8 Claims

A mechanism for dividing stacks of paper sheets into counted groups. The stack is held in vertical guides above a carriage which carries longitudinally spaced reciprocating upper and lower platforms. As the stack drops from the upper to the lower platform a reference finger and a separating wedge approach one corner of the stack, the finger supporting the stack and the wedge entering the stack at a predetermined height above the finger. At this point the carriage begins its

return movement and the upper platform enters the stack at the height of the wedge, both members then retracting. The edge thereof is detached from the surface of the next sheet while holding back said next sheet at said edge, and blowing in



counted group then drops between the platforms onto delivery bars.

air behind the detached edge, thereby making possible a rapid withdrawal of sheet from the pack.

3,690,476

## APPARATUS FOR FEEDING LIFTS OF SHEETS WITHOUT MARKING SAME

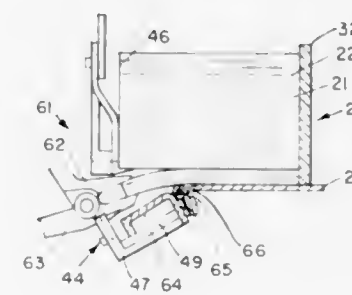
**Edson H. Stacy, East Baldwin, Maine**

Filed June 21, 1971, Ser. No. 154,832

Int. Cl. B65g 59/06

U.S. Cl. 214-8.5 SS

10 Claims



A sheet magazine containing limp sheets, cover sheets or carbon sheets avoids stabber damage and carbon smudging of conventional feeds by the use of a sharp pointed, small diameter segregation needle cooperable with but independently mounted relative to a pressure clamp member and a hold back finger member. The needle reciprocates parallel to the plane of the sheets on a movable member at the magazine gateway to pierce into the stack between adjacent sheets without damaging the sheets. The movable member then moves the needle away from the stack to form a separation gap which permits extraction by gripper jaws.

3,690,477

## MACHINE FOR HANDLING SHEET GLASS

**Leif Billy Nilsson, Emmaboda, Sweden, assignor to AB Emmaboda Glaswerk, Emmaboda, Sweden**

Filed June 21, 1971, Ser. No. 154,843

Claims priority, application Sweden, June 22, 1970, 8550/70

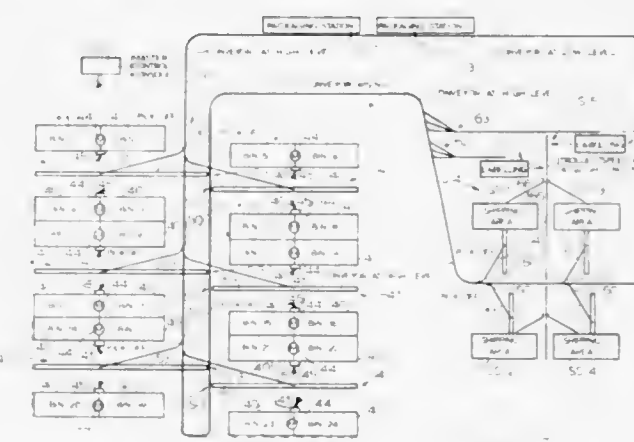
Int. Cl. B65g 59/04

U.S. Cl. 214-8.5 B

4 Claims

A machine for handling glass sheets by means of suction cups and provided with means facilitating removal of the sheets one by one from a pack by displacing the outermost sheet a short distance in its own plane, tilting it so that one

An intra-factory system and method provides a semi-automated means for conveying, temporarily storing and segregating non-uniform articles which may be textile articles such as coats, dresses, blouses, shirts, piece goods and the like or other non-uniform articles such as tires, filled cartons and the like. A closed loop, continuously moving, coding type, chain conveyor which operates at lower loading levels and higher pick-off levels codes the articles and circulates past loading, temporary vertical bin storage, labelling and shipping stations. Storage is provided by a plural group of vertical storage bins having storage rods which for each bin can be selectively positioned either locally at the bin or remotely at a master console. The articles are picked off the conveyor automatically and by gravity slide are directed to selected bins where they are temporarily stored and from which they are returned and recoded on the same conveyor for transfer to and pick-off at selected labelling or shipping stations.





3,690,479

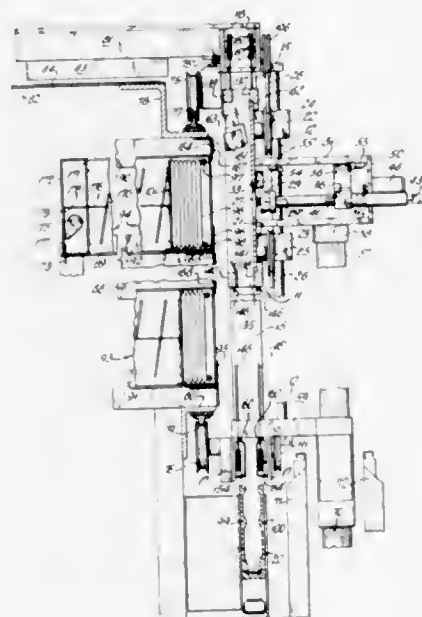
**AUTOMATIC SEARCH AND RETRIEVAL SYSTEM**

John A. Castaldi, Brooklyn, N.Y., assignor to Supreme Equipment &amp; Systems Corp.

Continuation-in-part of Ser. No. 681,259, Nov. 7, 1967, Pat. No. 3,490,616. This application Nov. 3, 1969, Ser. No. 873,606

Int. Cl. B65g 1/06

U.S. Cl. 214—16.4 A



The invention contemplates efficient, automatic retrieval of selected quantities of specific items from an inventory which may involve a large variety of items. The inventory is presented via a two-dimensional matrix of stationary storage compartments having open sides in essentially a single retrieval-access plane common to the compartments of the matrix. Each compartment accommodates a stacked plurality of like items, with an end item of each stack presented at a retrieval-access plane. Digitalized character identification applicable to and located at each compartment is externally exposed at said plane. Retrieval-slide means is positioned by compartment-selection control means, on orthogonally related guides, adjacent any particular compartment opening. The control means includes a compartment-digit selector, character-scanning means carried by the retrieval-slide means, and coincidence-detection means responsive to the outputs of the selector and the scanning means.

3,690,480

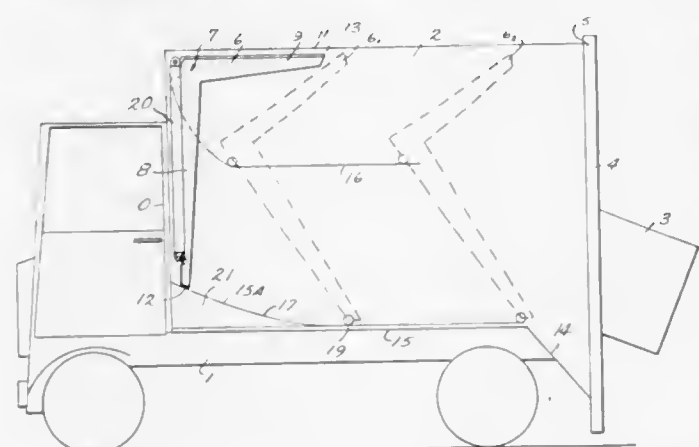
**DEVICE FOR DISCHARGING A BODY OR CONTAINER BY MEANS OF A PRESSURE MEMBER OR PLATEN**

Desire Heine, 48a, Av. Roger Salengro, Mulhouse, France

Filed June 15, 1970, Ser. No. 46,435

Int. Cl. B65g 65/40

U.S. Cl. 214—17 D



A device for discharging or emptying a body or container, e.g., for refuse, by means of a pressure platen or member,

which has two adjacent plates or faces abutting the bottom and one of the walls of the refuse body respectively, comprises pivot and guide means designed in such a way, that the attacking edge of each face of the pressure member follows the surface of the respective wall during emptying or discharging.

3,690,481

**APPARATUS TO DISPLACE A SNOWMOBILE**

Marc Pelletier, Ste-Flore, Quebec, Canada, assignor to Ebenisterie Pelletier Enr., Quebec, Canada

Filed Dec. 11, 1970, Ser. No. 97,199

Claims priority, application Canada, Dec. 18, 1969, 070,662

Int. Cl. B65g 67/02

U.S. Cl. 214—85

7 Claims

An apparatus to be used for displacing a snowmobile, the apparatus being formed of a platform mounted on swivelling wheels and provided at one end with braking shoes to avoid rolling of the platform when the snowmobile comes down from the platform on its own power. The apparatus is also preferably provided with a semi-rigid strip at the other end of the platform to be used by the snowmobile to climb thereon, always under its own power, without the platform moving away from the snowmobile.

3,690,482

**VEHICLE TOWING DEVICE**

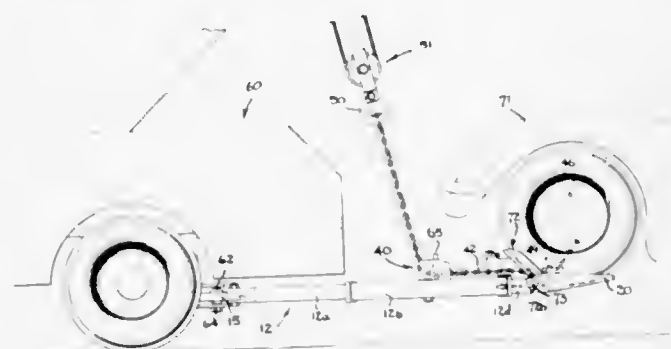
Richard J. Gaumont, 7906 Bleriot Ave., Los Angeles, Calif.

Filed July 12, 1971, Ser. No. 161,668

Int. Cl. B60p 3/12

U.S. Cl. 214—86 A

14 Claims



A vehicle towing device of the cradle type has a pair of cradle arms which are connected to a tow truck through a support member which may comprise a plate. One of the ends of each of the arms is attached to the support member for pivotal motion about a substantially vertical axis. The support member is attached to the lower structure of a tow truck by means of a ball and socket joint which permits limited two degree motion. The ends of the cradle arms opposite to those attached to the support plate have trays attached thereto for retaining and supporting the wheels of the vehicle to be towed. The cradle arms are interconnected at points therealong intermediate the opposite ends thereof by means of an adjustable bridging cross member. Means are provided for adjusting the lengths of the arms and that of the bridging interconnecting member to adapt the device in the field for utilization with various size vehicles. The bridging interconnecting member has a bracket unit attached thereto, through which the tow chain or cable fits. In utilizing the device, one end of each of two tow cables or chains is secured to the axle or the frame of the vehicle to be towed, each of these chains or cables being

3,690,485

**PORTABLE PLATFORMS, WITH ROLLER MEANS INSTALLED ON THEIR UPPER SIDE, FOR THE HANDLING AND TRANSPORTING OF FREIGHT**

Hans Jurgen Fischer, Haibach, and Georg Behrmann, Lauf, Pegnitz, both of Germany, assignors to Faun-Werke Kommunalfahrzeuge und Lastkraftwagen Karl Schmidt, Nurnberg, Germany

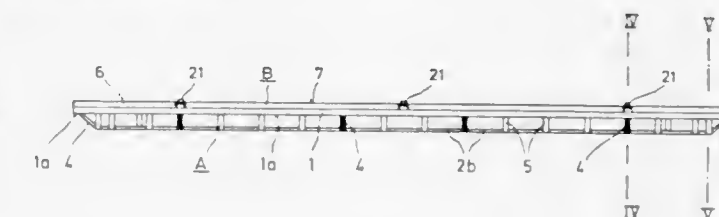
Filed Nov. 20, 1970, Ser. No. 91,415

Claims priority, application Germany, Nov. 21, 1969, P 19 58 565.0

Int. Cl. B65g 67/02

U.S. Cl. 214—310

13 Claims



A portable supporting platform particularly adapted for intermodal transporting and handling of containerized freight, in which there is an upper section upon which the freight is supported, and a lower section having roller means extending upwardly through openings in the upper section to rollingly support the freight when the upper and lower sections are in assembled relation. The upper section or both sections include attachments for conventional lifting and for securing means to permit transporting of such sections together with the freight as an integral unit.

3,690,486

**HIGH SPEED CONTAINER DRAINING APPARATUS**

Jerry L. East, Lynchburg, Va., assignor to Simplimatic Engineering Co., Lynchburg, Va.

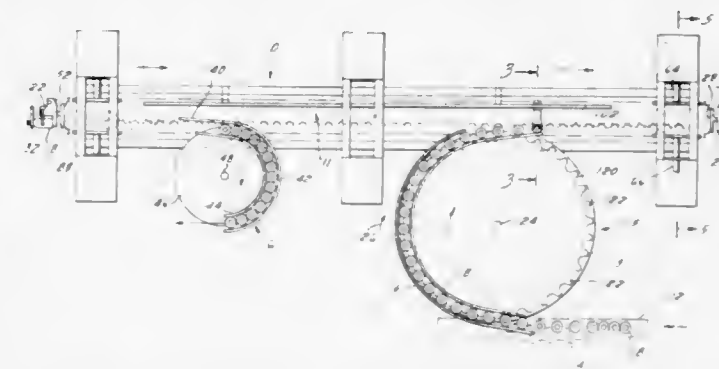
Continuation-in-part of Ser. No. 814,946, April 10, 1969, Pat. No. 3,591,027. This application Jan. 21, 1971, Ser. No. 108,520. The portion of the term of this patent subsequent to

July 6, 1988, has been disclaimed.

Int. Cl. B65b 69/00

U.S. Cl. 214—311

20 Claims



Open ended containers with rinse water in them are carried along a drying path which includes at least one curved path segment, the containers being carried along that curved segment with their open ends facing radially outwardly. As a result, an outwardly directed centrifugal force is effective to expel the rinse water from the containers. The containers are fed onto and off of individual support means carried by a conveyor means and means are provided for moving said individual support means radially outwardly of said conveyor means prior to said containers traversing said curved path segment and for returning said individual support means to their initial positions at the end of the drying path for removal from the conveyor means. As a result there is an increase in effective radius of the curved path segment, thereby to increase the effective net centrifugal force acting on the rinse water, although but a single conveyor means is utilized.

3,690,483

**POWER SHOVEL FRONT END**

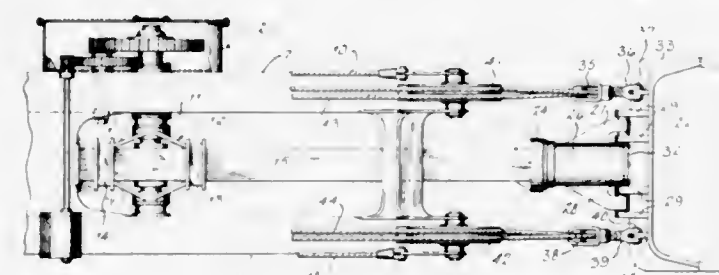
Melvin W. Kraschewski, Racine, and Gerald F. Lesniewski, South Milwaukee, both of Wis., assignors to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Nov. 27, 1970, Ser. No. 93,304

Int. Cl. E02f 3/28

U.S. Cl. 214—137

2 Claims



A twin-section boom is pivotally attached to the front of an excavator frame, and a saddle block pivotally mounted approximately half-way up the length of the boom slidably retains a dipper handle that moves back and forth between the boom sections. A pinion gear located in the saddle block and driven by a hydraulic motor engages a rack gear on the underside of the handle to provide a crowd-retract motion. A dipper is rotatably attached at the forward end of the handle to prevent transmission of torsional forces along the handle, and the dipper is retained in an upright attitude by twin dual hoist ropes extending over boom point sheaves attached at the upper ends of the boom sections.

3,690,484

**ROTARY BLADE CARTON RIDDLER**

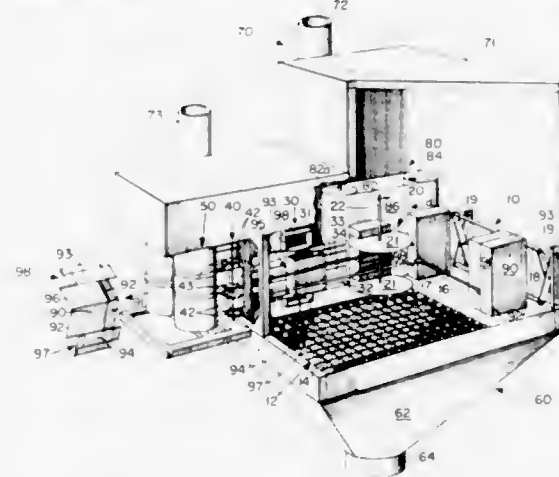
Warren H. Harlan, Forest Park, and Albert J. Spaeth, Greenhills, both of Ohio, assignors to The Procter &amp; Gamble Company, Cincinnati, Ohio

Filed Dec. 21, 1970, Ser. No. 99,884

Int. Cl. B65g 65/00

U.S. Cl. 214—305

10 Claims



A carton riddler is described in which the cartons are cut across three sides, top and bottom, forming articulated end flaps attached to the fourth side. The end flaps are cammed "open" and the product is dumped into a collection hopper. The carton is subsequently flattened and creased in such a way as to maintain the carton in flattened condition.



### 3,690,487 ORIENTING APPARATUS

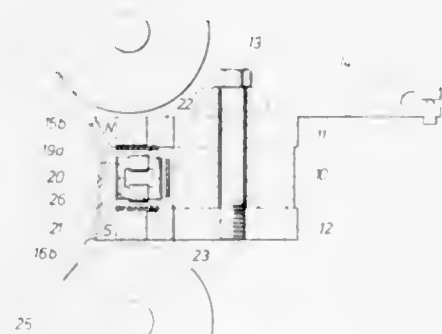
John S. Evans, Jr., and Leslie L. Jasper, both of Houston, Tex.,  
assignors to Mark Products, Inc., Houston, Tex.

Filed May 28, 1971, Ser. No. 148,041

Int. Cl. B65g 7/00

U.S. Cl. 214—340

15 Claims



Apparatus is disclosed that uses a known structural discontinuity in the wall of an object to orient the object. The wall of the object is moved through a magnetic field. As the known discontinuity, such as the longitudinal seam of a can, moves through the field, the field is disturbed and distorted. A magnetic detector head is positioned so a current will be induced in the head by the change in the magnetic field caused by the discontinuity. The induced current is used to stop the moving object after a predetermined time period, which may be zero. Thus, a plurality of similar objects can be sequentially passed through the field and all will be oriented in the same relative position.

### 3,690,488 HANDTRUCK JIG

John T. Cave, 1892 Shepard Ave., Hamden, Conn.

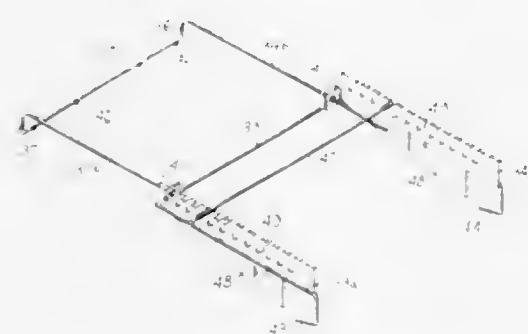
Continuation-in-part of Ser. No. 23,279, March 27, 1970,

abandoned. This application Aug. 21, 1970, Ser. No. 65,854

Int. Cl. B62b 1/06

U.S. Cl. 214—383

8 Claims



A device for supporting a load on a handtruck comprising a pair of leg members, a hooked extension on one end of each of said leg members, an angled extension on the other end of each of said leg members, a bar fixed transversely of said angled extensions whereby said leg members are spaced apart in approximately parallel relationship, and a depending member mounted on each leg adjacent said hooked extension for cooperating with said hooked extension in holding the device on a crossbar of a handtruck. Protrusions preferably are fixed along the transverse bar to aid in gripping the handtruck load. The depending member may be a finger-like member or may be a triangular plate which also aids in aligning the hooked extensions over a crossbar on the handtruck. The leg members may be segmented and the segments connected by adjusting and locking means in order to vary the length of the legs and to fix them at the desired length.

### 3,690,489 VEHICLE FOR TRANSPORTING CONTAINERIZED FREIGHT

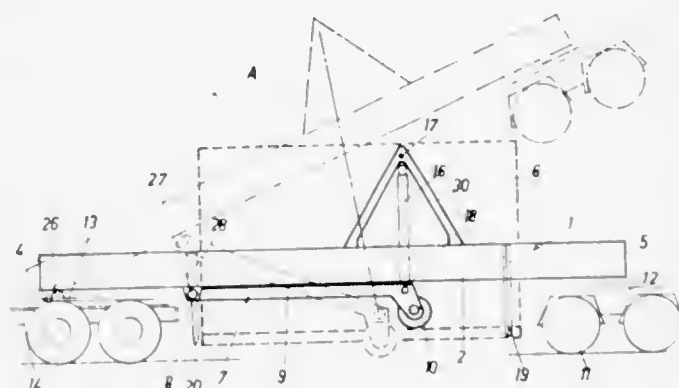
Hugo Mischek, Vienna, Austria, assignor to Siler AG, Luzern, Switzerland

Filed Nov. 10, 1970, Ser. No. 88,424

Int. Cl. B60p 3/00

U.S. Cl. 214—390

7 Claims



A vehicle for the transport of containerized freight, i.e. goods which have been packaged in quantity for shipment on a pallet, in a receptacle, etc., has an elongated rigid closed frame whose rear end is provided with wheels and whose front end is adapted to be pulled. Extending parallel to each other and to each side of an opening in the frame are a pair of arms which each have one end pivoted toward the front of the frame and another end attached to one end of an expansible hydraulic cylinder supported toward the rear of the frame. Expansion of the cylinders pushes the free end of the arms downwardly. These free ends are provided with wheels, which can be the usual road wheels of the vehicle, so that when the cylinders are actuated, the rear end of the frame is lifted and the frame, in this position, can be backed over a container and thereafter lowered around it. Means is provided around the frame opening to grab the container and lift it into place within the opening for transport.

### 3,690,490 TRAILER CONSTRUCTION

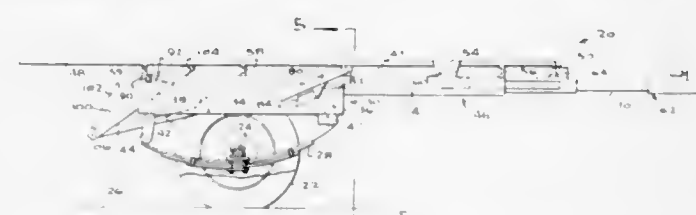
Harry P. Hall, Franklin, Tenn., assignor to Diversified Metals, Inc., Smyrna, Tenn.

Filed Jan. 12, 1971, Ser. No. 105,910

Int. Cl. B60p 1/28, 3/10

U.S. Cl. 214—506

3 Claims



A trailer construction is provided in which a load supporting platform frame is shiftable rearwardly with respect to a supporting axle while its rearmost edge is pivoted downwardly to provide a resultant small angle of inclination between the platform frame and the ground surface to enable an easy movement of material to and from the platform frame and to serve as a stationary loading ramp.

### 3,690,491 REEL TRAILER

Cornelius Butler, Jr., Rt. 8 Box 647, Greensboro, N.C.

Filed Dec. 7, 1970, Ser. No. 95,769

Int. Cl. B60p 1/28

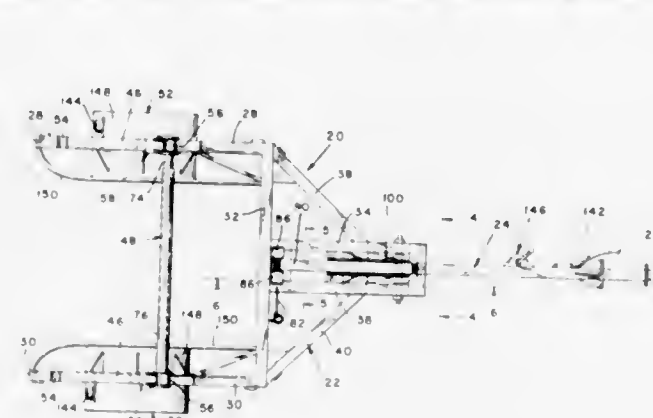
U.S. Cl. 214—506

10 Claims

A cable reel trailer including a wheeled, Y-shaped main frame is pivotally attached to a tongue having a coupling for

attachment to a towing vehicle. Reel supporting and lifting surfaces, secured to uprights mounted upon the main frame, transfer the reel between the trailer and the ground upon

enable the tipping height to be increased without increasing the overall height of the vehicle. There may be an acceleration



pivotable displacement of the tongue relative to the main frame due to movement of the towing vehicle and tongue relative to the main frame support wheels.

### 3,690,492 COIL CARRIER ATTACHMENT FOR FORK LIFT VEHICLES

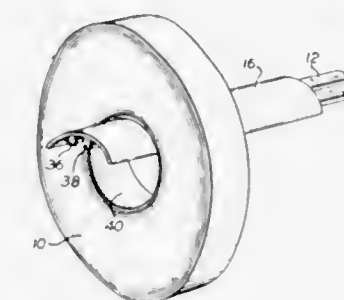
Sherman J. Shore, Pittsburgh, Pa., assignor to Mapco, Inc., Valencia, Pa.

Filed Aug. 21, 1970, Ser. No. 66,012

Int. Cl. B66f 9/12

U.S. Cl. 214—620

14 Claims



An attachment for fork lift vehicles removably mountable upon the fork lift elements thereof and having a convex outer configuration conforming to the circular inner surface of an annular coil of sheet material to facilitate lifting and hauling of the coil by engagement of the coil inner surface upon the conformed convex outer surface of the attachment.

### 3,690,493

Patent Not Issued For This Number

### 3,690,494 ATTACHMENT APPARATUS FOR MATERIAL HANDLING VEHICLES, AND MATERIAL HANDLING VEHICLES

Edward Shepherd, 28 Sandysacres, Leeds, England

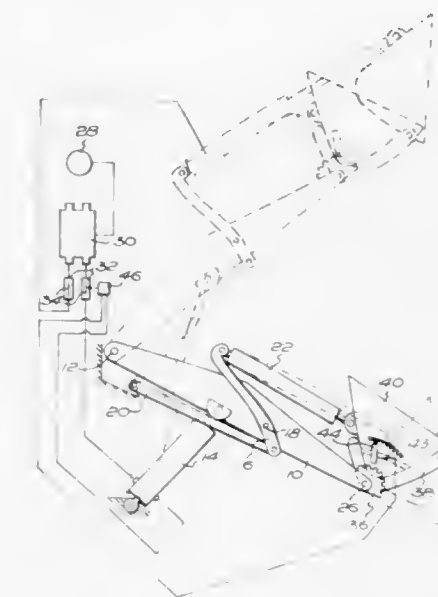
Filed Sept. 9, 1970, Ser. No. 70,720

Int. Cl. B66f 9/00

U.S. Cl. 214—774

2 Claims

In a materials handling vehicle with lift arms, a cradle is pivotally mounted on the lift arms and a material handling bucket is pivotally mounted on the cradle. The bucket can be locked to the cradle to enable normal tipping of the bucket on the lift arms by the tipping ram, or the cradle can be locked to the lift arms to enable tipping of the bucket on the cradle to



linkage between the tipping ram and bucket to obviate the need for using an extra long tipping ram.

### 3,690,495

SECURITY CLOSURE FOR A SCREW TYPE CONTAINER

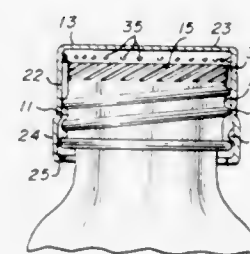
Lloyd S. Turner, 50 Chestnut St., Los Gatos, Calif.

Filed Sept. 28, 1970, Ser. No. 76,159

Int. Cl. B65d 55/02

U.S. Cl. 215—9

1 Claim



A common twist or screw on cap for a bottle or like container is converted to a security closure by the addition of a rigid cover member, which may be moved up and down between two axial positions. In one position, the closure is secured because the cover member will rotate freely in either direction without turning the cap. In the other position, closure is non-secured because a band of parallel knurling on the side of the cap is aligned with and engaged by a complementary band of knurling on the inside surface of the sidewall of the cover member such that rotation of the cover member will be transmitted to rotate the cap. The cover member may be snapped axially from the non-secured position to the secured position and vice versa. Alternatively, the knurling may extend diagonally within the bands whereby the cover member will be automatically cammed into the engaged position when turned in one direction, and into the disengaged position when turned in the opposite direction. In this embodiment, the closure may be removed by both twisting and pressing the cover member axially downwardly at the same time.

### 3,690,496

SAFETY CLOSURE FOR BOTTLES

Royal H. Gibson, Rumson, N.J., assignor to Gibson Associates Incorporated, Cranford, N.J.

Filed April 1, 1971, Ser. No. 130,156

Int. Cl. B65d 55/02

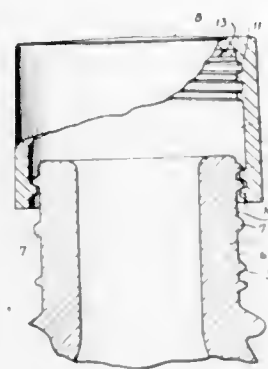
U.S. Cl. 215—9

5 Claims

A bottle closure in which the neck of the bottle is provided with upper and lower threaded portions separated by an unthreaded portion divided into two parts by an annular bead.



A cap is provided with upper and lower internally threaded portions separated by an unthreaded portion of a width substantially equal to the width of the unthreaded portion of the



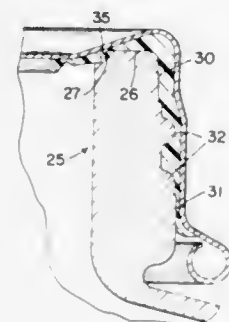
neck. When removing the cap, the bead interferes with the lower threaded portion of the cap providing resistance to easy removal.

3,690,497

**CLOSURE CAP AND PACKAGE FORMED THEREWITH**  
Frank H. Lecinski, Jr., Harwood Heights, Ill., assignor to Continental Can Company, Inc., New York, N.Y.  
Filed March 8, 1971, Ser. No. 122,049  
Int. Cl. B65d 23/00

U.S. Cl. 215-40

10 Claims



A closure cap of the press-on turn-off type having a gasket retaining channel formed with a frusto-conical inner wall which cooperates with the relatively abrupt inside top radius or corner of the relatively wide flat top seal finish of a container. The inside top radius or corner acts as a circumferential ridge that deeply indents the gasket material so as to pinch the opposing gasket material between the frusto-conical channel sidewall and the abrupt radius into a thin annular section which acts to minimize oxygen permeation and also to prevent cap settling with resultant increase of removal torques.

3,690,498

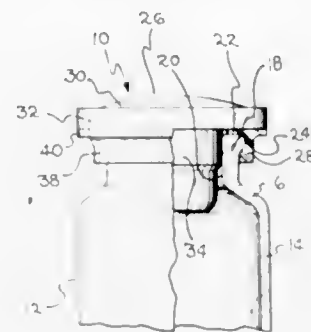
**CHILD-RESISTANT STOPPER-TYPE CLOSURE**  
Paul W. Harbauer, 232 E. 5th st., Perrysburg, Ohio  
Filed April 26, 1971, Ser. No. 137,137  
Int. Cl. B65d 55/02

U.S. Cl. 215-9

14 Claims

A child-resistant closure for a bottle comprising a resilient plastic stopper having a top flange extending outwardly beyond the rim of the bottle. The open mouth of the bottle is fitted with a unique resilient plastic fitment which is permanently attached on the open rim of the bottle and includes an outwardly directed flange underlying the flange of the plastic stopper. The closure is opened by applying an upward pressure to the flange of the fixed plastic fitment, thereby

deflecting this flange upwardly to initiate an upward or opening movement of the plastic stopper. Once the stopper is



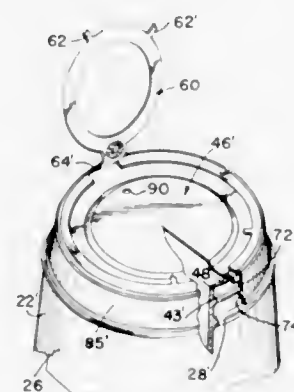
raised slightly in this manner, an adult can complete the removal of the stopper with normal finger pressure.

3,690,499  
COMPOSITE CLOSURE

James E. Westfall, Western Springs; Arthur L. Lawson, Deerfield, and Peter A. Vercillo, Oak Park, all of Ill., assignors to Continental Can Company, Inc., New York, N.Y.  
Filed July 29, 1971, Ser. No. 167,151  
Int. Cl. B65g 67/02

U.S. Cl. 215-40

6 Claims



The disclosure relates to improvements in closures comprising a dependent skirt which encircles a container neck, and which include a pull tab attached to the skirt for removal of the closure.

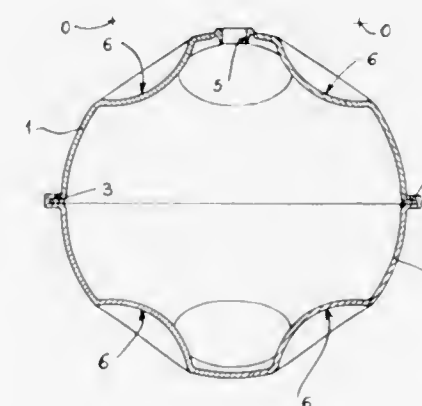
Preferred embodiments disclosed relate to a composite closure consisting of a flexible, resilient plastic fitment, and a gasketed rigid closure panel. The fitment has a perforate top and dependent skirt. The closure panel is retained within the skirt. A lifting ring in the top of the flexible plastic fitment is joined to marginal portions of the fitment top by breakable bridging portions and by a substantially unbreakable integral hinge portion attached directly to a portion of the skirt. Once breakable bridging portions are broken, the semi-detached ring serves to alert shoppers that the closure has been previously tampered with or removed. The exterior face of a downwardly extending skirt of the plastic fitment is substantially straight, and the interior face includes detent means for engaging the neck of the container. The closure includes means, responsive to the lifting of the ring, for breaking a vacuum within the container before the detent means begins to clear cooperating elements on the neck.

In a preferred embodiment, the closure also includes special positioning of the detent means so that no detent means are positioned on either side of the plastic fitment at a quarter circle from the hinge.

3,690,500  
**SPHERICAL CONTAINERS FOR PRESSURIZED FLUIDS**  
Roger Remane, Sainte-Colombe-Les-Vienne, France, assignor to Application Des Gaz, Paris, Seine, France  
Filed Nov. 2, 1970, Ser. No. 86,221  
Int. Cl. B65d ; F25j

U.S. Cl. 220-1 B

8 Claims



A pressurized fluid container of generally spherical shape, wherein at least one depression is provided in a wall of the container for outward expansion should the pressure within the container exceed a nominal value.

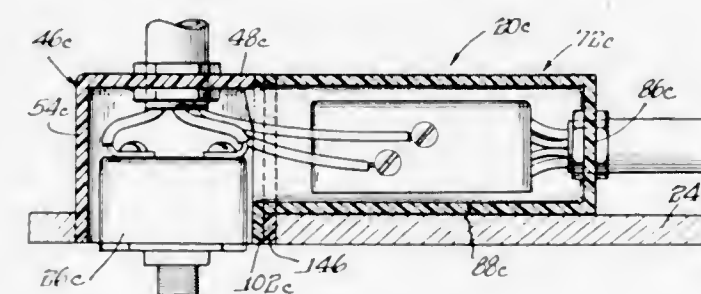
3,690,501

ELECTRICAL OUTLET BOX

Gordon K. Ware, Chicago, Ill., assignor to Ware Fuse Corporation, Chicago, Ill.  
Continuation-in-part of Ser. No. 823,569, May 12, 1969, Pat. No. 3,622,029. This application Dec. 29, 1969, Ser. No. 888,258  
Int. Cl. H02g 3/08

U.S. Cl. 220-3.94

8 Claims



A box including a first portion for receiving electrical outlets, switches, cover plates and the like of standard size and a second portion connectable with the first portion for increasing the interior volume of the box for accommodating electrical wires.

3,690,502

PIPE PONTOON FLOATING ROOF

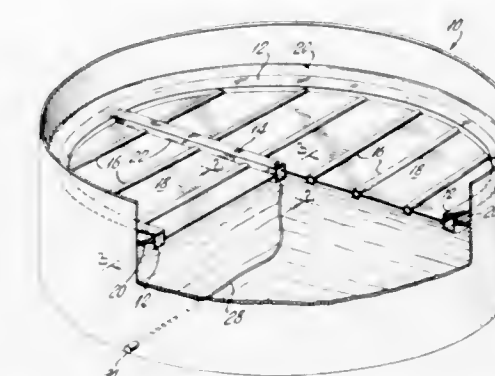
Fred H. Guber, Jr., 44 Courter Ave., Maplewood, N.J.  
Filed June 23, 1971, Ser. No. 155,809  
Int. Cl. B65d 87/18

U.S. Cl. 220-26 D

6 Claims

A floating roof for large storage tanks incorporating large diameter pipes to provide additional buoyancy and stiffening for the roof. An annular box pontoon provides a portion of the

required roof buoyancy. Large diameter chordal pipes are used to stiffen the flat circular deck located inside the annular



pontoon while providing additional distributed buoyancy and structural stability to said deck.

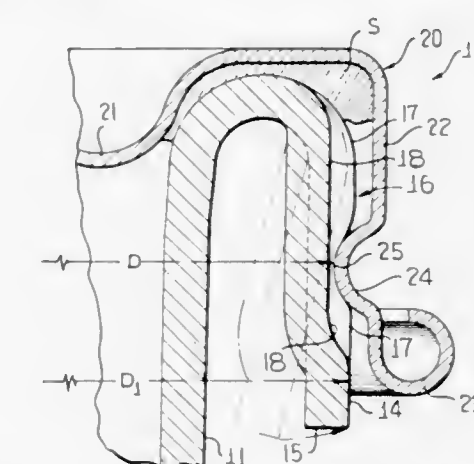
3,690,503

COMBINED CONTAINER AND CLOSURE

John J. Curry, 2926 Downing Ave., Westchester, Ill.  
Filed March 5, 1970, Ser. No. 16,739  
Int. Cl. B65d 41/04

U.S. Cl. 220-39 R

17 Claims



This disclosure relates to a container of thermo-formed plastic material and a metallic closure, the closure being of a conventional construction and including a plurality of inwardly directed threads, the container having a body terminating in an upper end in a radially outwardly directed shoulder terminating in a downwardly directed peripheral skirt, the latter of which includes a plurality of vertical flutes, whereby upon the snap application of the closure to the container the flutes are deformed by the screw threads forming a self-threaded closure.

3,690,504

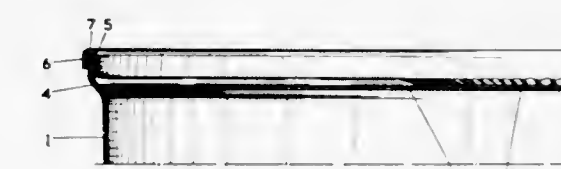
SHEET METAL CONTAINER

Christian Ragetti, Gockhausen near Zurich, Switzerland, assignor to Van Leer (U.K.) Limited, West Byfleet Weybridge, Surrey, Great Britain  
Filed Jan. 25, 1971, Ser. No. 109,110  
Claims priority, application Great Britain, Jan. 26, 1970, 3,580/70

Int. Cl. B65d 41/00

U.S. Cl. 220-42 C

5 Claims



A metal container having a lid which is secured to a top flange of the container by outward radial pressure. The lid



center panel is of frusto-conical configuration and the lid is secured to the container by axial pressure upon the center panel which forces the lid rim outwardly to tightly engage the container rim and permanently deform said rims.

3,690,505

# DEVICE FOR SEALINGLY CLOSING A METAL PRESSURE VESSEL

Willem Schoonman, Voorschoten, and Dijn Klan Oey, Rijswijk, both of Netherlands, assignors to Lummus Nederland N.V., The Hague, Netherlands

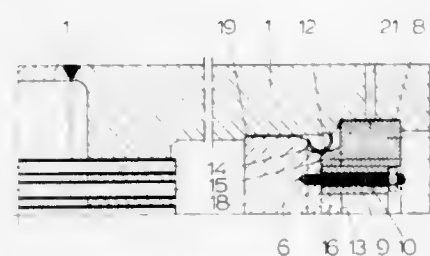
Filed Oct. 7, 1970, Ser. No. 78,667

Claims priority, application Netherlands, Apr. 7, 1970, 7004982

Int. Cl. B65d 53/00

U.S. Cl. 220—46 MS

6 Claims



A pressure chamber in a vessel is closed by a cover which is recessed in the vessel in abutment with a shoulder thereof and retained therein by a detachable support assembly. A semi-toroidal sealing member is received in an annular chamber formed by the cover, the support assembly and the inner wall of the vessel and the sealing member opens outwardly and one circumferential edge of the sealing member is welded to the cover and the other circumferential edge is welded to the inner wall of the vessel. The support assembly is constituted by a subdivided annular member partially received in a circumferential recess in the wall of the vessel and an annular inner locking member within the subdivided member and detachably secured to the cover.

3,690,506

# EASY OPEN CONTAINER WITH PRESSURE RELEASE AND SAFETY FEATURE

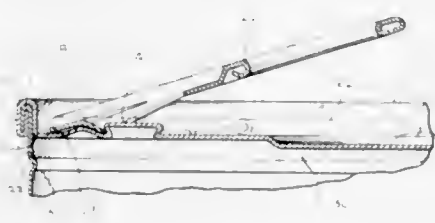
James E. Kennedy, Spanish Fort, Ala., and Melvin A. Koboldt, St. Louis, Mo., assignors to Container Corporation of America, Chicago, Ill.

Filed April 26, 1971, Ser. No. 137,453

Int. Cl. B65d 17/20

U.S. Cl. 220—54

4 Claims



Surging of the granular contents of a container at a pressure greater than ambient and having an end closure provided with a weakened score line and an opening device cooperating with the closure is prevented by a diaphragm disposed below the closure and above the container contents. The container closure is of the type that when a closure area defined by a weakened score line is removed, a sharp edge remains adjacent the container flange. The diaphragm has a removable central portion defined by a weakened line having openings therethrough to equalize the pressure on both sides of the diaphragm. When the closure area is removed, the openings in the diaphragm gently release the pressure in the container to prevent surging of the granular contents. The diaphragm has a removable center section defined by the weakened line and said openings for removal of the contents. The locus of the

weakened line is inboard of the sharp edge, and upon removal of the center section, the remanent portions of the diaphragm serve as a shield for the sharp edge.

3,690,507

# PROFIED BOTTOM WALL FOR EXTRUDED AND WALL IRONED CANS

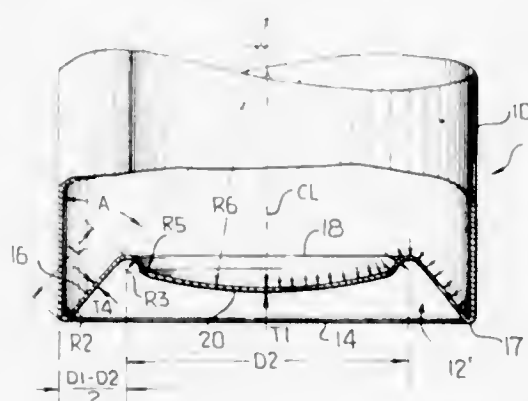
Walter J. Gallus, Chicago, and James R. Hoenig, Tinley Park, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed April 28, 1970, Ser. No. 32,526

Int. Cl. B65d 7/42

U.S. Cl. 220—66

9 Claims



A profiled bottom wall for drawn, extruded and/or wall ironed cans having improved resistance against buckling under the internal pressure of a packaged medium. The profiled bottom wall includes an annular chime projecting inwardly and upwardly from the body wall which terminates in an annular bead. The construction is such that a 50 percent increase in resistance to buckling is achieved as compared to conventional bottom walls.

3,690,508

Patent Not Issued For This Number

3,690,509

# HYGIENIC MOUTH PROTECTORS

George H. Kinolan, and Jeri Zuljvech, both of Fresno, Calif., assignors to George H. Kinolan and Jeri Zuljvech

Continuation of Ser. No. 669,766, Sept. 22, 1967, abandoned,

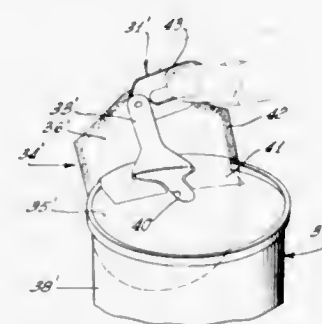
which is a continuation-in-part of Ser. No. 512,744, Dec. 22, 1965, abandoned. This application July 7, 1969, Ser. No.

845,629

Int. Cl. A47g 19/22

U.S. Cl. 220—90.6

5 Claims



A container which has a dispensing opening, the immediate adjacent areas of which are often placed in contact with a human consumer's mouth, said container having a cover over said area of contact, said cover being hygienically bonded to said container to protect the area of contact from being contaminated, said cover having sufficient tear-strength to overcome said bond so that the cover can be integrally removed by

breaking the bond, e.g., by manually pulling the cover away from the container. If the particular container is metal it is often desirable to provide the container with a plastic layer which is located between the cover and the area where the user's mouth would contact the metal in order to prevent the sometimes objectionable metallic taste.

3,690,510

# CONVEYING ROD FOR VENDING MACHINES

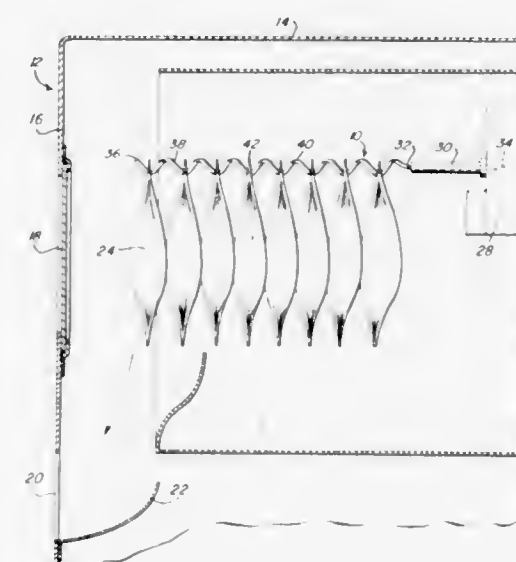
James M. Deaton, Conway, Ark., assignor to Vendmart, Inc.

Filed May 10, 1971, Ser. No. 141,587

Int. Cl. G07f 11/52

U.S. Cl. 221—75

8 Claims



A dispensing device for articles supported thereon in the form of an elongated rod rotatably supported and driven at one end thereof with the rod being constructed in a symmetrical zig-zag or serpentine configuration to provide, in effect, a step rod utilized to hold, convey and dispense any object or product which can be supported, hung or attached thereto such as by means of a hole, hook or the like so that as the rod rotates the articles will be conveyed along the rod in a step-by-step manner and discharged from a free end of the rod with one article being discharged for each 360° of rotation thereof. The step rod has primary utility in vending machines but may also be employed wherever movement or conveyance of items is desired.

3,690,511

# CONVEYOR BELT SPACER FOR POTATO PLANTERS

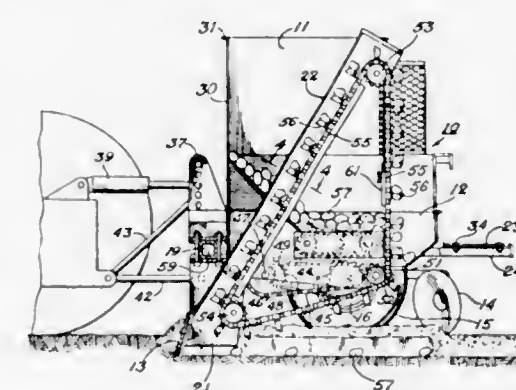
Jack H. Wigham, 4206 N. E. 15th St., Amarillo, Tex.

Filed Aug. 17, 1970, Ser. No. 64,402

Int. Cl. A01c 9/02

U.S. Cl. 221—174

3 Claims



A conveyor belt, sometimes referred to as a cell-belt, in the bottom of the bin of a potato planter having a cup conveyor chain driven by a sprocket on a cup conveyor drive shaft. The conveyor belt is intermittently advanced with seed potatoes

thereon to a hopper where the seed potatoes are picked up by the regularly spaced cups on the cup conveyor chain and are thereafter deposited in a furrow in the earth. The means for intermittently advancing the belt is a cam-like action comprised of a sprocket contacted by a revolving arm on a shaft which is indirectly turned by the wheels supporting the planter.

3,690,512

Patent Not Issued For This Number

3,690,513

# APPARATUS FOR SUPPLYING FLOWABLE MATERIAL

Harald Strohmeier, Kapfenberg, Austria, assignor to Gebr. Bohler & Co. A.G., Kapfenberg, Austria

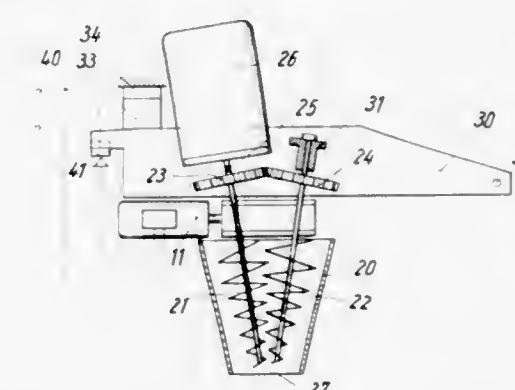
Filed Feb. 3, 1971, Ser. No. 112,376

Claims priority, application Austria, Feb. 10, 1970, 1173

Int. Cl. B67d 5/08

U.S. Cl. 222—55

8 Claims



Flowable material is supplied to a feed hopper. Feeder screw means disposed in said feed hopper are operated to force said material out of said hopper and to exert a thrust which varies with the amount of flowable material in said hopper. The supply of additional flowable material to said hopper is controlled in response to said thrust.

3,690,514

# INITIALLY SEALED CLOSURES WITH SEALING STRUCTURES

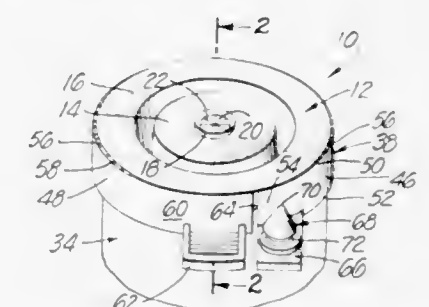
Woodrow S. Wilson, Slatersville, R.I., assignor to Polytox Corporation, Slatersville, R.I.

Filed Aug. 24, 1970, Ser. No. 66,263

Int. Cl. B67b 7/24

U.S. Cl. 222—81

5 Claims



An initially sealed closure having a top, sealing means for forming a seal against a container neck and means for engaging such a neck so as to hold the sealing means in a sealed relationship with the neck can be formed with an initially sealed dispensing opening, an integral strap capable of being partially severed from the closure and a subclosure carried by the strap. With this structure the strap can be partially broken away from the remainder of the closure so that the subclosure can be used to close the opening.

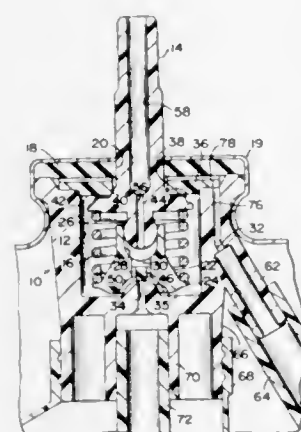


### 3,690,515 CO-DISPENSING VALVE

Ronald F. Ewald, Rolling Meadows, Fla., assignor to Seaquist Valve Company, Division of Pittway Corp., Cary, Ill.  
Filed Dec. 16, 1970, Ser. No. 98,684  
Int. Cl. B65d 83/14

U.S. Cl. 222-136

13 Claims



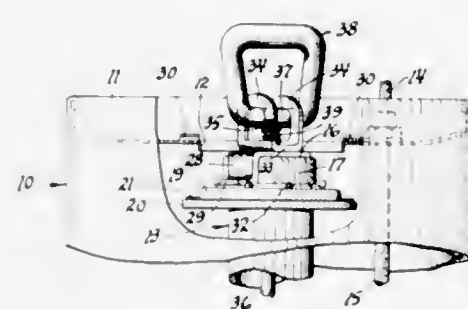
An aerosol valve designed to either selectively or simultaneously dispense one or more ingredients from a pressurized container. The ingredients are separately stored and are intermixed only immediately prior to being dispensed. The valve includes first and second sealing means wherein flow of the ingredients from separate compartments to a blending chamber is regulated.

### 3,690,516 COMBINATION CAP AND PUMP FOR SPRAYER APPARATUS

Vincent Santarelli, 27551 Gail, Warren, Mich.  
Filed Dec. 4, 1970, Ser. No. 95,177  
Int. Cl. B67d 5/40

U.S. Cl. 222-340

6 Claims



A pressure container having an upper horizontal wall and an oblong access opening which is adapted to be enclosed by a dual-purpose oblong cover disposed inside of the container upper wall. The cover is provided with a locking member pivotally mounted thereon for movement to a locking position with the outside of the container upper wall, and for movement to an unlocked position to release the cover for removal from the container. A pump is attached to the inner side of the cover and it is provided with a piston rod which extends outwardly through the cover and a pump operating handle is attached to the outer end of the piston rod. A retaining means is carried on the locking member for retaining the pump handle in a position locked against axial movement, whereby the pump handle may be used to rotate the locking member between the locking position and the unlocked position when the pump is not being used.

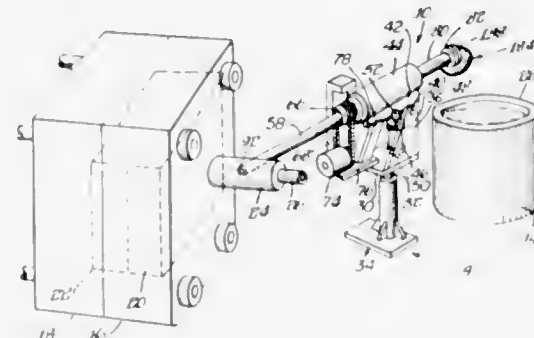
### 3,690,517 AUTOMATIC LADLER

Richard J. Ott, Baroda, Mich., assignor to Respond Inc., Baroda, Mich.  
Continuation-in-part of Ser. No. 725,466, April 30, 1968, Pat. No. 3,556,354. This application Dec. 15, 1969, Ser. No. 885,232

U.S. Cl. 222-358

Int. Cl. B22d 41/04

7 Claims



There is disclosed an automatic ladler for delivering measured quantities of molten metal to a die casting machine, which ladler comprises a ladle adapted to be completely filled and then rotated a predetermined amount for pouring out a measured quantity of the molten metal.

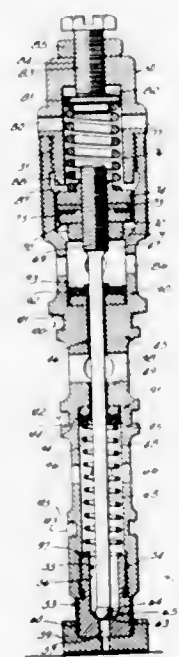
### 3,690,518 MODULAR APPLICATOR SYSTEM

Robert G. Baker, Avon, and Samuel R. Rosen, Lorain, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio  
Continuation-in-part of Ser. No. 776,177, Nov. 15, 1968, Pat. No. 3,570,725. This application Nov. 13, 1970, Ser. No. 89,381

U.S. Cl. 222-504

Int. Cl. G01f 11/06

27 Claims



A fluid operated system of modular guns for extruding or spraying liquids such as molten adhesives. The system includes multiple guns in the form of readily removable cylindrical modules that mount in apertures of a fixed service block or manifold which receives the supply lines for the liquid and the gun operating pressurized fluid. The service block and guns have passages which register when the system is assembled whereby the guns may be easily removed from the fixed service block and replaced without disconnecting any fluid lines or other service equipment.

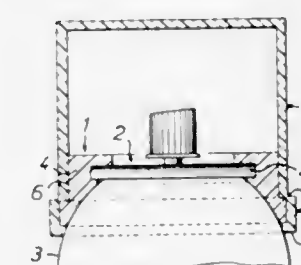
### 3,690,519 CLOSURES FOR CONTAINERS

Victor Wassiljeff, 84, Rue de l'Assomption 75, Paris, France  
Filed Jan. 12, 1970, Ser. No. 2,061

Claims priority, application France, Jan. 24, 1969, 6901450; Sept. 16, 1969, 6931454  
Int. Cl. B65d 83/14

U.S. Cl. 222-402.13

26 Claims



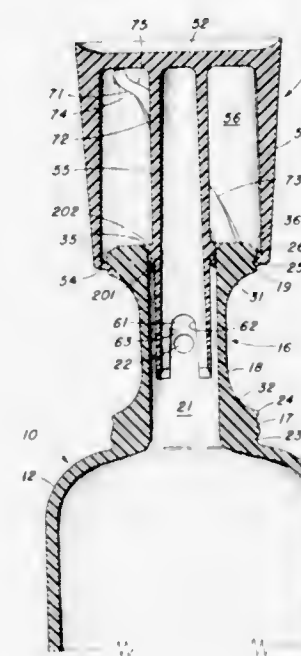
A safety closure for a container, e.g. an aerosol can, has a cap which covers the operative end of the can. An intermediate element is secured to the open end of the can and a breakable warranty tie or link immobilizes the cap relative to the intermediate element to ensure that the container and its contents are tamper-proof prior to sale.

### 3,690,520 PUSH-PULL CONTAINER AND CAP ASSEMBLY

Samuel E. Sarris, 162-01 87th Road, Jamaica, N.Y.  
Filed June 26, 1970, Ser. No. 50,225

Int. Cl. B65d 25/40  
U.S. Cl. 222-499

22 Claims



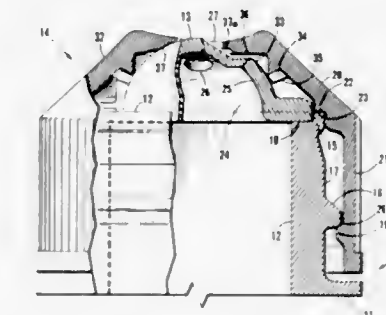
A material dispensing container provided with an elongated neck having a dispensing orifice in the side thereof and engaging means on the upper and lower portions thereof. The cap of the container has a plunger which extends into the neck of the container and an outer portion which fits over the container neck. The lower extremity of the outer portion of the cap is provided with an inwardly extending peripheral engaging lip which cooperates with the upper and lower engaging means of the neck of the container in open and closed positions, respectively. The upper portion of the neck and the interior surface of the cap are provided with male and female parts which cooperate with each other to guide the cap, in movement between closed and open positions in a twisting axial path, thereby facilitating release of the cap lip from the lower engaging means.

### 3,690,521 CONTAINER INCLUDING A ROTATABLE SPHERICAL VALVE WITH RING DRIVER GEAR TEETH

Edward B. Middleton, 245 Forest Hill Drive, Kitchener, Ontario, Canada  
Continuation-in-part of Ser. Nos. 35,673, May 8, 1970, and Ser. No. 133,180, April 12, 1971. This application May 28, 1971, Ser. No. 147,890  
Int. Cl. B67d 3/02

U.S. Cl. 222-507

7 Claims



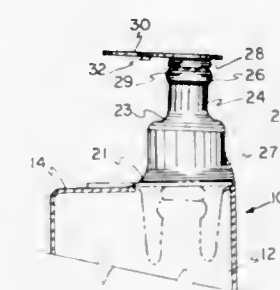
The following specification describes a valved container comprising a rotatable cap part, a valve member having spherical surfaces moveable through a limited range of rotation between registry of its orifice with an aperture in the cap to define an open position and a closed position at which spherical surfaces of the valve member form a seal with concave sealing surfaces of the cap, the cap containing a ring driver gear teeth on the valve member and the valve member being supported in saddle sockets in the container spout in such manner that tensioned locking means holding the cap in assembly with the spout develops the sealing pressure required, the components being adapted for automatic assembly in the inverted position.

### 3,690,522 CONTAINER WITH RECLOSABLE, COLLAPSIBLE POURING SPOUT

Walter K. Chlystun, 327 St. James Drive, Spartanburg, S.C.  
Filed Oct. 15, 1970, Ser. No. 81,074

Int. Cl. B67d 3/00  
U.S. Cl. 222-529

11 Claims



A container is disclosed having a collapsible pouring spout in the top portion thereof. The pouring spout may be separate from or integral with the top wall and is collapsible to a nested position through an opening in the top wall. The pouring spout has a cover means associated with the top thereof and the cover means has a member integral therewith that is removably secured to a portion of the pouring spout. A weakened tear line around the integral member permits the cover to be torn away from the top of the pouring spout at the end of the movement of the spout as it is being withdrawn to its extended position. After severing of the cover from the pouring spout, the member integral with the cover means now provides a member for friction or snapping engagement with the top of the pouring spout so as to facilitate reclosing thereof. Also, a container is disclosed having a separate withdrawal means and cover means.



3,690,523

**CONTAINER FOR FLOWABLE CONTENTS**

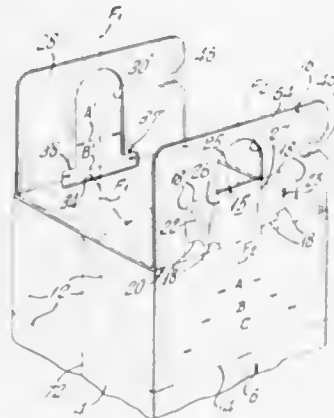
Martin Link, North Brunswick, N.J., assignor to Johnson &amp; Johnson

Filed June 3, 1971, Ser. No. 149,676

Int. Cl. B67d 3/00; B65d 5/10, 5/46

U.S. Cl. 222-538

7 Claims



A container for transporting and administering flowable contents is provided with a closure comprising two panels and a closure device for positively locking the panels together. The closure device comprises an aperture having a narrow and a wide section in a first panel and an aperture-cooperating tab, hinged to a second panel. The dimensions of the tab are scaled, relative to the dimensions of the aperture, to provide the positive locking feature of this invention. The container is further provided with means for readily observing the contents level therein without the necessity for opening the closure device, these means comprising viewing orifices in one sidewall and light-admitting orifices in an opposing sidewall to provide a satisfactory level-viewing background, these orifices being so oriented on each of the respective sidewalls as to preclude substantial weakening thereof.

3,690,524

**MOUTHPIECE FOR A PLASTICS MATERIAL BAG, PACKET, RECEPTACLE SACHET OR THE LIKE**

Karl Haberbauer, Grunstadt, Germany, assignor to Thimonnier &amp; Cie, Lyon, Rhone, France

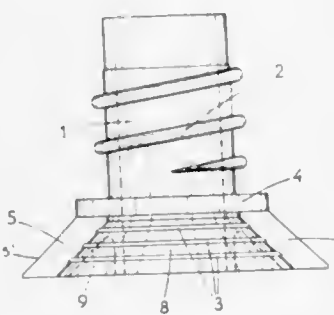
Filed April 14, 1970, Ser. No. 28,455

Claims priority, application Germany, Apr. 26, 1972, P 19 21 349.1; Jan. 7, 1970, P 20 00 532.7

Int. Cl. B65d 25/42, 35/38

U.S. Cl. 222-573

8 Claims



A mouthpiece for dispensing the contents of a container, made from heat-sealable plastic sheet material, has a tubular body divided by a peripheral collar into an upper and a lower portion. The lower portion, which may be cylindrical or frustoconically diverging, carries a pair of diametrically opposite wings whose outer lateral edges diverge downwardly from the periphery of the cells so as to define a trapezoidal outline.

3,690,525

**SUPPORT FRAME FOR USE WITH AN INFANT'S CAR SEAT-BED ASSEMBLY OR AS A SHOULDER SUPPORTED PACK CARRIER**

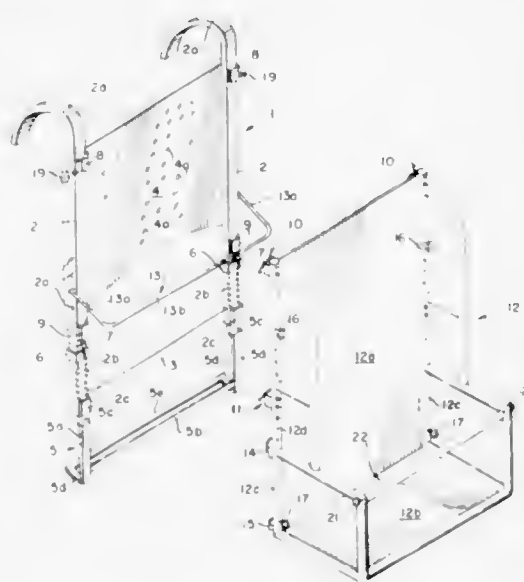
Albert Eugene Koons, Proctor Star Route, Williamsport, Pa.

Filed Dec. 23, 1970, Ser. No. 101,043

Int. Cl. A46f 4/02

U.S. Cl. 224-9

11 Claims



A support frame for use with an infant's car seat-bed assembly or as a shoulder supported pack carrier, the support frame including hook portions at one end thereof adapted to engage the upper edge portion of the back of a car seat when used with an infant's car seat-bed assembly, or on the shoulders of a person when used as a pack carrier; the opposite end of the frame having a detachable hook member adapted to engage the lower edge portion of the back of a car seat, the frame also includes socket members adapted to selectively receive portions of hinge members mounted on an infant carrier whereby the infant carrier may be supported on the frame as a seat or as a bed; a bail being pivotally connected to the support frame and adapted to support the infant carrier in various inclined positions when mounted on the support frame as an infant's car seat.

3,690,526

**LUGGAGE CARRIER**

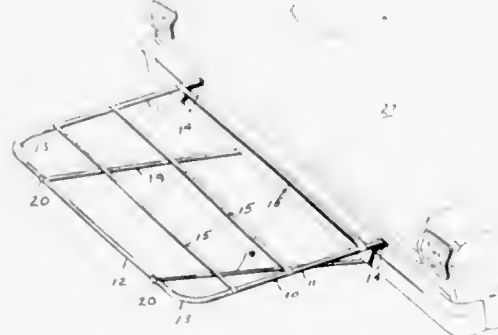
Albert A. Rundel, R.D. #1, Saegertown, Pa.

Filed Jan. 7, 1971, Ser. No. 104,707

Int. Cl. B60r 9/00

U.S. Cl. 224-42.07

3 Claims



The specification discloses a luggage carrier made up of a generally U-shaped frame. The frame has two spaced legs with a hook on the front which hooks over the bumper of an automobile. Two braces are attached to the cross member of the U-shaped member and the front portion of the braces is received on fastening means welded to the under side of the car frame. The cross members provide a supporting surface

for carrying articles, boats and the like. A platform may be supported on the frame.

3,690,527

**ARTICLE HANDLING APPARATUS AND METHOD**

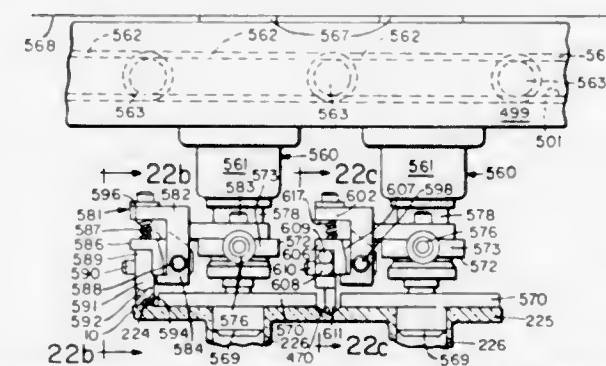
Daniel J. Bustraan, 273 Orchard Drive, Big Flats, N.Y.; Mijo A. Gossie, 216 Seneca Street; Roy N. Sundstrom, 18 Upper Drive, both of Corning, N.Y., and William R. Wisner, 413 Antler Road, Big Flats, N.Y.

Filed Oct. 20, 1970, Ser. No. 82,466

Int. Cl. B26f 3/00

U.S. Cl. 225-4

10 Claims



A substantially continuous ribbon of a thermoplastic material supporting a plurality of depending and equally spaced-apart articles or bodies and moving in a generally linear direction through a first path of travel at a relatively high rate of speed is periodically fractured at equally spaced-apart points along the length thereof to successively provide a series or succession of ribbon lengths each supporting an equal number of the pendent articles, and successive ones of the ribbon lengths are handled and delivered to ribbon-length receiving and transfer means without contacting any of the pendent articles or bodies of such ribbon lengths. The thermoplastic ribbon may, for example, be a ribbon of a glassy material from which the pendent articles or bodies are integrally formed by glass forming apparatus while the ribbon moves through said first path of travel, and the apparatus for fracturing, handling and delivering the ribbon lengths includes a plurality of ribbon-length pickup devices which are located in a second path of travel generally collinear with said first path of travel and each of which are alternately moved and actuated by cam means to follow and pickup successive ones of the moving ribbon lengths, move each length into clearance of the next following ribbon length, and deliver each picked-up length to said ribbon-length receiving and transfer means.

3,690,528

**WATCHCLOCK TAPE STORAGE UNIT**

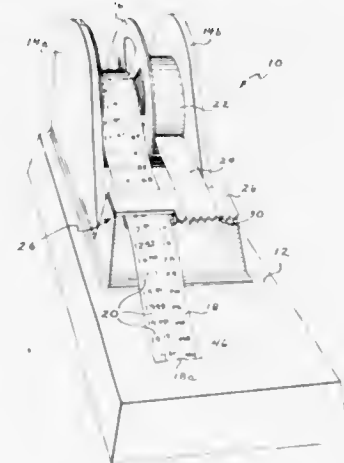
Richard J. O'Connor, Paxton, Mass., assignor to Pinkerton's Incorporated, New York, N.Y.

Filed Nov. 20, 1970, Ser. No. 91,483

Int. Cl. B26f 3/02

U.S. Cl. 225-37

9 Claims



An apparatus for storing marked watchclock tapes for subsequent inspection and verification. The marked tapes are

spooled onto a watchclock tape storage reel that is removably and rotatably held in the storage apparatus. The free end of the spooled watchclock tape is frictionally held to prevent inadvertent unwinding of the tape. A roll of pressure sensitive, adhesively coated tape is removably and rotatably held in the storage unit in side-by-side relationship with the watchclock tape storage reel. A serrated edged surface is provided for storage of the free end of the adhesively coated tape.

3,690,529

**CABLE DRIVE ASSEMBLY**

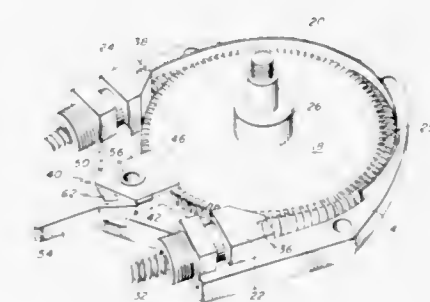
Robert J. Prest, Concord, Mass., assignor to Technical Operations, Incorporated, Burlington, Mass.

Filed June 11, 1971, Ser. No. 153,476

Int. Cl. B66d 1/76

U.S. Cl. 226-76

20 Claims



A cable drive assembly for driving a cable of the type having a helical wire winding includes a replaceable guide and wear strip which is captured by and between a pair of like half-housing members. A pair of bushings, also captured between the half-housing members, secure the ends of the wear strip. A novel drag brake assembly is also disclosed.

3,690,530

**YARN HANDLING APPARATUS**

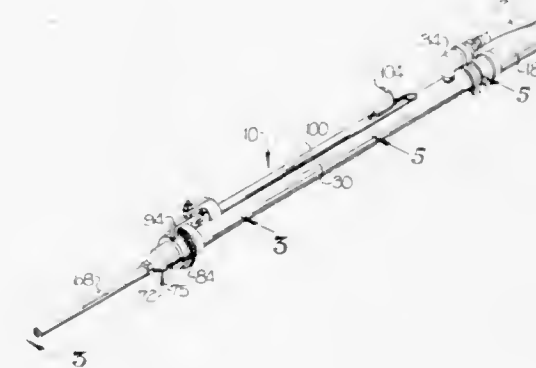
William D. Porter, Asheville, N.C., assignor to Northrop Carolina, Inc., Asheville, N.C.

Filed May 3, 1971, Ser. No. 139,663

Int. Cl. B65h 17/32

U.S. Cl. 226-97

10 Claims



A manually operable yarn handling apparatus adapted to initially pick up a running length of yarn and then pull the same at high speed and high tension. The apparatus includes a nozzle tube having an open forward end adapted to aspirate the yarn end thereinto, and an outlet tube coaxially aligned with the rear end of the nozzle tube to define an annular orifice therebetween. An air supply arrangement is provided for directing pressurized air through the orifice to create a suction in the nozzle tube, and means is provided for manually varying the spacing between the nozzle tube and outlet tube between a first position designed to aspirate the yarn end and a second position designed to tension the yarn.



3,690,531

## TAPE FEED APPARATUS FOR USE IN ELECTRO-MOTIVE TAPE CUTTER

Satoshi Tanigami, Tokyo, Japan, assignor to Elm Industry Co., Ltd., Tokyo, Japan

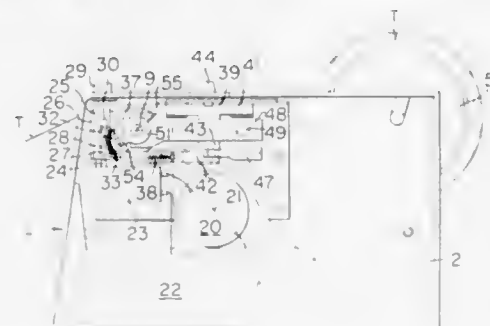
Filed July 1, 1971, Ser. No. 158,913

Claims priority, application Japan, July 25, 1970, 45/64735

Int. Cl. B65h 17/26

U.S. Cl. 226—136

6 Claims



A tape feed apparatus for use in electro-motive tape cutter which is characterized by such construction that; in the dent provided lengthwise on the upper part of a rectangular casing of the apparatus, there are provided a reel for adhesive tape supported by pivoting on the confronting walls of one end of said dent and a feed roll as well as a stripping roll disposed in a row and supported by pivoting on the confronting walls of the other end of said dent so as to make these rolls rotate simultaneously by means of a motor equipped within the casing; a tape adjusting roll is disposed above said stripping roll so as to make it move vertically; and, a pressing segment which functions to switch on or off the motor in concert with the vertical motion of the stripping roll is mounted on the wall of the casing so as to be vertically movable.

3,690,532

## DEVICE FOR INTERMITTENTLY TRANSPORTING ROLL FILM

Kaoru Umeda, Osaka; Kenjiro Ishii, Kanagawa, and Hiroshi Endo, Tokyo, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

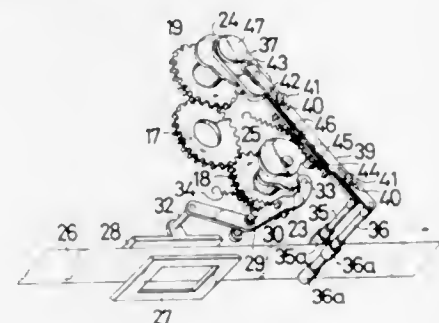
Filed April 12, 1971, Ser. No. 133,062

Claims priority, application Japan, April 16, 1970, 45/37280; May 20, 1970, 45/43578

Int. Cl. B65h 17/36

U.S. Cl. 226—149

4 Claims



A device comprises a pressure plate for pressing the roll film against an apertured plate under the control of a first cam to be driven in operative relationship with the rotation of drive means, clamp and transport members at least one of which is operated by a second cam to be driven in operative relationship with the first cam to clamp the roll film and which advance the film by a predetermined amount under the control of a third cam to be driven in similar operative relationship, and a mechanism for effecting a single turn of rotation for driving and stopping the first, second and third cams for every single frame transport of the film. The shape and timing of action of the first, second and third cams are so determined that the roll film is automatically advanced by only one frame when it is released from the pressure plate.

3,690,533

## FEEDING APPARATUS FOR WIRE AND LIKE ELONGATED MATERIAL

Otto Bihler, Halblech-Fussen, Germany, assignor to Otto Bihler KG, Halblech-Fussen, Germany

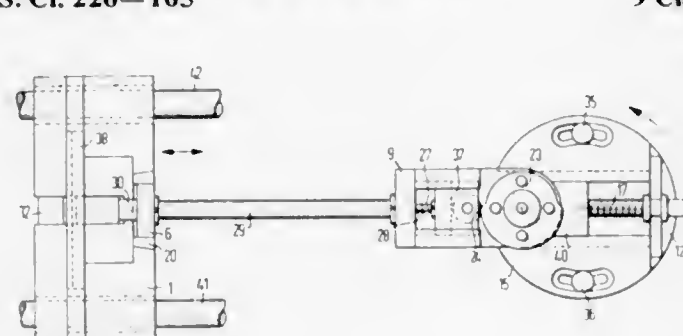
Filed July 1, 1971, Ser. No. 158,694

Claims priority, application Germany, July 8, 1970, P 20 33 940.6

Int. Cl. B65h 17/36

U.S. Cl. 226—165

9 Claims



Wire or like elongated material is fed forward in uniform increments by jaws mounted on a slide which is reciprocated in the direction of wire elongation by a crank drive. The jaws are opened and closed in synchronization with the slide movement by an operating member longitudinally slidable in the hollow connecting rod of the crank drive and carrying a cam follower which engages a radial cam fixed on the crank pin of the drive. Movement of the operating member is transmitted to one of the jaws by a wedge-shaped cam on the operating member engaging a cam follower on the movable jaw.

3,690,534

## CABLE HANDLING SYSTEM

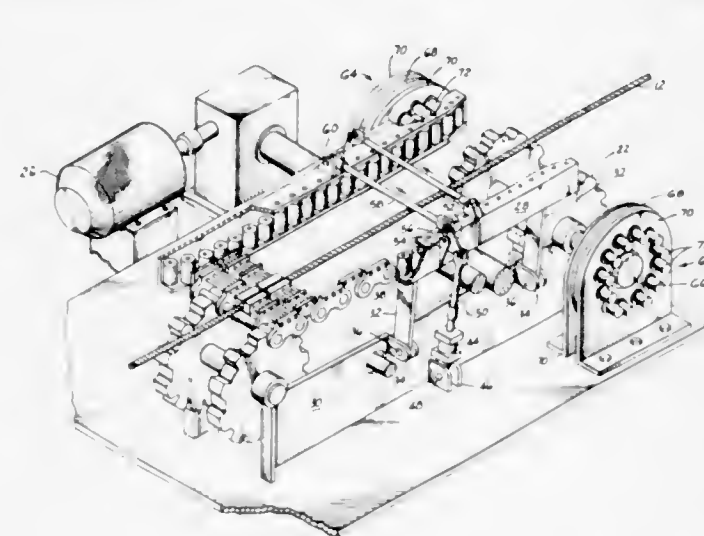
Jules N. Biron, 82903 Sharpview, Houston, Tex.

Filed Sept. 22, 1969, Ser. No. 859,641

Int. Cl. B65h 17/34

U.S. Cl. 226—172

13 Claims



A cable handling system including an endless chain with cable gripping members mounted thereon, a cam to engage and maintain the engagement of the gripping members with a cable, and release them from engagement with a cable, a drive for the endless chain, a brake and a cable storage bin.

3,690,535

## TAPE GUIDE DEVICE OF A TAPE RECORDER

Niro Nakamichi, Tokyo, Japan, assignor to Nakamichi Research Incorporated

Filed Nov. 30, 1970, Ser. No. 93,656

Claims priority, application Japan, Dec. 6, 1969, 44/116181

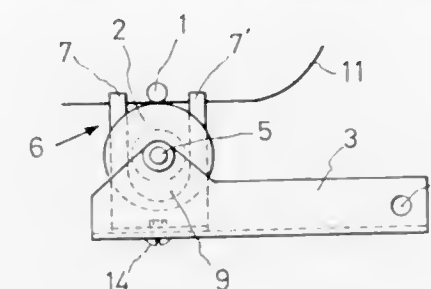
Int. Cl. B65h 17/20

U.S. Cl. 226—190

5 Claims

This invention relates to the tape guide device of a tape recorder; wherein the pinch roller is provided with two chan-

nels in its side face, the distance between said two channels being wider rather than the width of the magnetic tape, projections of said guide plate are put in said channels and the top ends of said projections keep the magnetic tape in the normal



position during operation. The guide plate for the magnetic tape can be arranged in a narrow space because the projections of the guide plate are put in the channels of the pinch roller.

3,690,536

## POWDER-ACTUATED TOOL

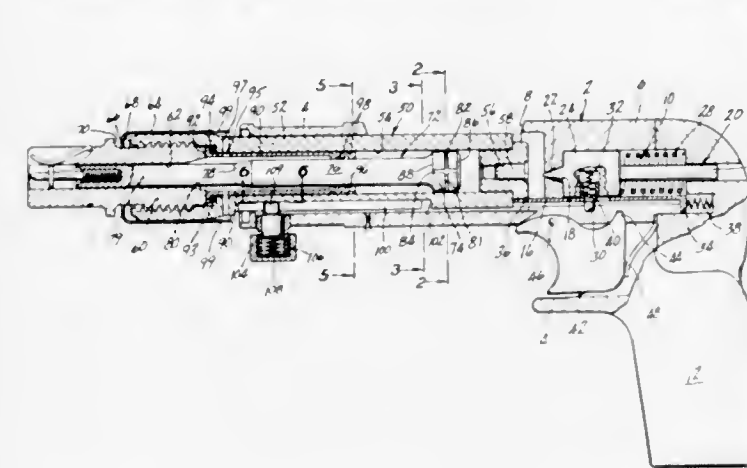
Andrew G. Bakoleidis, Clinton, Conn., assignor to Olin Corporation

Filed Dec. 7, 1970, Ser. No. 95,620

Int. Cl. B25c 1/14

U.S. Cl. 227—10

11 Claims



A power-actuated fastening tool of the type for driving fasteners by a propellant charge wherein a fastener driving member has an enlarged head portion. The head portion is so designed that a portion of the gases generated by the propellant charge may bleed from the rearward side to the forward side thereof to reduce recoil and buffer the fastener driving member. In addition, a specially designed piston member is provided for driving threaded fasteners wherein the piston has a bore extending into its forward end with the innermost portion of the bore being defined by a conical wall. The tool is so designed that power adjustment is obtained by positioning the piston member into its driving position by insertion of a fastener into the muzzle end of the tool. The barrel guide slot and pawl member are so designed that upon opening of the tool, there will be planar contact between the two members.

3,690,537

## STAPLE FORMING AND FASTENING APPARATUS

Lyman H. Turner, Pittsford; William P. Kukucka, Henrietta, and James E. Summers, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 9, 1970, Ser. No. 70,735

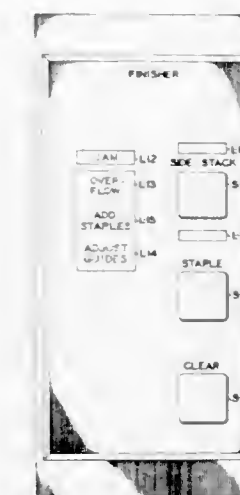
Int. Cl. B27f 7/10

U.S. Cl. 227—88

4 Claims

A staple forming and punch apparatus incorporating a punch member which is coupled to staple forming members for a predetermined interval during a drive stroke of the punch member which is then uncoupled to drive the formed

staple into a work piece. A staple feed finger is associated with the punch member to feed another staple into the path of the



punch member on the return stroke to ready the apparatus for another cycle. A control circuit energizes a solenoid to power the punch member during its drive stroke.

3,690,538

## BONDING TOOL

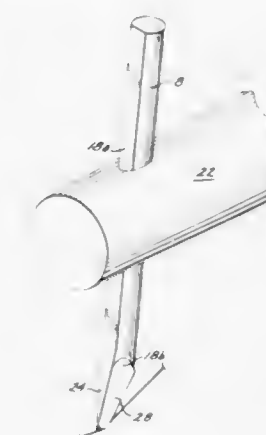
Edward L. Gaiser, Newport Beach, and Kenneth W. Ellett, Fountain View, both of Calif., assignors to Gaiser Tool Company, Santa Ana, Calif.

Filed Feb. 25, 1970, Ser. No. 13,869

Int. Cl. B23k 21/00; B23p 3/02

U.S. Cl. 228—3

6 Claims



This disclosure relates to tools for use in ultrasonic or thermocompression bonding devices for bonding fine wires on conductive materials, particularly semiconductor devices.

It is characterized by having a concave or cylindrical bonding surface which has an irregular or matte finish for firmly gripping the fine wire to be bonded. The tool is also formed with view relief cutouts on opposite sides of the tool adjacent the bonding surface to enable the operator to clearly view the target area at the bonding surface.

3,690,539

## HEAT AND AIR ACTION APPARATUS FOR

## ELECTRONIC CIRCUITRY REPAIRS

Joseph A. Geiger, 7258 Parkwood Court, Falls Church, Va.

Filed Sept. 25, 1970, Ser. No. 75,319

Int. Cl. B23k 11/00, 5/22

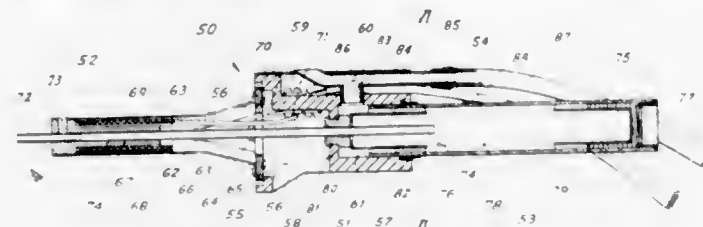
U.S. Cl. 228—20

32 Claims

A heat and air action apparatus for repairs on electronic circuitry capable of melting solder connections and of vacuum-collecting or air-jet-dispersing the melted solder or other air-entrainable matter, the apparatus including, in axial alignment, a heater, a central hub, and a barrel with an air connection. An air conduit links the hollow heater tip to the air connection, the conduit including solid-matter-separating means



in the form of either a trajectory trap or a container-shaped filter body, or both, arranged inside the barrel. The air connection is preferably at the hub-side of the barrel, including a finger-closable bypass opening. A more versatile embodiment

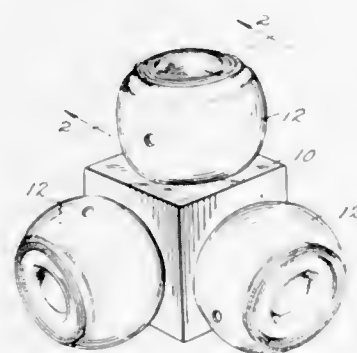


includes a finger-operable flow control valve for either a single air connection, or for separate air connections for vacuum and for pressure.

**3,690,540**  
**SHOCK ISOLATING DEVICE**  
James S. Hardigg, P.O. Box 89, Conway, Mass.  
Filed Feb. 5, 1970, Ser. No. 9,017  
Int. Cl. B65d 25/12

U.S. Cl. 229-14

21 Claims



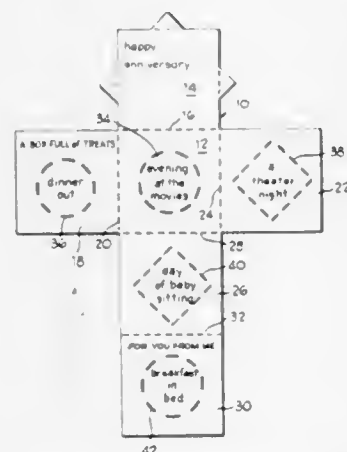
A plastic shock isolator element composed of a hollow toroidal-like body wherein its inside circumferential surface merges into a solid integral web centered upon and extending transversely to the axis of the toroidal-like body and its outside circumferential surface has an aperture which communicates with the interior thereof.

**3,690,541**  
Patent Not Issued For This Number

**3,690,542**  
**SIMULATED CONTAINER**  
Hans E. I. Jernstrom, 1635 Ferndale, Northbrook, Ill.  
Filed Oct. 20, 1970, Ser. No. 82,340  
Int. Cl. B65d 5/00

U.S. Cl. 229-30

10 Claims



A simulated gift box comprising a plurality of connected panels assembleable to form a simulated container, each panel

of the simulated container having at the inside thereof indicia indicating a surprise reward and easily separable reward certificate.

**3,690,543**  
**FOLDING CARTON**  
Charles R. Zeitter, Grand Rapids, Mich., assignor to Packaging Corporation of America, Evanston, Ill.  
Filed June 24, 1971, Ser. No. 156,362  
Int. Cl. B65d 5/10

U.S. Cl. 229-39

13 Claims

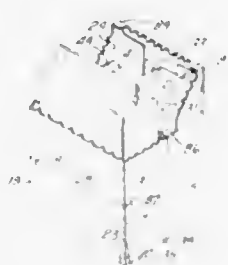


A folding carton is provided which is adapted to assume a collapsed tubular condition when in an unloaded condition. The carton is provided with bottom closure flaps which automatically assume a closed bottom-forming position when the collapsed tubular carton is set up for loading.

**3,690,544**  
**REDUCIBLE, RECLOSABLE CARTON**  
George Leroy Meyers, Winnebago, Wis., assignor to American Can Company, Greenwich, Conn.  
Filed May 5, 1971, Ser. No. 140,503  
Int. Cl. B65d 17/00

U.S. Cl. 229-51 TC

8 Claims



A reducible, reclosable carton blank which includes a tear-out portion extending across the top section of the front and side panels. After removal of this portion, the carton is reclosable at substantially reduced height, the top section of the rear panel now forming the new top wall and the original top wall now extending downward in overlapping relation to the front wall. The particular conformation of the tear-out portion results in a pair of male locking studs at the top wall front corners, which co-act with a pair of double, parallel slits running across the score lines between the front panel and two side panels. The slits form a push-in-step type of female locking slot.

**3,690,545**  
**CONTOUR BOTTOM BAG**  
Thomas E. Piazza, Mount Vernon, Ohio, assignor to Continental Can Company, Inc., New York, N.Y.  
Filed Nov. 27, 1970, Ser. No. 93,078  
Int. Cl. B65d 33/00

U.S. Cl. 229-57

6 Claims U.S. Cl. 235-70 R

12 Claims

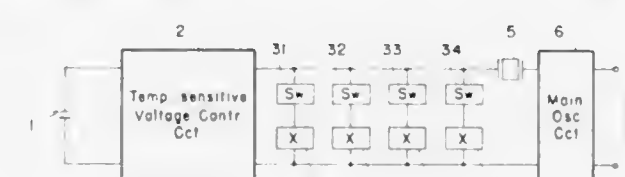


A side sealed bag particularly adapted for packaging a hand of bananas and a method of fabricating the same wherein a web of flexible heat sealable plastic film material is provided with a longitudinal gusset fold in which one of the inner faces of the gusset fold portion has a dimension transversely of the web which is substantially less than the corresponding dimension of the face of the oppositely disposed fold, the opposed faces of the fold portion are treated to prevent them from sealing to each other during the forming of bottom seams, the bottom seams or seals of adjacent bag sections are made by successive application of a V-shaped sealing and severing knife operating at spaced intervals along the folded web portion, and the bags are completed in flattened condition by sealing and severing the folded web on successive transverse lines extending across the web from the apex of each V-shaped cutout resulting from the application of the V-shaped bottom seam forming knife. The resultant bags, when opened up have a bottom of truncated triangular shape, and assume a curved contour corresponding substantially to the curved contour of the hand of bananas when filled with the latter.

**3,690,546**  
**TEMPERATURE COMPENSATING CIRCUIT FOR AN OSCILLATOR**  
Kiyoshi Uehara, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan  
Filed Jan. 6, 1971, Ser. No. 104,450  
Claims priority, application Japan, Jan. 13, 1970, 45/4165  
Int. Cl. H03b 5/32

U.S. Cl. 331-176

10 Claims

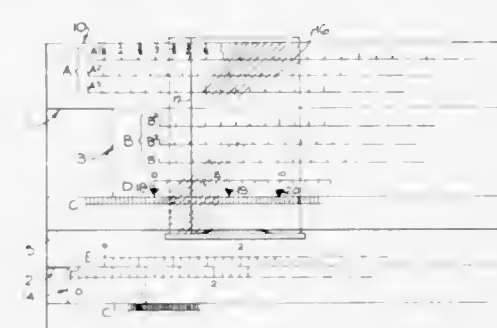


An automatic frequency control for a crystal tuned oscillator, comprising temperature sensitive means producing an output voltage varying in magnitude over a predetermined environmental frequency range, a crystal oscillator activated by the temperature means varying output voltage to provide a corresponding output frequency deviation over the predetermined environmental frequency range, and series diodes and capacitors or inductors to compensate for the oscillator output frequency deviation, wherein the diodes are biased to OFF states by different amounts of voltage to disconnect the capacitors or inductors from the crystal when the temperature means output voltage is less than the biasing voltage smallest amount and further wherein the diodes are activated in turn to ON states to connect the capacitors or inductors in turn with the crystal to maintain the oscillator output frequency deviation at substantially zero value over the predetermined environmental frequency range.

**3,690,547**  
**CALCULATING DEVICE**  
Stuart Eadon-Allen, Birmingham, England, assignor to Dollond and Aitchison Services Ltd., Birmingham, England  
Filed Oct. 6, 1971, Ser. No. 187,019  
Int. Cl. G06g 1/02

U.S. Cl. 235-70 R

12 Claims



A device for calculating the thickness of a blank which is required to make an optical lens of specified characteristics. The device provides for the specification of the front and back surface powers of the lens, the minimum thickness allowable in the finished lens, the effect of prism and the correction in the effective power due to the center thickness of a convex lens, each for a specified diameter of lens. The device may take either of two forms, a linear sliding calculator or a rotary disc calculator.

**3,690,548**  
**AIR DISTRIBUTION CONTROL**  
John C. McNabney, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.  
Continuation-in-part of Ser. No. 86,661, Nov. 4, 1970. This application March 16, 1971, Ser. No. 124,732  
Int. Cl. F24f 11/06

U.S. Cl. 236-1 C

7 Claims

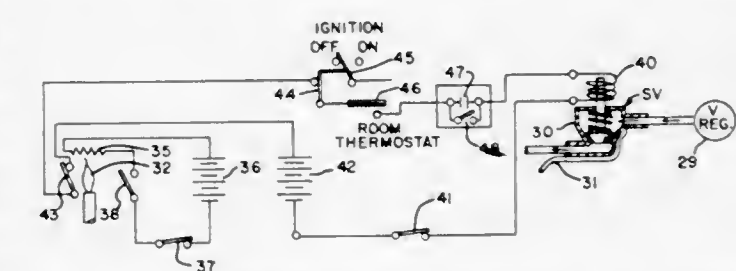


An apparatus and method for limiting the flow in a variable air volume distribution system in which a sensed differential pressure provides a signal to increase or decrease air flow. Further circuitry is provided to allow the flow limiting means to properly function with seasonal changeovers.

**3,690,549**  
**AUXILIARY HEATING SYSTEM FOR AUTOMOTIVE VEHICLES**  
Warren Frank Hardy, 9609 Dixie Highway, Louisville, Ky.  
Filed Jan. 27, 1971, Ser. No. 110,142  
Int. Cl. B60h 1/14

U.S. Cl. 237-2 A

6 Claims



An auxiliary heating system, composed of an auxiliary heater and automatic controls, is operatively mounted in an



automobile to heat the interior of the car and to maintain it at a predetermined above-freezing subnormal temperature of say 40° F. during engine shut-off periods in cold weather when the ambient temperature is at or below said predetermined temperature.

3,690,550

**PROCESS FOR TRANSPORTING THERMAL ENERGY**  
Friedrich Hilberath, and Hans Teggers, both of D 5047 Wesseling near Cologne, Germany, assignors to Union Reinische Braunkohlen Kraftstoff Aktiengesellschaft, Wesseling near Cologne, Germany

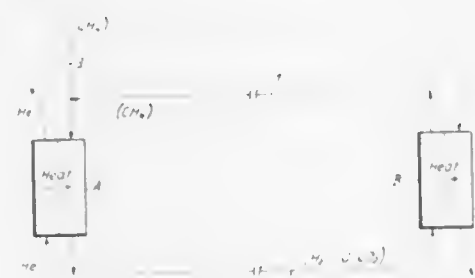
Filed Dec. 27, 1968, Ser. No. 787,334

Claims priority, application Germany, Jan. 16, 1968, P 16 92 253.5

Int. Cl. F24d 7/00

U.S. Cl. 237—81

6 Claims



Process for transporting thermal energy from the place where it is produced to the place where it is required for use by catalytic reforming of methane or natural gas, transporting the thus obtained gas mixture after cooling through pipe lines to the place where the energy is required for use, catalytically methanizing the gas mixture into methane and utilizing the heat liberated during this reaction in the manner required.

3,690,551

**RAIL-FASTENING DEVICES**

Wilhelm Munch, Rodenbecker Strasse 35, 4950 Minden, Germany

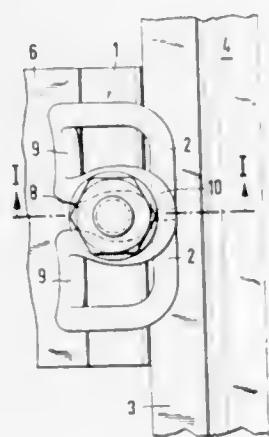
Filed Oct. 22, 1970, Ser. No. 83,136

Claims priority, application Germany, Oct. 27, 1969, 19540080

Int. Cl. E01b 9/48

U.S. Cl. 238—349

6 Claims



This invention relates to rail-fastening devices for fastening rails to mounting members such as ties or sleepers and of the kind where a bow-shaped clamp is elastically tightenable to hold the rail in position, a part or parts of the clamp resting on the tie or sleeper and another part of the clamp resting on the rail in such a fashion that one part of the clamp presses on the rail foot with a long spiral spring excursion positively to press the rail permanently in a downward direction. In accordance with the invention, one or more stiffly sprung parts of the clamp project over the rail foot and this part or parts on contacting the rail foot or on contacting other parts of the clamp that presses down the rail foot in a positive manner with a long

spring excursion, forms not only an elastic limitation of the tightening excursion against plastification of the clamp but also a stiffly sprung resistance to lifting and tilting movement of the rail.

3,690,552

**FOG DISPERSAL**

Ralph E. Plump, Hartford, Vt., and Robert M. Backiel, Richmond, Va., assignors to The United States of America as represented by the Secretary of the Army

Filed March 9, 1971, Ser. No. 122,500

Int. Cl. A01g 15/00

U.S. Cl. 239—2 R

8 Claims

The destruction of a warm fog is accomplished by dispersing through the atmosphere a sufficient quantity of low moisture, cellulose fibrous structure, such as small absorbent paper section, which may contain a hygroscopic agent, said structures functioning to absorb moisture and to collect water droplets as they descend through the atmosphere at a speed of not more than 4.0 feet per second.

3,690,553

Patent Not Issued For This Number

3,690,554

**MULTI-TIER FOUNTAIN NOZZLE**

John O. Hrubby, Jr., Burbank, Calif., assignor to Rain Jet Corporation, Burbank, Calif.

Continuation-in-part of Ser. Nos. 32,333, April 27, 1970,

abandoned, and Ser. No. 78,117, Oct. 5, 1970, Pat. No.

3,645,449, which is a continuation-in-part of Ser. No. 784,541,

Dec. 9, 1968, Pat. No. 3,558,053, Continuation-in-part of Ser.

No. 691,111, Dec. 8, 1967, abandoned, Continuation-in-part of

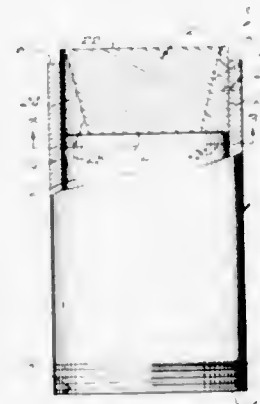
Ser. No. 492,389, Oct. 4, 1965, abandoned. This application

Dec. 30, 1970, Ser. No. 102,757

Int. Cl. B05b 17/08

U.S. Cl. 239—17

33 Claims



An ornamental fountain nozzle has no moving parts and includes a hollow body defining an internal chamber having a liquid inlet at one end thereof and an outlet opening at its opposite end. The communication between the chamber and the outlet end of the body is via grooves formed in a plug disposed across the outlet end of the body and having substantial length between its opposite end surfaces. The net area available for water flow out of the nozzle through the grooves is less than the area of the liquid inlet to the chamber.

3,690,555

**HYGIENIC UNIT**

Russell D. Johnson, 8912 Haskell, Sepulveda, Calif.

Filed Jan. 27, 1971, Ser. No. 110,125

Int. Cl. B05b 7/00

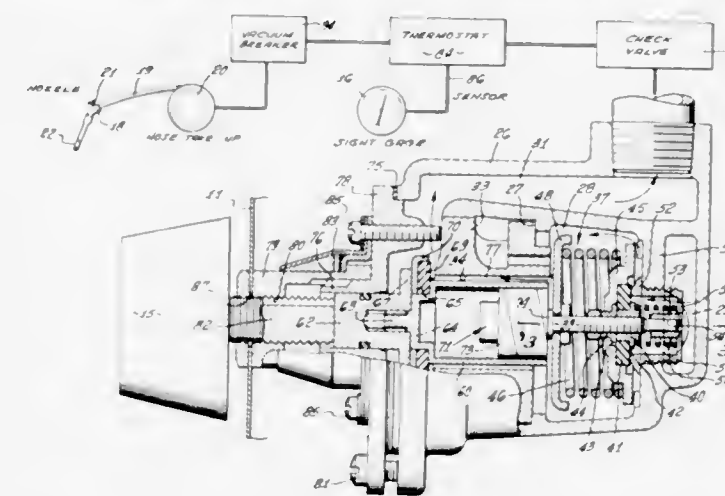
U.S. Cl. 239—61

2 Claims

A hygienic unit is provided for delivering water at a controlled temperature to a nozzle which provides a jet or stream

of water which can be applied by a person for cleansing or sanitary purposes to any part, organ, or cavity of the body. The unit includes a manual adjusting knob for initially setting a thermostatic motor which cooperates with a valve assembly for controlling a flow of hot water for mixing with a flow of

by passing a solvent therethrough to clean the mixture from the interior passages of the gun, and clean the outlet passages thereof by directing air and a solvent, under pressure,



cold water such as to provide a mixed flow of water having a selected temperature. The thermostatic motor then provides for repositioning the valve assembly as required to maintain the selected temperature of the mixed water being delivered by the hygienic unit.

3,690,556

**COMBINED FROTH-POUR SPRAY SYSTEM FOR RESIN FOAMS**

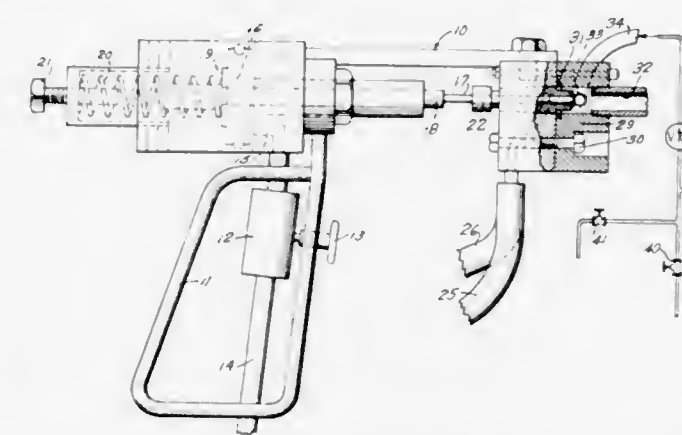
Samuel B. McCain, Bothell, Wash., assignor to Vertec Corporation, Inc., Kirkland, Wash.

Filed Dec. 7, 1970, Ser. No. 95,439

Int. Cl. B05b 15/02

U.S. Cl. 239—112

3 Claims



Apparatus for processing an organic resin froth from an airless-type spray gun employing an adapter which has a second mixing chamber coaxial with the spray axis of the gun, together with means for selectively introducing either a pressurized mixture of a physical blowing agent to create a froth from the material issuing from the spray gun or a solvent for cleaning the second mixing chamber at the conclusion of the spraying operation.

3,690,557

**PLASTIC FOAM SPRAY GUN WITH SUBSTANTIALLY INSTANTANEOUS CLEANING FEATURE**

James H. Higgins, 703 Meadow Dr., Burkburnett, Tex.

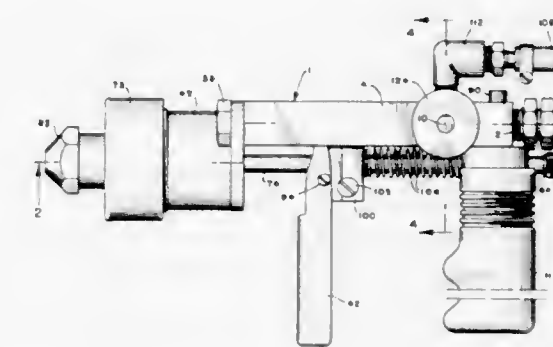
Filed July 29, 1971, Ser. No. 167,256

Int. Cl. B05b 15/02

U.S. Cl. 239—112

9 Claims

A plastic foam forming and spraying system which utilizes a spray gun that mixes resins and a catalyst in a mixing chamber substantially at the discharge end thereof. Provision is made for instantly cleaning the gun of the catalyst and resin mixture



therethrough. A special valving arrangement enables the valves to direct a solvent into the passages without permitting the fluid to come into contact with the threads.

3,690,558

**HYDRAULIC CLEANING DEVICE**

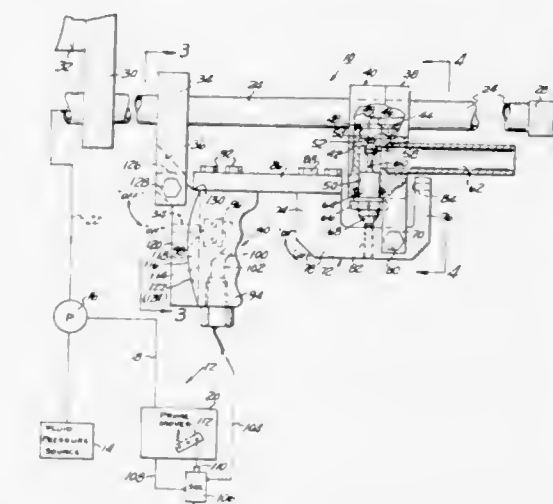
Phillip E. Tuttle, Port Huron, Mich., assignor to Federal Screw Works, Detroit, Mich.

Filed Feb. 5, 1971, Ser. No. 112,862

Int. Cl. B05b 9/00

U.S. Cl. 239—127

8 Claims



A hydraulic cleaning device in the form of a water gun, having a high pressure water nozzle for ejection of fluid under high pressure against a surface to be cleaned; the water gun has a two part pivotable handle assembly for manual control of the water gun; the grip portion of the handle controls the on and off water pressure through the jet nozzle and another portion of the pivotable handle assembly controls a dump valve having a by-pass outlet which dumps the fluid from the high pressure nozzle, when the handle is released.

3,690,559

**TRACTOR MOUNTED PAVEMENT WASHER**

Robert H. Rudloff, 3205 Los Felix, Los Angeles, Calif.

Filed Sept. 16, 1970, Ser. No. 72,671

Int. Cl. B05b 1/20

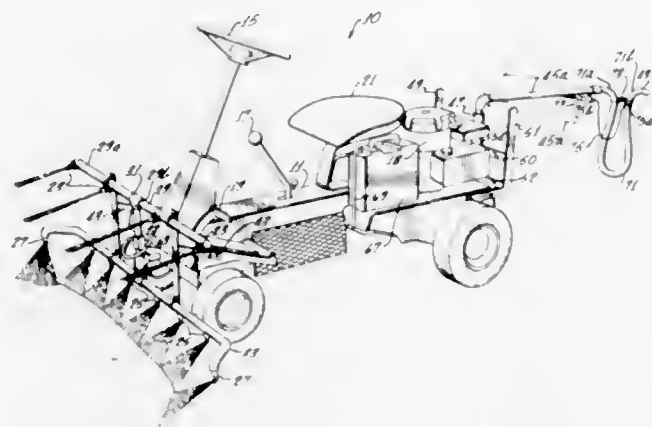
U.S. Cl. 239—163

15 Claims

Disclosed is a pavement washer having two sets of spray nozzles mounted on the front of a small tractor. Nozzles of the first set are aimed ahead substantially horizontally to throw a pattern of cleaning solution well ahead of the tractor, while the second set of nozzles are aimed sharply downward as well as forward to spray a pattern of water ahead of the tractor but



behind the cleaning solution. Also disclosed is an arrangement for connecting the tractor to a stationary source of water



through a hose wherein provision is made to shut off the ignition of the tractor before the hose is pulled taut.

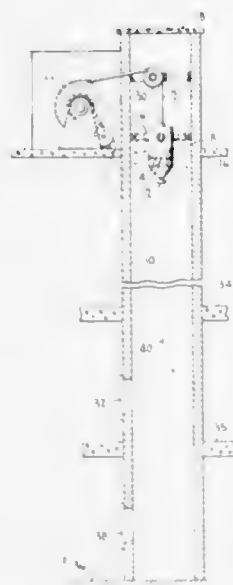
3,690,560

**CHUTE SANITIZER AND FIRE EXTINGUISHER**

John A. Boyd, 3314 Holloman Rd., Falls Church, Va.  
Filed April 22, 1971, Ser. No. 136,381  
Int. Cl. B65h 75/00

U.S. Cl. 239—195

9 Claims



An apparatus is disclosed for sanitizing as well as extinguishing fires in a rubbish chute. Both the sanitizer and fire extinguisher portions of the apparatus are vertically movable within an existing rubbish chute. For sanitizing purposes, the apparatus has a plurality of spray nozzles which are directed at the vertical walls within the rubbish chute. By moving sanitizing apparatus vertically through the rubbish chute, the interior walls can be sprayed with a sanitizing chemical. The fire extinguisher, being also vertically movable through the rubbish chute, can be positioned at a point above and close to a fire and, thus quickly extinguish any fires which might occur within the rubbish chute.

3,690,561

**THRUST CONTROLLING SYSTEM**

Earl B. Potter, El Cajon, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Nov. 5, 1970, Ser. No. 87,167

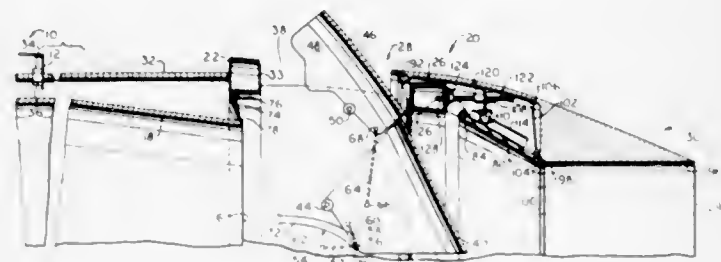
Int. Cl. B64c 15/04

U.S. Cl. 239—265.29

11 Claims

System includes a shroud surrounding a jet engine with a tail pipe extending rearward of the aft end of the shroud. A nozzle coaxial with the tail pipe is slidably mounted to the shroud for axial movement. In first, cruising, position the forward portion

of the nozzle overlaps the tail pipe and the forward end of the nozzle is adjacent to the aft end of the shroud to form a continuous streamlined body. The inner wall of the nozzle aft portion includes a forward section which conforms to the exit end of the tail pipe and converges rearward. The aft section is generally cylindrical but may be slightly convergent or divergent. The entire aft portion of the nozzle comprises front hinged petals which swing outward to increase the gas flow path area and also to form a convergent-divergent nozzle for afterburner operation. The nozzle slides rearward to second, reversing, position with its forward end adjacent to the exit



plane of the tail pipe. Lateral openings are exposed when the nozzle is moved axially rearward and the blocker doors are opened to form outflow passages for exhaust gas to produce reverse thrust. Blocker doors and deflector doors form parts of the inner and outer wall at the openings and are pivoted on transverse axes. Linkage anchored to the shroud swings blocker doors inward in response to rearward movement, and linkage between blocker doors and deflector doors swings latter in response to swinging of former. When deployed, the deflector doors form continuations of the blocker doors to guide the outflow beyond the contour of the nozzle.

3,690,562

**JET PROPULSION NOZZLE**

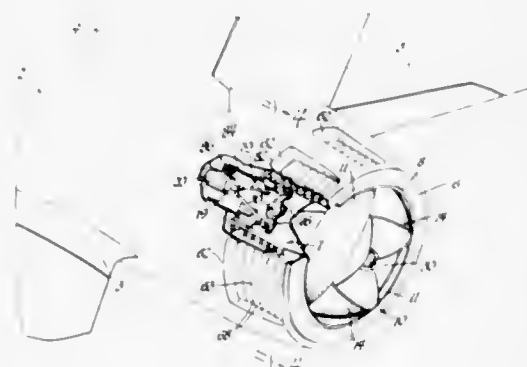
Charles H. Smale, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed June 23, 1971, Ser. No. 155,828

Int. Cl. B64c 15/04

U.S. Cl. 239—265.29

7 Claims



A variable area and reversing propulsion nozzle arrangement includes first and second sets of opposed valves or "eyelids" rotatable towards each other to reduce the area of the outlet of a jet pipe, the two sets of valves being rotatable about crossed axes. Reverse thrust outlets are disposed in the wall of the jet pipe between the axes of valve rotation, these including rotatable vane cascades which may close the outlets or direct the flow forwardly. The thrust reversing cascades and the area varying valves are coupled to common actuators, the arrangement being such that the reversing cascades begin to open only after the propulsion nozzle is partly closed.

3,690,563

**ASPIRATOR ASSEMBLY**

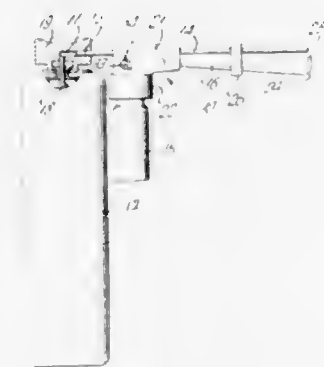
Allan P. Farrington, Englishtown, N.J. and Anthony J. Nastus, New Brunswick, N.J., assignors to Johnson & Johnson

Filed Jan. 18, 1971, Ser. No. 107,374

Int. Cl. B05b 7/30

U.S. Cl. 239—346

9 Claims



An aspirator assembly for use with a propellant gas source and small liquid containers is formed of such design that the same can be readily prepared by mass production, the same having a minimum of parts so that the cost can be kept low. The aspirator assembly is formed of two stainless steel tubes, one of which is adapted to conduct a propellant gas and the other of which is adapted to conduct the liquid to be sprayed. The gas-conducting tube, which has a gas-inlet end and a gas-outlet end, is a straight tube of somewhat larger diameter than the liquid-conducting tube. The liquid-conducting tube is more flexible than the gas-conducting tube and has two substantially right angle bends with one being near the liquid-entrance end and the other being near the liquid-exit end. The two tubes are positioned with respect to each other so that they lie in a single plane with their exit ends being in close relationship to each other and their entrance ends spaced apart the portion of the liquid-conducting tube which lies between the two bends being positioned at a slight angle with respect to the gas-conducting tube. The tubes are held in this position by molding a collar around the same, the collar completely covering the substantially right angle bend in the liquid-conducting tube which is located nearest its liquid-entrance end. By this construction the liquid-conducting tube is prevented from rotating with respect to the gas-conducting tube. Also, there is molded around the two tubes, in a position between the collar and the tube ends, a slide member which is adapted to slide along the tubes, such sliding moving the exit ends of the tubes relative to each other for regulating the spray pattern when in use. Both the positioning collar and the slide member can be molded simultaneously. They are preferably formed of polypropylene so that the aspirator assembly can be steam sterilized if desired.

In use the entrance end of the propellant gas-conducting tube is fitted into the gas-outlet opening of a conventional aerosol propellant can or some other suitable supply of gas. The two are held together by friction. The entrance end of the liquid-conducting tube is inserted into the mouth of a vial containing liquid to be dispensed. Preferably, the entrance end of the liquid-conducting tube is sharpened so that the same can pierce the covering diaphragm of a liquid-containing vial where such diaphragm is used. In such case friction between the resilient diaphragm and the liquid-containing tube holds the vial in place. Where the vial does not have a diaphragm cover the vial is opened and placed in a small container adapted to screw into a flange which is molded as part of the restraining collar.

3,690,564

**SEGMENTAL TORCH TIP FOR MIXING AND COMBUSTION OF GASES**

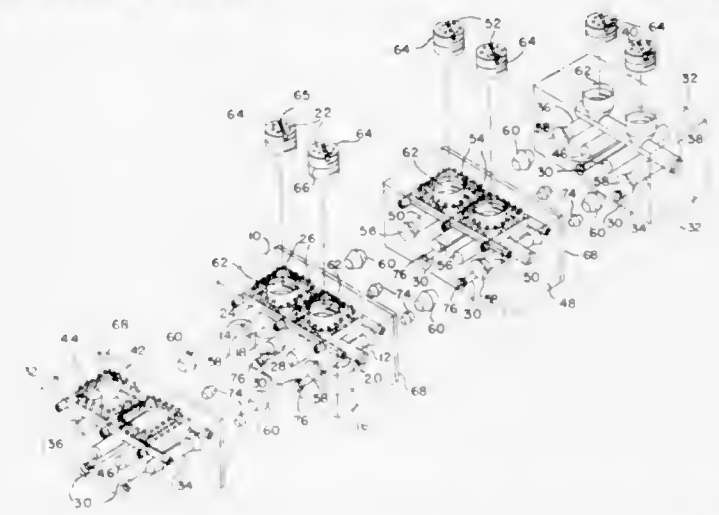
William J. Futerko, 19 Greenwood Ave., Butler, N.J.

Filed Aug. 16, 1971, Ser. No. 171,998

Int. Cl. B05b 7/06

U.S. Cl. 239—424.5

15 Claims



A segmental torch tip for mixing and combustion of gases whereby a plurality of segments are coupled together in fluid-tight relationship to provide a torch tip of variable size and shape. Each torch tip segment is provided with a plurality of gas passages that may be coupled in fluid-tight relationship with gas passages of each of the other segments, and the gases are supplied to the torch tip from sources via connections coupled to only one of the segments. A plurality of gas jet apertures are provided in fluid communication with the gas passage in each segment to permit mixing and combustion of the gases as they escape from the torch tip, and each of the segments may have one cross section of trapezoidal shape so that the torch tip forms an arc to permit concentration of flame and heat in a predetermined area.

3,690,565

**DIVERTER VALVE**

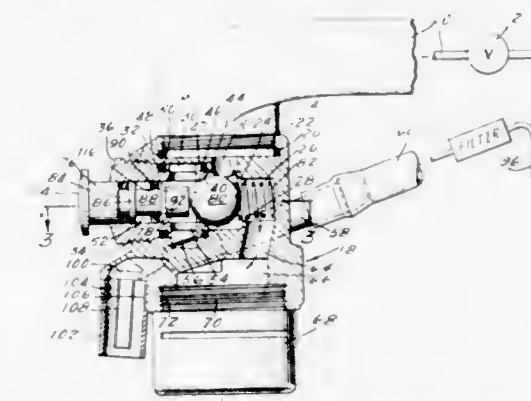
Ralph L. Abos, Whittier, Calif., assignor to Ecom-Systems, Inc., Reno, Nev.

Filed Jan. 7, 1971, Ser. No. 104,659

Int. Cl. B05b 1/14

U.S. Cl. 239—447

4 Claims



A diverter valve mechanism for selectively controlling the discharge of water from a faucet. There is a movable diverter valve which is manually actuated to effect diversion of the normal water flow from a faucet through a filter, from which the filtered water is returned to the faucet. The movable diverter valve is held by water pressure in the position for diverting water to the filter, as long as the manually operated faucet valve remains open. Upon closing of the manually operated faucet valve, spring pressure acts on the movable diverter valve to automatically return the movable diverter valve to the normal position whereat the unfiltered water is discharged from a faucet nozzle. A spring aids in moving the movable diverter valve to the normal position. There is a separate discharge nozzle for the discharge of filtered water.



### 3,690,566 FUEL INJECTION VALVE

Rudolf Krauss, Stuttgart, and Eugen Walch, Ditsingen, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

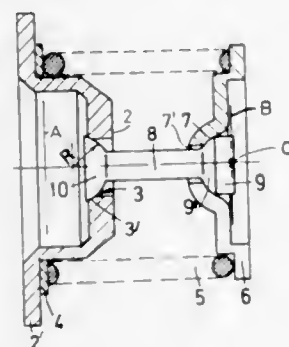
Filed Sept. 3, 1971, Ser. No. 177,551

Claims priority, application Germany, Sept. 28, 1970, P 20 47 588.1

Int. Cl. B05b 1/32

U.S. Cl. 239—453

6 Claims



In a fuel injection valve, in order to ensure alignment of the movable valve member with the longitudinal axis of the fuel injection valve, the length of a compression spring surrounding the movable valve member and urging the latter into a closed position, is substantially greater than the length of the movable valve member when the latter is in its closed position.

### 3,690,567 ELECTRIC ARC WELDING GUN HAVING A NOZZLE WITH A REMOVABLE METAL LINER TO PROTECT THE NOZZLE FROM WELD SPLATTER

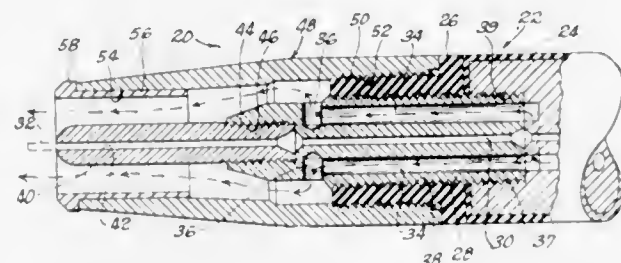
Lawrence A. Borneman, 411 W. Ethel Ave., Lombard, Ill.

Filed March 9, 1970, Ser. No. 17,361

Int. Cl. B05b 1/00

U.S. Cl. 239—591

15 Claims



The welding gun construction utilizes a nozzle member having an opening for directing an inert gas against the work to be welded. A tubular welding tip is disposed centrally within such opening to guide a welding wire toward the work. A welding arc is drawn between the work and the wire. A tubular metal liner is received within the opening to protect the nozzle member from weld splatter, which comprises molten metal globules thrown up from the welding area. The solidified weld splatter accumulates within the liner, which can be removed and disposed of as needed, before the weld splatter builds up to a thickness sufficient to cause a short circuit between the welding tip and the nozzle member. A new liner is then inserted into the nozzle. The liner is formed with a retaining element whereby the liner is held within the nozzle against accidental dislodgement. Such retaining element may take the form of an oval portion, one or more spring fingers bent outwardly from the liner, or a dimple portion formed by outward deformation of the liner. A pocket or tapered portion may be formed within the nozzle member to retain the outwardly projecting fingers or dimples. The liner may also be arranged for insertion into the nozzle from the rear, and may be retained in the nozzle by an outwardly projecting flange on the rear portion of the liner.

### 3,690,568 WOOD GRINDING

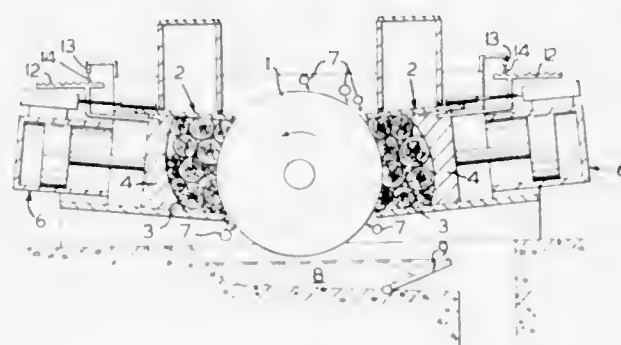
Donald K. Alexander, Thunder Bay, Ontario, Canada, assignor to Koehring-Waterous Ltd., Brantford, Ontario; Norton Company of Canada, Hamilton, Ontario; The Great Lakes Paper Company, Limited, Thunder Bay, Ontario, Canada; Montague Machine Company, Turners Falls and Norton Company, Worcester, Mass.

Filed Nov. 17, 1970, Ser. No. 90,340

Claims priority, application Canada, June 11, 1970, 085226 Int. Cl. B27 1/108

U.S. Cl. 241—15

14 Claims



Wood is ground by forcing the wood against a grinding wheel rotated by a source of power, cooling the grinding area with a flow of cooling fluid and maintaining the energy supplied by the source of power per unit weight of ground wood at a substantially constant value.

### 3,690,569 GRANULAR POLYTETRAFLUOROETHYLENE OF GOOD MOLDABILITY AND APPARENT BULK DENSITY

Glenn Frederick Leverett, Vienna, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 24, 1970, Ser. No. 75,235

Int. Cl. B02c 19/00, 23/00; C08f 3/24

U.S. Cl. 241—17  
Granular polytetrafluoroethylene is ground to a particle size of about 20–50 microns, and slurried in water at a temperature less than 40° C. to increase the apparent bulk density of the polymer without a substantial change to the moldability index and particle size thereof.

### 3,690,570 METHOD OF AND SYSTEM FOR CONTROLLING GRINDING MILLS

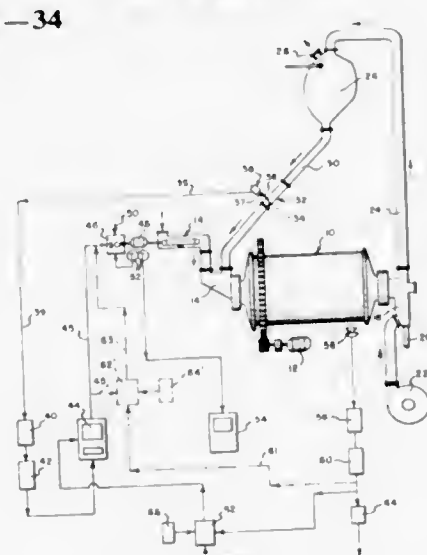
William Edward Root, Berwick, Pa., assignor to Kennedy Van Saun Corporation, Danville, Pa.

Filed Aug. 10, 1970, Ser. No. 62,570

Int. Cl. B02c 25/00

U.S. Cl. 241—34

6 Claims



A grinding mill system including a grinding mill, a motor driven feeder for supplying material to the feed end of the

mill, a classifier, means for carrying mill production in a gaseous stream, such as air to the inlet of the classifier for the separation of oversize material, a duct for returning oversize material to the feed inlet of the mill and means associated with the duct, including a rotary position transmitter responsive to variation in the rate of flow of oversize or reject material through said duct and means for controlling the feeder motor in response to actuation of the rotary position transmitter and variations in the rate of flow of reject material from the classifier to the feed inlet of the mill. The control system may include means such as a microphone responsive to variations in the sound of the mill.

### 3,690,571 APPARATUS FOR DISINTEGRATING AND SEPARATING MATERIAL IN FLUID SUSPENSION

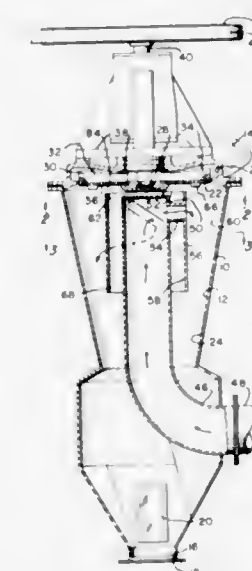
Oscar Luthi, and Rudi W. Schleinkofer, both of Nashua, N.H., assignors to Improved Machinery Inc., Nashua, N.H.

Filed May 12, 1971, Ser. No. 142,459

Int. Cl. B02c 13/14; B03b 1/00

U.S. Cl. 241—46 R

21 Claims  
frame and lifted as a unit thereby completely exposing the grindstone from above for easy replacement thereof.



Apparatus comprising a chamber containing a centrifugal pump arranged to pump material in fluid suspension to an accepts discharge, and a screen which limits the size of the material supplied by the pump to the accepts discharge and is rotatably driven to cause disintegration of coarse material in the suspension. Baffle means adjacent the screen feed face divide the chamber into communicating inner and outer portions, suspension being supplied to the screen through the chamber inner portion; and rotary vanes induce vortex flow of suspension in the chamber outer portion whereby heavy material is separated from the suspension by centrifugal separation.

### 3,690,572 TWO PRESS GRINDER CONSTRUCTED FOR EASY WHEEL REPLACEMENT

Helmut Thumm, and Willy Schleich, both of Heldenheim, Germany, assignors to J. M. Volth, GmbH, Heldenheim (Brenz), Germany

Filed Nov. 25, 1970, Ser. No. 92,584

Claims priority, application Germany, Dec. 6, 1969, P 19 61 309.3

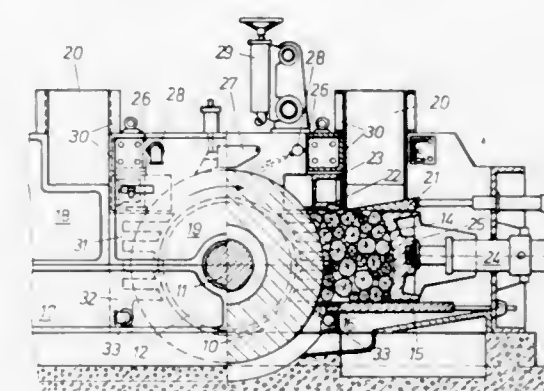
Int. Cl. B02c 19/00

U.S. Cl. 241—151

5 Claims

The specification discloses a two press grinder, especially for grinding wood, in which a grindstone, or grinding wheel, is supported on a horizontal shaft in the machine frame and between opposed press boxes which press the material, namely, wood, against the periphery of the grindstone to be ground thereby. According to the present invention, the frame of the machine is so constructed that the side walls of the frame, and

all operative parts of the machine disposed in the regions above the grindstone, can be detached from the machine



### 3,690,573 GYRATORY CRUSHER SECURING AND ADJUSTING MECHANISMS

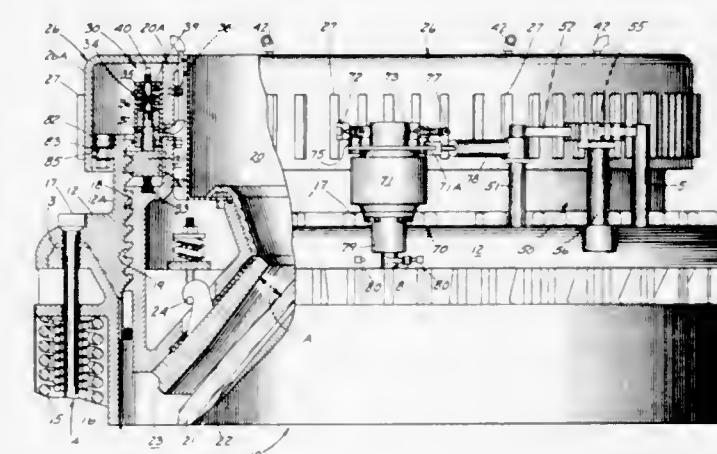
Don Kueneman, 6224 Estates Dr., and Cyril P. Kenville, 10 Wood Court, both of Oakland, Calif.

Division of Ser. No. 657,473, July 27, 1967, Pat. No. 3,539,118. This application Aug. 18, 1970, Ser. No. 64,804

Int. Cl. B02c 2/00

U.S. Cl. 241—207

2 Claims



Gyratory crushers, sometimes referred to as cone type crushers, often have a threaded connection between the bowl and the main crusher frame for adjusting the crushing zone by rotation of the bowl relative to the frame. This arrangement requires bowl rotating and locking mechanisms, as well as means to remove the lost motion in the threaded connection, which, if not removed, will allow the bowl to vibrate axially damaging the threaded connection. By incorporating a floating ring structure keyed to the bowl so that it is free to move axially thereon with controllable means to effect relative axial movement between the floating ring and the bowl and supporting the floating ring on a surrounding wall structure on the frame so that the relative position of the floating ring and bowl will remain essentially constant during bowl adjustments, the lost motion in the threaded connection can be eliminated with the controllable means and cooperating leaf locking units and rotary actuators can be employed to fully automate such a crusher.



3,690,574

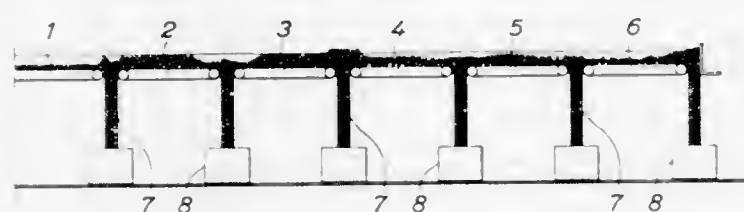
**METHOD AND DISTRIBUTING OBJECTS OR GOODS AMONG A NUMBER OF CONSECUTIVELY PLACED POINTS OF CONSUMPTION OR STORAGE**

Osmo Juhani Ivanto, Pohjoispuistikatu 10, Hyvinkää, Finland  
Continuation of Ser. No. 752,815, Aug. 15, 1968, abandoned.  
This application Jan. 21, 1971, Ser. No. 108,564

Int. Cl. B02c 1/08

U.S. Cl. 241—281

3 Claims



A method for distributing objects or goods among a number of consecutively placed points of consumption or storage from a conveyor which is composed of several consecutively arranged belt, chain, rope or other conveyors on which the objects or goods have been arranged to be transported from one conveyor to the other and to be distributed among the points of consumption or storage through the spaces between conveyors. The invention is characterized in that the gaps between the conveyors are constantly kept open and filled with the material itself which is being handled.

3,690,575

**MULTIPLE YARN PACKAGE TAKE-UP**

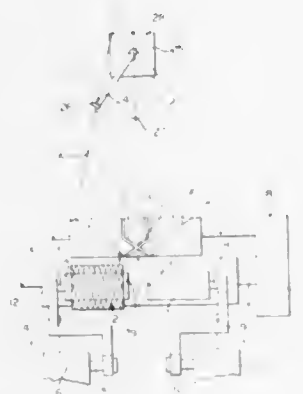
Shoji Ito, Inazawa; Kotaro Fujio, Nagoya; Mitsuhiro Okamoto, Nagoya, and Tetsuya Kikuchi, Nagoya, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan  
Filed Nov. 5, 1970, Ser. No. 87,182

Claims priority, application Japan, Nov. 19, 1969, 44/92115

Int. Cl. B65h 54/02

U.S. Cl. 242—18 A

3 Claims



Multiple package filament winding apparatus having at least two take-up positions placed right and left as a pair, arranged for taking up yarns alternately, fed by a traversing roller which has two traversing slots separated right and left, and two alternately crossing transfer slots, each of which connects into each of the traversing slots.

3,690,576

**TEXTILE THREAD WINDER WITH TENSION COMPENSATING DEVICE**

George F. Schroeder, Asheville, N.C., assignor to Northrop Carolina, Inc., Asheville, N.C.

Filed May 3, 1971, Ser. No. 139,359

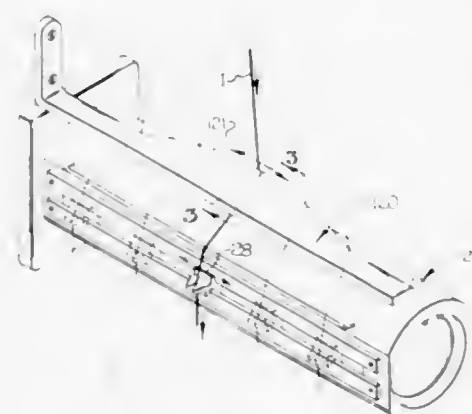
Int. Cl. B65h 54/02

U.S. Cl. 242—18 DD

2 Claims

A textile thread winder with a device for compensating for variations in tension in thread being wound due to increases

and decreases in the length of the path of travel of the thread from a thread source to a package roll caused by traversing action of a traversing mechanism. The textile thread winding apparatus has a driven rotating drive roll, at least one freely rotatable package roll positioned on one side of the drive roll for engagement therewith to be driven thereby for winding of thread and mounted for linear movement away from the drive



roll as the thread package builds thereon, and a thread traversing mechanism positioned on the other side of the drive roll for receiving the thread from a source and guiding the thread around the drive roll to the package roll while traversing the thread longitudinally of the drive roll. Preferably, the winding apparatus includes mechanisms for maintaining a predetermined pressure relationship between the drive roll and the package roll.

3,690,577

**TEXTILE THREAD WINDER WITH TRANSFER TAIL FORMING DEVICE**

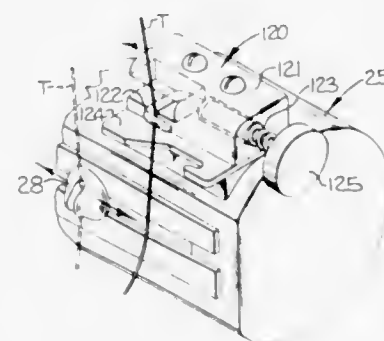
George F. Schroeder, Asheville, N.C., assignor to Northrop Carolina, Inc., Asheville, N.C.

Filed May 3, 1971, Ser. No. 139,514

Int. Cl. B65h 54/02, 54/34

U.S. Cl. 242—13 PW

4 Claims



A textile thread winder with a device for forming a transfer tail on the package being wound. The textile thread winding apparatus has a driven rotating drive roll, at least one freely rotatable package roll positioned on one side of the drive roll for engagement therewith to be driven thereby for winding of thread and mounted for linear movement away from the drive roll as the thread package builds thereon, and a thread traversing mechanism positioned on the other side of the drive roll for receiving the thread from a source and guiding the thread around the drive roll to the package roll while traversing the thread longitudinally of the drive roll. Preferably, the winding apparatus includes mechanisms for maintaining a predetermined pressure relationship between the drive roll and the package roll. Preferably, the transfer tail forming device comprises a cooperating movable hook member and stationary cam member.

3,690,578

**TEXTILE THREAD WINDER WITH GROOVED DRIVE ROLL**

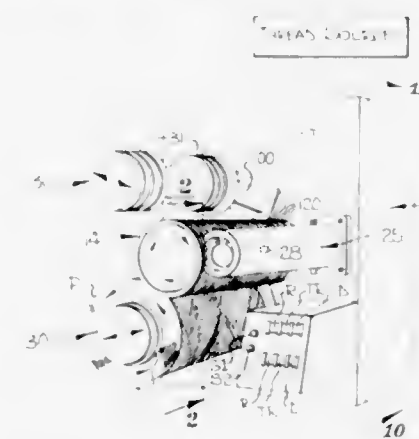
Bert B. Morgan, and George F. Schroeder, both of Asheville, N.C., assignors to Northrop Carolina, Inc., Asheville, N.C.

Filed May 3, 1971, Ser. No. 139,640

Int. Cl. B65h 54/02, 54/28

U.S. Cl. 242—18 DD

18 Claims



In a strand or textile thread winding apparatus, the combination of a reciprocating strand or thread traversing mechanism for receiving the strand being wound under tension and guiding the strand to the package winding device while traversing the strand back and forth to form a traversed wound package, and a cylindrical roll, preferably a rotating drive roll, positioned in the path of travel of the strand between the traversing mechanism and the package winding mechanism and having grooves in the outside surface thereof cooperating with the traversing mechanism for controlling the traversing action on the strand by receiving the strand in respective grooves and holding the strand in the respective traversed positions which the strand is placed during the traversing action of the traversing mechanism to aid in guiding and controlling the strand.

3,690,579

**TEXTILE THREAD WINDER WITH IMPROVED THREAD TRAVERSING MECHANISM**

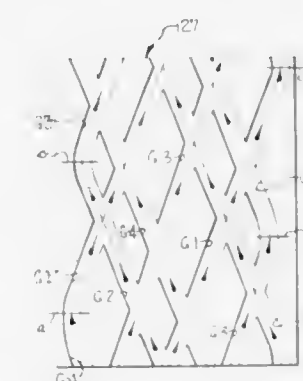
William D. Porter, and Larry H. Taylor, both of Asheville, N.C., assignors to Northrop Carolina, Inc., Asheville, N.C.

Filed Nov. 15, 1971, Ser. No. 198,671

Int. Cl. B65h 54/28

U.S. Cl. 242—43

6 Claims



A textile thread winding apparatus having a driven rotating drive roll, at least one freely rotatable package roll positioned for engagement with and to be driven by the drive roll for winding a package of yarn thereon, and a thread traversing mechanism for receiving thread from a source and guiding the thread to the package roll while traversing the thread longitudinally of the package roll for spiral winding of the thread. The thread traversing mechanism comprises devices for traversing the thread in successively different strokes during successive plural stroke cycles for forming successive spirally wound layers of thread on the package which are placed in different

positions on the thread package for eliminating layering of the thread in the thread package and the formation of hard shoulders at each end of the thread package which occur when the thread is traversed in the same strokes during successive cycles.

3,690,580

**DISPENSER FOR CONVENTION ROLLS OF FLEXIBLE SHEET MATERIAL**

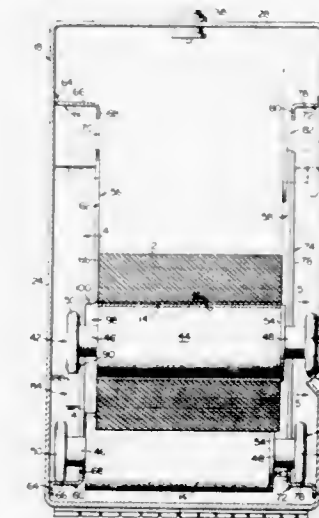
Paul W. Jespersen, 800 Summer St., Stamford, Conn.

Continuation-in-part of Ser. No. 784,307, Dec. 17, 1968, abandoned. This application May 13, 1970, Ser. No. 36,855

Int. Cl. B65h 19/04, 75/02

U.S. Cl. 242—55.3

18 Claims



A flexible sheet material dispenser comprising; a spindle on which a roll of flexible sheet material is adapted to be rotatably mounted, means for supporting the spindle to thereby rotatably support the roll in a dispensing position, and means for automatically disengaging the spindle from the supporting means after a predetermined amount of flexible material has been removed from the roll.

3,690,581

**REEL MOUNT**

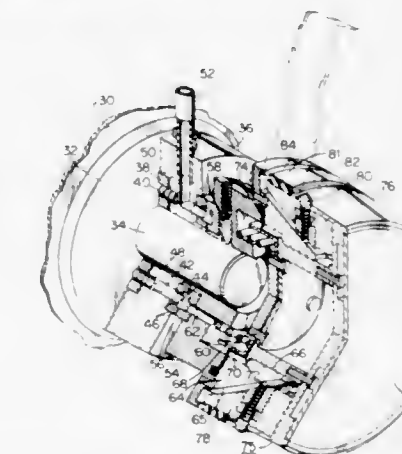
Allan C. Wainio, Maynard, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed April 20, 1970, Ser. No. 29,937

Int. Cl. B65h 17/02

U.S. Cl. 242—68.3

5 Claims



A reel mount for use in a tape transport having mechanical means for retaining and aligning a supply reel thereon, which is operated by fluid pressure. The reel mount comprises a hub having a resilient band expandable through movement of a plurality of collet elements arranged on the hub. Application of sub-atmospheric fluid pressure to the hub forces the collet elements along an incline to expand the resilient band, and cause the band to grip a reel located on the hub, while a plurality of plungers simultaneously serve to locate the reel in alignment on the hub.



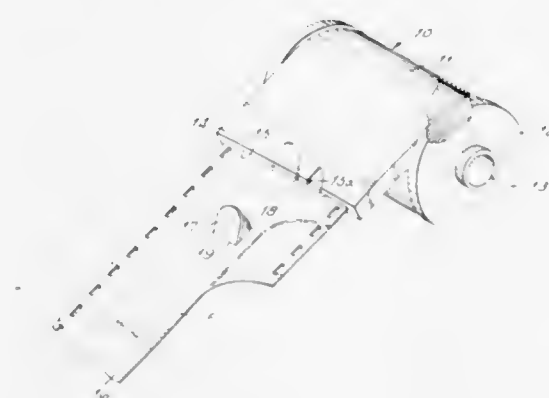
### 3,690,582 FILM CARTRIDGE

Harvey H. Duvall, 39441 Van Dyke-Apt. 208, Sterling Heights, Mich.

Filed Nov. 12, 1970, Ser. No. 88,710  
Int. Cl. G03b 1/04; G11b 15/32

U.S. Cl. 242—71.1

9 Claims



A film cartridge comprising a housing with a spool rotatably mounted therein and film wound upon the spool. The end of the film extends through a slot in the housing to the exterior and a tab or tabs are struck upwardly or downwardly from the film. When the film is rewound on the cartridge, the tab or tabs engage the housing to prevent the end of the film from being wound upon the spool.

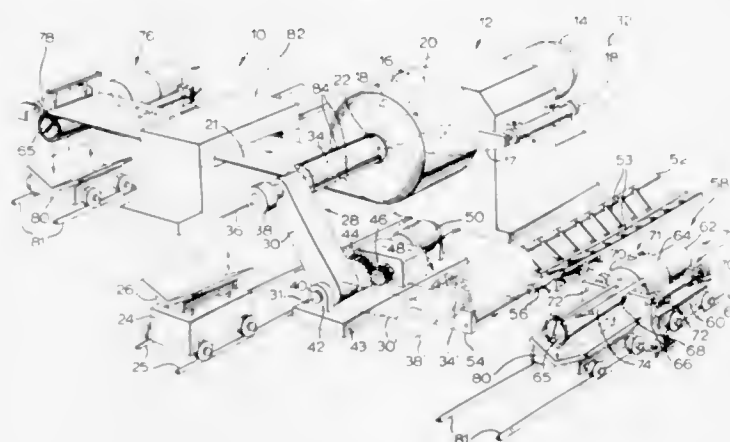
### 3,690,583 METHOD AND APPARATUS FOR SCRAP COIL TRANSFER IN CONTINUOUS STRIP PROCESSING LINES

Hans Herman, Ancaster, Ontario, Canada, assignor to The Steel Company of Canada, Limited, Hamilton, Ontario, Canada

Filed March 23, 1971, Ser. No. 127,117  
Int. Cl. B21c 47/24

U.S. Cl. 242—78.1

8 Claims



An apparatus and method are disclosed for accelerating the usually time-consuming operation, in a continuous strip-processing line, of removing the tail-end scrap from the line prior to bringing in a new coil. A swingable arm supports a transfer mandrel which aligns with the conventional pay-out mandrel in one position, and can swing to another position out of the way of an incoming new coil. After a given coil has been run down to the tail-end scrap, its rotation is halted, the strip is severed, the scrap coil is pushed off onto the aligned transfer mandrel, and the latter is swung to the other position where a conventional scrap-coiler unwinds the tail-end scrap from the transfer mandrel.

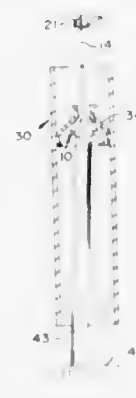
### 3,690,584 APPARATUS FOR MAINTAINING UNIFORM YARN TENSION DURING UNWINDING OF A YARN PACKAGE

Philip E. Wilkerson, Rt. 2, Box 216, Randleman, N.C.

Filed April 26, 1971, Ser. No. 137,419  
Int. Cl. B65h 49/00

U.S. Cl. 242—128

13 Claims



A cone shaped, spherical or otherwise tapered support member seated on the upper end of an upstanding pin engages and supports a textile yarn package or pin internally at a point above its center of gravity so that the weight of the package causes it to automatically assume a vertical position. A yarn guide eye is positioned directly above and spaced from the support member, whereby the axis of the textile package is self-aligning with the guide eye. Corrugations in the yarn holder surface spiral around the holder at an angle substantially perpendicular to the path of the yarn as it is unwound therefrom.

### 3,690,585 YARN PACKAGE SUPPORT

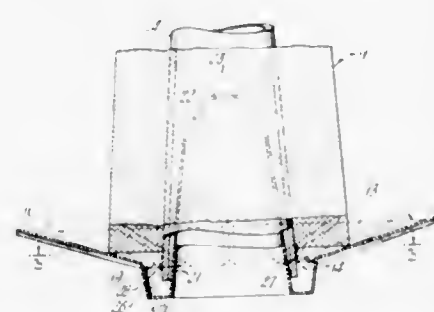
Lawrence Lesavoy, New York, N.Y., assignor to Glen Creations, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 749,456, Aug. 1, 1968. This application Jan. 20, 1971, Ser. No. 108,038

Int. Cl. B65h 49/00

U.S. Cl. 242—129.8

8 Claims



A device for supporting a package of yarn attendant its unwinding and for preventing the snagging and breaking of the yarn is an integrally formed unit and includes a vertical hub which engages the yarn package, an annular bottom wall joining the bottom of the hub and provided along its periphery with an upwardly directed outer wall. Extending from the upper edge of the outer wall is an upwardly outwardly inclined annular base member provided on its top face with radially extending ribs of triangular cross-section. The yarn package is engaged by the hub and the outer border of its underface rests on the ribs so that the withdrawal of yarn disposed along the underface of the package is facilitated.

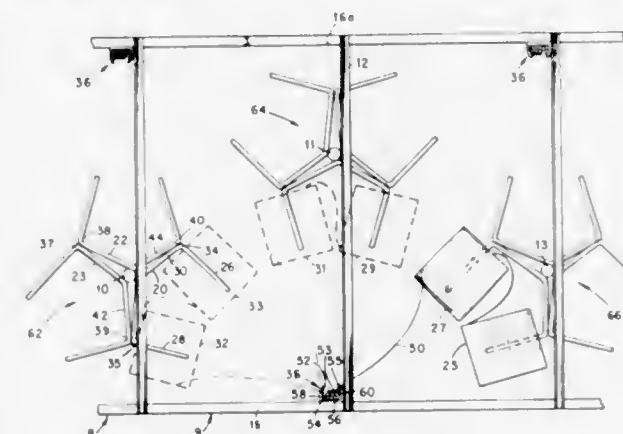
### 3,690,586 CREEL

Elmer E. Bock, Knoxville, Tenn., assignor to Textile Machinery Company, Inc., Chattanooga, Tenn.

Filed March 1, 1971, Ser. No. 119,526  
Int. Cl. B65h 49/02; D02h 1/00; D03j 5/08

U.S. Cl. 242—131

13 Claims



A creel for supporting a plurality of spools of filamentary matter comprising a plurality of spool holders extending generally horizontally to receive spools of filamentary matter thereon, the spool holders extending generally horizontally and disposed in an arcuate array about a focal take-off element. Multiple arcuate arrays are disposed in staggered back-to-back relation to develop close packing of the arrays and provide a creel which effects a substantial saving of space while simultaneously exposing each of the spool holders for ready access for loading spools of filamentary matter thereon.

### 3,690,587 AUTOMATIC TAPE CASSETTE RECORDING AND PLAYBACK APPARATUS

Ryozo Kitazawa, Kawasaki, Japan, assignor to Nippon Columbia Kabushikikaisha (Nippon Columbia Co., Ltd.), Tokyo

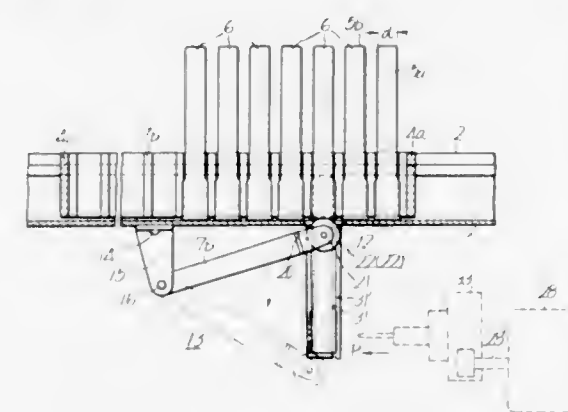
Filed Feb. 25, 1970, Ser. No. 13,978

Claims priority, application Japan, June 6, 1969, 44/44492; June 6, 1969, 44/53070; Dec. 29, 1969, 44/135; Jan. 10, 1970, 45/3119

Int. Cl. G11b 23/02

U.S. Cl. 242—181

15 Claims



An automatic tape cassette recording and playback apparatus having cassette support means for a plurality of tape cassettes, means for slidably supporting the cassette support means and having guide hole means, tape recording and playback means, means for driving the cassette support means, means for driving one of the plurality of tape cassettes, a mechanism for interlocking the tape recording and playback means, the means for driving the cassette support means, a motor for driving the interlocking mechanism and the tape driving means, means for selectively driving the interlocking mechanism, tape detecting means, and electric circuit means for controlling the motor and the interlocking mechanism driving means.

### 3,690,588 TENSION CONTROLLING MEANS FOR MAGNETIC TAPE OR THE LIKE

Hans Eckert, and Uwe Ehms, both of Nuernberg, Germany, assignors to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Inhaber Max Grundig, Fuerth/Bayern, Germany

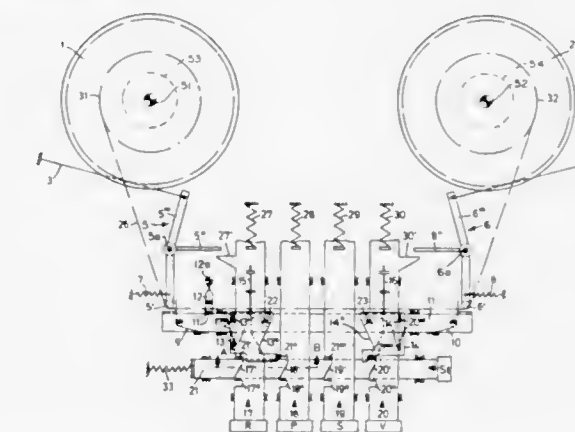
Filed Dec. 3, 1970, Ser. No. 94,912

Claims priority, application Germany, Dec. 19, 1969, P 19 63 613.6

Int. Cl. B65h 59/38, 63/02; G03b 1/04

U.S. Cl. 242—189

15 Claims



A tape recorder wherein the supply reel is braked with a weaker force during transport of magnetic tape at a normal speed so that the braking action varies as a function of changes in tension of the tape. The supply reel is subjected to a stronger braking action in response to termination of rapid forward transport or rapid rewinding of tape to thus prevent spillage and/or looping of tape due to inertia of the supply reel. The stronger braking action is produced by a regulating device having two torsion springs one of which assists that spring which serves to tension a band brake for the supply reel upon termination of rapid rewinding of tape onto the supply reel and the other of which assists that spring which serves to tension a band brake for the supply reel upon completion of rapid forward transport of the tape toward the takeup reel. That reel which constitutes the supply reel during forward transport of tape becomes the takeup reel during rewinding, and vice versa.

### 3,690,589 TAPE END DETECTION DEVICE FOR TAPE RECORDER

Takuro Bonjyo, and Katsuyuki Yamashita, both of Yokohama, Japan, assignors to Victor Company of Japan Limited, Yokohama, Japan

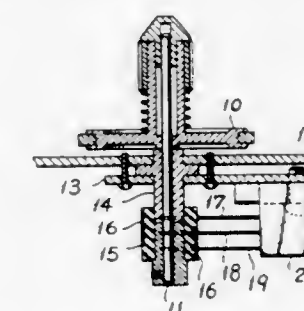
Filed Feb. 13, 1970, Ser. No. 11,166

Claims priority, application Japan, Feb. 18, 1969, 44/11511

Int. Cl. B65h 25/32; G11b 15/46

U.S. Cl. 242—191

3 Claims



A tape end detection device for a tape recorder comprising a substantial switch means to open or close alternately in cooperation with a rotary body during running of a tape, a capacitor charging and discharging through the switch means, and a detection output means actuating when after the tape stops its running and the switch means stops its opening or closing, the capacitor discharges a predetermined amount.



3,690,590

## COAXIAL TAPE CARTRIDGE

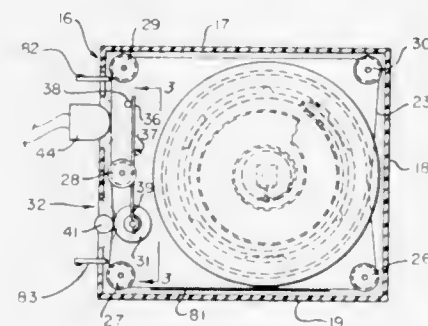
William Coffey Bennett, Menlo Park, and Edwin O. Stastny, Santa Ana, both of Calif., assignors to Novar Corporation, Mountain View, Calif.

Filed Jan. 6, 1970, Ser. No. 886

Int. Cl. G11b 23/10, 15/43

U.S. Cl. 242—194

6 Claims



A tape cartridge including a housing adapted to support a pair of coaxially disposed tape reels. Means for guiding the tape extending from one reel to the other past the front of the cartridge. A spring-loaded back-up roller for urging the tape towards an associated capstan. Spring means cooperate between said reels to rotate the reels in opposite directions to maintain suitable tape tension and drive one reel from the other.

3,690,591

## REMOTE CONTROL FOR RECORDERS

Christian Opelt, Bernbach, Germany, assignor to Grundig E.M.V., Kurgartenstrasse, Germany

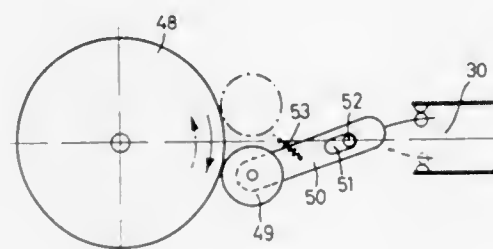
Filed Oct. 6, 1970, Ser. No. 78,515

Claims priority, application Germany, Oct. 17, 1970, P 19 52 330.9

Int. Cl. B11b 15/32; G03b 1/04

U.S. Cl. 242—204

11 Claims



A control circuit for a tape recorder employing a novel element which senses the direction of tape motion and remembers the direction of tape motion until the tape motion is reversed. The control circuit provides rapid and controlled stopping of the tape spools. Furthermore, when the end of the tape is sensed by the control circuit, the circuit stops the tape and prevents it from being restarted in the same direction to avoid the tape from running out.

3,690,592

Patent Not Issued For This Number

3,690,593

## PNEUMATIC CARRIER LOAD EJECTOR CONSTRUCTION

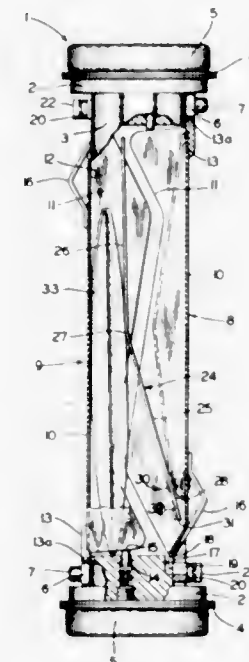
Dale O. Kettering, Canton, Ohio, assignor to Diebold, Incorporation, Canton, Ohio

Filed July 28, 1970, Ser. No. 58,850

Int. Cl. B65g 51/06

U.S. Cl. 243—34

4 Claims



A load ejector construction for material-conveying carriers in pneumatic tube systems, particularly captive carriers for conducting bank transactions. An ejector plate is pivotally mounted at its lower end by a flexible hinge adjacent an end of the carrier to which a door is pivotally mounted opposite the ejector plate. The ejector plate moves by gravity towards the open doorway when said opposite door is opened from a retracted position to an extended position within the carrier forcing the contents out of the carrier through the exposed doorway.

3,690,594

## METHOD AND APPARATUS FOR THE DETERMINATION OF COORDINATES

Joseph F. Menke, Heidelberg, Germany, assignor to Eltro GmbH & Co., Heidelberg, Germany

Filed May 20, 1964, Ser. No. 369,359

Int. Cl. F42b 15/02

U.S. Cl. 244—3.13

19 Claims



In order for an object in space to locate itself, a beam of electromagnetic radiation is transmitted at it, each cross-sectional element of which beam is modulated by a slotted disc rotating on its axis and at the same time about the axis of the beam. The object receiving one of the elements can thus locate itself relative to the beam axis.

3,690,595

## SELF-PROPELLED, VANED MISSILE

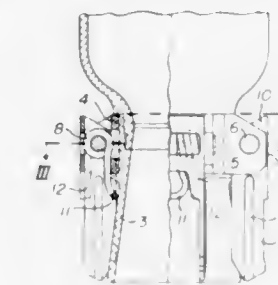
Maurice Rusbach, Geneva, Switzerland, assignor to Sarmac S.A., Geneva, Switzerland

Filed Nov. 19, 1970, Ser. No. 91,037

Int. Cl. C06d 1/04; F42b 13/32

U.S. Cl. 244—3.27

12 Claims



A self-propelled vanned missile, designed to be fired by means of a launching tube and wherein the vane system comprises at least three fins articulated onto pins disposed at the rear of the missile, the pins being perpendicular to the axis of the missile. It is new in that the fins of the said vane system are double fins, each having blades which are joined at their hinged end by a bridge and equipped with spacing springs. These springs exert on the fins a force greater than the resistance which the air exerts on them in the course of the missile's advance, and cause the open out of the said rear fins towards the front as soon as the missile has left the launching tube.

3,690,596

## SPIN CONTROL SYSTEM FOR REENTRY VEHICLE

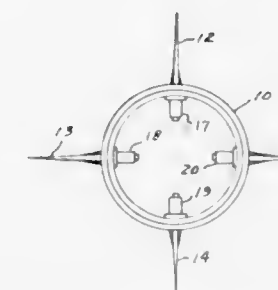
Donald A. Durran, Manhattan Beach, and Daniel H. Platus, Playa Del Rey, both of Calif., assignors to The United States of America as represented by the Secretary of the United States Air Force,

Filed May 2, 1969, Ser. No. 823,247

Int. Cl. F42b 15/14

U.S. Cl. 244—3.21

2 Claims



A spin control system for a reentry vehicle has a plurality of fins located around the periphery of the vehicle. The fins are rotated by a mass which moves under the action of centrifugal force to move a pair of pins in cam slots located on the fin support shafts to thereby rotate the fins to decrease the cant angle from a preset value at zero roll.

3,690,597

## VERTICAL TAKE-OFF LANDING AIRCRAFT HAVING A PAIR OF COAXIAL COUNTER-ROTATING ROTORS, EACH FORMED BY A SET OF REVOLVABLE BLADES RADially JUTTING FROM THE BODY OF THE CRAFT

Renato Di Martino, Parco Margherita n.8, Naples, Italy

Filed Aug. 19, 1970, Ser. No. 65,115

Claims priority, application Italy, Jan. 20, 1970, 48200 A/70

Int. Cl. B64c 29/00

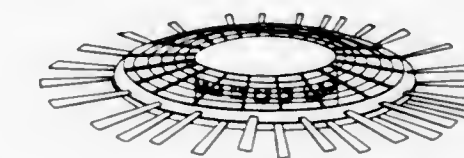
U.S. Cl. 244—23 C

1 Claim

A vertical take-off landing aircraft, wherein at the periphery

902 O.G.—20

of a saucer-shaped body counter-rotate two similar and coaxial rotors. A rotor is composed of an annular caisson moved by



gas-turbines and of a set of aerofoil-shaped blades jutting out of the caisson and revolvable around their own axis.

3,690,598

## SPEED CONTROL FOR AIRCRAFT WITH EXTENSIBLE LANDING FLAPS

Hans-Dieter Buchholz, 9772 Oberuhldingen, and Hans-Peter Reerink, 7758 Meersburg, both of Germany

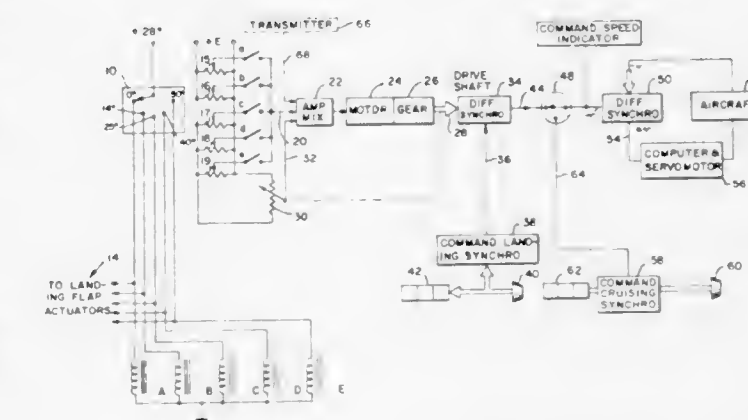
Filed April 30, 1969, Ser. No. 820,439

Claims priority, application Germany, Oct. 10, 1968, P 18 02 243.0

Int. Cl. B64c 13/50

U.S. Cl. 244—77 D

6 Claims



A speed controller for an aircraft is described which is adapted for regulating aircraft speed at a desired command speed and for automatically altering the command speed for particular aircraft landing weight in accordance with the degree of extension of the aircraft landing flaps.

3,690,599

## AIRCRAFT DOCKING GUIDE

Ira Vincent Hager, P.O. Box 632, Miami Springs, Fla.

Filed March 11, 1971, Ser. No. 123,207

Int. Cl. B64f 1/18

U.S. Cl. 244—114 R

9 Claims



An aircraft guide means for use by a pilot in docking an aircraft of the type having a nose wheel. It includes a mirror mounted on the docking line, the mirror being within the line of sight of the pilot and reflecting an image of the docking line



at the stopping release so that the pilot can tell when his wheel is at the predetermined stopping point on the docking line. The aircraft includes a light means arranged to be viewed in the mirror which tells the pilot if the plane is askew relative to the docking line. Signal means are provided to be actuated by the nose wheel of the aircraft when it is at the stopping point so that the pilot will stop the aircraft at the proper location.

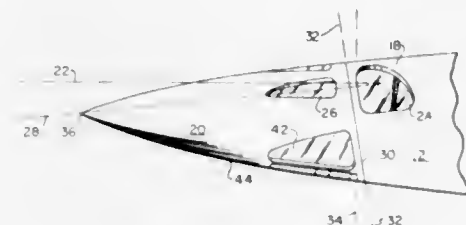
3,690,600

## ROTATING VARIABLE NOSE

Clifford B. Cooper, Fort Worth, Tex., assignor to General Dynamics Corporation, Fort Worth, Tex.  
Filed Nov. 24, 1970, Ser. No. 92,362  
Int. Cl. B64c 1/00, 1/28

U.S. Cl. 244—120

8 Claims



An aircraft having a geometrical means for revolving the nose portion thereof about an axis oblique to the normal centerline of the vehicle, resulting in a pitch-down, nonfaired configuration to increase clear field of vision in the critical area lying below and ahead of the aircraft for landing and takeoff while in one position, and an optimum aerodynamically acceptable supersonic configuration in the other position.

3,690,601

## PNEUMATIC DEICER PERIPHERY BLEEDER

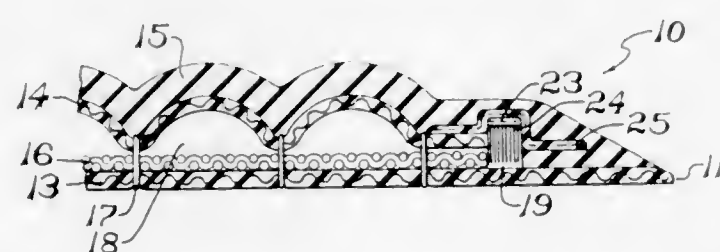
Lowell W. Roemke, 231 Sharon-Copley Rd.-R.F.D. 1, Wadsworth, Ohio

Filed Sept. 23, 1970, Ser. No. 74,690

Int. Cl. B64d 15/16

U.S. Cl. 244—134 A

4 Claims



A pneumatic deicer having passages for inflation and deflation to break up ice accumulations on the surface with a bleeder channel in the trailing edge containing a plurality of stiff fibers extending from one face of the channel toward the other to hold the channel open for maximum flow of the inflating medium out of the passages and thereby provide the rapid deflation needed for effective breakage of the ice forming on the surface.

3,690,602

## AUTOMATIC CARGO RELEASE MECHANISM

John Marsh, deceased, late of Trumbull, Conn. (by Jean S. Marsh, administratrix), assignor to United Aircraft Corporation

Filed March 30, 1971, Ser. No. 129,499

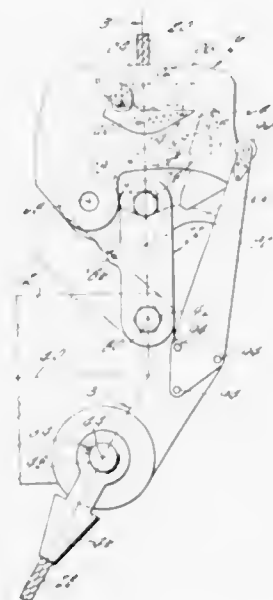
Int. Cl. B64d 1/00

U.S. Cl. 244—137 R

16 Claims

Automatic release mechanism for cargo handling equipment in which cargo is supported from a spreader bar, which is

in turn connected at its opposite ends to one or more aircraft and which includes cargo release mechanism responsive to



spreader bar rotation about the transverse axis at one of its ends to release the cargo hook which is located between the spreader bar and the aircraft.

3,690,603

## ARRANGEMENT FOR INCREASING THE LIFT AND/OR SUSTAINING POWER OF SAILS, AND SAILS INCLUDING THIS ARRANGEMENT

Pierre Marcel Lemoligne, Montrouge, France, assignor to Etudes et Fabrications Aeronautiques, Paris, France

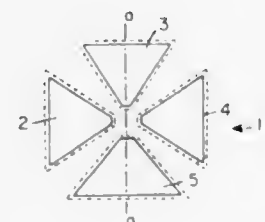
Filed Aug. 6, 1970, Ser. No. 61,617

Claims priority, application France, Aug. 8, 1969, 6927330

Int. Cl. B64d 17/18

U.S. Cl. 244—145

5 Claims



The sail at least partially comprises pockets each presenting a generally conical, pyramidal or frusto-pyramidal form with its concavity directed towards the inner surface of the sail. A part at least of these pockets constitutes nozzles accelerating the flow of air and/or modifying the direction of the flow.

3,690,604

## PARACHUTE STOWAGE AND DEPLOYMENT

Le Roy F. Guilfoyle, Point Pleasant, N.J., assignor to Parachutes Incorporated, Orange, Mass.

Filed Feb. 2, 1970, Ser. No. 7,939

Int. Cl. B64d 17/40

U.S. Cl. 244—148

23 Claims

Stowage and deployment arrangements for parachutes according to which a parachute canopy is first folded and a securing means, forming the deployment device, is wrapped about the folded canopy and secured to itself by detachable pull apart securing means and the parachute suspension lines are reefed outside the device in a manner such that the device

will not separate or allow release of the canopy until the suspension lines are fully extended. Novel suspension line



reefing arrangements are also described which hold the lines reefed until a pull is exerted on a trigger line from the deployment device.

3,690,605

## PARACHUTE RELEASE MECHANISM

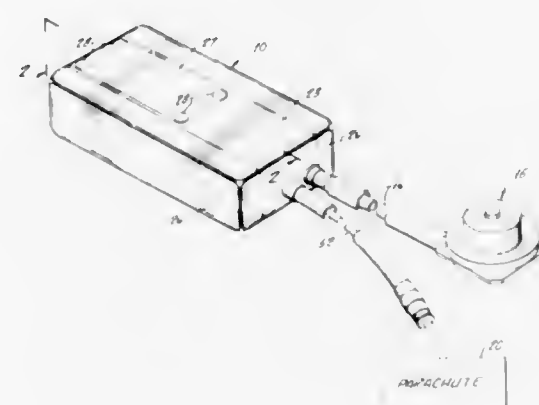
Leon Jones, 11332 Pemberton Rd., Los Alamitos, Calif.

Filed Sept. 21, 1970, Ser. No. 74,004

Int. Cl. B64d 17/56, 17/58

U.S. Cl. 244—149

14 Claims



The mechanism includes first and second chambers each of which continuously communicates with the ambient space through a small opening. The sizes of the chambers, and the sizes of the openings, are such that a predetermined relationship is maintained between the pressure in the first chamber and the pressure in the second chamber, regardless of the rate of climb or fall. Preferably, the predetermined pressure relationship is such that the pressures in the two chambers remain equal to each other. The sizes of the chambers and of the openings are also determined in such manner as to satisfy other conditions. An aneroid is provided to effect opening of a relatively large-diameter port between one of the chambers and the ambient space when a set altitude is reached. A diaphragm is provided between the two chambers and is responsive to the differential in pressure therebetween, created by the aneroid, to actuate the parachute release. Trigger and latch means associated with the diaphragm are adapted to cause reliable triggering in response to relatively low pressure differentials, and without danger of spurious actuation. The small openings between the chambers and the ambient space are capillary passages. The size of the diaphragm is small in comparison to chamber volume.

3,690,606

## ANISOMETRIC COMPRESSED AND BONDED MULTILAYER KNITTED WIRE MESH COMPOSITES

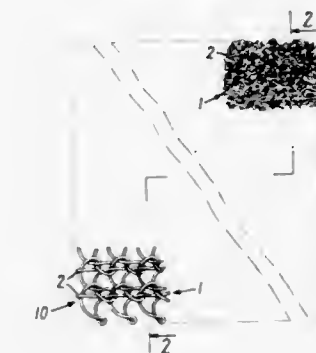
David B. Pall, Roslyn Estates, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed May 27, 1968, Ser. No. 732,443

Int. Cl. B22f 7/02

U.S. Cl. 245—1

14 Claims



Anisometric compressed and bonded knitted wire mesh composites are provided which comprise a plurality of sheets of knitted wire mesh, superimposed at random orientation with respect to each other, compressed or densified to a void volume within the range from about 10 to about 90 percent, and bonded together. The sheets are taken in sufficient number, usually at least five and preferably 10 or more, and as much as 1,000 or more, to form a self-supporting relatively non-resilient composite of high tensile strength and high breaking strength having an average pore diameter of less than 200 microns, and preferably less than 100 microns, that is relatively uniform in any unit area of the surface, and having an anisometric porosity, the through pores extending crosswise of the sheet greatly exceeding in number the through pores extending laterally of the sheet, which latter pores can be reduced virtually to zero in a highly compressed composite.

The composite is formed by superimposing a plurality of knitted wire mesh sheets, annealing the composite to avoid wire breakage during later processing, compressing the composite to the desired density and anisometricity by application of pressure in a direction approximately perpendicular to the plane of the layers of the composite, and bonding the sheet layers and the wire filaments of the sheets together at their points of contact and/or crossing. The bonding holds the composite at the selected density, prevents relative movement of the wires in the composite, and in conjunction with the multilayer structure imparts the self-supporting nonresilient characteristic, together with high tensile strength and high breaking strength.

3,690,607

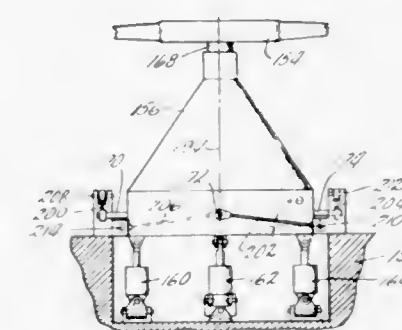
## VIBRATION ISOLATION SYSTEM

Kenneth C. Mard, 160 Wilbrook Road, Stratford, Conn.  
Division of Ser. No. 643,518, June 5, 1967, Pat. No. 3,514,054.  
This application Feb. 16, 1970, Ser. No. 14,842

Int. Cl. B64c 27/04; F16f 15/10

U.S. Cl. 248—20

4 Claims



This invention relates to a mounting system for a body, such as a wind tunnel model or a helicopter transmission, by which



the vibrational loads in one plane or about axes in a common plane can be isolated from the mount while loads in other directions or about other axes can be transferred directly to the mount.

3,690,608

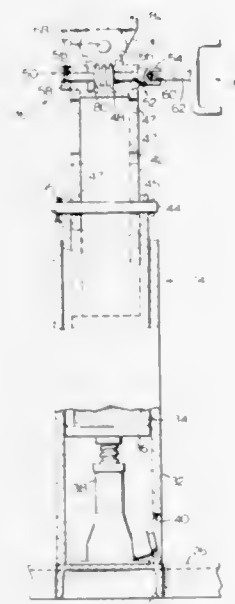
## ADJUSTABLE STAND

Julius Poizner, Downsview, Ontario, Canada, assignor to Newark Tool & Machine Limited, Weston, Ontario, Canada

Filed July 7, 1970, Ser. No. 52,965  
Int. Cl. F16m 11/10

U.S. Cl. 248—371

3 Claims



An adjustable stand for supporting attachments adjacent a machine tool table. The stand has a base on casters for easy movement, and a telescopic upright extends upwardly from the base. A tilting mechanism is attached to the top of the upright and supports an auxiliary table to which attachments may be fastened. The telescopic upright and tilting mechanism combine to permit adjustment of the height and angular position of the auxiliary table to match the position of the machine tool table.

3,690,609

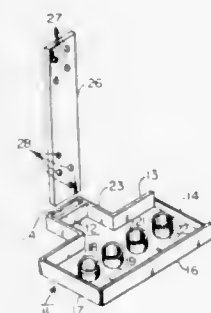
## PIPE BRACKET

Renaldo Montesdioca, Chula Vista, Calif., assignor to Bellon Plumbing Company, Incorporated, San Diego, Calif.

Filed June 16, 1970, Ser. No. 46,604  
Int. Cl. F16l 3/12

U.S. Cl. 248—68 B

1 Claim



A pipe bracket having a plurality of apertures dimensioned for receiving predetermined pipes during the construction of a building; the bracket terminating in a mounting extension; the mounting extension having a slot therein for being removably carried by a vertical mounting bracket adapted for nailing to a concrete foundation form board.

3,690,610

## CAKE TIER SEPARATOR

Patricia Marie Pelree, 2551 W. Ball Street, Anaheim, Calif.  
Filed Nov. 4, 1970, Ser. No. 86,831

Int. Cl. A21b 5/00

U.S. Cl. 248—159

10 Claims



The disclosed cake tier separator provides a home baker with a device that is adjustable, sturdy, and re-usable. The device comprises a pair of support plates that are spaced apart by a plurality of adjustable length support pillars. These, in turn, comprise a plurality of pillar components that may be disengagably fastened together in an end-to-end manner to form a support pillar of any desired length; the disengagable fastening feature permitting disassembly, and storage for future use. The disclosure also describes various accessories for use with the novel cake tier separator.

3,690,611

## HANGER

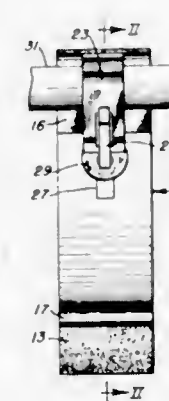
Bakari Mwanyoha, 40 Washington Street, East Orange, N.J.

Filed March 22, 1971, Ser. No. 126,435

Int. Cl. A47l 7/14

U.S. Cl. 248—205 A

8 Claims



A hanger which comprises a load-supporting member pivotally coupled to an arcuate member, said arcuate member being slidably connected to a mounting plate which carries a pressure-sensitive tape for attachment of the hanger to a vertical surface. Under load, the load-supporting member is pressed against the arcuate member causing the arcuate member to apply pressure components to the mounting plate in a direction opposing the force-moment which normally tends to pull the hanger away from the surface to which it is affixed.

3,690,612

Patent Not Issued For This Number

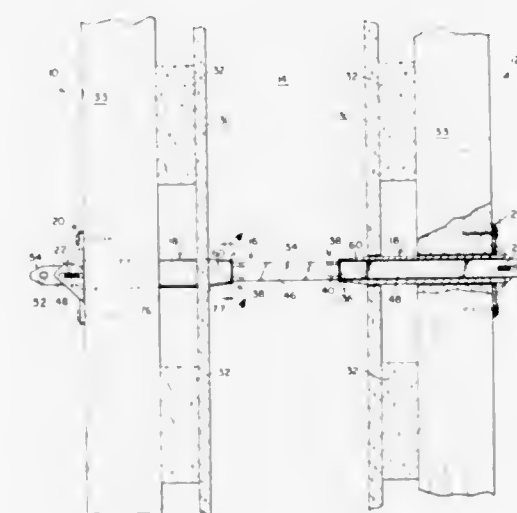
3,690,613

CONCRETE WALL FORM INSTALLATION WITH PARTICULAR TIE ROD SECURING MEANS THEREFOR  
James C. Shoemaker, Hampshire, Ill., assignor to Symons Corporation, Des Plaines, Ill.

Division of Ser. No. 802,109, Feb. 25, 1969, Pat. No. 3,625,470. This application Oct. 8, 1970, Ser. No. 79,234  
Int. Cl. E04g 17/08

U.S. Cl. 249—40

5 Claims



Securing means for a concrete wall form including a flat tie rod having means at its end sections for attachment to the form sides so that the medial section of the tie rod spans the form and becomes embedded in the concrete which is poured between the form sides, thus leaving outwardly projecting tie rod end sections. Elongated sleeve cones surround such tie rod end sections and have their inner ends drivingly connected to the same at regions in the immediate vicinity of the tie rod breakbacks, and also have torque-application facilities at their exposed outer ends so that the manual application of torque to the sleeve cones will impart a radial tear or shear effect at the breakbacks to thus free the projecting tie rod end sections.

3,690,614

## CONCRETE BLOCK SETTING FORM

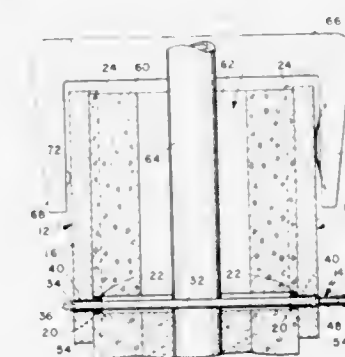
Victor B. Cherniak, 1057 Madison, Chula Vista, Calif.

Filed May 11, 1970, Ser. No. 35,986

Int. Cl. E04g 21/22

U.S. Cl. 249—90

1 Claim



A concrete block setting form comprising a pair of side boards which are secured on an initial course of blocks by quick release clamps, to hold one or more blocks in precise alignment. The side boards have ribs which spaced the block or blocks, so that mortar or concrete poured in place will form seamed joints of proper thickness.

3,690,615

## AUTOMATIC VALVE

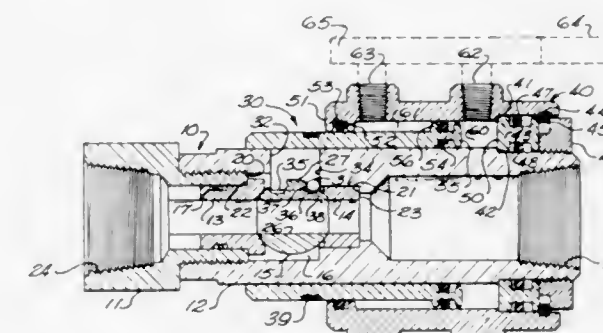
Gerald L. Rogers, Ballwin, Mo., assignor to Stile-Croft Manufacturers, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 783,315, Dec. 12, 1968. This application July 24, 1970, Ser. No. 57,913

Int. Cl. F16k 31/163

U.S. Cl. 251—31

8 Claims



This valve includes a tubular body having inlet and outlet ports at opposite ends and housing a rotatable valve cut-off member. A cylinder is coaxially mounted to the body and a piston sleeve received by the cylinder is interconnected to the rotatable member to rotate this member between open and closed valve positions. The sleeve includes a collar and the cylinder includes annular closure walls at each end. The collar and closure walls define pressure chambers supplied by fluid to induce reciprocating motion into the sleeve.

3,690,616

## PILOT-OPERATED VALVES

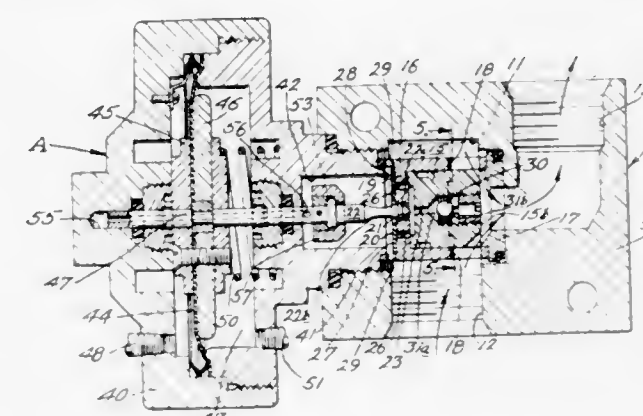
Donald E. Lewis, 112 Gently Drive, and Douglas A. Biesecker, R. D. #3, both of Clarks Summit, Pa.

Filed Nov. 18, 1970, Ser. No. 90,547

Int. Cl. F16k 31/12

U.S. Cl. 251—38

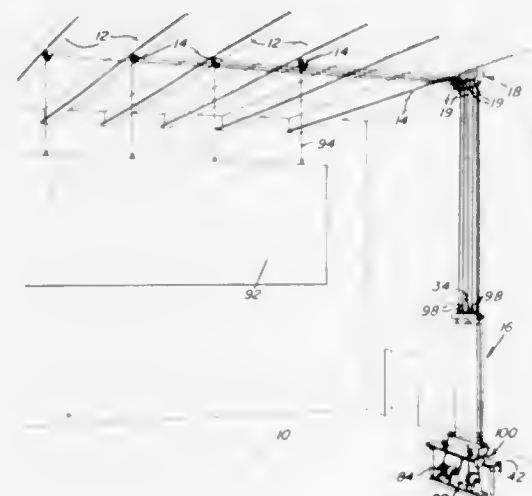
9 Claims



A pilot-operated valve having a body with an inlet and an outlet and a chamber telescopically mounting a piston for displacement in alternate directions toward or away from the outlet to block or afford fluid flow through the valve is provided. The piston has an axial bore mounting ball check means and the chamber has vent means and a closure plate normally covering the vent means. A plunger connected to a valve actuator extends through an orifice in the chamber wall to engage across the bore in the piston in its forward limit position and to close the orifice in its rearward limit position. When in its forward limit position, the plunger causes the chamber to be pressurized and closes the valves. With fluid pressure applied at the inlet, the ball check vents fluid from the chamber and to the outlet to disengage the piston from the outlet and to open the valve.

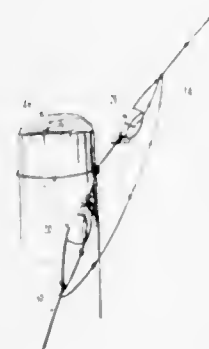


**3,690,617**  
**WATER COUNTERWEIGHT SYSTEM FOR THEATRICAL PROPS AND CURTAINS**  
 Lloyd V. Butler, 5251 79th Street, Sacramento, Calif.  
 Filed Jan. 20, 1970, Ser. No. 4,265  
 Int. Cl. A63j 1/02  
 U.S. Cl. 254—141



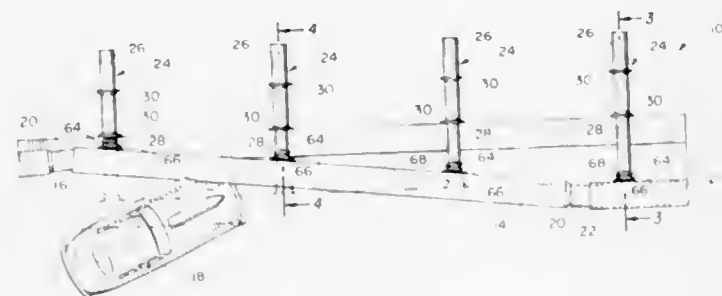
A counterweight assembly for theatrical scenery comprising a hollow enclosure supported for vertical shifting and adapted to have scenery suspension lines attached thereto with the enclosure acting as a counterweight for the scenery. The enclosure includes an inlet and an outlet opening therefor through which water may be pumped into the enclosure to increase the weight thereof and through which water may be drained from the enclosure to decrease the weight thereof.

**3,690,618**  
**ELECTRIFIED NODE FENCING**  
 Ralph E. Shettel, Twin Falls, Idaho  
 Filed Feb. 16, 1970, Ser. No. 14,812  
 Int. Cl. A01k 3/00  
 U.S. Cl. 256—10



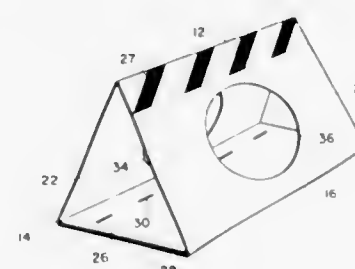
A charged node fence line for the control and confinement of livestock in general being a conductor strand insulated against unintentional grounding with the incorporation of protuberances equally spaced along the length thereof disposed in contact with the conductor strand to deliver an electrical shock to livestock. Terminal insulators are provided to maintain the required tension and thereby free the fencing wire to longitudinal travel in response to abuse and stress. Intermediate carriers loosely contain and protectively support the fencing wire while offering the advantages of direct nailing.

**3,690,619**  
**ENERGY ABSORBING GUARDRAIL**  
 Giles A. Kendall, Burbank, Calif., assignor to Menasco Manufacturing Company, Burbank, Calif.  
 Filed Dec. 10, 1970, Ser. No. 96,932  
 Int. Cl. E01f 15/00  
 U.S. Cl. 256—13.1



A railing to be located adjacent a roadway, to lessen the impact force of a land vehicle leaving the roadway, which is assembled in a plurality of sections, each section connected to adjacent sections by means of a telescoping hinge and slip joint. A plurality of compressible solid damped springs to be connected to the railing to absorb forces causing lateral movement of the railing.

**3,690,620**  
**ROAD MARKER, TEMPORARY BARRICADE OR THE LIKE**  
 Carl G. Matson, 401 E. Central Blvd., and Robert Bruce Martin, 906 E. Prospect St., both of Kewanee, Ill.  
 Filed Dec. 28, 1970, Ser. No. 101,878  
 Int. Cl. E01f 13/00  
 U.S. Cl. 256—64

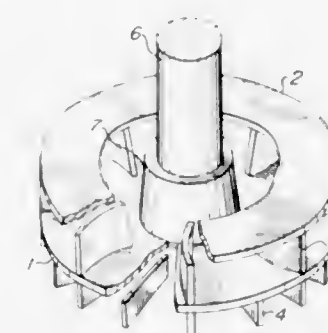


A collapsible structure useful in marking highways, etc. as to detours, road construction and the like and complying with safety and highway regulations. This structure is made of heavy non-metallic sheet-like material folded into triangular form to provide a base and a pair of panels joined to the base and converging to an upper apex and capable of being "trampled" by a vehicle striking same.

**3,690,621**  
**AGITATOR**  
 Masatami Tanaka, deceased, late of Machida-shi, Tokyo, Japan (by Itsuko Tanaka, administratrix), and Tadashi Hirotsu, Tokyo, Japan, assignors to Kyowa Hakko-Kogyo Co., Ltd., Tokyo, Japan  
 Filed March 4, 1969, Ser. No. 804,743  
 Int. Cl. B01f 5/16  
 U.S. Cl. 259—96

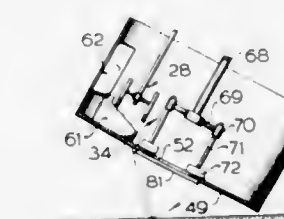
The present disclosure is directed to an agitating apparatus comprising an agitating blade assembly, said agitating blade assembly including upper and lower disk means which are spaced apart by a plurality of radially disposed plate means,

said lower disk means also containing a plurality of radially disposed blade plate means attached to its bottom side, and



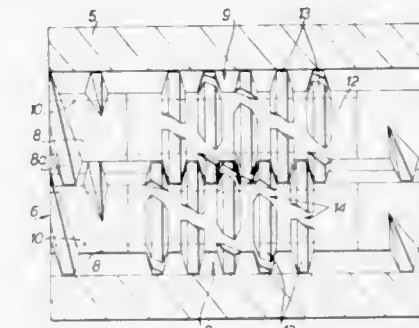
agitator shaft means extending through an opening in the upper disk means and attached to the top side of the lower disk means.

**3,690,622**  
**PROCESSING AND MIXING MACHINE**  
 Josef Alphons Brunner, deceased, late of Luzern, Switzerland; by Pia Beatrice Brunner-Rohrer, Luzern; Joseph Moritz Hugo Brunner, Locarno-Minusio, and Urs Viktor Johann Brunner, Kusnacht, all of Switzerland (legal heirs), assignors to Spemag AG, Luzern, Switzerland  
 Filed Feb. 26, 1970, Ser. No. 14,509  
 Claims priority, application Switzerland, Feb. 28, 1969, 3091/69  
 Int. Cl. B28c 5/28, 5/32, 7/16  
 U.S. Cl. 259—169



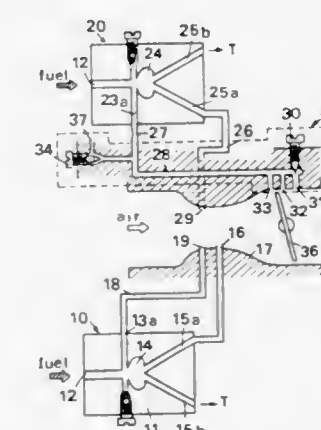
In a treatment and mixing machine, a cylindrical container is rotatable about an upwardly extending axis and the axis is disposed at an acute angle to the horizontal. Materials are discharged from the container through a closeable aperture centrally arranged in its bottom surface. A support post extends into the container from its upper end and a deflector plate with an arcuate shape transverse to the axis of the container is mounted at the lower end of the post and extends from the inner periphery of the container to the adjacent outer periphery of the discharge aperture. The deflector plate is short in the axial direction of the container relative to the axial dimension of the container. Another deflector plate is pivotally mounted on the support post and is movable in the axial direction of the container for controlling the turbulence of the mixing action. The axially movable deflector plate is located behind the other deflector plate in the direction of the path of rotation of the container. Extending downwardly into the material in the container is at least one rotatable tool which is located below the apex of the path of rotation of the container. In use, the container is rotated at a speed so that the centrifugal forces acting on the parts of the material are greater than the weight of the parts and a turbulent mixing action is developed.

**3,690,623**  
**TWIN SCREW EXTRUSION PRESSES**  
 Ivor Fenwick Boyne, West Ewell, England, assignor to GKN Windsor Limited  
 Filed May 26, 1970, Ser. No. 40,620  
 Claims priority, application Great Britain, June 11, 1969, 29,696/69  
 Int. Cl. B29f 3/02  
 U.S. Cl. 259—192



The invention consists in providing in a twin-screw injection or extrusion machine for moulding plastics material, a flow control means located between successive sections and/or at the forward end of the screws and comprising intermeshing flanged members each having a plurality of radial parallel flanges and each of said flanges having a plurality of circumferentially spaced gaps forming flow paths for the plastics material, said flanged members being rotatably adjustable relative to each other to vary the relative angular positions of the gaps in adjacent flanges thereby to vary the cross-sectional area or the course of said flow paths.

**3,690,624**  
**PATENT NOT ISSUED FOR THIS NUMBER**  
**3,690,625**  
**CARBURETOR UTILIZING FLUIDICS**  
 Takashi Ishida, Obi-Machi, Japan, assignor to Mikuni Kogyo Co., Ltd., Tokyo, Japan  
 Filed Aug. 17, 1970, Ser. No. 64,286  
 Claims priority, application Japan, Aug. 18, 1969, 44/65229  
 Int. Cl. F02m 69/04  
 U.S. Cl. 261—36 A



A carburetor whose main fuel flow system is constructed by a jet deflection proportional fluid amplifier. The carburetor has a separate fluid amplifier adapted to inject a fuel for use in a slow fuel flow system by means of a negative pressure in proportion to the amount of air passing through a throttle valve opening.



3,690,626

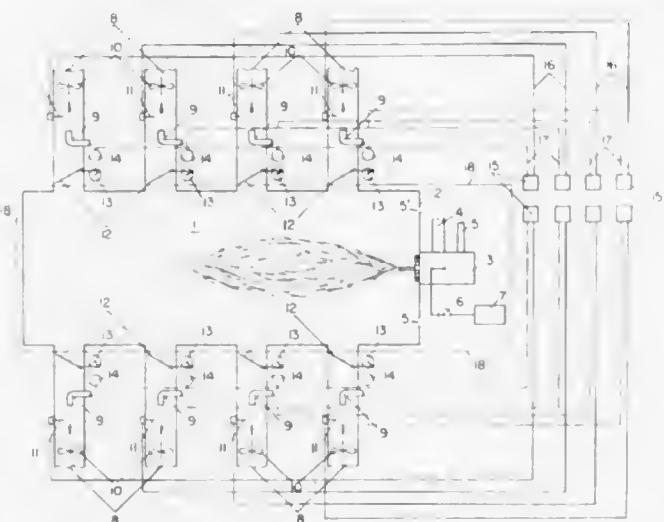
# METHOD AND EQUIPMENT FOR HEATING GAS AND MAINTAINING A DESIRED TEMPERATURE IN A PLURALITY OF FEED DUCTS

Julius Vernazza, Aachen, Germany, assignor to H. Krantz, Aachen, Germany

Filed Dec. 4, 1970, Ser. No. 95,245  
Int. Cl. F231 9/04

U.S. Cl. 263—19 A

2 Claims



A method and equipment for controlling the temperature of heated gas forced through a plurality of ducts from a heating chamber, in which each duct has an associated variable flap which sets the cross section of the duct and a temperature sensing device which retains the flaps in position such that a desired predetermined temperature of the gas forced through the ducts will be maintained.

3,690,627

# REGENERATIVE AIR HEATER SUCH AS HOT BLAST STOVE

Cornelis Van Herk, Haarlem, and Johannes Cornelis Mes, Alkmaar, both of Netherlands, assignors to Koninklijke Nederlandsche Hoogovens Ent. Staalfabriken N.V.

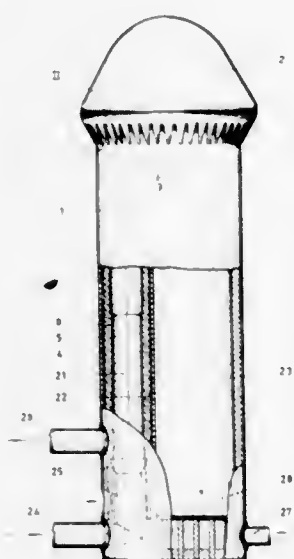
Filed March 8, 1971, Ser. No. 121,762

Claims priority, application Netherlands, March 10, 1970, 7003397

Int. Cl. F231 15/00; F23m 9/00

U.S. Cl. 263—19 R

8 Claims



The blast stove comprises a preferably cylindrical hollow vertical body of refractory bricks closed at the top by a dome of refractory bricks overlying and protruding radially outside the vertical body at the top thereof, the entire body and dome is surrounded by a jacket of steel, and the dome is built up on and is supported by a steel annular element which is in a gas-tight manner connected to the outer steel jacket of the dome

and of the vertical cylindrical body, the connection of the said annular element to the steel jacket of the vertical body and/or of the dome extending with respect to the axis of the vertical body alternately in a mainly radial and in mainly axial directions, this annular element being supported by a row of brackets secured to the outer jacket of the vertical body at a larger distance downwards from the upper edge of the vertical body than where the connection of the annular element to the vertical body is positioned, and preferably at at least twice the last mentioned distance. Several species and auxiliary features are also disclosed.

3,690,628

# METHOD AND A ROTARY KILN FOR PRODUCING A BLOATED CLAY PRODUCT

Harry Kamstrup-Larsen, Copenhagen Valby, Denmark, assignor to A/S Dansk Lecabeton, Glostrup, Denmark

Filed Aug. 6, 1970, Ser. No. 61,781

Claims priority, application Denmark, Aug. 6, 1969, 4228/69

Int. Cl. F27b 7/02

U.S. Cl. 263—21 B

14 Claims



A bloated granular clay product is manufactured by heating clay in a first step from atmospheric temperature to 300°–600° C. during a long period of time whereafter the clay now forming granules in a second step is heated to 1,150°–1,175° C. in a relatively short period of time i.e., about 15–30 minutes. The heating is effected in a rotary kiln having a drying section and a burning section. The first heating step is provided in the drying section and the second heating step takes place in a transition zone between the two sections. To ensure the quick heating in said second step there is provided heat transfer means in the transition zone.

3,690,629

# PNEUMATIC CONTROL SYSTEM AND APPARATUS AND METHOD UTILIZING THE SAME

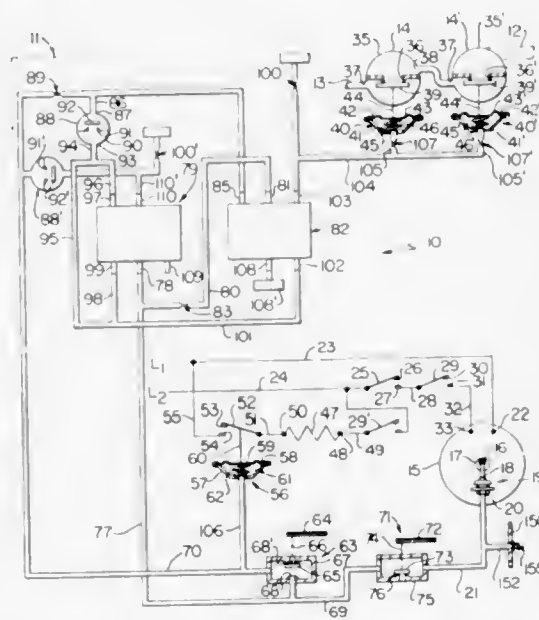
Douglas R. Scott, Elkhart, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Sept. 14, 1970, Ser. No. 72,073

Int. Cl. F27b 7/00; F15b 11/08, 13/042

U.S. Cl. 263—33 B

15 Claims



A pneumatic control system for an apparatus having a movable access door means, a pneumatic source, pneumatic

cally operated actuator means for controlling the apparatus, conduit means for interconnecting the source to the actuator means, and a suction cup means fluidly interconnected to the conduit means and having an open end for interconnecting the conduit means to the atmosphere. The suction cup means is so constructed and arranged that the access door means is adapted to close the open end of the suction cup means when the access door means is in a closed position thereof and is adapted to open the open end of the suction cup means when the door means is in an open position thereof whereby the source can be utilized to operate the actuator means only when the access door means is in its closed position.

3,690,630

Patent Not Issued For This Number

3,690,631

# REEL FOR ROD OR WIRE

Hans Peter Pech, Langenfeld, Germany, assignor to Schloemann Aktiengesellschaft, Düsseldorf, Germany

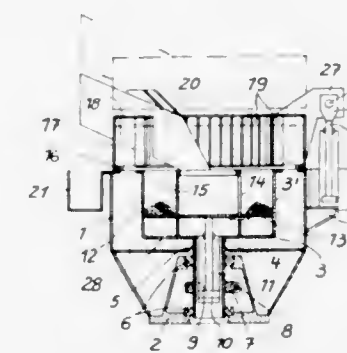
Filed Nov. 30, 1970, Ser. No. 93,704

Claims priority, application Germany, Nov. 29, 1969, P 19 59 972.5

Int. Cl. C21d 01/62

U.S. Cl. 266—6 R

10 Claims



In one form of reeling rod or wire, the rod or wire is coiled in a rotating vertical axis drum with a fixed container around the drum for holding cooling liquid so that the drum can rotate below the level of the liquid and to prevent the liquid being thrown out of the drum by centrifugal force, there is an annular casing above the drum with a diameter larger than that of the drum and a coaxial fixed ring of deflectors within the annular casing. The annular casing is fixed against rotation, but can preferably be lifted up, for instance, to discharge the finished coil. The deflectors stop or slow down the top zone of the swirling liquid and can prevent or make less marked the formation of a cone shaped surface on the liquid.

3,690,632

# BLAST FURNACE CONTROL BASED ON MEASUREMENT OF PRESSURES AT SPACED POINTS ALONG THE HEIGHT OF THE FURNACE

William A. Munson, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 30, 1970, Ser. No. 102,615

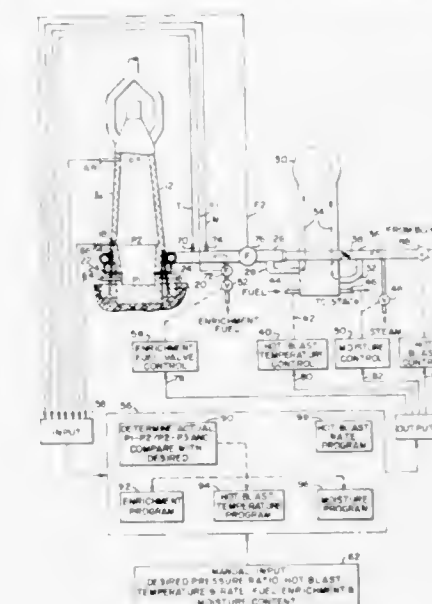
Int. Cl. F27d 7/02

U.S. Cl. 266—30

9 Claims

A system for automatically controlling the addition of moisture, the addition of enrichment fuels and/or the temperature of a hot blast for a blast furnace as a function of the

ratio of (1) the pressure differential between the pressure in the furnace at the tuyeres and at a point slightly above the



mantle to (2) the pressure differential at said point slightly above the mantle and that at the top of the furnace.

3,690,633

# COOLING COMPONENTS FOR COOLING SYSTEMS OF METALLURGICAL FURNACES AND METHOD FOR PRODUCING THE SAME

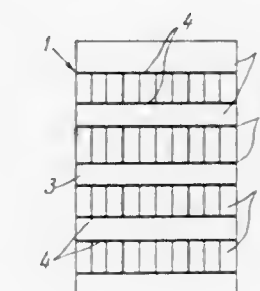
Sergei Mikhailovich Andoniev, Kharkov; Nikolai Nikitovich Alexandrov, Moscow; Nikolai Ivanovich Klochnev, Moscow; Evgeny Vladimirovich Kovalevich, Moscow; Alexandrovich Kudlinov; Dorina Borisovna Kutsykovich, both of Kharkov; Vasily Ivanovich Kulikov, Moscow, and Oleg Vladimirovich Filipiev, Kharkov, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatel'sky i Proektny Institut po Ochkistke Tekhnologicheskikh Gazov i Stoknykh Vod i Iskolzovaniju Vtorichnykh energoresursov predpriyaty Chernoi Metallurgii, Kharkov, U.S.S.R.

Filed Sept. 30, 1970, Ser. No. 76,703

Int. Cl. C21b 7/10

U.S. Cl. 266—32

2 Claims



A cooling member in the cooling system of a metallurgical furnace comprising a metal plate with pipes for a cooling medium and with transverse ribs placed between which are refractory bricks, thermo-resistant gaskets being placed between the ribs and the bricks.

3,690,634

# DEVICE FOR MAKING MOLTEN METAL FOR CASTING

Ryosuke Enya, 3620 Shinichi Murozumi-cho, Hikari, Japan

Division of Ser. No. 17,151, March 6, 1970, Pat. No.

3,653,877. This application Aug. 4, 1971, Ser. No. 168,887

Claims priority, application Japan, Sept. 11, 1969, 44/71624

Int. Cl. C21b 11/00

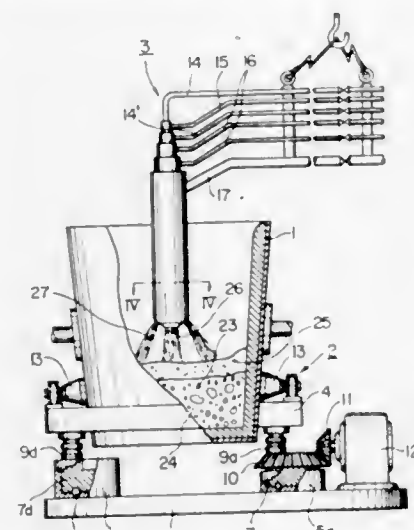
U.S. Cl. 266—33 R

15 Claims

Apparatus for melting metal for casting, comprises a vessel and a framework mounting the vessel on a base. A continu-



ously cooled vertical injector above the vessel mixes separately delivered fuel gas and oxygen-rich gas at the lower end of the injector and burns the fuels-gas-oxygen mixture so as to direct the flame into the vessel. A fluid blower disposed adjacent the injector produces a fluid curtain between the flame



of the fuel-gas-oxygen mixture and the inner surface of the vessel so as to surround the frame. Drive means translates the framework together with the vessel along a closed path so as to cause the material in the vessel to rotate therein about an axis which is offset from the central axis of the vessel.

3,690,635

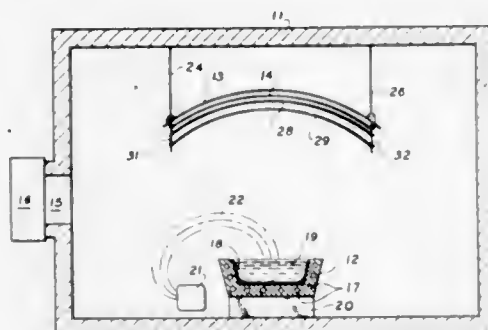
## CONDENSATE COLLECTION MEANS

Howard R. Harker, Mill Valley, and Geoffrey H. Humberstone, Berkeley, both of Calif., assignors to Air Reduction Company, Incorporated, New York, N.Y.

Filed May 16, 1969, Ser. No. 825,271  
Int. Cl. C21c 7/00

U.S. Cl. 266—34 R

5 Claims



Condensate collection means are described for use in a furnace for processing materials subject to vaporization wherein condensate is collected by means of a collector plate and one or more mesh structures positioned to condense the vapor. The one or more mesh structures allow vapor to first pass through to the collector plate but prevent solid pieces of condensate from falling back toward the vapor source.

3,690,636

## RECUPERATIVE FURNACES

Robert A. Shannon, Avon Lake, and Charles A. Waters, Lorain, both of Ohio, assignors to United States Steel Corporation

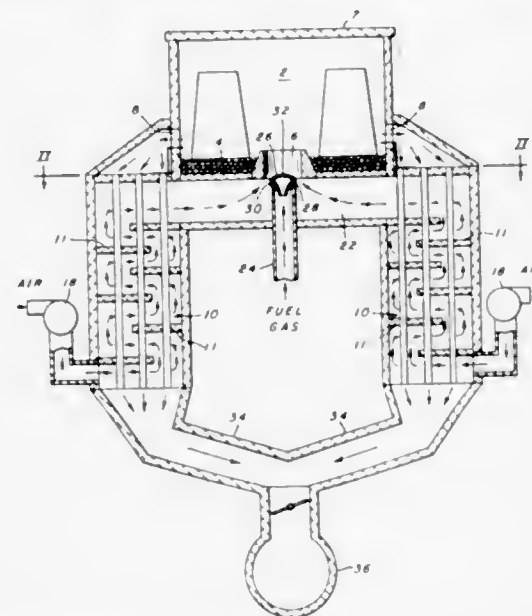
Filed Dec. 3, 1970, Ser. No. 94,735  
Int. Cl. C21d 1/06

U.S. Cl. 266—5 S

10 Claims

Recuperative furnaces, such as soaking pits, have recuperators formed of sets of ceramic tiles arranged end to end with aligned holes in each set of tiles forming one series of passages for the flue gas and openings between the sets of tiles forming

a second series of passages for the air to be heated. The heated air from the recuperator is directed through an air tunnel to an entry or burner port where it is mixed with coke oven gas or other fuel. Combustion is completed in the combustion or heating chamber which also receives the ingots to be heated. The burnt gases pass from the chamber through a flue gas port to the recuperator. It is impossible to maintain a gas tight con-



nection between the tile. To prevent air leakage into the flue gas passages and increase fuel efficiency and production the entry port area is made at least approximately 75 percent (preferably 100 percent) of the cross sectional area of the air tunnel and the flue port area is made at least approximately 75 percent (preferably 100 percent) of the total cross sectional area of the flue gas passages in the recuperator.

3,690,637

Patent Not Issued For This Number

3,690,638

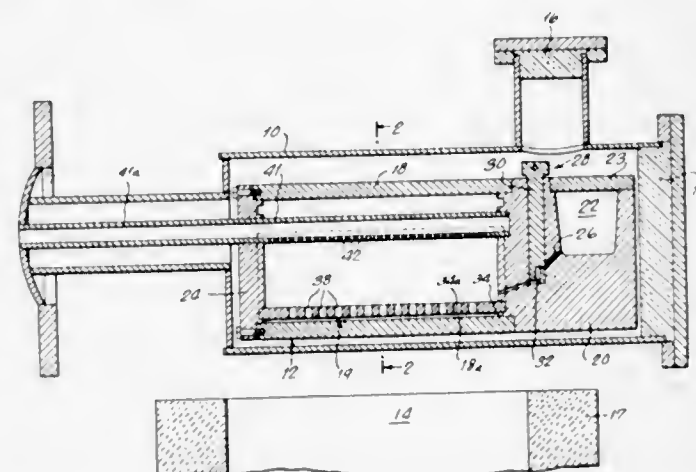
## APPARATUS FOR VAPORIZING MOLTEN METAL

John M. Roblin, Cleveland; Frank J. Cole, Parma, and William A. Reed, West Richfield, all of N.J., assignors to Republic Steel Corporation, Cleveland, Ohio

Filed May 15, 1970, Ser. No. 37,703  
Int. Cl. C21c 7/00

U.S. Cl. 266—34 R

22 Claims



Apparatus and method for vacuum vaporization of molten metal without entrainment of liquid droplets includes charging a pool of molten metal into a first cylinder member which has its central axis disposed horizontally and has at least one passage therethrough. A second cylinder member, also having its central axis disposed horizontally, encloses the first

3,690,641

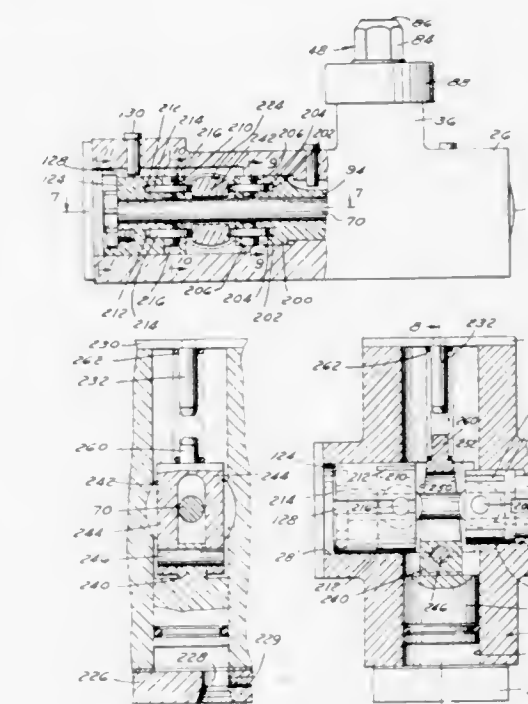
## FLUID OPERATED SPRING LOADED JACK LOCK ASSEMBLY

Dean A. Claycomb, 2320 Haggerty Road, Walled Lake, Mich. Continuation-in-part of Ser. No. 662,031, Aug. 21, 1967, Pat. No. 3,537,701. This application Aug. 5, 1970, Ser. No. 61,378

Int. Cl. B23q 1/22, 3/18; B25b 11/00

U.S. Cl. 269—20

13 Claims



A spring loaded jack lock assembly for supporting a work-piece at fixed points. The assembly includes a vertically movable plunger adapted to be fixedly located in a work supporting position by locking elements adapted to engage opposite sides of the plunger. A camming member is provided to move the elements into locking engagement with the plunger. A power operated piston/cylinder assembly has a rack and gear connection with the camming member to operate it.

3,690,642

## MEANS FOR CONFINING A TRANSLATABLE MEMBER TO STRAIGHT LINE MOTION

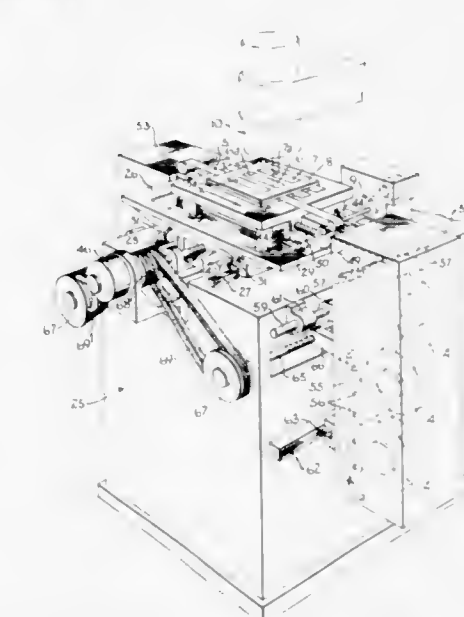
Borje Angelstrand; Ragnar Mostrom, and Henry Yngvesson, all of Jonkoping, Sweden, assignors to Saab-Scania Aktiebolag, Linkoping, Sweden

Division of Ser. No. 854,147, Aug. 28, 1969. This application Jan. 20, 1971, Ser. No. 107,972

Int. Cl. B23q 1/18, 3/18; B25b 1/24

U.S. Cl. 269—56

4 Claims



In structure comprising a pair of elements, one movable in a straight path relative to the other, one of the elements is pro-

cylinder member so as to receive molten metal through the passage. A thin semi-cylindrical shell of fluid metal is thus formed between the cylinder members. Heating the thin shell generates metal vapor. The metal vapor is passed through a tortuous path to remove any liquid droplets, and is discharged from an outlet nozzle for deposition upon a substrate.

In a modification the molten metal is contained in the lower portion of an evaporator member. A shelf with a passage therethrough divides the evaporator member horizontally while allowing generated metal vapor to pass to the upper portion of the evaporator member. There the vapor is passed through a tortuous path to remove any liquid droplets, thence proceeding to an outlet nozzle for deposition upon a substrate.

3,690,639

## HELICALLY WOUND LAMINATED BEARINGS AND METHOD OF MANUFACTURE

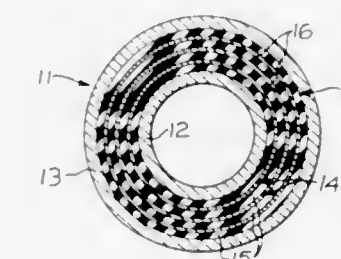
William D. Brandon, and Jack A. Drais, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 5, 1970, Ser. No. 77,819

Int. Cl. F16c 1/10

U.S. Cl. 267—57.1

17 Claims



An improved cylindrical bearing material of a laminated construction employs a plurality of alternating cylindrical shells of elastomer and metal laminated together in which each metal shell is formed by helically winding a band of the metal in an edge-wise, abutting relationship to form a cylindrical metal shell or sleeve. The resulting bearing material, composed of a plurality of alternating concentric elastomeric and metallic shells can be confined between a cylindrical core and an outer cylindrical retaining ring to form a bearing assembly in which the bearing material may be placed under a radial pre-load, if desired, to decrease its radial deflection when it is placed under radial loads. In the preferred embodiment of the invention, the adjacent metal shells are wound in opposite directions to stabilize the bearing material under torsional loading.

3,690,640

## VIBRATION DAMPER

Andre Lucien Pineau, 12 Rue de Bearn 92, Saint-Cloud, France

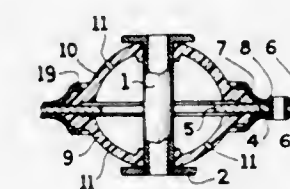
Filed Jan. 26, 1971, Ser. No. 109,895

Claims priority, application France, Feb. 3, 1970, 7003678

Int. Cl. F16k 1/36

U.S. Cl. 267—137

11 Claims



Damper of vibrations between two elements comprising a center rod adapted to be connected to one of the elements and a mount surrounding the rod and adapted to be connected to the other element. The rod and mount are interconnected by two elastically yieldable bell-shaped membranes. The latter have at their apices apertures in which the rod is engaged and are connected to the mount at their peripheries.



vided with a track having a true, flat master surface extending in the direction of motion and an oppositely facing generally flat and parallel surface. The other element has rollers on fixed axes engaging the master surface and rollers on yieldingly movable axes engaging the other surface to maintain the first mentioned rollers firmly engaged with the master surface.

3,690,643

## ARTICLE DISTRIBUTOR

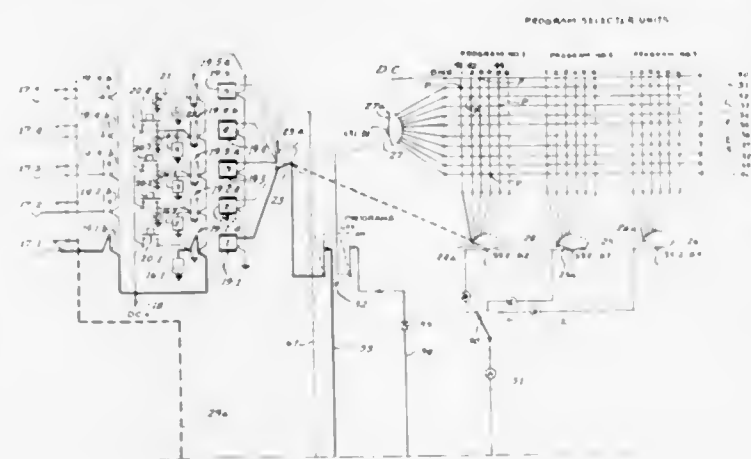
Eugene A. Anderson, and Clifford R. Strain, both of Lombard, Ill., assignors to Eugene A. Anderson, Lombard, Ill.

Filed Oct. 21, 1970, Ser. No. 82,619

Int. Cl. B65h 39/02, 29/58

U.S. Cl. 270—58

26 Claims



Copy sorting and distributing apparatus for automatically depositing a preselected number of copies in particular storage spaces. A switch selects a particular program which is arranged to indicate particular numbers of copies or articles to be deposited in particular bins. The program units together with switch mechanism represent copy counting mechanisms which automatically reset themselves and set up the apparatus for depositing copies in a succeeding space. Program units may be changed automatically.

3,690,644

## CARD HANDLING MECHANISM

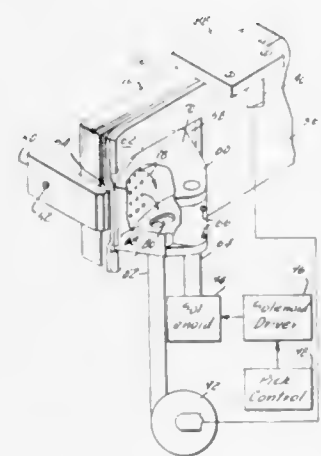
Silas Ray Halbert, Brevard, Fla., assignor to Documentation, Inc., Melbourne, Fla.

Filed Dec. 30, 1970, Ser. No. 102,796

Int. Cl. B65h 3/10

U.S. Cl. 271—29

20 Claims



Picker used in a processing apparatus wherein a stack of data processing cards or other paper, checks, or the like, are fed along an input hopper to an end wall plate where each of the cards are sequentially ejected from the stack in a direction at right angles to the previous travel path. The picker seizes each card as it reaches the end plate and directs the card one at a time in the new direction past a throat formed by a throat

bar defining the throat passage past the end plate. The end plate has a window for the picker face near the throat bar. The picker is a substantially hollow body with angular walls and a generally arcuate picker face having holes therein and is supported in the window so that it can be turned by a drive means a predetermined angle of rotation in the direction of the throat. Suction means are connected to the picker to generate a negative pressure force through the holes therein to cause the foremost card to adhere to the face upon reaching the end place and be directed past the throat as the picker turns.

3,690,645

## APPARATUS FOR SEPARATING A STACK OF FOLDED PRINTED PRODUCTS OR PRINTED PRODUCTS BOUND AT ONE SIDE

Walter Reist, and Hans Rudolf Kuratle, both of Hinwil/Zurich, Switzerland, assignors to Ferag, Fehr & Reist AG, Hinwil, Zurich, Switzerland

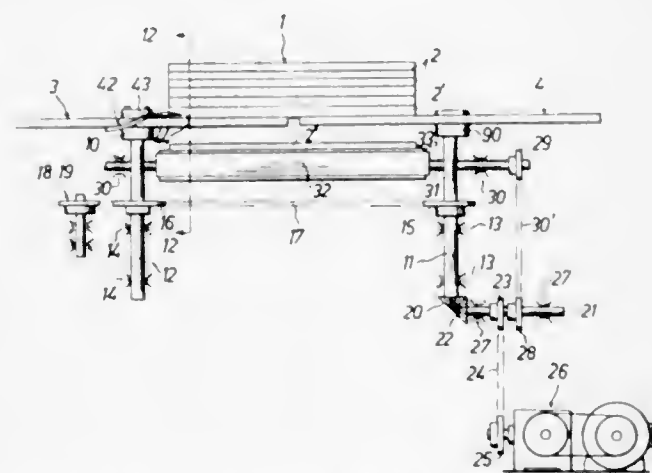
Filed July 24, 1970, Ser. No. 57,953

Claims priority, application Switzerland, July 24, 1969, 11331/69

Int. Cl. B65h 3/32

U.S. Cl. 271—29

12 Claims



An apparatus for separating a stack of individual sheets or folded and/or one-side bound printed products with the aid of a least one separation element suitable for initiating the separation operation and acting directly at the printed product to be separated. According to the invention, the separation element possesses a substantially lance-shaped constructed leading end portion driven to move in a plane substantially parallel to the printed products with respect to the stack thereof. This separation element is destined to engage with one so-called cut side edge portion of the printed product to be separated from the stack thereof or above such cut side edge of the printed product to be separated.

3,690,646

## ELECTROSTATIC CONVEYOR

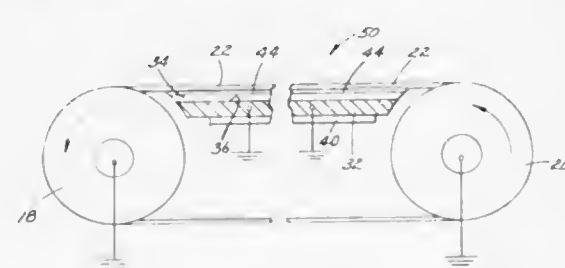
James A. Kolibas, Broadview Heights, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed July 8, 1970, Ser. No. 53,053

Int. Cl. B65h 5/02

U.S. Cl. 271—45

15 Claims



An electrostatic conveyor including a machine frame defining a feed table and a conveyor including a plurality of belts

3,690,649

## AUTOMATIC SHEET STACKER

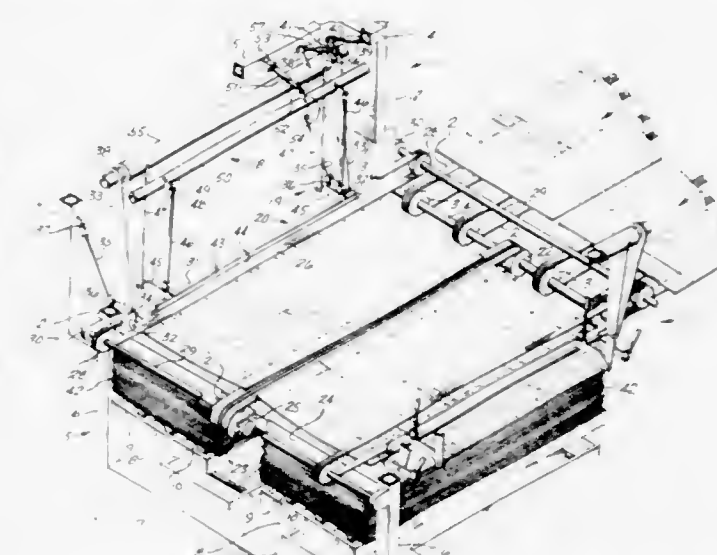
Byron B. Brookhyser, Milton, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed March 29, 1971, Ser. No. 128,781

Int. Cl. B65h 29/68

U.S. Cl. 271—68

6 Claims



A material handling device to stack thin sheet material as it comes from the output end of a suitable upstream process. The sheet stacker has a supporting conveyor surface and laterally spaced therefrom a tray and clutch bar mechanism which is operable to provide the other supporting side to the incoming sheet material. As an individual sheet enters the sheet stacker, it will be supported by the conveyor surface and tray member while at the proper instant the clutch bar will actuate and pull the sheet from the conveyor surface allowing it to fall toward the top of the stack which is being formed between the supporting conveyor surface and laterally spaced tray and clutch bar mechanism.

3,690,650

## METHOD AND APPARATUS FOR FEEDING SHEET MATERIAL INTO A HOPPER

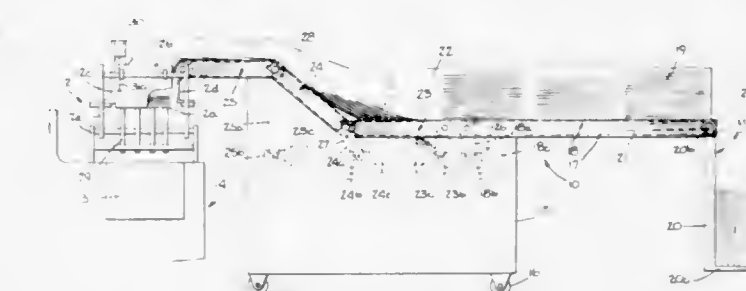
Robert E. Maier, Jr., Easton; Joseph P. McGinnis, Raubsville, and Paul R. Simon, Allentown, all of Pa., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed Dec. 17, 1970, Ser. No. 99,066

Int. Cl. B65h 29/16, 31/38

U.S. Cl. 271—89

30 Claims



Apparatus which delivers sheet material such as signatures to a hopper from which the sheet material is subsequently delivered to another apparatus such as a gatherer. A conveyor delivers the sheet material to the hopper to maintain a pile stack of sheet material therein. The material is delivered by the conveyor in bursts to facilitate the accumulation of the sheet material within the hopper. The apparatus further comprises one or more joggers which cyclically strike an edge portion of the sheet material being delivered in a period to ensure that the sheet material is evenly accumulated within the hopper.

which move across the table to convey sheet material. The moving conveyor belts, along with charging members connected to the feed table, and the feed table itself define an electrostatic generator. The generator establishes an electrostatic field between sheets on the conveyor and the feed table. The field creates an electrostatic force which urges the sheets toward the table thereby frictionally engaging the sheets and the conveyor belts so that sheets are conveyed along the table by the belts.

3,690,647

## SHEET FEEDING APPARATUS

Masaharu Matsuo, No. 17-13, 3-chome, Higashikomagata, Sumida-ku, Tokyo, Japan

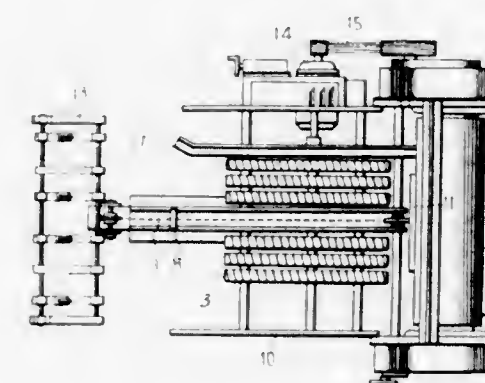
Filed Oct. 22, 1970, Ser. No. 83,088

Claims priority, application Japan, March 23, 1970, 45/23580

Int. Cl. B65h 9/16

U.S. Cl. 271—49

4 Claims



Cardboard sheets and the like are fed to a rotary die cutter by a conveyor having a multiplicity of idling guide rollers tangential to a common horizontal plane and rotating in respective parallel planes perpendicular to the common plane and approaching the face of a stationary lateral guide at a small acute angle in the direction of sheet movement. Each sheet is pushed over the guide rollers by a dog on an endless conveyor chain and laterally deflected by the guide rollers into engagement with the stationary guide.

3,690,648

## WHEEL ASSEMBLY

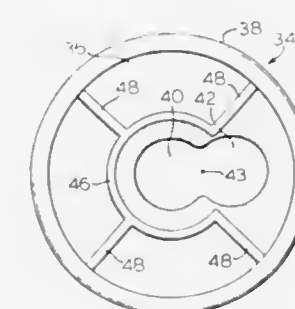
Francis Walter Herrington, 41 Bonnie Brae Blvd., Toronto, Ontario, and James D. McClure, 23 Darlington Crescent, Bramalea, Ontario, both of Canada

Filed April 21, 1971, Ser. No. 135,880

Int. Cl. B65h 29/20

U.S. Cl. 271—51

8 Claims



An improved wheel for use in a sheet-supporting assembly for a roll of a printing press comprising a hub, an annular race formed on the periphery of the hub, a planar disc having a central opening and mounted in said hub race, and an eccentric opening formed in said disc communicating with said central opening whereby said disc can be selectively positioned on the hub in its central opening operative position for free rotation or on its eccentric opening inoperative position for restricted rotation.



3,690,651

Patent Not Issued For This Number

3,690,652

**FOLDABLE INVALID WALKER CONVERTIBLE FROM FIXED TO SWINGABLE WALKER**

Joseph C. Schneider, Williamstown, Mass., assignor to Parker Machine Co., Inc., North Adams, Mass.

Filed June 7, 1971, Ser. No. 150,402

Int. Cl. A61h 3/00

U.S. Cl. 272-70.3

10 Claims



A foldable invalid walker is provided with a pair of locking keys each of which is mounted within a leg of the walker for movement into either a narrow slot for use of the walker as a fixed walker, or into a wide slot for use of the walker as a swingable striding walker. When the keys are positioned in their respective narrow slots, the associated legs are held against relative movement with respect to the rest of the walker. When the keys are positioned in their respective wide slots, the associated legs are pivotally mounted to the rest of the walker, thus converting the walker to a swingable walker. The walker can further be folded for storage.

3,690,653

Patent Not Issued For This Number

3,690,654

**PULL TYPE FRICTIONAL RESISTANCE EXERCISING DEVICE**

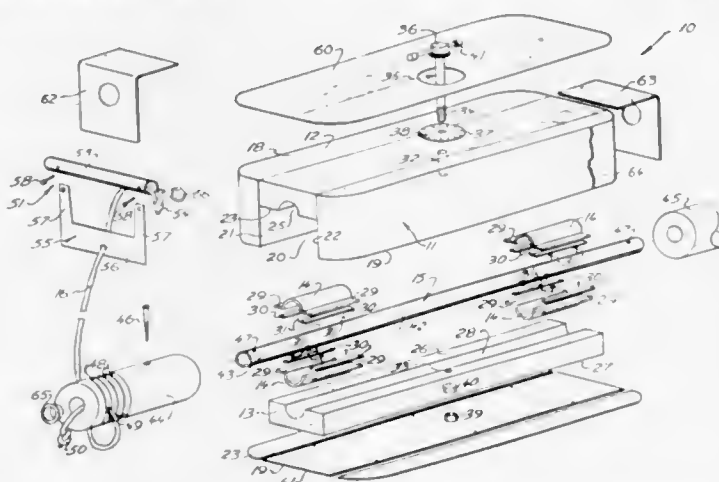
Douglas I. Hepburn, 1390 Southwest Marine Drive, Vancouver, British Columbia, Canada

Filed April 21, 1971, Ser. No. 136,104

Int. Cl. A63b 21/22, 21/00

U.S. Cl. 272-79 D

6 Claims



An exercising apparatus having a rotatable member to which a braking moment is frictionally applied so that tension will be developed in flexible members which are wound on the rotatable member and which are operable for alternately rotating the latter in opposite directions.

**3,690,655  
A MANUALLY OPERABLE CANTILEVERED TYPE EXERCISING DEVICE**

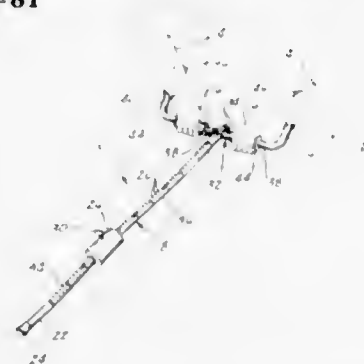
Richard L. Chapman, 233 Prospect Ave., Waterloo, Iowa

Filed June 21, 1968, Ser. No. 738,942

Int. Cl. A63b 21/00

U.S. Cl. 272-81

8 Claims



A device for performing a variety of exercises including an elongated member having calibrations along its length and a movable weight means mounted thereon adapted to be selectively positioned as desired. A U-shaped handle bar unit is rotatably connected at one end of the elongated member and may be turned as desired to perform various exercises. A strap may be connected to the elongated member and extend around the exerciser's neck for certain exercises. A cross piece may be selectively moved along the elongated member for desired leg exercises.

**3,690,656  
TABLE GAME**

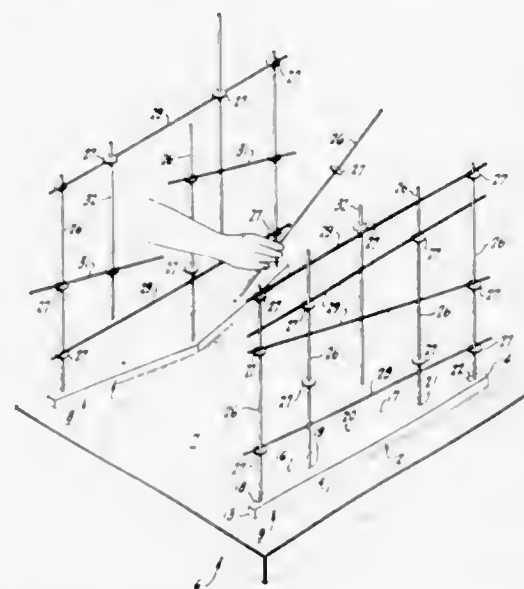
David A. Hughes, and Alan T. Hughes, both of El Cerrito, Calif., assignors to Dalan Company

Filed Jan. 6, 1970, Ser. No. 862

Int. Cl. A63f 9/00

U.S. Cl. 273-1 R

1 Claim



A table game for play by at least two facing players has two set-ups on a table top, each set-up including a base plate having a plurality of vertical bores arranged a distance apart about equal to the transverse dimension of a human forearm and disposed out of a straight line. Upstanding vertical rods are releasably held in the bores. Washers frictionally engage the rods in desired locations. Bars of various lengths are rested on the washers on selected sides of the rods by each player. Also, rod-like hangers are provided with washers and suspended from the bars. The players in turn reach through the adjacent set-up successively to position bars, rods and hangers on the remote set-up. Play continues until a player knocks down an excessive number of bars, hangers or rods in any assortment or his opponent has blocked all spaces in the adjacent set-up through which he can pass his forearm for further play.

3,690,657

**GAME MACHINE**

Masaya Nakamura, Tokyo, Japan, assignor to Kabushiki Kaisha Nakamura Seisakujo, Tokyo, Japan

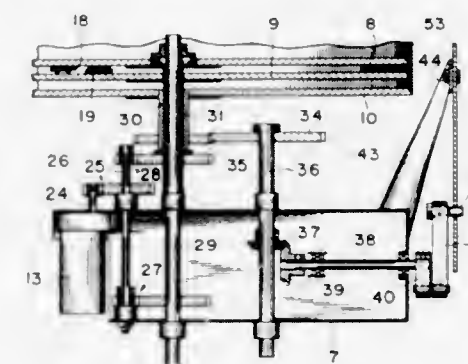
Filed Jan. 16, 1970, Ser. No. 3,450

Claims priority, application Japan, Sept. 17, 1969, 44/73354; Sept. 17, 1969, 44/73355; Nov. 25, 1969, 44/93967

Int. Cl. A63f 9/14

U.S. Cl. 273-1 E

7 Claims



A game machine wherein three-dimensional models of motor vehicles carried by transparent discs are used for forming the image of motor vehicles on a screen, the three-dimensional models being projected obliquely and directly onto the screen. A light source for projecting the motor vehicle models onto the screen can move with respect to the discs. The discs carrying the motor vehicle models and a pictorial road and their drive means can swivel to give realistic banking effect to the screen.

3,690,658

**TENNIS RACKET**

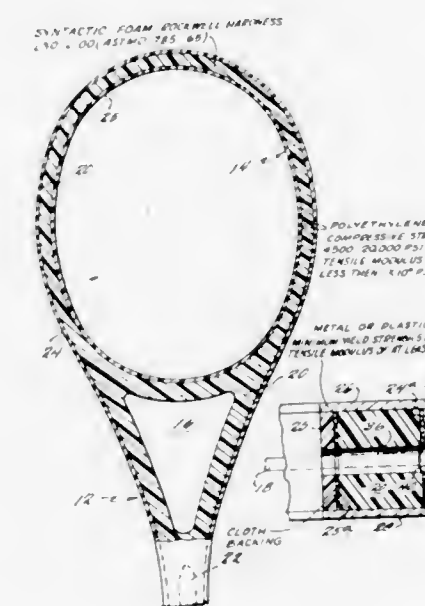
John G. Howe, Baltimore, Md., assignor to AMF Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 11,547, Feb. 16, 1970, abandoned. This application May 25, 1970, Ser. No. 40,171

Int. Cl. A63b 49/10

U.S. Cl. 273-73 C

2 Claims



A racket construction having a central dampening core sandwiched between skins of high strength material, the skins serving as the racket faces. In the bow portion of the racket at least one web, having higher strength characteristics than the core, extends normal to the skins. Layers of elastomeric material are utilized between the skins and the core to assist in laminating the core, skins and web into a unitary structure.

3,690,659

Patent Not Issued For This Number

3,690,660

**HORSESHOE CATAPULTING APPARATUS HAVING A REMOTE CONTROL FEATURE**

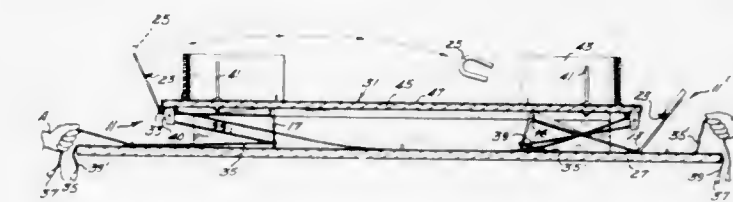
William Olkowski, Rt. 5, Box 107, Traverse City, Mich.

Filed Feb. 28, 1968, Ser. No. 709,031

Int. Cl. A63b 71/04

U.S. Cl. 273-101

7 Claims



A game structure with a flat playing surface and rigid, pivotal type catapults mounted at each end for launching game pieces toward a stake at the opposite end of the playing surface. Control cords are attached to each catapult for remote manual actuation of each catapult from both ends of the playing surface.

3,690,661

**AUTOMATIC HIT INDICATING SHOOTING TARGET**

Armin Scharz, and Oskar Scharz, both of Rugenparkstrasse 6, 3800 Interlaken (Canton of Berne), Switzerland

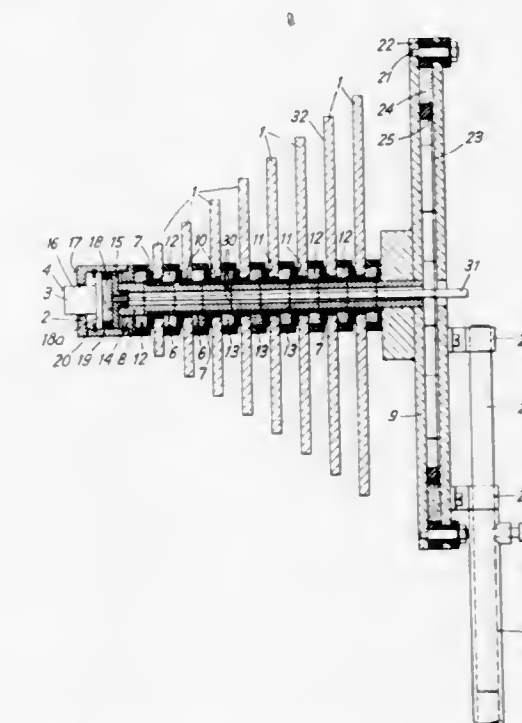
Filed Feb. 1, 1971, Ser. No. 111,313

Claims priority, application Switzerland, Feb. 12, 1970, 2068/70

Int. Cl. F41j 5/00

U.S. Cl. 273-102.2 R

5 Claims



There is disclosed a shooting target for the automatic indication of hits, comprising a number of different size target bodies having impact surface for the fired projectiles, a base plate, and a central column for mounting said target bodies behind one another and independently movable with respect to one another to a limited extent at said base plate. Sensing elements responsive to the relative movement of the target bodies serve to influence an electrical current flowing in a current circuit associated with each target body, said sensing elements being arranged between said individual target bodies.



An intermediate plate is mounted to be movable to a limited extent relative to the base plate and is arranged between the target bodies and the base plate. Additional sensing elements are arranged substantially along a circular path between said intermediate plate and said base plate for indicating the position of the fired shot.

3,690,662

## TOWED AERIAL TARGET

Joseph Pasqualini, 82, Rue du Parc de la Lande, 94 Plessis-Trevise, France

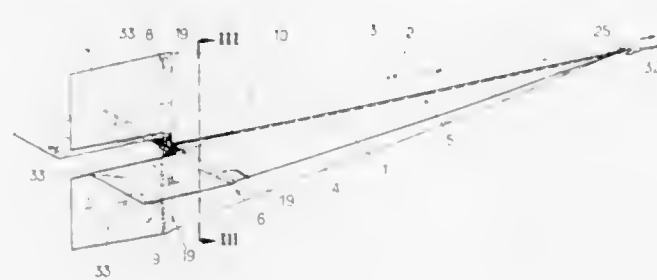
Filed Dec. 4, 1970, Ser. No. 95,161

Claims priority, application France, Jan. 8, 1970, 7000601

Int. Cl. F41j 9/10

U.S. Cl. 273—105.3

3 Claims



Target comprises at least three right triangular panels of flexible sheet material with their long sides fastened together. A collapsible frame comprises a longitudinal bar running along the sides attached together and a transverse bar extending along the rear edge of each panel pivotally connected to the rear end of the longitudinal bar.

3,690,663

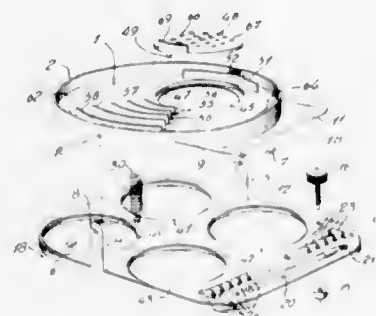
MARBLE GAME DEVICE WITH REMOVABLE INSERTS  
Paul Boulva, 4040 Wilson Ave., Montreal, 253 Quebec, Canada

Filed Sept. 21, 1970, Ser. No. 73,863

Int. Cl. A63b 67/14

U.S. Cl. 273—110

8 Claims



A manually tiltable playing table is provided for playing a variety of marble games. The table is pivoted on a central horizontal axis. A spring normally holds the disk, which provides the playing surface, tilted so that the side carrying a playing handle is raised. The playing surface is about 10 inches in diameter, and enclosed by a circumferential wall. Opposite the starting position, which is at one end of the tilt axis, are a number of curved channels to turn rolling marbles back so that further rolling can be directed generally towards other by sectoral vanes. An array of one or more deflectors or traps and one or more goals is located between the curved channels and the starting position. The said array is carried by a removable disk and other arrays may be substituted to vary the game.

3,690,664  
TIC-TAC-TOE GAME

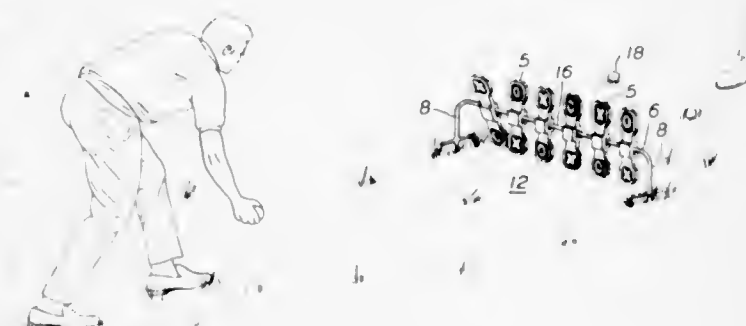
Gary F. Hauke, 40 E. Main St., P. O. Box 281, New Albany, Ohio

Filed Oct. 26, 1970, Ser. No. 83,845

Int. Cl. A63b 67/14

U.S. Cl. 273—127 D

8 Claims



A game using flippers supported on a horizontal support (1) with different insignia in the upper and lower halves, or (2) with different insignia in the upper and lower halves and at the midpoint. By rolling a ball and turning the flippers, opponents strive to bring all of their insignia in line in the top or bottom halves of the flippers.

3,690,665

## BOARD GAME APPARATUS

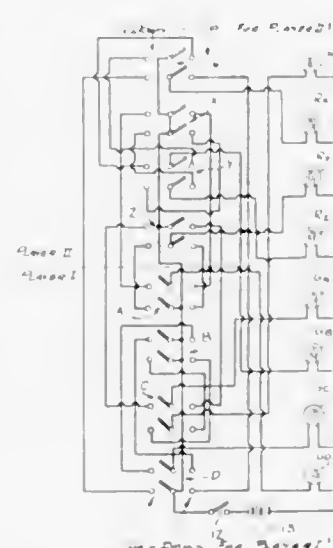
Norman Becker, 5 Boar Court, Suffern, N.Y.

Filed Feb. 8, 1971, Ser. No. 113,131

Int. Cl. A63f 3/00

U.S. Cl. 273—130 AB

3 Claims



An electrically-operated switching game wherein switches are manipulated by players to selectively activate light bulbs. Each player is provided with a like row of double-pole, double-throw switches and a series of light bulbs, the bulbs associated with the players on opposing sides differing in color. The switches and bulbs are so interconnected that each switching action, which may be either in the up or down direction, results in a change in the status of a pair of bulbs, one on each side, such that a previously lit bulb is turned off or vice versa. The outcome of the game is indicated by an unbroken series of lit bulbs on either side, or any other predetermined light pattern depending on the rules.

3,690,666

## HORSE RACING BOARD GAME APPARATUS

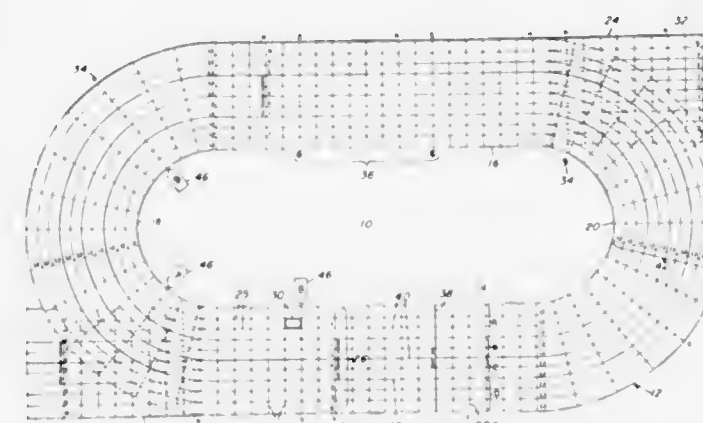
John R. Seltz, 915 Wheaton Dr., Lancaster, Pa.

Filed Nov. 24, 1970, Ser. No. 92,338

Int. Cl. A63f 3/00

U.S. Cl. 273—134 CH

12 Claims



A horse racing game including a game board inscribed with a simulated racetrack, and a plurality of cards inscribed with various groups of numbers which indicate horse performance, a particular horse's rating, key numbers, and index numbers. A race action board has various tables and charts which are used, in combination with the horse performance cards, to determine the amount each marker representing a horse is to be moved along the simulated racetrack. A random number selector means is used to determine the key numbers and various finder numbers which are used with a plurality of finder tables which are, in turn, used to determine the track condition, race time, odds for each horse, etc. A race charting sheet is used to record all pertinent data during the preparation for and running of each race.

3,690,667

## BOARD GAME APPARATUS

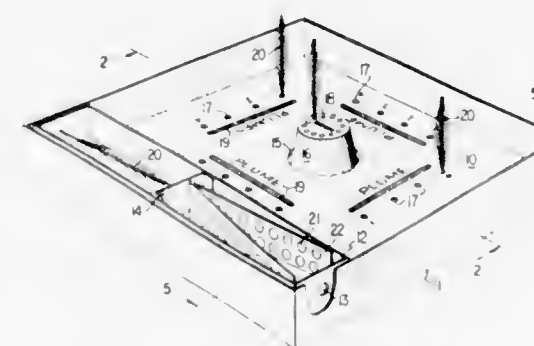
Richard D. Smith, 913 N. Liberty St., Arlington, Va.

Filed Oct. 29, 1970, Ser. No. 85,193

Int. Cl. A63f 3/00

U.S. Cl. 273—134 B

10 Claims



A board game in which a tapered hollow body is positioned and confined in an inverted posture within a game box by the gameboard, said body effectively simulating an upstanding hat. The top of the hat is multiply apertured to receive slender implements such as feathers placed therein according to chance, either directly or by incremental movement through a series of gameboard apertures as designated by shaker box dispensed tokens having appropriate indicia thereon.

3,690,668

## GAME APPARATUS

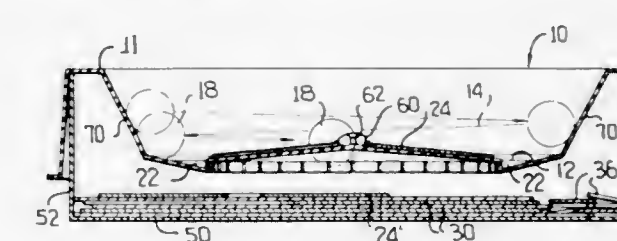
James F. Weeks, Macon, and Ray T. Bustos, Atlanta, both of Ga., assignors to said Weeks, by said Bustos

Filed Nov. 14, 1969, Ser. No. 876,886

Int. Cl. A63f 5/02

U.S. Cl. 273—138 R

1 Claim



A game apparatus comprising a container for game equipment such as playing cards, markers or discs, instruction sheets, marbles or dice, etc., the container lid member including a novel track or raceway for a projectile, such as marble, which is movable into one of a plurality of stalls arranged adjacent to score-indicating or move-indicating indicia means.

3,690,669

Patent Not Issued For This Number

3,690,670

## CARD SORTING DEVICE

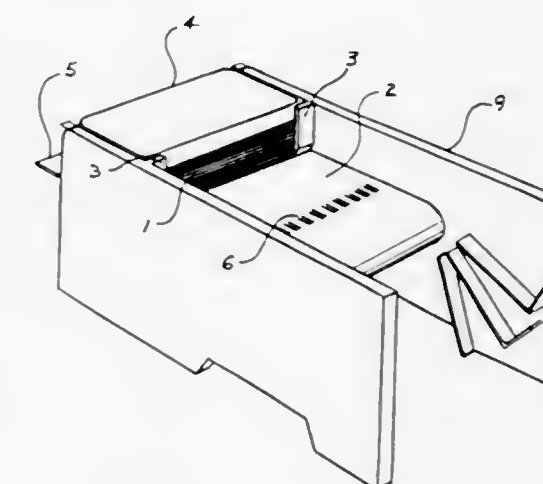
John Cassady, 11 Mira Monte Rd., Orinda, Calif., and George Coad, 1697 Castle Hill Rd., Walnut Creek, Calif.

Filed Dec. 15, 1969, Ser. No. 885,283

Int. Cl. A63f 1/14

U.S. Cl. 273—149 P

8 Claims



Stacked cards may be sorted by providing uniquely located identifying holes in each card and a movable element with tabs that are able to engage selected holes in a card to remove the card from a stack and deliver it to a selected sorting station. Selection is accomplished by a sort controlling means placed between the movable element and the stacked cards. The sort controlling means aligns one tab with one hole of a group on a stacked card. The tab then moves the card to a selected sorting station.

3,690,671

## EDUCATIONAL COLOR ASSOCIATION GAME

Linda F. Slutsky, 5700 Bunker Hill Apt. 806, Pittsburgh, Pa.

Filed March 22, 1971, Ser. No. 126,587

Int. Cl. A63f 9/08; G09b 19/00

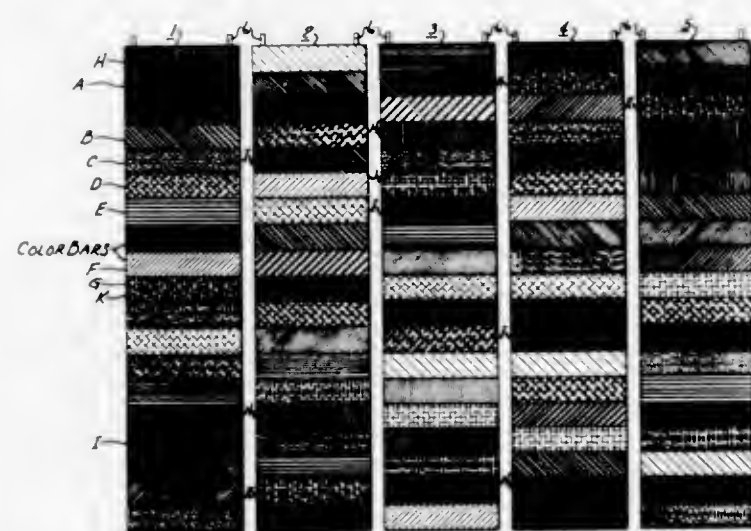
U.S. Cl. 273—153 R

6 Claims

An educational color association game wherein a plurality of panels, usually three or more, are each provided with a number of different color bars adjacently arranged thereon. A



selection of the different color bars are common to all panels wherein the object of the game is to find the color or colors which are common to all panels and in addition to find a color



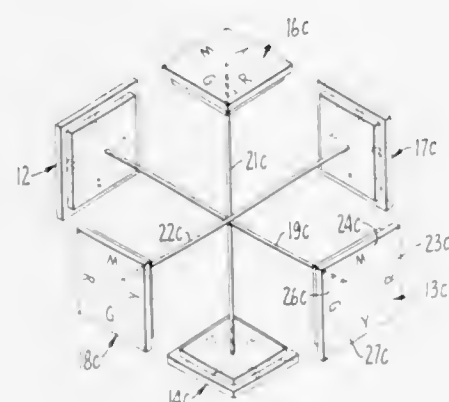
that is shown only once on all panels. The difficulty in matching the colors arises due to the camouflage effect given to the common color bars by reason of their association with different colors from one panel to the next.

### 3,690,672 PUZZLE

Allen E. Dreyer, Richmond, Calif., assignor to Universal Research Company, Berkeley, Calif.  
Filed July 22, 1971, Ser. No. 165,278  
Int. Cl. A63f 9/08

U.S. Cl. 273—155

16 Claims



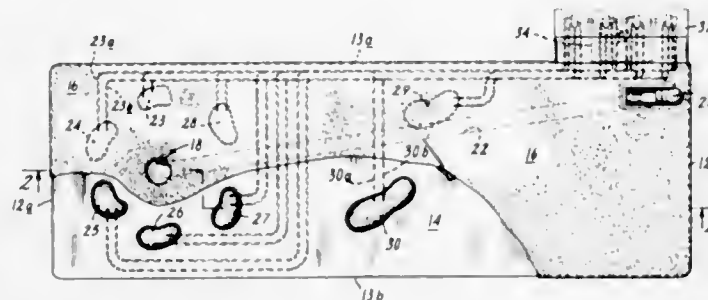
A polyhedral puzzle is provided which is assembled from pairs of faces held to each other by an elastic member swivelably attached at the midpoint of the face, with said faces all having recessed edge configurations and being slightly but not perceptively different from each other, and formed to assemble into a regular polyhedron. A typical assembled puzzle is a cube formed with three pairs of opposed faces attached through elastic members with each face having a step-like recessed portion at the edge. Each of the opposed face members are alike and formed so that one pair of faces will nest completely into the other faces, another pair will completely overlap the other faces, and the third pair will partially nest and partially overlap. Another form of puzzle also contains design configurations on the faces which must be oriented as the puzzle is assembled in order to increase the difficulty of assembly thereof.

### 3,690,673 SELECTIVELY CONTOURABLE PUTTING GREEN

Peter W. Occhipinti, 672 Downing St., Teaneck, N.J.  
Filed Aug. 11, 1971, Ser. No. 170,700  
Int. Cl. A63b 69/36

U.S. Cl. 273—176 H

10 Claims



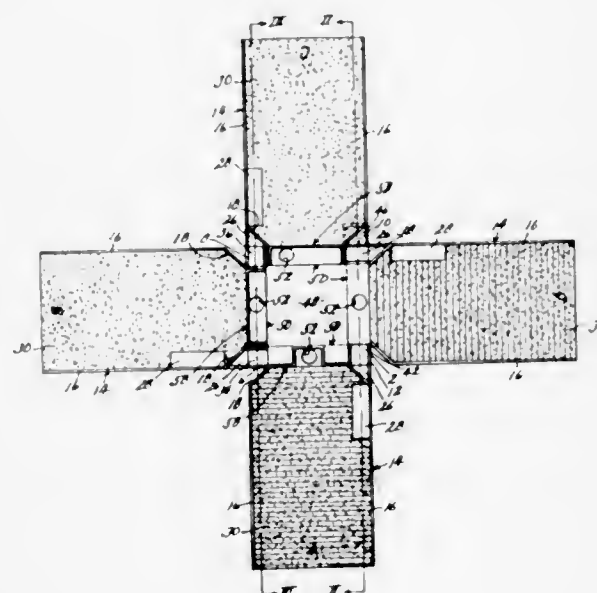
As described herein, a golf putting green simulator includes an enclosed support member having a defined configuration over which synthetic grass is extended to provide a putting surface. A hollow putting cup is mounted in the support member adjacent one end thereof and communicates with a receptacle formed in the support member at the other end thereof through an inclined conduit. Randomly spaced between the synthetic grass and the upper surface of the support member are a plurality of irregularly shaped air sacks, each sack containing an air inlet port and an air outlet port. A console containing an air compressor and a plurality of supply and exhaust valves coupled to the inlet and outlet ports of the air sacks is further provided to enable the golfer to selectively expand and deplete the air sacks to thereby modify the contour of the synthetic grass putting surface.

### 3,690,674 PUTTING PRACTICE DEVICE

Cecil R. Taylor, 2921 R. D. Mize Rd., Independence, Mo.  
Filed Sept. 28, 1971, Ser. No. 184,360  
Int. Cl. A63b 67/02, 57/00

U.S. Cl. 273—176 G

10 Claims



A putting practice device consisting of a square box adapted to rest on a floor, four ramps inclined upwardly from the floor respectively to the four upper edges of the box, and up which a golf ball is to be putted in sequence, a target plate overlying the box at the upper end of each ramp, and having an aperture therein providing a target hole through which the ball must fall, hazards guarding the holes, passageways in the box beneath each of the target plates and each operable to convey a ball to the successive ramp, except beneath the fourth plate which delivers the ball to a special container indicating

completion of the course, and a central trap in the box adapted to receive a ball passing over any of said target plates without passing through the hole thereof, and operable to return any such ball to the first ramp of the series. The ramps, target plates and hazards are detachable and interchangeable to vary the putting conditions.

### 3,690,675 SPIN DETECTOR FOR GOLF GAMES

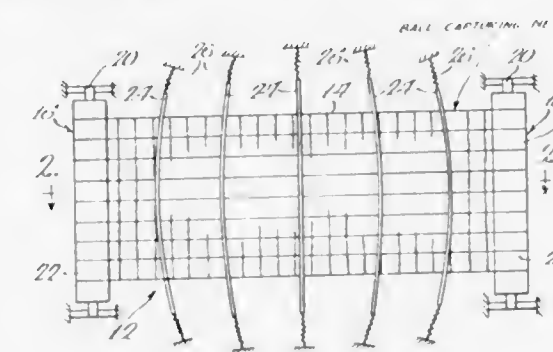
Robert M. Conklin, Muskegon, Mich., assignor to Brunswick Corporation

Filed Dec. 14, 1970, Ser. No. 97,554

Int. Cl. A63b 69/36

U.S. Cl. 273—185 R

6 Claims



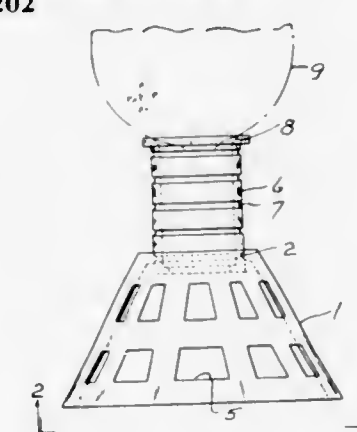
A golf game including a ball capturing net resiliently suspended in spherical form relative to the tee point and biased laterally by two side take-up cylinders. Deflection of the net by the momentum and spin of an impacting ball unwinds the cylinders. The outputs of a piezo-electric signal generators activated by the unwinding of each cylinder are integrated, compared and the difference displayed by a galvanometer calibrated to indicate slice or hook of the ball.

### 3,690,676 GOLF BALL TEE

Frank Costa, 1217 Tynfield Road, Oakmont, Pa.  
Filed Jan. 26, 1971, Ser. No. 109,764  
Int. Cl. A63b 57/00

U.S. Cl. 273—202

1 Claim



A reusable golf ball tee of plastic material that renders it practically indestructible and which is of a shape like a badminton shuttlecock with a relatively wide base that constitutes a skirt in flight to retard forward movement when it is struck by the head of a golf club. The skirt portion of the golf ball tee is perforated to render it of light weight and suitably ribbed to reinforce the same sufficiently to withstand the severe service to which it is exposed. Another feature is an adjustable seat on which the golf ball rests in the form of a tubular member having external spaced grooves that interact with a lip on the skirt member to maintain the different vertical positions that determine the height of the golf ball when it is mounted thereon. Further, the skirt member has a considerable surface area on which advertising copy is printed and thereby they can be furnished free to golfers.

### 3,690,677 PATENT NOT ISSUED FOR THIS NUMBER

### 3,690,678 CASSETTE AND DICTATING MACHINE FOR BELT TYPE RECORDS

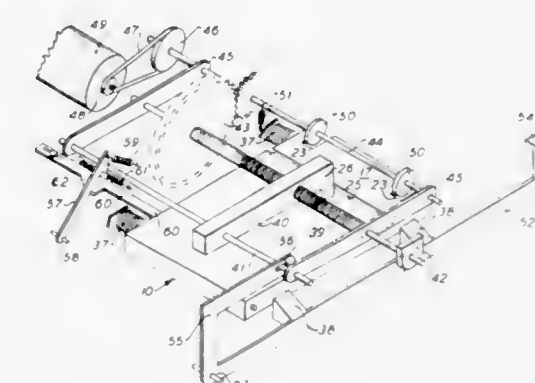
Thomas J. Gaven, Livingston, and Bruce N. Whitlock, Morris Plains, both of N.J., assignors to McGraw-Edison Company, Elgin, Ill.

Filed Sept. 9, 1969, Ser. No. 856,276

Int. Cl. G11b 23/06, 15/24, 21/16

U.S. Cl. 274—4 J

2 Claims



A cassette for belt record type dictating machines comprises a flat rectangular box with means supporting a magnetic belt record for revolving movement. The cassette has an opening for a drive coupling with the record and has a transverse opening for traveling engagement of a recorder-reproducer head with the record. The dictating machine is adapted for receiving the cassette and for causing the drive means to become coupled to the belt record and the traveling head to slidably engage the record when the cassette reaches a mounted position and is latched.

### 3,690,679 REPEAT MEANS FOR A CASSETTE CHANGER

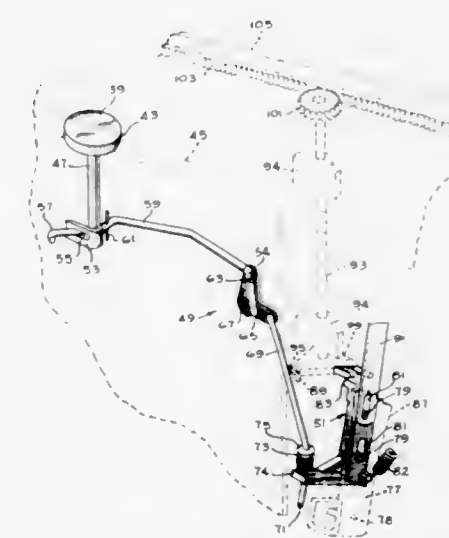
Glenn E. Sterly, Carol Stream, Ill., assignor to Ampex Corporation, Redwood City, Calif.

Filed Nov. 10, 1969, Ser. No. 875,305

Int. Cl. G11b 23/12

U.S. Cl. 274—4 F

2 Claims



A repeat playback capability is provided for cassette changers having a magazine for storing a series of cassettes therein. Preferably, a manually operable selector is provided to disable a feed mechanism for the magazine so that the magazine remains stationary and the same cassette is recycled for playing until the repeat selector is returned to a non-repeat position.



3,690,680

**ELECTROMECHANICAL SELECTOR UNIT**

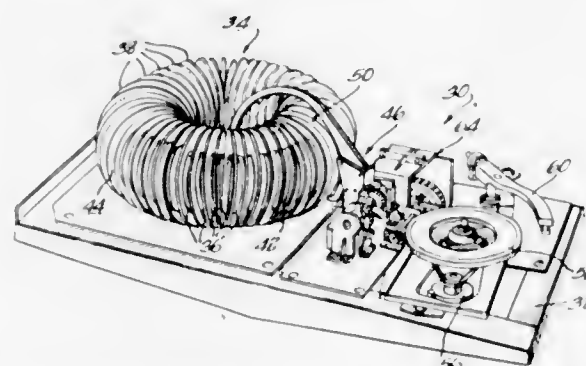
Frank B. Lumney, Tonawanda, N.Y., and Ronald P. Eberhardt, Amherst, N.Y., assignors to The Wurlitzer Company, Chicago, Ill.

Filed March 1, 1967, Ser. No. 619,686

Int. Cl. G11b 17/22

U.S. Cl. 274—10 D

11 Claims U.S. Cl. 277—207



This invention relates generally to an automatic phonograph, and more particularly to a control apparatus for selecting a predetermined record or a predetermined series of records from a record storage magazine in which a large number of records are stored.

A series of selector pins or levers is arranged in an arc, and a moving electromagnet acts on selected pins corresponding to selected records to move and set the pins while the electro magnet is moving.

3,690,681

Patent Not Issued For This Number

3,690,682

**HIGH PRESSURE SEALING MEANS**

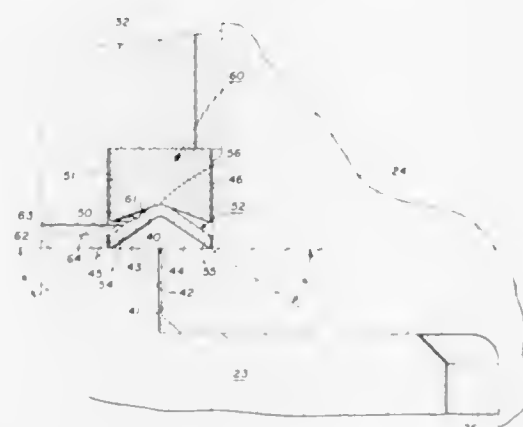
Homer E. Ferrill, Alexandria, La., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 18, 1970, Ser. No. 38,425

Int. Cl. F16j 15/08

U.S. Cl. 277—102

10 Claims



A sealing means for providing a fluid tight joint between assembled components of valves adapted for high temperature-high pressure service. The sealing means is comprised of a metallic ring, V-shaped in radial cross section through its annulus and engaged at its outer apex by a similarly shaped recessed surface of an annular rigid follower. Forcing the follower axially against the ring spreadingly deforms the ring in a radial direction into a firm sealing engagement against opposing walls of adjacent components.

3,690,683

Patent Not Issued For This Number

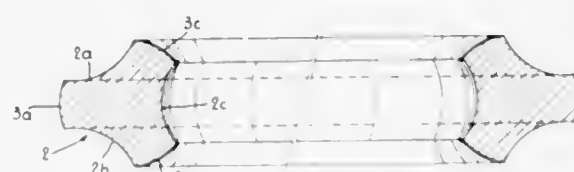
3,690,684  
**GASKETS**

Rene Lansaque, Meyzieu, Rhone, and Georges Bonnefund, Tassin-la Demi-Lune, Rhone, both of France, assignors to Societe Chimique De Gerland, Lyon, Rhone, France

Filed Oct. 27, 1970, Ser. No. 84,314

Int. Cl. F16j 15/10

2 Claims



A gasket insertable in a pipe joint has a toroidal body with three circular grooves of concave profile centered on the body axis and separated by broad annular ribs of convex profile curved about its centerline.

3,690,685

**SEALING RING**

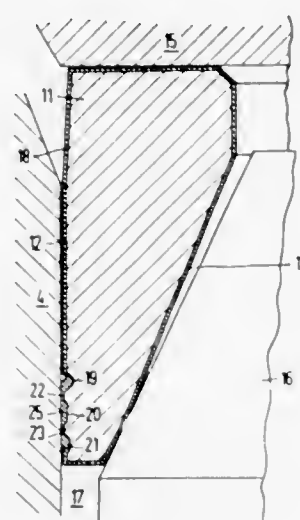
Horst Porner; Hans-Peter Schabert, and Robert Weber, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed April 3, 1970, Ser. No. 25,460

Int. Cl. F16j 15/08

U.S. Cl. 277—235 A

10 Claims



Sealing ring includes an annular member of creep-resistant material formed with at least one pair of projecting webs defining an annular depression therebetween, and metal material received in the annular depression, the metal material having the properties of creeping under given stress conditions and of adhering to the creep-resistant material of the annular member.

3,690,686

**PISTON WITH SEAL HAVING HIGH STRENGTH MOLYBDENUM ALLOY FACING**

Herbert F. Prasse, Town and Country, and Harold E. McCormick, Ballwin, both of Mo., assignors to Ramsey Corporation, St. Louis, Mo.

Filed Aug. 11, 1969, Ser. No. 849,018

Int. Cl. B23p 3/24; F02t 5/00

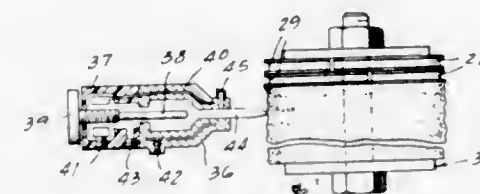
U.S. Cl. 277—235 A

7 Claims

Piston rings, including compression and oil control rings, for internal combustion engine pistons, having a bearing face of an alloy formed in situ on the ring from a plasma jet stream. The alloy is a high strength molybdenum alloy composed of molybdenum and a metal such as nickel, chromium, boron, and silicon. The coating has exceptionally high bond strength

and possesses a higher tensile strength than present in heretofore used piston ring facings comprising molybdenum as the

corresponding distributor, characterized in that said elastic operative connection comprises a hydraulic system for transmitting the wheel movements to the movable members of said distributors, with hydraulic time-lag means.



3,690,687

**MACHINE TOOL**

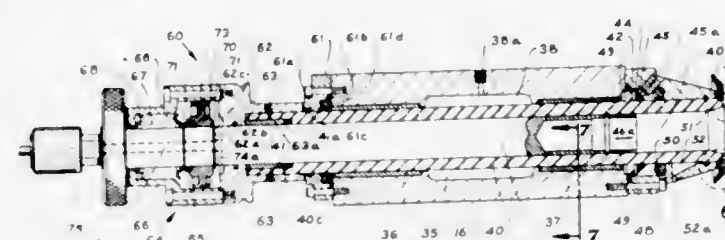
Fred L. Moe, 4380 Brookside Ave., Minneapolis, Minn.

Filed July 6, 1970, Ser. No. 52,522

Int. Cl. B23b 5/22

U.S. Cl. 279—4

2 Claims



A machine tool which provides rotative movement to the work piece, including a source of power driving a spindle which spindle includes a collet receiving draw bar with an air driven and controlled piston attached to the piston for automatically shifting the draw bar inwardly into the spindle whereby the collet is closed about the work piece. The entire spindle unit including the draw bar shifting piston is rotatably mounted for rotation within a mounting base.

3,690,688

**AUTOMOTIVE HYDROELASTIC SUSPENSION WITH LEVEL CORRECTION**

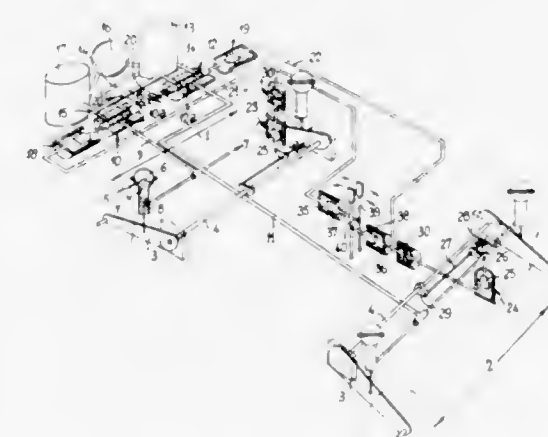
Jacques Fleury, 117/167 quai Andre Citroen, Paris, France

Filed Nov. 12, 1970, Ser. No. 88,537

Int. Cl. B60g 17/00

U.S. Cl. 280—6 H

7 Claims



Hydro-elastic suspension system of vehicle, comprising hydraulic receiving devices interposed between the body of the vehicle and the wheels, and for each train of wheels a hydraulic distributor connected to the corresponding hydraulic receiver and adapted to either connect said receivers to a source of fluid under pressure, or isolate them, or connect them to the exhaust, as well as a device for correcting the ground clearance of the vehicle body, this correcting device comprising an elastic operative connection, with delay-action means, disposed between the wheels of the vehicle and the

3,690,689

**COMBINATION VALVE FOR CONTROLLING TWO PRESSURE SOURCES**

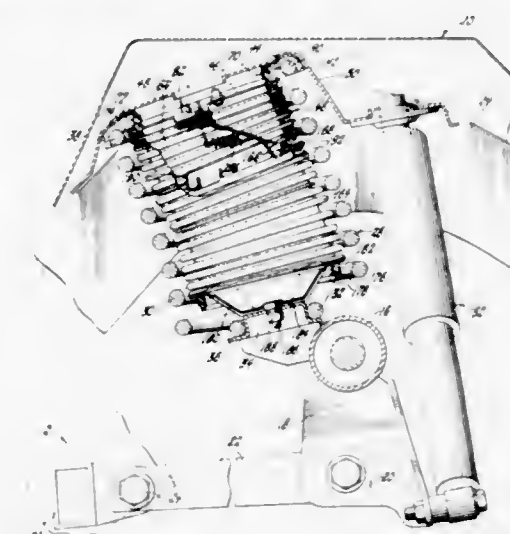
Wayne V. Fannin, Dayton, and Harry C. Buchanan, Jr., Centerville, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed April 21, 1971, Ser. No. 136,116

Int. Cl. B60g 17/04

U.S. Cl. 280—6 H

6 Claims



In preferred form, a combination control valve that is carried by the end closure member of a vehicle leveler unit. A resilient, unitary valve element includes a movable seal surface supported on an annular seat formed around a first port in the end closure of the leveler. It also includes a second port adapted to be connected to a vacuum source and a third port adapted to be connected to atmosphere. A nozzle valve seat on the valve element surrounds the third port. A movable valve actuator engages the nozzle valve seat to position the valve element to open and close the first and third ports to regulate the pressure in the leveler unit and control the vehicle height.

3,690,690

**TOE-OR HEEL-HOLDING DEVICE FOR SAFETY SKI BINDINGS**

Hannes Marker, Hauptstrasse 51-53, Garmisch-Partenkirchen, Germany

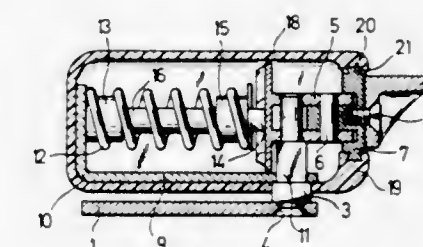
Filed June 23, 1970, Ser. No. 49,004

Claims priority, application Germany, July 29, 1969, P 19 38 567.2

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T

5 Claims



The device comprises a baseplate adapted to be secured to the ski and a soleholder which is movable against a resistance presented by a spring. An envelope encloses and seals the entire device except for the baseplate and the soleholder.



3,690,691

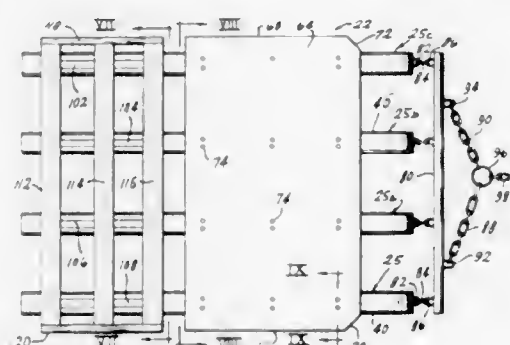
**METHOD AND APPARATUS FOR HARVESTING BALED CROPS**

Dwight F. Kampe, 1310 Sherwood Rd. Rt. 2, Williamston, Mich.

Filed Dec. 21, 1970, Ser. No. 100,096  
Int. Cl. B62b 13/06

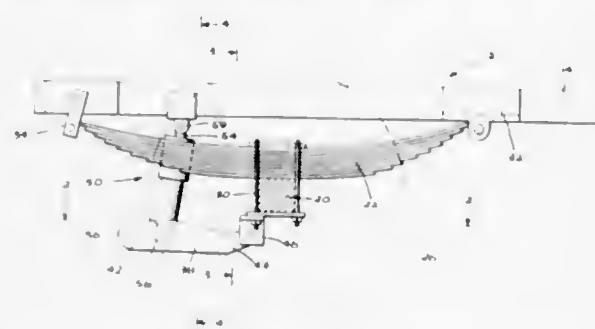
U.S. Cl. 280-24

2 Claims



An improved method and improved apparatus for harvesting baled crops wherein a trailing bale is provided which is adapted to be pulled over the ground by a baling machine, the bale stacker including pallet support means and platform means, and enabling the manual stacking of baled crops onto pallets for subsequent haulage to and storage in a storage area.

spaced-apart springs respectively connecting the axle to the frame. An elongated, rigid, transversely extending bar has a pair of lever members rigidly secured to its opposite ends, the lever members being pivotally connected to the axle. A pair of variable length, hydraulically lockable and releasable link elements each have one end connected to the frame and the other end pivotally connected to a respective lever member.



Application of hydraulic pressure to the link elements adjusts and locks the lengths thereof to a predetermined length thereby providing a rigid, fixed-length pivotal support for the lever members and bar so that the springs are substantially equally deflected and transverse tilting of the frame with respect to the axle is inhibited. Release of the hydraulic pressure permits unrestricted variation in the length of the link elements and thus unequal deflection of the springs.

3,690,692

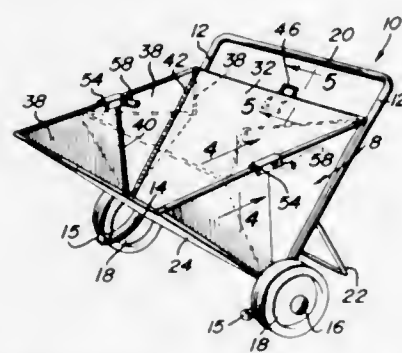
**FOLDABLE LAWN AND GARDEN CART**

Berkeley Julian Florian, and Berkeley Jay Florian, both of 88 West St., Plantsville, Conn.

Filed Nov. 16, 1970, Ser. No. 89,695  
Int. Cl. B62b 11/00

U.S. Cl. 280-36 C

10 Claims



A foldable two-wheeled low-slung lawn and garden cart characterized by a hopper-type wheelbarrow, that is, an adaptation wherein the barrow or receiver comprises panel-type front and back walls whose lower flanged ends are hingedly joined. The opposed vertical side walls are made up of paired triangular panels whose outer marginal edges are hingedly joined to coacting marginal flanges on the front and back walls. The inner vertical edges of these side wall panels are hingedly joined and when collapsed inwardly they are sandwiched with requisite nicety between the folded front and back walls. A hook-type fastener serves to hold the collapsible walls closed and channel clips serve to hold the side walls open.

3,690,693

**TORSION BAR STABILIZING APPARATUS FOR VEHICLES**

Lester L. Myers, Fort Wayne, Ind., assignor to Mobile Aerial Towers, Fort Wayne, Ind.

Filed May 11, 1970, Ser. No. 36,048  
Int. Cl. B60g 11/46

U.S. Cl. 280-24 R

14 Claims

Torsion bar stabilizing apparatus for a Vehicle which includes a frame, a transversely extending axle, and transversely

3,690,694

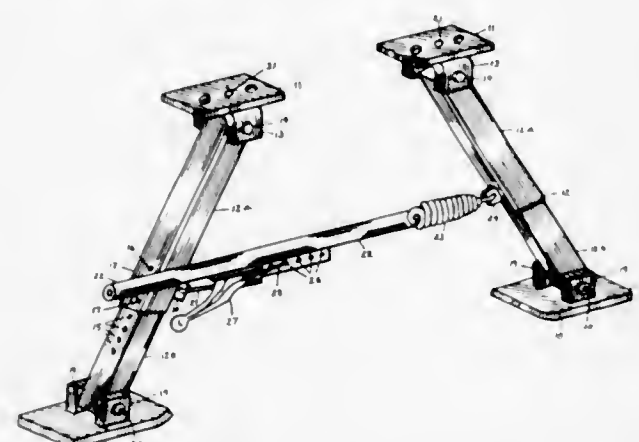
**TRAILER STABILIZER**

Robert R. Herndon, 207 Short Mountain St., Smithville, Tenn.

Filed Jan. 4, 1971, Ser. No. 103,784  
Int. Cl. B60s 9/02

U.S. Cl. 280-150.5

6 Claims



A pair of extensible leveling and stabilizing legs are connected pivotally to the underside of a trailer, the legs can be raised from their ground engaging position to a retracted position, in the ground engaging position the legs extend downward to the ground in an outward direction transverse to the longitudinal axis of the trailer. Force means are provided which tend to move the legs toward each other and thus continuously maintain stabilizing and leveling contact of the ground engaging portion of the legs with the ground. The force means can also be used to maintain the legs in engagement with brackets on the underside of the trailer when the legs are raised to their retracted positions.

3,690,695

**PERSONNEL RESTRAINT SYSTEM FOR VEHICULAR OCCUPANTS**

John Leslie Jones, Sr., 1070 Glen Oaks Blvd., Pasadena, Calif.

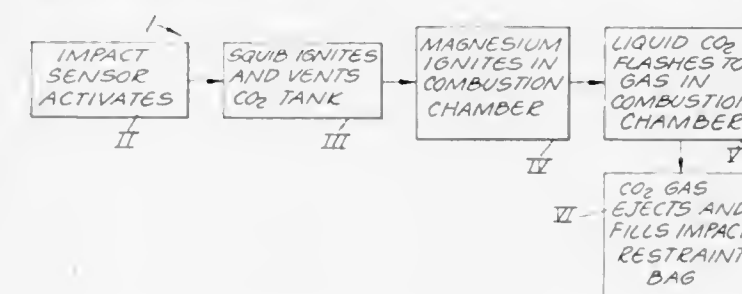
Filed Aug. 14, 1970, Ser. No. 63,750  
Int. Cl. B60r 21/06

U.S. Cl. 280-150 AB

15 Claims

The personnel restraint system has an accordion pleated impact restraint bag, which is folded flat in a transverse U-bend

and disposed in a case, which can be fixed under the vehicle instrument panel, adjacent to the front seat. In a quickly acting process an adjacently disposed tank of liquid carbon dioxide charge, is rapidly discharged through a ruptured tank sealing metal membrane on activating an impact sensor and firing a squib. Concurrently magnesium metal powder is blown into a metal combustion chamber duct and rapidly oxidized. The



heat of combustion is utilized to vaporize the discharged liquid carbon dioxide to gas in the chamber duct. The heated carbon dioxide gas is ducted into the folded impact bag, rapidly expanding the bag into the vehicle compartment volume in front of the personnel seats. A second impact sensor can operate a second carbon dioxide tank which vents into the atmosphere adjacent to the gasoline tank, acting to flood the tank vicinity with carbon dioxide, to prevent or extinguish a gasoline fire.

3,690,696

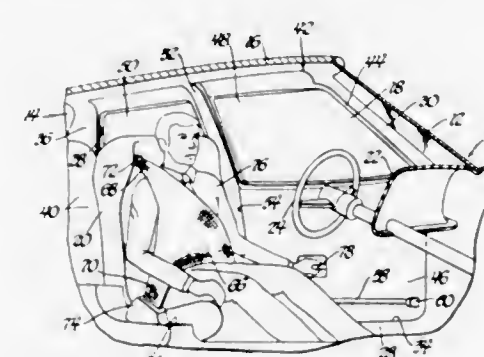
**VEHICLE BODY PASSIVE OCCUPANT RESTRAINING ARRANGEMENT**

Clark Lincoln, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed April 20, 1971, Ser. No. 135,625  
Int. Cl. B60r 21/02

U.S. Cl. 280-150 SB

2 Claims



A vehicle body passive occupant restraining arrangement includes a vehicle body defining an occupant compartment in which is mounted a vehicle seat accessible through a vehicle body side door opening, a side door having upper and lower panels pivoted to each other about a longitudinal vehicle axis at their lower and upper edges respectively, a hinge arrangement pivotally mounting the upper edge of the upper panel to the vehicle body about a longitudinal vehicle axis adjacent the upper edge of the door opening, a link extending between the vehicle body and the lower panel and cooperable with the hinge arrangement to mount the door for vertical movement between a lower closed position and an upper folded open position, a generally triangular restraining vest having two portions respectively secured adjacent upper and lower in-board portions of the seat and having a generally elongated belt portions, an inertia retractor receiving the belt portion and slidably mounted on a lower inboard edge portion of the lower panel of the door for longitudinal movement with respect to the vehicle body, and a drive mechanism for moving the retractor along the door between forward and rearward positions in response to door opening and closing movement. During upward door opening movement, the drive mechanism moves the retractor to the forward position to move the

restraining vest to an easy-enter position with the belt portion pointing upwardly and forwardly of the vehicle body and allowing convenient occupant access to the seat. During downward door closing movement, the drive mechanism moves the retractor to the rearward position to move the restraining vest to a restraining position across a seated occupant with the belt portion pointing downwardly and rearwardly of the vehicle body and retracted by the retractor to maintain the restraining vest in a taut condition across the occupant.

3,690,697

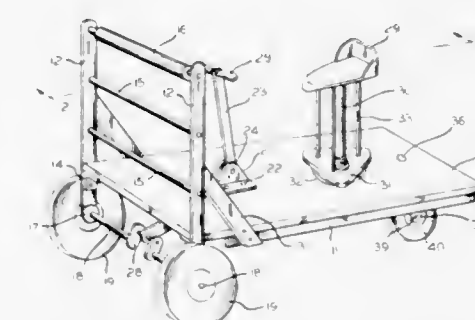
**HAND PROPELLED VEHICLES**

John S. Bohanski, 401 Union St., Stevens Point, Wis.

Filed May 25, 1970, Ser. No. 40,090  
Int. Cl. B62m 1/14; B62k 21/00

U.S. Cl. 280-247

1 Claim



This invention provides a vehicle which is propelled by a hand operated lever. The steering arrangement is attached to the operator's seat for turning a swivel wheel as the operator turns his body. A pinion and gear arrangement turns the swivel wheel to guide the vehicle in a direction in which a person driving the vehicle instinctively turns when confronted with an obstacle in his path.

3,690,698

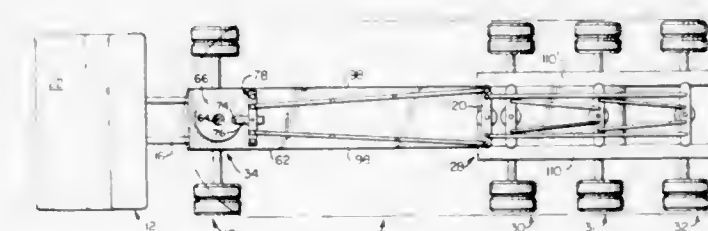
**STEERING ASSEMBLY FOR TRAILERS**

Carl E. Humes, 907 Franklin Ave., Steubenville, Ohio

Filed Nov. 30, 1970, Ser. No. 93,685  
Int. Cl. B62d 13/02

U.S. Cl. 280-426

4 Claims



An improved steering mechanism for a tractor driven plural wheeled extendable trailer wherein the motive force for steering the trailer positively extends from the fifth wheel of the tractor in the form of readily changeable tie rods to one or more turntable supporting assemblies structurally associated with one or several steerable axle assemblies supporting the trailer with means being provided for varying and limiting the degree of turning movement of each turntable assembly to maintain all of the steerable axle assemblies in proper steering relation to the tractor regardless of the operating length of the trailer.

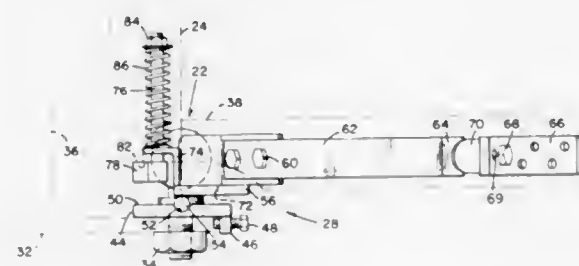


3,690,699

**ANTI-SWAY DEVICE FOR TRAILER HITCHES**

M. Arthur Derr, Jr., 17 Richard Court, Orinda, Calif.  
Continuation-in-part of Ser. No. 21,635, March 23, 1970,  
abandoned. This application Aug. 12, 1970, Ser. No. 63,191  
Int. Cl. B60d 1/06; B62d 53/00  
U.S. Cl. 280—446 B

41 Claims



A device for preventing trailers hitched to passenger automobiles or tractors from swaying under the influence of lateral forces commonly encountered during relatively high speed straight line travel on highways. The device comprises a flat plate having a groove that faces and is engaged by a detent. The plate and the detent are mounted to the towing vehicle and the trailer and they are biased towards each other so that a torque of a predetermined magnitude is necessary to disengage the detent and the groove and permit sideway swaying, or relative angular movement of the trailer. After the detent is disengaged the necessary force to cause additional angular movements is reduced. The anti-sway device can be mounted to and used with conventional, already installed trailer hitches.

3,690,700

Patent Not Issued For This Number

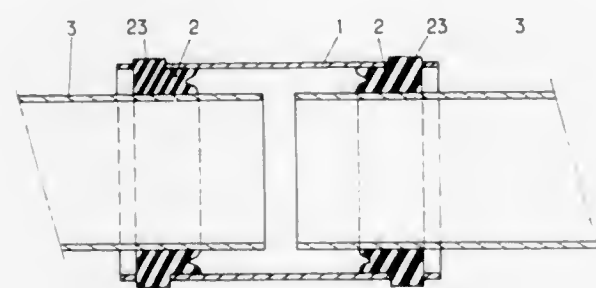
3,690,701

**SLEEVE FOR CONNECTING PIPES**

Jean Gramain, Paris, France, assignor to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleher Colombes, Colombes, France

Filed Sept. 29, 1970, Ser. No. 59,258  
Claims priority, application France, July 31, 1969, 6926434  
Int. Cl. F16l 17/00  
U.S. Cl. 285—111

3 Claims



In a connecting sleeve fitting around adjacent ends of two aligned pipes and comprising at each end a resilient axially extending fluid tight sealing member gripped between the sleeve and the pipes, the sleeve has near each end circumferentially distributed apertures into which fit projections extending radially from a flange on the external surface of the sealing member.

3,690,702

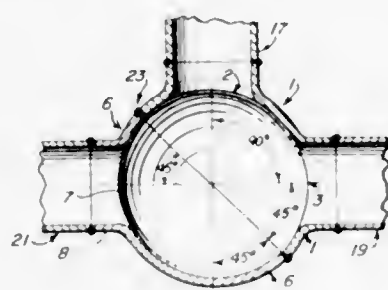
**CONNECTION ASSEMBLY FOR FLUID PRESSURE LINES**

Charles H. Moore, 645 Matanzas Court, Fort Myers Beach, Fla.

Filed July 28, 1971, Ser. No. 166,659  
Int. Cl. F16l 13/02

U.S. Cl. 285—156

4 Claims



A metallic pipe connector for T's, crosses, bends, or a combination of such, and either full size or reducing, consists essentially of a pair of substantially identical semispherical shells in opposed relationship with their adjoining edges secured together with a continuous weld, thus forming a hollow sphere. This hollow sphere is provided with at least two circular openings therein, the axes of which are spaced from the adjoining edges of the semispherical shells at an angle of approximately 45°. The metal surrounding at least one, and in some instances all, of the circular openings is displaced into an outwardly projecting or "flued" portion; and the wall-thickness of the sphere with respect to the diameter of the openings therein being so arranged that there is sufficient metal between the openings to adequately compensate by way of reinforcement for the weakening of the walls of the sphere caused by the initial placing of the aforementioned openings therein. A pipe abuts the outer end of the circular collar "flued" portion to thus communicate with the interior of the sphere, the internal diameter and wall-thickness of each of the pipes corresponding to the wall-thickness and diameter of the outer end of the flue with which it communicates; and the adjacent ends of the pipes are secured to the flues by continuous welds. The cross-section of the wall of each of the outwardly projecting or "flued" portions is such as to provide sufficient metal in the area of reinforcement to adequately compensate by way of reinforcement for the weakening of the wall of the semisphere to which it is attached which was caused by the placing of the circular opening therein and with which it communicates.

3,690,703

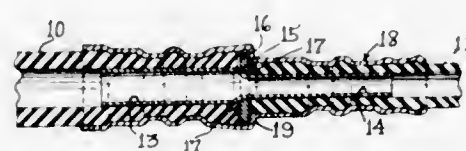
**COUPLING FOR HOSES OF DIFFERENT DIAMETERS**

Virgil Philipps, Chicago, Ill., assignor to Federal Auto Products Co., Inc., Chicago, Ill.

Filed Dec. 2, 1970, Ser. No. 94,502  
Int. Cl. F16l 33/20

U.S. Cl. 285—177

1 Claim



A coupling for hoses of different diameters in which the ends of the hoses abutting a sealing washer disposed between the ends of the hoses with the washer mounted upon an insert tube of two integral lengths of different diameters to provide a shoulder intermediate the ends of the insert tube to hold a metallic washer upon the insert tube between the adjacent ends of the hose lengths to effect a tight seal, and with a one-piece sleeve surrounding the end portions of the hoses and circumferentially crimped to provide a firm connection between the two end portions of the hoses.

3,690,704

**PLASTIC TUBING CONNECTOR**

Frank L. Reynolds, Monroe; Alfred C. Langer, Brookfield, and Ellsworth Tweedie, Milford, all of Conn., assignors to Frigtronics of Conn., Inc., Shelton, Conn.

Filed Sept. 9, 1970, Ser. No. 70,751  
Int. Cl. F16l 33/00

U.S. Cl. 285—244

9 Claims



There is disclosed a connector for tubing made from plastic having cold flow characteristics. A tubular insert is placed in the end of the plastic tubing. A tubular sleeve is positioned over the tube. Elastomeric O-rings are mounted on the tubing at the end of the sleeve. An internally threaded tubular coupling member is threaded onto the plastic tubing, compressing the O-rings between the member and the end of the sleeve. The coupling member is secured to the sleeve to retain the O-rings in their compressed state.

3,690,705

**HEAT INSULATING DEVICE FOR FASTENING TWO METALLIC MEMBERS OR OTHER OBJECTS TO EACH OTHER**

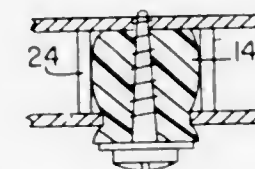
Goran Ygfors, Sollentuna, Sweden, assignor to Ygfors Trading AB, Jarfalla, Sweden

Filed March 4, 1970, Ser. No. 16,547  
Claims priority, application Sweden, March 7, 1969, 3147/69

Int. Cl. F16b 1/00

U.S. Cl. 287—20.3

4 Claims



A device for rigidly connecting two metallic members together in heat-insulating condition. A non-metallic bushing with a central passageway is positioned within a hole provided in at least one of said members and a screw or like fastener is positioned through the passageway adjacent the hole to expand the bushing within the hole. In one embodiment, the screw is secured directly to the second member and in another embodiment the bushing is expanded within the holes in both members thereby effecting the rigid connection.

3,690,706

**SINGLE OPERATION RIVET**

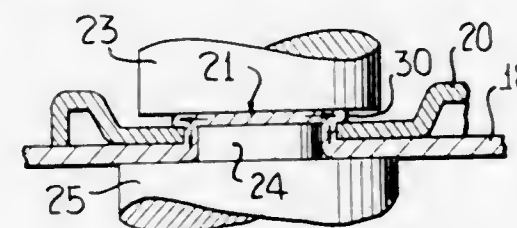
Arnold R. Boik, 12612 South Yale Avenue, Chicago, Ill., and Albert J. Holk, Jr., Rt. #1, Frankfort, Ill.

Division of Ser. No. 695,915, Jan. 5, 1968, Pat. No. 3,557,441.  
This application Aug. 25, 1970, Ser. No. 66,667

Int. Cl. F16b 1/00

U.S. Cl. 287—20.3

1 Claim



This disclosure has to do with a rivet which is formed of sheet material as an integral component thereof. The rivet dif-

fers from other rivets in that although it is of a tubular construction the body and closed end thereof have the material thereof compressively stressed. The rivet is formed in a single operation through the extrusion flow of the material of the sheet between a pair of punches and as a part of the operation, the rivet may also be headed. The rivet is readily formed utilizing a tool set consisting solely of two opposed male punches and has particular adaptability to the securing of pull tabs to easy opening container ends.

3,690,707

**CONNECTION OF TWO MEMBERS SHRUNK ON EACH OTHER**

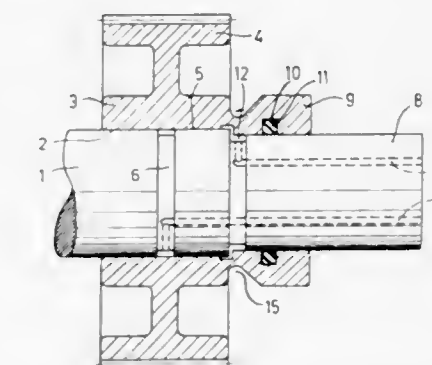
Petrus Johannes Cornelius van Rooij, Emmasingel, Eindhoven, Netherlands

Filed Nov. 23, 1970, Ser. No. 91,966  
Claims priority, application Netherlands, Dec. 10, 1969, 6918492

Int. Cl. F16d 1/06

U.S. Cl. 287—52 R

4 Claims



A shrink connection between two members in which at the area of the fitting surfaces, an annular groove is present which divides the fitting surfaces into two equal parts and communicates, via a liquid supply duct, with the atmosphere, the members on one side of the fitting surfaces comprising parts having diameters differing from the fitting surfaces, in such manner that said parts are not shrunk on each other, a flexible sealing element being present between said parts and a further liquid supply duct debouching between the relative side of the fitting surfaces and the sealing element.

3,690,708

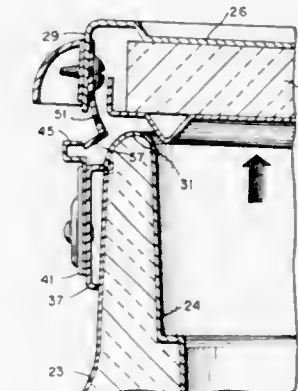
**PRESSURE-RELEASING LATCH ASSEMBLY FOR PICNIC COOLERS**

Lauren D. Worley, and James R. Conley, both of Wichita, Kans., assignors to The Coleman Company, Inc., Wichita, Kans.

Filed May 12, 1971, Ser. No. 142,571  
Int. Cl. E05c 3/04, 11/00, 15/00

U.S. Cl. 292—101

11 Claims



A safety latch for picnic coolers is provided which permits the door of the cooler to be unlatched when pressure is applied to the door from inside the cooler. The latch assembly



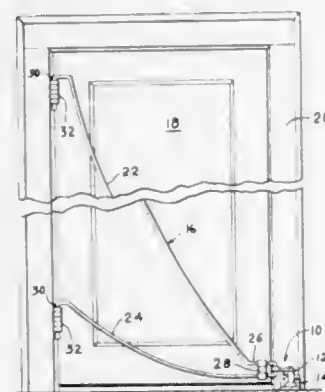
includes a latch rotatable between locking and unlocking positions which includes a keeper plate which is engagable with a strike for maintaining the door closed when the latch is in the locking position. The stroke is formed of flexible and resilient material and includes a shank portion extending generally parallel to the side wall on which the latch is mounted and a foot portion which extends generally laterally outwardly from the shank portion. The keeper plate extends laterally inwardly to engage the foot portion when the latch is in the locking position to prevent inadvertent opening of the door. When a predetermined force is applied to the interior of the door, the shank portion flexes inwardly to release the foot portion from the keeper plate to permit the door to swing open. When the door opens, the resilient shank portion returns to its unflexed position, and the foot portion is engagable with the keeper plate to prevent the door from closing until the latch is moved to the unlocking position.

### 3,690,709 DOOR GUARD

Frank J. Bogusz, Talcott, Farmington, Conn.  
Filed April 12, 1971, Ser. No. 133,107  
Int. Cl. E05c 17/06

U.S. Cl. 292—262

6 Claims



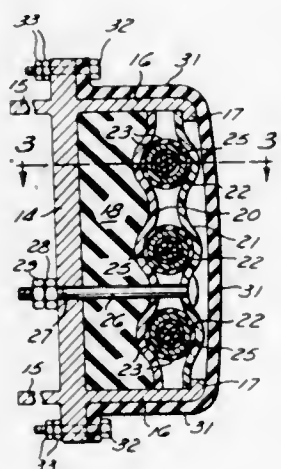
There is provided a door guard which may be installed in relation to a swinging pivot action type door, and left thereon to selectively provide secure or unsecure mode for the doorway. Callers may be interviewed through partially opened door while retaining door guard in the secure mode thereby preventing entry to intruders. Convenient means is provided to disengage door guard from within the allow full opening of the door.

### 3,690,710 SHOCK ABSORBING BUMPER

Michael G. Curran, 11608 Detroit Avenue, Cleveland, Ohio  
Filed May 12, 1971, Ser. No. 142,488  
Int. Cl. B60r 19/08

U.S. Cl. 293—71 R

15 Claims



An improved shock absorbing bumper is provided for use on automobiles and the like in which, in one form, a backing

plate supports an elastomeric body or pad having at its front a plurality of longitudinally extending elastomeric tubes. The tubes nest within corrugations of a corrugated panel which, upon being struck, compresses the tubes and elastomeric body during movement of the panel toward the back or support plate. Preferably, an elastomeric cover substantially encompasses the body, tubes, and corrugated panels and has terminal portions secured to the support plate. The tubes are preferably closed at their ends and may contain rubber pellets, liquids, compressed gas, and the like.

### 3,690,711

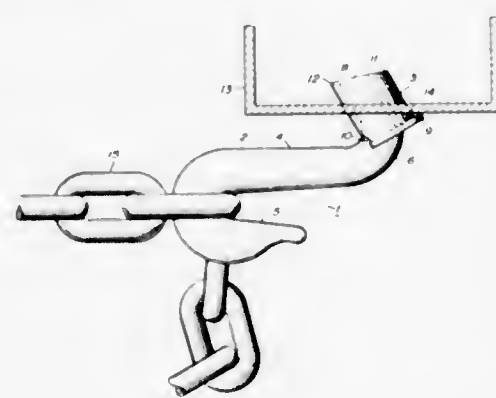
Patent Not Issued For This Number

### 3,690,712 GRAB HOOK ASSEMBLY

Wilbur N. Bahrman, 3031 Shakespeare Road, Bethlehem, Pa.  
Filed March 15, 1971, Ser. No. 124,355  
Int. Cl. B66c 1/34

U.S. Cl. 294—82 R

3 Claims



A grab hook assembly for use in the straightening of motor vehicle frames and the like. The hook is S-shaped and has a link-receiving grab hook at one end and a reverse open throat hook formed at the other end which is designed to fit in the welding jig holes provided in the structural members of a motor vehicle frame by the manufacturer. Included in the assembly is a removable collar member adapted to fit over the leading end of the reverse open throat hook to enlarge the bearing surface thereof when the hook is used in large diameter jig holes.

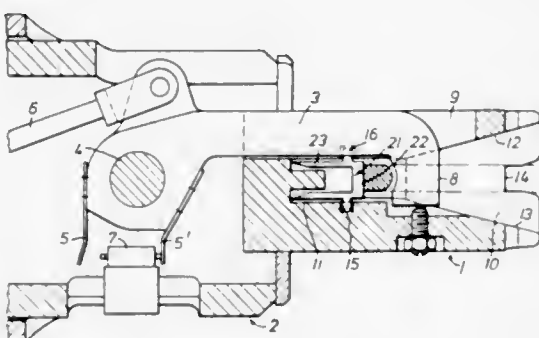
### 3,690,713 GRIPPING TOOL

Ulrich Ristow, Neu Isenburg, Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Germany

Filed April 27, 1971, Ser. No. 137,756  
Claims priority, application Germany, April 15, 1970, P 20 17 912.8; April 15, 1970, HGM 70 13 719.8  
Int. Cl. B66c 1/62

U.S. Cl. 294—86 A

7 Claims



A gripper with a muzzle-shaped opening to receive loops on control rods and fuel elements of a nuclear reactor and guide

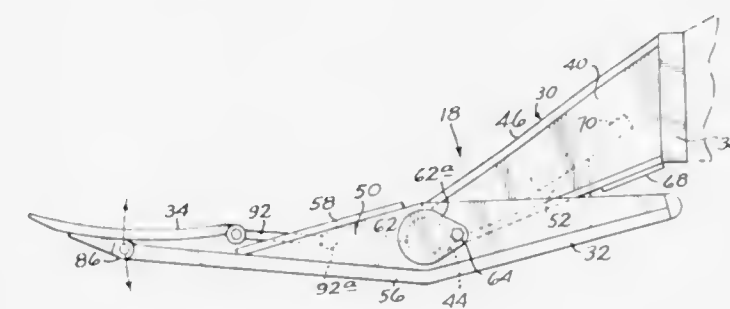
these loops to a slit where they can be gripped by a rotatable gripping hook. An inset having an end wall and spaced walls projecting in the same direction from the end wall is designed to be slipped into engagement within the slit. In a first position the spaced walls project in the slit toward the muzzle-shaped opening to restrict the slit to the reception of a relatively narrow loop on a control rod. In a second position the spaced walls are reversed in the slit so that the full width of the slit toward the muzzle-shaped opening is available to receive the relatively wide loop on a fuel element.

### 3,690,714 ROLL CLAMP

Stanley E. Farmer, Gresham, Oreg., assignor to Cascade Corporation, Portland, Oreg.  
Continuation of Ser. No. 814,919, April 10, 1969, abandoned.  
This application Aug. 26, 1970, Ser. No. 67,235  
Int. Cl. B66f 9/18

U.S. Cl. 294—88

4 Claims



A roll clamp comprising a pair of concavely curved pads for clamping onto opposite sides of a roll. A pair of opposed arm structures extending rearwardly from the pads toward a frame support the pads in spaced opposed and facing relationship. The arm structures are movable toward and away from each other on the frame, whereby the pads may be brought against opposite sides of a roll. At least one arm structure includes an arm base which is mounted on the frame, a forward arm section, and means pivotally mounting the forward arm section on the arm base enabling it to swing in each of opposite directions until reaching defined limit positions. The pivot means is located toward said frame from said pads, and from the load center of any roll clamped by the pads. A spring biases the forward arm section to place it in an intermediate at rest position between these two limit positions.

### 3,690,715 TRAVELING CRANE HEAD SUBASSEMBLY FOR ATOMIC REACTOR FUEL CELLS

George A. Vanlingen, and Eugene W. Pickett, both of Denver, Colo., assignors to Stearns-Roger Corporation, Denver, Colo.

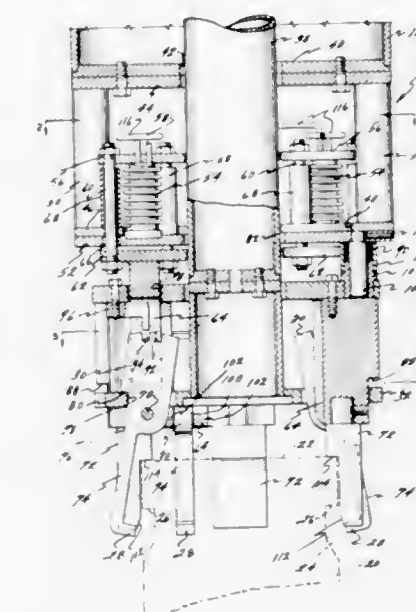
Filed Nov. 26, 1969, Ser. No. 880,344  
Int. Cl. B25j 3/04; B66c 1/10, 19/00

U.S. Cl. 294—88

10 Claims

This invention relates to a head subassembly for changing fuel cells in an atomic reactor that includes a plurality of hook-like fingers pivotally movable from a released into an engaged position locked beneath a downwardly-facing shoulder around the top of the cell. These fingers are cammed between their released and engaged positions by a pneumatic-servo-motor actuated cam plate. Each of the fingers is suspended

from a separate sealed fluid chamber of variable volume and the several chambers are, in turn, serially interconnected to



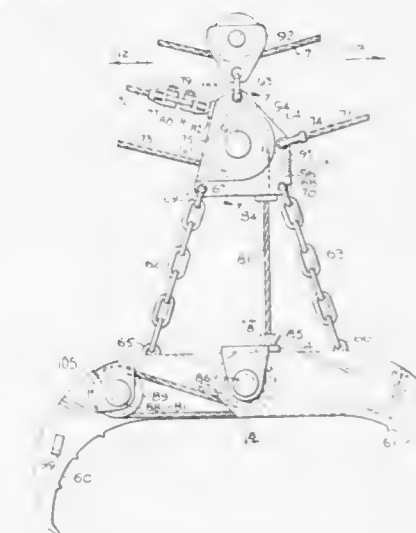
form a self-equalizing hydraulic system wherein the load is evenly distributed to maintain the cell in plumb relation.

### 3,690,716 CHOKER GRAPPLE

Norman A. Johnson, 5325 10th Ave., Delta 742, British Columbia, Canada  
Filed June 8, 1970, Ser. No. 44,474  
Int. Cl. B66c 1/10

U.S. Cl. 294—111

3 Claims



This disclosure pertains to that class of grapples shown as two-line grapples, wherein one line opens and one line closes the grapple. Two embodiments of the invention are disclosed in detail, the first for grapple-loading and the second for grapple-yarding, both of which applications are found in the logging industry. In both embodiments a pair of jaws are interconnected at their upper ends by means of a pivot pin for scissors-like relative motion. The closing line is entrained about the pivot pin, thence entrained about a pin mounted substantially at the geometric mid point of one jaw, and thence connected to the other jaw at substantially the same geometric location. Hence, supporting the weight of the jaws by the closing line causes the jaws to close about a log or object therebetween; in so closing the jaws, that part of the closing line which spans the jaw opening moves downward, thus choking off the opening and coming to rest upon and tending to bite into the log(s) or object between the jaws. The opening line is interconnected to a pair of either rigid or flexible opening members, one each of which is connected to a point midway between the upper and lower ends of each jaw. Hence, supporting the jaws by the opening line causes the jaws to fall open under the influence of gravity, much as in the case of a



clamshell bucket. In the first embodiment of the invention, the opening members are rigid and pivotally interconnected at their upper ends and pivotally connected at their lower ends each to one jaw. In the second embodiment of the invention, the opening members are flexible and connected directly to the underside of a grapple-yarding carriage, the "opening line" in effect being the cable system supporting the carriage; the flexibility of the opening members allows the grapple-jaws to swivel with respect to the carriage.

3,690,717

## VEHICLE TRANSPORT

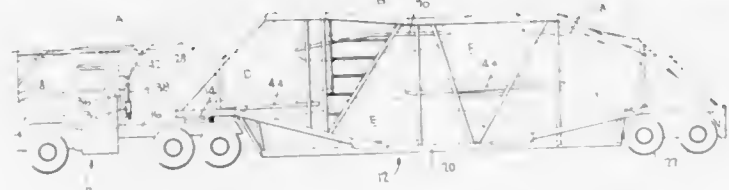
Glenn Edward Taylor, P.O. Box 93006 Martech Station, Atlanta, Ga.

Filed Dec. 11, 1970, Ser. No. 97,187

Int. Cl. B60p 3/08

U.S. Cl. 296-1 A

6 Claims



A vehicle transport including a low-bed trailer in which the spaced side frames of the superstructure, except for the connection between their bottom edges, are interconnected solely by vertically adjustable horizontal cross-ties on which the forward ends of track assemblies are swingably supported for vertical adjustment, the rear ends of the respective track assemblies being vertically adjustable independently of their forward ends. All of the supporting and adjusting means for such assemblies are located within vertical planes common to the respective side frames of the trailer.

3,690,718

Patent Not Issued For This Number

3,690,719

## FOLDABLE CANOPY ATTACHMENT FOR A PICK-UP TRUCK

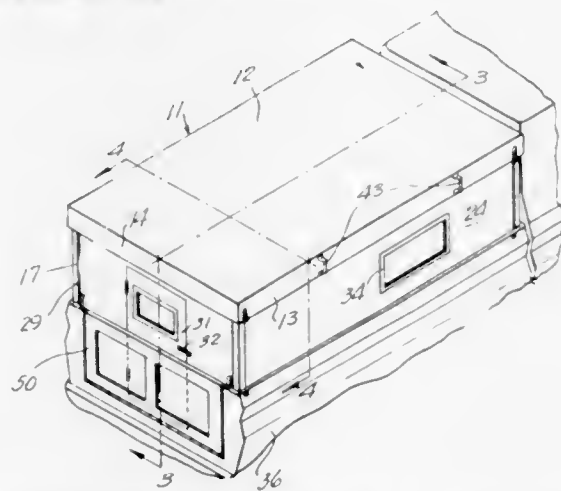
Orin A. Yount, 85 Monterey Lane, Folsom, Calif.

Filed Dec. 11, 1970, Ser. No. 97,067

Int. Cl. B60p 3/34

U.S. Cl. 296-23 F

7 Claims



A canopy attachment for a pick-up truck consisting of a rectangular top wall having hinged side and end walls which are swingable beneath the top wall to form a flat package when the attachment is not in use. The side and end walls are swingable to vertical positions to define a camper enclosure and are provided with fastening latches engageable with cooperating elements on the top edges and rear end portions of the body of the pick-up truck to lock the attachment in operating position.

3,690,720

## VEHICLE CAB AND SAFETY FRAME ASSEMBLY

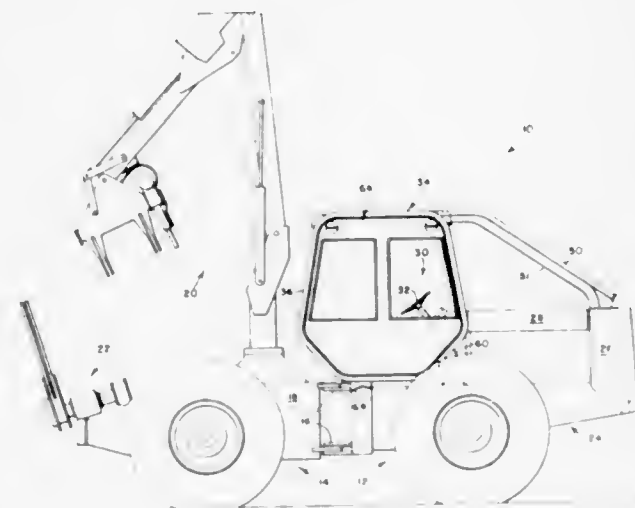
Edwin Lee Whisler, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed July 27, 1970, Ser. No. 58,258

Int. Cl. B62d 27/04

U.S. Cl. 296-28 C

2 Claims



A vehicle cab and a safety frame are constructed as separate units. The safety frame is rigidly fixed to the vehicle frame and the cab is secured to the safety frame by resilient mount assemblies which isolate the cab from the ordinary flexions and vibrations of the safety frame. Four resilient mount assemblies are used to suspend substantially the entire weight of the cab from upper structural members of the safety frame and a pair of resilient mounts are used to anchor the cab to lower structural members of the safety frame. The upper and lower resilient mount assemblies cooperate to limit lateral and fore-and-aft movements of the cab.

3,690,721

## PROTECTIVE WINDSHIELD

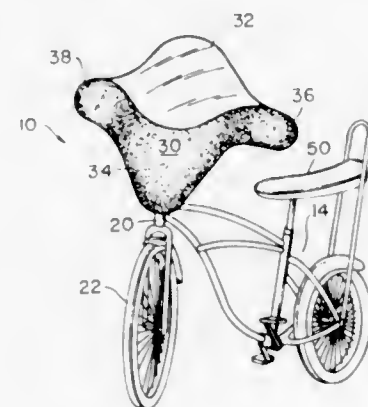
Donald C. Herbert, 23425 Colonial Court, St. Clair Shores, Mich.

Filed Nov. 12, 1970, Ser. No. 88,619

Int. Cl. B62h 17/04

U.S. Cl. 296-78.1

8 Claims



A protective windshield for a bicycle or the like, having clamps for removably mounting it on the handle bar. The upper portion of the shield is transparent and the lower portion is reflectorized and/or luminescent.

3,690,722

## RETRACTABLE CLOSURE

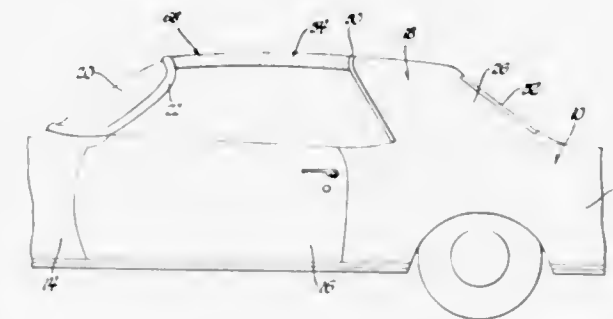
Frank J. Bakewicz, Grosse Pointe, and Robert G. McGarvey, Troy, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed April 21, 1971, Ser. No. 135,855

Int. Cl. B60j 7/00

U.S. Cl. 296-137 R

4 Claims



A retractable closure for a vehicle body having a rigid roof structure over only a portion of the passenger compartment, the closure including a frame member supported on the vehicle body for fore and aft bodily movement and for limited pivotal movement, a cloth cover attached to the rigid roof structure and to the frame member, a pair of telescopic struts attached to the frame member and pivotally supported on the vehicle body, a cam on the vehicle body and a follower on the strut. Movement of the frame member aft initiates telescopic collapse of the strut and folding of the cloth cover beneath the rigid roof structure. As the frame member approaches the fully retracted or open position the follower engages the cam which thereafter constrains the strut to pivot simultaneously with aft movement of the frame member, the strut, in turn, pivoting the frame member upward into juxtaposition with the underside of the rigid roof structure to maximize passenger headroom.

3,690,723

## RECLINING CHAIR CONSTRUCTION

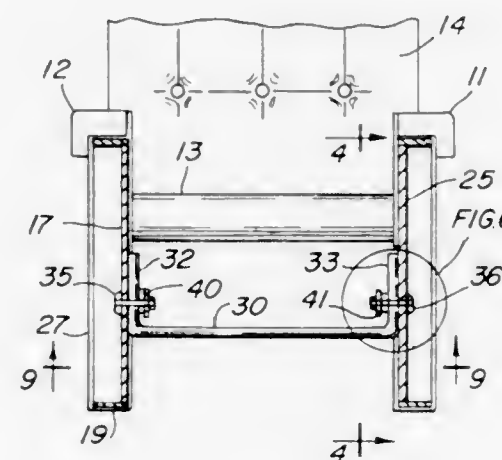
Douglas McClain, Houka, Miss., and Lemuel E. Osborn, Wheaton, Ill., assignors to Relax-O-Lounger, Inc., Baldwin, Miss.

Filed Oct. 8, 1970, Ser. No. 79,241

Int. Cl. A47c 1/02

U.S. Cl. 297-85

7 Claims



A reclining chair construction employs a basic frame comprising a pair of arm panels connected together by metal cross frames bolted to the panels.

3,690,724

## CHAIR ARM SUPPORT

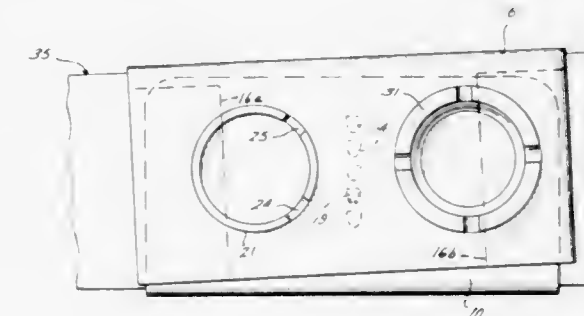
Ormond S. Douglas, 501 Ross, Dayton, Tex., and Warnell M. Byrd, 121 Anita Drive, Panama City, Fla.

Filed Sept. 13, 1971, Ser. No. 179,648

Int. Cl. A47c 7/62

U.S. Cl. 297-194

7 Claims



Support adapted for mounting on the arm of a chair, for support of objects such as glasses, cups, ash trays, or the like, within convenient reach of the occupant of the chair. The support has two flat panels, one flush against the other, which rest upon the chair arm, and each has a downturned outer edge which grips a side of the chair arm. The relative positions of the panels are adjustable so that the support may be mounted on chair arms of diverse widths and on chair arms having sides angular one to the other.

3,690,725

## ROCKING MOUNT FOR CHAIRS

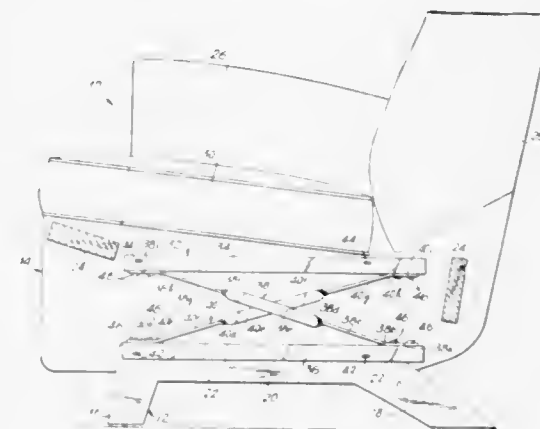
William G. Faulkner, Jupiter, Fla., assignor to Peter S. Fletcher, Delray Beach, Fla.

Filed March 11, 1970, Ser. No. 18,647

Int. Cl. A47c 3/02

U.S. Cl. 297-258

22 Claims



A rocking device for furniture, specifically for chairs. At each side of the chair a pair of members are arranged in a relatively flat crossed configuration and are rigidly fixed at their upper ends to a chair frame and at their lower ends to a stationary chair base. Each member is stiffened in its central region and flexible in its end regions, the ends of the member providing both a pivotal action and a spring action to produce a frictionless rocking motion of the chair frame on the chair base with positive and predictable path control and without any moving surfaces in frictional contact.

3,690,726

## THREE-QUARTER FOLD CHAIR

Arthur L. Van Ryn, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.

Filed Dec. 21, 1970, Ser. No. 100,208

Int. Cl. A47c 1/12

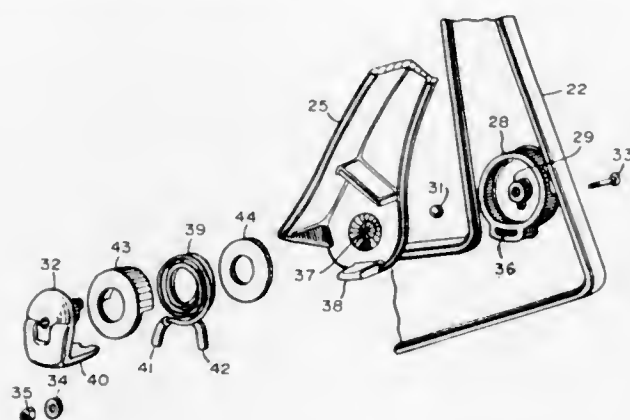
U.S. Cl. 297-332

5 Claims

A stadium chair has a base pivotally supporting a seat on a ball bearing with a spring actuator depending from the seat



lying between coil spring ends, the ends normally being spaced by a fixed arm depending from a tail back housing for the



spring and arranged for normally supporting the seat in a three-quarter raised position but yielding for movement of the seat to fully raised or lowered positions.

3,690,727

**DUST SUPPRESSING DURING MINING PROCESS**

Edward R. Degginger, Convent Station, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 13, 1970, Ser. No. 80,483

Int. Cl. E21c 41/00

U.S. Cl. 299—12

9 Claims

Dilutant compositions comprising aqueous solutions containing 0.5 to 6.0 weight percent alkali metal borate and 0.5 to 6.0 weight percent water soluble polyvinyl alcohol are effective dust suppressants and collectors.

3,690,728

**RESILIENT RETAINING MEANS FOR JOINING WORK TOOLS AND WORK TOOL HOLDERS**

Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Co., Cincinnati, Ohio

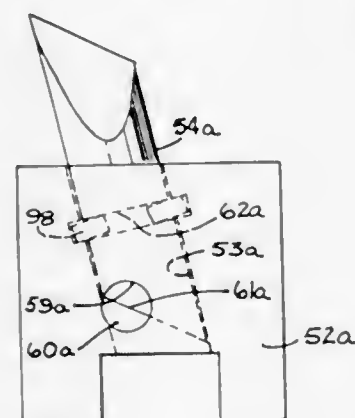
Continuation-in-part of Ser. No. 842,791, June 30, 1969, Pat.

No. 3,622,206, which is a continuation-in-part of Ser. No. 753,398, Aug. 19, 1968, abandoned. This application Sept. 8, 1970, Ser. No. 70,340

Int. Cl. E21c 25/46

U.S. Cl. 299—92

29 Claims



Resilient retaining means for securing work tools either rotatable or non-rotatable, in appropriate work tools holders or mounting means. The work tools and holders are intended primarily for use on mining, excavating and earth working machines and the like. The work tools comprise elongated elements having a shank portion with a working tip at one end and a gauge-determining abutment surface at at least the other end. The holders or mounting means comprise bodies having a shank receiving perforation and means in association with the bottom of the perforation having an abutment surface adapted to cooperate with the abutment surface on the work tool. Either the work tool or the holder, and in a few cases, both, is provided with a recess to receive a resilient retaining means,

usually, in the present invention, a special form of spring clip, to frictionally retain the work tool in the holder against longitudinal movement. In some cases the spring clip will be captive in the holder and will frictionally engage the work tool shank portion in such manner that the work tool will be non-rotatable in the shank receiving portion of the holder. In other cases the spring clip will also be captive in the holder and will also frictionally engage the shank but both the shank and retainer will rotate together with respect to the perforation. And in still other cases the spring clip will be captive on the shank, in a particular manner, and will frictionally engage the lug, the work tool usually being rotatable within the clip and perforation. Some of the clips may be arranged to either permit or prevent rotation of the work tool in the perforation. Various configurations and characteristics will be given these clips, such as special shapes, surfaces and twists.

3,690,729

**DEVICE AND APPARATUS SUITABLE TO PULSED AND CONTROLLED TRANSFER OF SOLIDS IN LIQUID PHASE**

Alessandro Facchini, San Donato Milanese, Italy, assignor to Snam Progetti S.P.A., Milan, Italy

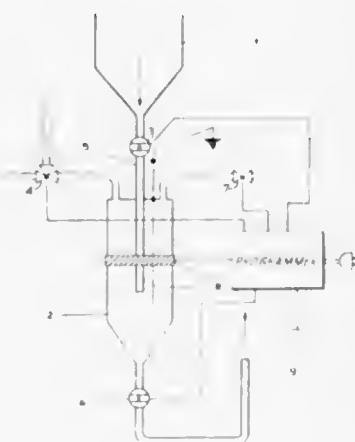
Filed May 13, 1970, Ser. No. 36,765

Claims priority, application Italy, May 13, 1969, 16751 A/69

Int. Cl. B65g 53/04

U.S. Cl. 302—15

3 Claims



Finely divided particles of a brittle solid are transported by dispersing them in a transport liquid of lower density in a dispersion chamber and by feeding a series of aliquots of the dispersion from the dispersion chamber to a vessel, equipped with inlet and outlet ducts which are respectively provided with automatic control valves, when the several aliquots are subjected to increased pressure and whence the dispersed particles are expelled for transport through the outlet duct.

3,690,730

**APPARATUS FOR UNLOADING PULVERIZED MATERIAL IN TANK**

Masanobu Sakata, Keniti Nagata, and Shigeru Nagamori, all of Ichihara, Japan, assignors to Mitsui Shipbuilding and Engineering Co., Ltd., Chuoku, Japan

Filed Feb. 17, 1971, Ser. No. 116,128

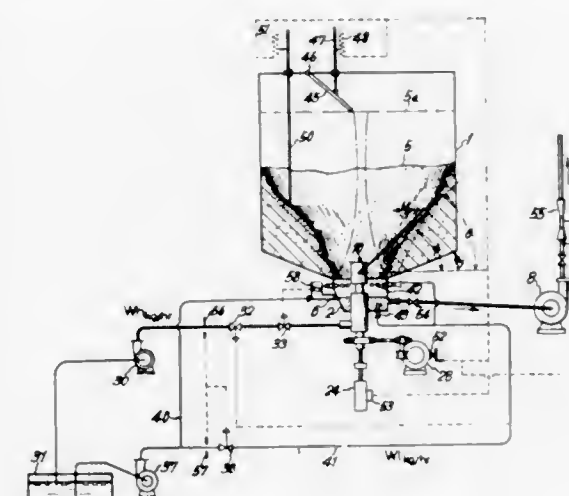
Int. Cl. B65g 53/30

U.S. Cl. 302—15

4 Claims

A device for creating a slurry of pulverized material in a tank including a rotating cylindrical body having an adjustable nozzle therein for jetting the high-pressure water against the material in the tank. A sump is provided adjacent the bottom of the tank around the rotary cylindrical body and means is provided for injecting water into the sump to control the fluidity of the pulverized material falling into the sump. Detection rods are provided to detect the total amount of material in the tank and to detect the amount of pulverized material which is compacted against the sides of the tank. Controls are

provided to regulate the flow and orientation of flow of water through the two nozzles and the orientation of the rotating



nozzle to break down the caking of the pulverized material and to effect efficient discharge of the slurry of material from the tank.

3,690,731

**APPARATUS AND METHODS FOR UNLOADING BULK FLUENT MATERIALS**

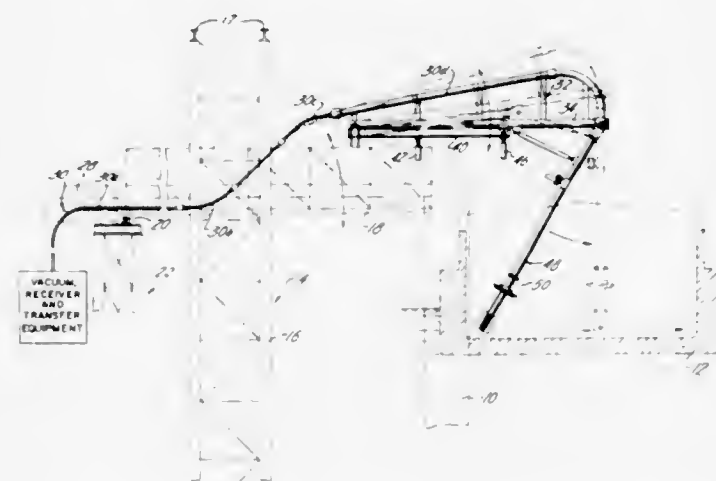
Lauritz E. Mytting, Ardmore, Pa., assignor to Envirotech Corporation, Salt Lake City, Utah, a part interest

Filed Aug. 17, 1970, Ser. No. 64,329

Int. Cl. B65g 53/40

U.S. Cl. 302—42

29 Claims



Vacuum apparatus and methods for unloading bulk fluent material from a receptacle. An unloading tool coupled to a vacuum conveying system is moved through the fluent material at a rate automatically controlled in accordance with the vacuum pressure within the conveying system so as to afford continuous maximum efficiency of intake and conveying of the fluent material. In one embodiment, the unloading tool is supported to pivot in a vertical plane, and automatic controls are provided to coordinate the vertical and horizontal movements of the tool so that the tool nozzle moves along a straight-line path through the material, thereby allowing the nozzle to be maintained at the proper depth for optimum delivery of the material and facilitating the unloading of layers of material of uniform thickness. Structure associated with the unloading tool agitates and redistributes the fluent material in the vicinity of the tool to surround the tool nozzle with a continuous supply of free-flowing material. A safety device breaks the vacuum in the conveying system at a predetermined pressure level, thus avoiding stalling of, or damage to, the system from too high vacuums.

3,690,732

**CAP FORMATION IN SLURRY PIPELINES**

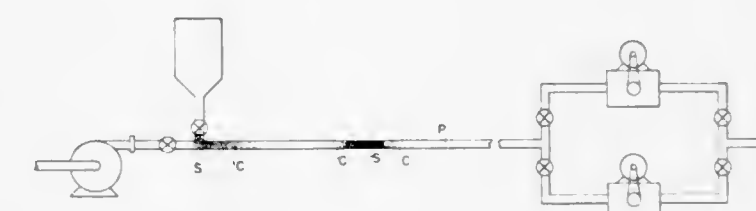
Edward J. Wasp, San Rafael, Calif., assignor to Beshtel International Corporation

Filed Feb. 18, 1971, Ser. No. 116,678

Int. Cl. B65g 53/30

U.S. Cl. 302—66

7 Claims



My prior U.S. Pat. No. 2,920,923 of Jan. 12, 1960 teaches the desirability of including a quantity of a "pseudo-fluid" between a slug of water and a slug of slurry in a pipeline used for the transportation of the slurry. The pseudo fluid is also known as a "cap." The utility of the pseudo fluid or cap is to exert a suspending influence on the relatively coarse particles of the solids in the slurry which is substantially greater than the suspending force exerted by the liquid alone. Preparation of the pseudo fluid or cap is carried on as a separate operation and one must be present between each slug of water and slurry. In accordance with this invention, the pseudo fluid or cap is created from the slurry itself and in a very simple manner, thus facilitating the pumping of the slurry and decreasing the overall cost of operation.

3,690,733

**COMPRESSED-AIR BRAKING AND LOCKING SYSTEM FOR TRAILERS OR SEMITRAILERS**

Jean Gachot, 179 Avenue de la Division Leclerc, 95 Enghien, and Fernand Perales, 87 Avenue A.G. Belin, 95 Argenteuil, both of France

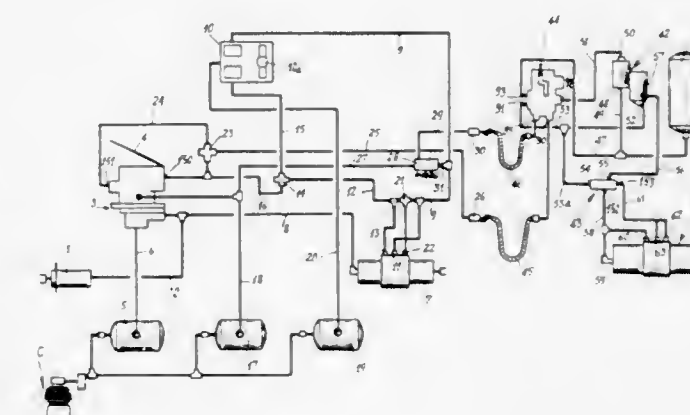
Filed Dec. 7, 1970, Ser. No. 95,684

Claims priority, application France, Dec. 9, 1969, 6942493; Aug. 7, 1970, 7029170; Sept. 30, 1970, 7035370; Oct. 13, 1970, 7036857

Int. Cl. B60t 13/00

U.S. Cl. 303—7

19 Claims



A compressed-air braking and brakes locking system for trailers is provided, which permits to release the trailer brakes and to apply and lock the trailer brakes again when the trailer is separated from its tractor. The system includes a compressed air reservoir and an emergency relay valve on the trailer and a hand operated valve so arranged to put the control inlets of the emergency relay valve and of the brake unlocking device selectively in communication with the control circuits of the tractor or with the reservoir of the trailer.



3,690,734

**TRACTOR CONTROLLED TRAILER BRAKE**

Jean Claude Van Dest, Ris-Orangis, France, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands

Filed Dec. 8, 1970, Ser. No. 96,194

Claims priority, application Great Britain, Dec. 18, 1969, 61,822/69

Int. Cl. B60t 13/00

U.S. Cl. 303—7

10 Claims



A tractor hydraulic braking system includes hydraulic connections from a tractor auxiliary hydraulic power source to the trailer brakes. A control valve is responsive to tractor brake application forces to control hydraulic power fluid flow to the trailer brakes in proportion to tractor brake forces.

3,690,735

**ANTI-SKID DEVICE FOR VEHICLES**

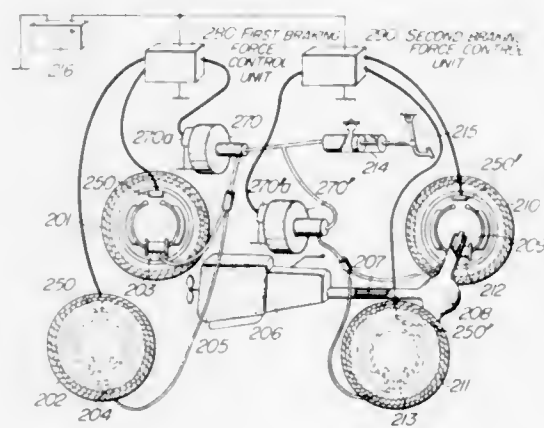
Hiroshi Arai; Akira Nakamura, both of Toyota; Atutosi Okamoto, Toyohashi; Shunji Okumura; Motoyoshi Suzuki, both of Kariya, and Akio Sugiura, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi and Nippondenso Kabushiki Kaisha, Aichi-ken, Japan, part interest to each

Filed Dec. 3, 1970, Ser. No. 94,740

Int. Cl. B60t 8/08

U.S. Cl. 303—21 P

5 Claims



An anti-skid device for vehicles comprising a wheel speed detector for producing an output signal upon detecting that the wheel speed is below a predetermined value, a first timer circuit for producing an output signal when the output signal from the wheel speed detector remains on for more than a definite time, and a second timer circuit for energizing the braking force modulator only for a definite time upon receipt of the output signal from the first timer circuit, whereby the locking of wheels due to a braking operation by the driver may be prevented.

3,690,736

**FLUID PRESSURE MODULATING APPARATUS**

Richard L. Smirl, 314 N. Edgewood, La Grange Park, Ill., and Richard D. Kerestury, 617 N. Garfield St., Lombard, Ill.

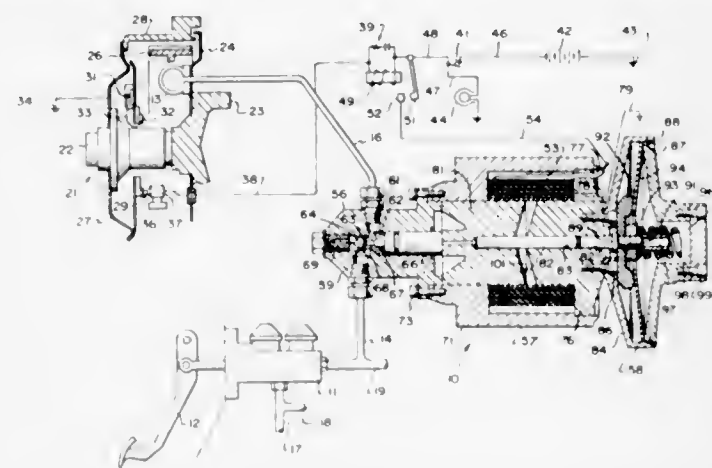
Continuation of Ser. No. 762,381, Sept. 25, 1968, abandoned.

This application Oct. 5, 1970, Ser. No. 78,272

Int. Cl. B60t 8/00

U.S. Cl. 303—21 F

1 Claim



Fluid pressure regulating apparatus for incorporation in a hydraulic braking system of a vehicle, includes an electrically actuated spring driven reciprocable plunger device providing periodic increase and decrease of the available volume in the system for varying the braking pressure and therefore the braking force exerted by the system. Plunger movement is controlled by the combination of fluid pressure in the system, a spring having a negative deflection rate, and an armature moveable in accordance with a magnetic flux field. The spring and armature cooperate in providing rapid movement of the plunger in a direction to quickly reduce braking pressure for avoiding skidding.

3,690,737

**ANTI-LOCK BRAKE SYSTEM**

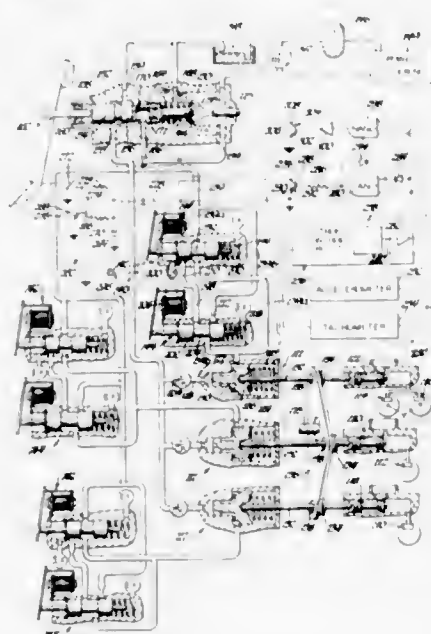
Philip C. Neese, Anderson; Richard D. Watson, Chesterfield, and Thomas A. Zickel, Anderson, all of Ind., assignors to General Motors Corp., Detroit, Mich.

Filed Dec. 7, 1970, Ser. No. 95,468

Int. Cl. B60t 8/06

U.S. Cl. 303—21 F

7 Claims



An anti-lock brake system includes separate hydraulically boosted master cylinders for each wheel brake or set of wheel brakes to be controlled, a brake control valve to provide fluid pressure for simultaneous actuation of the plurality of hydraulic boosters, an anti-lock control valve circuit associated with

3,690,741

**EYELET FOR TRACK DRIVEN VEHICLE**

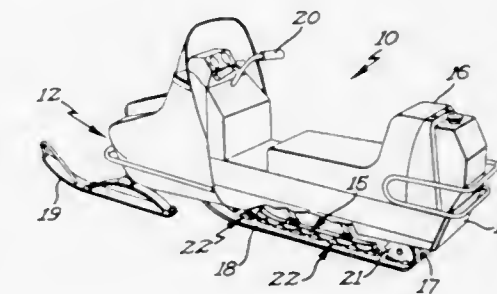
Neil W. Pierson, P. O. Box 98, Roseau, Minn.

Filed March 29, 1971, Ser. No. 128,814

Int. Cl. B62d 55/24

U.S. Cl. 305—38

10 Claims



An improved eyelet for track driven vehicles allowing the track to be driven by the teeth of a drive sprocket extending through the eyelet is disclosed. The eyelet includes a head for mounting inside of the track and a hollow body extending from the head through an aperture in the track to fold over the track on the outside and hold the eyelet in the track. The eyelet head includes a set of parallel sides providing sliding support and a set of parallel sides providing guiding support for a slide rail suspension of the track driven vehicle. Further the head is curled back towards the track itself to grip the track. Also disclosed is a washer which may be used with the eyelet of the present invention also to grip the track. The washer may also include traction teeth extending downward from the outside of the track.

3,690,742

**CRANE BOOM**

Fu-Tien Sung, Waynesboro, Pa., assignor to Grove Manufacturing Company, Shady Grove, Pa.

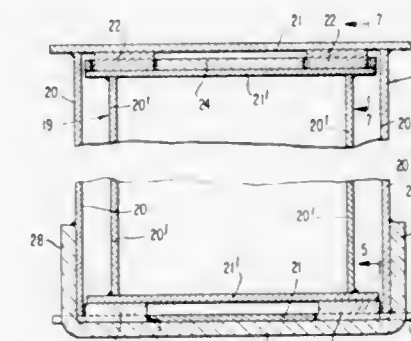
Continuation of Ser. No. 90,373, Nov. 17, 1970, abandoned.

This application Nov. 19, 1971, Ser. No. 200,352

Int. Cl. F16c 17/00

U.S. Cl. 308—3 R

9 Claims



A telescoping crane boom includes interfitting box sections fabricated by welding from plate stock. The side webs of the individual box sections are spaced inwardly from the longitudinal edges of the top and bottom webs, to allow placement of bearing pads substantially directly over and under the side webs of each box section in a multiple section boom. As a result, the side webs of the box sections are utilized as columns to absorb the heavy stresses transmitted through the wear pads and transverse stressing and flexure of the top and bottom webs is greatly minimized. The arrangement allows considerably lighter sections to be employed for the top and bottom webs of the individual box sections without fear of excessive transverse bending.

3,690,738

**HYDRAULIC SYSTEMS FOR VEHICLES**

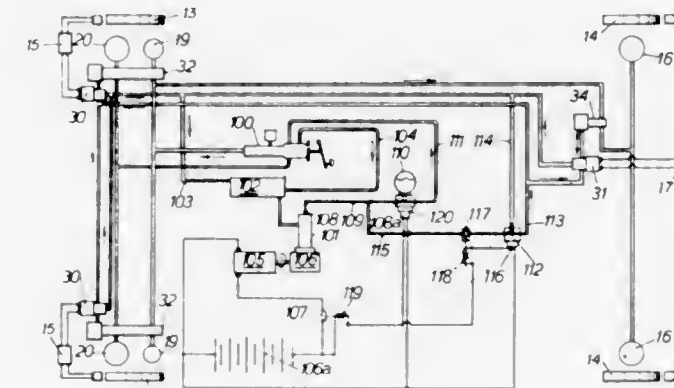
Brian Ingram, Warks; Douglas Roy Spence, Warks, and Robin Adam Cochrane, Warks, all of England, assignors to Girling Limited, Birmingham, England

Filed Dec. 8, 1970, Ser. No. 96,085

Int. Cl. B60t 8/06

U.S. Cl. 303—21 F

8 Claims



An anti-skid braking system includes hydraulically actuated valves which interrupt the supply of fluid to the brakes when deceleration is excessive, the pressure fluid for both the brakes and the actuators being supplied by a single pump driven by the vehicle starter motor, and means which control the pressure of the brake fluid and the actuator fluid to predetermined values.

3,690,739

**PHASE-ANGLE REGULATOR**

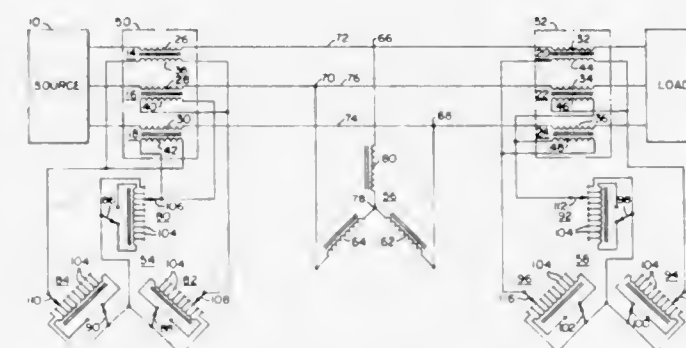
Herbert L. Prescott, Brookfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 25, 1971, Ser. No. 146,742

Int. Cl. G05f 3/04

U.S. Cl. 323—43.5 R

7 Claims



Load tap changing regulator apparatus for high voltage power distribution systems. Two series transformers are used with separate excitation windings and tap changing means. The tap changers may be synchronized to provide phase-angle regulation with or without a change in the voltage.

3,690,740

Patent Not Issued For This Number



3,690,743

## SCHOOL DESKS

Fritz Flototto, Uber Bielefeld II, Friedrichsdorf near Bielefeld, Germany

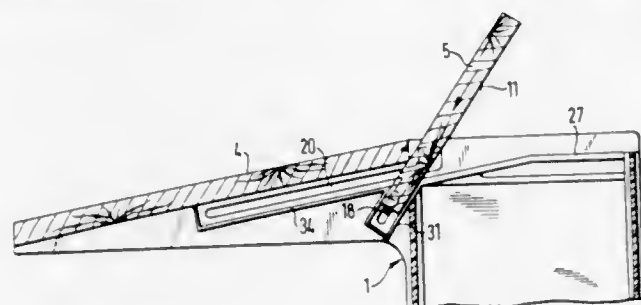
Filed Sept. 14, 1970, Ser. No. 71,654

Claims priority, application Germany, Sept. 15, 1969, P 19 46 659.2

Int. Cl. A47c 1/00

U.S. Cl. 312-231

18 Claims



A school desk comprises a front compartment which opens in an upward direction. For closing the compartment use is made of a folding flap which, for opening the compartment, can be slid quietly underneath the top of the desk.

3,690,744

## ADJUSTABLE REFRIGERATOR SHELF

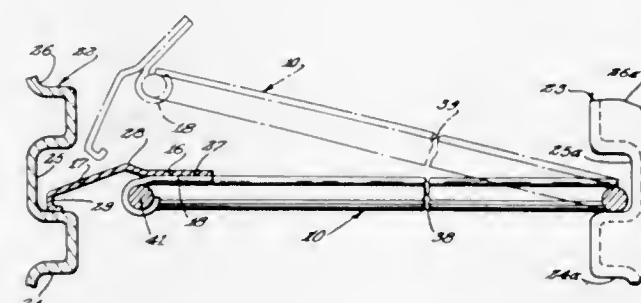
Herbert D. Squire, 535 Columbus, Galesburg, Ill.

Filed Feb. 5, 1970, Ser. No. 8,949

Int. Cl. A47b 96/02; A47f 5/00

U.S. Cl. 312-351

4 Claims



The combination of a molded liner in a refrigerating unit and a shelf which is positionable between horizontal grooves formed on opposite walls at vertical increments in the liner. The length of the main shelf is less than the distance between opposite grooves. However, the shelf has an extension portion which is pivotally mounted to its front rim to cause its overall length to be sufficient to be supported by the grooves. The extension portion is restricted from pivotal movement upwardly from its aligned position with the shelf, but is allowed to pivot downwardly so as to allow the shelf to be moved either upwardly or downwardly to a new position in the refrigerator.

3,690,745

## ELECTRO-OPTICAL DEVICES USING LYOTROPIC NEMATIC LIQUID CRYSTALS

Derick Jones, Lu, Sun, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed March 3, 1970, Ser. No. 16,078

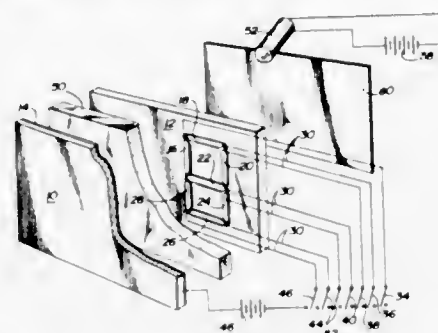
Int. Cl. G02f 1/28; G01n 31/00

U.S. Cl. 350-160 R

12 Claims

A display device in which a thin layer of a lyotropic nematic mesomorphic composition is utilized to diffuse light from a source toward an observer by applying a suitable voltage, for example, 20 volts for a 1 mil layer. One form of the device

transmits light through the layer. A second form of the device uses light diffused and reflected to the observer. A preferred



lyotropic nematic mesomorphic composition includes three compounds of the structural formulas

3,690,746

## FEED MEANS FOR OPTICAL DISPLAY DEVICE AND CONTROL SYSTEM THEREFOR

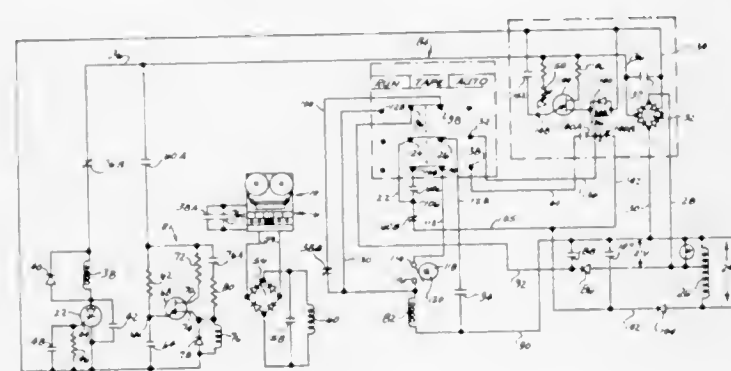
Max Kotler, Montvale, N.J., and Frank E. Ravese, Brooklyn, N.Y., assignors to De Jur-Amsco Corporation, Long Island City, N.Y.

Filed Sept. 24, 1970, Ser. No. 75,158

Int. Cl. G03b 31/00

U.S. Cl. 352-12

37 Claims



An optical displayer such as a motion picture or slide projector is used in conjunction with a sound reproducer, each reproducing from a film, tape, or other device. The controls for the feeding of the respective devices through the optical displayer and the sound reproducer are interrelated so that first one and then the other controls the feeding of itself and/or the other. In a preferred embodiment, the optical displayer feeds for a predetermined period of time, it then causes the sound reproducer to feed, and the feed of the optical displayer is then controlled by the sound reproducer. An interlock is provided between the feeding means control system and the feeding means per se of the optical displayer, so that the feed of the optical displayer occurs only at the proper synchronized time. If desired the sound reproducer can then shift control back to the optical displayer. Each of the reproduced devices may have reproducible control signals carried thereby in addition to reproducible intelligence such as pictures and sound.

3,690,747

## ANIMATION SYSTEM

Charles A. Vaughn, 2665 Regency Drive, E. Tucker, Ga.

Filed Oct. 26, 1970, Ser. No. 83,900

Int. Cl. G03b 21/32

U.S. Cl. 352-87

23 Claims

An animation system in which a camera means for exposing frames of film to photograph an object and a support means for supporting the object with respect to the camera means are moved relative to each other in accordance with motion data and status data converted by a computing means into a plurality of data outputs to which a motion means for moving the

3,690,749

## FILM PROJECTOR

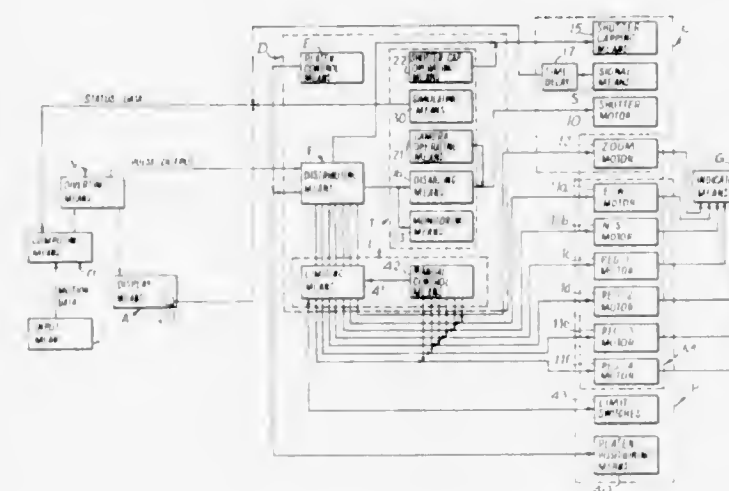
Ottmar Haberkern, Wiesbaden, and Gunter Heller, Wiesbaden-Biebrich, both of Germany, assignors to Ottmar Haberkern, Wiesbaden, Germany

Filed Sept. 21, 1970, Ser. No. 73,742

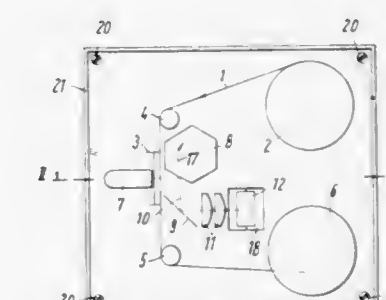
Int. Cl. G03b 41/06

U.S. Cl. 352-108

7 Claims



cal pulses in the data outputs differ selectively to cause that varying motion of the camera means and support means relative to each other which creates the illusion of an object accelerating or decelerating in the frames of film exposed by the camera means.



A film projector, preferably for projecting films in cartridges, having a projection lamp separated from the film gate by a heat insulated separation wall within the projector housing. The light is directed through a light guide rod onto the film frame to be projected. The film runs continuously, and the optical standstill of the picture is performed by a prismatic mirror. The prismatic mirror is rotated by a drive which is engaged to the film perforations.

3,690,748

## MOTION PICTURE CAMERA WITH A FADE-OVER DEVICE

Johann Roth, Schwabhausen, Germany, assignor to Niezoldi &amp; Kramer GmbH, Munich-Allach, Germany

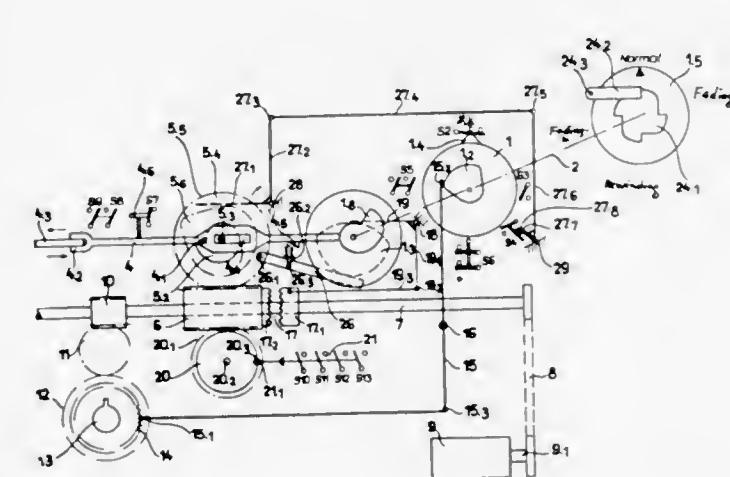
Filed June 30, 1970, Ser. No. 51,074

Claims priority, application Germany, July 2, 1969, P 19 33 579.6

Int. Cl. G03b 21/36

U.S. Cl. 352-91

9 Claims



A motion picture camera having diaphragm, a winding spool, a device for measuring off the same length of film for a fading-out film section and a subsequent fading-over film section, and motor means for driving the camera, which comprises a fade-over device having a selector disc adapted to be moved into a plurality of fade-over phases, the fade-over device, depending on the position of the selector disc being adapted to initiate, carry out, and complete all electric and mechanical functions necessary for the respective preselected fade-over phase.

3,690,750

## CONTROL SYSTEM

John Kellner Taillon, Massena, N.Y., assignor to Bell &amp; Howell Company, Pasadena, Calif.

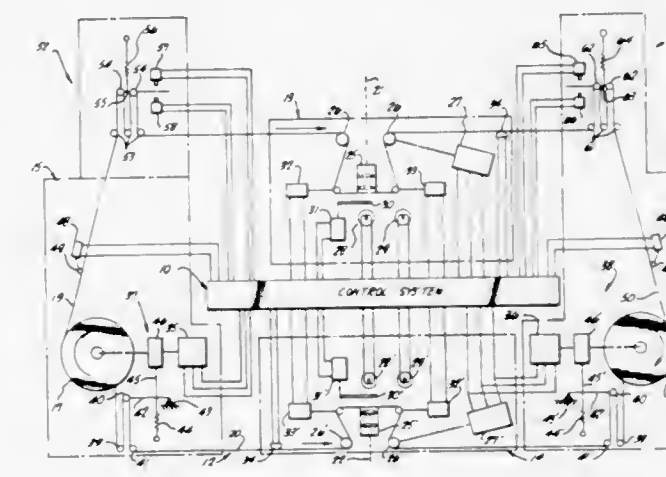
Division of Ser. No. 795,992, Feb. 3, 1969, Pat. No. 3,552,842.

This application Nov. 12, 1970, Ser. No. 88,633

Int. Cl. G03b 23/02

U.S. Cl. 352-124

5 Claims



A control system for a motion picture projection installation having a pair of lengths of motion picture film passed along separate film paths through separate reversible drive means between a pair of reels upon which the films are wound in reciprocal head-to-tail bifilar relation. The control system includes means for sensing the quantity of film present in one of the film paths between one reel and film display means located intermediate the reels. The control system also includes means for controlling the drive means to maintain said film quantity between predetermined limits.



3,690,751

**PROJECTOR FOR USE WITH CASSETTES FOR MOTION PICTURE FILM**

Bernhard von Fischern; Alfred Winkler; Klaus Fuchsle, all of Munich; Johann Zanner, Jr., and Peter Ungnadner, both of Unterhaching, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

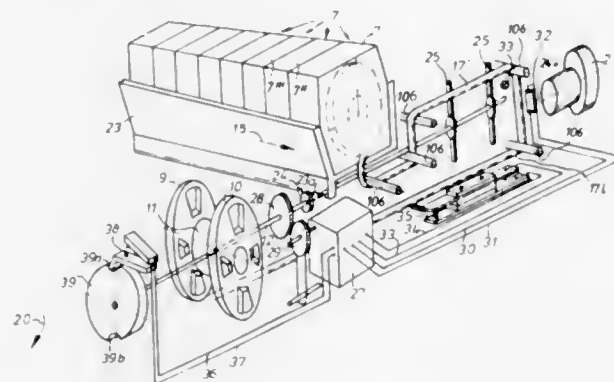
Filed Dec. 18, 1970, Ser. No. 99,569

Claims priority, application Germany, Dec. 23, 1969, P 19 64 727.9

Int. Cl. G03b 1/58, 21/02, 21/52

U.S. Cl. 352—125

26 Claims



A motion picture projector for use with magazines containing stacks of cassettes for motion picture film. The housing of the projector supports two coaxial takeup reels one of which assumes a collecting position and collects the film which is being withdrawn from a cassette in a projection position while the other takeup reel assumes a withdrawing position and pays out the film whose presentation is completed and which is being returned to the corresponding cassette. The takeup reels are caused to change positions in response to detection of the trailing portion of the film which is being presented, and such change in positions of the takeup reels take place simultaneously with a stepwise advance of the magazine so as to place a fresh cassette into the projection position while the preceding cassette assumes a position in which a rewinding mechanism rewinds onto its supply reel that film which is stored on the core of the takeup reel occupying the withdrawing position.

3,690,752

**DEVICE FOR STANDING PROJECTION OF SINGLE PHOTOGRAPHS IN A CINEMATOGRAPHIC PROJECTOR**

Piero Derossi, Corso Giovanni Lanza 55, Turin, Italy

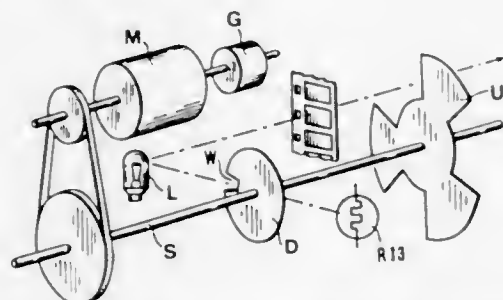
Filed Sept. 29, 1970, Ser. No. 76,546

Claims priority, application Italy, Oct. 20, 1969, 53749-A/69

Int. Cl. G03b 21/38

U.S. Cl. 352—174

6 Claims



In a cinematographic projector having an electronic circuit for speed control, a device is provided for interrupting motor supply when standing projection is required. The device comprises an apertured disc rotating with the sector diaphragm of the projector and interposed between a lamp and a photoreistance connected with the electronic speed control circuit for stopping conduction of the circuit when the photoreistance is illuminated. The aperture of the disc is arranged for allowing illumination of the photoreistance when the sector diaphragm leaves a projected photograph entirely free.

3,690,753

**DATA STORAGE SYSTEM**

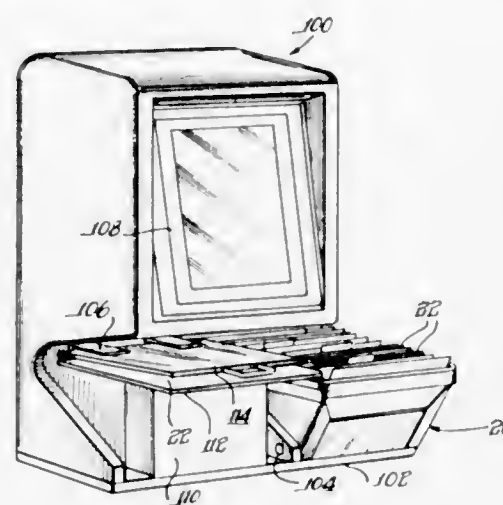
Ernest A. Dahl, Jr., 729 Greenwood Ave., Wilmette, Ill.

Filed Jan. 2, 1970, Ser. No. 57

Int. Cl. G03b 1/48, 23/02

U.S. Cl. 353—23

4 Claims



An apertured frame including side and bottom tab sections for holding a microfilm data sheet for filing with others and for use individually in combination with a microfilm reader having a transparent base to support the frame and a transparent upper flat to fit the frame aperture and hold the microfilm data in position for viewing.

**ERRATUM**

For Class 353—103 see:  
Patent No. 3,690,186

3,690,754

**CONTROL SYSTEM FOR AN OPTICAL IMAGING SYSTEM**

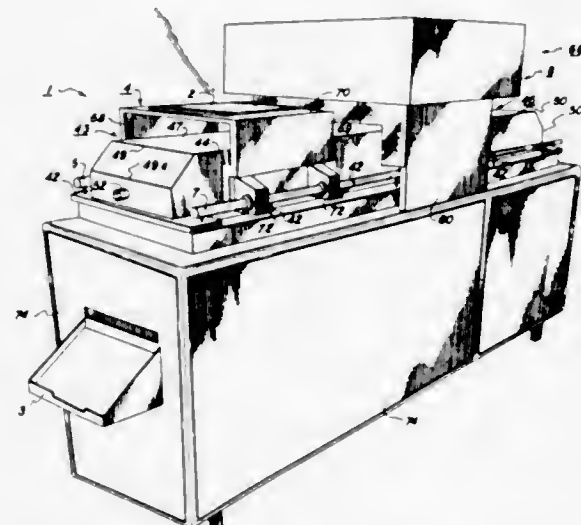
Edwin A. Urbanek, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,977

Int. Cl. G03g 15/00; B01k 5/00

U.S. Cl. 355—3

2 Claims



An electrical control system is used to regulate the operation of a photoelectrophoretic imaging machine. Included is a lead peaked ballast circuit for driving metallic additive gas discharge lamps. Lamp output is controlled by coupling capacitors in series with a lamp and by varying the input current to the primary of a step-up transformer coupled to a lamp. A controller meter is used to automatically maintain the transformer primary current within desired limits.

3,690,755

Patent Not Issued For This Number

3,690,756

**COLOR XEROGRAPHY**

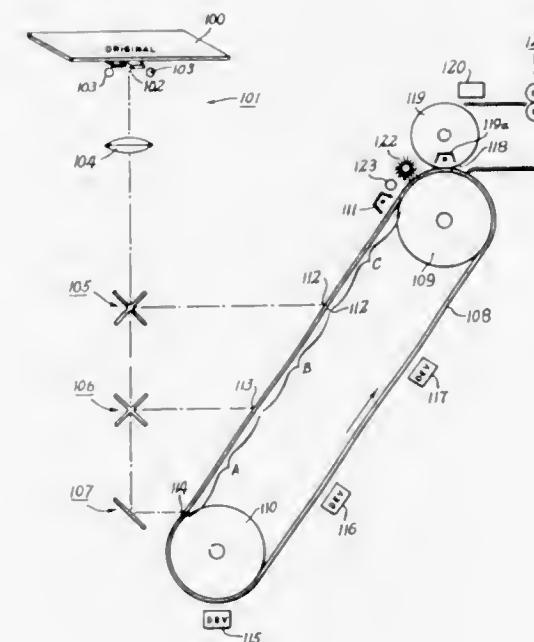
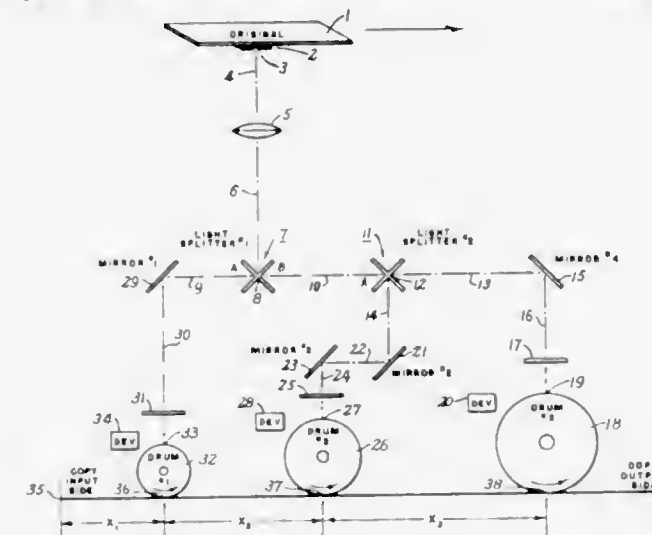
William A. Smith, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed March 22, 1971, Ser. No. 126,742

Int. Cl. G03g 15/00

U.S. Cl. 355—4

10 Claims



An electrostatic reproduction apparatus cable of producing a polychromatic copy of a color original upon a copy material comprising:

1. light scanning means for forming a light image of the color original;
2. beam splitting means for separating the light image into at least a first and second light beam, which are conducted along different optical paths of equal lengths through separate filters of dissimilar colors;
3. a uniformly charged photoconductive area at the terminus of each optical path, each area being simultaneously discharged in imagewise configuration by the light beam impinging upon it;
4. means for separately developing the respective imaged areas with toner compositions of different colors to form developed images of different colors; and
5. means for moving a copy material in sequential contact with the developed photoconductive areas whereby the developed images are transferred thereto in substantially perfect registration to thereby form a composite color image.

3,690,757

Patent Not Issued For This Number

3,690,758

**TANK FILLED WITH DEVELOPING LIQUID IN ELECTROPHOTOGRAPHIC APPARATUS**

Wilhelm Josef Knechtel, 6301 Rodheim, Paulinen Str. 24, Rodheim, and Detlef Schaffer, 6330 Wetzlar, Kornmarkt 6, Wetzlar, both of Germany

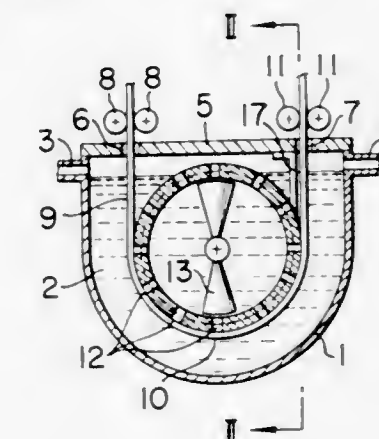
Filed July 13, 1970, Ser. No. 54,389

Claims priority, application Germany, July 14, 1969, P 19 35 615.1

Int. Cl. G03g 15/10

U.S. Cl. 355—10

7 Claims



Developing apparatus for electrophotographic use includes a tank containing developing liquid, a cylinder having an apertured sidewall supported for rotation in the tank and a propeller creating reduced pressure within the cylinder. Sheets bearing electrostatic images are attracted to the cylinder and maintained in contact with the apertured sidewall by suction. Upon development the sheets are peeled from the cylinder by fingers juxtaposed with reduced diameter sidewall areas.

3,690,759

**ELECTRONIC PHOTOCOPYING MACHINE**

Teizo Kushima, Osaka; Susumu Tanaka, Ditto, and Masaya Ogawa, Ditto, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

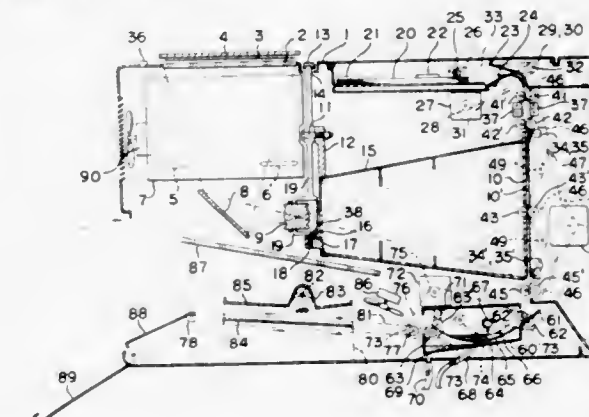
Filed April 18, 1966, Ser. No. 543,226

Claims priority, application Japan, July 27, 1965, 40/45427; Aug. 26, 1965, 40/70129; July 2, 1965, 40/54051; Aug. 20, 1965, 40/50816; Aug. 18, 1965, 40/67863; Aug. 17, 1965, 40/50077; July 27, 1965, 40/45427; Sept. 10, 1965, 40/74304

Int. Cl. G03g 13/10

U.S. Cl. 355—10

1 Claim



A feeding and conveying arrangement for sheets of xerographic copy paper passing through the recording and developing sections of a photocopying machine. Three feed-



ing mechanisms are provided, one to take sheets from the magazine, a second to take the sheets through the exposure station, this one being on a pivotal assembly, and a third for feeding the sheets through the developing means at a lower velocity than that at which the others operate, means being provided to accommodate a temporary loop of paper until it can be handled by the slower developing feeder.

3,690,760

## ELECTROSTATIC PRINTING SYSTEM

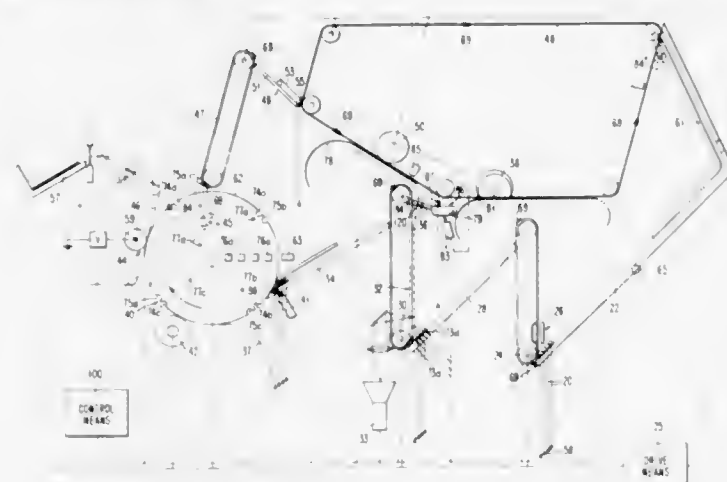
Willard K. Banks, Cupertino, and James L. Lyon, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed April 5, 1971, Ser. No. 131,311

Int. Cl. G03g 15/00

U.S. Cl. 355—16

18 Claims



An electrostatic printing apparatus wherein photoconductive elements are individually movable through process stations for charging, exposing and developing an electrostatic image, and wherein the photoconductive element is fed through a process buffer means between each of the stations so that asynchronous operation results. A plurality of the photoconductive elements with the electrostatic image are cycled a predetermined number of times through the development and transfer stations at a higher rate so that multiple copies can be printed from a single image deposition for each of the photoconductive elements without slowing the operation of the other parts of the system.

3,690,761

## ACCESSORY FOR OPTICALLY REVERSING THE IMAGE IN COPY CAMERAS

Jeff Green, Ramsey, N.J., assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

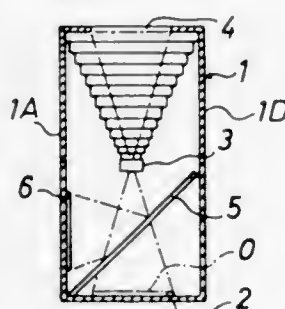
Filed Dec. 8, 1970, Ser. No. 96,061

Claims priority, application Germany, Dec. 10, 1969, G 69 47 770.9

Int. Cl. G03b 27/70

U.S. Cl. 355—43

8 Claims



An accessory for use in vertical or horizontal copy cameras to optically reverse the image of an original. A frame of the ac-

cessory is insertable into the housing of a copy camera between the lens and the easel for originals and carries a mirror which makes with the optical axis of the lens an angle of 45°. The frame further carries a second easel which can be placed in front of the mirror so that it is located at 90° to the easel of the camera. The image of an original which is placed onto the second easel is reversed so that the camera can make right reading negative or positive copies.

3,690,762

## METHOD OF PRODUCING A MICROFICHE

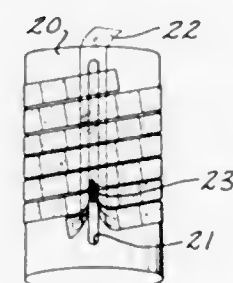
Julian Silver, White Plains, N.Y., assignor to U.S. Dynamics Inc., Elmsford, N.Y.

Filed July 20, 1970, Ser. No. 56,393

Int. Cl. G03b 27/32

U.S. Cl. 355—77

5 Claims



A method of recording and displaying photographic images includes the steps of exposing a series of image areas on a film strip, leaving blank areas at predetermined locations on the film strip, processing the film strip to produce image transparencies thereon, arranging the film strip in the form of a helix with portions of each of the blank areas aligned, securing the blank areas to one another, cutting through the film strip in the blank areas to form the image areas into a matrix having the form of a parallelogram, and positioning the matrix to project selectively the images thereon for viewing purposes. The apparatus includes a photographic system with a camera for exposing a series of image areas on a film strip with blank areas disposed at predetermined locations on the film strip, and after the film is processed, the film strip is wound in the form of a helix on a drum or a cylinder with the unexposed areas disposed over a slot in the drum. The unexposed film areas are secured together, as by an adhesive, and the film is cut along the unexposed areas over the slot whereby a matrix in the form of a parallelogram is produced. The matrix in the form of a parallelogram is composed of a plurality of columns of photographic images with each column having a plurality of rectangular photographic film areas disposed in series. The rectangular film areas of each column are offset relative to the corresponding film areas of adjacent columns. An image viewer has a carrier which holds the matrix array of rectangular photographic and film areas, and the carrier may be moved in two dimension back and forth or right and left. The carrier has an arm which extends over an index mat which includes an array of rectangular elements likewise disposed in the format of a parallelogram. The carrier and the index mat have a pantographic type relationship whereby the position of the carrier is indicated by the index mat.

3,690,763

## APPARATUS FOR COMPUTING COLOR BALANCE CHARACTERISTICS AND PREPARING IMPROVED COLOR PRINTS

Robert W. Mitchell, 707 Myrtle Ave., Saint Joseph, Mich.

Continuation-in-part of Ser. No. 478,665, Aug. 10, 1965, Pat. No. 3,443,868. This application Feb. 27, 1967, Ser. No. 618,799

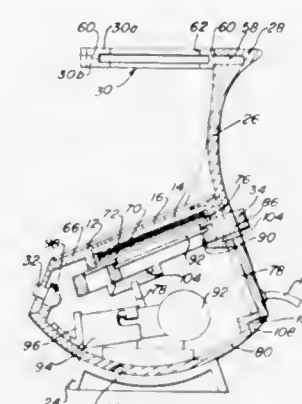
Int. Cl. G03b 27/24

U.S. Cl. 355—88

7 Claims

A colorimeter which is adapted for accurately comparing an unknown light with a light of standard color to enable the ad-

justment or compensation of the unknown color to produce a desired effect in photography or the like. One colorimeter is on a universal mounting and has a filter support spaced from a comparing surface to direct the unknown light with filter compensation along an axis unto a small central mirror mounted at



an angle to the light axis on the comparing surface. A source of known light of controlled and constant color and intensity is within the colorimeter and illuminates the comparing surface around the small mirror. The disclosure includes alternate embodiments and unique methods of utilizing the colorimeter.

3,690,764

Patent Not Issued For This Number

3,690,765

## APPARATUS FOR ADVANCING UNPRINTABLE NEGATIVES THROUGH PHOTOGRAPHIC PRINTERS

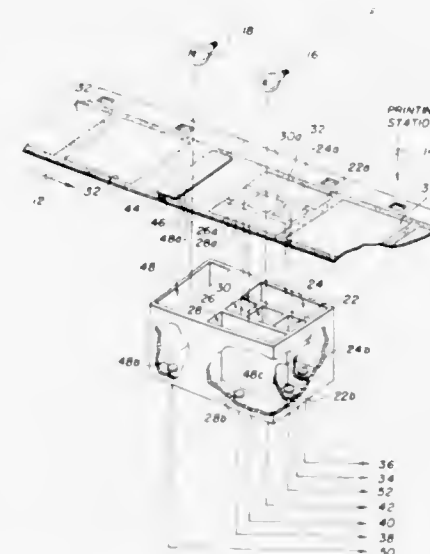
Robert K. Rickard, and William C. Klein, both of Rochester, N.Y., assignors to Eastman Kodak Company

Filed April 13, 1971, Ser. No. 133,649

Int. Cl. G03b 27/04

U.S. Cl. 355—97

24 Claims



Apparatus responsive to the detected density of a plurality of peripheral background areas of a negative and the central area of a negative determines whether the negative is suitable for producing an acceptable print and whether classification correction is necessary in printing the negative. Over-exposed or fogged negatives and under-exposed or blank negatives are detected by a comparison of the peripheral and central area density with reference densities to generate an unprintable negative signal. A splice signal is also generated upon the detection of a splice connecting negative strips. Apparatus responsive to the unprintable negative signal and the splice signal advances unprintable negatives or negatives otherwise unsuitable for producing acceptable prints and splices, respectively, through the printing station of the printer without print-

ing the negative or the splice. However, if all negatives in a negative strip are determined to be unprintable, the last unprintable negative is printed so that an order sort mark may be placed on the print to keep the group of prints in each customer's order coordinated with its respective negative film-strip.

If the negative is determined to be printable, the densities of the central and peripheral areas of the negative are compared to each other in a predetermined manner to determine if the negative exhibits an unequal distribution in density indicating a subject failure. Apparatus is provided to activate classification correction factors provided on the printer in response to the classification of the negative.

3,690,766

## PHOTOGRAPHIC FILM DUPLICATOR

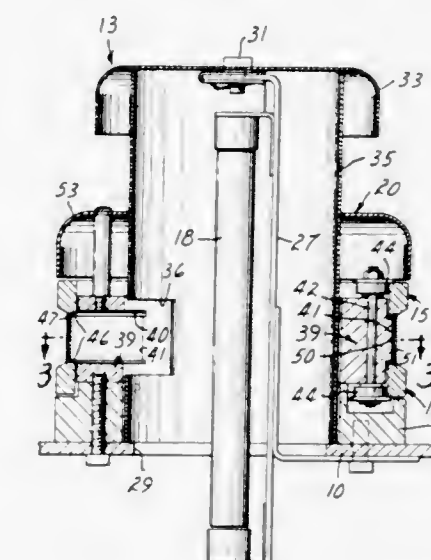
George G. Lunde, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 25, 1970, Ser. No. 14,095

Int. Cl. G03b 27/10

U.S. Cl. 355—111

9 Claims



A photographic film duplicator in which an original film is supported by its longitudinal edges at a constant radius from a line source of radiation at a duplicating station with the original film between the source of radiation and a radiation sensitive duplicating film in intimate contact with the original film to permit radiation from the source to be projected through the original film to image the duplicating film.

3,690,767

## OPTICAL TANKER-DOCKING SYSTEM

Danilo V. Missio, Belmont; Herbert Wollman, Burlington, and Irving G. Englander, Cambridge, all of Mass., assignors to Systron-Donner Corporation

Filed Oct. 1, 1970, Ser. No. 77,214

Int. Cl. G01c 3/08

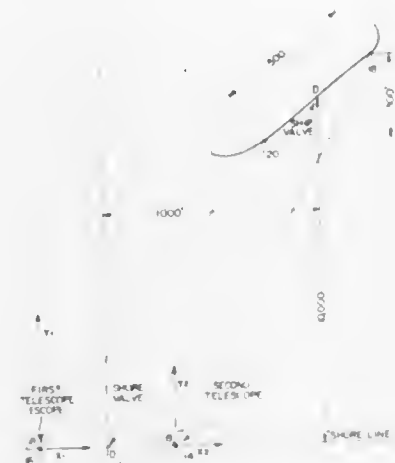
U.S. Cl. 356—5

9 Claims

A docking system for large ocean-going vessels, which comprises a laser pulse range radar system having a laser transmitter and receiver, a retroreflector, and receiving and transmitting optics. Two such systems are disposed on a dock. The retroreflectors are disposed on the bow and stern of a vessel. The laser systems share a time interval meter, a computer, and a display panel. The lasers track the retroreflectors as the ship approaches the dock, and the time interval between the transmitted and received pulses is measured. Computations are



made and the velocity of the approaching vessel, its distance from the dock, and the vessel position with reference to the



dock are continually displayed. This information is then transmitted to the ship's captain.

3,690,768

### DIESEL FUEL INJECTION SYSTEM WITH IMPROVED STARTING PERFORMANCE

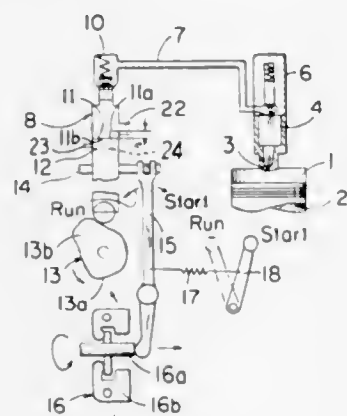
Shigeo Nagasawa, Kyoto, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1969, Ser. No. 882,829

Claims priority, application Japan, Feb. 28, 1969, 44/14560  
Int. Cl. F02b 3/00; F02n 17/00

U.S. Cl. 123—32 G

1 Claim



A fuel injection system for a diesel engine has a plunger barrel with a fuel intake port and a plunger slidable axially in the barrel. A plunger operating cam has a pair of lobes for operating the plunger. During either the intake or the compression stroke, the cam advances the plunger to a first position blocking the port to inject fuel, after which the plunger retracts. At the end of the compression stroke, the cam advances the plunger further to a second position to block the port to inject fuel. A switching device is effective to rotate the plunger between a starting position and a running position. In the starting position, the peripheral surface of the plunger blocks the port during the two fuel injection strokes of the plunger and, in the running position, the plunger is rotated to a position where its peripheral surface blocks the port only upon the further advance of the plunger to the second position. The invention improvement comprises at least one fuel passage in the plunger connecting the peripheral surface to the inner end face of the plunger and communicating with a by-pass fuel intake port in the barrel, only during starting of the engine, and in the second plunger position. The by-pass fuel intake port is spaced angularly from the main fuel intake port.

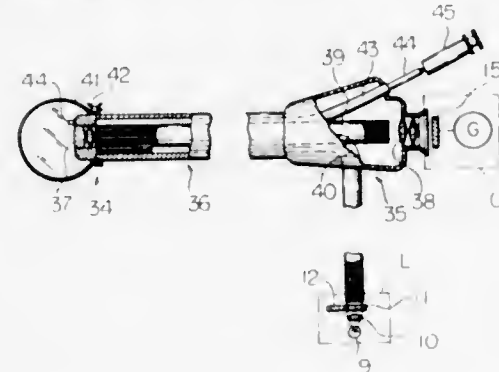
### 3,690,769 ENDOSCOPE WITH BUILT-IN OXIMETER

Toshiyuki Mori, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan  
Filed Dec. 7, 1970, Ser. No. 95,479

Claims priority, application Japan, Dec. 12, 1969, 44/100359; Dec. 12, 1969, 44/118626; Dec. 12, 1969, 44/118627

Int. Cl. G01n 33/16  
U.S. Cl. 356—41

3 Claims



An endoscope is provided with an inflatable, transparent bag enveloping the objective in the forward end portion and capable of being inflated by air from the control housing. The light reflected from the patient's blood through the bag into the objective and transmitted by a bundle of optical fibers to the control housing is analyzed for its content of red and infrared radiation as a measure of the oxygenation of the blood, the analysis apparatus being connected either to the eyepiece in the control housing or to a separate outlet receiving a portion of the image forming light through a beam splitter so that visual inspection of an internal organ can be performed alternately or simultaneously with the oximetric analysis.

3,690,770

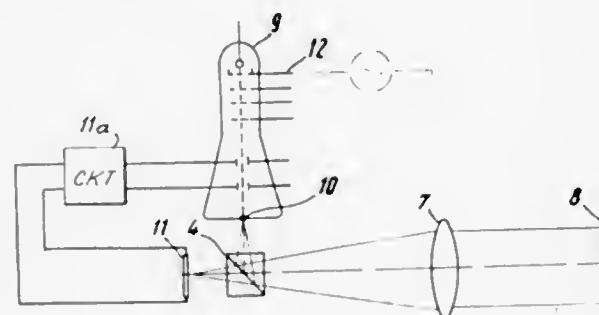
### METHOD TO MEASURE MIRROR DEFLECTION

Siegfried Raith, Nelkenweg 23, D-8510, Fuerth, Germany  
Filed Nov. 16, 1970, Ser. No. 89,697

Claims priority, application Germany, Nov. 18, 1969, P 19 57 905.6

Int. Cl. G01b 11/27  
U.S. Cl. 356—152

7 Claims



A dynamic autocollimator telescope for measuring mirror deflections having a point source of light, a lens for converging the light, and beam splitter positioned between the light source and the lens for directing diverging light from the source to the lens. The lens converges the received light into parallel rays which are directly substantially normally onto the face of the mirror whose deflections are to be measured. The mirror reflects the incident parallel light back through the lens and the beam splitter which passes the reflected light to a photo detector located at the focal point of said lens. The detector generates electric signals proportional to the position of said light on the photo detector and the signals are used to adjust the position of the light source so that the reflected light always appears in the same location on the photo detector.

3,690,771

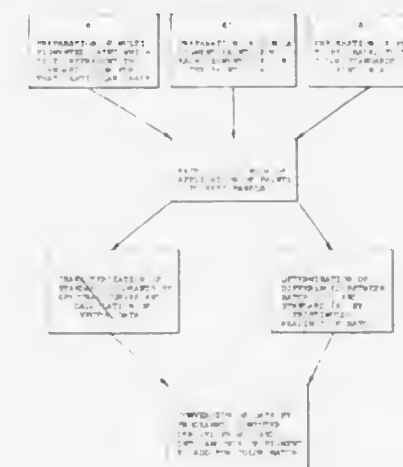
### METHOD AND APPARATUS FOR INSTRUMENTALLY SHADING METALLIC PAINTS

William S. Armstrong, Jr., Phoenixville; Webster H. Edwards, Springfield, both of Pa.; Joseph P. Laird, Wilmington, Del., and Roy H. Vining, Swarthmore, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed April 7, 1970, Ser. No. 26,269

Int. Cl. G01j 3/46, 3/42  
U.S. Cl. 356—176

6 Claims



A system which can be used in the paint manufacturing industry to shade batches of paint to desired standard color based on standard values for the standard color by use of physical differences of the paint to be shaded and the standard paint determined from tristimulus values derived from panels sprayed with the respective paints.

3,690,772

### PHOTOMETER FOR CARRYING OUT MEASUREMENTS AT DIFFERENT WAVE LENGTHS

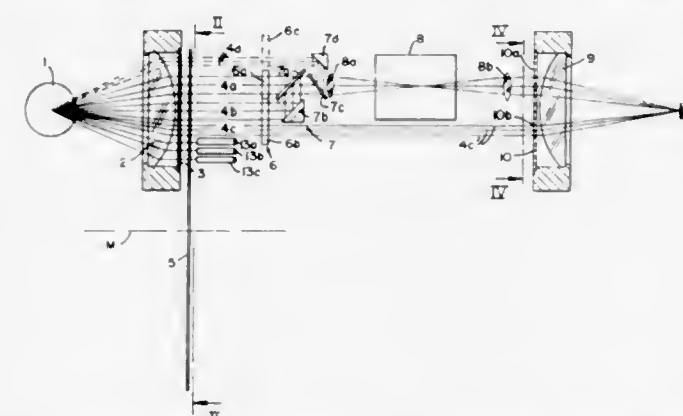
Alfons Endl, Munich, Germany, assignor to Bio-Cal Instrument Company, Richmond, Calif.

Filed July 31, 1970, Ser. No. 60,053

Claims priority, application Germany, July 31, 1969, P 19 39 034.2

Int. Cl. G01j 3/50; G01n 21/22  
U.S. Cl. 356—179

24 Claims



Apparatus for measuring the optical characteristics of a sample by determining the absorption of light of different wave lengths by the sample. Light pulses are transmitted via at least three light ray paths at intermittent intervals so that no more than one light path is illuminated during any instant of time. The pulses of one path are used as a reference pulse and the remaining pulses are filtered, aligned and passed through the sample. Light passing the sample as well as light on the referenced paths are then directed to a single photocell. Output signals from the photocell are identified as to which light path they correspond and are maintained steady to prevent light source intensity variations or the like from influencing the reading. The magnitude of the signals is compared with a constant reference signal to determine the optical transmission and/or absorption characteristics of the sample under investigation.

3,690,773

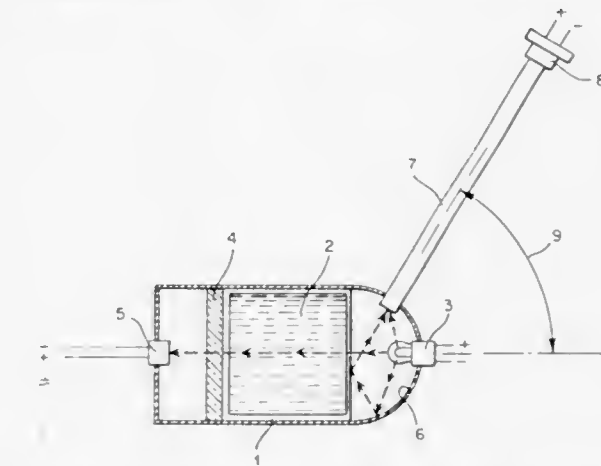
### DUAL PHOTOCONDUCTIVE CELL PHOTOMETER

Frank Malley, Gloucester Heights, N.J., assignor to Unilex, Inc., Pennsauken, N.J.

Filed Nov. 19, 1970, Ser. No. 91,033

Int. Cl. G01j 3/46, 3/48; G01n 21/22; G01j 1/04  
U.S. Cl. 356—181

12 Claims



A photometer for measuring the color of aqueous solutions such as polluted water with great sensitivity is provided. The photometer is portable, operates on a low power source, and retains sensitivity despite shock or drift of either the energy source or the light source.

The photometer utilizes photoconductive cells in a manner to eliminate the "light history" effect. A sample filter cell is placed between the lamp source and a regulating filter, which in turn is in front of a first cell, the second filter being designed to reduce the total light reaching the first cell. A second photoconductive cell is positioned to view light directly from the source and at the same time light reflected off of the sample filter. The cells are on opposite legs of a bridge circuit with each leg of the circuit being shunted around the cells to provide for drift control and balance. The bridge circuit is operated at low voltage across each photocell. The difference between the spectral response of the cells is balanced by the impedance of each leg circuit. The color intensity difference between sample filters is read directly on a microammeter across the bridge, the ammeter being chosen to provide as little impedance across the bridge as possible.

3,690,774

### CONTINUOUS OPTICAL QUALITY CONTROL MONITOR

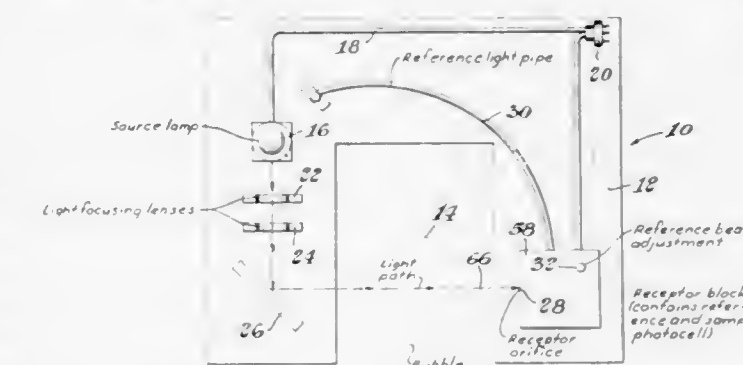
Sherman Kottle, Lake Jackson, Tex.; William P. Carl, and Walter L. Vaughn, both of Angleton, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 26, 1971, Ser. No. 119,214

Int. Cl. G01n 21/30

U.S. Cl. 356—206

7 Claims



This invention relates to an instrument for continuously measuring the gloss of thin essentially transparent plastic films as the film is in the light path of the instrument. The instrument uses a beam of visible light directed through the film in such a manner that the transmitted intensity is a measure of the gloss of the film. This device makes lengthy laboratory testing of film optical properties unnecessary because the measurement can be made as the film is being fabricated.



3,690,775

**BORESCOPE FIXTURE**

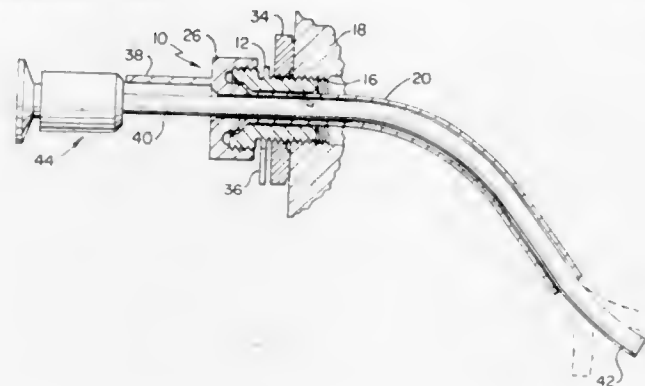
Nicholas T. Cousins, Bridgeport, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Sept. 1, 1971, Ser. No. 176,897

Int. Cl. G01n 2/116

U.S. Cl. 356-241

3 Claims



A fixture to permit use of a flexible borescope to inspect inaccessible recesses of engines is disclosed. The borescope fixture is adapted to be fitted into an existing threaded hole of the engine. A semi-rigid tube is shaped to reach from the hole in the engine casing to the engine location of interest so as to permit the flexible borescope to reach such location for visual inspection thereof.

3,690,776

**WAX APPLICATOR**

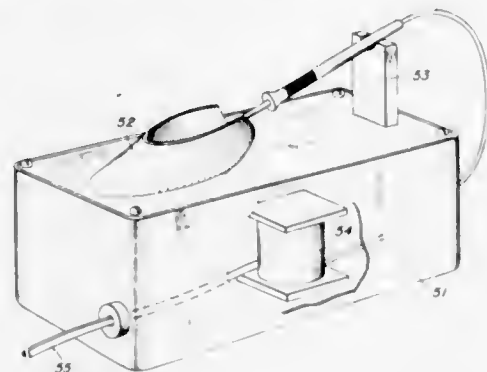
Kirill M. Zaporoshan, 5 Alcott Drive, Livingston, N.J.

Filed March 16, 1970, Ser. No. 19,615

Int. Cl. B43m 1/02

U.S. Cl. 401-1

2 Claims



A wax applicator comprised of an elongated pencil-type soldering iron having a wax applying tip mounted in direct heat transfer relationship therewith. The tip is comprised of a plurality of spaced parallel flexible metal fingers defining a flexible metal brush. The wax applicator is incorporated into an assembly comprising a casing, a wax reservoir, applicator holder and energizer for the applicator. The energized applicator is dipped into the reservoir, melting wax therein and removed from the reservoir to apply wax to a surface.

3,690,777

**DOUBLE DISPENSING APPLICATOR WITH TWIN RESERVOIRS**

Allan A. Costa, 682 Udall Street, West Islip, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,169

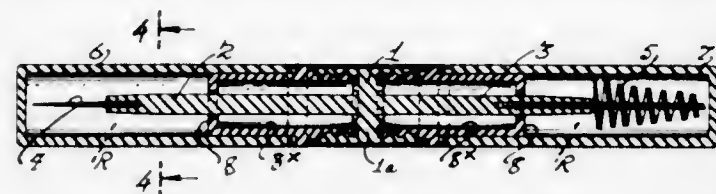
Int. Cl. A46b 1/00

U.S. Cl. 401-17

4 Claims

The embodiment shown in the drawing comprises a central cylindrical member which at each end is formed with internally threaded sleeves meeting a solid area from which integrally project oppositely directed rods, one of the rods carrying, in the said embodiment, an eyeliner narrow brush, and

the second rod carrying a spiral mascara applicator. The assembly includes two cover members, each of which is a reservoir for the appropriate cosmetic, and each cover member serves as a handle when the opposite cover is removed for use of the particular applicator exposed when said cover is removed. The reservoir in each cover lies toward its closed end, forwardly of which is an internal cover wall formed with



an aperture for passage of the rod and applicator, but the wall closely having slidable contact for the latter and serving both as a complementary closure for the reservoir and as a wiper for the rod and applicator. The construction provides a double cosmetic dispensing applicator in small space, and one which can be safely carried, a fully operative size being, for example, less than the diameter of the usual lipstick and only about one third longer.

3,690,778

**PUSH-BUTTON TYPE WRITING INSTRUMENT WITH A CAP**

Tatsuo Hirota, Saitama-ken, Japan, assignor to Pentel Co., Ltd., Tokyo, Japan

Filed July 30, 1970, Ser. No. 59,534

Claims priority, application Japan, July 31, 1969, 44/72387

Int. Cl. B43k 21/18, 23/00

U.S. Cl. 401-66

4 Claims



A pencil with a push-button for displacing the lead has a flange encircling the button. The flange limits displacement of the button into the pencil body and limits the depth of engagement of a cap mountable selectively on the button or on the writing end of the pencil. The writing end is also provided with a step to limit the depth of engagement of the cap.

3,690,779

**WIPE-ON PAINT APPLICATOR WITH PRESSURIZED FEED**

Donald A. Ellis, New Berlin, Wis., assignor to Bastt Rollr, Inc., Fond du Lac, Wis.

Filed Oct. 8, 1970, Ser. No. 79,067

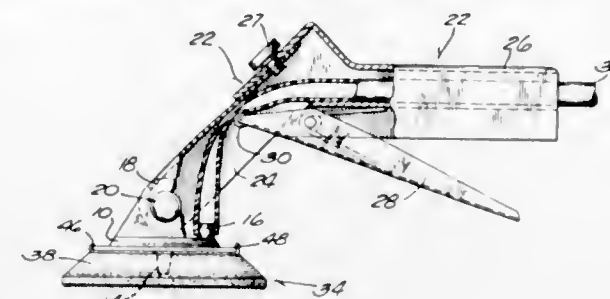
Int. Cl. A46b 1/02

U.S. Cl. 401-266

3 Claims

A wipe-on paint applicator has a feeder head to which a handle is pivotally mounted. This head has depending nozzles which are connected internally to a distribution channel. An applicator provided with nozzle receiving pockets with small outlets is mounted on the head with the nozzles projecting into the pockets. A flexible tube passing through the handle has its

outlet end connected to the distribution channel and its inlet end connected to a source of paint under pressure. A pinch



type valve carried by the handle controls flow of paint through the tube to the channel, the nozzles and the applicator.

3,690,780

**VACUUM ACTUATED ROTARY DRILL**

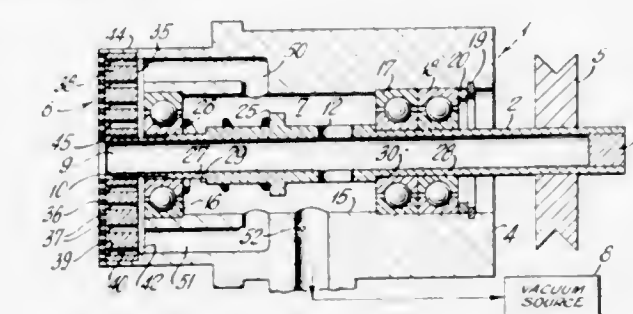
John Louis Bjelland, Glen Head; Floyd W. Flynn, and Norman C. Schutt, both of Glen Cove, all of N.Y., assignors to Powers Chemco, Inc., Glen Cove, N.Y.

Continuation-in-part of Ser. No. 853,835, Aug. 28, 1969, abandoned. This application Feb. 26, 1971, Ser. No. 119,193

Int. Cl. B23b 41/00, 47/22

U.S. Cl. 408-58

5 Claims



A motor-driven hollow drill member having a cylindrical bit or cutting edge to engage a sheet of photographic film or the like is rotationally and slidably supported in a housing connected to a vacuum pump by apertures communicating with the exterior and interior of the hollow drill. The bit end of the drill may protrude from one end of the housing which is adapted to be brought into vacuum contact with a sheet film. Upon the drill housing making contact with the film, the film is drawn into firm contact with the drill assembly and the bit is pneumatically urged into contact with the film to drill an accurate hole therein. As soon as the hole has been drilled, the vacuum is destroyed, the cut-out disc is sucked through the drill and the drill assembly is released from the surface of the film.

The drill assembly finds its primary field of usefulness in the formation of register holes in one or more margins of a sheet of film being processed in a photomechanical camera as the first step in preparing a preregistered printing plate.

3,690,781

Patent Not Issued For This Number

3,690,782

**LEAD-SCREW TAPPING HEAD**

Robert J. Petroff, 1703 S. Main Street, Lombard, Ill.

Filed June 27, 1969, Ser. No. 837,093

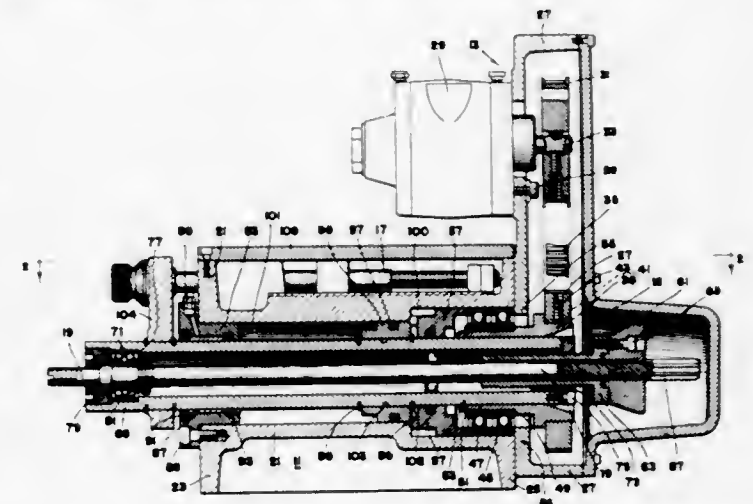
Int. Cl. B23g 1/00, 1/04

U.S. Cl. 408-132

4 Claims

Lead screw tapping apparatus for guiding and feeding a threading tool into a workpiece. The apparatus comprises an axially movable quill within which is rotatably mounted a spindle holding the threading tool. The quill is rapidly advanced

and retracted from the proximity of the workpiece by means of supplied superatmospheric gas pressure acting on a piston fixedly mounted on the quill. The rapid advancement of the quill engages a clutch element, attached to a lead screw, with a corresponding clutch element rotated by a drive means, thereby advancing an associated lead nut having threads of the same pitch of the threads formed by the tool, while simultaneously rotating the spindle and threading tool. The quill (to



which the lead nut is secured) the spindle and the threading tool are advanced at the same rate, the tool thus forming the threads in the workpiece. Obstacles or forces encountered during the threading operation which are greater in magnitude than the total resultant force produced by the preselected gas pressure acting on the piston disengage the clutch surfaces thereby stopping the operation and saving the threading tool from destruction.

3,690,783

**ADJUSTING COLLAR ARRANGEMENT, ESPECIALLY FOR A BORING BAR**

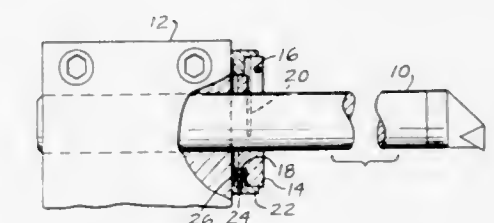
James W. Heaton, Greensburg; William C. Eversole, and Ernest J. Friedline, both of Latrobe, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed June 22, 1970, Ser. No. 47,947

Int. Cl. B23b 29/02

U.S. Cl. 408-146

4 Claims



An adjusting collar arrangement for mounting on a boring bar or the like to effect fine adjustment of the boring bar. The collar has a part which is fixedly clamped to the boring bar and another part threaded thereon with a fine thread which abuts the support for the boring bar so that by loosening the boring bar in its support, the threaded part of the adjusting collar can be rotated and thereby effect fine axial adjustment of the boring bar.

3,690,784

**TURBINE**

Desmond J. Farrow, R.D. 2, North East, Md.

Filed Oct. 14, 1970, Ser. No. 80,556

Int. Cl. F01d 1/12

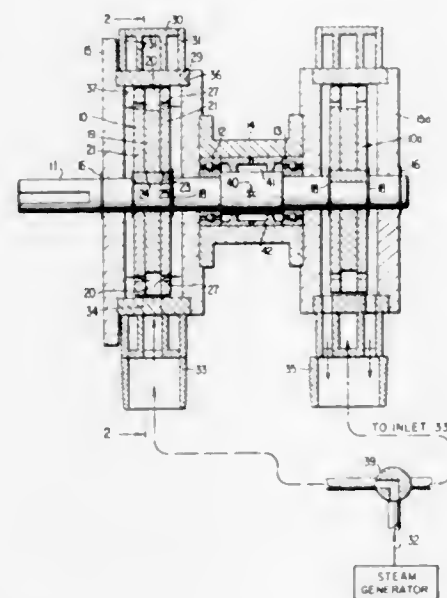
U.S. Cl. 415-55

12 Claims

A small-sized turbine designed for use with a steam generating chamber comprises a pair of rotors mounted in spaced



relation on an axial support for rotation about the axis in clockwise and counter-clockwise directions, respectively, according to the application of steam to one or the other of the rotors for obtaining either forward or reverse operation, as desired. Each rotor is formed of a central section having a plurality of circumferentially spaced pockets in the periphery thereof, with the peripheral edges between these pockets being slightly sloped for receiving the steam input and causing the same not to merely strike the opposite side of the pocket, but to curve radially inwardly and initiate the formation of a vortex flow, and a pair of rotor sections disposed on opposite



sides of the central rotor section being keyed thereto for rotary movement therewith and having lateral apertures spaced about the periphery thereof which extend from the side adjacent the central rotor to the opposite outside face, for providing a reaction outlet from each of the pockets of the central rotor section. The rotors are disposed in separate stators, each having spaced steam inlets for introducing the steam tangentially over the sloped peripheral edges of the central rotor section, and are keyed to a shaft which is supported in bearings positioned between and outside the stator housings for causing rotation of the same in a predetermined direction.

3,690,785

## SPRING PLATE SEALING SYSTEM

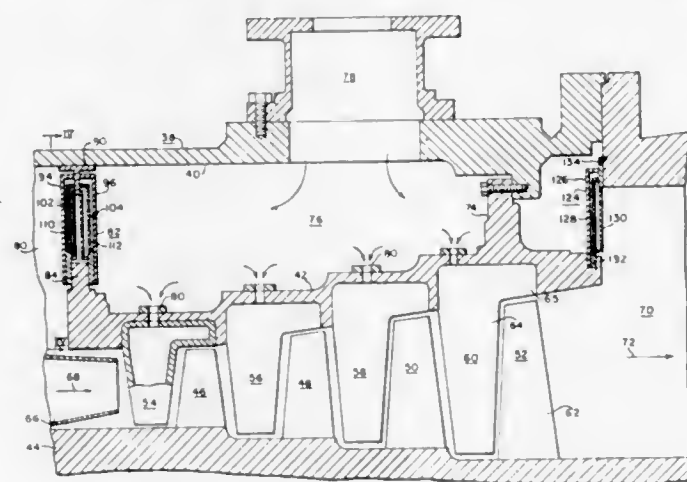
LeRoger J. Lind, Minneapolis, Minn., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 17, 1970, Ser. No. 99,095

Int. Cl. F01d 11/02, 25/24; F01t 5/00

U.S. Cl. 415-108

9 Claims



Sealing means for the ends of an enclosure defined between essentially concentric cylindrical members having different thermal expansion properties, characterized in that the sealing means is formed from segments each comprising a plate having a generally L-shaped cross section with one leg of the cross section being attached to one of the concentric members and

the other leg, at right angles to the first, being spring-biased against a radially extending surface on the other member. The sealing means of the invention is designed to operate at high temperatures and will withstand large transient thermal growth differences in areas where rigid attachment of sealing elements to both members is impractical.

3,690,786

## LOW PRESSURE END DIFFUSER FOR AXIAL FLOW ELASTIC FLUID TURBINES

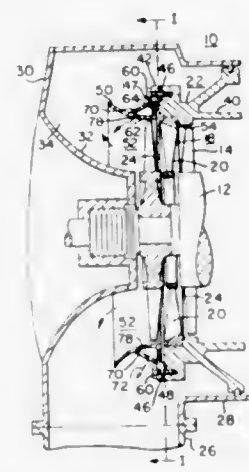
George J. Silvestri, Jr., Morton, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 10, 1971, Ser. No. 141,679

Int. Cl. F01d 11/00, 25/32; F01b 25/00

U.S. Cl. 415-121

8 Claims



An improved low pressure end diffuser for axial flow elastic fluid turbines, such as steam turbines, is disclosed. A housing is provided on the outer fairing member of the diffuser, which housing defines a vented chamber. The outer fairing member is provided with openings communicating between the chamber and the annular area within the turbine casing adjacent the leading edges of the last stage turbine blades. Injection slots are formed in the outer fairing member to communicate between the chamber and the exhaust outlet downstream of the trailing edges of the last stage turbine blades. The injection slots are formed in such a manner that the fluid will flow from the chamber along a major portion of the inner surface of the outer fairing member whereby fluid boundary layer on the fairing surface will be accelerated to prevent separation of the boundary layer from the surface thereby resulting in improved diffuser performance.

3,690,787

## APPARATUS FOR INDICATING THE POSITION OF THE CONTROL CENTER FOR THE BLADES OF A ROTATING BLADE PROPELLER

Harald Gross, Sohnstetten, Germany, assignor to J. M. Volth GmbH, Heidenheim/Brenz, Germany

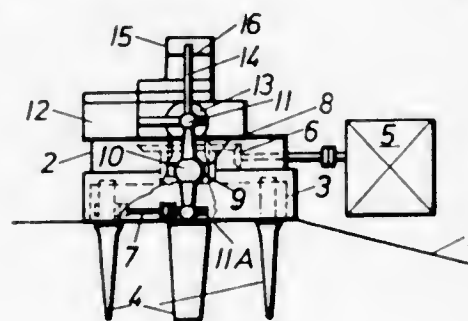
Filed May 7, 1971, Ser. No. 141,205

Claims priority, application Germany, May 16, 1970, P 20 24 146.7

U.S. Cl. 416-61

Int. Cl. B63h 1/10

6 Claims



A blade wheel ship propeller has a rotatable hub from which a plurality of blades extend vertically downwardly adjacent

the periphery thereof with the blades being pivotable about their longitudinal axes. The blades are connected to a displaceable control disk in the hub which determines the center of eccentricity for the blades. A vertically extending universally tiltable control member has one end pivotally connected to the control disk and its upper end pivotally connected to the lower end of a measuring rod which is gimbal mounted or firmly connected in a propeller housing. The angles of tilt of the gimbal mounting axes or the magnitude and direction of bending of the measuring rod are sensed and transmitted to remotely located indicators to indicate the position of the control center with respect to a reference point on the propeller.

3,690,788

## CONTROLLABLE PITCH PROPELLER

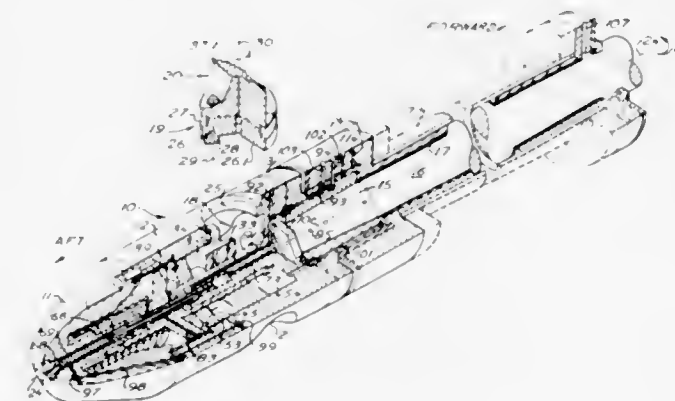
James M. Pedersen, 3809 Puget Drive, Vancouver 8, British Columbia, Canada

Filed Feb. 16, 1970, Ser. No. 11,686

Int. Cl. B63h 3/08

U.S. Cl. 416-157

5 Claims



Hydraulically activated controllable pitch propeller mechanism adapted to be secured to a tailshaft of a vessel without material modification of the shaft. Can be used to convert existing installations to controllable pitch, and in new installations. Propeller hub has attachment flange and rotary seal, internal hollow shaft has a piston and a crosshead, axial motion of the shaft effecting alteration of pitch of propeller blades. Hydraulic fluid introduced into the hollow shaft through the seal moves a pilot spool within the shaft movement being responsive to difference in pressure upon opposite ends of the spool. Pilot spool acts as a valve, motion admitting hydraulic fluid to move the piston so altering the pitch. Full hydraulic pressure within the hub only during pitch alteration. The rotary seal eliminates hollow tailshaft used on many prior art constructions.

3,690,789

## HYDRAULIC APPARATUS

Peter Spence, Leckhampton, England, assignor to Dowty Technical Developments Limited

Division of Ser. No. 690,369, Dec. 8, 1967, Pat. No. 3,612,725.

This application May 1, 1970, Ser. No. 33,717

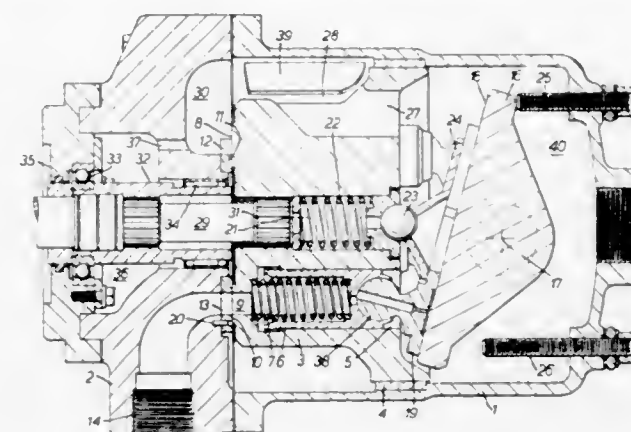
Int. Cl. F04b 23/14

U.S. Cl. 417-203

5 Claims

A swash plate pump or motor comprising a rotary cylinder block having cylinders either parallel to or inclined to the rotation axis, a valve on which the block is arranged to rotate, an inclined or inclinable swash plate located adjacent to one end of the cylinder block engageable by cylinders either directly or through the medium of slippers whereby the

pistons are reciprocated as the block rotates, a casing enclosing the valve cylinder block and swash plate, the end portion of the cylinder block adjacent to the swash plate having a cylindrical journal bearing surface engaging within a comple-



mentary cylindrical bearing surface within the casing to divide the casing into two chambers and passages extending through the cylinder block in close proximity to the cylindrical bearing surfaces and connecting the two chambers for the flow of liquid therethrough during operation of the pump or motor.

3,690,790

## TIDE-POWERED UNIT AND FLOATING PLATFORM UTILIZING SAME

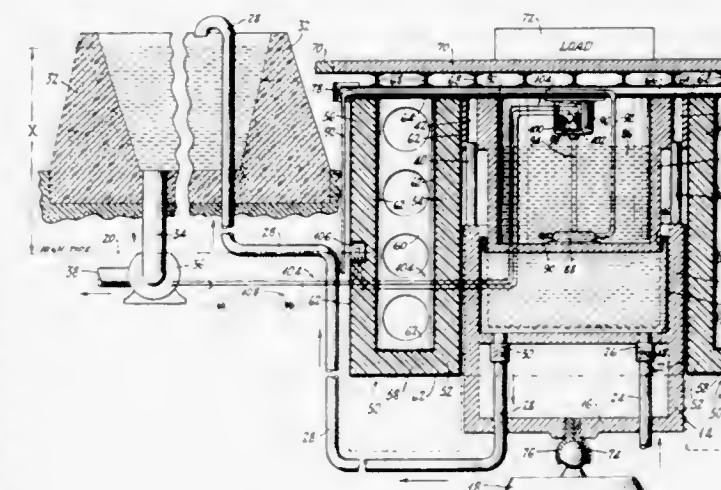
George H. Hooper, 2092 East Main Street, Bridgeport, Conn.

Filed Dec. 7, 1970, Ser. No. 95,543

Int. Cl. F04b 17/00, 35/00, 21/02, 39/10; F01b 19/00

U.S. Cl. 417-331

9 Claims



A tide-powered unit for generating electrical power, comprising a relatively large-diameter cylinder and piston therein, disposed with their axes vertical, the piston being capable of a raising and lowering movement through the open top of the cylinder. The lower portion of the cylinder is attached to a base or anchorage located on the bottom of a large body of water the level of which is influenced by tides. The piston is operatively connected to a float whereby both will rise and fall as the tide comes in and goes out. The cylinder has inlet and outlet passages which are valved to permit ingress of water into the cylinder as the piston rises, and to provide for egress of water from the cylinder as the piston descends. The outlet, through which the water leaves the cylinder, goes to a reservoir located above the high tide mark whereby the rise and fall of the tide causes a pumping of tide water into the reservoir. When the reservoir fills, the water stored therein can be used to turn hydroelectric generators for generating electric power. A multiplicity of such power units is shown as being disposed side by side beneath a large platform whereby the latter is supported by the floats of the units and can carry buildings, equipment and other facilities. Where the supported platform is suf-



ficiently large, it functions also as an air strip for the landing and take-off of aircraft. The platform imperceptibly rises and falls with the tides whereby it is always at a given fixed level above the surface of the body of water. The large number of power units supporting the platform totalize to provide a large amount of ultimate hydroelectric power originating with the rise and fall of the tide. Automatically controlled water ballasts associated with the power units compensate for any unequal loading on the platform supported thereby.

3,690,791

# ROTARY ENGINE WITH RADIALY SHIFTABLE ROTOR

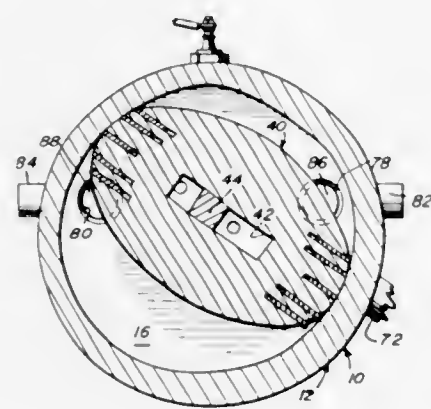
Robert L. Dieter, 919 Cliffwood Drive, Mt. Pleasant, S.C.

Filed Feb. 10, 1970, Ser. No. 9,473

Int. Cl. F03c 3/00; F02b 55/14; F01c 19/02

U.S. Cl. 418-61

11 Claims



A rotary engine including a hollow housing having an irregular but generally cylindrical cavity therein and a shaft journaled through the cavity in off-center relation thereto. The curved walls of the housing defining and extending about the cavity gradually increase and decrease in radial distance from the axis of rotation of the shaft but the spacing between all working curved wall portions of the cavity lying at opposite ends of all diameters of the aforementioned axis is constant. An elliptical rotor is mounted on the shaft within the cavity for rotation with the shaft and for shifting radially of the axis of rotation of the shaft along a line extending between the vertices of the rotor while fuel mixture and exhaust by-products inlet and outlet means and fuel mixture ignition means are spaced about the outer periphery of the cavity. Also, the rotor and shaft define a rotary assembly having axially extending air passages extending therethrough opening through opposite ends of the housing with air vane structure carried by one end of the rotary assembly operative to pump cooling air through the air passages in response to rotation of the assembly.

3,690,792

# TOOTHED WHEEL MACHINE

Alex Petersen, Sonderborg, Denmark, assignor to Danfoss A/S Nordborg

Filed Dec. 10, 1970, Ser. No. 96,721

Claims priority, application Germany, Dec. 15, 1969, P 19 62 769.1

Int. Cl. F01c 1/02; F04c 1/02, 17/02

U.S. Cl. 418-61

2 Claims

The invention relates to a gear set of the type comprising a generally annularly shaped internally toothed ring member and an externally toothed star member having at least one fewer teeth than the ring member. The star member has an axis disposed eccentrically relative to the axis of the ring

member. These parts are normally formed with low tolerances to facilitate fluid tight sealing between the meshing teeth. A



different mode of sealing is provided which comprises sealing plates slidably disposed in radially extending slots formed in the ring member teeth.

3,690,793

# GEAR PUMP WITH LUBRICATING MEANS

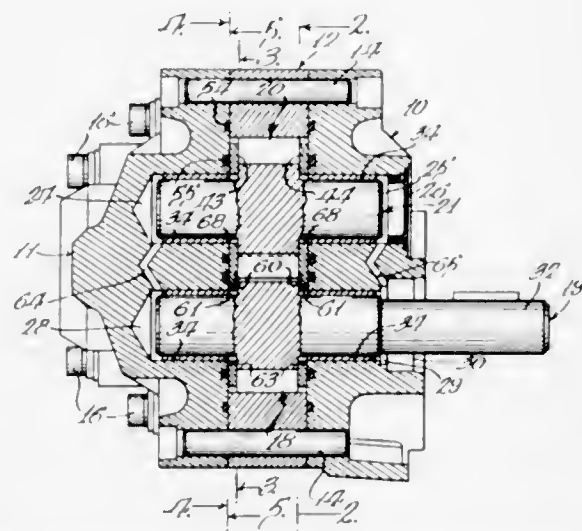
Frederic W. Pollman; Lee R. Frandsen, and Charles D. Throckmorton, Sr., all of Rockford, Ill., assignors to Sundstrand Corporation

Filed Jan. 27, 1971, Ser. No. 110,179

Int. Cl. F01c 21/04

U.S. Cl. 418-102

4 Claims



A high pressure rotary spur gear pump including a pair of gear members intermeshing at a location between an inlet and an outlet, a pair of shafts carrying the gear members and having opposite ends mounted in bearing sleeves, together with means for pumping lubricating fluid under pressure from an area at the zone of intermeshing teeth, where the spaces between teeth are decreasing in volume, outwardly along the bearing sleeves at opposite ends of one shaft and back along the bearing sleeves at opposite ends of the other shaft, to the pump inlet.

3,690,794

# TIRE BEAD SEALING AND SUPPORTING MEANS FOR RETREADING MOLD

Donald Elston Shellabarger, 1110 Mac Nichol Lane, Chattanooga, Tenn.

Filed Aug. 1, 1969, Ser. No. 846,824

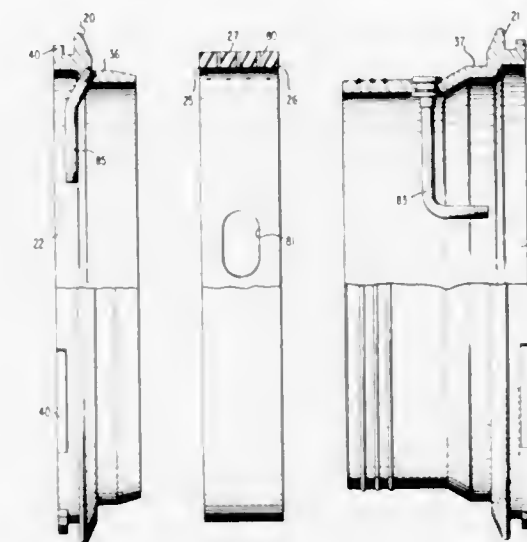
Int. Cl. B29h 5/04

U.S. Cl. 425-21

2 Claims

An apparatus is provided for retreading tires without the use of an air bag or tube. Sound fluid tight integrity during initial

tire inflation is provided by a bead seater means, preferably in the form of an internal annular belt which presses the tire



beads against outer rims to produce a sealing engagement. Inflation air passes through a valve in one of the rims and through the bead seater means into the tire.

3,690,795

# BLADDER CLAMPING DEVICE FOR PRESS FOR SHAPING AND CURING PNEUMATIC TIRES

Shoushi Yoshida, Higashinada-ku, Kobe; Atsuki Iwama, Nada-ku, Kobe; Takashi Okada, Tarumi-ku, Kobe, and Tetuo Suda, Nada-ku, Kobe, all of Japan, assignors to Kobe Steele, Ltd., Kobe, Japan

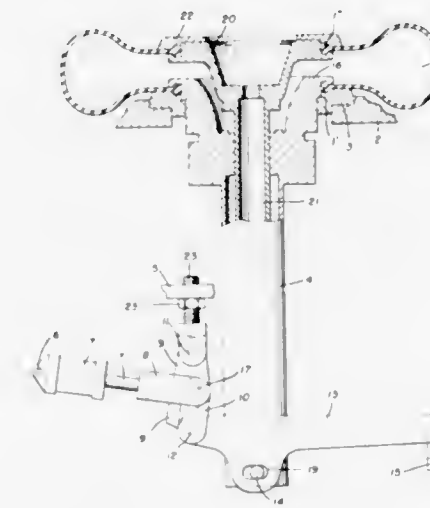
Filed Oct. 5, 1970, Ser. No. 78,021

Claims priority, application Japan, Oct. 6, 1969, 44/80071

Int. Cl. B29h 5/02

U.S. Cl. 425-29

3 Claims



A press for shaping and curing tires having an inflatable bladder with a device for positively clamping the lower bead of the bladder between a lower stationary bead ring and a lower plate ring connected with the vertical cylinder of the center mechanism wherein the vertical cylinder is raised and lowered by an actuating device having a drive unit, a power converting mechanism transforming the output of the drive unit into mechanical motion acting in a direction axially of the vertical cylinder, and a motion transmitting device connecting the output of the power converting mechanism to the vertical cylinder.

3,690,796

# APPARATUS FOR VULCANIZING ELASTOMERIC HOSE

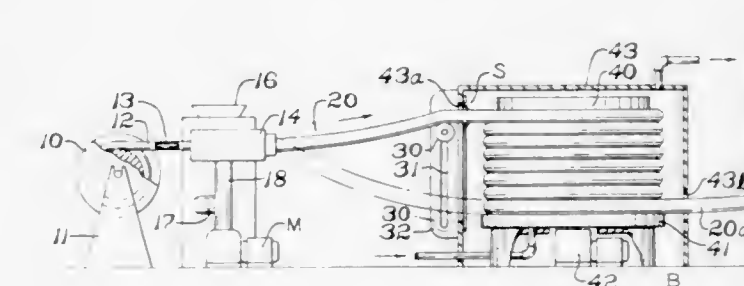
Herbert H. Borsvold, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Aug. 21, 1970, Ser. No. 65,776

Int. Cl. F27b 7/20, 9/28; B29h 7/14

U.S. Cl. 425-90

4 Claims



An elastomeric hose is encased in a lead sheath and continuously wound in a coil over a drum rotating about a vertical axis, heated to vulcanizing temperature while thereon and leaves the drum in the cured state. The cured hose leaves the drum continuously at a level lower than that at which it enters whereby the lead covered coil drops one pitch with each revolution of the drum such that the position of the hose coil on the drum remains substantially fixed.

3,690,797

# INJECTION MOULDING MACHINES

Paul Johnson Garner, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

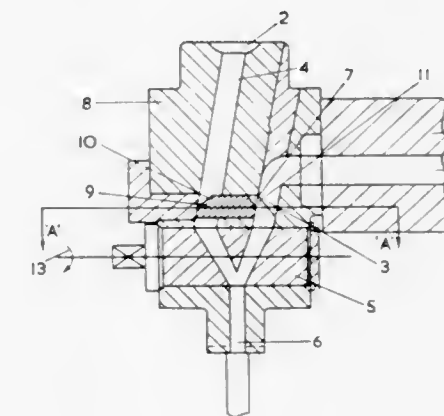
Filed Feb. 2, 1970, Ser. No. 7,865

Claims priority, application Great Britain, Feb. 18, 1969, 8,714/69

Int. Cl. B29f 1/03

U.S. Cl. 425-146

6 Claims



Providing a valve in a "two-shot" injection moulding machine which consists of a shuttle which can slide across the paths of polymer flow to block one while allowing polymer to flow along the other, the position of the shuttle being controlled by the relative pressures in the two polymer streams.



### 3,690,798 EXTRUDER HEAD

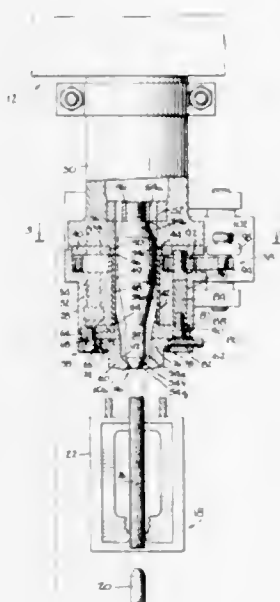
Anthony Raspante, Centerville, Mass., assignor to Packaging Industries, Inc., Hyannis, Mass.

Continuation of Ser. No. 841,816, July 15, 1969. This application Oct. 24, 1969, Ser. No. 869,142

Int. Cl. B29d 23/04

U.S. Cl. 425—167

17 Claims



A variable orifice extruder head for extruding parisons whose wall thickness may be varied over the length of the parison. The extruder head comprises a die assembly movable with respect to a fixed mandrel for varying the die assembly orifice. The die assembly is supported by suspension rods from a fixed housing through which the mandrel passes and in relation to which the mandrel is also fixed. The suspension rods are threaded at their upper ends and have spur gears threaded thereon. An internal ring gear engages each of the spur gears in such manner that rotation of the ring gear causes rotation of the spur gears thereby to raise or lower the die assembly.

### 3,690,799

#### MULTIPLE INJECTION BLOW MOLDING MACHINE

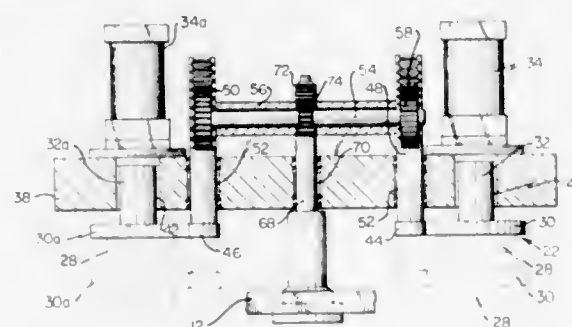
Joseph A. Johnson, Brigantine, N.J., assignor to Jomar Industries, Inc., Brigantine, N.J.

Filed July 7, 1970, Ser. No. 52,807

Int. Cl. B29f 1/00; B29d 23/03

U.S. Cl. 425—168

17 Claims



An injection blow molding machine for automatically forming hollow articles of plastic material has a horizontally disposed rotatable and elevatable turret having distinct sets of hollow parison pins projecting from its six side faces and surrounded by 60° angularly spaced apart operating stations. The

turret is indexed first 120° clockwise from an opposing pair of parison mold stations and then two cycles of 60° counter-clockwise to an opposing pair of blow mold stations and to an opposing pair of ejection stations to cause the pins to successively operatively occupy such stations. Hydraulically actuated rams for the parison clamps at the parison mold stations and the shaft for the turret are linked together by a rack and pinion arrangement so that the synchronously operating rams lift the turret one half the distance of the movable mold halves whereby the pins clear the separated parison and blow mold halves as the turret is indexed. The hollow pins carry operating stems for the valves on the outer ends thereof with the turret ends of the pins having pressurized air inlets for air to act on the valve stems and to flow through the pins in the expansion of the parisons at the blow mold stations and the cooling of the blown articles at the ejection stations where the articles are mechanically stripped from the pins.

### 3,690,800

#### INJECTION MOULD HAVING A CLOSURE IN THE INJECTION CHANNEL PARTICULARLY FOR MOULDED SHAPES OF POLYURETHANE

Johann Schwab, Vienna, and Wladimir Hascic, Maria-Enzersdorf, both of Austria, assignors to Semperit Österreichisch-Amerikanische Gummiwerke Aktiengesellschaft, Vienna, Austria

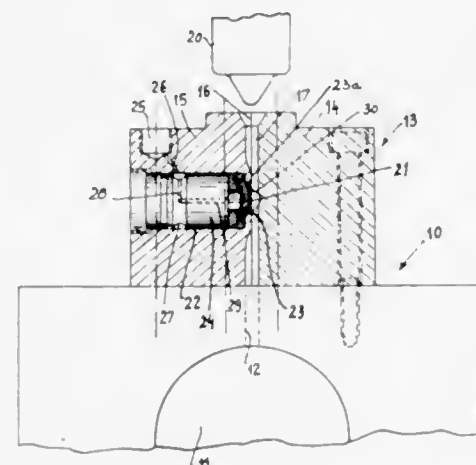
Filed March 5, 1970, Ser. No. 16,877

Claims priority, application Austria, March 6, 1969, A 2248/69; July 22, 1969, A 7023/69

Int. Cl. B29f 1/00

U.S. Cl. 425—192

11 Claims



An injection mould is disclosed for the manufacture of moulded shapes from an injectable material, with a device for closing the injection channel by means of an elastic deformable body, particularly in the processing of foamable synthetic materials. The closing device comprises a diaphragm-type sealing disk, particularly of silicone, which is housed in a cross-bore and held therein by an insert. The diaphragm can be operated approximately perpendicularly to the injection channel by compressed air or by a piston and is substantially arranged in a plane parallel to the axis of the injection channel.

### 3,690,801

#### DISCHARGE DEVICE FOR PLATEN PRESS

Gerhard Hutz, Suchteln, and Karl Müller, St. Tonis, both of Germany, assignors to G. Siempelkamp & Co., Krefeld, Germany

Filed July 10, 1970, Ser. No. 53,793

Claims priority, application Germany, July 15, 1969, P 19 35 887.3

Int. Cl. B29j 5/08; B30b 5/00

U.S. Cl. 425—229

13 Claims

A horizontal frame, riding on fixed rails, can be slid into the gap between two separated press plates for removing a freshly pressed board with the aid of an extractor bar dropped behind

### 3,690,803

#### APPARATUS FOR CLOSING A FILLED SYNTHETIC MATERIAL CONTAINER

Heinz Pechtold, Walldurn Odenwald, and Gerhard Gold, Moglingen, both of Germany, assignors to PMD Entwicklungswerk für Kunststoffmaschinen GmbH & Co., KG Ettlingen Baden, Germany

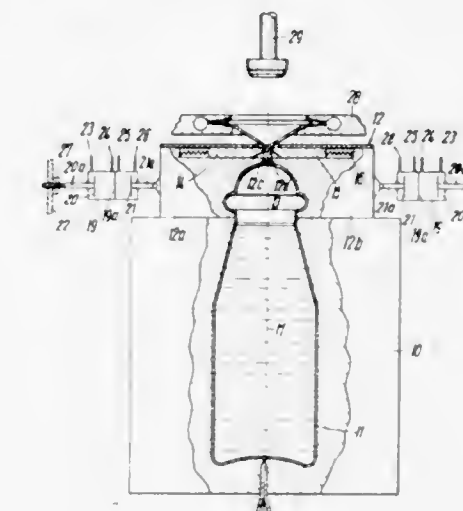
Filed June 22, 1970, Ser. No. 48,376

Claims priority, application Germany, June 23, 1969, P 19 31 710.3

Int. Cl. B29c 17/07

U.S. Cl. 425—326

3 Claims



press plates to sweep their confronting surfaces upon the withdrawal of the frame. Retractable extensions at the ends of the extractor bar may serve for the withdrawal of spacing strips together with the board.

### 3,690,802

#### APPARATUS FOR THE MANUFACTURE OF HOLLOW OBJECTS, IN PARTICULAR BOTTLES OF THERMOPLASTIC MATERIAL UTILIZING INJECTION BLOWING METHOD

Stefan Fischer, Im Korresgarten 21, Lohmar, Bezirk Cologne, Germany

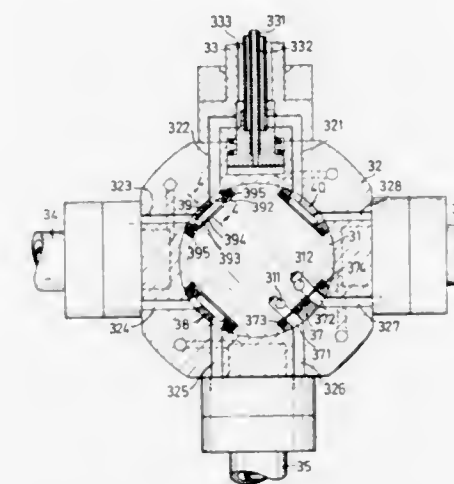
Filed Aug. 26, 1970, Ser. No. 67,090

Claims priority, application Germany, Aug. 29, 1969, P 19 43 873.4; June 26, 1970, P 20 31 585.9; July 23, 1970, P 20 36 523.5

Int. Cl. B29d 23/03

U.S. Cl. 425—326

18 Claims



An apparatus for the production of hollow articles, such as bottles, from thermoplastic synthetic plastic material by the injection and blowing process, having an extruder, an injection mould, a blowing mould arranged at a distance therefrom and a transport or transmission device which bring the pre-mouldings formed in said injection mould into said blowing mould after removal from said injection mould. The apparatus includes several intermittently advanceable blowing mandrels formed as mould cores for the injection mould, which are provided with supply conduits for a heating or cooling medium as well as a blowing air supply conduit, the cooling or heating medium throughflow conduits of all blowing mandrels are connected one behind the other and the cooling or heating medium flows successively through all blowing mandrels.

A method of and an apparatus for closing a filled container of synthetic material, which comprises the steps of producing a forming piece in its formable state, widened under pressure and filled, to the container, then the upper container section is formed to a head by means of a head mold with pinge edges in its closing position. An additional pressure medium is fed into the container, in order to create a predetermined pressure above atmospheric pressure in the container between the pressure filling step and the airtight closing of the container.

### 3,690,804

#### RETRACTABLE BLOW PIN FOR USE WITH PREPINCHED PARISONS

Thomas J. Nave, Bartlesville, Okla., assignor to Phillips Petroleum Company

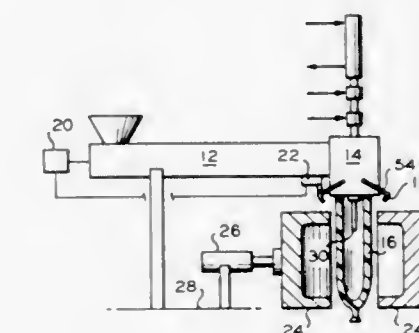
Division of Ser. No. 840,744, July 10, 1969, Pat. No.

3,584,091. This application Jan. 8, 1971, Ser. No. 104,980

Int. Cl. B29d 23/03

U.S. Cl. 425—326

1 Claim



In the extrusion of thermoplastic parisons, a retractable blow pin and prepinching members are provided. The blow pin is retracted to allow the prepinching members to seal off the parison at a point adjacent the die face. Preblow fluid is introduced and the blow pin extended to allow the mold to close on it. The preblow fluid is preferably programmed to allow higher introduction pressure as the parison nears its full drop.



### 3,690,805 MULTIPLE FILL COMPACTING PRESS

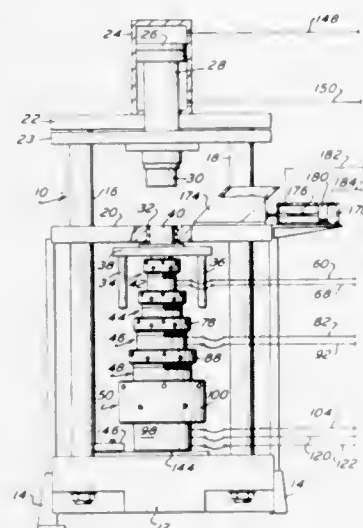
Walter J. Kopicko, Wilmington, Del., assignor to Baldwin-Hamilton Company, Wilmington, Del.

Filed Nov. 16, 1970, Ser. No. 89,786

Int. Cl. B30b 1/102

U.S. Cl. 425—352

15 Claims



A five-stage compacting press having independently adjustable stages is disclosed for making multilayered laminated objects from powdered materials.

### 3,690,806 EXTRUSION DIE HEAD WITH REVERSED-FLOW AND ADJUSTABLE-CHOKE STRUCTURE

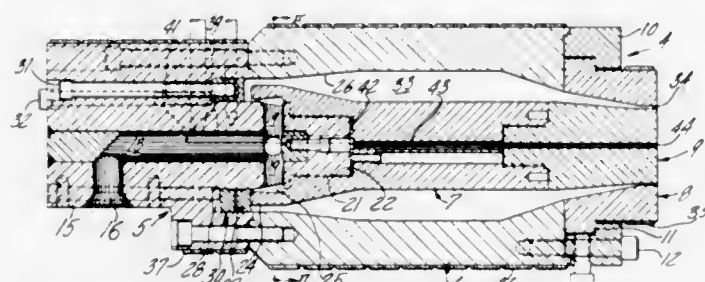
Lloyd Kovacs, Somerset, N.J., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Oct. 15, 1970, Ser. No. 80,977

Int. Cl. B29f 3/01

U.S. Cl. 425—467

4 Claims



A die head especially suitable in producing blown film and pipe wherein the parts are internally shaped to define a circular manifold chamber resulting from annular tongue-and-groove structure whereby a short axial reversal in the generally forward flow of material through the die head may be effected. The die head, in a preferred form, contains an axially adjustable choke ring within the groove of the tongue-and-groove structure for varying back pressure on the material supplied to the die head.

### 3,690,807 BURNER

Douglas R. Paxton, Ventura, and George Robert Talbott, Orange, both of Calif., assignors to Paxve, Inc.

Filed Nov. 16, 1970, Ser. No. 89,570

Int. Cl. F23c 3/02

U.S. Cl. 431—1

24 Claims

A burner and process which carries the burning of a hydrocarbon by a chain reaction to a point of substantial completion wherein relatively few parts of unreacted hydrocarbon remain. The burner and process comprise the introduction of air and a hydrocarbon into an elongated con-

cally terminating chamber sized or affected so that the driving frequency of the chemical reaction of the hydrocarbon is matched to the resonant frequency of the chamber which

serves to provide an increased dwell time and mixing of the molecules of the hydrocarbon to permit them to more fully react.

### 3,690,808 METHOD AND APPARATUS FOR SULFUR DIOXIDE EMISSION CONTROL IN COMBUSTION SYSTEMS

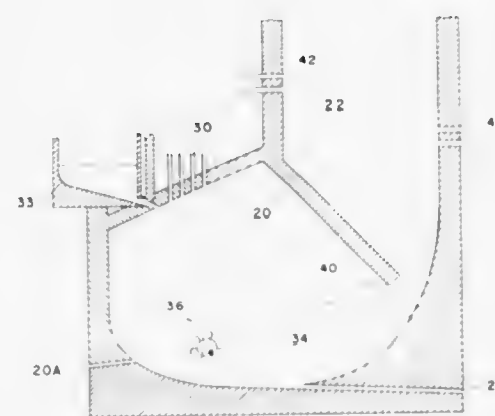
George R. St. Pierre, Worthington, Ohio, assignor to The Ohio State University, Columbus, Ohio

Filed Aug. 28, 1970, Ser. No. 67,757

Int. Cl. C01b 17/48

U.S. Cl. 431—4

16 Claims



A method and apparatus for burning fossil fuels containing a significant sulfur content which removes a significant portion of the sulfur oxides released to the atmosphere. The invention is characterized by the dispersal of a molten metal into a combustion chamber for intimate contact with the combustion products to combine with the sulfur compounds produced by the combustion reaction. The metal sulphide may then be collected and refined for recirculation and the sulfur dioxides collected for use or sale.

## CHEMICAL

### 3,690,809 LIQUID AZO DYE COMPOSITION AND PROCESS THEREFOR

Richard B. Orelup, Upper Saddle River, N.J., assignor to Morton International, Inc., Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 677,733, Oct. 24, 1967, which is a continuation-in-part of application Ser. No. 468,551, June 30, 1965, which in turn is a continuation-in-part of application Ser. No. 230,268, Oct. 12, 1962, all now abandoned. This application Apr. 5, 1971, Ser. No. 131,409

Int. Cl. D06p 1/08

U.S. Cl. 8—6

4 Claims

A liquid azo dye composition which has at least about 40 percent of the color value of a comparable solid dye, exhibits permanent homogeneous liquidity, and is capable of complete and instantaneous solubility in petroleum distillates. The dye composition consists essentially of between about 50–75% by weight of a mixture of azo dyes containing C<sub>5</sub>–C<sub>12</sub> alkyl-beta-naphthols or p-C<sub>5</sub>–C<sub>12</sub> alkyl phenol in the dye molecule and about between 50–25% by weight of a liquid organic viscosity depressant compatible with the azo dyes.

### 3,690,810 BENZOMORPHOLINE COUPLERS AND OXIDATION BASES FOR DYEING LIVE HUMAN HAIR

Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, France, assignors to Societe Anonyme dite L'Oreal, Paris, France

No Drawing. Filed Aug. 4, 1969, Ser. No. 847,413

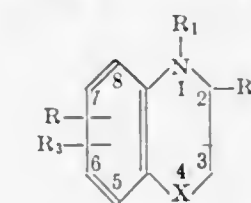
Claims priority, application Luxembourg, Aug. 13, 1968, 56,703

Int. Cl. A01k 7/12

U.S. Cl. 8—10.2

4 Claims

Oxidation dye coupling compounds for use in dyeing live human hair having the formula:



### 3,690,811 ACID DYEING FOR TERTIARY AMINATED POLY-AMIDE, POLYOLEFIN AND POLYAMIDE BLENDS AND DISPERSE DYEING OF SAID POLYOLEFIN AND POLYESTER BLENDS

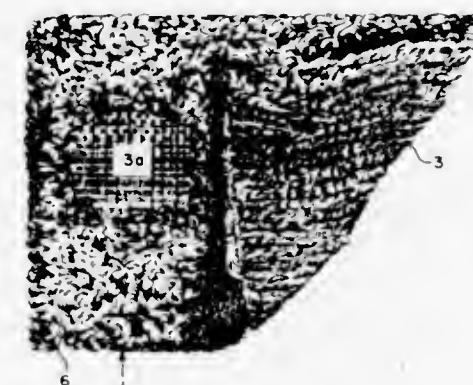
Kermit G. Horning, Waynesboro, Va., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed June 1, 1970, Ser. No. 42,357

Int. Cl. D06p 3/82

U.S. Cl. 8—21 B

14 Claims



A union dyed, solid colored, tufted carpeting, uniformly shaded in both the face yarns and in the backing material,

comprises as the backing material woven ribbons of a composition comprising a polyolefin blended with a basic polyamide dye site additive, said additive consisting of a minor incorporated amount of a polyamide resin based on a linear aliphatic dicarboxylic acid and a polyamine containing two primary or secondary amine groups and at least one tertiary amine group.

### 3,690,812 PROCESS FOR CHROMIUM TANNING AND BATH FOR CARRYING OUT SAID PROCESS

André Klein, Marcq-en-Bareul, France, assignor to Societe Anonyme: Ugine Kuhlmann, Paris, France

No Drawing. Filed Feb. 3, 1970, Ser. No. 8,431

Claims priority, application France, Feb. 5, 1969, 6902541

Int. Cl. C14c 3/04, 3/06

U.S. Cl. 8—94.27

7 Claims

Tanning skins for making leather, by treating the skins in a bath containing a basic chromium salt.

Chromium tanning is effected with a mixture of trivalent chromium salt and a double carbonate of aluminium and an alkaline metal, preferably sodium. An aluminium and sodium salt is preferably used, obtained by thermal treatment of a double carbonate aluminium and sodium for 2–3 hours at 250–300° C., having the following basic formula, the percentages being expressed by weight:

	Percent
Al <sub>2</sub> O <sub>3</sub> -----	30–50
CO <sub>2</sub> -----	10–25
Na <sub>2</sub> O -----	10–20

This process providing high quality tanned animal skins.

### 3,690,813 PROCESS OF REACTING HYDROGEN-DONOR FIBROUS SUBSTRATE WITH POLYMERS OF ACRYLOXYACYL CHLORIDES AND PRODUCTS PRODUCED THEREBY

Martin J. Diamond, 6131 Hillegass Ave., Oakland, Calif. 94618, and Howard L. Needles, Davis, Calif. 95616

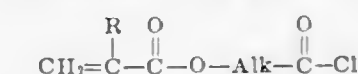
No Drawing. Filed Mar. 20, 1970, Ser. No. 21,499

Int. Cl. D06m 13/20

U.S. Cl. 8—115.5

14 Claims

Acryloxyacyl chlorides of the structure



wherein R is H or CH<sub>3</sub> and Alk is a bivalent hydrocarbon radical containing 1 to 21 carbon atoms. These compounds may be homopolymerized or copolymerized with a different polymerizable monomer (e.g., a lower alkyl acrylate or methacrylate). The polymers are useful for application to fibrous materials, for example, to wool to make it shrink resistant.

### 3,690,814 METHOD FOR CONTINUOUS WET TREATMENT OF A TEXTILE WEB

Peter Schroeder, Stockacker, Switzerland, assignor to Paul Weber AG, Rothrist, Switzerland

Filed Feb. 26, 1970, Ser. No. 14,361

Claims priority, application Switzerland, Feb. 28, 1969, 3,017/69

Int. Cl. B05c 3/136

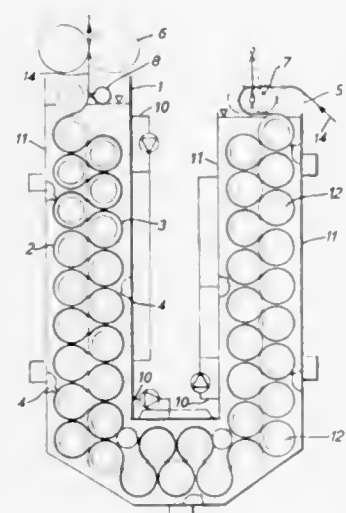
U.S. Cl. 8—151

4 Claims

In a method for the continuous wet treatment of a textile web guided along a zig-zag path in a bath formed by a continuous counter-current of flowing treatment liquid, the



web is positively guided along its path of movement through the bath while being supported in a substantially uninterrupted manner along this path. To effect simultaneous boundary layer exchange on both surfaces, the both surfaces of the web are alternately compressed and stretched. The web is guided over perforated rollers and, with respect to the majority of these rollers, the web has



a looping angle therearound in excess of 180°. The perforated rollers are arranged so close to each other that, although they do not touch, they form practically an uninterrupted support for the web. At least one wide-slot nozzle directs treatment liquid directly against the textile web in the bath. Preferably, the rollers have displacement inserts therein to fill a substantial part of the interior of the rollers.

3,690,815

#### DYEING ASSISTED BY ARYL ESTERS OF ARYL SULFONIC ACIDS

Kurt A. Dellian, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Mar. 31, 1971, Ser. No. 130,026

Int. Cl. D06p 5/04

U.S. Cl. 8—173

9 Claims

A technique is disclosed for coloring hydrophobic textile fibers with a disperse, essentially water insoluble, dyestuff in combination with an arylsulfonic ester carrier.

3,690,816

#### SIMPLIFIED GAS OR LIQUID TREATING AND/OR DEHYDRATION PROCESS

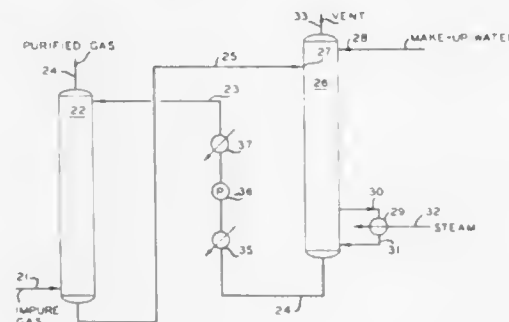
Carl E. Alleman, % Phillips Petroleum Co., Bartlesville, Okla. 74003

Filed Feb. 24, 1970, Ser. No. 13,681

Int. Cl. B01d 47/00; C10g 29/20

U.S. Cl. 423—228

4 Claims



The removal of impurities such as hydrogen sulfide, carbon dioxide, and water from a gas or liquid such as natural gas or a hydrocarbon, is accomplished by treating

the gas or liquid with an absorbent liquid or reagent in a treator or an absorber, obtaining a purified gas or liquid and an enriched absorbent liquid or reagent. The absorbent liquid is passed without prior essential heating directly to the top of a stripper or regenerator wherein impurities are released with the aid of heat. Heat is supplied, for example, by reboiling the absorbent liquid in the stripper or the regenerator. The enriched liquid acts in the stripper or regenerator to condense vaporized absorbent or reagent liquid which normally would pass therefrom then to be condensed and later returned. Hot, lean absorbent liquid or reagent recovered from the stripper or regenerator is cooled by external cooling media and returned to the treatment. This cooling is the sole essential cooling of the liquid absorbent or reagent in the overall operation. In many cases this cooling is the sole essential cooling in the overall operation.

3,690,817

Patent Not Issued For This Number

3,690,818

#### CYCLIC PROCESS FOR REMOVAL OF SO<sub>2</sub> FROM FLUE GAS

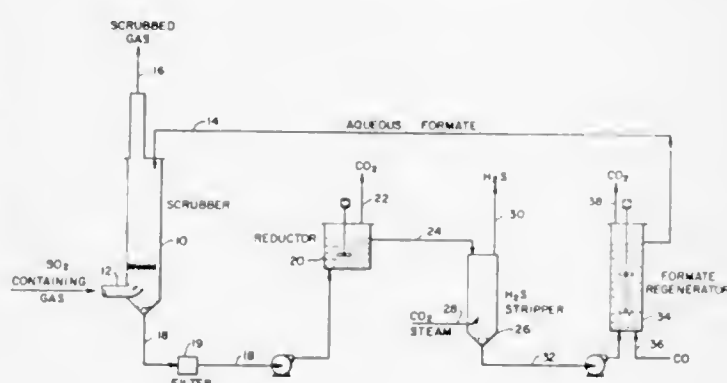
Everett Gorin, Pittsburgh, and Paul M. Yavorsky, Monongahela, Pa., assignors to Consolidation Coal Co., Pittsburgh, Pa.

Continuation-in-part of applications Ser. No. 879,223 and Ser. No. 879,224, both Nov. 24, 1967, which are continuations-in-part of application Ser. No. 667,479, Sept. 13, 1967. This application Mar. 29, 1971, Ser. No. 128,782

Int. Cl. B01d 53/34; C01b 17/64; C07c 53/06

U.S. Cl. 423—243

5 Claims



A cyclic process including absorption of SO<sub>2</sub> from a flue gas by means of an absorbent containing potassium formate, sodium formate, or ammonium formate at a temperature above 140° F., and regeneration of the spent absorbent by treatment with selected reducing agents, specifically, potassium formate, sodium formate or ammonium formate, and carbon monoxide at a temperature above 475° F., either concurrently or sequentially.

3,690,819

#### PROCESS FOR THE PREPARATION OF POTASSIUM NITRATE

Giacinto Veronica, 7 Via Dolores Bello, Novara, Italy

Filed June 1, 1970, Ser. No. 42,135

Claims priority, application Italy, May 22, 1969, 17,178/69

Int. Cl. C01b 21/48

U.S. Cl. 423—397

6 Claims

Process for making KNO<sub>3</sub> from KCl and Ca(NO<sub>3</sub>)<sub>2</sub> salts, these salts being reacted in the presence of a

recycle solution to form solid KNO<sub>3</sub>, the recycle solution containing Ca<sup>2+</sup>, K<sup>+</sup>, NO<sub>3</sub><sup>-</sup>, and Cl<sup>-</sup> ions, separating the solid KNO<sub>3</sub> at a temperature from about -10 to +20° C., and treating the mother liquor from which the KNO<sub>3</sub> has been precipitated with lime to thereby precipitate calcium oxychloride, CaCl<sub>2</sub>·3CaO·16H<sub>2</sub>O, to thereby reduce the calcium chloride content of the mother liquor. Improvement comprises effecting the precipitation of calcium oxychloride in the presence of a solid phase made up substantially of calcium oxychloride and not more than 5% by weight of free lime at a temperature that is from about 5 to 15° higher than the temperature of separation of the KNO<sub>3</sub>, and maintaining the concentration of chloride ions of the liquid phase within ±5 grams per liter of the saturation concentration.

3,690,820

#### PRODUCTION OF AMMONIUM NITRATE

Daniel J. Newman, Jackson Heights, N.Y., and Rolf Falck-Muus, Closter, N.J., assignors to Chemical Construction Corporation, New York, N.Y.

Filed June 13, 1969, Ser. No. 832,932

Int. Cl. C01c 1/18

U.S. Cl. 423—396

6 Claims

An improvement in the production of solid chemicals such as ammonium nitrate is provided, for processes in which a vapor containing liquid droplets is evolved during formation or concentration of a liquid solution containing dissolved solid chemical. The vapor is cooled and condensed, and the resulting liquid condensate is employed to scrub a gas stream laden with entrained solid or liquid chemical particles, which is formed during processing of the liquid solution with gas to form solid chemical. The scrubbing step produces liquid solution containing dissolved solid chemical which is economically concentrated and recycled.

3,690,821

#### MANUFACTURE OF BORON TRIFLUORIDE

Robert A. Wiesboeck, Stone Mountain, Ga., assignor to United States Steel Corporation

No Drawing. Continuation-in-part of application Ser. No. 848,116, Aug. 6, 1969, which is a continuation-in-part of abandoned application Ser. No. 666,514, Sept. 8, 1967. This application Mar. 23, 1971, Ser. No. 127,334

Int. Cl. C01b 35/00

U.S. Cl. 423—293

7 Claims

An anhydrous oxo-salt of boron or boric oxide is mixed with an alkali or alkaline earth fluorosulfonate and heated, preferably in the range of about 100–200° C. to evolve boron trifluoride which is recovered as product.

3,690,822

#### HIGHLY SILICEOUS SOLID SODIUM SILICATE

Clyde B. Myers, 7744 Fairlawn Drive, Mentor, Ohio 44060

No Drawing. Continuation-in-part of abandoned application Ser. No. 738,771, June 21, 1968. This application Dec. 21, 1970, Ser. No. 100,444

Int. Cl. C01b 33/32

U.S. Cl. 423—334

5 Claims

A process is described for preparing a solid sodium silicate having a SiO<sub>2</sub>:Na<sub>2</sub>O weight ratio from about 4.0:1–5.3:1 by the direct reaction of a mixture of 40–60 percent water, a soluble sodium silicate having a ratio of less than 4.0:1 and an amorphous finely-divided silica, the amount of silica being sufficient to yield, in combination with the sodium silicate, the desired final weight ratio. Reaction takes place at a temperature less than that at which intumescence occurs. The water-soluble, high water content, solid product so obtained is also described.

3,690,823

#### MANUFACTURE OF SILICA-RICH ZEOLITES

Dean Arthur Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif. No Drawing. Continuation-in-part of application Ser. No. 516,662, Dec. 27, 1965. This application Apr. 16, 1969, Ser. No. 816,810

Int. Cl. C01b 33/28

U.S. Cl. 423—338

19 Claims

Zeolites of the Y crystal type are produced by digesting an aqueous reaction mixture comprising silica gel synerized at a pH between about 5.5 and 10, preferably between about 6 and 9, and sodium aluminate at an elevated temperature. The particular silica gel employed permits the production of good yields of Y-type zeolites having a silica to alumina mole ratio of above 3.9 under mildly alkaline conditions heretofore considered possible only in conjunction with silica hydrosols and reactive amorphous solid silicas.

3,690,824

#### DESULFURIZATION OF FLUE GAS

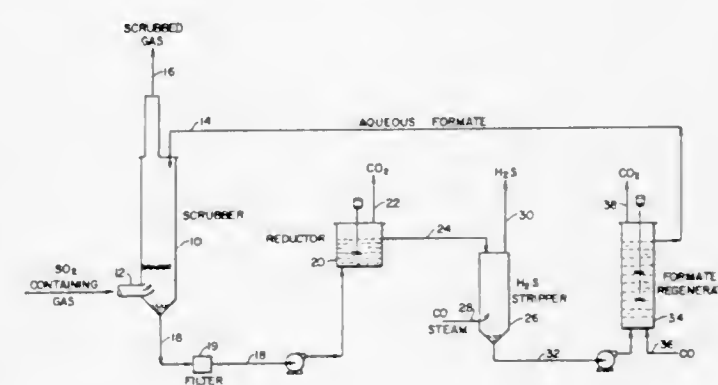
Everett Gorin, Pittsburgh, and Paul M. Yavorsky, Monongahela, Pa., assignors to Consolidation Coal Company, Pittsburgh, Pa.

Application Nov. 24, 1969, Ser. No. 879,223, which is a continuation-in-part of application Ser. No. 667,479, Sept. 13, 1967. Divided and this application Mar. 29, 1971, Ser. No. 128,783

Int. Cl. B01d 53/34; C01b 17/64; C07c 53/06

U.S. Cl. 423—243

5 Claims



Removal of sulfur dioxide from hot flue gas by passing the flue gas in contact with potassium formate, sodium formate, or ammonium formate, in either a molten state or in an aqueous solution, at a temperature above 140° F., whereby the sulfur dioxide and the formate react to form principally thiosulfate.

3,690,825

#### PROCESS FOR THE PREPARATION OF GLOBULAR SODIUM BISULFATE

Reuben C. Ott, Bay Village, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 671,603, Sept. 29, 1967. This application Oct. 30, 1970, Ser. No. 85,740

Int. Cl. C01d 5/02

U.S. Cl. 423—264

5 Claims

Precipitation of iron salts in molten sodium bisulfate is prevented by the steps of adding water to a molten sodium bisulfate process stream, thereby cooling this molten sodium bisulfate process stream to a temperature below 500° F. but maintaining it above the crystallization temperature of the sodium bisulfate, contacting the cooled sodium bisulfate-water mixtures with metallic zinc, and then spray-forming the mixture into globules.



3,690,826

**PROCESS FOR THE PRODUCTION OF PHOSPHORIC ACID BY THE WET METHOD**

Albert Leon Lucien Husken, 17 Rue de la Liberte, Bondy, Seine-Saint Denis, France

Continuation-in-part of application Ser. No. 524,240, Feb. 1, 1966. This application Dec. 23, 1969, Ser. No. 887,764

Claims priority, application France, Feb. 2, 1965, 4,160; Sept. 3, 1965, 30,372

Int. Cl. C01f 11/46; C01b 25/22

U.S. Cl. 423—320

6 Claims

The invention relates to a process for the production of phosphoric acid by the wet method in which crushed natural phosphate and concentrated sulfuric acid are added to a phosphoric acid slurry circulating in a closed circuit. A predetermined end product can be obtained by controlling the temperature and rate of flow of the ripening slurry through the circuit.

3,690,827

**ION EXCHANGE PROCESS FOR ALUMINUM VALUES**

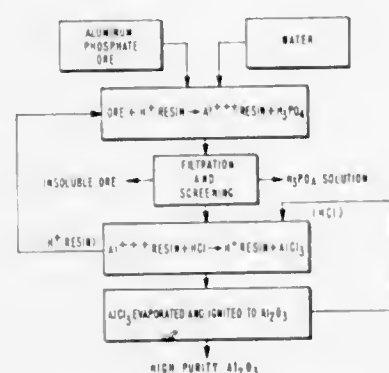
Donald E. Garrett, 505 W. 9th St., Claremont, Calif. 91711

Filed June 4, 1970, Ser. No. 43,379

Int. Cl. C01f 7/02; C01b 25/18; C01g 49/02

U.S. Cl. 423—112

3 Claims



Aluminum phosphate ore is solubilized by a cation exchange resin to produce a resin slurry and phosphoric acid filtrate. The resin is treated with HCl to regenerate the resin and produce an aluminum chloride solution which is then evaporated and hydrolized to aluminum oxide with the evolved HCl being recycled to the resin regeneration step. When iron is present, the iron is separated from the chloride solution by the addition of alumina to adjust the pH of the solution to a value of from about 2 to 2.5. This causes the iron to precipitate as ferric hydroxide.

3,690,828

**ORE EXTRACTION**

Herbert Barclay Baetz, Kingston, Jamaica (1211 W. Bay Ave., Newport Beach, Calif. 92660), and Robert C. Lightbourne, 5 S. Race Course, P.O. Box 496, Kingston, Jamaica

Filed Feb. 5, 1970, Ser. No. 9,015

Claims priority, application Great Britain, Feb. 6, 1969, 6,494/69

Int. Cl. C01g 23/00, 49/00

U.S. Cl. 423—149

9 Claims

A method of extracting a metal forming a volatile chloride, such as iron and/or titanium, from a material, such as bauxite or a high silica bauxite. The material is reacted with a hot gaseous mixture of sulphur dioxide and chlorine above the vaporization temperature of the metal chloride produced during the reaction and the gaseous products of the reaction separated from the solid residue. The metal chloride is then isolated from the other gaseous reaction products.

3,690,829

**DEUTERIUM SULFIDE SEPARATION AND ITS CONVERSION TO DEUTERIUM OXIDE**

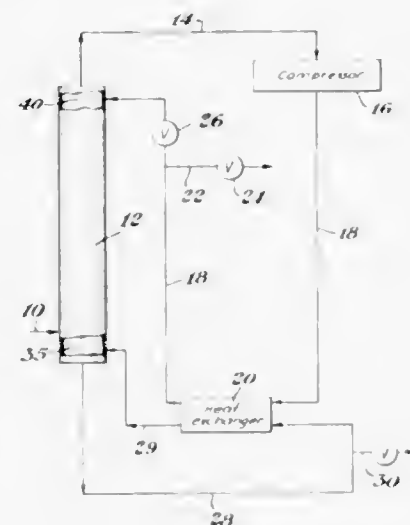
David N. Glew and Ewart C. Clarke, Sarnia, Ontario, Canada, assignors to The Dow Chemical Company, Midland, Mich.

Filed May 22, 1970, Ser. No. 39,594

Int. Cl. C01b 5/02, 17/16; F25j 3/00

U.S. Cl. 423—561

8 Claims



Disclosed herein is a process for concentrating deuterium values. Specifically, the process comprises distilling a liquid mixture of hydrogen sulfide and deuterium sulfides at a temperature of from about minus 45° C. to about 100° C. The gaseous distillate is enriched with respect to the deuterium sulfides. Ultimately the enriched distillate can be processed to convert the deuterium sulfides to deuterium oxides suitable for use as moderators in nuclear reactors.

3,690,830

**ISOTOPE SEPARATION WITH HEAT BALANCING**

Don Barkley Nazzer, Port Hawkesbury, Nova Scotia, Canada, assignor to Canadian General Electric Company, Limited, Toronto, Ontario, Canada

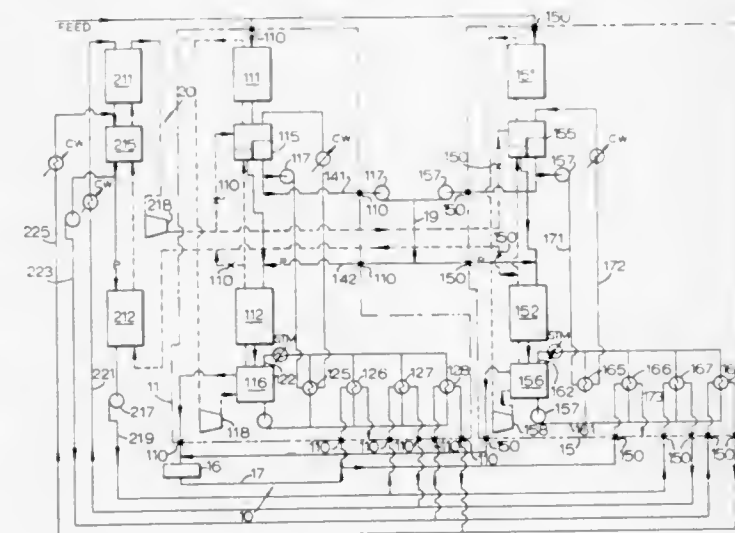
Filed Oct. 27, 1969, Ser. No. 869,689

Claims priority, application Canada, Nov. 30, 1968, 36,564

Int. Cl. C01b 5/02; B01j 1/00

U.S. Cl. 423—580

9 Claims



The heat exchange provisions for a heavy water separation plant first stage having a plurality of parallel flow sub-stages permits selective isolation of one of the

sub-stages from the plant, with the provision of thermal compensation to the plant to maintain thermal balance of the process.

3,690,831

**METHOD OF PREPARING CARBON BLACK OF LARGE PARTICLE SIZE AND LOW STRUCTURE**

Wagi Kobayashi and Fumitugu Narisawa, Niigata, Japan, assignors to Asahi Carbon Co., Niigata-ken, Japan

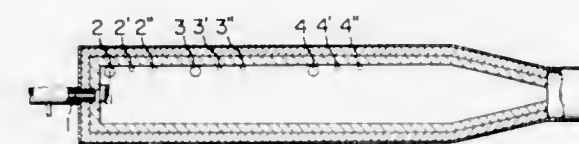
Filed Feb. 19, 1970, Ser. No. 12,755

Claims priority, application Japan, Sept. 25, 1969, 44/76,381

Int. Cl. C09c 1/48

U.S. Cl. 423—449

7 Claims



A method of preparing carbon black of large particle size and low (less linked) structure comprising the steps of: jetting the feed oil together with the primary air into the reaction chamber from one end of a cylindrical furnace to opposite end thereof; simultaneously introducing the secondary air from a plurality of air orifices into said reaction chamber tangentially along the circular inner-wall thereof; and combusting incompletely said feed oil; wherein the angle of said jetting is regulated and the secondary air streams are introduced in the same tangential directions or in opposed tangential directions at the specifically located air orifices.

**ERRATA**

For Classes 8—6 thru 8—173 see:  
Patents Nos. 3,690,809 thru 3,690,815

3,690,832

**LUMINESCENCE DETECTION BY SURFACE REACTION**

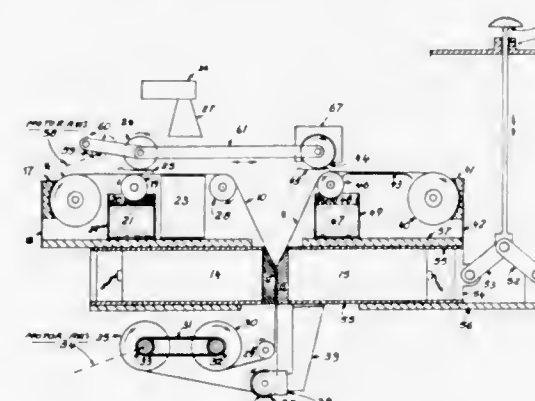
Chris J. Plakas, Champaign, Ill., assignor to Vitalect Corporation, Arlington, Va.

Filed Apr. 17, 1970, Ser. No. 29,475

Int. Cl. G01n 21/30, 33/16

U.S. Cl. 23—230 B

15 Claims



A system for testing a sample by means of bioluminescent or chemiluminescent reaction or scintillation fluorescence to detect living material or radioactive tracers therein. Bioluminescent and chemiluminescent reaction is achieved by bringing into contact between two photodetectors two light transparent surfaces, one of which carries the sample at spaced intervals and the other the reagent at similar intervals. Light emitted due to the reaction

of the sample and reagent on the interface of the surfaces is transmitted through optical coupling liquid and light pipes to photocathodes of the photodetectors. Scintillation fluorescence is achieved in a similar manner but with one surface carrying sample containing a tracer and the other surface made of scintillation material. For special individual experiments involving extremely small quantities of sample the surfaces may be two microscope cover plates bearing the sample and reagent. The output signals of the photodetectors are transmitted through amplifiers and coincidence circuitry into a scaler or display unit, thus accurately recording the number of reactions of individual cells or their extract, the number of disintegrated particles, or the total energy of reaction. The entire system is ambient light tight for protection and greater efficiency in detecting low levels of luminescence.

3,690,833

**AUTOMATED FLUIDS ANALYZER HAVING SELECTIVELY INTERRUPTED FLOW**

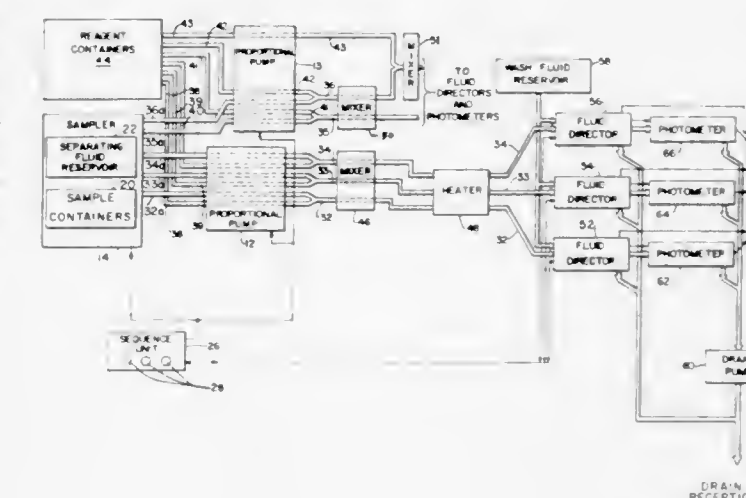
Andres Ferrari, Dover, Mass., assignor to Damon Corporation, Needham Heights, Mass.

Filed May 4, 1970, Ser. No. 34,104

Int. Cl. G01n 21/16, 33/16

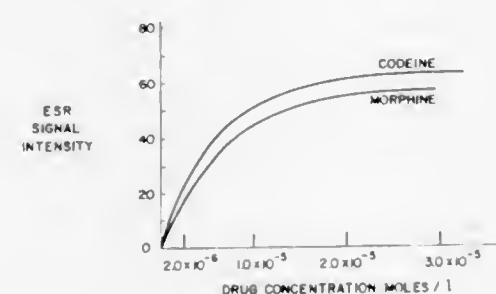
U.S. Cl. 23—230 R

28 Claims





site spatially characteristic of the ligand, hereinafter referred to as receptor, and an analog of the ligand having a free radical functionality, hereinafter referred to as "ligand analog." The ligand analog and ligand in the medium compete for the receptor site, the amount of ligand analog bound to the receptor, being dependent on



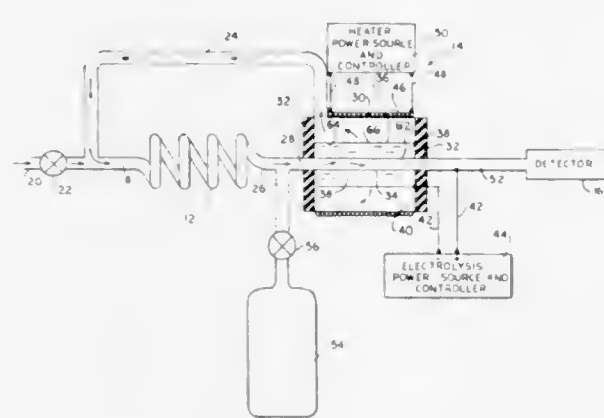
the amount of ligand present in the medium. By following the change in electron spin resonance spectrum of the ligand analog and comparing it to the change in spectrum which would be obtained in the absence of any ligand, the amount of ligand can be determined. Compounds are provided which are ligand analogs for use in the assay.

### 3,690,835 METHOD AND APPARATUS FOR ANALYZING GASEOUS CHROMATOGRAPHIC EFFLUENTS

James E. Lovelock, Bowerchalke, near Salisbury, England, assignor to California Institute of Technology, Pasadena, Calif.

Filed Feb. 2, 1970, Ser. No. 7,922  
Claims priority, application Great Britain, Mar. 6, 1969, 12,003/69

Int. Cl. G01n 31/00, 31/08  
U.S. Cl. 23—232 C 18 Claims



A combined hydrogen gas separator and generator device comprising a pair of thin palladium film membrane electrodes separated by an aqueous hydroxide electrolyte. On application of an electrolytic current to the films heated to a temperature of at least 150° C., hydrogen is selectively transferred through the first film, across the body of electrolyte as protonic hydrogen and is regenerated as diatomic hydrogen on the outside surface of the second film. The impurities in the hydrogen inlet stream collect at the outside surface of the first film. The concentrated impurities can be sent to a detector for analysis. The regenerated hydrogen can be recycled to operate a separator unit such as a gas chromatographic column.

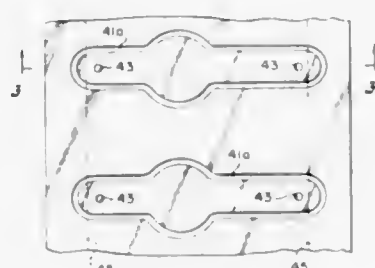
### 3,690,836 DEVICE FOR USE IN THE STUDY OF CHEMICAL AND BIOLOGICAL REACTIONS AND METHOD OF MAKING SAME

Jean Buisserie, Villeurbanne, Louis Colobert, Collonges-au-Mont-d'Or, and Paul A. F. Montagnon, La Balmie-les-Grottes, France, assignors to Promoveo, Seyssinet, Isere, France

Continuation of abandoned application Ser. No. 618,942, Feb. 27, 1967. This application Nov. 12, 1970, Ser. No. 89,032

Claims priority, application France, Feb. 28, 1966, 47,000; Mar. 7, 1966, 47,031  
Int. Cl. G01n 1/10, 21/06

U.S. Cl. 23—253 TP 30 Claims

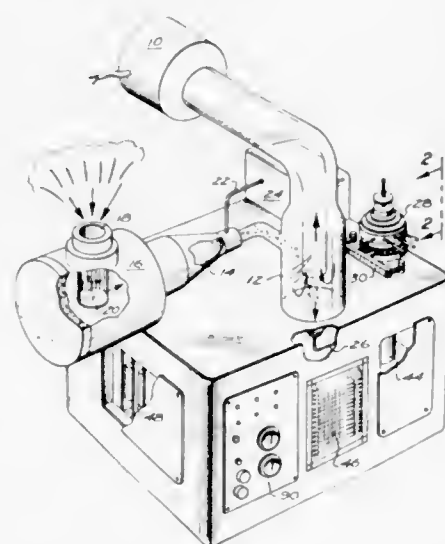


Devices for the study of chemical or biological reactions are provided by forming a sandwich of two plastic sheets having at least one sheet of porous water-absorbent material such as filter paper interposed therebetween. Upon compression of the sandwich, as between suitably designed heater electrodes, one or more chambers are formed, each chamber having a portion of the water-absorbent sheet positioned therein and having suitable apertures provided through which apertures chemicals, enzymes, and cell suspensions may be introduced for testing of the metabolic utilization of such chemicals by such enzymes or cells and observation of concomitant color reactions within said chambers.

### 3,690,837 AUTOMATIC BIOLOGICAL AGENT DETECTOR

Samuel Witz, Los Angeles, Calif., Lee T. Carleton, Northport, N.Y., Howard H. Anderson, Covina, and Rudolph H. Moyer, West Covina, Calif., and Harold A. Neufeld, Frederick, Md.; said Witz, Anderson, and Moyer assignors to Aerojet-General Corporation, El Monte, Calif., and said Neufeld assignor to the United States of America as represented by the Secretary of the Army

Filed July 6, 1970, Ser. No. 52,606  
Int. Cl. G01n 21/26, 33/16  
U.S. Cl. 23—254 R 7 Claims



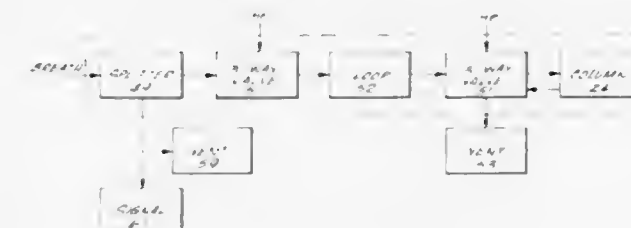
Apparatus for detecting biological agents such as vegetative bacteria, spores and viruses, capable of operating satis-

factorily when supplied with minute samples of material to be tested, even when present in a continuous background of matter similar in nature. The equipment utilizes the phenomenon of chemiluminescence and, more particularly, provides the proper conditions for chemiluminescence of luminol by hydrogen peroxide, operating in an intermittent flow system supplied with the agents by an aerosol particle collector, and in which detection of the chemiluminescence is by a photomultiplier tube the output of which is monitored. Photomultiplier output could be recorded on a chart, magnetic tape or merely designed to set off an alarm when values exceed a prescribed threshold.

### 3,690,838 APPARATUS FOR UNIVERSAL BLOOD ALCOHOL DETERMINATION

Manley J. Luckey, 7252 Osburn Road, San Bernardino, Calif. 92404  
Filed Oct. 19, 1970, Ser. No. 81,935  
Int. Cl. G01n 1/22, 31/08, 33/16

U.S. Cl. 23—254 R 9 Claims



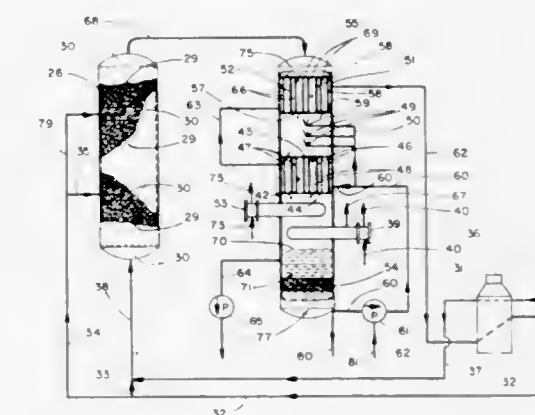
A gas chromatograph and method for determination of blood alcohol content from blood samples, urine samples, direct breath samples, or breath extraction samples. Blood or urine samples are analyzed directly in the gas chromatograph, which includes a sample-taking mechanism, including a storage loop for direct breath sampling, and includes an audible signal for assuring that the sample taken is of alveolar breath. A sample of alcohol extracted from breath is dissolved in water and a chromatographic analysis of alcohol vapor concentration in the air over the solution provides a measure of blood alcohol concentration.

### 3,690,839 HEAT EXCHANGE APPARATUS

Edwin K. Jones, Kenilworth, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.  
Filed Oct. 26, 1970, Ser. No. 84,012  
Int. Cl. B01n 9/04; F28f 9/02

U.S. Cl. 23—260 6 Claims  
A heat exchange apparatus which has special utility when utilized to separate water from the effluent of an endothermic catalytic reaction utilizing super heated steam as a heat exchange medium. The apparatus is comprised of a floating tube bundle contained within a heat exchange chamber. The tube bundle includes a substantially horizontal fixed tube sheet that extends completely across and is attached to the interior of heat exchange chamber, a substantially horizontal floating tube sheet spaced from the first tube sheet disposed across the heat exchanger, and a plurality of spaced apart vertical heat exchange tubes connected between the tube sheets, the interior of the heat exchange tubes communicating through the tube sheets. The interiors of the tubes establish a group of mixture passageways and the space around the tubes establishes a group of heat exchange passageways. A condenser

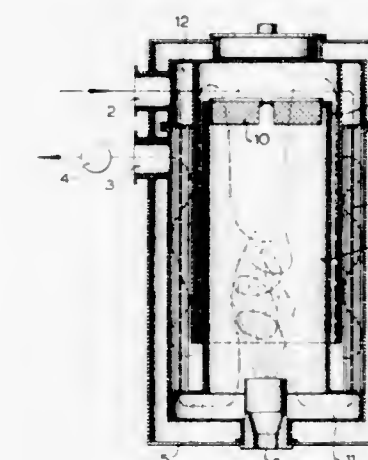
is disposed downstream of the mixture passageways for condensing the vapor water in the mixture to liquid. A settling tank, located downstream of a condenser, is used for settling and separating the liquid water from the hy-



drocarbon. Water is carried to the heat exchange passageways of the tube bundle where it is placed in indirect heat exchange relationship with the total mixture and the temperature of the water is raised and the temperature of the total mixture in the mixture passageways is lowered.

### 3,690,840 APPARATUS FOR INCINERATING WASTE GASES

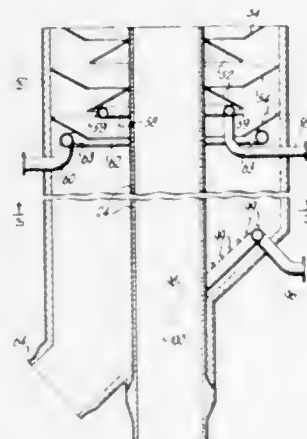
Herbert Volker, 43 Bogenstrasse, 6451 Wolfgang, Germany  
Filed Aug. 24, 1970, Ser. No. 66,200  
Claims priority, application Germany, Jan. 16, 1970, P 20 01 933.4  
Int. Cl. F23g 7/06; B01g 9/04  
U.S. Cl. 23—277 C 8 Claims



A cylindrical form thermal-catalytic incinerator unit for treating waste gas streams. The catalytic bed traverses the downstream end of the combustion chamber to effect contact with the mixture of waste gases and burner products from a burner axially positioned at the opposing inlet end of the combustion chamber. An annular heat exchange section around the combustion zone provides for cooling the resulting oxidized gas stream and for preheating the incoming noxious stream which is then fed circumferentially around the burner to admix with the flame and hot gases therefrom.

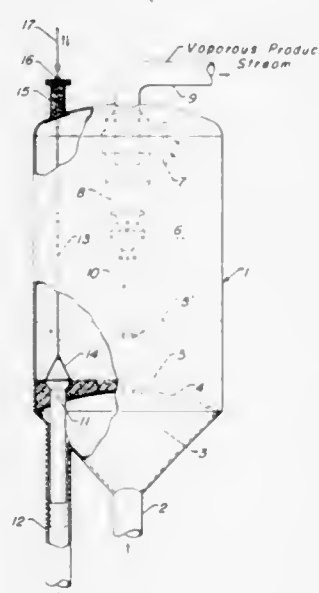


**3,690,841**  
**STEAM DISTRIBUTOR FOR FLUID CATALYTIC CRACKER STRIPPER**  
 Dorrance P. Bunn, Jr., 5206 Grape Road, Houston, Tex. 77035, and Werner L. Hack, 20 Danzigerstr., 609 Russelsheim am Main, Germany  
 Filed Aug. 3, 1970, Ser. No. 60,585  
 Int. Cl. B01j 9/20  
 U.S. Cl. 23—288 S 3 Claims



A steam distributor is located in the conic discharge section of an annular catalyst stripper in a fluid catalytic cracker unit upstream of the recycle feed riser entry to provide for improved flow control of the discharge of the spent catalyst and the additional stripping thereof.

**3,690,842**  
**REACTOR FOR FLUIDIZED PARTICLES WITH ADJUSTABLE LEVEL WEIR TO PARTICLE OUTLET**  
 Lawrence S. Lockwood, La Grange, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.  
 Filed Oct. 5, 1970, Ser. No. 77,824  
 Int. Cl. B01j 9/00  
 U.S. Cl. 23—288 S 5 Claims



A reactor chamber suitable for fluidized catalyst or other particulates which provides an adjustable height weir or opening to the particulate withdrawal means such as,

for example, a vertically adjustable lift means connective with a slidable and open-topped conduit section as an upper part of the particulate withdrawal means from the chamber. Thus, varying levels of dense-phase particulate beds can be maintained in the chamber. The seal means around the lift means extending into the chamber for adjusting weir height is preferably provided at a zone that is somewhat removed from any high temperature areas within the chamber and away from the area of dense catalyst concentration.

**3,690,843**  
**Patent Not Issued For This Number**

**3,690,844**  
**RECOVERY OF SULFATE-FREE HYDRATED MAGNESIUM CHLORIDE FROM SULFATE-CONTAMINATED BRINES**  
 Ulrich E. G. Neitzel and Hans Gerhard Flint, Ogden, Utah, assignors to Great Salt Lake Minerals and Chemicals Corporation, Ogden, Utah  
 Filed Oct. 17, 1969, Ser. No. 867,337  
 Int. Cl. C01f 5/30, 5/40; B01d 1/00  
 U.S. Cl. 23—296 9 Claims

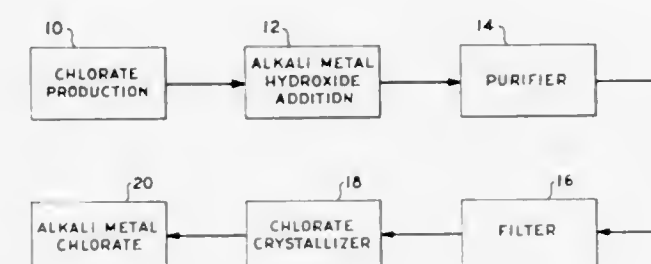


Magnesium chloride brine contaminated with sulfate, sodium chloride, and other impurities is evaporated to produce a slurry of hydrated magnesium chloride, hydrated magnesium sulfate, and, in some instances, sodium chloride. The slurry is heated to a temperature at which the solubility of magnesium sulfate is very low and is held at that temperature sufficiently long to permit most of the dissolved sulfate to crystallize as artificial kieserite. Most or all of the magnesium chloride is redissolved at the elevated temperature. The aqueous phase of the slurry is recovered and cooled to produce substantially pure hydrated magnesium chloride, usually bischofite.

**3,690,845**  
**CRYSTALLIZATION OF A METAL CHLORATE FROM A CHLORATE-CHLORIDE CONTAINING SOLUTION**  
 Morris P. Grotheer, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.  
 Filed Dec. 22, 1969, Ser. No. 887,216  
 Int. Cl. C01b 11/14  
 U.S. Cl. 23—300 5 Claims

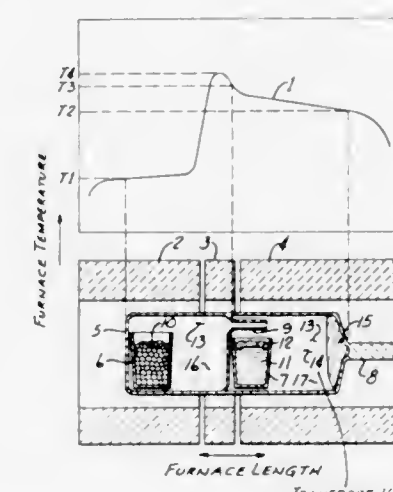
A process is provided for crystallizing an alkali metal chlorate from an aqueous solution containing an alkali metal chlorate and the same alkali metal chloride mixture,

which comprises introducing the same alkali metal hydroxide into said solution in an amount sufficient to depress the solubility of said alkali metal chlorate and cooling the solution from an initial temperature of from



80–100° C. to an ultimate temperature of from 25 to 40° C. It has been found that in the presence of a common metal hydroxide, the solubility of an alkali metal chlorate is greatly reduced whereas the solubility of a common metal chloride is not greatly affected.

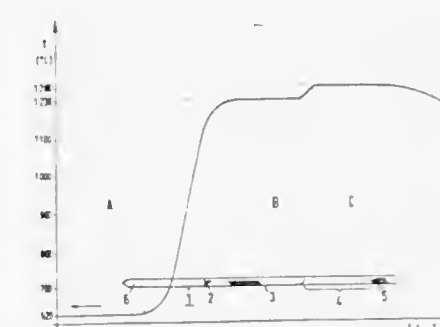
**3,690,846**  
**METHOD OF MANUFACTURING SEMICONDUCTING COMPOUNDS BY VAPOR GROWTH METHOD**  
 Shin-ichi Akai and Katsunosuke Aoyagi, Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan  
 Filed Sept. 9, 1970, Ser. No. 70,231  
 Int. Cl. B01d 7/00; B01j 17/28  
 U.S. Cl. 23—294 6 Claims



This invention relates to a method of manufacturing semiconducting compounds, particularly GaP, which has a high dissociation pressure (about 39 atm.) at its melting point (1465° C.), in the crystalline ingot form. The method is a new improvement of the vapor growth method, and comprises the step of making use of a crystal growing furnace having a low temperature zone (T<sub>1</sub>), a maximum temperature zone (T<sub>4</sub>) and a high temperature zone providing a temperature gradient (T<sub>3</sub>–T<sub>2</sub>), where T<sub>4</sub>>T<sub>3</sub>>T<sub>2</sub>>T<sub>1</sub>, the step of using a sealed fused silica reaction tube having a first temperature zone which is positioned between the T<sub>1</sub> and T<sub>4</sub> zones, a second temperature zone which is positioned between T<sub>3</sub> and T<sub>2</sub> zones, and a separating wall between the first and second temperature zones with a thin silica tube (capillary) retained thereby to allow the vapor of the volatile constituent to diffuse through but to prevent the vapor of volatile

compounds of the non-volatile constituents from diffusing therethrough, the step of placing the volatile constituent such as phosphorous in the first temperature zone where the vapor pressure of said volatile constituent is controlled by the temperature T<sub>1</sub>, and the step of positioning the non-volatile constituent such as gallium and a transport agent, particularly a halogen or a halide of the non-volatile constituents in the hotter part (T<sub>3</sub>) of the second temperature zone wherein the thin layer of said semiconducting compound is produced on the surface of the solution of the non-volatile constituent due to supersaturation of the volatile constituent. This thin layer of semiconducting compound reacts with the transport agent to form volatile compounds which diffuse to the colder part (T<sub>2</sub>) of the second temperature zone and react with the volatile constituent to form a crystal of said semiconducting compound, but are prevented from diffusing into the first temperature zone by said separating wall.

**3,690,847**  
**METHOD OF PRODUCING HIGHLY PURE, PARTICULARLY SILICON FREE GALLIUM ARSENIDE**  
 Hans Merkel and Siegfried Leibenzeder, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany  
 Filed Aug. 18, 1970, Ser. No. 64,770  
 Claims priority, application Germany, Aug. 27, 1969, P 19 43 550.8  
 Int. Cl. C01b 27/00; C01f 15/00  
 U.S. Cl. 23—294 6 Claims



Method of producing highly pure gallium arsenide. The product is particularly silicon free. The method utilizes the "two temperature" technique. Two gallium bodies are provided, the first is at a temperature slightly above the melting point of gallium arsenide and the second is at a temperature of 1250° to 1350° C.

**3,690,848**  
**NECKED HOUSING IN FLOAT ZONE REFINING**  
 Michel Ayel, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.  
 Filed July 21, 1970, Ser. No. 56,774  
 Claims priority, application France, July 21, 1969, 6924719  
 Int. Cl. B01j 17/08  
 U.S. Cl. 23—301 SP 7 Claims

A method of producing a semiconductor single crystal by floating zone melting of a vertical rod of semiconductor material in a controllable atmosphere inside a tubular, hermetically closed chamber, which rod is capable of performing at least one transitory movement relative to a coil surrounding the rod and traversed by high-frequency current. The coil is arranged to surround



the chamber at the level of narrowed portion thereof. The rod is melted from its lower end and is brought into contact with a seed crystal. The single crystal formed has the



same diameter as the rod. The molten zone contains a narrowed zone, the diameter of which is smaller than the diameter of the solid portions of the rod.

3,690,849

**CERMET-TYPE ALLOY**

Nikolajs Bredzs, Detroit, and Forbes M. Miller, Dearborn, Mich., assignors to Wall Colmonoy Corporation. Application Feb. 19, 1969, Ser. No. 800,540, now Patent No. 3,547,673, dated Dec. 15, 1970, which is a continuation-in-part of application Ser. No. 646,654, June 16, 1967. Divided and this application July 7, 1969, Ser. No. 871,124.

Int. Cl. B22f 1/00

U.S. Cl. 29—182.5

3 Claims

An improved cermet-type alloy and method of making same which is particularly adaptable for forming protective surface coatings on heat-resistant alloys. A particulated mixture is formed containing titanium and/or zirconium reactive metal constituents that undergo an exothermic reaction upon fusion at an elevated temperature in a substantially inert atmosphere with silicon and/or boron present in the mixture forming the corresponding silicides or borides of the reacted metals in situ which are subsequently precipitated as a uniformly dispersed discontinuous phase in a continuous phase of a nickel and/or cobalt base matrix. The invention also encompasses novel powder compositions for exothermically forming the cermet-type alloys and coatings.

3,690,850

**ZIRCONIUM ALLOY TUBE WITH ZIRCONIUM HYDRIDE INCLUSIONS**

John Olof Edstrom, Sven Eric Innerman, Bengt Henrik Berg, and Brian Edward Mills, Sandviken, Sweden, assignors to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden.

Original application May 25, 1966, Ser. No. 552,766, now Patent No. 3,487,675, dated Jan. 6, 1970. Divided and this application Mar. 3, 1969, Ser. No. 817,600. Claims priority, application Sweden, Feb. 1, 1966, 1,242/66.

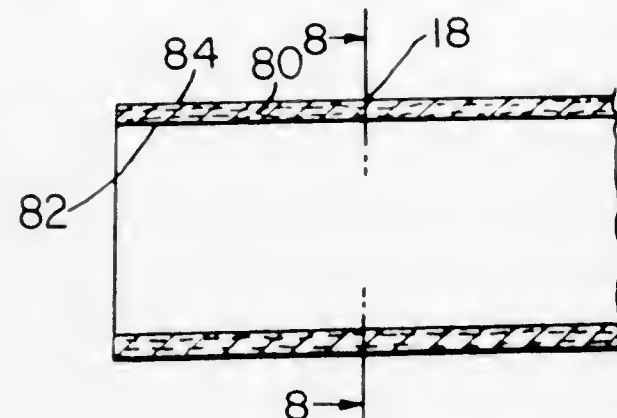
Int. Cl. B22f 5/00

U.S. Cl. 29—183

4 Claims

A cold-worked tube of zirconium or zirconium alloy in which zirconium hydride inclusions formed in the metal

are oriented to lie generally parallel to the inner and outer surfaces of the tube, rather than radially of the tube;



whereby cracking and resulting leaking of the tube are rendered negligible.

3,690,851

**AUTOMATIC ANTIKNOCK RATING AND ADJUSTMENT APPARATUS**

John T. Jones, Ardsley, William C. Ludt, Yonkers, and Hudson W. Kellogg, Dobbs Ferry, N.Y., assignors to Ethyl Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 617,754, Jan. 24, 1967, now Patent No. 3,485,598, which is a continuation-in-part of applications Ser. No. 205,015, June 25, 1962, now Patent No. 3,383,904, Ser. No. 299,583, Aug. 2, 1963, and Ser. No. 377,192, June 23, 1964. This application Dec. 19, 1969, Ser. No. 886,458.

Int. Cl. C10k 3/00

U.S. Cl. 44—2

22 Claims

Automatic antiknock monitoring and/or adjusting apparatus having detonation testing engine operated on fuel to be monitored or adjusted, and automatic controls to change its compression ratio in response to changes in detonation intensity, with occasional resetting against results using a reference fuel. Maximum knock fuel-air ratio is used and the automatic controls can also control the addition of high antiknock blend ingredient to the fuel.

3,690,852

**METHOD OF PRODUCING GRADED FIBROUS FILTER MEDIA**

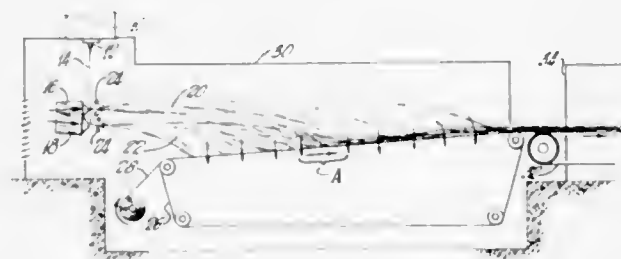
Irving N. Smith, Saratoga, and Jack R. Pfeffer, Los Gatos, Calif., assignors to Owens-Corning Fiberglas Corporation.

Filed Dec. 29, 1969, Ser. No. 888,767

Int. Cl. C03c 27/00

U.S. Cl. 65—3

7 Claims



A process for producing a graded fibrous filter media preformed in a mat by intermingling mineral fibers of one average diameter with fibers of smaller average diameter in the area of a plane parallel with a major face of the mat. Two groups of fibers of different diameter are attenuated and blown horizontally upon a moving conveyor such

that the groups intermingle with each other to a limited extent prior to deposition on the conveyor to produce a two layer, graded density product having a gradual transition between fiber layers.

3,690,853

**METHOD OF MAKING HIGH RESOLUTION IMAGE TRANSMITTING FIBER OPTICS BUNDLES**

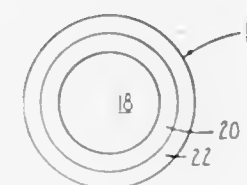
Jack M. Law, Mountain View, Calif., assignor to Optics Technology, Inc., Palo Alto, Calif.

Filed Aug. 19, 1970, Ser. No. 65,041

Int. Cl. C03c 15/00, 23/20

U.S. Cl. 65—4

4 Claims



A large number of light-transmitting conventionally clad glass rods enveloped or supercladded with a bonding material are gathered, aligned, heated and stretched while maintained in alignment to reduce their diameter and bond them to each other to form a bundle of mutually aligned fibers. The material for the light-transmitting rods is selected so that it withstands a chemical solution in which the bonding material is soluble. Intermediate portions of the rod are immersed in the solution to dissolve the bonding material from between the individual fibers while the ends of the fibers remain embedded therein, fixed with respect to each other and in their original, mutually aligned position.

3,690,854

**METHOD FOR TEMPERATURE CONTROL OF IONIC ELECTRODE**

Albert Sidney Robinson, 7 Dunster Road, Birkdale, Southport, England; Jack Lawrenson, 22 Sackville Road, St. Helens, England; and Edward Russell Ormesher, 48 Heyes Ave., Rainford, England.

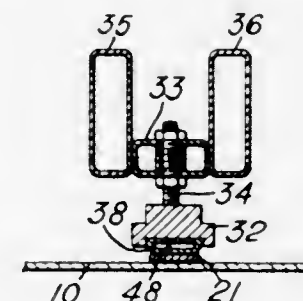
Filed Aug. 21, 1969, Ser. No. 859,238

Claims priority, application Great Britain, Aug. 30, 1968, 41,595/68

Int. Cl. C03c 15/00; C03b 18/00

U.S. Cl. 65—30

5 Claims



The characteristics of glass, e.g. float glass, are modified by a body of molten material which contacts the glass surface and clings to a locating member positioned adjacent the glass surface, and the temperature of that molten body is regulated independently of the temperature of the glass.

3,690,855

**METHOD FOR PRODUCING TiO<sub>2</sub>-SiO<sub>2</sub> GLASSES**

Peter C. Schultz, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,096

Int. Cl. C03c 3/04

U.S. Cl. 65—117

3 Claims

TiO<sub>2</sub>-SiO<sub>2</sub> glasses containing 12–20% by weight TiO<sub>2</sub> are disclosed. These glasses may be heat treated to provide a controlled low or zero thermal coefficient of expansion over the range of –200° C. to +700° C.

3,690,856

**WELDED DOUBLE GLAZING UNITS**

John Bryan, Saint Helens, England, assignor to Pilkington Brothers, Limited, Liverpool, England.

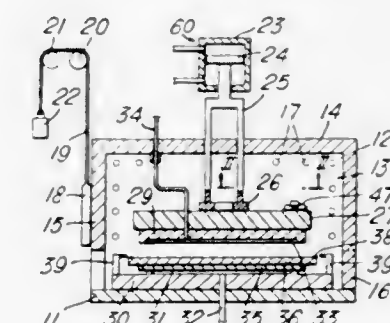
Filed June 5, 1970, Ser. No. 43,881

Claims priority, application Great Britain, June 11, 1969, 29,679/69

Int. Cl. B66c 1/02; C03b 23/02

U.S. Cl. 65—287

10 Claims



Vacuum holding apparatus for engaging the upper surface of a sheet of glass in the manufacture of an all-glass welded double glazing unit, includes a chuck platen and a sheet-holding platen connected by at least two bolt connections, each bolt connection including spring means resiliently drawing the platens together.

3,690,857

**METHOD OF CONTROLLING AQUATIC WEEDS, AND OTHER UNDESIRABLE FORMS OF AQUATIC LIFE, WITHOUT ADVERSELY AFFECTING FISH**

Charles M. Blair, Jr., Fullerton, Calif., assignor to Magna Corporation, Santa Fe Springs, Calif.

No Drawing. Filed Feb. 19, 1969, Ser. No. 800,723

Int. Cl. A01n 9/24, 9/28

U.S. Cl. 71—66

4 Claims

The disclosure relates to a method of controlling a wide spectrum of life found in watery media, including aquatic plants, marine animals, algae, fungi, molds, slimes, bacteria and symbiotic growths, without adversely affecting fish populations. The method comprises adding an acrolein diacetal to a body of water containing the aquatic life to be controlled, in quantity sufficient and for a time period sufficient to kill weeds and other undesired forms of aquatic life without at the same time killing the fish present in such body. More specifically, the acrolein diacetal added is one derived from an aliphatic alcohol containing less than seven carbon atoms. A particularly preferred acrolein diacetal employed in the present method is acrolein dimethyl acetal.

3,690,858

**COMBATING WEEDS AND ALGAE WITH 2-CHLORO-5-ARYL-1,3,4-THIADIAZOLES**

Norman A. Dahle, Mission, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Oct. 24, 1969, Ser. No. 869,329

Int. Cl. A01n 9/12

U.S. Cl. 71—67

2 Claims

5-aryl-tetrazoles may be reacted with thiophosgene to yield 2-chloro-5-aryl-1,3,4-thiadiazoles which have unusu-







3,690,871

Patent Not Issued For This Number

3,690,872

**PHOTOGRAPHIC DEVELOPING PROCESS WITH AMINO HYDROXY CYCLOALKENONE**

Rolf S. Gabrielsen and Ismael A. Olivares, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,567  
Int. Cl. G03c 5/30

U.S. Cl. 96—66 HD

11 Claims

Photographic silver halide developing agents which are amino hydroxy cycloalkenone compounds having a five or six member cycloalkene nucleus provide increased development activity, e.g. reduced development time, and provide low-colored oxidation products without undesired sensitometric properties in developing a latent image in a photographic element. These developing agents can be employed in photographic elements and/or processing compositions. They can be employed in combination with other silver halide developing agents and addenda employed in photographic elements and/or processing compositions. They are suitable, for instance, in elements for dry processing with heat, and/or processing solutions and/or photographic emulsions.

3,690,873

**DESULPHURIZING PLANT ALLOY**

Paul Isidore Fontaine, Solihull, England, assignor to The International Nickel Company, Inc., New York, N.Y.

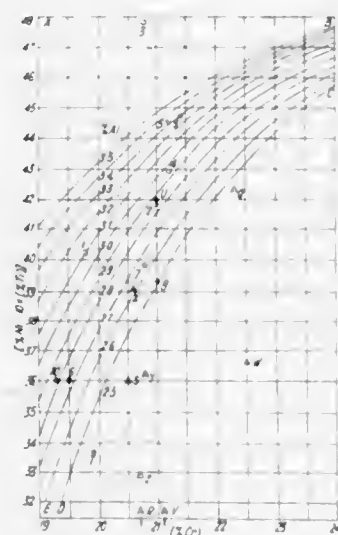
Filed July 9, 1969, Ser. No. 840,242

Claims priority, application Great Britain, July 9, 1968, 32,650/68

Int. Cl. C22c 19/00, 39/20

U.S. Cl. 75—134 F

8 Claims



Directed to alloys having improved resistance to carburization and sulfidation, good stress rupture strength, and structural stability on prolonged heating containing, by weight, about 32% to about 48% nickel, about 19% to about 24% chromium, about 2.2% to about 3.5% aluminum, and the balance essentially iron, wherein the nickel content and the chromium content are correlated to the aluminum content such that the minimum nickel content increases and/or the maximum chromium content decreases as the aluminum content increases.

**GRAIN SIZE OF METAL CASTINGS**

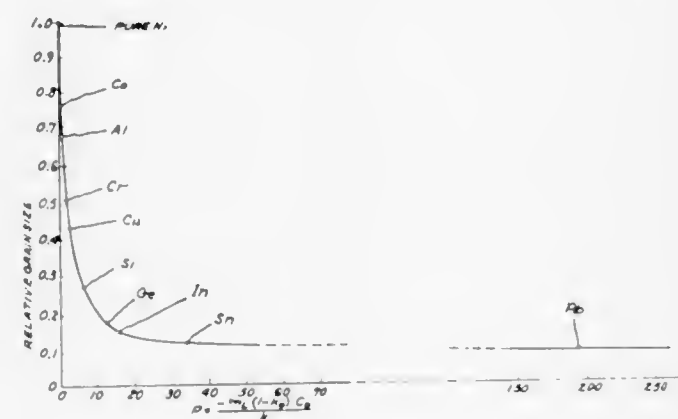
Lemuel A. Tarshis, Latham, and James L. Walker, Schenectady, N.Y., assignors to General Electric Company

Filed Dec. 5, 1969, Ser. No. 882,512

Int. Cl. C22c 19/00

U.S. Cl. 75—170

2 Claims



A definite relationship is disclosed between cast structure and a parameter which is obtainable from existing phase diagram information. The parametric relationship

$$P = \frac{(m_L)(1 - K_0)C_0}{K_0}$$

wherein  $m_L$  is the liquidus line slope,  $K_0$  is the solute distribution coefficient and  $C_0$  is the bulk composition in terms of atomic percent of the grain size refining additive.

3,690,875

**METHOD OF MAKING A CERMET-TYPE ALLOY**  
Nikolajs Bredz, Detroit, and Forbes M. Miller, Dearborn, Mich., assignors to Wall Colmonoy Corporation  
Application Feb. 19, 1969, Ser. No. 800,540, now Patent No. 3,547,673, dated Dec. 15, 1970, which is a continuation-in-part of application Ser. No. 646,654, June 16, 1967. Divided and this application July 7, 1969, Ser. No. 871,122

Int. Cl. B22f 1/00

U.S. Cl. 75—202

8 Claims

An improved cermet-type alloy and method of making same which is particularly adaptable for forming protective surface coatings on heat-resistant alloys. A particulated mixture is formed containing titanium and/or zirconium reactive metal constituents that undergo an exothermic reaction upon fusion at an elevated temperature in a substantially inert atmosphere with silicon and/or boron present in the mixture forming the corresponding silicides or borides of the reacted metals in situ which are subsequently precipitated as a uniformly dispersed discontinuous phase in a continuous phase of a nickel and/or cobalt base matrix. The invention also encompasses novel powder compositions for exothermically forming the cermet-type alloys and coatings.

3,690,876

**METHOD FOR PRODUCING SINTERED COBALT-BASE ALLOY CONTAINING GOLD**

James S. Smith, Leslie Paul Clare, and Robert M. Kubicki, Towanda, Pa., assignors to GTE Sylvania Incorporated

No Drawing. Filed Apr. 13, 1971, Ser. No. 133,727

Int. Cl. B22f 1/00

U.S. Cl. 75—211

6 Claims

Cobalt-base alloys containing gold are prepared by a powder metallurgy process comprising dissolving a predetermined amount of gold in sufficient aqua regia to form

a solution, adding a sufficient amount of a cobalt-containing constituent to the solution to achieve the cobalt to gold ratio in the resulting mixture that is desired in the alloy, drying the mixture to form a powder, heating the powder in a reducing atmosphere under controlled time and temperature conditions, compacting the resulting reduced powder into a shaped article and sintering the shaped article in a reducing atmosphere under controlled time and temperature conditions.

3,690,877

Patent Not Issued For This Number

3,690,878

**PLANOGRAPHIC PRINTING ELEMENT HAVING CARBOXYLIC ACID TREATED IMAGE AREAS**

William H. Tandy, Mentor, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

No Drawing. Filed Jan. 9, 1970, Ser. No. 1,887

Int. Cl. G03g 5/00, 13/00

U.S. Cl. 96—1.8

11 Claims

A planographic printing plate is provided having image areas formed by treatment with a carboxylic acid as a marking ink, the acid having from about 12 carbon atoms to about 22 carbon atoms. The plate is preferably a paper-based, electrophotosensitive sheet but can comprise other backing members and other image-receptive printing surfaces.

3,690,879

**PHOTOGRAPHIC DIFFUSION TRANSFER COLOR PROCESS AND COMPOSITE FILM UNIT FOR USE THEREIN**

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 782,075, Dec. 9, 1968. This application Mar. 4, 1971, Ser. No. 120,942

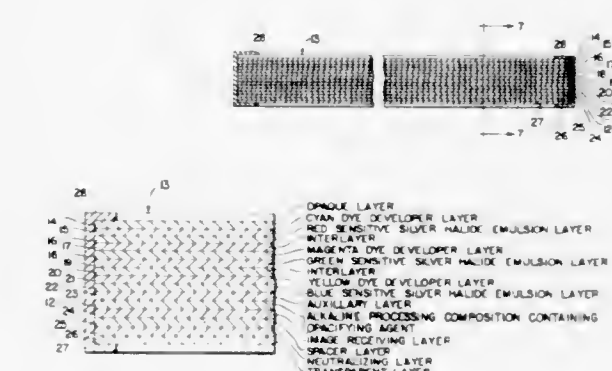
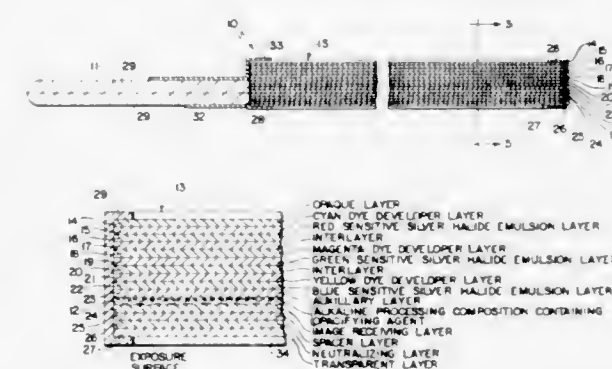
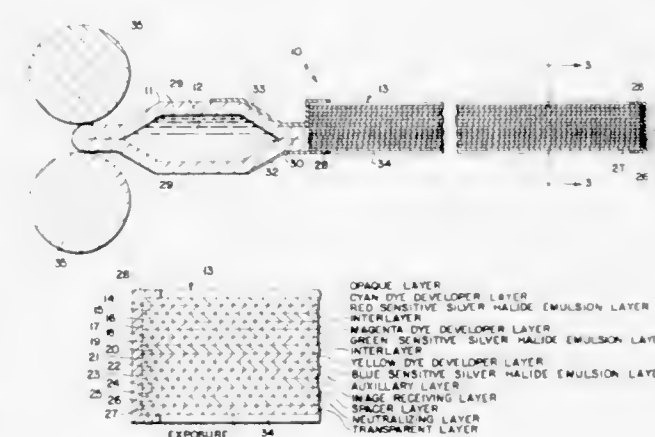
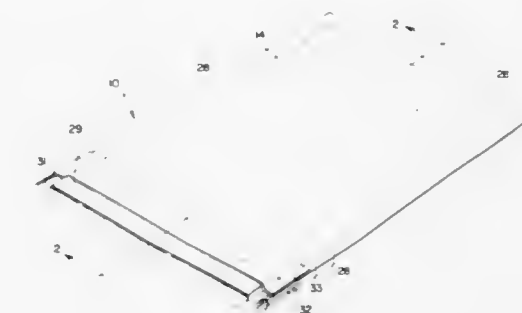
The portion of the term of the patent subsequent to Mar. 30, 1988, has been disclaimed  
Int. Cl. G03c 7/00

U.S. Cl. 96—3

17 Claims

Photographic film units and processes employing the same to obtain a color transfer print viewable without separation of the layer containing same as a reflection print, which film unit comprises a negative component comprising at least one light-sensitive silver halide layer having associated therewith, in the same and/or in an adjacent layer, a dye image-forming material for providing, as a function of development of the associated silver halide, an imagewise distribution of a mobile and diffusible color-providing material; and a positive component comprising at least a dyeable stratum adapted for receiving said diffusible color-providing material to provide a color transfer image; means for providing an opacifying agent between said negative and positive components to mask said negative component and to provide a background for viewing the color transfer image imparted to said dyeable stratum by reflected light without separation of said positive component containing said transfer image from said negative component; said positive and negative components being confined in superposition between a pair of dimensionally stable layers or support members, one of which is vapor permeable to permit osmotic transpiration of processing composition solvent to decrease the solvent concentration of the processing composition applied to develop said film unit from a first solvent concentration at which the dye image-forming material is soluble and diffusible to a second solvent concentration at which it is substantially non-diffusible, the other of said dimensionally stable layers being impervious or relatively impervious to solvent vapor, at least the dimensionally stable layer associated with the positive component being substantially transparent to permit view-

ing therethrough of the color transfer image, the other of said dimensionally stable layers, i.e., the one associated with the negative component, preferably being opaque.



The film unit preferably additionally includes means for applying between said negative and positive components an aqueous alkaline processing composition having said first solvent concentration, and the film unit further preferably contains means for reducing the pH of said processing composition subsequent to substantial dye transfer image formation.



3,690,880

**INTERMEDIATE COATING COMPOSITIONS, AND LONG RUNNING PLANOGRAPHIC PLATES PREPARED THEREWITH**

Thaddeus M. Muzyczko, Melrose Park, Ronald A. Frederiksen, Schaumburg, and David L. York, Elgin, Ill., assignors to The Richardson Company, Melrose Park, Ill.

No Drawing. Filed Dec. 11, 1970, Ser. No. 97,394

Int. Cl. G03f 7/02

U.S. Cl. 96—33

11 Claims

Compositions comprising the reaction product of a novel, highly branched polyalkylenimine-urea-aldehyde resin and a polyacrylic resin provide useful intermediate coatings when applied to preconditioned metal surfaces which may be subsequently coated with light sensitive materials to make photolithographic plates. The intermediate coating, particularly when applied to a grained or ungrained aluminum support member which has been anodized and finally coated with light sensitive materials produces a highly durable plate that possesses good storage characteristics and is capable of unusually extended press runs.

3,690,881

**MOIRE PATTERN ALIGNING OF PHOTOLITHOGRAPHIC MASK**

Michael Charles King, Basking Ridge, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 28, 1970, Ser. No. 75,983

Int. Cl. G03c 5/00, 5/04

U.S. Cl. 96—27

5 Claims

A pair of moire gratings that comprise a similar pattern of concentric lines but have a different pitch are used with a microscope to provide extremely accurate alignment of objects such as a photolithographic mask and a substrate of a semiconductive material.

3,690,882

**PROCESSES AND ELEMENTS FOR PREPARATION OF PHOTOMECHANICAL IMAGES WITH CINNAMYLIDENE MALONATE COPOLYESTER**

Wojciech M. Przewdzicki, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 15, 1970, Ser. No. 46,526

Int. Cl. G03c 11/12

U.S. Cl. 96—28

23 Claims

A dry process for the preparation of photomechanical images is described which employs as the photosensitive material a cinnamylidene malonate copolyester.

3,690,883

**METHOD OF FORMING A LITHO PLATE BY DIFFUSION TRANSFER**

Albert L. Hyland, Jr., Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 30, 1970, Ser. No. 7,015

Int. Cl. G03c 5/54

U.S. Cl. 96—29 L

11 Claims

A method for selectively eliminating hydrophobic portions of a photolithographic printing surface to modify the information contained in said surface or add information to said surface. Essentially, the method involves the step of applying a hydrophilic coating to selected portions of the hydrophobic printing pattern contained in said plate.

3,690,884

**PHOTOGRAPHIC DRY COPYING PROCESS**

Maria Scheibitz and Anita von Konig, Leverkusen, Helmut Kampfer, Cologne, Dietmar Mayer, Leverkusen, Klaus Sasse and Gunter Kolb, Cologne, Hans Ludwig Honig, Leverkusen, and Werner Meiser, Wuppertal-Elberfeld, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,337

Claims priority, application Germany, May 24, 1969, P 19 26 658.1

Int. Cl. G03c 5/54

U.S. Cl. 96—29

14 Claims

Photographic prints can be produced by imagewise exposure of a light-sensitive layer containing a transferable image producing compound and a light-sensitive compound capable of reacting upon exposure with an image producing compound to yield a non-transferable reaction product. The exposed layer is heated and contacted with an image receiving layer containing compounds capable of reacting with the heat transferred image producing compound to form the image dye.

3,690,885

**IMAGE RECEIVING LAYER FOR THE SILVER SALT DIFFUSION PROCESS**

Werner Krafft, Leverkusen, Peter Kruck, Cologne, and Rudolf Meyer and Maria Scheibitz, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 4, 1970, Ser. No. 86,943

Claims priority, application Germany, Nov. 6, 1969, P 19 55 899.7

Int. Cl. G03c 5/54

U.S. Cl. 96—29 R

5 Claims

Continuous-tone or line images can be produced by the silver salt diffusion process by imagewise exposing a silver halide emulsion layer transferring the silver halide from the unexposed positions to an image-receiving layer and reducing the transferred silver halide to silver. Particularly useful for the image-receiving layer is a water insoluble mixture of cellulose acetate and an acetal of polyvinyl alcohol which is permeable to moisture.

3,690,886

**PRINT-OUT PROCESS UTILIZING CHEMICALLY SENSITIZED LEAD SALT IN ORGANOPHILIC BINDER**

Walter August Van den Heuvel, Berchem, Johan Eugene Vanhalst, Wilrijk, and Eric Maria Brinckman, Mortsel, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Filed Nov. 12, 1969, Ser. No. 876,064

Claims priority, application Great Britain, Nov. 12, 1968, 53,668/68

Int. Cl. G03c 1/00, 5/24

U.S. Cl. 96—88

11 Claims

A print-out recording method and material using a recording layer comprising a photosensitive lead halide salt dispersed in an organophilic binder. Preferred lead salts are lead iodide, lead bromide, or a crystalline mixture thereof. A sensitizing agent may be added to increase the photosensitivity of the lead salt. Faint print-out images may be intensified by treatment with a physical development using, for instance, a solution containing a reducing agent and metal ions of a metal more electropositive than lead.

3,690,887

**PHOTOSENSITIVE SUB-PIGMENTARY TITANIUM DIOXIDE PRODUCED BY CALCINATING TITANIUM HYDRATE FROM 725° C. TO 825° C.**

Horace F. Dantro, Toms River, N.J., assignor to Knorr-Bremse G.m.b.H., Munich, Germany

No Drawing. Original application June 26, 1967, Ser. No. 648,955. Divided and this application Aug. 20, 1970, Ser. No. 65,723

Int. Cl. G03c 1/00

U.S. Cl. 96—88

3 Claims

This invention relates in general to a method for the preparation of titanium dioxide material which possesses photosensitive properties. More specifically it relates to a particular type of photosensitive titanium dioxide material which possesses sufficient photoreactive properties to be commercially useful in systems designed to respond to exposure to light i.e., photographic emulsions, copy paper and the like.

3,690,888

**PROCESS OF MAKING SILVER HALIDE EMULSIONS HAVING POLYVALENT METAL IONS OCCLUDED THEREIN**

Robert Elwin Bacon, Ernest John Perry, and Evan Thomas Jones, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 4, 1970, Ser. No. 43,565

Int. Cl. G03c 1/02

U.S. Cl. 96—94

13 Claims

An improved process is disclosed for preparing silver halide emulsions which contain grains having polyvalent metal ions occluded therein; the improvement comprises the step of forming the silver halide grains in the presence of (1) a peptizer consisting essentially of an acrylic polymer and (2) the polyvalent metal ions to be occluded inside the grains.

3,690,889

**PHOTOCOLORABLE VACUUM SUBLIMED XANTHENE DYE**

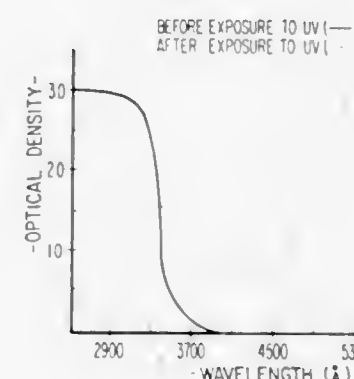
Sol Esther Harrison, Huntingdon Valley, Pa., and Robert Drake, Old Bridge, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sept. 30, 1970, Ser. No. 76,906

Int. Cl. G03c 1/52

U.S. Cl. 96—90

7 Claims



An optical recording and storage media comprises a substrate having an essentially colorless vacuum sublimed xanthene dye type film thereon. The xanthene dye is of the type having a pendant phenyl ring at the 9th carbon of the xanthene structure. A COOH group is present on the carbon atom of the phenyl ring immediately adjacent the linking carbon of the ring. Electron withdrawing groups are present on the xanthene structure. An example of such a material is rhodamine B.

3,690,890

**PHOTORESIST COMPOSITION**

Hiroyoshi Yamaguchi and Akio Iwaki, Tokyo, and Hiroshi Tokura, Tsuru, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed Oct. 26, 1970, Ser. No. 84,114

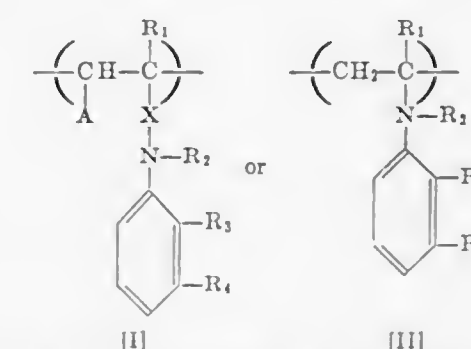
Claims priority, application Japan, Oct. 31, 1969, 44/86,886

Int. Cl. G03c 1/70

U.S. Cl. 96—90 R

8 Claims

A photoresist-forming composition comprising a photo activator having a polychlorinated or polybrominated methyl group capable of forming a free radical by the action of light: a homopolymer or a co-polymer with other vinyl monomer, of a monomer represented by the general formula



wherein A is a hydrogen atom, a carboxylic acid or carboxylic acid amide; X is  $\text{---COOCH}_2\text{CH}_2\text{---}$ ,  $\text{---CONHCH}_2\text{CH}_2\text{---}$

$\text{---CONH---}$ ,  $\text{---CH}_2\text{---}$ ,  $\text{---SO}_2\text{NH---}$ ,  $\text{---SO}_2\text{O---}$ ,  $\text{---CONH---}$ ; R<sub>1</sub> is a hydrogen atom or a lower alkyl group; R<sub>2</sub> is a hydrogen atom, a lower alkyl group or a substituted or unsubstituted phenyl group; and R<sub>3</sub> and R<sub>4</sub> are individually a hydrogen atom or a lower alkyl group, provided that in the case of the Formula II, R<sub>2</sub> and R<sub>3</sub> may form a heterocyclic ring together with nitrogen and the benzene ring, and R<sub>3</sub> and R<sub>4</sub> may form a naphthalene ring together with the benzene ring; and a cellulose ether.

3,690,891

**INFRARED-SENSITIZED SILVER HALIDE SYSTEMS**

John Spence, Honeoye Falls, Paul Brewster Gilman, Jr., Rochester, and Cynthia Geer Ulbing, Fairport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed July 20, 1970, Ser. No. 56,700

Int. Cl. G03c 1/28, 1/36

U.S. Cl. 96—108

26 Claims

This invention relates to improved infrared-sensitization of silver halide emulsions containing silver halide grains having metal dopants occluded therein. In one aspect, methine dyes having a primary radiation-adsorption peak above 700 nanometers can be used in combination with silver halide emulsions containing grains having metal dopants occluded therein to produce highly improved infrared sensitivity. In another aspect, infrared-absorbing dyes can be used in combination with the silver halide emulsions of this invention in high concentrations which would normally cause considerable desensitization of a surface-sensitive silver halide emulsion.

3,690,892

**ELIMINATING PROCESSING DEFECTS IN LIGHT-SENSITIVE SILVER HALIDE MATERIALS**

Charles W. Fairbanks and William J. Rosecrants, Jr., Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 6, 1970, Ser. No. 26,087

Int. Cl. G03c 1/02, 1/30

U.S. Cl. 96—110

15 Claims

Incorporating a water-soluble inorganic acid salt (e.g., cadmium nitrate) and a water-soluble alkylenediamine



polycarboxylic compound (e.g., disodium salt of ethylenediamine tetraacetic acid) into a light-sensitive silver halide emulsion layer or a contiguous layer eliminates undeveloped areas where development normally should have occurred caused by localized pre-wetting of the exposed photosensitive surface prior to immersing the photographic element in the first processing solution.

# ERRATA

For Classes 96—50 and 96—66 HD see:  
Patents Nos. 3,690,871 and 3,690,872

## 3,690,893 TORTILLA AND PROCESS USING EPICHLOROHYDRIN

Manuel Jesus Rubio, Bridgeport, Conn., assignor to Roberto Gonzalez Barrera, Monterrey, Nuevo Leon, Mexico  
No Drawing. Filed July 24, 1970, Ser. No. 58,142  
Int. Cl. A231 1/10

U.S. Cl. 99—80 R 2 Claims  
To retard the staling of tortillas, which are an unleavened unshortened food product made from nixtamalized corn or corn flour by incorporating an additive in making the tortilla dough. The additive is epichlorohydrin.

## 3,690,894 PROCESS FOR PREPARING A DRIED RICE CEREAL PRODUCT

Vincent J. Kelly, Wayne J. Smalligan, and Larry L. Cloud, Fremont, Mich., assignors to Gerber Products Company, Fremont, Mich.  
No Drawing. Filed Nov. 3, 1969, Ser. No. 873,667  
Int. Cl. A231 1/10

U.S. Cl. 99—83 3 Claims  
A process for obtaining a dehydrated reconstitutable rice cereal by incorporating an ester-containing organic releasing agent containing at least one phosphatide linkage, in a rice cereal slurry prior to dehydration of the slurry surface.

## 3,690,895 PROCESS FOR PREPARING FOLDED FOOD CHIPS

Roger M. Amadon, Greenville, Ill., and Morris G. Boren, St. Louis, Mo., assignors to Pet Incorporated, St. Louis, Mo.

Filed Sept. 5, 1969, Ser. No. 855,690  
Int. Cl. A231 1/10, 1/12

U.S. Cl. 99—80 R 4 Claims  
Discrete segments are cut from a sheet of dough and deposited on an endless conveyor chain such that they drape downwardly across the sides of the chain and assume a folding configuration. The segments are heated while on the chain to reduce their moisture content and are thereafter dislodged from the chain and introduced into a frying vat where they are converted into food chips.

## 3,690,896 PROCESS FOR FORMING A MULTI-COLORED FOOD PRODUCT

Donald L. Maxwell, Minneapolis, Minn., assignor to General Mills, Inc.

No Drawing. Filed May 15, 1970, Ser. No. 37,917  
Int. Cl. A231 1/18

U.S. Cl. 99—81 9 Claims  
A process for making a multi-colored food product by introducing at least two different colored dyes into a continuous cooker on an alternate or sequential basis. A product is continuously discharged from the cooker which varies in color from each of the individual colors introduced, to a mixture of the two colors.

## 3,690,897 Patent Not Issued For This Number

## 3,690,898 METHOD OF MAKING A FILLED SANDWICH

Anthony S. Partyka, Chicago, Ill., assignor to Kraftco Corporation, New York, N.Y.

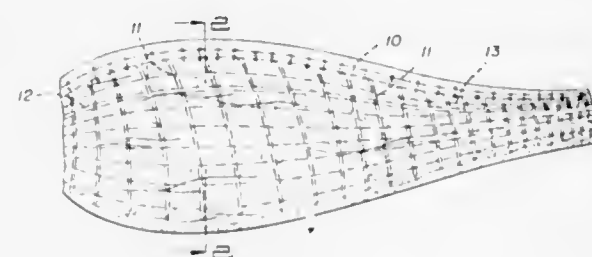
No Drawing. Filed Feb. 9, 1970, Ser. No. 9,962  
Int. Cl. A21d 13/00

U.S. Cl. 99—86 4 Claims  
A filled sandwich is provided which is suitable for heating in a vertical position without loss of filling. In preparing the sandwich, slices of bread are treated so as to provide a thin layer of hydrocolloid on at least one surface of each slice of bread. Thereafter, a sandwich filling is applied to the treated surface of at least one of the bread slices and the bread slices are formed into a filled sandwich. The hydrocolloid seals the sandwich and prevents loss of filling when the sandwich is heated in a vertical position.

## 3,690,899 PROCESSING CARP FOR HUMAN CONSUMPTION

Dallas J. Biechele, Jr., Sandusky, Ohio 44870  
Filed July 8, 1970, Ser. No. 53,063  
Int. Cl. A231 1/325

U.S. Cl. 99—111 4 Claims



A process of treating carp to eliminate such characteristics as the mud vein, in darkness of meat, and the presence of fine bones, which ordinarily make the carp undesirable for human consumption. The mud vein is removed after cutting to expose it, a cold salt solution leaching operation is used to remove excess blood cells from the tissues which ordinarily give the meat its dark color, and a special scoring operation is used to cut the fine longitudinally extending bones, which cannot be removed by ordinary filleting, so that they will be in such short pieces that they will not be troublesome.

## 3,690,900 SEASONING COMPOSITIONS CONTAINING 2- (LOWER-ALKOXY) INOSINE-5'-PHOSPHATES

Ryuji Marumoto, Minoo, Yoshio Yoshioka, Osaka, Hisashi Aoki, Suita, and Jun Toda, Nishinomiya, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Original application June 26, 1968, Ser. No. 740,094. Divided and this application Apr. 22, 1971, Ser. No. 136,598

Claims priority, application Japan, June 26, 1967, 42/40,899

Int. Cl. A231 1/26

U.S. Cl. 99—140 N 17 Claims  
The 2-(lower-alkoxy)inosine-5'-phosphates (2-methoxy-, 2-ethoxy-, 2-n-propoxy- and 2-isopropoxy-inosine-5'-phosphates) have a high capacity for improving the flavor of foods and beverages. Moreover, there is a significant synergistic action therebetween and monosodium glutamate.

## 3,690,901 CURING OF MEAT AND MEAT CURING PREPARATION THEREFOR

David F. Hinkley, Plainfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 4,403, Jan. 20, 1970. This application Jan. 12, 1972, Ser. No. 217,243

Int. Cl. A22c 11/00; A23b 1/02, 3/34  
U.S. Cl. 99—159 6 Claims

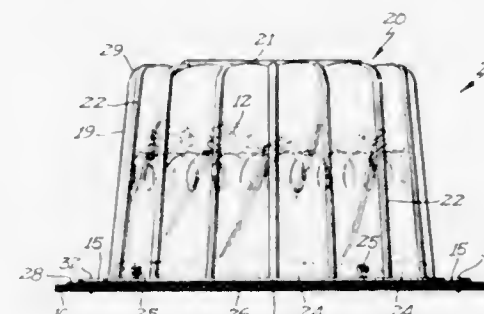
Dehydroascorbic acid and dehydroisoascorbic acid are added to meats along with a nitric-oxide producing agent to accelerate the rate of curing.

## 3,690,902 CAKE PACKAGE

Robert S. Dahl, 5820 82nd Terrace, Pinellas Park, Fla. 33565

Filed Mar. 18, 1970, Ser. No. 20,580  
Int. Cl. B65b 25/16

U.S. Cl. 99—172 7 Claims



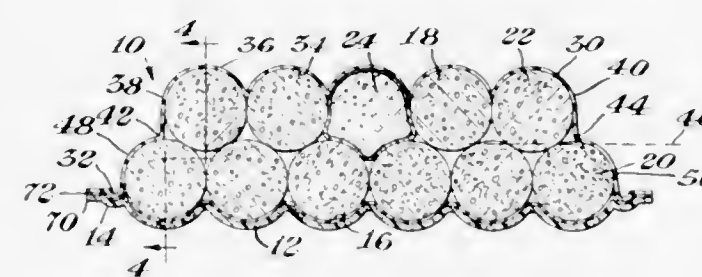
A cake cover designed to be detachably secured to a corrugated cake base for packaging a cake therein, the cake cover including a side wall consisting essentially of a plurality of vertically extending small ribs and a plurality of vertically extending large ribs interspersed among said small ribs, both sets of ribs being spaced outwardly from an inner peripheral boundary defined by the intersection of adjacent ribs; and a relatively rigid dome portion designed to enclose a cake mounted on the corrugated cake base, and to be spaced therefrom when the cover is secured to the base.

## 3,690,903 PRE-FORMED MEAT PACKAGE

Laddie M. Thomka, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 6, 1970, Ser. No. 892  
Int. Cl. B65b 25/06

U.S. Cl. 99—174 18 Claims



A negative pressure package is provided employing a rigid or semi-rigid clear plastic tub fittable to a self-sup-

porting lid or base member, and adapted to contain weiners or weiner-like products with minimum product deformation and with improved characteristics for retaining a preservative environment within the package. Strategic stacking or positioning of the weiners is permitted by employment of a void filler component strategically located to take up excess space within the package. The filler component optimally comprises a separate film envelope containing a complementary product such as mustard, relish, ketchup, spices or the like. In addition, the tub is provided with various inflection or hinge lines to controllably assist take up of internal package volume lost through slow compression and/or squeezing together of the products during package life, by atmospheric pressure.

## 3,690,904 CERAMICS PRODUCED FROM SPODUMENE, PETALITE AND CLAY

Earl G. Spangler, Newport Beach, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Mar. 20, 1970, Ser. No. 21,361  
Int. Cl. C04b 33/00

U.S. Cl. 106—39 R 7 Claims  
A fired ceramic having a nearly zero temperature coefficient of expansion, a hardness of from about 1.0 to 6.75 on the Mohs scale can be formed by firing a composition consisting essentially of at least 10% by weight of the mineral alpha spodumene, at least 10% by weight of petalite and from 10 to 60% by weight of clay.

## 3,690,905 OPTICAL GLASS HAVING ANOMALOUS PARTIAL DISPERSION

Heinz Bromer, Hermannstein, Norbert Meinert and Johann Spincic, Wetzlar, and Hans Staaden, Stockhausen, Germany, assignors to Ernst Leitz G.m.b.H., Wetzlar, Germany

Filed May 20, 1971, Ser. No. 145,321

Claims priority, application Germany, May 22, 1970, P 20 24 912.1

Int. Cl. C03c 3/08, 3/33, 3/00

U.S. Cl. 106—47 Q 2 Claims  
Novel germanium-containing optical glass compositions having anomalous partial dispersion and improved chemical properties containing glass batch constituents ranging in weight percent: 37–50% of glass formers selected from the group of metal oxides consisting of SiO<sub>2</sub>, B<sub>2</sub>O<sub>3</sub> and GeO<sub>2</sub>; at least 6% of an alkali metal oxide, at least 2% of an oxide selected from the group consisting of ZnO and CdO, up to 13% of an oxide selected from the group consisting of Al<sub>2</sub>O<sub>3</sub> and La<sub>2</sub>O<sub>3</sub>, 3–8% of ZrO<sub>2</sub> and 25–42% of an oxide selected from the group consisting of Ta<sub>2</sub>O<sub>5</sub> and/or WO<sub>3</sub> or Nb<sub>2</sub>O<sub>5</sub> with at least 20% of the oxide of tantalum being present. The refractive indices (n<sub>D</sub>) of such glasses range approximately from 1.646 to 1.733 while the Abbe values (v<sub>D</sub>) range between 44.8 and 37.1 and the partial dispersions (Δv<sub>D</sub>) are from –3.0 to –6.4.

## 3,690,906 CHROME PIGMENTS

Charles Harold Buckley, John Mitchell, and Geoffrey Lionel Collier, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Oct. 5, 1970, Ser. No. 78,153  
Claims priority, application Great Britain, Oct. 13, 1969, 50,129/69

Int. Cl. C09c 1/20

U.S. Cl. 106—302 5 Claims  
Chrome pigments of improved durability, especially to atmospheric sulphurous acid, are obtained by adding to a stirred aqueous suspension of a chrome pigment at an initial pH between 1.8 and 9.0 a source of silicate ions, a



source of trivalent antimony ions, an alkali metal hydroxide, a polyhydric alcohol and a hydroxyalkylamine and adjusting the pH to between 3.0 and 7.0 by addition of an acidic compound.

3,690,907

**METHOD OF PRODUCING CLAY-BASE PIGMENT**

Roger D. Kroening, Bay City, and David B. Kirby, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 20, 1970, Ser. No. 39,138

Int. Cl. C09c 1/02

U.S. Cl. 106—306

4 Claims

A method of producing a clay-base pigment with improved optical properties which comprises forming an aqueous mixture of clay with an alkaline earth metal hydroxide, e.g. calcium hydroxide, and aging the mixture at elevated temperatures.

3,690,908

**HIGH INDEX OPTICAL GLASS**

Edgar J. Greco and Gerald E. Blair, Rochester, N.Y., and Guy E. Rindone, State College, Pa., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 1, 1970, Ser. No. 77,330

Int. Cl. C03c 3/30, 3/02, 3/12

U.S. Cl. 106—47 Q

3 Claims

An optical glass having a high index of refraction and low absorption in the visible region of the spectrum contains as components tellurium dioxide, lanthanum oxide, boron oxide, potassium oxide, tantalum pentoxide, and germanium dioxide.

3,690,909

**SUPPORTED RELEASABLE POLYOLEFIN FILMS**

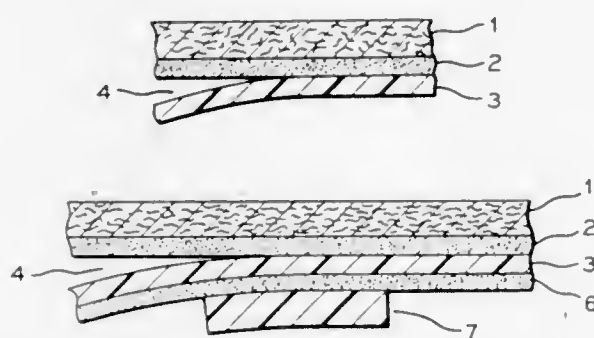
John G. Finley, Chicago, Ill.  
(% Phillips Petroleum Co., Bartlesville, Okla. 74003)

Filed Feb. 27, 1970, Ser. No. 15,119

Int. Cl. B44d 5/00, 1/14

U.S. Cl. 117—6

9 Claims



A strippable release composition is prepared by applying a silicone-alkyd resin to a base substrate, curing the resin, and applying a polyolefin film to the cured resin layer. The film adheres sufficiently to the cured silicone-alkyd resin for further processing, such as for addition of subsequent layers. The film is readily releasable from the silicone-alkyd resin without distortion of either substrate, film, or subsequently added layers.

3,690,910  
**COATING PROCESS FOR REGENERATED CELLULOSE FILM**

Yves Mahe, Mantes-la-Jolie, Gilbert Letourneur, Mantes-la-Ville, and Jean-Luc Devillas, Mantes-la-Jolie, France, assignors to La Cellophane Societe Anonyme, Paris, France

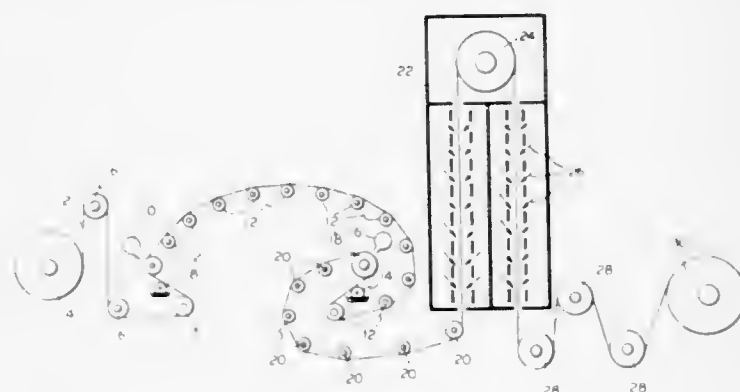
Continuation-in-part of abandoned application Ser. No. 544,219, Apr. 21, 1966. This application Jan. 19, 1971, Ser. No. 107,775

Claims priority, application France, May 4, 1965, 15,623

Int. Cl. B44d 1/16

U.S. Cl. 117—7

6 Claims



A process for coating a water-absorbent support, e.g., regenerated cellulose films, with an aqueous solution or dispersion whereby the support poses little or no tendency to roll up upon itself, which comprises coating the support with such aqueous solution or dispersion along its entire width on both faces successively and without intermediate drying, the support, after being coated on one face traveling over a supported path which is of sufficient length to permit the deposited coating to reach a degree of coalescence so that the coating will not be altered by passage of a detour roll; coating the second face while allowing coalescence thereof in substantially the same manner, and drying the coated support.

3,690,911

**PROCESS FOR PREPARING SYNTHETIC SUEDE SHEETS**

Hiroshi Endo, Tokyo, Kazuo Tokoyoda, Funabashi, and Takemi Fujiyu, Yasuaki Kayasuga, and Tokio Kunii, Tokyo, Japan, assignors to Suehiro Sen-I Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1970, Ser. No. 30,760

Claims priority, application Japan, June 30, 1969, 44/51,373

Int. Cl. B29j 1/04; D06n 3/14

U.S. Cl. 117—17

6 Claims



A thin, flexible, soft and tough synthetic suede sheet comprising a homogeneous unitary structure of a napped

knitted fabric containing at least 50% of hydrophilic fibers and 30 to 50% by weight of a microporous polyurethane resin impregnated in the knitted fabric is prepared by treating the napped knitted fabric with a low concentration resin solution in a solvent soluble in water, adjusting the resin content in the fabric to 30 to 50% by weight, passing the fabric through a bath of cold water to remove the solvent and cause the resin to coagulate thus forming said composite structure, drying the composite structure at a temperature of 138° C. to 162° C. to set the resin and polishing the dried composite structure.

3,690,912

**METHOD FOR MAGNETIC DEVELOPMENT OF LATENT ELECTROSTATIC IMAGES**

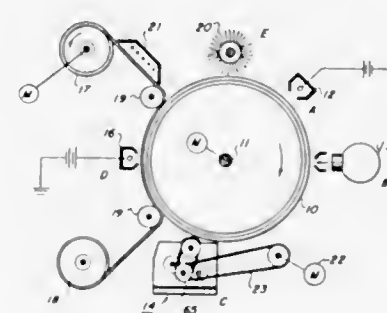
Larry W. Nuzum, 429 Mayfair Blvd., Columbus, Ohio 43213

Original application Aug. 7, 1968, Ser. No. 750,852, now Patent No. 3,570,453. Divided and this application June 4, 1970, Ser. No. 57,408

Int. Cl. G03g 13/08, 15/08

U.S. Cl. 117—17.5

1 Claim



This is a method for magnetic development of latent electrostatic images wherein development can be rapidly started and stopped by moving the magnet member relative to the roll member from a first position in which development occurs to a second position displacing the magnetic flux field and bristle-like formation of developer material away from the images on the photoconductive surface, and simultaneously moving a plate member from a first position spaced from the roll member during development to a second position into close proximity and in overlying relationship with the roll member where the magnetic member is displaced away from its first position to its second position to break down any bristles of developer material and prevent unwanted spurious development of images.

3,690,913

**PROCESS FOR THE CONTINUOUS DEPOSITION OF A PROTECTIVE LAYER ON FORGED, ROLLED OR FOUNDRY PRODUCTS**

Georges Schaumburg, 1-bis, Rue de Londres, Montigny-les-Metz, Moselle, France

No Drawing. Continuation-in-part of application Ser. No. 714,419, Mar. 20, 1968. This application Nov. 9, 1970, Ser. No. 88,211

Claims priority, application France, Mar. 31, 1967, 48,483

Int. Cl. C23d 3/00

U.S. Cl. 117—23

9 Claims

Metallic forged, rolled or foundry products are deoxidized or descaled by applying to such products, while they are hot, a suitable reducing agent and, while the products are maintained in a heated state, applying a protective agent, capable of existing in different physical, chemical or electrical states. The reducing agent may be a boron, phosphorus, silicon or aluminum derivative. The protective agent may be a metal such as a ferro metal

such as ferro-manganese, ferro-silicon, an oxide or a mineral or chemical product and may be projected onto the product in powder form. It may form a chemical or alloy bond with the base metal of the product to form an oxidation- or corrosion-resistant coating.

3,690,914

**METHOD OF FORMING SEAMLESS FLOORING**

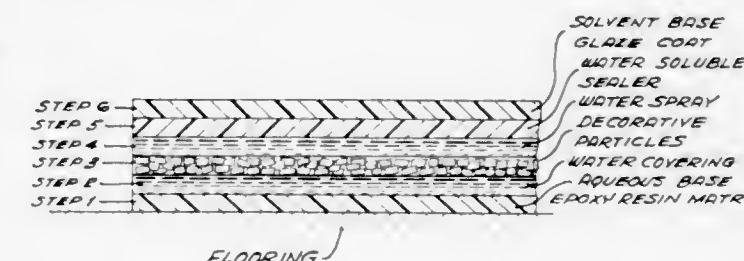
Mitchell Andreski, 32 Barbonsel Road, East Hartford, Conn. 06118

Continuation of abandoned application Ser. No. 676,466, Oct. 19, 1967. This application Mar. 18, 1971, Ser. No. 125,864

Int. Cl. B44d 1/02

U.S. Cl. 117—26

11 Claims



Seamless surface coverings, e.g. seamless floor coverings with a markedly reduced incidence of surface protrusions through the resinous overlayer from projecting decorative particles are disclosed to be obtainable by spraying the particles which have been randomly deposited onto the base coat or matrix with water to wet the particles and thus decrease the number and protrusion extent of projecting particles.

3,690,915

**METHOD OF FORMING GALLIUM PHOSPHIDE COATINGS**

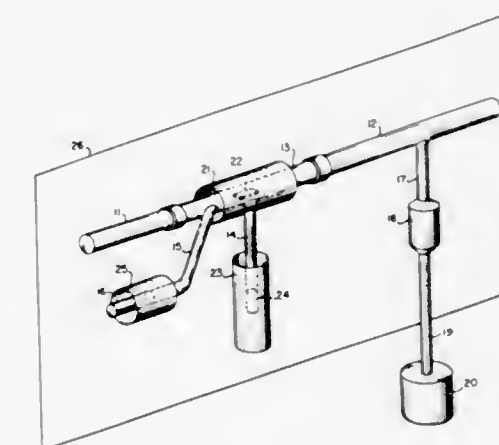
John E. Davey, Alexandria, Va., and Titus Pankey, Jr., Washington, D.C., assignors to the United States of America as represented by the Secretary of the Navy

Filed Dec. 16, 1969, Ser. No. 885,572

Int. Cl. B29d 11/00; C03c 17/00

U.S. Cl. 117—33.3

10 Claims



Gallium phosphide (GaP) films evaporated onto amorphous or crystalline substrates held at a particular temperature from that of separate sources of Ga and P, each held at a particular temperature exhibit an optical absorption edge shift from a bulk position of 2.34 ev., down to about 0.8 ev. By appropriate deposition of GaP films onto a substrate and/or by vacuum-annealing of films so deposited, the optical absorption edge can be shifted to any position between 0.8 ev. and 2.34 ev. Thus, GaP



films may be deposited and then properly annealed to provide films that cover the entire absorption spectrum of the III-V compounds (with the exception of InAs and InSb) plus Ge and Si. Such films may be used as optical filters of variable index of refraction and extinction coefficient to cover the entire range of energies between 0.8 and 2.34 ev.

3,690,916

**PROCESS FOR THE CONTINUOUS OPTICAL BRIGHTENING OF ORGANIC FIBRE MATERIAL**  
Hans Wegmüller, Riehen, Alois Kleemann, Basel, and Rudolf Keller, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland  
No Drawing. Filed Apr. 6, 1970, Ser. No. 26,166  
Claims priority, application Switzerland, Apr. 11, 1969, 5,524/69

Int. Cl. C09k 1/02

U.S. Cl. 117—33.5 T

9 Claims

A process for the continuous, non-aqueous optical brightening of organic fibre material, especially fibre material made from natural or synthetic polyamide, is disclosed, which comprises impregnating said fibre material with the solution of at least one optical brightener salt consisting of an anionic radical of an anionic optical brightener and at least one organic nitrogen compound containing at least one nitrogen atom capable of salt formation, in a solvent or solvent mixture, the solvent or solvent mixture consisting of unsubstituted or halogenated hydrocarbon boiling between 50 and 150° C., and, optionally, liquid, water-soluble organic solvent boiling below 220° C., removing excess solvent from the material and finishing the brightening by a heat treatment of the impregnated fibre material at temperatures below the softening point of said fibre material. By this process, on the stated fibre material very effective and even optical brightenings having good fastness properties, such as fastness to dry cleaning and washing, are obtained.

3,690,917

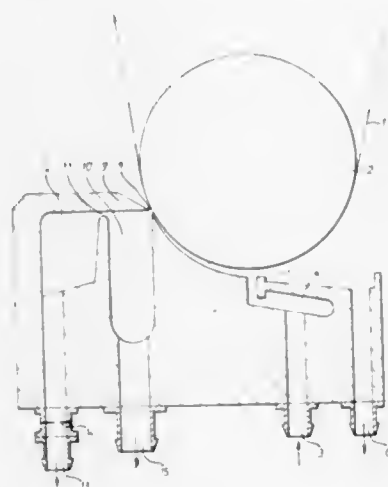
**SUCTION SYSTEM AND PROCESS FOR COATING ARRANGEMENTS AVOIDING THE TRANSMISSION OF PRESSURE DIFFERENCES TO THE COATING OPERATION**

Peter Herzhoff and Stephan Platz, Leverkusen, and Hans Gref, Cologne-Stammheim, Germany, Willi Schwenger, Aranjuez, Madrid, Spain, and Fritz Maus, Cologne-Flittard, Wolfgang Schweicher, Günther Koepke, and Willi Wasser, Leverkusen, and Kurt Browatzki, Opladen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany  
Filed Feb. 3, 1970, Ser. No. 8,262

Int. Cl. B05c 3/12; G03c 1/74

U.S. Cl. 117—34

2 Claims



A photographic web is coated with a photographic emulsion under a roller and the final thickness of the coating

is effected by an air stream blown tangentially over the coating into a vacuum chamber. Fluctuations in the air stream are prevented by subjecting the air stream discharged from the vacuum chamber to a sudden restriction in its cross sectional area by passing it through an apertured diaphragm. This abruptly changes its pressure in the ratio of at least 2:1 and obtains relatively high air velocity in the aperture in the sonic region.

3,690,918

**PHOTOGRAPHIC ELEMENT AND PROCESS**  
Warren J. Miller, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.  
No Drawing. Filed Mar. 19, 1970, Ser. No. 21,174  
Int. Cl. B44d 1/02; G03c 1/00

U.S. Cl. 117—34

12 Claims

Photographic elements incorporating an electrically insulating support having coated thereon at least one radiation-sensitive silver salt layer can be prepared with little or no hydrophilic colloid binder by the electrostatic deposition of dispersed preformed, radiation-sensitive silver salt crystals from a fluid medium, which electrostatic coating process can also be used to deposit such silver salt crystals including silver-dye complex crystals which have been previously dispersed in a hydrophilic colloid binder.

3,690,919

Patent Not Issued For This Number

3,690,920

**LAMINABLE FILM HAVING AN INTEGRAL GLUTINOUS GROUND COATING**

Pasco R. Santurri, 828 Clayton Road 63105, and John H. Rother, 6 Canterbury 63117, both of St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 670,400, Sept. 25, 1967. This application June 3, 1970, Ser. No. 43,190

Int. Cl. B44d 1/10, 1/12, 1/14

U.S. Cl. 117—45

14 Claims

A polyvinylchloride film having a decorative imprint on one face thereof, and a ground coat provided on said decorative imprint to present a background therefor and having bonding properties, being laminable to a suitable rigid substrate preferably of cellulosic character such as plywood, hardboard, flakeboard, etc. The ground coat is normally nontacky permitting storing of the film in roll form pending usage, and comprising essentially pigmented resin emulsion, and a plasticizer providing an eutectic mixture adapted for softening within the range of 200–225° F. for bonding to the substrate in minimum nip time providing a minimum bond strength of 3 to 5 p.s.i. at 180° angle pull being applied to the film in a density of about 10 pounds for each 3000 square feet of film.

3,690,921

**METHOD FOR STRONGLY ADHERING A METAL FILM ON CERAMIC SUBSTRATES**

Glenn V. Elmore, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Dec. 7, 1970, Ser. No. 95,940

Int. Cl. C23c 3/02; C04b 41/38

U.S. Cl. 117—54

9 Claims

A method for metal plating ceramic substrates is provided. A ceramic substrate is prepared for metal plating by cleaning the substrate with a hot cleaning alkaline solution, rinsing with water, immersing the substrate in concentrated alkali metal hydroxide solution and heating to a temperature sufficient to remove water from the solution and thereby depositing the solid alkali metal hydroxide

on the surface. Further heating the substrate to a temperature above the melting point of the deposited alkali metal hydroxide for a time sufficient to cause the molten alkali metal hydroxide to alter the surface by etching of both the  $Al_2O_3$  and the binder in the substrate and thereafter cooling, rinsing and neutralizing the alkali metal hydroxide. Alternately, the cleaned dry substrate may be directly immersed in molten alkali metal hydroxide and rinsed in the same manner as before. The so-treated substrate may then be subjected to an electroless deposition bath for metal plating thereon. The resultant metal film is found to be strongly bonded to the ceramic substrate.

3,690,922

**CONDITIONING OF WOOD TO STABILISE ITS COLOUR**

Stephen Dombay, Stevenage, England, assignor to Furniture Industry Research Association, Stevenage, England  
No Drawing. Continuation-in-part of application Ser. No. 687,464, Dec. 4, 1967. This application Sept. 1, 1970, Ser. No. 68,781

Claims priority, application Great Britain, Dec. 8, 1966, 55,026/66

The portion of the term of the patent subsequent to Jan. 12, 1988, has been disclaimed

Int. Cl. B27k 5/02

U.S. Cl. 117—57

19 Claims

The invention relates to a process for imparting stabilized colour to wood. In the process, the wood is treated with a persulfate oxidising agent so as to produce therein light-stable products which stabilise the colour of the wood.

3,690,923

**FROZEN FISH PACKAGE**

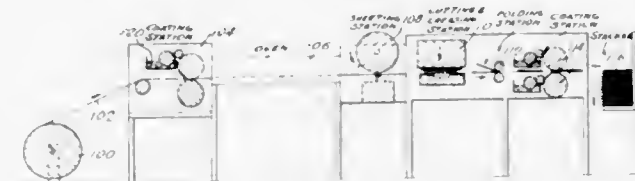
Alexander McIntosh Vessie, Lachute, Quebec, Canada, assignor to The Price Company Limited, Quebec, Quebec, Canada

Filed Feb. 12, 1970, Ser. No. 10,890

Int. Cl. B05c 9/04; C09d 5/00

U.S. Cl. 117—68

9 Claims



A packaging folder formed from a fibrous board having a porosity in the range of 300 to 650 seconds measured on a Gurley densometer and coated on one surface with a release coating permeable to air but substantially preventing penetration of water into the board and preferably coated on the other surface with a wax coating impervious to water and water vapour.

3,690,924

**PRESSURE SENSITIVE ADHESIVE ARTICLES HAVING A RELEASE COATING**

Phillip W. Estes, Groveton, N.H., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Oct. 5, 1970, Ser. No. 77,795

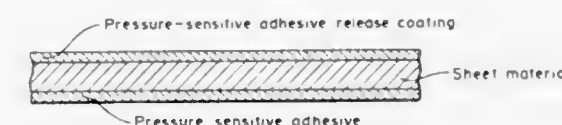
Int. Cl. C09j 7/04

U.S. Cl. 117—68.5

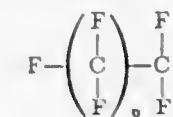
3 Claims

A pressure-sensitive adhesive coated article, such as a tape, having a release coating with superior organic solvent and water resistance on side opposite the adhesive

coating comprising a water soluble, organic solvent-insoluble film forming polymer, e.g. polyvinyl alcohol, as the



major component, a fluorochemical containing a nonpolar "head" portion of the structure



and a polar "tail" portion which is a carboxylic acid group of the Werner complex type with chromium and an insolubilizer for said polyvinyl alcohol.

3,690,925

**METHOD OF BONDING POLYPROPYLENE OR A COPOLYMER OF ETHYLENE AND PROPYLENE TO AN ELASTOMER**

Raymond J. T. Morris, Solihull, England, assignor to Dunlop Holdings Limited, London, England

No Drawing. Filed June 8, 1970, Ser. No. 44,615

Claims priority, application Great Britain, June 17, 1969, 30,552/69

Int. Cl. B32b 27/32

U.S. Cl. 117—76 T

6 Claims

A method of modifying a polyalkene which comprises applying to the surface of the polyalkene a solution containing 0.025 to 10 percent by weight of a polyalkene which is the same or different from the polyalkene to be treated. Examples of suitable polyalkenes which may be modified include polypropylene and propylene/ethylene copolymers. Suitable solvents for forming the solution of the polyalkene include white spirits, paraffin, heavy coal tar naphtha, toluene and xylene. The modified surface of the polyalkene may be bonded to an elastomer such as natural rubber, styrene butadiene copolymer rubbers and acrylonitrile rubbers.

3,690,926

**POLYESTER FIBRES COATED WITH AN N-GLYCIDYL COMPOUND EMBEDDED IN A RUBBER MATRIX**

Matthias J. Wampetich and Wolfgang Griehl, Chur, Grisons, Switzerland, assignors to Inventa AG, Zurich, Switzerland

No Drawing. Filed June 11, 1970, Ser. No. 45,548

Int. Cl. B32b 27/02, 27/06; B60c 9/02

U.S. Cl. 117—77

11 Claims

The treatment of polyester fibres with N-glycidyl compounds to improve the adhesion of the polyester to a rubber matrix.

3,690,927

**ACRYLOXY ESTERS OF ANHYDRIDES AND COATING COMPOSITIONS DERIVED THEREFROM**

Gordon M. Parker, Harwick, and Raymond C. Heuser, Arnold, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed July 17, 1969, Ser. No. 842,717

Int. Cl. B44d 1/50

U.S. Cl. 117—93.31

30 Claims

This invention relates to acryloxy (or methacryloxy)-alkyl (or alkoxyalkyl) organic dicarboxylic esters prepared by reacting an organic anhydride with a hydroxy-alkyl acrylate (or methacrylate) and then reacting this half-ester with a terminally-saturated glycidyl ether or



ester. These compounds are useful in coating compositions and are particularly useful in coating compositions curable by radiation.

3,690,928

# METHOD OF COATING GLASS CONTAINERS

Raleigh A. Carmen, Concord, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

No Drawing. Original application Aug. 2, 1968, Ser. No. 749,790, now Patent No. 3,598,269, dated Aug. 10, 1971. Divided and this application July 24, 1970, Ser. No. 64,854

Int. Cl. B44d 1/02, 1/06

U.S. Cl. 117—97

4 Claims

A method for interiorly lining glass bottles to protect them from attack by liquids tending to attack glass. The interior walls of each bottle are coated with a solution in a volatile liquid solvent of polymer, the bottle drained, the solvent evaporated, and the resulting lining heat-cured. This especially applies to the use of a solution of polyvinyl chloride in a volatile liquid solvent containing an organic coupling agent.

3,690,929

# STABILIZATION OF PHOSPHOR SLURRIES

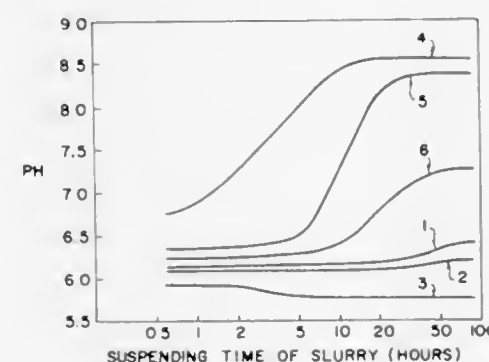
Yoshiyuki Yokota, 1506 Shinshiku; and Takashi Miyagawa, 1268 Karaoka, both of Hiratsuka-shi, Kanagawa-ken, Japan; Yasuto Tanaka, 2-38 Misono, Ota-ku, Tokyo, Japan; and Tatuki Torii, 668 Kamonomiya, Odawara-shi, Kanagawa-ken, Japan

Continuation-in-part of application Ser. No. 573,635, Aug. 19, 1966. This application Jan. 15, 1970, Ser. No. 3,144

Int. Cl. B44d 1/02, 5/00

U.S. Cl. 117—100 B

2 Claims



The photosensitive properties and stability of phosphor slurries used in photoprinting are improved by making a slightly soluble acidic oxide co-exist with a phosphor adapted for being applied to the inner surface of a cathode ray tube substantially in close contact with the surface of the phosphor particles, said acidic oxide being oxides of at least one element selected from the group consisting of boron, vanadium, gallium, germanium, arsenic, niobium, molybdenum, antimony, tantalum and tungsten.

3,690,930

# METHOD OF PROTECTING REDUCED IRON ORE BY COATING

David E. Mueller and Marnell A. Segura, Baton Rouge, La., assignors to Esso Research and Engineering Company

No Drawing. Filed July 13, 1970, Ser. No. 54,583

Int. Cl. C21b 1/00

U.S. Cl. 117—100 B

7 Claims

Reduced metals are protected for prolonged periods against back oxidation and water absorption by coating the metal with a composition comprising a bituminous material and from about 1 to about 40 wt. percent of an alkaline earth metal oxide, hydroxide or mixtures there-

of to deposit thereon up to about 0.5 wt. percent of the bituminous material and the alkaline earth metal compound.

3,690,931

# PARTICLED UREA COATED WITH MAGNESIUM DODECYL BENZENE SULFONATE

John J. Jasnosz, Jr., Santa Ana, Calif., assignor to Petrochemicals, Inc., Fort Worth, Tex.

No Drawing. Continuation of abandoned application Ser. No. 758,128, Sept. 6, 1968. This application Mar. 4, 1971, Ser. No. 121,198

Int. Cl. C05c 9/00; B44d 1/094

U.S. Cl. 117—100 A

1 Claim

Particled urea coated with magnesium dodecyl benzene sulfonate in amounts of 0.025 to 0.15 percent by weight of the urea does not substantially cake on standing. Other compounds may also be used, but with less effectiveness.

3,690,932

# METHOD FOR PRODUCING MIXED LAYERS FROM INORGANIC AND ORGANIC SUBSTANCES ON A SUBSTRATE

Walter Geffcken and Volker Paquet, Mainz, Germany, assignors to JENAer Glaswerk Schott & Gen., Mainz, Germany

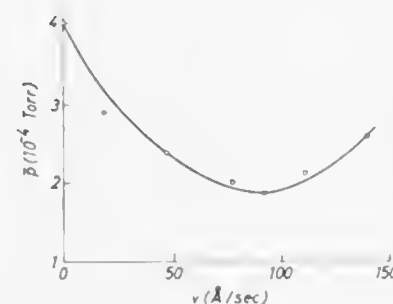
Filed Nov. 14, 1969, Ser. No. 876,945

Claims priority, application Germany, Nov. 20, 1968, P 18 09 906.4; Oct. 28, 1969, P 19 54 083.1

Int. Cl. C23c 11/00, 17/00

U.S. Cl. 117—106 R

20 Claims



Mixed layers of inorganic and organic substances are produced by vaporization of these substances in a high vacuum chamber and precipitating these vaporized substances on a substrate, such as a plate of synthetic material or chemically sensitive optical glass. The mixed layer so formed serves as a durable coating protecting the substrate effectively against detrimental chemical and mechanical influences.

3,690,933

# APPARATUS AND METHOD FOR CONTINUOUSLY CONDENSING METAL VAPOR UPON A SUBSTRATE

Frank J. Cole, Parma, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Filed May 21, 1970, Ser. No. 39,379

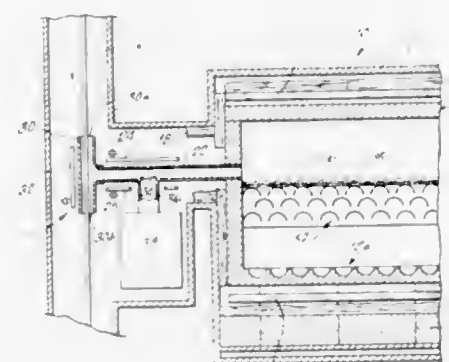
Int. Cl. C23c 11/00, 13/00

U.S. Cl. 117—107.1

8 Claims

Apparatus and method for continuously condensing metal vapor upon a moving substrate includes generating a continuous quantity of metal vapor, which may be at nonturbulent flow. The metal vapor is directed by a nozzle from the metal vaporizing apparatus toward the substrate at turbulent flow. A chamber in which the substrate continuously moves communicates with the nozzle so as to receive from the nozzle the metal vapor to be deposited upon the substrate. The chamber and the nozzle are maintained at a temperature equal to or in excess of the temperature of the metal vapor to prevent substantial deposition of the vapor upon the walls of the nozzle

and the chamber. The substrate is at a temperature substantially less than that of the metal vapor. The flow of



metal vapor may be controlled by a valve in the nozzle which divides excess vapor from the flow and directs the excess vapor into a collector box.

3,690,934

# METHOD OF FORMING CHROMIUM AND ALUMINUM DIFFUSION ALLOYS ON METAL PIECES

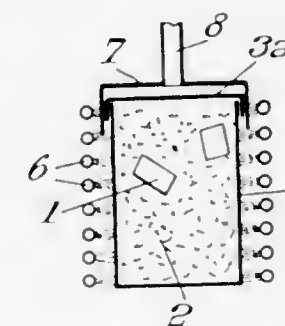
Philippe Marie Galmiche, Clamart, and Andre Hivert, Pontoise, France, assignors to Office National d'Etudes et de Recherches Aeronautiques (par abreviation O.N.E.R.A.), Chatillon-sous-Bagneux, France

Continuation-in-part of abandoned application Ser. No. 594,239, Nov. 14, 1966. This application July 1, 1970, Ser. No. 51,726

Int. Cl. C23c 11/00, 13/00, 17/02

U.S. Cl. 117—107.2 P

19 Claims



The metal pieces to be treated are embedded in a reactive mass contained in a partly gastight box placed in a heating vessel wherein there is an at least partly hydrogenated protective atmosphere. The reactive mass comprises an intimate mixture of (1) a powder alloy of chromium and aluminum, (2) an inert powdered diluting component and (3) a halogen-containing component. The box and its contents are heated to 1050° C.—1100° C. for a few hours, then cooled. The starting chromium powder for the chromium-aluminum alloy powder may be of either magnesiothermic or electrolytic origin and at least the electrolytic chromium is subjected to at least one pretreatment, prior to alloying, by exposure to either magnesium or calcium vapor to substantially reduce the amount of free oxygen on and in the chromium grains.

3,690,935

# SYSTEM FOR WET IMPACT PLATING

Lester Coch, Northport, N.Y., assignor to Waldes Kohinoor, Inc., Long Island, N.Y.

Filed July 8, 1970, Ser. No. 53,123

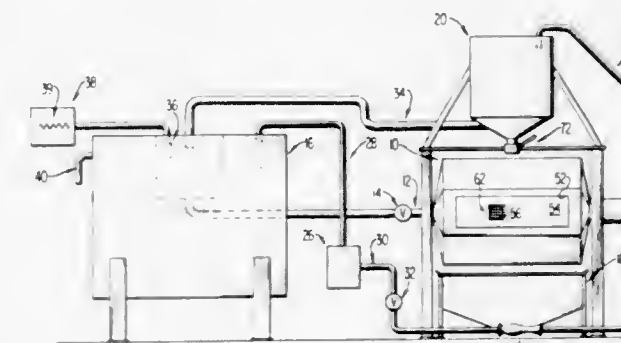
Int. Cl. B05c 3/08, 11/10; B44d 1/34

U.S. Cl. 117—109

15 Claims

A system for wet impact plating of metal parts utilizing a single tumbling barrel for independent parts rinsing and

impacting operations respectively when interchangeable, smaller perforate and imperforate barrel doors are secured to a larger door of the barrel. Rinsing water is supplied to the barrel while rotating with the perforate door in position. Water expenditure is thereby minimized and the rinsing effluent is thereby effectively separated from the impacting medium. A stationary bin with a screen for separating parts from the impacting medium and aqueous solutions is positioned beneath the barrel. Communicating with the bin in selectively operable relationship is a venturi eductor which, together with a pump communicating with a water storage tank, is operable to rapidly



transfer the impacting medium to a hopper positioned over the barrel for reuse while generating sufficient turbulence to tend to cleanse the impacting medium of spent plating material and promoter chemicals. These spent materials pass, with overflow water, through an overflow strainer in the hopper to the water storage tank where they settle and are subsequently removed. Substantially all water is thereby recovered and reused, and the frequency of impacting medium rectification is materially lessened. Two separate charges of impacting medium are used in the system, and several tumbling barrel units may be supported by a single water storage tank where the water level and temperature are controlled.

3,690,936

# ADHESIVE MATERIAL FOR BONDING VINYL CHLORIDE POLYMERS TO SUBSTRATES

Richard C. Doss and Faber B. Jones, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Feb. 2, 1970, Ser. No. 8,074

Int. Cl. C09j 7/02

U.S. Cl. 117—122 H

4 Claims

Film materials of vinyl chloride polymers are contacted with a solution or dispersion of a dry-film forming, heat-activatable adhesive material comprising a blend of an ethylene-vinyl acetate copolymer, a polyamide, and a tackifier; dry adhesive coated film is thereafter heat activated and bonded to substrates.

3,690,937

# PROCESS OF MAKING A PRESSURE-SENSITIVE ADHESIVE MATERIAL

Gunter Guse and Hanns G. Pietsch, Hamburg, Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Germany

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,629

Claims priority, application Germany, Aug. 8, 1969, P 19 40 549.3

Int. Cl. C09j 7/02

U.S. Cl. 117—122 P

11 Claims

A pressure sensitive adhesive material is made by coating a substrate with a copolymer of specified proportions of a diester of fumaric acid, and a vinyl compound copolymerisable therewith as well as either or both of an



olefinically unsaturated copolymerisable polar compound with carboxyl, carboxamide, dicarboxylic anhydride or dicarboximide groups, and an olefinically unsaturated copolymerisable compound with self-crosslinkable reactive groups, together with a cross-linking polyfunctional compound, and subjecting the coating thereon to a short period heat treatment.

3,690,938

# REMOISTENABLE ADHESIVE COMPOSITION FOR PREPASTED WALL COVERINGS

Thomas G. Swift, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,862

Int. Cl. B66b 3/02

U.S. Cl. 117—122 S 4 Claims

A remoistenable adhesive composition particularly useful for prepasted wall coverings which includes a dry blend of a water soluble low viscosity starch, a low viscosity cellulose material such as hydroxyethyl cellulose, carboxymethyl cellulose or methyl cellulose ether, and a plasticizer such as sodium nitrate, urea, calcium chloride, glycerin or sodium methacrylate. The above blend may also include an extender material such as sodium methacrylate or a clay, or both in combination. The adhesive is not disturbed by further handling and can be applied to the wall covering either before or after printing the decorative surface. The wall coverings treated with this adhesive are easily applied when remoistened, because they have good "slip" properties. They are also easily removed after installation without the use of steam or other stripping agents, simply by pulling the covering away from the undersurface.

3,690,939

# PROCESS FOR THE COATING OF TEXTILES

Jacques Wegmann, Bettingen, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,234

Int. Cl. B32b 15/02, 17/04, 27/02

U.S. Cl. 117—126 GB 7 Claims

Process for coating of textile flat-shaped articles which comprises impregnating the articles with a solution or dispersion containing an epoxy compound, a thio compound containing a



group bound to at least one nitrogen atom and a high polymeric material. After impregnation, the coating is affixed to the substrate either in wet or dry state.

3,690,940

# PREVENTING RUSTING OF STEEL SHEETS COATED WITH AQUEOUS SLURRY OF METAL POWDER

Hidehisa Yamagishi, Fumitoshi Yokoi, and Tadao Takahashi, Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha

Filed Nov. 17, 1970, Ser. No. 90,379

Claims priority, application Japan, Nov. 21, 1969, 44/93,141

Int. Cl. B22f 7/04; C23c 17/00

U.S. Cl. 117—131 2 Claims

In coating steel sheet with aqueous slurry of metal powder, the slurry is added with corrosion inhibitor to prevent rusting of steel sheet at the time of drying the coating layer thereby improving the adhesion thereof to the steel surface, said corrosion inhibitor addition being

a compound containing any one of such negative ions as  $\text{NO}_2^-$ ,  $\text{MoO}_4^{--}$  or  $\text{C}_6\text{H}_5\text{COO}^-$  in a concentration ranging from  $10^{-5}$  mol/l. to  $10^{-1}$  mol/l.

3,690,941

# PROCESS FOR PROVIDING CELLULOSE FIBRE MATERIAL WITH A FLAME-PROOF FINISH FAST TO WASHING

Martin Reuter, Kronberg, Taunus, Claus Beermann, Neu-Isenburg, and Fritz Linke, Königstein, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of application Ser. No. 43,192, June 3, 1970. This application Dec. 8, 1970, Ser. No. 96,286

Claims priority, application Germany, Aug. 29, 1970, P 20 42 949.6

Int. Cl. C09k 3/28; D06m 13/28

U.S. Cl. 117—136 9 Claims

Cellulose fiber materials are rendered flame proof and fast to washing by (a) impregnation with aqueous bath containing phosphoric acid esters with N-methylol groups and, optionally, aminoplast precondensates and/or aminoplast condensation catalysts, and (b) a subsequent heat treatment.

3,690,942

# STAIN RELEASE AND DURABLE PRESS FINISHING USING SOLUTION POLYMERS

Joseph K. Vandermaas, Charlotte, Larry J. Rikard, Lowell, Robert K. Dunlap, Charlotte, and James F. Lavender, Gastonia, N.C., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 777,505, Nov. 20, 1968. This application Apr. 23, 1971, Ser. No. 137,067

Int. Cl. B44d 5/00

U.S. Cl. 117—138.8 F 5 Claims

Process for imparting durable press and soil release properties to textiles containing a significant man-made fiber content, particularly polyester, by treatment in a bath containing a durable press textile resin, textile resin catalyst and an acid solution polymer characterized by a pH below about 6.0 and an acid content of at least 20 weight percent calculated as acrylic acid. Low molecular weight, non-fiber-forming, hydrophilic polyesters synergize the activity of the acid solution polymer.

3,690,943

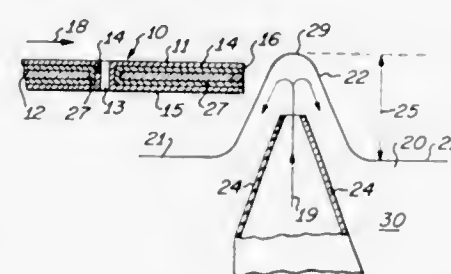
# METHOD OF ALLOYING TWO METALS

Francis John Papiano, Cranbury, N.J., assignor to RCA Corporation

Filed Apr. 24, 1970, Ser. No. 31,600

Int. Cl. B44d 1/18

U.S. Cl. 117—212 15 Claims



Two metals are alloyed by a method wherein the metals are coated on a surface which is passed through

a standing wave of a heat transfer fluid to melt only the coating. Upon cooling, the two metals form a solid alloy on the surface.

3,690,944

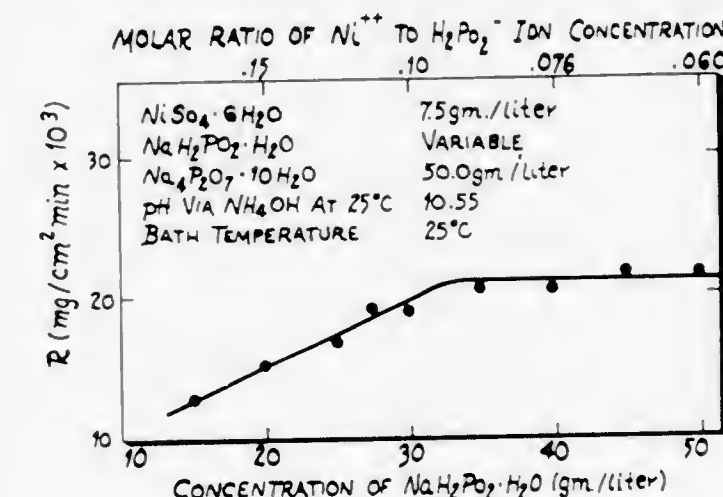
# ELECTROLESS NICKEL PLATING METHOD

Nathan Feldstein, Kendall Park, N.J., assignor to RCA Corporation

Continuation of application Ser. No. 706,822, Feb. 20, 1968. This application Mar. 10, 1970, Ser. No. 17,041

Int. Cl. C23c 3/02

U.S. Cl. 117—160 R 6 Claims



A method for electrolessly plating nickel from a bath comprising (i) a nickel salt; (ii) a nickel ion complexing agent; (iii) a source of hypophosphite ions; and (iv) ammonium hydroxide, in which the molar concentration ratio of nickel to hypophosphite ions is less than 0.2. The bath exhibits a plating rate substantially independent of hypophosphite ion concentration.

3,690,945

# METHOD OF PRODUCING A TRANSISTOR WITH AN INSULATED CONTROL ELECTRODE

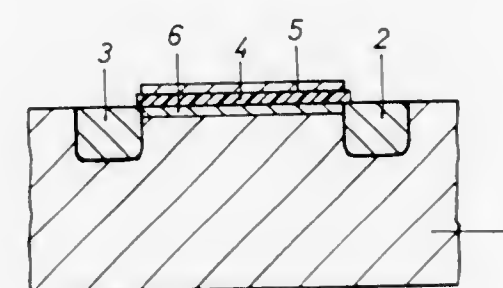
Max Kuisl, Ay (Iller), Germany, assignor to Licentia, Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Apr. 27, 1970, Ser. No. 32,156

Claims priority, application Germany, May 7, 1969, P 19 23 265.6

Int. Cl. H01l 7/34

U.S. Cl. 117—215 4 Claims



A method of producing a transistor with an insulated control electrode comprises applying to a silicon semi-

conductor body an oxygen permeable insulating layer which does not consist of a silicon oxide for the control electrode, and thereafter tempering the semiconductor body in an atmosphere of oxygen to produce a silicon dioxide layer at the phase border between the insulating layer and the silicon body.

3,690,946

# MANUFACTURE OF MAGNETIC RECORDING MEDIA

Heinrich Hartmann, 46 Weinheimer Strasse, 6703 Limburgerhof, Germany; Job-Werner Hartmann, 1 Frankenstrasse, 6700 Ludwigshafen, Germany; Hans Wilhelm, 25 Nachtigallenweg, 6951 Heinsheim, Germany; Georg Schnell, 21 Freinsheimer Strasse; and Wolfram Kittler, 12 Ungsteiner Strasse, both of 6700 Ludwigshafen, Germany; Gerhard Werst, 8 Auf dem Sand, 6730 Neustadt, Germany; and Reinhold Baur, 4a Rene-Bohn-Strasse, 6700 Ludwigshafen, Germany

No Drawing. Filed Feb. 16, 1970, Ser. No. 11,818

Claims priority, application Germany, Feb. 18, 1969, P 19 07 957.3

Int. Cl. H01f 10/02

U.S. Cl. 117—235 6 Claims

Magnetic recording media and process for their manufacture by coating a non-magnetic support with a dispersion of magnetic pigment in a binder based on a reactive mixture of (A) a polyisocyanate and (B) a hydroxyl group-containing copolymer prepared by solution polymerization from (1) hydroxyalkyl acrylate or methacrylate, (2) alkyl acrylate or methacrylate, (3) vinylidene chloride and, if desired, (4) a further monomer, such as acrylonitrile, in certain proportions, and curing the applied coating.

3,690,947

# PROCESS FOR THE OPTICAL BRIGHTENING OF FIBROUS MATERIALS MADE FROM POLY-ACRYLONITRILE

Gunter Rosch, Altenhain, Taunus, Werner Linke, Sulzbach, Taunus, Otto Smerz, Kelkheim, Taunus, and Erich Schinzel, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Jan. 21, 1970, Ser. No. 4,746

Claims priority, application Germany, Jan. 30, 1969, P 19 04 424.7

Int. Cl. C09k 1/02

U.S. Cl. 117—33.5 T 11 Claims

Fibrous materials made of polymers containing at least 85% of polyacrylonitrile can be optically brightened in a said material with a liquor containing a 1-(4'-β-alkoxyethyl sulfonyl)-phenyl-3-p-chlorophenyl-Δ<sup>2</sup>-pyrazoline, adjusting the impregnated material to a liquor content of about 5 to 120% by weight, referred to the dry-weight of the goods, and heating it for about 2 seconds to 30 minutes to a temperature of about 100 to 150°C.

3,690,948

# PROCESS OF MAKING HIGH D.E. FRUCTOSE CONTAINING SYRUPS

Edward Katz, St. Louis, Irving Ehrenthal, University City, and Barrett L. Scallet, Clayton, Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Aug. 31, 1970, Ser. No. 68,125

Int. Cl. C13k 9/00

U.S. Cl. 127—46 A 12 Claims

A line of fructose-containing, water white, ash-free, high D.E. syrups is made by resin isomerization utilizing







containing a solid solution of chromium and carbon. Then large numbers of relatively small particles of chromium carbides are precipitated from the matrix and distributed throughout the spaces between the large primary carbide particles leaving the remainder of the matrix containing carbon and susceptible to subsequent hardening. Then hardening the casting by heating and subsequently quenching to convert the matrix to substantially a martensitic structure without significantly changing the carbide particles.

### 3,690,958 ROCKER ARM

Earl A. Thompson, Bloomfield Hills, Mich., assignor to F. Jos. Lamb Company, Warren, Mich.  
Original application Feb. 24, 1966, Ser. No. 529,829, now Patent No. 3,502,058, dated Mar. 24, 1970. Divided and this application Mar. 18, 1970, Ser. No. 20,516  
Int. Cl. C22c 37/06; F01I 1/18

U.S. Cl. 148—3 5 Claims  
A rocker arm for internal combustion engines made from an alloy containing from 1.3% to about 3.1% C, from about 15% to about 35% Cr with the remainder iron, with or without up to about 3.25% Si, Mn and other residuals. The alloy is cast, cooled so a relatively small number of relatively large primary chromium carbide particles are formed and widely dispersed in a matrix of austenite containing a solid solution of chromium and carbon. Then large numbers of relatively small particles of chromium carbides are precipitated from the matrix and distributed throughout the spaces between the large primary carbon particles leaving the remainder of the matrix containing carbon and susceptible to subsequent hardening. Then hardening the casting by heating and subsequently quenching to convert the matrix to substantially a martensitic structure without significantly changing the carbide particles.

### 3,690,959 ALLOY, ARTICLE OF MANUFACTURE, AND PROCESS

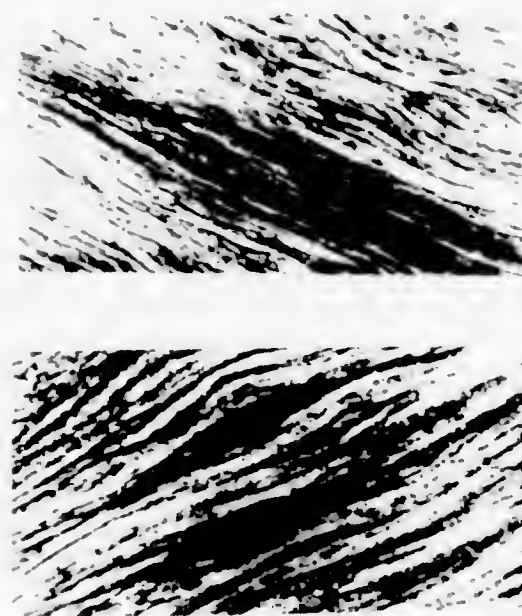
Earl A. Thompson, Bloomfield Hills, Mich., assignor to F. Jos. Lamb Company, Warren, Mich.  
Original application Feb. 24, 1966, Ser. No. 529,690, now Patent No. 3,502,057, dated Mar. 24, 1970. Divided and this application Mar. 18, 1970, Ser. No. 20,517  
Int. Cl. C22c 37/06; F01I 1/14

U.S. Cl. 148—2 10 Claims  
Articles of manufacture generally and in particular tappets for internal combustion engines are made of a high carbon high chromium alloy containing from about 1.3% to about 3.1% carbon, from about 15% to about 35% chromium with the remainder iron, with or without up to about 3.25% silicon, manganese and other residuals. The alloy is cast, cooled so quickly that a relatively small number of relatively large primary chromium carbide particles are formed and widely dispersed in a matrix of austenite containing a solid solution of chromium and carbon. Then large numbers of relatively small particles of chromium carbides are precipitated from the matrix and distributed throughout the spaces between the large primary carbon particles leaving the remainder of the matrix containing carbon and susceptible to subsequent hardening. Then the casting is hardened by heating and subsequent quenching at such temperature and at such time that the matrix is substantially converted to martensite without significantly changing the carbide particles.

3,690,960  
Patent Not Issued For This Number

3,690,961  
METHOD FOR PRODUCING COMPOSITE ARTICLE  
Aurel I. Berghazan, Rhode-St.-Genese, Belgium, assignor to Cabot Corporation  
Original application Dec. 6, 1967, Ser. No. 688,945. Divided and this application Jan. 23, 1970, Ser. No. 8,759

Int. Cl. C21d 1 Claim  
U.S. Cl. 148—11.5 F



A nickel-aluminum composite metallic material produced from nickel and aluminum powders characterized by high strength throughout a wide range of temperatures and having excellent resistance to oxidation at elevated temperatures.

### 3,690,962 CARBIDE ALLOYS SUITABLE FOR CUTTING TOOLS AND WEAR PARTS

Erwin Rudy, Beaverton, Oreg., assignor to Aerojet-General Corporation, El Monte, Calif.  
Filed Feb. 26, 1969, Ser. No. 802,625  
Int. Cl. C22c 27/00, 29/00

U.S. Cl. 148—32 6 Claims



This invention relates to refractory metal bonded carbide alloys for use as cutting tools and in other applications where high hardness and abrasion resistance are required. The desired fine-grain, lamellar microstructure is obtained preferably by casting eutectic, or near-eutectic alloys of a Group IVA metal (titanium, zirconium, hafnium), tungsten and carbon which may contain certain alloying and inert materials. For selected applications, the composites may be fabricated by powder-metallurgical techniques.

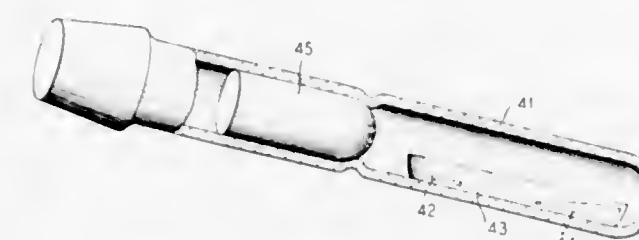
### 3,690,963 COMPACTIBLE FUSED AND ATOMIZED METAL POWDER

Donald R. Spink, Waterloo, Ontario, Canada, and Allen C. Goodrich, East Aurora, N.Y., assignors to Amax Specialty Metals, Inc., Akron, N.Y.  
No Drawing. Original application Feb. 18, 1966, Ser. No. 528,390, now Patent No. 3,498,782, dated Mar. 3, 1970. Divided and this application Feb. 24, 1970, Ser. No. 13,794

Int. Cl. B22f 9/00 3 Claims  
U.S. Cl. 148—126  
Metal powders produced by fusing and atomizing metals selected from Groups 4, 5 and 6, the rare earths, and the actinium series of the periodic table and their alloys are made highly compactible by reducing their relatively high energy state in the as-produced condition to a lower energy state accompanied by the discharge of energy in the form of heat. This reduction in energy state is accomplished by controlled annealing or by a plurality of compacting and recrushing steps, or a combination thereof.

3,690,964  
ELECTROLUMINESCENT DEVICE  
Robert H. Saul, Scotch Plains, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Aug. 8, 1969, Ser. No. 848,546  
Int. Cl. H01I 7/38, 7/34; H05 33/00 5 Claims  
U.S. Cl. 148—171



The efficiency of gallium phosphide electroluminescent devices, emitting light in the red region of the spectrum, produced by the liquid phase epitaxial deposition of p-type material on an n-type substrate depends in part on the concentration of zinc and oxygen in the gallium solvent used in the deposition and on the heat treatment after deposition. It has been found that inclusion in the gallium of 0.03 mole percent zinc and 0.35 mole percent Ga<sub>2</sub>O<sub>3</sub> lead to the production of mounted devices of greater than 6 percent photon efficiency when junction formation is followed by a suitable heat treating schedule.

### 3,690,965 SEMICONDUCTOR EPITAXIAL GROWTH FROM SOLUTION

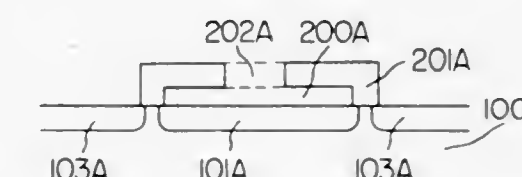
Arpad Albert Bergh, Murray Hill, Carl Ralph Paola, Westfield, and Robert H. Saul, Scotch Plains, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.  
Filed Nov. 29, 1971, Ser. No. 202,837  
Int. Cl. H01I 7/38

U.S. Cl. 148—172 14 Claims  
Crystalline layers of Group III-V semiconductor materials are grown epitaxially from solution by a method which includes the isolation of small equal portions of solution from a solution reservoir. The portions in contact with the crystal substrate are constrained in a direction perpendicular to the substrate to be less than 3 millimeters thick before crystal growth is initiated by lowering the temperature of the substrate and its contacting solution. At the termination of growth, the depleted solution

is removed from the grown layer leaving a surface sufficiently perfect to allow further processing without an intervening grinding or polishing operation.

3,690,966  
METHOD OF MANUFACTURING  
MICROSTRUCTURES  
Yutaka Hayashi and Yasuo Tarui, Tokyo, Japan, assignors to Kogyo Gijutsuin, Tokyo-to, Japan  
Filed Mar. 31, 1970, Ser. No. 24,168  
Claims priority, application Japan, Oct. 15, 1969, 44/81,843  
Int. Cl. H01I 7/44

U.S. Cl. 148—187 8 Claims



A method of manufacturing a microstructure which comprises forming a substance layer on the surface of a workpiece, working said substance layer into a desired configuration during or after said formation thereof, changing the composition of a portion of the said surface layer 7, said surface layer having a hole in the portion of said surface layer whose composition has been changed, removing the remainder of said substance layer previously formed through said hole, and utilizing as a processing means the portion of said surface layer of changed composition, adjacent to said workpiece.

3,690,967  
METHOD FOR THE PRODUCTION OF A  
GERMANIUM PLANAR TRANSISTOR  
Helmut Schädlich and Wolfgang Schembs, Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Berlin and Erlangen, Germany  
Filed July 7, 1970, Ser. No. 52,912  
Claims priority, application Germany, July 9, 1969, P 19 34 820.0  
Int. Cl. H01I 7/44

U.S. Cl. 148—187 1 Claim  
A method for the production of a germanium planar transistor, wherein the base zone and the emitter zone are being produced through indiffusion of doping materials into a germanium monocrystal of a certain conductivity type. Donors are diffused into the adjoining germanium surface from a donor containing SiO<sub>2</sub> layer. The germanium surface is masked with an interim layer consisting of pure SiO<sub>2</sub> outside the area which is to be diffused with donors. The donor containing SiO<sub>2</sub> layer is used as a mask in the acceptor diffusion.

3,690,968  
METHOD FOR FORMING A FIELD EFFECT  
DEVICE  
Charles H. Fa, Santa Clara, and Clarence K. Suzuki, San Jose, Calif., assignors to Advanced Memory Systems, Inc., Sunnyvale, Calif.  
Filed Mar. 5, 1971, Ser. No. 121,259  
Int. Cl. H01I 7/36

U.S. Cl. 148—188 37 Claims  
A method for fabricating semiconductor devices by means of certain in-situ and encapsulating operations thus minimizing or desensitizing the environmental contaminants. The invented process when used to produce insulated gate field effect transistors produces improved process yields and devices with improved electrical characteristics.



3,690,969

**METHOD OF DOPING SEMICONDUCTOR SUBSTRATES**

Robert Guy Hays, Scottsdale, Ronald Charles Pennell, Mesa, and Edwin Emmett Reed and Charles Edward Volk, Scottsdale, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 3, 1971, Ser. No. 139,505  
Int. Cl. H01l 7/34

U.S. Cl. 148—188

10 Claims

There is disclosed a method of controlling surface dopant concentration in a semiconductor material in which the dopant is diffused from a doped oxide source. The method involves the use of an oxidizing ambient during the doping operation which creates a growing interface oxide barrier to moderate the doping of the substrate. Control of the process is obtained by adjusting the partial pressure of the oxidant and by controlling the amount of time the semiconductor material is kept in the diffusion chamber. This process permits the use of a standard highly doped oxide coating to achieve different and controllable surface concentrations of dopants diffused from the doped oxide into the semiconductor material by controlling the rate of growth of the interface oxide barrier which results from the use of the oxidizing ambient.

3,690,970

**PROPELLANT POWDERS CONTAINING NITROCELLULOSE, STABILIZED WITH CERTAIN ALDEHYDES**

Gunther Schreiner and Ernst-Joachim Stoetzer, Kleine Geest, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing, Filed Aug. 15, 1969, Ser. No. 850,647  
Claims priority, application Germany, Aug. 16, 1968, P 17 96 009.7

Int. Cl. C06b 19/06, 5/00, 5/04

U.S. Cl. 149—2

7 Claims

A single or multiple-base propellant powder having improved ballistic, mechanical and chemical properties which comprises a nitrocellulose or nitroglycerin base powder and an effective amount of an aliphatic or aromatic aldehyde.

3,690,971

**PYROTECHNIC COMPOSITION FOR COLORED SMOKE PRODUCTION**

Frank C. Gunderloy, Santa Susana, Charles L. Hamermesh, Tarzana, and Ross I. Wagner, Woodland Hills, Calif., assignors to North American Rockwell Corporation

No Drawing, Filed Aug. 11, 1970, Ser. No. 63,033  
Int. Cl. C06d 3/00

U.S. Cl. 149—19

20 Claims

A pyrotechnic composition for colored smoke production including a dye precursor which is capable of reacting in situ to yield a sublimable dye which will recondense as a colored smoke and a heat producing composition which is capable of generating sufficient heat to react the dye precursor to yield the sublimable dye and to sublime the dye without substantial destruction thereof.

3,690,972

**GREEN FLARE COMPOSITION**

Seymour M. Kaye, Morris Plains, and Bossie Jackson, Jr., Newark, N.J., assignors to the United States of America as represented by the Secretary of the Army  
No Drawing, Filed July 16, 1971, Ser. No. 163,493  
Int. Cl. C06d 1/10

U.S. Cl. 149—19

10 Claims

The combination of a finely divided non-halogenated organic fuel such as an acetal resin and a chlorinated barium compound as an oxidizing material to produce a pyrotechnic composition emitting radiation in the green spectral region with minimal overtones of extraneous colors, thus enabling a positive color identification.

3,690,973

Patent Not Issued For This Number

3,690,974

**METHOD FOR MANUFACTURING A TEMPERATURE DETECTING WIRE**

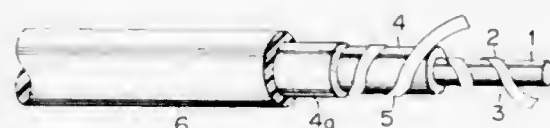
Toshinobu Kawazoe, 863-1 Shiro, Tokorozawa-shi, Saitama-ken, Japan

Filed Dec. 2, 1969, Ser. No. 881,425

Claims priority, application Japan, Dec. 17, 1968, 43/92,026; Jan. 21, 1969, 44/3,815  
Int. Cl. H01b 13/06

U.S. Cl. 156—51

5 Claims



A method for manufacturing a temperature detecting wire which comprises the steps of heating a mixture of vanadium pentoxide and diammonium hydrogenphosphate to a temperature of 500° to 550° C. in an atmosphere of nitrogen gas, reducing most of the vanadium pentoxide to vanadium dioxide by hydrogen evolved through thermal decomposition of the diammonium hydrogenphosphate, allowing a reaction mixture to cool in an atmosphere of nitrogen gas, and then heating it again to a temperature of 1100° to 1200° C. to complete the reaction of reduction, quenching the resultant product to form a lump of fine crystals of vanadium dioxide, grinding said lump of fine crystals of vanadium dioxide into powders of a thermosensitive material, adding to said powders a binder mainly consisting of synthetic resin, and inserting a thermosensitive layer consisting of a mixture of said powders and binder into the interspaces between a plurality of conductive wires.

3,690,975

**MANIPULATION OF FILAMENTS**

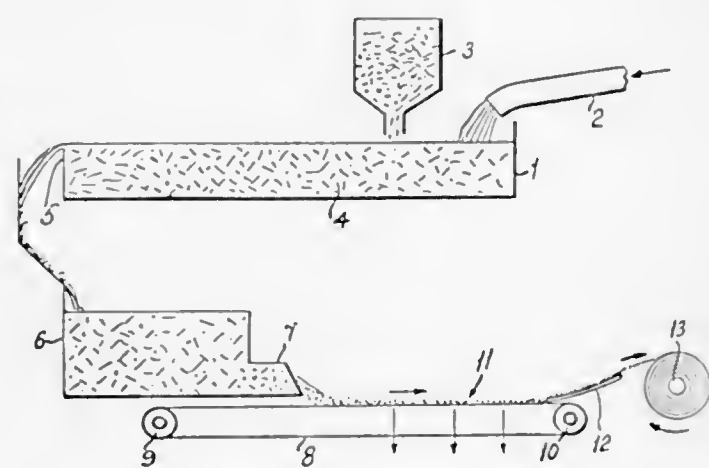
Denis William Groombridge, Spondon, England, assignor to Courtaulds Limited, London, England

Filed Nov. 18, 1969, Ser. No. 877,783

Int. Cl. B29j 5/00

U.S. Cl. 156—62.2

7 Claims



A process for the production of an assembly of oriented staple fibres which comprises feeding a dispersion of staple fibres in a liquid medium at a rate such that laminar flow conditions are experienced, onto a perforate surface through which the liquid medium may pass but on which the staple fibres are retained, so that the staple fibres lie on the perforate surface substantially at right angles to the direction of flow of the dispersion. The assembly of

fibres may be removed from the perforate surface in the side-by-side contact with adjacent filaments and to form a unitary assembly, and drawing the assembly to adjust example, for the production of resin composites.

3,690,976

**METHOD OF MAKING DECORATIVE WOOD PANELS**

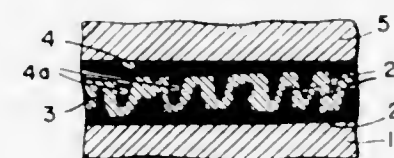
Tutomu Nakajima, Osaka, and Tadasi Shyaku, Hyogo, Japan, assignors to Asahi Fancy Plywood Co., Ltd., Osaka, Japan

Filed Oct. 23, 1969, Ser. No. 868,767

Int. Cl. B32b 31/12

U.S. Cl. 156—90

1 Claim



A method for producing an overlaid decorative wood panel which does not show cracks in its veneer. A gluing agent prepared by mixing a thermosetting resin gluing agent and a thermoplastic resin gluing agent in the ratio of about 1:0.5 to about 1:2 is applied to a substrate wood member. Thereafter, a non-sized paper is applied into which the gluing agent for paper is allowed to permeate and set to touch. A thermal pressing is given to the paper, a gluing agent for a decorative veneer is applied thereto, and the decorative veneer is fastened thereto.

3,690,977

**METHOD FOR MAKING AIR-PERMEABLE WATER-PROOF PRODUCTS HAVING FABRIC-LIKE AESTHETIC PROPERTIES**

John T. Loft, Springfield, Steven G. Plovan, Livingston, and Clifford M. Vogt, Madison, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing, Filed June 4, 1970, Ser. No. 43,563

Int. Cl. D04h 3/16; B32b 5/24

U.S. Cl. 156—167

6 Claims

Novel products are described which possess a capability of transmitting air and moisture vapor, are waterproof, and have fabric-like aesthetic properties. These products may have applications such as rainwear material, tent material, garment liners, and shoe liners. These products may be made by spray spinning filamentary polymer material onto open-celled polymer film, or into non-cellular elastic polymer film with the additional steps of stretching and heat setting creating a stable open-celled structure in the film portion of the product. Subsequent calendaring of the product may further improve its fabric-like aesthetic properties.

3,690,978

**METHOD OF PRODUCING TAPE-SHAPED ASSEMBLY OF ELASTIC FILAMENTS**

Hirofumi Nishizawa, Ashiya, Shigeo Kitaura, Osaka, and Misao Sumoto, Hideki Komagata, and Hiroshi Matsumoto, Ootsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Aug. 25, 1969, Ser. No. 852,581

Claims priority, application Japan, Aug. 24, 1968, 43/60,791; Oct. 18, 1968, 43/76,309; Dec. 4, 1968, 43/89,223  
Int. Cl. D02g 3/22; D04h 3/16

U.S. Cl. 156—167

4 Claims

Method of producing tape-shaped assembly by melt spinning an elastic polymer into filaments, cooling the filaments, arranging the filaments while still tacky to effect



the separating elongation (defined in specification) between adjacent filaments to less than 150%.

3,690,979

**METHOD OF LAYING UP PLYWOOD PANELS**

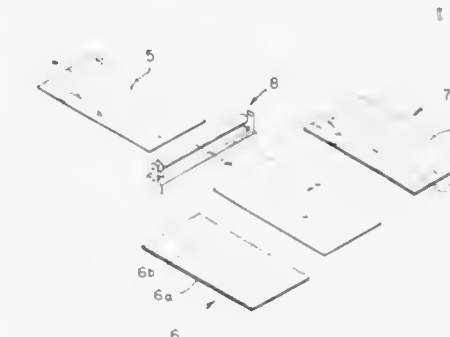
Reino A. Jarvi, Bellevue, Wash., assignor to Simpson Timber Company, Seattle, Wash.

Filed Nov. 18, 1969, Ser. No. 877,603

Int. Cl. B32b 31/06, 31/14

U.S. Cl. 156—182

7 Claims



Plywood panels of five or more plies are laid up by coating the outer plies, i.e. the face and back plies, on one side with a long flow phenolic adhesive, laying one piece cross band veneers over each of the adhesive coated veneers to form a series of two ply sandwiches, coating a sheet of center veneer on both sides with a fast curing adhesive relative to the curing time of the long flow adhesive, laying the adhesive coated center veneer over the uncoated cross band sheet of veneer of one of the two-ply structures and laying a second two-ply structure over the adhesive coated center, the cross band of the second two-ply sandwich contacting the adhesive coated center ply.

3,690,980

**THERMOSETTING LAMINATES**

Dusan C. Prevorsek, Morristown, Hsin L. Li, Parsippany, Paul J. Koch, Mount Freedom, Hendrikus J. Oswald, Morristown, and George J. Schmitt, Madison, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Application Apr. 4, 1968, Ser. No. 718,858, now Patent No. 3,578,552, which is a continuation-in-part of application Ser. No. 604,255, Dec. 23, 1966, now Patent No. 3,520,720. Divided and this application June 29, 1970, Ser. No. 60,180

The portion of the term of the patent subsequent to July 14, 1987, has been disclaimed  
Int. Cl. B31f 43/00

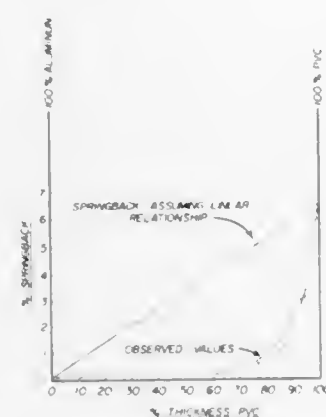
U.S. Cl. 156—199

2 Claims

A cold formable sandwich structure which has a thermosetting resinous core between face sheets comprising laminae of a thermoplastic sheet which incorporates a metallic foil. The metal foil-thermoplastic resin facing sheets are of sufficient thickness and strength so that the sandwich containing the thermosetting core between the



face sheets may be cold-formed into shaped articles and such shape as is imparted to it is retained by the thermo-



plastic face sheets without external constraint on the shape as the thermosetting core is subsequently cured at relatively high temperature.

3,690,981

# PROCESS FOR THE MANUFACTURE OF LAMINATED ARTICLE

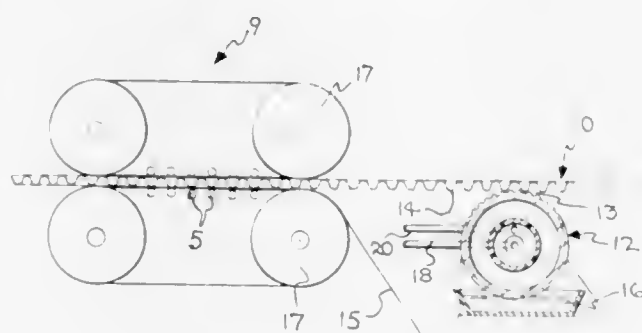
Frank J. Di Frank and Glenn W. Maze, Toledo, Ohio, assignors to Owens-Illinois, Inc.

Filed Mar. 2, 1970, Ser. No. 15,688

Int. Cl. B31f 1/20; C09j 3/02

U.S. Cl. 156—210

3 Claims



A novel process for the fabrication of a laminated article of manufacture wherein raw starch adhesive solution is first converted to a partially gelatinized starch, secondly, the just prepared partially gelatinized starch is applied to a receptive substrate before it and at least one lamina is brought together in bonding position, and then the partially gelatinized starch is essentially substantially gelatinized to produce the desired laminated article of manufacture.

3,690,982

# FILAMENTARY OR SHEET-LIKE MATERIAL OF POLYMERIC SUBSTANCES AND METHOD AND APPARATUS FOR PRODUCING SAID MATERIAL

Ole-Bendt Rasmussen, 28 Rugmarken, Farum, Denmark

Original application June 7, 1966, Ser. No. 555,835, now Patent No. 3,505,162. Divided and this application June 27, 1969, Ser. No. 854,004

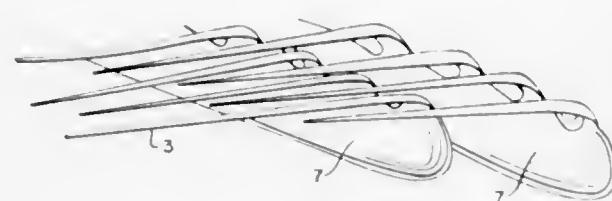
Int. Cl. D04b 39/00

U.S. Cl. 156—148

8 Claims

Process of making filamentary or sheet-like materials by extruding an extrudable synthetic polymeric material with at least one other extrudable material in the form of a multiplicity of thin interspersed lamellae extending in closely spaced relation generally in the extrusion direction, combining the lamellae thus formed into a composite unitary stream, drawing out from at least one surface

of the lamellae tentacles extending generally in the extrusion direction and solidifying the resultant stream into filamentary or sheet-like form. The lamellae can be subdivided into short segments along their length and these



segments combined into plural separate distinct streams with the tentacles being drawn out from a surface of some or all of these segment streams instead of from a composite stream of the lamellae directly.

3,690,983

# PROTECTION OF INFORMATION IN RECORDING MATERIAL

Daniel Alois Claeys, Morsel, Belgium, assignor to Gevaert-Agfa N.V., Morsel, Belgium

No Drawing. Filed Sept. 3, 1969, Ser. No. 855,022

Claims priority, application Great Britain, Sept. 3, 1968, 41,794/68

Int. Cl. B32b 31/12, 31/26

U.S. Cl. 156—230

5 Claims

A relief image is formed by exposing to a heat pattern a heat-sensitive recording material comprising a generally uniform layer consisting essentially of a continuous phase of hydrophilic binding agent having distributed therethrough in substantially discrete, generally contiguous relationship a dispersed phase of particles consisting essentially of a hydrophobic thermoplastic polymer, in a weight ratio relative to the binder phase in excess of 1:1, the heat of such pattern being sufficient to at least partially coalesce the polymer particles in the heated area and thereby significantly reduce the fluid permeability of the layer in the heated regions thereof, and thereafter developing the exposed heat-sensitive recording material by washing off the unheated regions thereof of substantially unreduced permeability while leaving the remaining portions of the coalesced particles to form the relief image, is given a protective covering by applying to the relief image with pressure a hydrophilic colloid layer carried on a temporary hydrophobic sheet support, and stripping off the temporary sheet support so as to leave the colloid layer superimposed upon the relief image. Preferably, the colloid protective layer has a thickness of 3–10 $\mu$  and preferably the hydrophilic colloid layer is wet with an aqueous liquid which can contain a softening agent for the hydrophilic colloid when the colloid layer is applied to the relief layer.

3,690,984

# RELEASABLE MOUNTING METHOD OF PLACING AN ORIENTED ARRAY OF SEMICONDUCTOR DEVICES ON THE MOUNTING

William R. Wanesky, Wescosville, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Application Apr. 10, 1968, Ser. No. 729,859, now Patent No. 3,632,074, which is a continuation-in-part of application Ser. No. 673,900, Oct. 9, 1967. Divided and this application July 30, 1970, Ser. No. 64,898

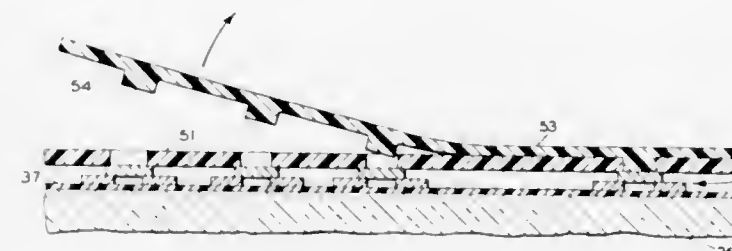
Int. Cl. B44c 1/28, 3/12; H01c 7/00

U.S. Cl. 156—235

6 Claims

An oriented array of small, fragile electrical devices such as beam lead transistors or integrated circuits,

partially embedded in wax, are removed from the wax and transferred to a releasable mounting without disrupting the orientation of the devices. The releasable mount-



ing comprises a plate with a layer of silicone rubber or resin which exerts a suction or vacuum holding force on the array of oriented devices.

3,690,985

# METHOD FOR FORMING A MATTE FINISH ON A SURFACE

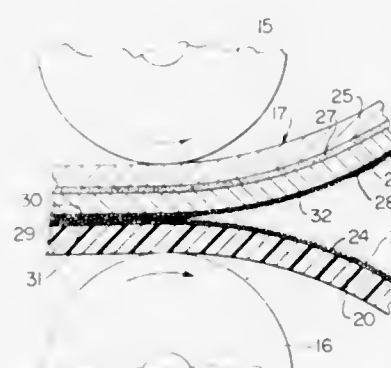
Herbert K. Price, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Dec. 7, 1970, Ser. No. 95,835

Int. Cl. B32b 31/18

U.S. Cl. 156—254

12 Claims



A matte finish is provided on a desired surface by the heating and compressing of a fluorocarbon coating to the desired surface so that the coating is secured thereto. Thereafter, the coating is split between opposed sides thereof so that one split part of the coating remains on the surface to provide the matte finish thereon and the other split part of the coating is removed from the surface.

3,690,986

# CARTON LABELING METHOD

David L. Pearl, Atlanta, George E. Harris, Marietta, and John G. Waller, College Park, Ga., and Beverly P. Head, Jr., Birmingham, Ala., assignors to W. R. Grace & Co., Duncan, S.C.

Application June 17, 1968, Ser. No. 737,601, which is a continuation-in-part of application Ser. No. 626,288, Mar. 27, 1967. Divided and this application Aug. 4, 1969, Ser. No. 855,063

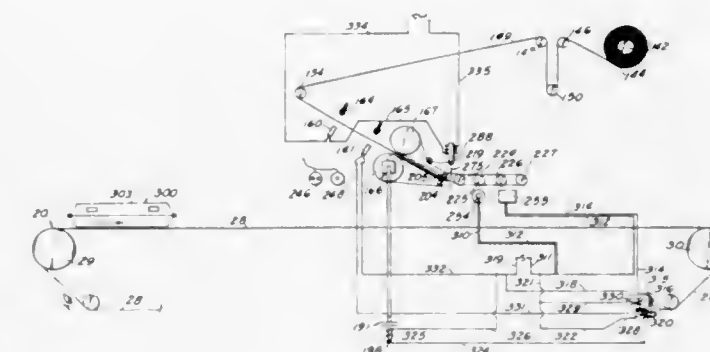
Int. Cl. B32b 31/04

U.S. Cl. 156—257

5 Claims

Carton closing and labeling method and apparatus wherein an open carton of the type utilized for storing eggs is conveyed along a conveyor belt with the eggs positioned in the egg receiving cells of the lower portion of the carton, the lid of the carton is pivoted over the bottom section of the carton and latched to the bottom section of the carton, the carton is stamped with a date; the top surface of the carton is heated prior to the application of the label, and a label is applied to the top surface of the

closed carton. The label contains a thin layer of heat responsive adhesive, and after the label is applied to the top



surface of the carton, the label is heated and pressed onto the top surface of the carton.

3,690,987

# METHOD OF MAKING AN INSULATED BUILDING PANEL UNIT

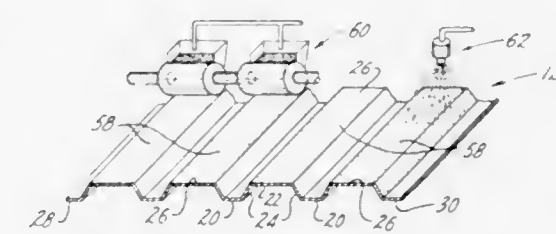
Bernard E. Curran, Sewickley, Rodney W. Gartner, Coraopolis, and Robert G. Lindner, Sewickley, Pa., assignors to H. H. Robertson Company, Pittsburgh, Pa.

Original application Apr. 12, 1968, Ser. No. 720,909, now Patent No. 3,555,756, dated Jan. 19, 1971. Divided and this application Oct. 29, 1969, Ser. No. 872,029

Int. Cl. B32b 31/00

U.S. Cl. 156—257

10 Claims



An insulated building panel unit consisting of a metal liner sheet, a layer of rigid foamed plastic material self-adhered to the liner sheet and a facing sheet adhesively secured to the layer of foamed plastic material. Selected regions of the surface of the foamed plastic material are modified to provide essentially flat surfaces for adhesive bonding with essentially flat surfaces of the facing sheet. A method is described for making the present insulated building panel unit.

3,690,988

# MICROTOME WITH MEANS FOR COLLECTING SECTIONS OF THE SPECIMEN ON A TAPE

Sven Gustav Folke Ullberg, Danderyd, Sweden, assignor to Incentive Research & Development AB, Bromma, Sweden

Filed Dec. 16, 1969, Ser. No. 885,535

Int. Cl. B26d 4/46

U.S. Cl. 156—353

9 Claims

A microtome for section-cutting in particular of biological specimens and especially fresh-frozen specimens embedded in an ice block, comprising a knife and a specimen holder reciprocally movable relative each other in a cutting stroke and opposite return stroke so that during the cutting stroke the knife passes above the specimen holder and can cut a section from the upper surface of a specimen block supported by the specimen holder. A tape extends from a wind-off supply roll to a wind-on collecting roll above the knife and the specimen holder



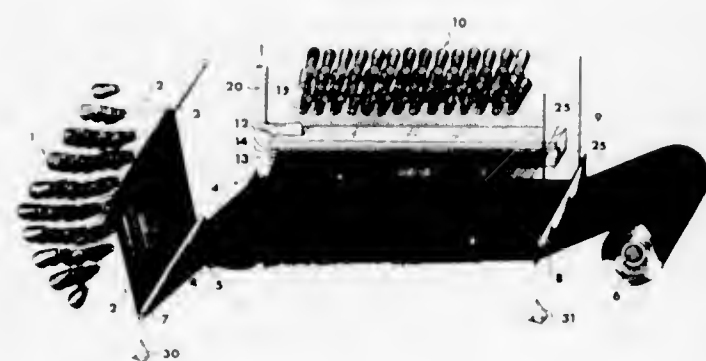
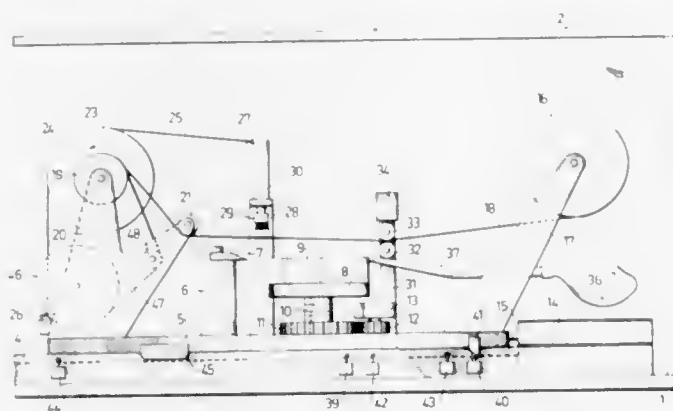
preferably in a direction parallel to the direction of the mutual movement between the knife and the specimen holder. During the cutting stroke the tape is pressed against the upper surface of the specimen block on the specimen holder immediately in front of the knife. The tape is preferably provided with an adhesive coating on its lower side and the section cut from the specimen block adheres to the lower side of the tape pressed against the surface of the specimen block during the cutting of the section. In the interval between two successive cutting strokes the tape is fed from the wind-off supply roll to the wind-on collecting roll by a length of tape substantially equal to the length of the cutting stroke, whereby the sections cut

associated with the building drum and provides automatic adjustment for reasonable variations in bead diameter and a positive adjustable bead setting pressure (up to a magnitude of 3000 lbs. per bead).

**3,690,990**  
**APPARATUS FOR MANUFACTURE OF**  
**NON-WOVEN FABRIC**  
 Yasuhiro Izumi, 19-8, 1-chome, Higashi-Kaigan,  
 Tsujido, Fujisawa, Kanagawa, Japan  
 Filed Feb. 10, 1970, Ser. No. 9,681  
 Int. Cl. B29h 9/00

U.S. Cl. 156-441

1 Claim



from the specimen block are obtained mounted in an orderly sequence upon the tape wound onto the collecting roll. Between successive cutting strokes the specimen holder is raised towards the knife by a predetermined number of incremental steps, whereby the thickness of the next section to be cut from the specimen block is determined. The operation of the microtome is automatically controlled by a control unit according to a preset program, which may be varied so that different sections of different thickness are cut from the specimen block and so that only predetermined sections of the total number of sections cut from the specimen block are collected on the tape, whereas the remaining sections are discarded.

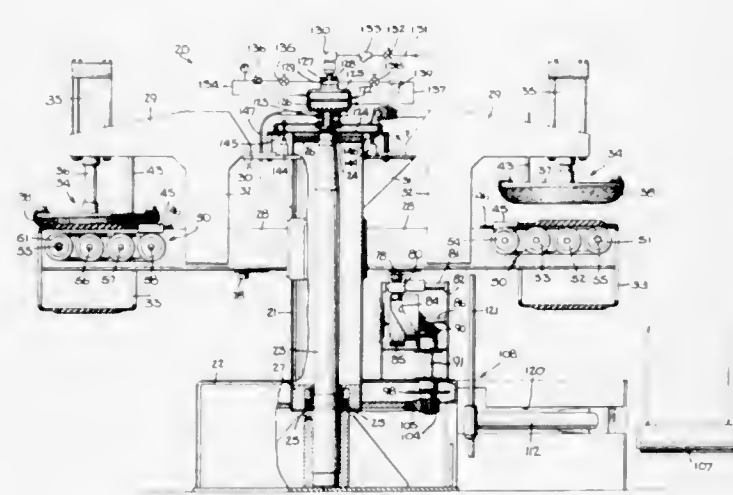
Method and apparatus for manufacture of non-woven fabric in which weft yarns are ejected by a jet of air under high pressure ejected through a slit over warp yarns extended in side-by-side and equidistantly spaced apart relation with each other and their intersections are connected together.

**3,690,991**  
**Patent Not Issued For This Number**

**3,690,992**  
**APPARATUS FOR PRESSING THE SEAMS OR**  
**SPLICES OF RAW TIRES**  
 Hubert Breuer, Zweifall, Germany, assignor to Uniroyal  
 Englebert Deutschland AG, Aachen, Germany  
 Filed Dec. 7, 1970, Ser. No. 95,492  
 Claims priority, application Germany, Dec. 20, 1969,  
 P 19 64 018.7  
 Int. Cl. B29h 7/08

U.S. Cl. 156-412

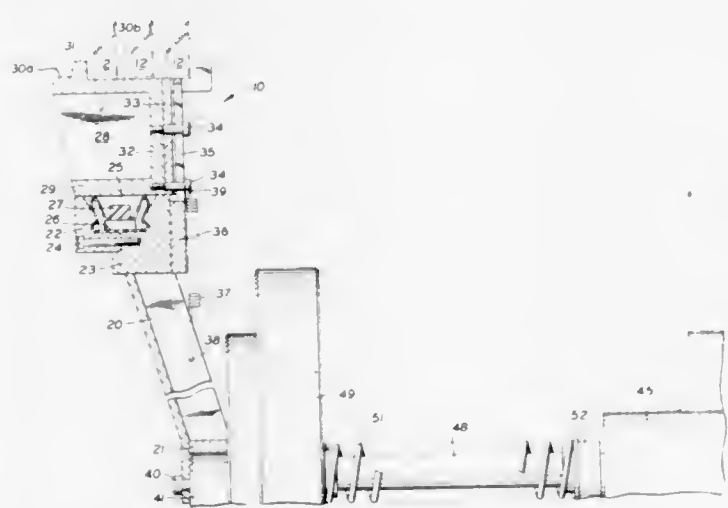
14 Claims



**3,690,989**  
**TIRE BEAD HANDLING APPARATUS**  
 Robert F. McCafferty, Akron, and Gerald D. Riggle,  
 Stow, Ohio, assignors to Akron Standard, division of  
 Eagle-Picher Industries, Inc., Cincinnati, Ohio  
 Filed May 6, 1970, Ser. No. 35,093  
 Int. Cl. B29h 17/22

U.S. Cl. 156-403

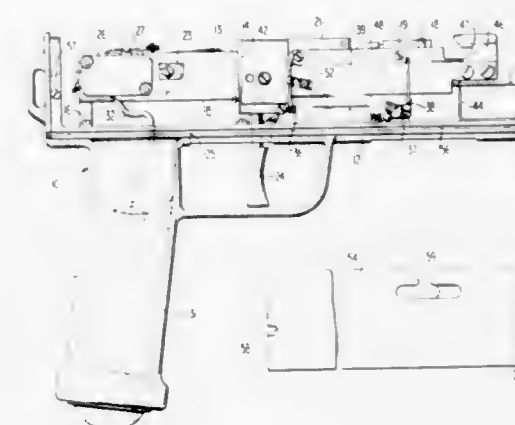
2 Claims



Apparatus for handling large diameter bead wire bundles for placement on a tire building drum. Apparatus is

A continuously running, turret-type apparatus for automatically and simultaneously stitching the rubber tread and

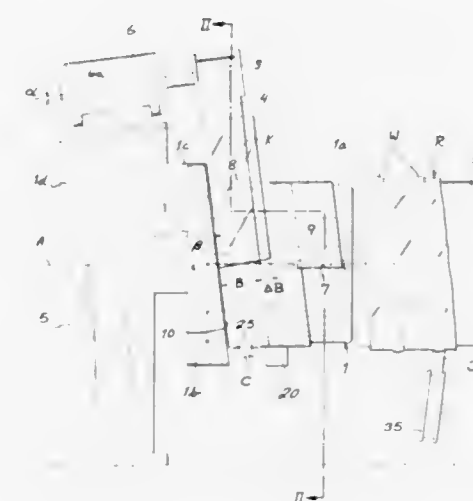
sidewall seams or splices of several raw pneumatic tires in cylindrical or flat band form at a time, is disclosed. The vertical rotatable turret structure carries a star-shaped arrangement of a relatively large plurality of radial, horizontal, vertically aligned pairs of arms, of which the lower ones are designed for supporting raw tires being worked on, while the upper ones carry the respective automatically activated and deactivated fluid pressure cylinders for lowering and raising the associated air cushions or pressing bags toward and away from the underlying supporting arms. Raw tires are manually loaded into the apparatus one at a time, but ejection of pressed tires in like sequence is automatic. Power for rotating the turret structure and for operating in synchronism therewith the respective mechanisms by means of which the pressed tires are loosened and ejected from the various lower arms as the latter reach the unloading/loading station, is taken off a common drive mechanism.



**3,690,993**  
**APPARATUS FOR MAKING HELICAL-SEAM**  
**TUBING FROM A SYNTHETIC-RESIN STRIP**  
 Manfred Hawerkamp, 47 Altenrather Str.,  
 521 Troisdorf, Germany  
 Filed June 12, 1970, Ser. No. 45,716  
 Claims priority, application Germany, June 12, 1969,  
 P 19 29 926.4  
 Int. Cl. B31c 5/00

U.S. Cl. 156-429

8 Claims



An apparatus for forming helical-seam tubing in which an endless transport band passes over at least one helical turn along the periphery of a cylindrical mandrel to deposit and form a synthetic-resin band into helical configuration thereon. The transport band is deflected inwardly into the interior of the mandrel at an inlet slot and emerges at an outlet slot for return to a drive roller.

**3,690,994**  
**HAND-CARRIED YARN SPLICING DEVICE**  
 Willie Vincent Williams, 701 S. Green St.,  
 Dalton, Ga. 30720  
 Continuation-in-part of application Ser. No. 790,077, Jan.  
 9, 1969, now Patent No. 3,607,559. This application  
 Oct. 7, 1970, Ser. No. 78,812  
 Int. Cl. B65h 21/00

U.S. Cl. 156-433

1 Claim

A hand-held battery-powered apparatus for splicing thermoplastic yarn embodies a pistol-shaped body having a primary guide rail thereon and a fixed heating element near one end of this rail. A trigger operated carriage moves on the rail and carries coacting jaw means which

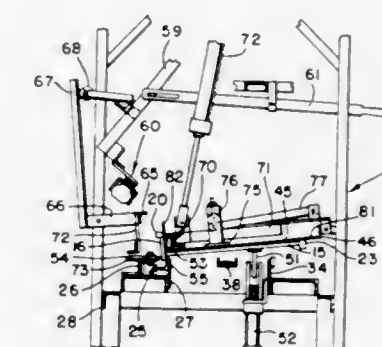
grip and move the yarn ends into close proximity with the radiant heating element. The heating element is ener-

gized automatically by the closing of a switch when the carriage is retracted.

**3,690,995**  
**PLASTIC LAMINATING APPARATUS**  
 George W. Loy, Scio, Ohio, assignor to Scio Cabinet  
 Company, Inc., Scio, Ohio  
 Original application Dec. 15, 1969, Ser. No. 885,014.  
 Divided and this application Feb. 10, 1971, Ser. No.  
 114,290  
 Int. Cl. B32b 3/04

U.S. Cl. 156-478

5 Claims

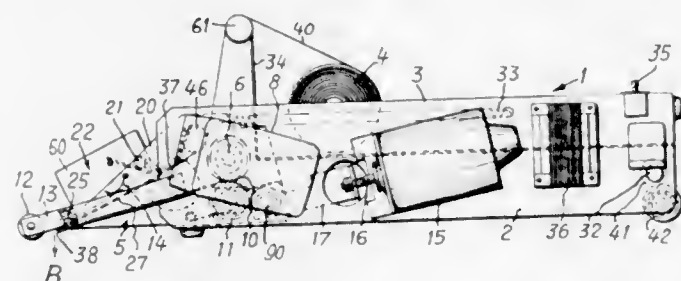


A plastic laminating apparatus for laminating plastic sheet material to a countertop core having a backplash attached at right angles thereto during a single pass through the apparatus. The apparatus consists of a plurality of longitudinally spaced work stations through which the work is successively moved for progressively shaping and adhering the plastic laminate to the work, such work being guided through the apparatus by receipt of a downwardly projecting portion from the work in a guide track extending the entire length of the apparatus. A back die bends the laminate to conform to the general shape of the backplash and countertop after heating, and fingers and pressure rolls are used to progressively bend and press the projecting edges of the laminate into firm contact with the edges of the countertop and backplash. Floating cutters are also used to trim the excess laminate material extending beyond the countertop and backplash edges, and such excess material may be picked up by a suction blower or removed by a rotary brush prior to passage through final pressure rolls.



**3,690,996**  
**APPARATUS FOR THE APPLICATION OF SELF-ADHERING LABELS OR THE LIKE**  
 Kurt Rünzi, Kusunacherstrasse 59, Zumikon, Switzerland  
 Continuation-in-part of application Ser. No. 708,682, Feb. 27, 1968. This application July 27, 1970, Ser. No. 58,519  
 Claims priority, application Switzerland, Mar. 1, 1967, 2,984/67  
 Int. Cl. B65c 9/18, 9/42  
 U.S. Cl. 156—542

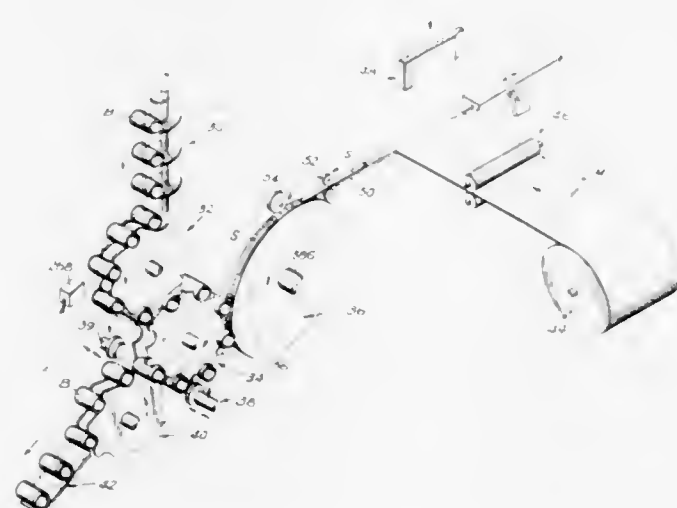
6 Claims



An apparatus for applying self-adhering pressure sensitive labels or the like to articles comprising a carrier band for detachably supporting the labels, and deflecting edge means about which the carrier band is guided in order to free the labels from such carrier band. A pivotably mounted table means cooperates with the carrier band, and the deflecting edge means is disposed at an outer end of such pivotably mounted table means. Additionally, motor-driven transport means are provided for advancing the carrier band, and control means serve to stop the motor-driven transport means as a function of the feed position of a label.

**3,690,997**  
**APPARATUS FOR SECURING STRIP MEMBERS TO CONTAINER BODIES**  
 Karl Bofinger, Cincinnati, Ohio, and Walter Thomas Hake, Wyckoff, N.J., assignors to American Can Company, New York, N.Y.  
 Original application Nov. 21, 1966, Ser. No. 595,809, now Patent No. 3,598,675, dated Aug. 10, 1971. Divided and this application Sept. 22, 1970, Ser. No. 74,402  
 Int. Cl. B65c 3/12, 9/02  
 U.S. Cl. 156—567

18 Claims

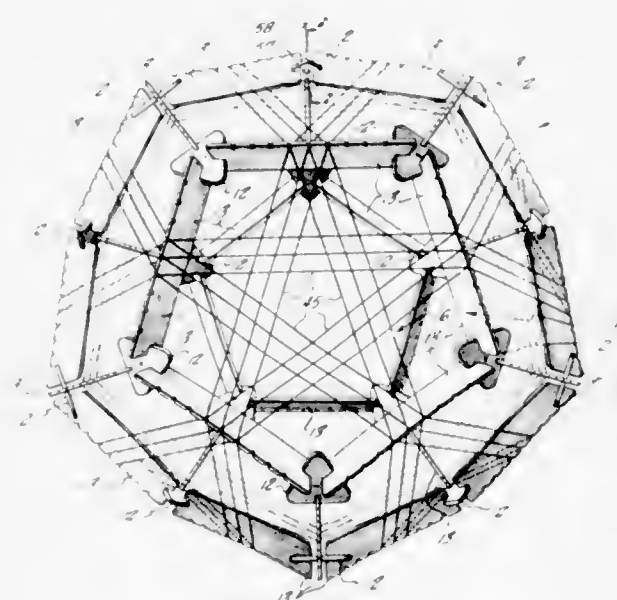


An apparatus for adhesively securing a seamed release strip to the marginal end portion of a tubular container wherein the strip is moved along a circular path of revolution and simultaneously with the movement of the strip, the container, rotating about its own axis, is moved in a

circular path of revolution tangential to the strip's path and axially aligned therewith so that a lateral edge of the strip is in substantial alignment with the marginal end portion of the container. An adhesive is applied to either the strip or the container in order that one will adhere to the other upon contact. The leading portion of the strip contacts the marginal end portion of the rotating container and is adhered thereto. The container movement and rotation subsequent to the contacting causes the strip to leave its path of revolution and the remaining portion of the strip to adhere around the marginal end portion of the container. The length of the strip exceeds the circumference of the container causing a trailing portion of the strip to overlap the leading portion upon adherence of the strip to the marginal end portion of the container. The strip is then pressed against the container causing more intimate contact therewith.

**3,690,998**  
**DODECAHEDRON ORNAMENT**  
 Olaf G. Brynjegard, 7433 Irondale Ave., Canoga Park, Los Angeles, Calif. 91306  
 Filed Nov. 30, 1970, Ser. No. 93,613  
 Int. Cl. A47g 33/08  
 U.S. Cl. 161—16

8 Claims



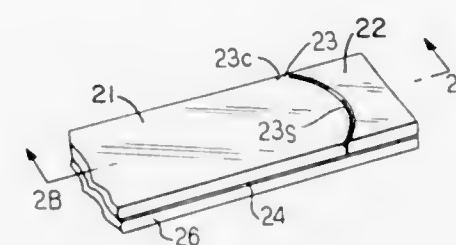
An ornament having twelve facets each defined by an open frame having corner connectors each joining three or four side members of adjoining facets. Each facet frame has four or five side members, depending upon the type of dodecahedron. The side members have notches which receive strands which extend from side member to side member of the same or opposed facets exteriorly or interiorly of the ornament to describe geometric patterns. In the case of a regular dodecahedron the corners are all similar pieces and the side members are all similar. A rhombic dodecahedron has two types of corner connectors and two types of side members.

**3,690,999**  
**PRECUT COMPOSITE TAPE STRUCTURE**  
 Henry J. Setzer, East Brunswick, N.J., assignor to Dennison Manufacturing Company, Framingham, Mass.  
 Filed Apr. 28, 1970, Ser. No. 32,608  
 Int. Cl. B32b 3/10; B41j 1/30  
 U.S. Cl. 161—39

5 Claims

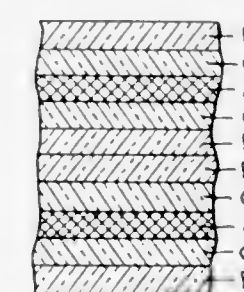
A precut tape structure for use with an embossing machine. One end of the structure includes a tab that is at least partially severed from the structure. The tab is of a configuration to facilitate manufacture and processing of the tape structure, and removal of a protective liner from

the back of the structure. The tab is also configured to reduce the possibility of machine interference and acci-



**3,691,000**  
**GLASS FIBER REINFORCED COMPOSITE ARTICLE EXHIBITING ENHANCED LONGITUDINAL TENSILE AND COMPRESSIVE MODULI**  
 Ilmar L. Kalnin, Millington, N.J., assignor to Celanese Corporation, New York, N.Y.  
 Filed Mar. 10, 1971, Ser. No. 122,842  
 Int. Cl. B32b 5/12, 27/04  
 U.S. Cl. 161—60

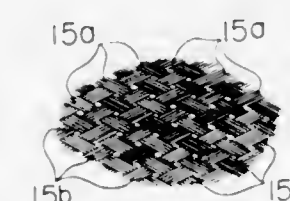
13 Claims



Glass fiber reinforced composite articles are produced which possess a surprisingly enhanced longitudinal stiffness. The composite articles comprise a resinous matrix material which has incorporated therein substantially parallel hybrid fibrous reinforcing laminate in an appropriate concentration as described. Laminae of relatively high modulus carbon fiber simultaneously serve as fibrous reinforcement in conjunction with laminae of glass fiber.

**3,691,001**  
**FLEXIBLE PROTECTING SHEATH OF AN ELONGATED FLEXIBLE OPTICAL FIBER BUNDLE**  
 Nagashige Takahashi and Teruo Oouchi, Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan  
 Filed Nov. 12, 1969, Ser. No. 875,836  
 Claims priority, application Japan, Nov. 14, 1968, 43/83,465, 43/99,327  
 Int. Cl. D06m; D06q  
 U.S. Cl. 161—96

4 Claims

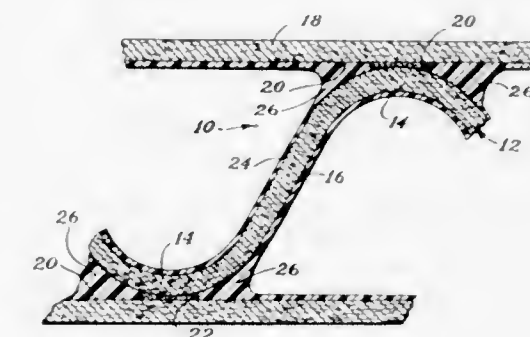


Flexible protecting sheath on an elongated flexible optical fiber bundle such as used in an endoscope and

method for forming the same. The protecting sheath comprises an elongated cylindrical braid member snugly fitted on the peripheral surface of the optical fiber bundle and impregnated with a synthetic resin material therewith to form the protecting sheath.

**3,691,002**  
**IMPREGNATED CORRUGATED BOARD**  
 William Blandy, 22 Ozark St., Lake Ronkonkoma, N.Y. 11779  
 Filed Oct. 23, 1970, Ser. No. 83,558  
 Int. Cl. B32b 3/28  
 U.S. Cl. 161—137

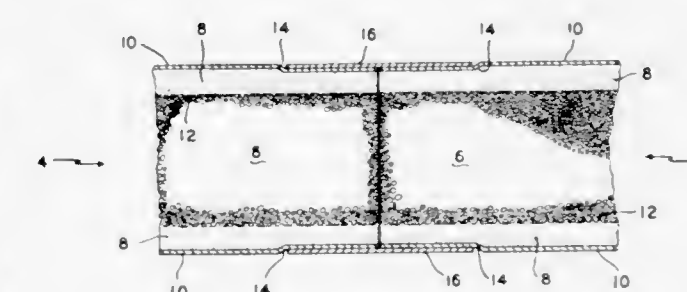
7 Claims



A sheet of paper board comprised of spacedly opposed facing sheets and a corrugated member intermediate the facing sheets is saturated with a resin which coats the corrugated member and also fills the corners at the bonded junctures of the facing sheets and the corrugated member. The method of this invention comprises the steps of forcing resin into the interior flutes of the formed paper board sheet and then rotating the sheet slowly about the longitudinal axis of the corrugations.

**3,691,003**  
**BUILDING BOARD**  
 Julius W. Etischer, Nedlands, Western Australia, Australia  
 Continuation-in-part of abandoned application Ser. No. 869,392, Oct. 24, 1969. This application Nov. 23, 1970, Ser. No. 91,709  
 Int. Cl. B32b 3/26, 5/18, 13/08  
 U.S. Cl. 161—159

7 Claims

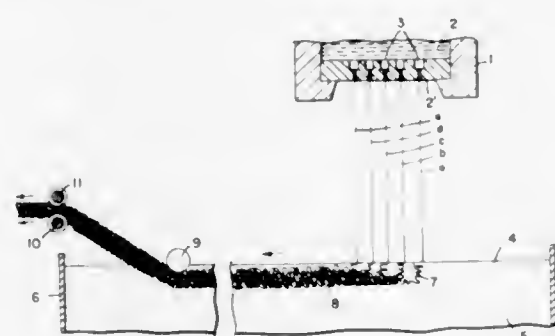


A self-supporting, load bearing building board that is relatively light in weight and economical to manufacture and use. The board has a multi-layered construction with a central core of relatively strong foraminous material, intermediate layers of a different material mechanically bonded to the opposite faces of the core and outer layers of fibrous material bonded to the intermediate layers. The intermediate layers are considerably more dense than the core material and have sufficient compression strength to



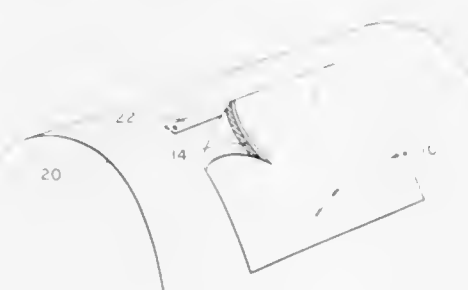
impart dimensional stability thereto. The outer layers are in tension and insure a lasting bond between the intermediate layers and core.

**3,691,004**  
**MATting OF MELT-SPUN AMORPHOUS POLYMER FILAMENTS AND PROCESS**  
 Helmut Werner, Elsenfeld, and Hans Stapp, Momlingen, Germany, assignors to Akzona Incorporated, Asheville, N.C.  
 Filed Nov. 21, 1969, Ser. No. 878,615  
 Int. Cl. D04b 3/16, 1/04  
 U.S. Cl. 161—150 27 Claims



Production of a matting of melt-spun, substantially amorphous and continuous filaments by depositing the freshly spun filaments onto the surface of a cooling bath to form overlapping self-adhering loops in at least three rows or layers, the loops being oriented at different angles by adjusting the withdrawal of the filaments in a diverging path through the bath, e.g. with the use of a supporting guide plate in contact with an outermost row of filaments. The product is a lightweight, coherent matting of self-bonded, looped filaments and is especially useful in constructing artificial ski slopes and as a reinforcement for transportable turf.

**3,691,005**  
**HEADREST WITH ADHESIVE ATTACHMENT**  
 David B. Butler, Wickford, R.I., assignor to The Kendall Company, Boston, Mass.  
 Filed Nov. 16, 1970, Ser. No. 89,717  
 Int. Cl. C09j 7/02; B32b 7/14  
 U.S. Cl. 161—167 2 Claims



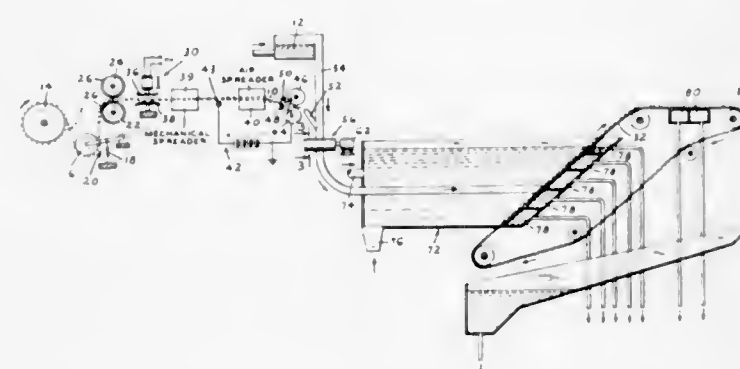
A protective cover such as a headrest is formed from a sheet of nonwoven fabric bearing along one edge a strip of adhesive, said adhesive being capable of adhering firmly to a smooth surface such as a metal or plastic strip, but showing little or no adhesion to the fabric of the headrest.

**3,691,006**  
 Patent Not Issued For This Number

**3,691,007**  
**PRINTED CIRCUIT BOARD FABRICATION BY ELECTROPLATING A SURFACE THROUGH A POROUS MEMBRANE**  
 James Pavlou, Sherman Oaks, Calif., assignor to The Mica Corporation, Culver City, Calif.  
 No Drawing. Filed Aug. 14, 1969, Ser. No. 850,248  
 Int. Cl. B01k 3/00; C23b 5/48  
 U.S. Cl. 161—213 12 Claims  
 The present patent describes a printed circuit board material comprising a rigid plastic substrate, a resistive layer carried on said substrate and a conductive film carried on said resistive layer; the improvement wherein the resistive layer is applied to a preformed conductive layer through a porous, polymeric membrane.

**3,691,008**  
**TWO-STAGE SODA-OXYGEN PULPING**  
 Hans Edmund Worster, Richmond, British Columbia, and Marian Franciszek Pudek, Coquitlam, British Columbia, Canada, assignors to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada  
 No Drawing. Filed Apr. 13, 1970, Ser. No. 28,005  
 Int. Cl. D21b 1/16  
 U.S. Cl. 162—25 9 Claims  
 Subjecting softwood chips to a mild digestion with sodium hydroxide alone, defiberizing the thus treated material and then subjecting the defiberized material to a second digestion with sodium hydroxide in the presence of an excess of oxygen.

**3,691,009**  
**METHOD FOR MANUFACTURING NONWOVEN SHEET MATERIAL**  
 Fritz Opderbeck, Dusseldorf, Theodor Ploetz, Hoesel, and Rudolf Thamm, Viersen, Germany, assignors to Feldmuehle Aktiengesellschaft, Dusseldorf-Oberkassel, Germany  
 Filed Jan. 12, 1970, Ser. No. 2,307  
 Claims priority, application Germany, Jan. 11, 1969, P 19 01 285.2  
 Int. Cl. D21f 11/00; D21h 5/12  
 U.S. Cl. 162—146 11 Claims



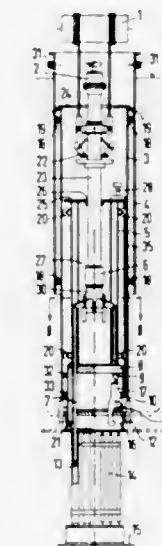
A method and apparatus for making nonwoven sheet material in which endless fibers are spread apart from each other into a fiber mat, then immersed in a forming medium, cut into fibers of finite length and formed into a sheet on a permeable support either alone or with traditional short fibers such as cellulose or ground wood fibers. The endless fibers are provided in a bundle which is beaten to loosen the fibers before the spreading step and the spreading is accomplished either by exposing the fibers to an electric field or by one or more air currents or both. The fibers are cut while immersed in the forming medium (for example, water) by a plurality of replaceable knives mounted on a roller and a counterknife. The knives are spaced about the circumference of the roller at variable distances so that when the roller is rotated the fibers are cut into different lengths.

**3,691,010**  
**METHOD AND APPARATUS FOR DEWATERING PAPER WEBS**  
 Kenneth V. Krake, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.  
 Filed July 27, 1970, Ser. No. 58,487  
 Int. Cl. D21f 11/00; D21j  
 U.S. Cl. 162—206 10 Claims



Paper webs, particularly tissue papers, formed by the wet process from an aqueous fiber slurry, are dewatered by a novel press arrangement. The method is accomplished by expelling water from a carrying felt-newly formed web combination and so eliminating the water that the felt is not rewetted by it and crushing of the sheet is avoided. Very high manufacturing speeds are attainable.

**3,691,011**  
**LOADING DEVICE FOR FUEL ELEMENTS AND CONTROL RODS IN A NUCLEAR REACTOR**  
 Joachim Krüger, Hans-Peter Schabert, Franz Schubert, and Robert Weber, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany  
 Filed Oct. 30, 1968, Ser. No. 771,898  
 Int. Cl. G21c 19/10  
 U.S. Cl. 176—30 16 Claims



Loading device for fuel elements and control rods in a nuclear reactor includes a vertically travelling double manipulator having respectively an independently actuatable control rod manipulator and fuel element manipulator.

**3,691,012**  
**PROCESS FOR PRODUCING CITRIC ACID**  
 Katsunobu Tanaka, Kazuo Kimura, and Ken Yamaguchi, Machida-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan  
 No Drawing. Continuation of application Ser. No. 692,690, Dec. 22, 1967. This application June 17, 1968, Ser. No. 737,373  
 Claims priority, application Japan, Dec. 28, 1966, 42/85,147  
 Int. Cl. C12d 1/04 15 Claims

A process for producing citric acid by fermentation which comprises culturing a bacterium capable of assimilating hydrocarbons and belonging to the genus *Arthrobacter* in an aqueous nutrient medium containing n-paraffins as the principal source of carbon under aerobic conditions. *Arthrobacter paraffineus* is the preferred bacterium. The addition of calcium carbonate, urea, higher fatty acid salts or esters and methanol, as well as various kinds of surface active agents, to the medium helps to increase the yield of citric acid.

**3,691,013**  
**PROCESS FOR PRODUCING KETOSE**  
 Shuzo Sakai, Toshio Miyake, and Yoshinori Sato, Okayama, Japan, assignors to Hayashibara Company, Okayama-shi, Okayama, Japan  
 No Drawing. Filed July 24, 1970, Ser. No. 58,146  
 Claims priority, application Japan, July 27, 1969, 44/59,262, 44/59,263  
 Int. Cl. C12b 1/00 7 Claims

A process for producing ketose composed essentially of maltulose and maltotriulose by forming a sugar containing maltose and maltotriose as chief constituents from starch by the actions of  $\alpha$ -1,6-glucosidase and  $\beta$ -amylase, isomerizing the aldoses with an alkaline solution, oxidizing the residual aldoses with a dehydrogenase, and then separating the acid thereby produced from ketose.

**3,691,014**  
**METHOD FOR PRODUCING PROTEASE**  
 Masao Isono and Katsumi Tomoda, Hyogo, Koichi Miyata, Osaka, Kazutaka Maejima, Hyogo, and Reijiro Kodama, Kyoto, Japan, assignors to Tokeda Chemical Industries, Ltd., Higashiyodogawa-ku, Osaka, Japan  
 Continuation-in-part of application Ser. No. 641,001, May 24, 1967. This application Oct. 9, 1969, Ser. No. 868,280  
 Int. Cl. C12d 13/10 5 Claims

A protease which has strong caseinolytic and fibrinolytic activities is abundantly produced by *Serratia* sp. E-15 when the microorganism is cultivated in a medium containing milk casein and soybean meal extract. The protease is recovered from the culture medium and purified, and the purified protease is used as an effective antiinflammatory agent.

**3,691,015**  
**METHOD FOR PURIFYING ENZYMES**  
 Fritz Leidholdt, Kleinmachnow, Germany, assignor to Colgate-Palmolive Company, New York, N.Y.  
 No Drawing. Filed Mar. 18, 1970, Ser. No. 20,838  
 Int. Cl. C07g 7/026 7 Claims

Inhibitor-free readily water-soluble enzymes are prepared by comminuting animal pancreas which has been frozen immediately after slaughtering, extracting said pancreas with an alcohol containing 1-2 carbon atoms, treating said extract with a water-insoluble liquid solvent selected from the group consisting of a butyl alcohol



and an ether, precipitating said enzyme from the resulting clear layer with a water-soluble solvent selected from the group consisting of an alcohol containing 1-2 carbon atoms and a ketone at a temperature below 10° C. and recovering the enzyme.

3,691,016

# PROCESS FOR THE PREPARATION OF INSOLUBLE ENZYMES

Ravindra P. Patel, Boston, Mass., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 779,248, Nov. 26, 1968, which is a continuation-in-part of application Ser. No. 560,100, June 24, 1966. This application Apr. 17, 1970, Ser. No. 29,673

Int. Cl. A61k 19/00; C07g 7/02

U.S. Cl. 195—68

14 Claims

Insoluble enzymes are prepared by esterifying a carboxyl moiety with a compound capable of forming an activated ester with the carboxyl moiety and then condensing the activated ester with an amine moiety. At least a portion of either the carboxyl moiety or the amine moiety must be an enzyme. Exemplary of the ester forming compound is N-ethyl-5-phenyl isooxazolium-3-sulfonate.

3,691,017

# MEANS AND METHOD FOR CHEMICAL ANALYSIS

George H. Brown, Bricktown, and Robert J. Ewing, Colts Neck, N.J., assignors to Worthington Biochemical Corporation, Freehold, N.J.

Filed May 6, 1970, Ser. No. 34,926

Int. Cl. C12k 1/04

U.S. Cl. 195—103.5 R

25 Claims

A rigid or semi-rigid disposable reaction container is disclosed for use in measuring the extent or rate of optical density change produced by a reaction, which container is provided with chamber means that preferably comprises a windowed chamber and an auxiliary chamber having openings communicating with the interior thereof and interconnected by a passage of small cross-section through which solution from the auxiliary chamber containing a dissolved key reactant may be injected into the reaction chamber to initiate the chemical reaction. There is further disclosure of a disposable reaction container that is in the form of a chambered slide wherein the opening or openings providing access to the chamber means preferably occurs in the margin of the slide. There also is disclosed a disposable reaction container in the form of separable sections which are adapted to have components of the reaction mixture deposited thereon in independent separated relation on predetermined surface areas, the components being deposited in solid form preferably by lyophilization before bringing the sections of the container together in face-to-face abutting secured relation and means being provided conducive to keeping the deposited components separate from each other in the common chamber. The disclosure also describes certain procedures including the loading of the sections of the reaction container with the separated quantities of solid components of the reaction mixture followed by uniting of the sections in face-to-face relation and thereafter, when making an analysis, introducing a suitable solvent and any other component or components of the reaction mixture, the reaction being initiated by the injection of a key component. For purposes of incubation, the disposable reaction container preferably comprises an incubation chamber which is used in controlling temperature as by placing therein a metal which is responsive to a thermostatically controlled field for the generation of heat.

# DIAGNOSTIC METHOD FOR PERIODONTAL DISEASE

Thomas F. McNamara, North Caldwell, N.J., and Richard A. Winer, Marblehead, Mass., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Oct. 28, 1970, Ser. No. 84,901

Int. Cl. C12k 1/04

U.S. Cl. 195—103.5 R

3 Claims

A diagnostic method for the early detection of periodontal disease by determining the presence of  $\beta$ -D-galactosidase in crevicular fluids.

3,691,019

# RETORTING APPARATUS WITH HOOD-SHAPED UNITARY COOLANT JACKET DISPOSED OVER SCREW CONVEYOR

Ray S. Brimhall, deceased, late of Salt Lake City, Utah, by Walker Bank and Trust Co., administrator, assignor to said Walker Bank and Trust Company, administrator of the estate of said Brimhall

Filed Feb. 16, 1970, Ser. No. 11,793

Int. Cl. C10b 7/10

U.S. Cl. 202—118

10 Claims



The present invention comprises apparatus for processing carbonaceous fossil fuels such as oil shale and coal. This structure includes conveyor and heater means for progressively increasing the temperature of the carbonaceous materials, and partitioned successive chambers for collecting and condensing ascending vapors therefrom at respective heat zones. Means are provided for collecting and/or processing non-condensibles. Vaporization and condensation zones are provided with baffle means for optimizing recovery and separation. Means are also provided to ensure that a pre-soak time is provided, despite continuous through-put, wherein the carbonaceous material is pre-mixed with a hydrocarbon diluent. Discharge structure for spent material is canted upwardly to minimize escape of vapor out of the discharge area.

3,691,020

# STYRENE PLANT WASTE HEAT UTILIZATION IN A WATER DESALINATION PROCESS

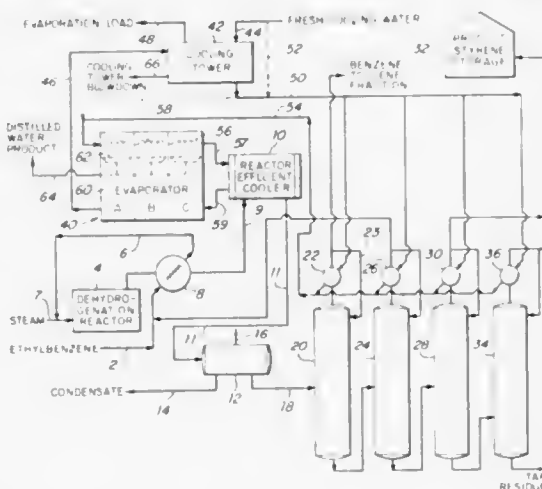
Richard E. Hughes, Belmont, Mass., assignor to The Badger Company, Inc., Cambridge, Mass.

Filed Aug. 20, 1971, Ser. No. 173,549

Int. Cl. B01d 3/02, 3/00, 1/28, 1/26, 15/00, 15/10

U.S. Cl. 203—25

12 Claims



Low temperature level waste heat recovered from the dehydrogenation reactor effluent of a styrene manufactur-

ing unit is used in the flash evaporator of a water desalination unit to produce pure water from contaminated or high mineral content water.

3,691,021

# PROCESS FOR PURIFICATION OF VINYL ACETATE BY EXTRACTIVE DISTILLATION

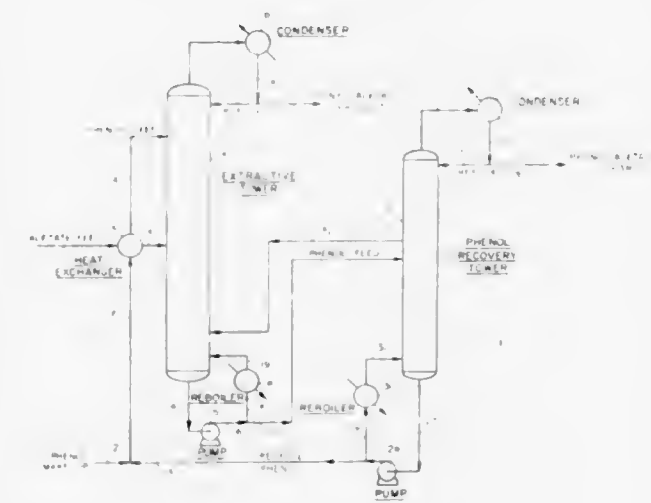
Julian Feldman, Frank Lerman, and Franklyn D. Miller, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Mar. 26, 1970, Ser. No. 22,960

Int. Cl. C07c 67/06; B01d 3/40

U.S. Cl. 203—65

10 Claims



A process for purification of vinyl acetate containing residual but appreciable amounts of ethyl acetate which process is particularly adapted for separation and removal of the ethyl acetate therefrom by subjecting an impure, crude stream of vinyl acetate containing ethyl acetate and other impurities to extractive distillation using an aromatic hydroxy compound and more particularly, phenol, as the extractive solvent; a special feature being critical control of temperatures at the lower portion of the extractive distillation tower.

3,691,022

# PROCESS FOR THE EVAPORATION OF PHTHALIC ANHYDRIDE FROM THE SUMP OF A DISTILLATION ZONE

Gerhard Keuneeke, Geyen, and Johannes Krämer, Weiden, Germany, assignors to Chemiebau, Dr. A. Zieren GmbH & Co., KG, Cologne-Muengersdorf, Germany

Filed Dec. 15, 1969, Ser. No. 885,176

Claims priority, application Germany, Dec. 14, 1968, P 18 14 774.5

Int. Cl. B01d 1/12; C07c 63/18

U.S. Cl. 203—71

12 Claims

Crude phthalic anhydride produced by the oxidation of o-xylene is continuously distilled from the sump of a distillation column. Evaporation of the crude phthalic anhydride is effected in an evaporator which is in communication with the sump of the column by natural circulation from the bottom of the sump up through the evaporator and back to the sump. The crude phthalic anhydride leaving the evaporator has a concentration of



phthalic anhydride in the evaporator is 30—100% of the length of the evaporator pipes.

3,691,023

# METHOD FOR POLAROGRAPHIC MEASUREMENT OF OXYGEN PARTIAL PRESSURE

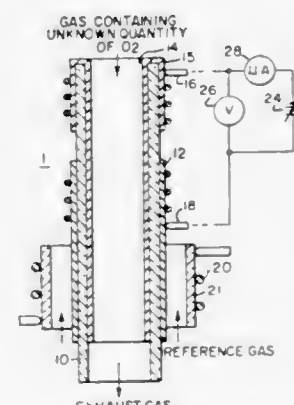
Roswell J. Ruka and Armand J. Panson, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of abandoned application Ser. No. 773,540, Nov. 5, 1968. This application Dec. 15, 1970, Ser. No. 98,476

Int. Cl. G01n 27/46

U.S. Cl. 204—1 T

5 Claims



An oxygen gauge which includes a solid electrolyte electrochemical cell in which oxygen is electrolyzed at a potential of sufficiently high value to obtain a limiting cell current determined by the rate at which oxygen diffuses to the electrode. This cell current is proportional to the oxygen partial pressure.

3,691,024

Patent Not Issued For This Number

3,691,025

Patent Not Issued For This Number

3,691,026

# PROCESS FOR A CONTINUOUS SELECTIVE ELECTROPLATING OF STRIP

Eugen Dürrwächter, Pforzheim, and Otto Reichert, Eutingen, Germany, assignors to Dr. Eugen Dürrwächter Doduco, Pforzheim, Germany

Filed June 3, 1970, Ser. No. 42,974

Int. Cl. C23b 5/58, 6/68

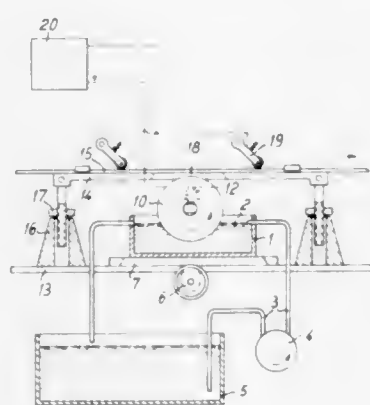
U.S. Cl. 204—28

4 Claims

An anode potential is applied to roller means partly immersed in an electroplating bath of liquid electrolyte.



The strip to be electroplated is arranged over the roller means so that the longitudinal direction of the strip is parallel to a tangent to the periphery of the roller means and the strip defines a gap with the periphery. A cathode



potential is applied to the strip. The strip is moved in said longitudinal direction and the roller means are rotated at the same time to entrain electrolyte from the bath and maintain said gap filled with electrolyte.

3,691,027

**METHOD OF PRODUCING CORROSION RESISTANT CHROMIUM PLATED ARTICLES**  
Winslow H. Hartford, Fayetteville, and Edmund W. Smalley, Cicero, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed June 16, 1970, Ser. No. 46,802  
Int. Cl. C23b 5/32, 5/50

U.S. Cl. 204—29 10 Claims  
Corrosion resistant chromium plated articles and a method for producing them is provided wherein a decorative and protective multi-layer electroplate is applied on a basis metal comprising successive layers of a zinc-nickel alloy, a nickel plate and a decorative and protective chromium plate.

3,691,028

Patent Not Issued For This Number

3,691,029

**CHROME PLATING OF TITANIUM**

Louis W. Raymond, Fairfield, Conn., and Mark C. Gussack, Riverdale, N.Y., assignors to Superior Plating Company, Fairfield, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 30,223, Apr. 20, 1970. This application Mar. 5, 1971, Ser. No. 121,599

Int. Cl. C23b 5/52

U.S. Cl. 204—37 R 18 Claims  
An adherent layer of wear-resistant hard chromium is applied to a titanium or titanium alloy part by first electroplating a layer of chromium on such part, then subjecting the part to heat treatment at a temperature from about 1600° F. to about 1900° F. for a very brief time (less than one minute), to cause diffusion bonding of the chromium to the titanium substrate, and then electroplating a relatively thick layer of hard chromium on the first chromium layer. The resulting hard chromium outer layer is firmly adherent, and the procedure avoids distortion of the titanium and minimizes deterioration of its physical properties. The fatigue strength of the titanium is increased by shot peening the initial chromium layer after diffusion bonding thereof to the titanium substrate prior to electroplating the outer chromium layer.

3,691,030

**PROCESS AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF A LITHOGRAPHIC SURFACE**

Joachim Stroszynski, 18 Buchenweg,  
6201 Naurod, Germany

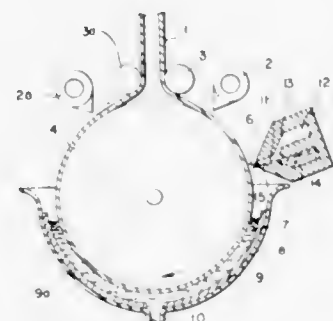
Filed Dec. 14, 1970, Ser. No. 97,944

Claims priority, application Germany, Dec. 15, 1969,  
P 19 62 728.2

Int. Cl. C23b 1/00, 5/58

U.S. Cl. 204—32 R

4 Claims



This invention relates to a process and apparatus for the continuous production of a lithographic surface on a metal strip by wet grinding and electro-chemical treatment in an electrolyte. In the process, the electrolyte is employed for wetting during grinding, and electro-chemical treatment and grinding are performed immediately following each other.

3,691,031

**METHOD OF APPLYING A NIOBIUM LAYER TO A COPPER CARRIER BY ELECTROLYTIC DEPOSITION FROM FUSED SALTS**

Walter Lugscheider, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

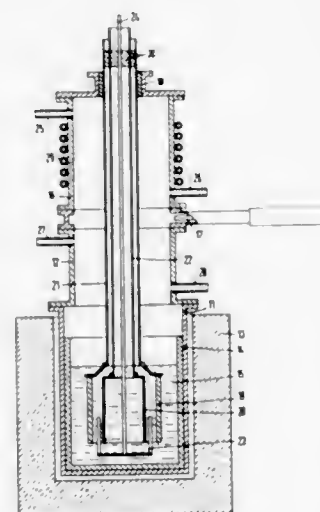
Filed Mar. 27, 1970, Ser. No. 23,358

Claims priority, application Germany, Mar. 29, 1969,  
P 19 16 293.7

Int. Cl. C23b 5/00

U.S. Cl. 204—39

15 Claims



A niobium layer is produced on a copper carrier by electrolytically depositing niobium from a melt upon the copper surface. The surface has an average dimension across the grain of at least 1 mm. and the carrier is substantially free of elastic tension and substantially free of lattice defects.

3,691,032

**PERMALLOY FILM PLATED WIRES HAVING SUPERIOR NONDESTRUCTIVE READ-OUT CHARACTERISTICS AND METHOD OF FORMING**

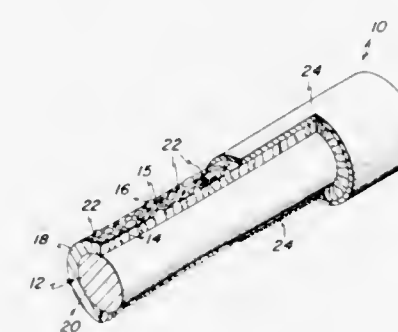
Fred E. Luborsky, Schenectady, and Raymond E. Skoda,  
Scotia, N.Y., assignors to General Electric Company

Filed May 1, 1970, Ser. No. 33,631

Int. Cl. H01f

U.S. Cl. 204—40

11 Claims



Nondestructive read-out characteristics of permalloy film coated wires for magnetic memories are significantly enhanced by selectively depositing fine grained islands of a face centered cubic metal, e.g., gold, along the nodular surface of a nonmagnetic substrate of preferably dissimilar metal, e.g., copper, prior to deposition of the permalloy film thereon.

3,691,033

**ADDITIVE FOR TIN ELECTROPLATING**

Donald Kearey Howard, Levenshulme, Manchester, Brian Martin Thomas, Woodmoor, Stockport/Cheshire, and Alan Francis Popplewell, Didsbury, Manchester, England, and Dario Matossi, Pamplona, Spain, assignors to Ciba-Geigy Corporation

No Drawing. Filed Feb. 24, 1970, Ser. No. 13,766

Int. Cl. C23b 5/14, 5/46

U.S. Cl. 204—54 R

5 Claims

The present invention provides a tin-plating additive comprising a proportion within the range of from 0.0125% to 98.7% by weight based on the total weight of the additive of 4:4'-di [dimethylamino] diphenylmethane and one or more tin-plating additives functionally active in an acidic tin-plating bath.

3,691,034

Patent Not Issued For This Number

3,691,035

Patent Not Issued For This Number

3,691,036

**METHOD OF OPERATING A MERCURY-AMALGAM CATHODE ELECTROLYTIC CELL**

James G. Peck, Jr., Lake Charles, La., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 9, 1970, Ser. No. 17,505

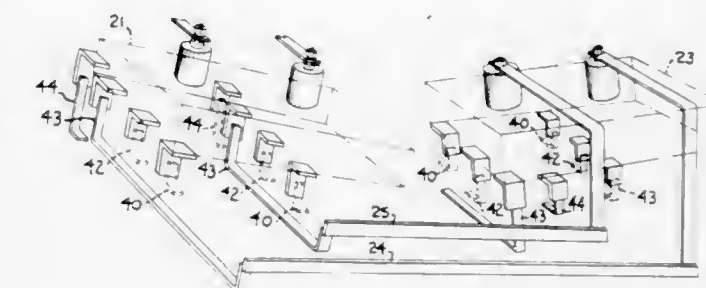
Int. Cl. B01k 1/00; C01d 1/08

U.S. Cl. 204—99

5 Claims

In the high current operation of a mercury-amalgam

cathode electrolytic cell used for the electrolysis of aqueous alkali metal chloride solutions, an electromagnetic



field is induced in the mercury-amalgam cathode to overcome the erratic performance of the cell.

3,691,037

**MERCURY RECOVERY FROM CHLORINE CELLS UTILIZING MERCURY CATHODES**

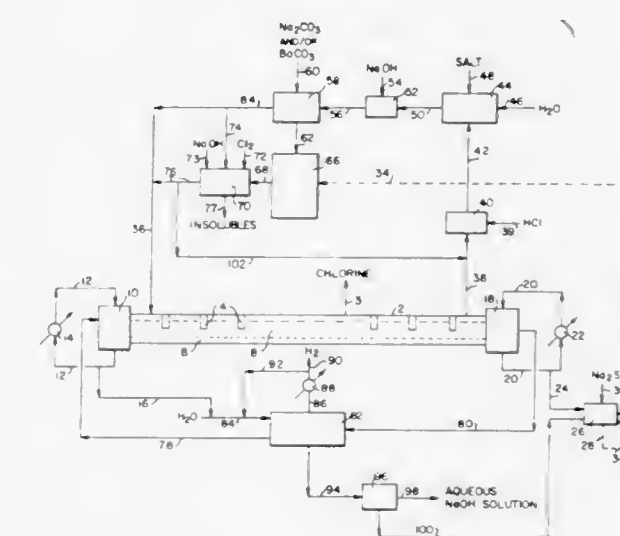
Lionel Joe Updyke, Squamish, British Columbia, Canada, assignor to FMC Corporation, New York, N.Y.

Filed Mar. 25, 1971, Ser. No. 127,899

Int. Cl. B01k 1/00; C01d 1/08

U.S. Cl. 204—99

9 Claims



In the process of producing chlorine and caustic from chlorine cells having mercury cathodes, liquid effluent streams unavoidably contain minor amounts of mercury. The mercury in these effluent streams is recovered in a simplified process by solubilizing it in a hypochlorite solution and reducing the dissolved mercury to elemental mercury in the chlorine cell.

3,691,038

**PROCESS FOR THE RECOVERY OF ZINC FROM ZINC- AND IRON-CONTAINING MATERIALS**

Adolf von Roepenack and Hans Wuetrich, Datteln, and Wilhelm Schmidt, Quellenkamp, Germany, assignors to Det Norske Zenkkompani A/S, Eitheim, Odda, Norway

No Drawing. Filed Sept. 23, 1970, Ser. No. 74,895

Claims priority, application Germany, Sept. 25, 1969,  
P 19 48 411.8

Int. Cl. C22d 1/22; C22b 19/00

U.S. Cl. 204—119

9 Claims

A process for the recovery of zinc from materials, e.g. ores or concentrates and other substances containing zinc and iron, generally in the form of oxides, wherein the material is leached with excess hot sulfuric acid. The



acidity of the extracts is reduced by adding zinc oxide or like zinc-containing oxidic materials to precipitate iron. The leaching is carried out at 95°–100° C. with a leaching solution containing 180–220 g./liter  $H_2SO_4$ . Leaching is continued until the sulfuric acid content is reduced to 20–60 g./liter  $H_2SO_4$ , whereupon the zinc-containing oxidic materials are added, preferably subsequent to the addition of alkali-metal and/or ammonium ions, at a temperature of 95°–100° C. to reduce the sulfuric acid concentration to less than 10 g./liter  $H_2SO_4$ .

3,691,039

Patent Not Issued For This Number

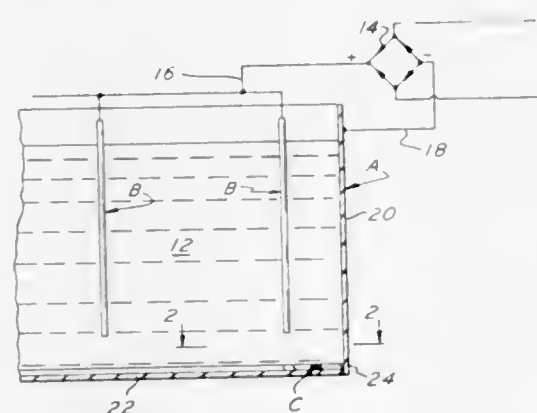
### 3,691,040 ELECTRICAL SHIELD FOR CATHODIC PROTECTION SYSTEMS

Leon P. Sudrablin, Berkeley Heights, and Harry Neugold, Jr., Livingston, N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Apr. 8, 1970, Ser. No. 26,485  
Int. Cl. C23f 13/00

U.S. Cl. 204—147

10 Claims



A cathodic protection system for improvement of cathodic protection current distribution at the junction of intersecting metallic structures which hold electrolyte. Electrically insulative shields are extended from at least one of the intersecting surfaces at the junction in spaced disposition from the anode. Where the intersecting surfaces are dissimilar metals, the electrical shield is applied to the surface of the less noble metal.

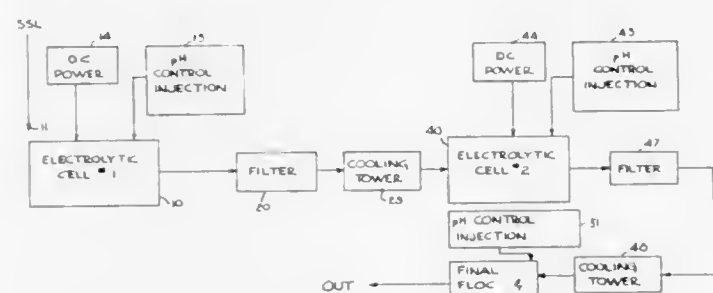
### 3,691,041 RECOVERING WATER FROM SPENT SULFITE LIQUOR

Bernard J. Stralser, 12726 E. Apache Pass, Spokane, Wash. 99206

Filed May 3, 1971, Ser. No. 139,655  
Int. Cl. B01k 3/00

U.S. Cl. 204—152

4 Claims



Spent sulfite liquor used in the calcuim base sulfite pulping process is diluted by about six parts water to one part

of spent liquor as it exists in the pulp. To recover the water for re-use, the pH of the diluted liquor is first adjusted to about 6.4 by addition of 30% NaOH. The liquor is then put in an electrolytic cell having electrodes of mild steel about 1/2 inch apart and is subjected to direct current voltage of about 27–36 volts between electrodes with enough current to bring the temperature within a range of 140° F. to 200° F. in about two minutes. Current is cut off and the liquid is cooled for two to five minutes to enable a dark green precipitate to form. Then, the liquid is filtered. The recovered liquid is brought to a pH of 11 using NaOH and then is subjected to direct current of 30 volts in a second electrolytic cell having a mild steel cathode and a lead dioxide anode 1/2 inch apart, until the temperature is again raised to between 140° F. and 200° F. The treated liquid is allowed to cool to form another dark green precipitate. This is again filtered. Then, the cooled liquid is neutralized, using sulfuric acid, to a pH of 7. A white precipitate forms and is filtered out. The water remaining is now re-usable.

3,691,042

### PROCESS FOR THE MANUFACTURE OF ESTERIFIED HYDROXY COMPOUNDS

Robert Burns Woodward, 12 Oxford St., Cambridge, Mass. 02138

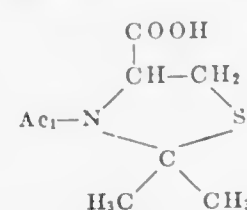
No Drawing. Original application Jan. 26, 1967, Ser. No. 611,808, now Patent No. 3,498,996. Divided and this application Feb. 25, 1969, Ser. No. 802,226  
Claims priority, application Switzerland, Feb. 3, 1966, 1,531/66; Feb. 22, 1966, 2,509/66; June 17, 1966, 8,831/66

Int. Cl. C07d 91/16

U.S. Cl. 204—158 R

5 Claims

The invention concerns a process for the introduction of an acyloxy group into the 5-position of a 5-unsubstituted 2,2-disubstituted 3-acyl-thiazolidine 4-carboxylic acid derivative by treatment with an alkoxy radical-forming oxidation reagent in the presence of a reagent capable of furnishing an acyloxy group by homolytic cleavage, more especially the introduction of an acyloxy, especially an acetyloxy group into the 5-position of an ester, particularly the methyl ester of an acid of the formula



in which  $\text{Ac}_1$  is an acyl radical, primarily the tert-butyl-oxycarbonyl group, by treatment with a lead-IV-acrylate, particularly lead tetraacetate, in the presence of an alcohol, particularly tert-butanol. The compounds of the process are useful as intermediates for the preparation of 7-amino-cephalosporanic acid and its derivatives.

3,691,043

### PREPARATION OF ACID HALIDES FROM PARAFFINS

Warren A. Thaler, Matawan, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed Sept. 9, 1965, Ser. No. 486,219  
Int. Cl. C07c 51/58

U.S. Cl. 204—163 HE

15 Claims

Acid halides are prepared by reacting paraffins with carbon monoxide and halohydrocarbons; use of the halohydrocarbon allows formation of acid halide in preference to halide; products are useful as chemical intermediates, e.g., in the preparation of textile wetting agents.

3,691,044

Patent Not Issued For This Number

3,691,045

### METHOD OF MAKING PHOTOCROMIC FILMS ON GLASS SUBSTRATES

Morton L. Licherman, Albuquerque, N. Mex., assignor to Corning Glass Works, Corning, N.Y.

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,495  
Int. Cl. C23c 15/00

U.S. Cl. 204—192

10 Claims

A method is disclosed for forming on a glass substrate a film exhibiting photochromic properties. A mixed oxide film containing silver oxide in addition to tantalum oxide, tungsten oxide, or mixtures thereof is reactively sputtered on a glass substrate. Excess silver oxide is removed from the film by immersing the film in an acid solution until the film, which is black to brown when deposited, becomes substantially colorless. The photochromic properties of the film are enhanced by heating the substrate-film composite at a temperature of at least 300° C. for at least 1/2 hour.

3,691,046

### METHOD FOR MANUFACTURING A SUPERCONDUCTIVE COIL ELEMENT

Tsuneo Okada, Chiba-ken, Yutaka Onodera, Takeshi Mitsuoka, Yukinori Saito, Yoshio Muto, and Takeshi Anayama, Sendai-shi, and Ko Yasukochi, Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

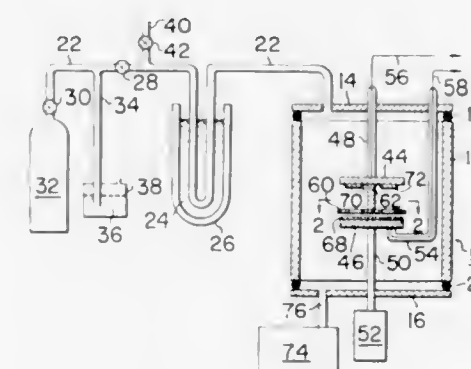
Filed Sept. 25, 1969, Ser. No. 860,929

Claims priority, application Japan, Feb. 28, 1969, 44/15,520, 44/15,521, 44/15,522

Int. Cl. C23c 15/00

U.S. Cl. 204—192

1 Claim



A superconductive coil element comprising a layer of superconductive material and a layer of insulating material, each alternately arranged in a helical form centered about a common axis with their adjacent turns tightly attached to each other. The superconductive coil element exhibits a maximum critical current density when an electromagnetic field acting on the surface of said superconductive layer is substantially at an angle of 90°. The method of manufacture comprises relatively disposing the substrate and evaporation sources which respectively consists of said superconductive material and insulating material with the adjacent planes of the substrate and evaporation sources facing each other, interposing a perforated shield between the substrate and the sources, rotating the substrate and evaporation sources relative to each other and evaporating the superconductive material and insulating material at the same time separately from each other to successively deposit same on an annular region of the substrate.

902 O.G.—23

3,691,047

### MEMBRANE ELECTRODE

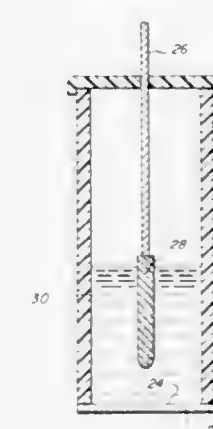
James W. Ross and Martin S. Frant, Newton, Mass., assignors to New England Merchants National Bank, Boston, Mass.

Filed Jan. 8, 1970, Ser. No. 1,365

Int. Cl. G01n 27/30; B01k 3/10

U.S. Cl. 204—195 M

6 Claims



An ion-sensitive membrane for potentiometric electrodes, the membrane being a gel in which the solid phase is an inert polymer such as cellulose triacetate and the liquid phase is an ion-exchange liquid such as calcium (bis-dibromomethylphosphate)<sub>2</sub> dissolved in dioctylphenylphosphate.

3,691,048

### APPARATUS FOR CONTINUOUS ELECTROLYTIC PRODUCTION OF METALS

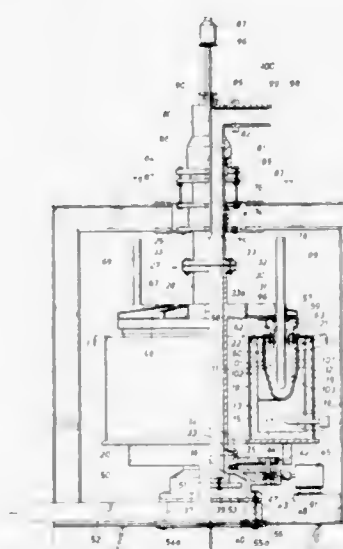
Anthony J. Yznaga, 1638 Clower, San Antonio, Tex. 78201

Filed Aug. 26, 1970, Ser. No. 66,960

Int. Cl. C23b 5/74; C22d 3/02

U.S. Cl. 204—245

19 Claims



An apparatus for the continuous electrolytic production of metals from fused baths more dense than the metals comprising an annular cell for containing a fused bath in which the walls of the cell constitute the main cathode, at least one anode suspended in the cell, means to rotate the anode through the annular cell and a separator to continuously remove from the cell the metal produced at the cathode. In its more preferred embodiments, the apparatus includes a continuous unloader for removing the metal from the separator, a means for continuously removing from the bottom of the cell sludge more dense than the fused bath, a continuous feed means and a means to remove from the cell gaseous components released in the electrolysis process.



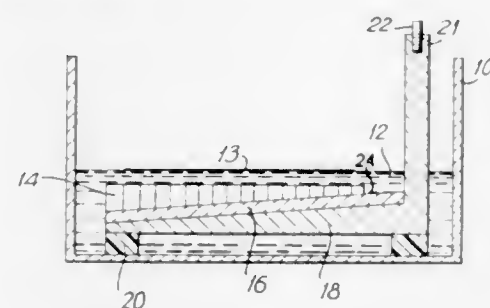
3,691,049

**WIRE AND STRIP LINE ELECTROPLATING**  
 Frederick Walter Eppensteiner, Southfield, and Richard E. Woehle, Birmingham, Mich., assignors to M & T Chemicals Inc., New York, N.Y.

Filed Apr. 15, 1970, Ser. No. 28,758  
 Int. Cl. C23b 5/68, 5/10

U.S. Cl. 204—206

12 Claims



Methods and apparatus are provided for high speed wire and/or strip line electroplating of metals such as tin and zinc on a metal substrate by utilizing in the anode assembly therefor a combination of the plating metal as the anode and an anode support comprised essentially of a member selected from the group consisting of tantalum, niobium, and mixtures thereof.

3,691,050

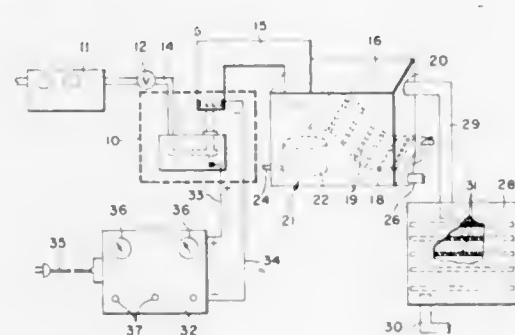
**APPARATUS AND METHOD FOR THE REMOVAL OF IMPURITIES FROM LIQUIDS**

David E. Sayre, Austin, Tex., assignor to Sayreco, Inc., Austin, Tex.

Filed Feb. 25, 1970, Ser. No. 14,052  
 Int. Cl. C02c 5/12; C22d 1/04

U.S. Cl. 204—219

8 Claims



The method and apparatus for the continuous purification of water wherein the water is introduced under pressure to a treatment cell having a lower anode of mercury and a stack culminating in a silver ring cathode, the electrodes being energized from a high voltage DC source. Diffused mercury particles act as a catalyst for the flocking of impurities in the water in the presence of the electric field. The treated water then is presented in turn to a settlement tank and an activated carbon filter for removal of solids and further treatment for taste and odor.

3,691,051

**POROUS ELECTRODE HAVING CAVITY WITH IMPERVIOUS DOME**

Keith A. Williams, Bartlesville, Okla., assignor to Phillips Petroleum Company

Original application June 24, 1968, Ser. No. 739,506. Divided and this application Aug. 28, 1970, Ser. No. 67,884

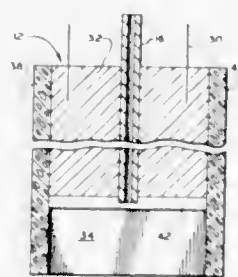
Int. Cl. B01r 3/04, 3/08

U.S. Cl. 204—284

17 Claims

In an electrochemical process, the reaction takes place within the confines of a porous electrode element. The

bottom of this electrode element has a cavity open to the bulk of the electrolyte. Gaseous or vaporous feed materials are introduced into this cavity; a portion of the inner surfaces of the walls of this cavity are sufficiently impervious so as to cause a gas cap to form in the upper portion of the cavity. This allows the feed materials to be



distributed evenly throughout the entire horizontal span of the cavity. The feed materials then pass out of the cavity and into and upward through the porous reaction section of the electrode without contact with the bulk of the electrolyte and are converted to the desired products while within the confines of the electrode element.

3,691,052

**VALUE METAL BASE ELECTRODE COATED WITH  $Pb_2Ru_2O_6$  OR  $Pb_2Ir_2O_6$**

Robert C. Langley, Millington, N.J., assignor to Engelhard Minerals & Chemicals Corporation

No Drawing. Filed Jan. 7, 1971, Ser. No. 104,797  
 Int. Cl. B01r 3/04

U.S. Cl. 204—290 F

6 Claims

Electrolysis of brines is accomplished with anodes having an operative surface of lead ruthenate or lead iridate. The anodes are particularly effective for the production of chlorine. It has been found that lead ruthenate or lead iridate powder may be bonded to a value metal substrate by using a low melting glass flux. One group of glasses exists in the  $V_2O_5$ - $PbO$  system, consisting of  $V_2O_5$  plus about 30 to 55 mol percent of  $PbO$ . Other types of fluxes are lead borosilicate glass or lead borate:bismuth subnitrate in the proportion of 2:1 parts by weight.

3,691,053

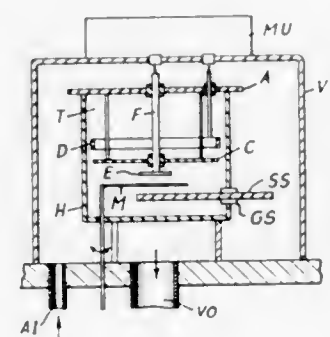
**GETTER-SPUTTERING APPARATUS**

David W. F. James, David O. Spiller, and Harvey D. Colman, Bangor, Wales, assignors to University College of North Wales, Bangor, Wales

Filed Dec. 29, 1969, Ser. No. 888,493  
 Claims priority, application Great Britain, Jan. 2, 1969, 380/69; Nov. 20, 1969, 56,959/69  
 Int. Cl. C23c 15/00

U.S. Cl. 204—298

7 Claims



Apparatus and method for getter-sputtering. Material is sputtered from a cathode onto a substrate at low pressure in an inert atmosphere. Sputtering is effected in a

sputter space to which there is access of gas only by way of a gettering antechamber or space. Gettering is effected continuously in the antechamber while sputtering is taking place. The sputter space may be arranged co-axially within the gettering space either in a planar arrangement or an arrangement of co-axial chamber with a dividing wall. Alternatively, the gettering chamber may be arranged above the sputter chamber.

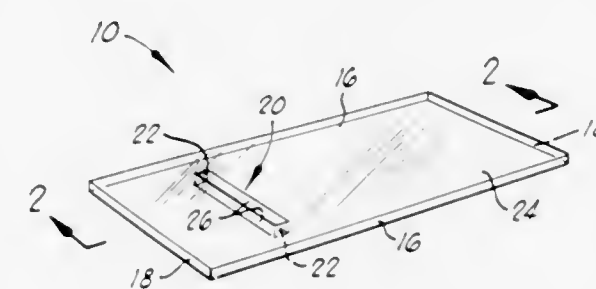
3,691,054

**STABILIZING MEDIA TEMPLATE**

Leo P. Cawley, 550 N. Hillside, Wichita, Kans. 67208  
 Filed Feb. 9, 1970, Ser. No. 9,624  
 Int. Cl. B01k 5/00

U.S. Cl. 204—299

5 Claims



This invention is a template structure for electrophoresis and immunoelectrophoresis processes including a relatively thin sheet member inert to and adapted to receive a stabilizing media gel on one side and having an aperture therein. More particularly, this invention relates to a thin sheet member with an aperture and adapted to receive on a surface a relatively thin coating of the stabilizing media gel forming a well with the aperture to receive a sample of serum therein.

3,691,055

**METHOD OF COATING STEEL SHEET SURFACES**  
 Motoharu Hamada, Nishinomiya, and Hiroshi Nakagawa, Kobe, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Sept. 17, 1969, Ser. No. 858,782  
 Claims priority, application Japan, Sept. 27, 1968, 43/69,758  
 Int. Cl. C23b 9/00, 11/00

U.S. Cl. 204—385

12 Claims

A method of coating steel sheet surfaces with double coating films having a high corrosion resistance. Each steel sheet is at first coated with a first film mainly consisting of hydrous chromium oxides by electrolytic treatment with chromic acid. An aluminum film is coated on the first film by vacuum evaporation.

3,691,056

**PROCESS FOR RETORTING OIL SHALE IN THE ABSENCE OF SHALE ASH**

John H. Barney, Denver, and Franklin B. Carlson, Bloomfield, Colo., assignors to The Oil Shale Corporation, New York, N.Y.

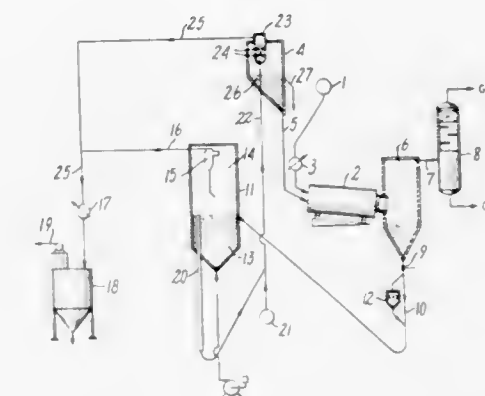
Filed Apr. 13, 1971, Ser. No. 133,507  
 Int. Cl. C10b 53/06

U.S. Cl. 208—11

5 Claims

In the pyrolysis of oil shale to shale oil, the loss of the shale oil product by sorption on porous shale ash in

the pyrolysis zone is prevented by attriting the shale ash particles to fines and elutriating the fines from the heat



3,691,057

Patent Not Issued For This Number

3,691,058

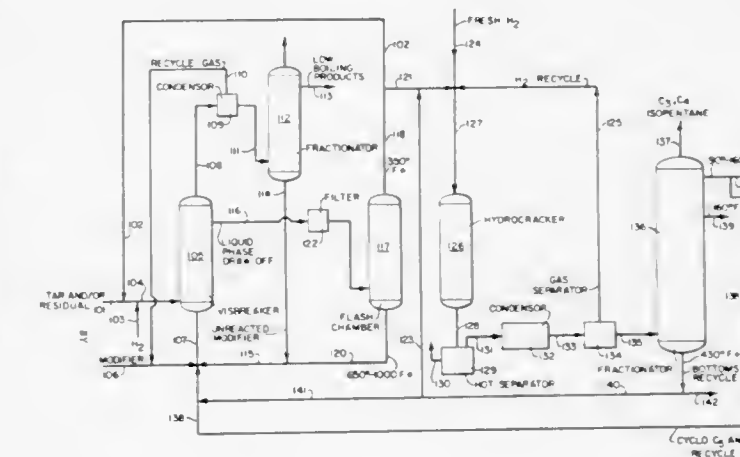
**PRODUCTION OF SINGLE-RING AROMATIC HYDROCARBONS FROM GAS OILS CONTAINING CONDENSED RING AROMATICS AND INTEGRATING THIS WITH THE VISBREAKING OF RESIDUA**

Glen P. Hammer, Baton Rouge, and Ralph B. Mason, Denham Springs, La., assignors to Esso Research and Engineering Company

Continuation-in-part of abandoned application Ser. No. 840,986, July 11, 1969. This application Apr. 15, 1970, Ser. No. 28,867  
 Int. Cl. C10g 31/14, 37/04

U.S. Cl. 208—73

8 Claims



Single-ring aromatic hydrocarbons are maximized by hydrocracking a heavy hydrocarbon feed boiling below 1050° F. containing polynuclear aromatics or their precursors over zeolite base hydrocracking catalysts at low conversions of 5 to 40% and recycling the 90–160° F. and 350° F.+ fractions to extinction. Integrating this step with the visbreaking of residua in presence of a hydro-



carbon modifier or free-radical acceptor in which the 90-160° F. fraction from the hydrocracking is used at least in part as the modifier is included.

3,691,059

### HYDROGEN-CASCADE PROCESS FOR HYDROCARBON CONVERSION

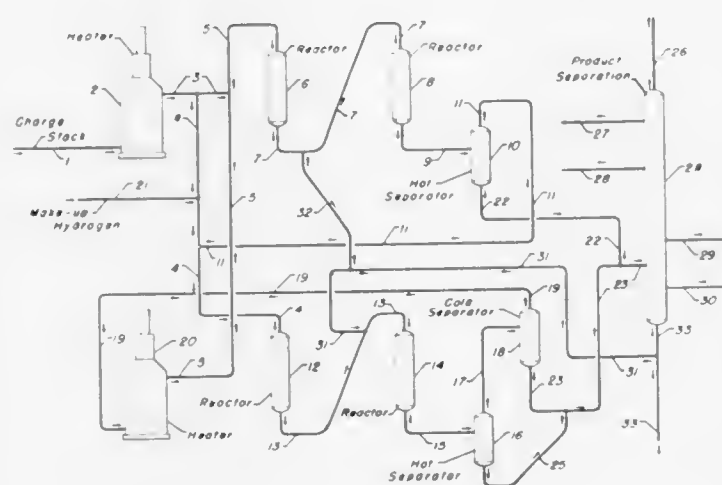
Newt M. Hallman, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 24, 1970, Ser. No. 66,522

Int. Cl. C10g 23/00, 37/00

U.S. Cl. 208—80

10 Claims



An economical hydrocarbon hydroprocess of modified hydrogen circulation which effects savings in compression by hydrogen cascade in a process requiring the recycling of hydrogen. Particularly directed for utilization hydrocracking, the present process is applicable to the hydrogenation of aromatic nuclei, the ring-opening of cyclic hydrocarbons for the production of jet fuel components, desulfurization, denitrification, hydrogenation, etc. The process involves separately reacting portions of the fresh feed charge stock in individual reaction systems interconnected by way of the flow of circulating hydrogen. A catalytic process wherein the catalytically active metallic components are selected from the metals of Groups V-B, VI-B or VIII.

3,691,060

### HYDROGENATION OF AROMATIC HYDROCARBONS

Texas V. Inwood, 1932 Fullerton Road, La Habra, Calif. 90631

No Drawing. Continuation-in-part of application Ser. No. 796,895, Feb. 5, 1969, now Patent No. 3,592,758. This application Mar. 24, 1971, Ser. No. 127,749

Int. Cl. C10g 23/04

U.S. Cl. 208—89

16 Claims

Aromatic hydrocarbon feedstocks containing organic sulfur compounds are hydrogenated in a "single-stage" process, utilizing a dual-catalyst hydrogenation system. The feed is first hydrofined over a sulfactive catalyst selective for the hydrodecomposition of organic sulfur compounds, and total effluent is then hydrogenated over a sulfur-sensitive Group VIII noble metal hydrogenation

catalyst active for the hydrogenation of aromatic hydrocarbons.

3,691,061

### CRACKING OF SOLVENT EXTRACTED GAS OIL WITHOUT ADDED HYDROGEN

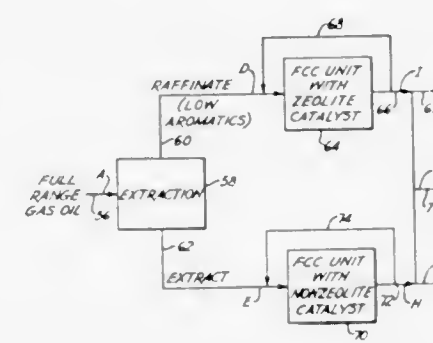
Robert W. Koch, Verona, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed July 23, 1970, Ser. No. 57,518

Int. Cl. C10g 21/00

U.S. Cl. 208—87

5 Claims



A gas oil cracking feed is passed through a solvent extraction zone to separate an aromatics-lean raffinate from an aromatics-rich extract. The aromatics-lean raffinate is charged to a fluid zeolite cracking zone without added hydrogen and the aromatics-rich extract is charged to a fluid nonzeolite cracking zone without added hydrogen.

3,691,062

### COMBINED HYDROFINING-REFORMING PROCESS

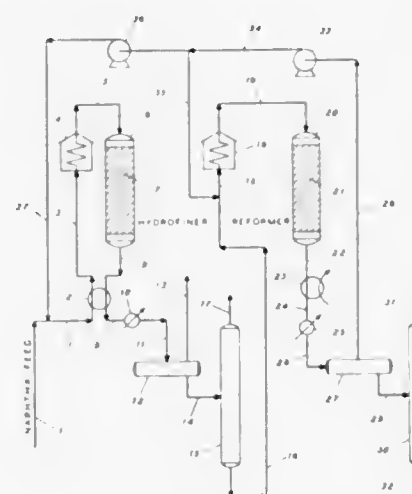
Willard M. Haunschild, Walnut Creek, Robert L. Jacobson, Pinole, and Charles S. McCoy, Orinda, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of abandoned application Ser. No. 789,517, Jan. 7, 1969. This application June 25, 1971, Ser. No. 163,512

Int. Cl. C10g 23/00

U.S. Cl. 208—89

1 Claim



A combination hydrofining-reforming process wherein a naphtha feedstock low in sulfur and nitrogen is hydro-

fined, without substantial cracking, in a reaction zone in the presence of once-through hydrogen to convert sulfur and nitrogen to hydrogen sulfide and ammonia, followed by separation of the hydrogen sulfide and ammonia and reforming of the hydrofined naphtha with a catalyst comprising platinum and rhenium associated with an alumina-containing support. The reforming effluent is processed to recover gasoline and hydrogen-rich gas, a portion of the hydrogen-rich gas being used in the hydrofining reaction zone as the once-through hydrogen.

VI transition metal component and a halogen component with an alumina carrier material in amounts sufficient to result in the composite containing, on an elemental basis, about 0.05 to about 1 wt. percent of the platinum group metal, about 0.05 to about 1 wt. percent rhenium, about 0.01 to about 1 wt. percent of the group VI transition metal component and about 0.1 to about 1.5 wt. percent of halogen. A specific example of the disclosed process involves the catalytic reforming of a gasoline fraction with this catalytic composite.

3,691,063

### RESIDUAL FUEL OIL HYDROCRACKING PROCESS

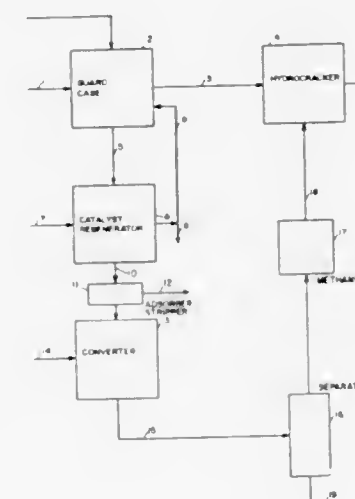
Merritt C. Kirk, Jr., Thornton, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Mar. 18, 1971, Ser. No. 125,644

Int. Cl. C10g 25/00, 31/14, 37/00

U.S. Cl. 208—91

6 Claims



Process of hydrocracking residuum containing petroleum wherein the metals which poison the hydrocracking catalyst are removed in a guard case containing an acid catalyst along with the asphaltenes contained in the residuum. The guard case catalyst is regenerated with steam and oxygen to maximize hydrogen production obtainable by partial oxidation of the asphaltenes, and which hydrogen is then used in the hydrocracking process.

Conducting a catalytic reaction with a dual function catalyst comprising two catalytic constituents, one of which is caused to function at a somewhat more elevated temperature than the other catalytic constituent by the action of a radio frequency field sufficient to selectively raise the temperature of the first named catalytic constituent a substantial amount.

3,691,066

### HYDROGENATION OF UNSATURATED GASOLINES

John Carruthers, Chertsey, Warren N. N. Knight, Shepperton, and Christopher Henry Dodwell, Ashford, England, assignors to The British Petroleum Company Limited, London, England

No Drawing. Filed Sept. 10, 1970, Ser. No. 71,197

Claims priority, application Great Britain, Sept. 23, 1969, 46,779/69

Int. Cl. C10g 9/12

U.S. Cl. 208—255 R

9 Claims

The selective hydrogenation of unsaturated gasolines e.g. steam cracker gasoline can be carried out over a supported nickel catalyst at 50-250° C., 200-3000 p.s.i.g., 0.2-10 v./v./hr. and 200-5000 s.c.f. of H<sub>2</sub>/B even when the feedstock contains 10-3000 p.p.m. wt. of mercaptan sulphur. Poisoning of the catalyst by the mercaptan sulphur is prevented because the mercaptans are converted to thiophenes during processing to a level of below 30 p.p.m. wt. of mercaptans in the product, particularly below 10 p.p.m. wt. The diene content is reduced from 4-55% wt. to below 0.5% wt. Total sulphur content of the feedstock is 0.1-1.5% wt., of which 0.003-1.0% wt. may

3,691,064

### HYDROCARBON CONVERSION WITH A MULTICOMPONENT CATALYST

John C. Hayes, Palatine, and Ernest L. Pollitzer, Skokie, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Original application Apr. 24, 1968, Ser. No. 723,895. Divided and this application July 31, 1970, Ser. No. 60,156

Int. Cl. C10g 35/08

U.S. Cl. 208—136

16 Claims

Hydrocarbons are converted by contacting them and hydrogen, at hydrocarbon conversion conditions, with a catalytic composite comprising a combination of a platinum group component, a rhenium component, a group



be thiophenic sulphur and such feedstocks may be produced by the thermal cracking of high sulphur content, high boiling petroleum fractions. They may be inhibited with a phenolic inhibitor.

The preferred catalyst is 1-50% wt. nickel on sepio-lite and presulphiding of the catalyst is optional.

Runs of over 500 hours, particularly over 1000 hours are possible.

3,691,067

# **PRODUCTION OF LUBRICATING OILS BY HYDROTREATING AND DISTILLATION**

William B. Ashton, Nederland, Tex., and Herbert C. Morris, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 755,746, Aug. 27, 1968. This application Mar. 4, 1970, Ser. No. 16,558

Int. Cl. C10g 23/00

U.S. Cl. 208—264

8 Claims

A narrow cut lubricating oil stock, particularly a low grade stock, is hydrotreated and then fractionated to produce a light fraction of medium viscosity index and a heavy fraction of high viscosity index.

3,691,068

# **DIALYSIS MEMBRANE AND ITS USE**

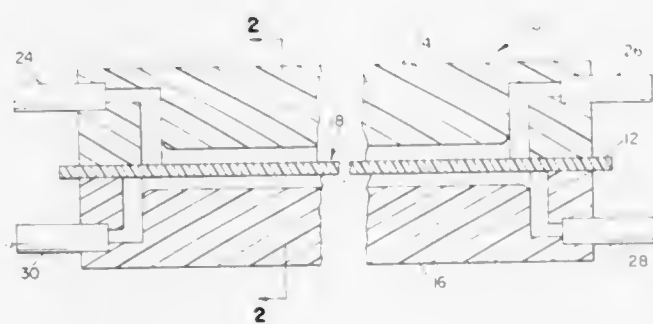
Robert A. Cross, Harvard, Mass., assignor to Amicon Corporation, Lexington, Mass.

Filed Jan. 8, 1971, Ser. No. 104,916

Int. Cl. B01d 13/00

U.S. Cl. 210—22

20 Claims



Subjecting a dialyzable liquid (such as blood) to dialysis (hemodialysis) by providing an anisotropic microporous polysulfone polymer membrane having a barrier layer at a surface thereof and a more porous support layer integral with the barrier layer, the barrier and support layers being a continuous uninterrupted polymer phase, which membrane has a dialytic resistance to sodium chloride less than about 50 min./cm. and a total ultrafiltration flux between about  $3 \times 10^{-5}$  and  $1 \times 10^{-6}$  ml./cm.<sup>2</sup> x min. x mm-Hg, contacting the barrier layer surface of this membrane with the dialyzable liquid, and contacting the other side of the membrane with a solvent for the dialyzable components of such liquid.

3,691,069

# **PROCESS AND DEVICE FOR MAKING FABRICS WITH NON-WOVEN PILE**

Olaf Ferdinand Walser, Raditschgasse, 653-Vaduz, Liechtenstein

Continuation of abandoned application Ser. No. 584,249, Oct. 4, 1966. This application May 19, 1971, Ser. No. 135,262

Claims priority, application Belgium, Oct. 11, 1965, 18,931; Oct. 29, 1965, 670,784

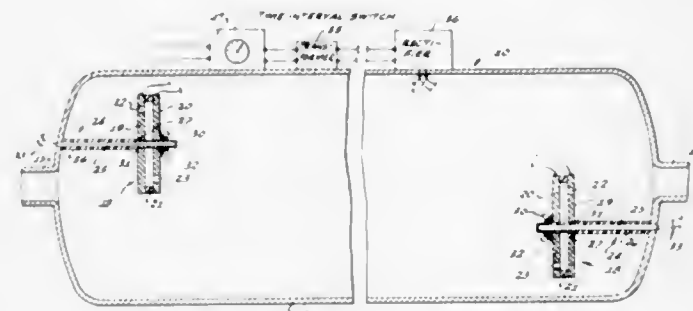
Int. Cl. D04b 1/02

U.S. Cl. 156—72

5 Claims

A process for making fabrics with non-woven pile where a continuous thread or band is fed to a parallel passage

having two parallel support bands each carrying a layer of adhesive. The thread or fabric is prefolded with a flexible bladelet and then driven with a substantially circular movement by folder blades against the support band.



After having produced the desired adhesive connection of the fabric and the band, the adhesive is cured and the support bands are separated to produce the finished product.

## **ERRATUM**

For Class 208—210 see:  
Patent No. 3,691,152

3,691,070

# **EMPLOYMENT OF BENTONITE IN BRINE MUDS**

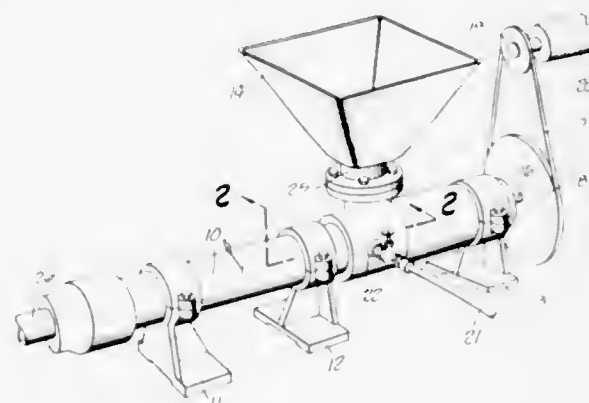
William C. Pippen, Lafayette, La., assignor to National Lead Company, New York, N.Y.

Filed Apr. 27, 1970, Ser. No. 32,054

Int. Cl. C10m 3/02

U.S. Cl. 252—8.5 B

2 Claims



A brine drilling mud is formed by a two-step process comprising prehydrating bentonite with fresh water in an axial, positive displacement pump so as to form a prehydrated bentonite-water mixture, which is subsequently incorporated with the brine phase so as to form the desired brine mud.

3,691,071

# **PELLETED CARBON BLACK CONTAINING SURFACTANT**

Myron L. Corrin, Fort Collins, Colo., assignor to Phillips Petroleum Company

No Drawing. Application July 28, 1969, Ser. No. 845,543, now Patent No. 3,559,735, dated Feb. 2, 1971, which is a continuation-in-part of application Ser. No. 688,651, Dec. 7, 1967. Divided and this application Apr. 13, 1970, Ser. No. 28,006

Int. Cl. E21b 43/20

U.S. Cl. 252—8.55 D

11 Claims

Pelleted carbon black, and process for preparing same, containing at least one of (a) an oil-displacing surfactant and (b) a suspending and stabilizing surfactant. The pelleted carbon black and surfactants are useful in the production of oil from an oil stratum by water flooding.

3,691,072

# **SOLUBLE OIL COMPOSITION**

Le Roy W. Holm, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Continuation-in-part of application Ser. No. 713,294, Mar. 5, 1968, now Patent No. 3,500,918. This application Dec. 31, 1969, Ser. No. 889,739

Int. Cl. E21b 43/16, 43/20

U.S. Cl. 252—8.55 D

16 Claims

A soluble oil composition comprising a mixture of liquid hydrocarbon, surface active agent and secondary butyl alcohol is disclosed. The composition is particularly useful as a displacement fluid in a flooding process for the recovery of oil. The soluble oil composition can be substantially anhydrous, or it can contain water present as a water-in-oil microemulsion.

3,691,073

# **LUBRICANT COMPOSITION CONTAINING MOLYBDENUM NAPHTHENATE**

Melvin L. Larson, Royal Oak, Mich., assignor to American Metal Climax Inc.

No Drawing. Original application Aug. 12, 1968, Ser. No. 751,740, now Patent No. 3,598,847, dated Aug. 10, 1971. Divided and this application Aug. 13, 1970, Ser. No. 63,618

Int. Cl. C10m 1/12, 1/24

U.S. Cl. 252—24

6 Claims

An improved lubricant composition comprising an oily substance containing a controlled proportion of molybdenum naphthenate dissolved therein and which may further include a sulfur-containing compound in controlled amounts.

3,691,074

# **EXTREME PRESSURE, RUST PREVENTIVE NONREACTIVE GREASES**

Joseph F. Messina, Havertown, and Henry Gisser, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Apr. 6, 1971, Ser. No. 131,773

Int. Cl. C10m 7/16, 7/28

U.S. Cl. 252—25

5 Claims

Grease compositions comprising perfluoroalkylpolyether (PFAPE) fluids thickened with polytetrafluoroethylene (PTFE) for use with liquid fueled rocket engines, the grease including a small quantity of rust preventing sodium nitrite. The greases exhibit a very unexpected and significant improvement in extreme pressure characteristics, are rust preventive, and are nonreactive upon contact with conventional fuels and oxidizers, and at high impact energies in the presence of liquid oxygen and other oxidizers used in conventional rocket engines.

3,691,075

# **PROCESS FOR PREPARING BARIUM-CONTAINING DISPERSION**

Roy C. Sias, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Continuation-in-part of application Ser. No. 826,708, May 21, 1969. This application Aug. 31, 1970, Ser. No. 68,566

Int. Cl. C10m 1/40, 1/24

U.S. Cl. 252—33

34 Claims

Process for preparing a highly basic barium-containing dispersion wherein the process comprises: (a) forming an

admixture of oil-soluble dispersing agent (e.g. sulfonic acid), nonvolatile diluent, process solvent and water, (b) adding to the admixture a solution of basic barium compound (e.g. BaO) in an alcohol (e.g. methanol or methoxy ethanol)—from about 55 to less than about 90%, preferably from about 65 to about 75%, of the total requirement is added, (c) passing CO<sub>2</sub> through the admixture, (d) adding to the carbonated admixture a solution of basic barium compound in alcohol (remainder of the requirement), (e) removing volatiles and (f) carbonating the admixture.

The salient features of the process are (1) adding from about 55 to less than about 90%, preferably from about 65 to about 75%, of the alcoholic solution of basic barium compound prior to carbonation and (2) the temperature at which the first carbonation is conducted.

3,691,076

# **PROCESS FOR PREPARING HYDROCARBON LUBRICATING OIL CONTAINING CALCIUM ALKYLPHENOLATE**

Harry Chafetz, Poughkeepsie, William H. Canning, Wappingers Falls, and Bertrand G. Morissette, Beacon, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Sept. 14, 1970, Ser. No. 72,121

Int. Cl. C10m 1/20, 1/54

U.S. Cl. 252—42.7

9 Claims

A method of preparing a lubricating oil composition of detergent properties containing a normal calcium alkylphenolate comprising contacting in the presence of acetic acid, alkylphenol, a calcium member selected from the group consisting of calcium oxide and calcium hydroxide and a hydrocarbon oil of lubricating viscosity.

3,691,077

# **LUBRICANT COMPOSITION**

Robert Earl Wann, 3933 Thimbleglen Drive 45239; Denzel Allan Nicholson, Miami Valley Lab., P.O. Box 39175 45239; and Ted Joe Logan, Ivorydale Technical Center 45217, all of Cincinnati, Ohio

No Drawing. Original application Sept. 26, 1968, Ser. No. 762,966. Divided and this application Mar. 10, 1971, Ser. No. 123,091

Int. Cl. C10m 1/30

U.S. Cl. 252—54.6

6 Claims

Lubricant compositions comprising a major amount of a lubricating base fluid and a minor amount of extreme pressure additives which contain either a methylene, monohalomethylene or dihalomethylene group between two moieties, selected from the group consisting of phosphono, dihydrocarbylphosphoryl, phenyl, substituted phenyl, keto, cyano, and carboxylate ester moieties.

3,691,078

# **OIL COMPOSITIONS CONTAINING ETHYLENE COPOLYMERS**

Thomas Emmett Johnston and Earl Eugene Sommers, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 785,346, Dec. 19, 1968. This application Nov. 25, 1969, Ser. No. 879,902

Int. Cl. C10m 1/18

U.S. Cl. 252—59

6 Claims

Improved mineral oil compositions comprising a neutral, non-volatile, mineral oil, a pour point depressant



and a viscosity index improver consisting of an oil-soluble, substantially linear, hydrocarbon copolymer containing 25 to 55 weight percent polymerized ethylene units and 75 to 45 weight percent polymerized comonomer units, said comonomer selected from the group consisting of terminally unsaturated straight chain monoolefins of 3 to 12 carbon atoms,  $\omega$ -phenyl-1-alkenes of 9 to 10 carbon atoms, 2-norbornene, terminally unsaturated non-conjugated diolefins of 5 to 8 carbon atoms, dicyclopentadiene, 5-methylene-2-norbornene, and mixtures thereof, said copolymer having a pendent index of about 18 to 33, an average pendent size not exceeding 10 carbon atoms, an average chain length of 2,700 to 8,800 carbon atoms and an inherent viscosity of about 0.7 to 1.8 as measured on a 0.1 weight percent solution in tetrachloroethylene at 30° C.

3,691,079

## PIEZOELECTRIC OXIDE MATERIALS

Noboru Ichinose, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed June 10, 1971, Ser. No. 151,643

Claims priority, application Japan, June 13, 1970, 45/50,716

Int. Cl. C04b 35/46

U.S. Cl. 252—62.9

1 Claim

A piezoelectric oxide material essentially consisting of a solid solution having a composition of the general formula:



where  $x$  ranges 0.02 to 0.20 and Me denotes at least one metal selected from the group consisting of Cd and Cu.

3,691,080

## NITRITES IN VINYL CHLORIDE POLYMERIZATION

Johann Bauer, Kurt Fendel, and Thomas Balwe, Burg-hausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany

No Drawing. Filed Sept. 22, 1970, Ser. No. 74,468

Claims priority, application Germany, Sept. 24, 1969, P 19 48 358.0

Int. Cl. C08f 1/58

U.S. Cl. 260—78.5 CL

6 Claims

Process for polymerizing vinyl chloride, and for co-polymerizing vinyl chloride with up to 50% by weight of other ethylenic unsaturated monomers, in aqueous phase containing a suspension agent, in the presence of an oil-soluble catalyst, which comprises heating the suspension to a temperature of 30 to 80° C. at a pressure of 1 to 15 atmospheres in the presence of 0.0001 to 0.1% by weight, referred to monomers, of inorganic or organic nitrites.

3,691,081

## DETERGENT COMPOSITIONS

Eric William Thompson and Michael Charles Marshall, Norton, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,175

Claims priority, application Great Britain, Nov. 26, 1969, 57,861/69

Int. Cl. C11d 1/825

U.S. Cl. 252—89

4 Claims

A detergent composition primarily adapted for use as an industrial surfactant which comprises a liquid substan-

tially biodegradable mixture or blend of an ethoxylated detergent range alcohol and an ethoxylated plasticiser range alcohol, the said mixture or blend including ethoxylates of alcohols derived by hydroformylation of mixed olefines.

3,691,082

## LOW-FOAMING RINSING, WASHING AND CLEANING COMPOSITIONS

Hans-Josef Stimberg, 190 Einsteinstrasse, 404 Neuss, Germany; Joachim Galinke, 30 Am Nettesfeld, 4 Dusseldorf-Holthausen, Germany; and Edmund Schmadel, 23 August-Burberg-Strasse, 402 Mettmann, Germany

No Drawing. Filed Dec. 9, 1970, Ser. No. 96,673

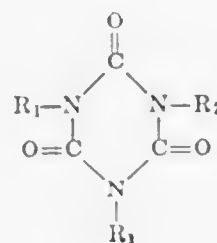
Claims priority, application Germany, Dec. 31, 1969, P 19 65 643.0, P 19 65 640.7

Int. Cl. C11d 3/28, 7/32, 9/42

U.S. Cl. 252—98

14 Claims

Low-foaming rinsing, washing and cleaning compositions comprising (a) from 90% to 99.9% by weight of at least one compound having a cleaning or complexing action and (b) from 0.1% to 10% by weight of at least one foam-inhibiting isocyanurate of the formula



wherein  $R_1$ ,  $R_2$  and  $R_3$  are identical or different aliphatic, cycloaliphatic or alkylaromatic hydrocarbon radicals having from 8 to 30 carbon atoms.

3,691,083

## CURING AGENT MIXTURES FOR EPOXIDE RESINS

Ulrich Niklaus, Aesch, Basel-Land, and Dieter Baumann, Birsfelden, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,013

Claims priority, application Switzerland, Nov. 21, 1969, 17,382/69

Int. Cl. C09k 3/00; H05b 33/00

U.S. Cl. 252—182

7 Claims

Curing agent mixtures for epoxide resins, containing (1) a precondensate of (a) cycloaliphatic dicarboxylic acid anhydride, for example hexahydrophthalic anhydride, (b) a dimeric or trimeric  $C_{14}$ — $C_{24}$  fatty acid (for example "Empol 1024") and (c) a polyglycidyl-ether of polyglycidyl-ester (for example butanediol-1,4-diglycidyl-ether or Araldite F), and (2) a  $C_{12}$ — $C_{18}$ -alkylsuccinic anhydride or alkenylsuccinic anhydride (for example dodecenylsuccinic anhydride). To manufacture the precondensate (1), 0.2 to 0.7 carboxyl groups of the oligometric fatty acid and 0.1 to 0.4 epoxide groups of the polyglycidyl-ether or polyglycidyl-ester are employed for 1 mol of anhydride. 5–50 parts by weight of alkylsuccinic anhydride or alkenylsuccinic anhydride are used per 100 parts of anhydride precondensate. The new curing agent mixtures are liquid and can be mixed with epoxide resins in any desired ratio; the cured shaped articles show good flexibility and have a very low dielectric loss above the 2nd glass point.

3,691,084

## BASE-BORATE REACTOR SAFETY SPRAY SOLUTION FOR RADIOLYTIC HYDROGEN SUPPRESSION

Herman E. Zittel, Kingston; Sebastian B. Lupica, Oak Ridge, and Lamont C. Bate, Clinton, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed April 19, 1971, Ser. No. 135,393

Int. Cl. B01d 47/06; G21c 15/18

U.S. Cl. 252—182

2 Claims

As a new composition of matter, water or an aqueous solution of sodium hydroxide containing up to 3,000 ppm boron as the borate is provided, said water or solution having a pH in the range 5.8 to 12.1, said water or solution containing a reagent selected from the group consisting essentially of  $\text{Na}_2\text{MoO}_4$ ,  $\text{Na}_2\text{CrO}_4$ ,  $\text{Na}_2\text{WO}_4$ , and  $\text{NaVO}_3$  at a concentration which is effective to suppress hydrogen formation resulting from irradiation of said solution in a nuclear reactor.

3,691,085

## METHOD OF CONTROLLING THE LIFETIME OF OXALATE ESTER CHEMILUMINESCENT REACTIONS

Bernard Roberts, Rowayton, Conn., and Michael McKay, Rahut, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 648,932, June 26, 1967, which is a continuation-in-part of Ser. No. 577,615, Sept. 7, 1966, abandoned. This application July 13, 1970, Ser. No. 56,198

Int. Cl. C09k 3/00

U.S. Cl. 252—188.3

11 Claims

A novel chemiluminescent composition which incorporates at least one of a newly discovered group of materials which extend the lifetime during which an oxalic ester chemiluminescent reaction produces chemiluminescent light. The lifetime extender materials are inorganic and organic acids which have a pKa below about 5.0 in aqueous solution. Also useful are sulfates of lithium and metals from Groups 2a, 2b, and 3a of the Periodic Table, chlorides of Group 2a metals, silica, and acidic ion exchange resins.

3,691,086

## OIL-WATER SEPARATIONS

Ronald D. Lees, Houston, Tex., and Ronald W. Smith, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed July 31, 1970, Ser. No. 60,137

Int. Cl. B01d 17/04

U.S. Cl. 252—329

18 Claims

Disclosed is a process of facilitating the separation of oil from oil-in-water liquid emulsion systems. The system is contacted with a separation aid including either (1) certain polymers, (2) polymers in conjunction with certain salts, or (3) polymers in conjunction with salts and silica sol. The polymers are water soluble cationic vinyl polymers. The salts are water soluble salts of polyvalent metals which salts in water solution give an acid reaction.

3,691,087

## METHOD FOR THE PREPARATION OF URANIUM OXIDE SOLS

Forrest R. Hurley, Ellicott City, Md.; Melvin Tecotzky, Palo Alto, Calif., and Milton C. Vanik, Severna Park, Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 558,616, June 20, 1966, Pat. No. 3,375,203, which is a continuation-in-part of Ser. No. 290,170, June 24, 1963, abandoned, which is a continuation-in-part of Ser. No. 1,159, Jan. 8, 1960, abandoned. This application Feb. 20, 1968, Ser. No. 706,773. The portion of the term of this patent subsequent to May 20, 1980, has been disclaimed.

Int. Cl. C09k 3/00

U.S. Cl. 252—301.1 S

4 Claims

A process for preparing sols of urania composed of particles in the 60 to 1900 angstrom size range which comprises elec-

trolyzing a solution of a tetravalent salt of uranium in a multi-compartment cell wherein the compartments are separated by an ion exchange resin membrane.

3,691,088

## PROCESS FOR PREPARING PHOSPHORS

Dean E. Pelton, Towanda, Pa., assignor to Sylvania Electric Products, Inc.

Filed Oct. 30, 1970, Ser. No. 85,797

Int. Cl. C09r 1/12

U.S. Cl. 252—301.6 S

9 Claims

A dry process for preparing cathodoluminescent sulfide phosphors having a small particle size, that comprises forming a relatively uniform mixture of an oxide of a divalent metal, a source of an activator material, and a source of sulfur, in specific ratios and thereafter heating the uniform mixture under controlled conditions in air.

3,691,089

## PROCESS FOR THE PRODUCTION OF COLLOIDAL SILICIC ACID COATED WITH MIXTURE OF METALLIC OXIDES, AND PRODUCT

Karl-Heinz Janzon, Grossauheim; Eugen Meyer Simon, and Heinrich Schwab, both of Frankfurt/Main, all of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt, Vormalis Roessler, Frankfurt am Main, Germany

Filed Aug. 5, 1970, Ser. No. 61,484

Claims priority, application Germany, Aug. 8, 1969, P 19 40 412.7

Int. Cl. B01J 13/00; B44d 1/12

U.S. Cl. 252—313 S

10 Claims

Silicic acid sols are treated with a mixture of trivalent metal salts and bivalent metal salts which react to form metallic oxide coatings on the surface of the sol particles. The sols as a result are rendered more stable, as indicated by the fact that the viscosity of said sols remains constant and the tendency to gel is eliminated. The sols can be dried to give a finely divided product.

3,691,090

## ENCAPSULATION METHOD

Masao Kitajima, Saitama; Tsutomu Yamaguchi, Saitama; Asaji Kondo, Saitama, and Noriyuki Muroya, Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, and Toyo Jozo Co. Ltd., Shizuoka, all of Japan

Filed Jan. 13, 1970, Ser. No. 2,618

Claims priority, application Japan, Jan. 16, 1969, 44/3042; Jan. 17, 1969, 44/3260

Int. Cl. B01J 13/02; B44d 1/02

U.S. Cl. 252—316

28 Claims

A process for the preparation of capsules containing a core material, comprising dispersing the core material in a solution of an organic solvent and an encapsulating material, dispersing the dispersion in an aqueous inorganic salt solution and then removing the organic solvent, is disclosed.





3,691,091

## DEFOAMING EMULSION

Gotz Koerner, Essen, Germany, assignor to Th. Goldschmidt AG, Essen, Germany

Filed Feb. 10, 1970, Ser. No. 10,281

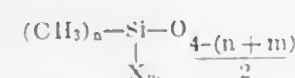
Claims priority, application Germany, March 22, 1969, P 19 14 684.0

Int. Cl. B01d 17/00

U.S. Cl. 252—358

1 Claim

The defoaming activity of an aqueous defoaming emulsion containing an emulsifier, silica in fine particle form and methylpolysiloxanes is increased by incorporating into the emulsion 10 to 60 percent by weight, calculated on the total amount of siloxane in the emulsion, of organosilicon compounds of the general formula:



wherein X stands for -OR, R being hydrogen or alkyl of one to four carbon atoms,  $n$  has a value of 1.8 to 2.0 and  $m$  has a value from 0.02 to 0.33.

3,691,092

## 1,1,1,3,3,3-HEXAFLUORO-2-PROPANOL/C1 TO C4 ALKANOL COMPLEXES

Joseph Angelo Floria, Pennsville, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 29, 1970, Ser. No. 85,220

Int. Cl. B01f 1/00

U.S. Cl. 252—364

5 Claims

1,1,1,3,3,3-Hexafluoro-2-propanol forms maximum boiling point complexes with primary, secondary and tertiary C<sub>1</sub> to C<sub>4</sub> alkanols that have improved selective solubilities for polymethylmethacrylates and other similar polymers.

3,691,093

## EFFICIENCY OF NICKEL-ALUMINUM CATALYSTS BY WATER WASHING

Herman J. Frank, Seabrook, and Irving Moch, Jr., Harris County, both of Tex., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 12, 1969, Ser. No. 798,766

Int. Cl. B01j 11/02, 11/30

U.S. Cl. 252—420

5 Claims

The method of increasing the efficiency for the conversion of 2-butyne-1,4-diol to saturated products of a granular, foraminous catalyst which has been activated by removing about 5–30 percent of the aluminum from a nickel-aluminum alloy containing about 35–60 percent by weight of nickel and about 40–65 percent by weight of aluminum after such efficiency has been reduced through extended use as a fixed-bed catalyst in the continuous hydrogenation of an aqueous mixture containing about 20–70 percent by weight of 2-butyne-1,4-diol and about 30–80 percent by weight of water at a temperature of about 60°–150°C. under a hydrogen pressure of 2,500–5,500 psi. and a superficial gas velocity of at least about 0.5 foot per minute which comprises washing the catalyst with a wash medium consisting essentially of water in combination with a pressure which is less than the reaction pressure, the volume of said wash medium being at least about 50 percent of the volume of the catalyst bed.

3,691,094

Patent Not Issued For This Number

3,691,095

## CATALYST FOR OLEFIN REACTIONS

Wolfram R. Kroll, Gerald Doyle, both of Somerville, N.J., and Helmut W. Ruhle, Edison, N.J., assignors to Esso Research and Engineering Company

Filed Sept. 16, 1970, Ser. No. 72,837

Int. Cl. C07c 3/62

U.S. Cl. 252—428

8 Claims

A process for preparing a catalyst which comprises contacting a polynuclear transition metal carbonyl complex having the general formula



wherein A is a cation selected from the group consisting of alkali metals and cations having the general formula D<sub>2</sub>Q wherein D is selected from a group consisting of C<sub>1</sub>–C<sub>20</sub> hydrocarbyl radicals and halogenated derivatives thereof and Q is selected from the group consisting of nitrogen, phosphorus and arsenic; M is a Group VI-B metal; M' is a metal selected from the group consisting of Group VI-B and Group VII transition metals; L is a unidentate or bidentate ligand selected from the group consisting of CO, NH<sub>3</sub>, hydrazine, phenylhydrazine, cyclohexylamine, n-butylamine, dimethylamine, aniline, diethylamine, pyridine, 2,6-dimethylpyridine, triphenylarsine, tributylstibine, triphenylstibine, dimethylsulfoxide, dimethylcyanamide, N-cyanopiperidine, triphenylphosphine imine, ethylenediamine, tetramethylethylenediamine, 2,2'-dipyridyl, 1,10-phenanthroline, 2,7-dimethyl-1,8-naphthyridine, piperidine, piperazine, acetonitrile, propionitrile, acrylonitrile, triphenylphosphine, triphenylphosphine oxide, triphenyl phosphite, tricyclohexylphosphine, triphenylarsine, tri(p-tolyl)arsine, tetramethyldiphosphine, 1,2-bis(diphenylphosphino) ethane, 1,2-bis(diphenylarsino)ethane, O-phenylene bis(dimethylarsine), diethylenetriamine, bis(2-methoxyethyl)ether, 2,5,8-trithianone, tris(diphenylphosphinomethyl)ethane, and tetrakis(diphenylphosphinomethyl)methane; q is an integer of from 0 to 14; m is an integer varying from 0 to 2, and wherein L must be CO when q is equal to 0; n is an integer of from 1 to 2 and equal to the valence of the carbonyl anion; with an ionic compound of the type RX wherein X is a halide and R is selected from the group consisting of compounds having the general formula D<sub>2</sub>Q wherein D is selected from the group consisting of C<sub>1</sub>–C<sub>20</sub> hydrocarbyl radicals and halogenated derivatives thereof and Q is nitrogen, phosphorus or arsenic, and an organometallic activator, said organometallic activator comprising organoaluminum halides selected from the group consisting of compounds having the general formulas R'AL<sub>2</sub> and R'<sub>2</sub>AL<sub>2</sub>Y<sub>3</sub> wherein R' is selected from the group consisting of hydrogen and C<sub>1</sub>–C<sub>20</sub> hydrocarbyl radicals and C<sub>1</sub>–C<sub>20</sub> oxyhydrocarbyls and wherein at least one R' is a hydrocarbyl radical, and Y is a halide, said contacting taking place at a temperature from –35 to 100°C and a pressure of from about 0.01 atmospheres to 500 atmospheres, the atomic ratio of the metal of the organometallic activator to the Group VI-B metal of the metallic complex varying from about 20:1 to 1:1 and the molar ratio of the Group VI-B metal to said ionic compound varying from 10:1 and 0.1:1, whereby a catalyst is formed. Catalysts prepared by the above process are especially effective as olefin disproportionation catalysts.

3,691,096

## PREPARATION OF A CARRIER-SUPPORTED CATALYST

Kurt Sennwald, Hurth-Hermulheim; Heinz Erpenbach, Surth near Cologne; Wilhelm Vogt, Efferen near Cologne; Winfried Lork, Erftstadt Friesheim; and Peter Prinz, Hurth-Burbach, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Aug. 21, 1970, Ser. No. 66,120

Claims priority, application Germany, Sept. 22, 1969, P 19 47 830.9

Int. Cl. B01j 11/82

U.S. Cl. 252—437

12 Claims

Preparation of a carrier-supported catalyst consisting of oxides of iron, bismuth, molybdenum and optionally silver and

3,691,100

## TUNGSTEN OXIDE PROMOTED AND SUPPORTED NICKEL CATALYST

Leon W. Wright, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

Filed Feb. 5, 1970, Ser. No. 9,059

Int. Cl. B01j 11/22; B01j 11/32

U.S. Cl. 252—458

7 Claims

Disclosed is a process for the production of polyhydric alcohols from carbohydrates. Also disclosed is a catalyst comprising finely divided metallic nickel and finely divided tungsten oxide supported on an inert carrier wherein the metallic nickel is from 15 to 45 percent by weight, based on total weight of catalyst, and wherein the tungsten oxide is from 0.5 to 16 percent by weight, based on the total weight of catalyst.

3,691,101

## HIGH ACTIVITY ZEOLITE CATALYSTS AND THEIR PREPARATION

Joseph K. Mertzweiler, Baton Rouge, La., and Neville L. Cull, Baker, La., assignors to Esso Research and Engineering Company

Filed June 5, 1970, Ser. No. 43,984

Int. Cl. B01j 11/40; C01b 33/28

U.S. Cl. 252—455 Z

11 Claims

Hydrocarbon feeds are converted into hydrocarbon products by contact at suitable conversion conditions with new and novel, highly active catalyst composites formed from crystalline aluminosilicate zeolites within which transition metal cations are deposited, i.e., exchanged or impregnated, and then activated, in novel manner. The catalysts are formed by ion-exchanging, or impregnating, an alkali, alkaline earth or other form, e.g., a hydrogen form, of the crystalline aluminosilicate zeolite base, natural or synthetic, with salt solutions of Group IB, IVB, VB, VIB, VII B and VIII metals; heat-treating, or pretreating, to form chemical complexes at the ion-exchange sites, to drive off moisture and absorbed oxygen, and then activating and further modifying the complex by contacting the so-formed composite with covalent or liquid soluble forms, and preferably monomeric forms, of organometallic compounds capable of entering into the pores of the zeolite, and wherein the metal constituent is selected from Groups I, II and III, and preferably Groups IA, IIA and IIIA, of the Periodic Chart of the Elements. Preferably, the so-activated composite is then treated in the presence of hydrogen at elevated temperature to fix the catalyst in its most active and stable form. Suitably, a mixed metal modification of the catalyst can be formed by use of an additional metal component, or components, which can be contacted and composited with the catalyst before or after, but preferably before, the activation and fixation steps.

3,691,097

## UNIFORM COMPOSITE STRUCTURES OF CATALYST AND FIBROUS REFRACTORY

Alvin B. Stiles, 1301 Grayson Rd., Welshire, Wilmington, Del., and Joseph Angelo Floria, Pennsville, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 803,560, March 3, 1969, abandoned. This application June 15, 1970, Ser. No. 46,550

Int. Cl. B01j 11/06

U.S. Cl. 252—440

4 Claims

This invention relates to paper-like catalytic structures which are comprised of a catalytic material uniformly distributed throughout a porous fibrous support material. The paper-like catalytic structure can also include a cement or a filler material if desired.

This invention also relates to the process of preparing said paper-like catalytic structures.

3,691,098

## PROCESS FOR MANUFACTURING OXYCHLORINATION CATALYSTS

Benedetto Calcagno, Milan; Marcello Ghirga, Bresso, and Natale Bertolini, Milan, all of Italy, assignors to Società Italiana Resine S.P.A., Milan, Italy

Filed Oct. 29, 1970, Ser. No. 85,309

Claims priority, application Italy, Nov. 14, 1969, 24409 A/69

Int. Cl. B01j 11/78

U.S. Cl. 252—441

12 Claims

Oxychlorination catalysts for conversion of hydrocarbons or partially chlorinated hydrocarbons to chlorinated derivatives are made by fluidizing a bed of decomposable copper salt and an inert support, optionally in the presence of an alkali metal chloride, by means of a flow of hydrochloric acid gas and a molecular-oxygen containing gas.

3,691,099

## TREATMENT OF ALUMINOSILICATE

Dean Arthur Young, 4721 Palm Ave., Yorba Linda, Calif.

Continuation-in-part of Ser. No. 797,678, Feb. 7, 1969, abandoned, which is a continuation-in-part of Ser. No.

697,587, Jan. 15, 1968, Pat. No. 3,460,934, which is a

continuation-in-part of Ser. No. 457,485, May 20, 1965, Pat. No. 3,383,169. This application Feb. 27, 1970, Ser. No. 15,219

Int. Cl. B01j 11/32, 11/40

U.S. Cl. 252—450

25 Claims

The properties of aluminum-containing refractory oxides in which at least some of the aluminum atoms are tetra-coordinated are improved and/or retained upon contacting with aqueous acidic media in the presence of slats having cations capable of satisfying the negative charge on the tetra-coordinated aluminum atoms. Further advantage with regard to zeolites is realized when the salt anion is capable of combining, e.g., reacting, complexing etc., with aluminum.

3,691,102

## GROUP VIII METAL-TIN CATALYST AND METHOD OF MAKING SAME

Harold E. Swift, West Deer Township, Allegheny County, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 689,233, Nov. 22, 1967, Pat.

No. 3,580,970, which is a continuation-in-part of Ser. No.

506,479, Nov. 5, 1965, abandoned. This application May 11,

1970, Ser. No. 36,178

Int. Cl. B01j 11/08, 11/22, 11/32

U.S. Cl. 252—469

13 Claims

A Group VIII metal-tin catalyst is described in which the molar ratio of Group VIII metal to tin is about 1.7 to 15. The catalyst is prepared by heating reducible compounds of a Group VIII metal and tin in oxygen and then reducing the resulting product with hydrogen. A metallic nickel-tin composition is an example of this catalyst.



3,691,103

## PROCESS FOR THE PREPARATION OF A NON-PYROPHORIC NICKEL SKELETON CATALYST

Zoltan Csuros; Jozsef Petro; Antal Tungler; Tibor Mathe, and Sandor Bekassy, all of Budapest, Hungary, assignors to Magyar Tudomanyos Akademia

Filed March 26, 1970, Ser. No. 23,068

Claims priority, application Hungary, March 25, 1969, MA 1965

Int. Cl. B01j 11/22

U.S. Cl. 252—473

3 Claims

A process for the preparation of non-pyrophoric nickel skeleton catalysts, in which 30 to 80 percent by weight of metallic zinc, 60 to 20 percent by weight of metallic nickel and 0 to 40 percent by weight of one or more further metals soluble in alkaline solutions are heat-treated at temperatures in the range of 880° to 1,120° C for at least 3 minutes, preferably for 10 to 30 minutes, with simultaneous protection of the surface of the melt against oxidation, the melt thus obtained is cooled at a rate not exceeding 120°/minute in the average, the alloy thus obtained is powdered or granulated, and the powdered or granulated alloy is treated with an alkali hydroxide solution of 10–50 percent by weight at temperatures not exceeding the boiling point of the alkaline solution.

3,691,104

## PROCESS FOR PREPARING PHOTOCONDUCTIVE POWDERS

Hiroshi Hanada, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1970, Ser. No. 37,040

Claims priority, application Japan, May 15, 1969, 44/37799

Int. Cl. H01c 7/06

U.S. Cl. 252—501

2 Claims

A ternary compound of A<sub>2</sub>BC<sub>2</sub> type where A is Cd or Zn, B is Si or Ge, and C is S, Se or Te is calcinated by using a halogen compound as flux, and if desired, in addition, an activator. The ternary compound thus calcinated has high spectral sensitivity to a shorter wave length range of visible light and is useful for electrophotographic photosensitive member.

3,691,105

## COMPOSITIONS FOR ELECTROSENSITIVE RECORDING MATERIAL

Kiyoshi Juna; Noboru Shinada, and Masuo Tuchiya, all of Research Laboratory, Kansai Paint Co., Ltd., 1200, Yawata, Kanagawa-ken, Japan

Filed Oct. 21, 1970, Ser. No. 82,855

Claims priority, application Japan, May 12, 1970, 45/39691; June 29, 1970, 45/55947; Aug. 28, 1970, 45/74947

Int. Cl. H01b 1/08

U.S. Cl. 252—519

7 Claims

Compositions for electrosensitive recording material used as recording paper for facsimiles etc., comprise zinc oxide doped with trivalent or tetravalent metal elements and a binder.

3,691,106

## NOVEL DETERGENT COMPOSITIONS

Nicholas Z. Erdy, New York, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Aug. 28, 1970, Ser. No. 68,015

Int. Cl. C11d 3/30

U.S. Cl. 252—544

16 Claims

There are disclosed novel detergent compositions comprising a mixture of one or more surfactants with a unique builder for said compositions which comprises a crosslinked, water-insoluble copolymer of at least one C<sub>4</sub>–C<sub>10</sub> olefin and at least one polycarboxyl vinyl monomer; said crosslinked, water-insoluble copolymer being a water-swellaable, gel-forming material.

3,691,107

## NOVEL DETERGENT COMPOSITIONS

Nicholas Z. Erdy, New York, N.Y., and Arthur J. Yu, Stamford, Conn., assignors to Stauffer Chemical Company, New York, N.Y.

Filed Aug. 28, 1970, Ser. No. 68,016

Int. Cl. C11d 3/30

U.S. Cl. 252—544

16 Claims

There are disclosed novel detergent compositions comprising a mixture of one or more surfactants with a unique builder for said compositions which comprises a cross-linked, water-insoluble copolymer of at least one C<sub>4</sub>–C<sub>10</sub> olefin and at least one polycarboxyl vinyl monomer; said crosslinked, water-insoluble copolymer being a water-swellaable, gel-forming material.

3,691,108

## OLEFIN SULFONATE DETERGENT COMPOSITION

Eiichi Ichiki; Kazuo Iida; Yasuhiko Inoue, and Keizo Uyeo, all of Niihama, Japan, assignors to Sumitomo Chemical Co., Ltd., Higashi-ku, Osaka, Japan

Filed Aug. 28, 1970, Ser. No. 68,042

Claims priority, application Japan, Aug. 29, 1969, 44/68853

Int. Cl. C11d 3/065, 1/12

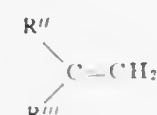
U.S. Cl. 252—555

5 Claims

An olefin sulfonate detergent composition containing, as active ingredients, a mixture consisting essentially of (a) 25 to 75 parts by weight of a sulfonate of a straight chain α-olefin represented by the general formula



wherein R' is an alkyl radical of 12 to 20 carbon atoms, and the average number of bonded SO<sub>3</sub> radicals of said sulfonate is 1.05 to 1.7, and (b) 75 to 25 parts by weight of a sulfonate of a vinylidene olefin represented by the general formula



wherein R'' and R''' each is an alkyl radical of one to 19 carbon atoms and the sum of the carbon atoms of R'' and R''' is 12 to 22, and the average number of bonded SO<sub>3</sub> radicals of said sulfonate is 1.05 to 1.7.

3,691,109

## PROCESS FOR REGENERATING RESINS OF DEIONIZATION SYSTEM

Arthur L. Larsen, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed May 25, 1970, Ser. No. 40,183

Int. Cl. B01d 15/06; C02b 1/76

U.S. Cl. 260—2.1 R

4 Claims

A weak acid resin which is exhausted by contact with bases is regenerated by contact with carbonic acid formed by introducing carbon dioxide into water under a pressure of from 100 to 300 psi. The carbonic acid is capable of regenerating the sodium form of the weak acid resin. The sodium bicarbonate from the regeneration of the weak acid resin is then degassed to eliminate the carbonic acid or CO<sub>2</sub> and the remaining sodium bicarbonate is used to regenerate a weak base anion resin. The ion exchange beds are then run in reverse, that is, the anions are exchanged before the cations.

3,691,110

## ANTISTATIC TREATING AGENT FROM POLYEPOXIDE-POLYAMINE REACTION

Toshio Ohfuka; Yasushi Ichikawa, and Takeshi Ueda, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 2, 1970, Ser. No. 42,871

Claims priority, application Japan, June 11, 1969, 44/45403

Int. Cl. C08g 30/14, 45/00

U.S. Cl. 260—2 EP

18 Claims

Durable antistatic effects can be imparted to fibers by treating the fibers with a novel water-soluble polyamine either alone or in admixture with a polyepoxide compound. The novel water-soluble polyamine is obtained by reacting a polyamine with a polyol derivative having at least two glycidyl ether groups in one molecule and treating the reaction product, before it becomes water-insoluble, with a sulfite and/or a bisulfite.

3,691,111

## EPIHALOHYDRIN POLYMERS

Tsuneo Takaoka, Chigasaki-shi; Tetsuya Ohta, Fujisawa-shi, and Masaru Itoh, Chigasaki-shi, all of Japan, assignors to Nippon Oil Seal Industry Co. Ltd., Minato-ky, Tokyo-to, Japan

Filed Nov. 28, 1969, Ser. No. 880,989

Claims priority, application Japan, Dec. 19, 1968, 43/92683

Int. Cl. C08g 23/14

U.S. Cl. 260—2 A

5 Claims

Production of epihalohydrin polymers using a catalyst system including an organoaluminum compound and sulfur wherein the sulfur/aluminum atomic ratio is from about 0.05 to 0.8.

3,691,112

## PROCESS FOR THE PRODUCTION OF POLYAMIDE FOAMS AND ELASTOMERS FROM AMINO-CROTONIC ACID ESTERS

Gerhard Grogler, Leverkusen, and Gunter Oertel, Cologne, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 10, 1970, Ser. No. 53,994

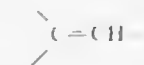
Claims priority, application Germany, July 12, 1969, P 19 35 484.8

Int. Cl. C08g 22/44, 22/00, 20/00

U.S. Cl. 260—2.5 AM

16 Claims

Novel polyamides are obtained by a process which comprises the polyaddition of aliphatic or aromatic polyisocyanates with N-substituted-amino-crotonic acid esters. The addition of the NCO group takes place on the active hydrogen atom of the



group of the amino-crotonic acid ester.

3,691,113

## EXPANDED CROSS-LINKED POLYMERS OF EPIHALOHYDRIN

William D. Willis, Limestone Acres, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 550,622, May 17, 1966, which is a continuation-in-part of Ser. No. 341,728, Jan. 31, 1964, Pat. No. 3,287,287, which is a continuation-in-part of Ser. No. 261,189, Feb. 26, 1963, abandoned. This application Aug. 23, 1967, Ser. No. 662,577

Int. Cl. C08j 1/18

U.S. Cl. 260—2.5 R

8 Claims

A foamed product comprising a cross-linked epihalohydrin polymer of substantially uniform closed-cell structure.

3,691,114

Patent Not Issued For This Number

3,691,115

Patent Not Issued For This Number

3,691,116

## SYNTHETIC RESIN COMPOUNDS OF THE PHTHALOCYANINE SERIES

Robert Bruce McKay, Kilmarnock, Ayrshire, Scotland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Aug. 12, 1970, Ser. No. 63,345

Claims priority, application Great Britain, Aug. 13, 1969, 40455/69

Int. Cl. C08g 51/14; C08h 17/14

U.S. Cl. 260—18 N

13 Claims

New synthetic resin condensation products are prepared by condensing a chlormethylated copper phthalocyanine and a polyamide. The new polymers are used to improve the flocculation resistance of phthalocyanine pigments.

3,691,117

## POLYURETHANE COMPOSITIONS OF MATTER AND METHODS OF MANUFACTURE

Alfred E. Messerly, 7955 Haskell Ave., Unit 15, Van Nuys, Calif.

Continuation-in-part of Ser. No. 635,659, May 3, 1967, abandoned. This application Aug. 10, 1970, Ser. No. 62,669

Int. Cl. C08g 22/08, 22/40; C09d 3/72

U.S. Cl. 260—18 TN

7 Claims

Improved polyurethane compositions of matter are prepared by reacting a prepolymer and a polyol in the presence of suitable catalysts to produce materials which cure rapidly and through chemical bonding, are adapted to provide covering protection for surfaces made of various substances and prevent electrolysis of conductive substances. The steps in the preparation of these improved polyurethane compositions generally provide for the reaction of higher molecular weight diols with isocyanates at an elevated temperature to insure completion of reaction and then reducing the temperature to inhibit premature formation of cross linkages in the preparation of prepolymers. The polyols used in the reaction with such prepolymers are novel in that such polyols contain chain extenders, polyfunctional polyalkylene polyols, tertiary alkanolamines, and relatively high molecular weight polyalkylene ethers.

3,691,118

## LEATHER PRINTING COMPOSITION

Murray Fishman, Wantagh, N.Y., assignor to Nicholas R. Loscalzo, Suffolk County and Frank Colopriscio, Wantagh, N.Y., part interest to each

Filed Jan. 12, 1968, Ser. No. 697,328

Int. Cl. C08g 5/20

U.S. Cl. 260—19 UA

4 Claims

Compositions for printing on leather are obtained from compositions containing an oleoresinous varnish, a penetrating agent and a friction-reducing agent.

3,691,119

## OXSILYLENE FLUORO-CHEMICAL POLYMERS AND PROCESS FOR PREPARING SAME

Albert Charles Tanquary, Birmingham, Ala., assignor to Southern Research Institute, Birmingham, Ala.

Filed Aug. 18, 1970, Ser. No. 64,811

Int. Cl. C08f 1/104

U.S. Cl. 260—2 S

12 Claims

An oxysilylene fluorochemical polymer is prepared by reacting (a) at least one fluorochemical diol containing two pairs of trifluoromethyl groups, each pair being attached







phosphonium or sulfonium salt, which are relatively stable at room temperature and can be cured at moderately elevated temperatures in a relatively short period of time to thermoset products characterized by excellent thermal stability, and when used in adhesive applications to bond together materials such as wood, plastic and metal, by excellent bonding strength.

3,691,134

# POLYURETHANES PREPARED FROM CYCLO-ALKYL DIISOCYANATES

Julian Feldman, and Robert J. Shaw, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 694,114, Dec. 28, 1967, Pat. No. 3,625,986. This application April 27, 1970, Ser. No. 43,253 Int. Cl. C08g 22/18

U.S. Cl. 260—77.5 AT

6 Claims

Polyurethanes are prepared from alkyl diisocyanates such as 1-(isocyanatomethyl)-1-(3-isocyanatopropyl)-cyclohexane; 1-(isocyanatomethyl)-1-(3-isocyanatopropyl)-4-ethyl-5-n-propyl-cyclohexane and bicyclo[2.2.1]-2-isocyanatomethyl-2-(3-isocyanatopropyl) heptane and glycols.

3,691,135

# RAPID DRYING MOISTURE CURED COATINGS

Heinz Schulze, 6408 Wilbur Drive, Austin, Tex., and Michael Cuscurida, 301 E. 34 St., Austin, Tex.

Filed Sept. 28, 1970, Ser. No. 76,329 Int. Cl. C08g 22/16

U.S. Cl. 260—77.5 AP

10 Claims

Fast drying (curing) polyurethane coatings with excellent physical properties may be made from an isocyanate, a polyhydric alcohol and a polyol which is a condensation product of glyoxal and a polyhydric alcohol which may also contain monofunctional alcohols and residues of vinyl carboxylic acids. Such coatings cure both by reaction with air and moisture. Polyurethane coatings are useful anywhere a tough covering is required. For example, the coatings are useful in flooring, roofing, and wire covering.

3,691,136

# USE OF PHOSPHORUS COMPOUNDS AS STRIPPING AGENTS FOR POLYAMIDE-IMIDE FILMS

Carl Serres, Jr., Naperville, and Benjamin A. Bolton, both of Winfield, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed March 29, 1971, Ser. No. 129,110 Int. Cl. C08g 20/32, 51/34, 51/44

U.S. Cl. 260—78 TF

12 Claims

Polyamide-imide compositions useful for film preparation are disclosed. These compositions comprise the polyamide-imide polymer, a solvent system for said polymer, and one of the following stripping agents: phosphoric acid, phosphites, esters of phosphoric acid and strong organic acids.

3,691,137

Patent Not Issued For This Number

3,691,138

# PROCESS FOR THE POLYMERIZATION OF $\alpha,\alpha$ -DIALKYL- $\beta$ -PROPIOLACTONES

Norbert Vollkommer, Kenntemich-Platz 14, 521 Troisdorf; Roshdy Ismail, Schulstrasse, 5201 Neunkirchen, and Moustafa El-Chahawi, Alfred Delp-strasse 6, 521 Troisdorf, all of Germany

Filed July 2, 1970, Ser. No. 60,219 Claims priority, application Germany, July 3, 1969, P 19 33 730.5; Dec. 23, 1969, P 19 64 360.8

Int. Cl. C08g 17/017

U.S. Cl. 260—78.3 R

9 Claims

In production of polyesters from a  $\alpha,\alpha$ -substituted- $\beta$ -propiolactones, amides of acids of phosphorus are used as initiators for the polymerization.

3,691,139

# SODIUM MALEATE PEROXYHYDRATE

John H. Blumbergs, Highland Park, and Paul R. Muceniks, Trenton, both of N.J., assignors to FMC Corporation, New York, N.Y.

Filed June 18, 1970, Ser. No. 47,551 Int. Cl. C08f 27/04

U.S. Cl. 260—78.4 R

2 Claims

Sodium maleate peroxyhydrate, useful as a combined detergent builder and bleach, is described, together with its preparation.

3,691,140

# ACRYLATE COPOLYMER MICROSPHERES

Spencer Ferguson Silver, 3 M Center, St. Paul, Minn.

Filed March 9, 1970, Ser. No. 17,880 Int. Cl. C08f 15/26

U.S. Cl. 260—78.5

19 Claims

Infusible, solvent-dispersible, solvent-insoluble, inherently tacky, elastomeric copolymer microspheres consist essentially of about 90 percent to about 99.5 percent by weight of at least one alkyl acrylate ester and about 10 to about 0.5 percent by weight of at least one monomer selected from the group consisting of substantially oil-insoluble, water-soluble, ionic monomers and maleic anhydride. The microspheres are prepared by aqueous suspension polymerization utilizing emulsifier in an amount greater than the critical micelle concentration in the absence of externally added protective colloids or the like.

## ERRATUM

For Class 260—78.5 CL see: Patent No. 3,691,080

3,691,141

# CROSSLINKED TERPOLYMERS OBTAINED WITHOUT SULFUR AND VULCANIZING AGENTS AND METHOD FOR PREPARING SAME

Giorgio Corradini, Via Cupello, 11/A; Giuseppe Ghetti, Via Cesare Battisti, 11; Sabastiano Cesca, Via Pace, 7/C, all of San Donato Milanese, and Sergio Arrighetti, Via Caldera 11, Milan, all of Italy

Filed April 23, 1970, Ser. No. 31,410 Claims priority, application Italy, April 23, 1969, 15875 A/69

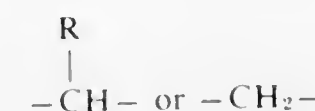
Int. Cl. C08f 15/40, 17/00, 19/00

U.S. Cl. 260—80.78

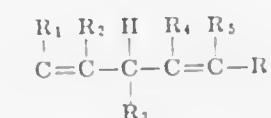
11 Claims

Terpolymers are disclosed which are subject to crosslinking in the absence of any vulcanizing agent or accelerator and

which are obtained from  $\alpha$ -olefine monomers and a terpolymer having side chains consisting of a



group which is directly linked to two carbon atoms, each of which has an ethylenic bond, e.g.:



wherein  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_5$ , and  $R_6$  are selected from the group consisting of hydrogen and hydrocarbon radicals which contain from one to five carbon atoms and which may include pairs of radicals that may be cyclized to form one or more rings having from four to seven carbon atoms.

3,691,142

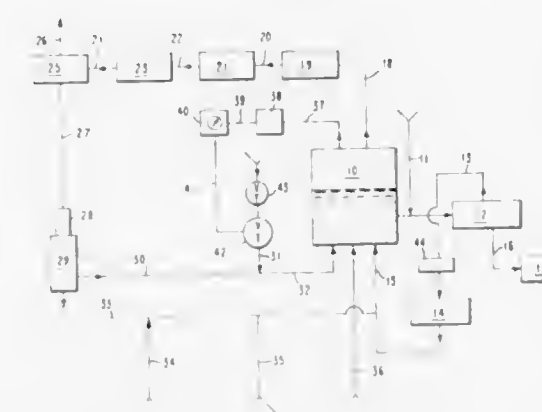
# CONTROL SYSTEM FOR AN ETHYLENE COPOLYMERIZATION PROCESS

Robert E. A. Petersen, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 29, 1969, Ser. No. 828,876 Int. Cl. C08f 15/40, 15/04, 1/28

U.S. Cl. 260—80.78

1 Claim



In manufacturing ethylene copolymers in a gas-liquid phase reactor general reactor fouling is avoided by regulating ethylene feed in response to gas pressure in the reactor.

3,691,143

# METHOD FOR RECOVERING A SOLVENT AND AN ELASTOMERIC POLYMER FROM AN ELASTOMERIC POLYMER SOLUTION

Takashi Kadowaki; Takao Iwasaki; Yutaka Mitsuta, all of Nishikubiki-gun, and Kenji Shimada, Itoigawa, all of Japan, assignors to Denki Kagaku Kogyo Kaisha and Nippon Alpin Rubber Co., Ltd.

Filed July 14, 1970, Ser. No. 54,853

Claims priority, application Japan, July 22, 1969, 44/57406 Int. Cl. C08d 5/02; C08f 1/88

U.S. Cl. 260—85.5

5 Claims

A solvent and an elastomeric polymer are recovered and separated from a polymer solution obtained by a solution polymerization by treating the polymer solution with steam in the presence of a phosphate of polyoxyethylene alkyl ether or polyoxyethylene alkylaryl ether at pH value of more than 7 in an aqueous phase.

3,691,144

# OLEFIN POLYMERIZATION USING COMPLEXES OF MO AND W, CONTAINING NO WITH ORGANOALUMINUMS

Ernest A. Zuech, c/o Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 717,023, March 28, 1968, which is a continuation-in-part of Ser. Nos. 694,873, Jan. 2, 1968, abandoned, and Ser. No. 635,700, May 3, 1967, abandoned. This application Sept. 17, 1970, Ser. No. 73,231

Int. Cl. C08f 3/02, 15/04

U.S. Cl. 260—93.1

15 Claims

A process for the conversion of olefinic hydrocarbons according to the olefin reaction (e.g., the olefin disproportionation reaction) by contacting the olefinic hydrocarbon with a catalyst comprising a coordination compound of molybdenum or tungsten complexed with NO, together with an organoaluminum adjuvant.

3,691,145

# PRODUCTION OF POLYETHYLENE BY THE HIGH PRESSURE PROCESS USING A MIXTURE OF TERTIARY BUTYL HYDROPEROXIDE AND OXYGEN AS THE INITIATOR

Volker Gierth; Hans Gropper; Franc Georg Mietzner, all of Ludwigshafen, and Friedrich Urban, Limburgerhof, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Aug. 6, 1970, Ser. No. 61,832

Int. Cl. C08f 1/60, 3/04

U.S. Cl. 260—94.9 R

5 Claims

Production of polyethylene by polymerizing ethylene at elevated temperatures and elevated pressure under the action of a polymerization initiator, consisting of oxygen and t-butyl hydroperoxide, and of a polymerization regulator. The process of the invention is characterized in that temperature ranging from 310° to 400°C are used and that the polymerization initiator consists of from 1 to 12 molar parts of oxygen and from 1 to 5 molar parts of t-butyl hydroperoxide per million molar parts of the ethylene being polymerized. The process of the invention is preferably carried out continuously in a tubular reactor. The process permits easy control of the reaction with high yields and provides products with high flexibility and elongation.

3,691,146

Patent Not Issued For This Number

3,691,147

# (4-L-THREONINE)-OXYTOCIN

Maurice Manning, Toledo, Ohio, assignor to The Medical College of Ohio, Toledo, Ohio

Filed June 5, 1970, Ser. No. 43,943

Int. Cl. C07c 103/52

U.S. Cl. 260—112.5

1 Claim

A novel biologically active (4-L-threonine)-oxytocin which is an analog of oxytocin in which the glutamine residue in position four is replaced by a threonine residue.



3,691,148

## INSOLUBLE HETEROCYCLIC DISAZO DYES

Richard Peter, and Hans-Joerg Angliker, both of Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

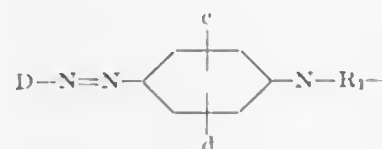
Continuation-in-part of Ser. No. 693,703, Dec. 27, 1967, abandoned. This application Aug. 7, 1970, Ser. No. 62,165. Claims priority, application Switzerland, Jan. 4, 1967, 77/67; May 26, 1967, 7468/67; Dec. 11, 1967, 17307/67

Int. Cl. C09b 33/16; D06p 3/54, 3/72

U.S. Cl. 260—158

5 Claims

Heterocyclic disazo compounds containing two heterocyclicazo-aniline groups of general formula

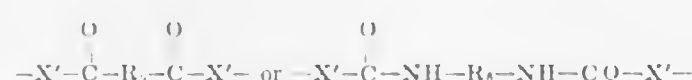


where D is a heterocyclic diazo component such as thiazolyl, benzthiazolyl, benzimidazolyl, etc.

c and d are such substituents as methyl, ethoxy, phenoxy and acylamino

R1 can be hydrogen, lower alkyl and lower-alkyl substituted by cyano, phenyl, hydroxy, alkoxy, etc.

R2 can be alkylene and substituted alkylene, etc. are bridged by a bridging group, Z, which has no dyestuff characteristics, such as —O—R3—, —NH—R3—NH— where R3 is aliphatic, cyclo- or araliphatic, aromatic or acyl,



where X' is oxygen, sulfur or —NH and R4 is aliphatic, cycloaliphatic, aromatic or heterocyclic. The compounds are useful in dyeing synthetic fibers, especially polyester and acrylic.

3,691,149

## DISAZO PIGMENTS

Willy Mueller; Karl Ronco, both of Riehen, and Rudolf Mory, Dornach, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed April 9, 1970, Ser. No. 27,102

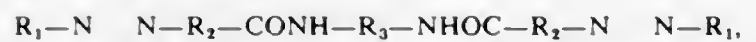
Claims priority, application Switzerland, April 25, 1969, 6360/69

Int. Cl. C07c 107/08; C09b 43/12

U.S. Cl. 260—174

9 Claims

Disazo dyestuffs of the formula



in which R1 represents an aryl residue, R2 represents a hydroxynaphthalene residue in which the azo, hydroxy and —CO groups are in 1, 2, 3-position, or the residue of an enolized or enolizable ketomethylene compound and R3 represents a phenylene or diphenylene residue containing at least one carboxylic acid ester, carboxylic acid amide, sulphonic acid ester, sulphonic acid amide or sulphone group are valuable pigments which are useful for coloring plastics and lacquers in yellow to red shades.

3,691,150

## PROCESS FOR PREPARING PROPYLENE GLYCOL ALGINATE

Vagn Nielsen, Janelyst, Edwin Rahrs Vej, DK-8220 Brabrand; Jens Birk Lauridsen, 3, Eblehegnet, Horret Pr. DK-8230 Marslet, and Kristian Stistrup Jensen, 45, Nojsomhedsbakken, DK-8220 Brabrand, all of Denmark

Filed Sept. 21, 1970, Ser. No. 74,200

Int. Cl. C08b 19/10

U.S. Cl. 260—209.6

1 Claim

In order to minimize risks of explosion and to utilize the reactor space more intensively, in the preparation of propylene glycol alginate by reacting alginic acid or partially neutralized alginic acid with propylene oxide in the presence of a diluent, the alginic material is held or conveyed at moderate speed in the reactor with the aid of stationary or slowly moving holding means adapted to permit the passage of gases and liquids, while the diluent with the propylene oxide is caused to flow through the holding means and the alginic material until the reaction is substantially completed.

3,691,151

## KANAMYCIN EMBONATE

Giuseppe Guadagnini, Sunnazzaro dei Burgondi, and Franco Fabi, Milan, both of Italy, assignors to Pierrel S.p.A., Milan, Italy

Filed Aug. 7, 1970, Ser. No. 62,147

Claims priority, application Great Britain, Aug. 14, 1969, 40,754/69

Int. Cl. C07g 11/00

U.S. Cl. 260—210 K

1 Claim

Kanamycin embonate and pharmaceutical preparations thereof, useful as antibiotics, are disclosed. Kanamycin embonate is prepared by reacting a water soluble salt of embonic acid with an aqueous solution of kanamycin or a salt thereof.

3,691,152

## HYDRODESULFURIZATION AND BLENDING OF RESIDUE-CONTAINING PETROLEUM OIL

Gerald V. Nelson, Nederland; William R. Coons, Jr., Port Arthur, both of Tex., and Glenn C. Wray, Dyersburg, Tenn., assignors to Texaco Inc., New York, N.Y.

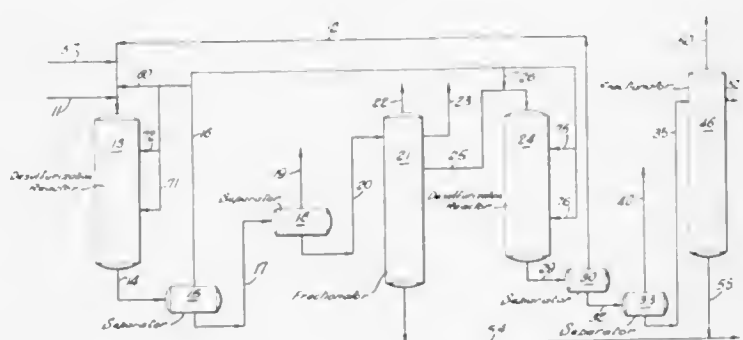
Continuation of Ser. No. 787,908, Dec. 30, 1968, abandoned.

This application March 10, 1971, Ser. No. 123,004

Int. Cl. C10g 23/02

U.S. Cl. 208—210

6 Claims



Petroleum oils of reduced sulfur content are produced by introducing into a catalytic hydrodesulfurization zone a residue-containing petroleum oil of which at least 10 volume per cent boils below 1,000°F. separating the hydrodesulfurization zone effluent into a fraction boiling below about 1,000°F. and a fraction boiling above about 1,000°F. desulfurizing the fraction boiling below about 1,000°F. and combining the product with the fraction boiling above about 1,000°F. The catalyst in the first hydrodesulfurization should have a surface area of at least 250 m<sup>2</sup>/g., a pore volume of at least 0.6 cc/g and should contain at least 2 percent by weight silica.

3,691,153

## POLYSACCHARIDE OXIDIZED PRODUCTS

Krishna P. Vemuri, Appleton, Wis., assignor to Abitibi Paper Company, Ltd., Toronto, Ontario, Canada

Filed June 5, 1969, Ser. No. 830,664

Claims priority, application Canada, Sept. 30, 1968, 031,235

Int. Cl. C07c 47/18

U.S. Cl. 260—209 R

3 Claims

A novel oxidized non cellulosic polysaccharide which is useful as a wet strength additive in paper making is described. The starting material is preferably a naturally occurring polysaccharide gum or a seaweed extractive, and these materials are oxidized, without degradation of the ring structure of the hexose units, with an acid-dichromate system so that at least some of the initial primary alcohol groups at the C<sub>6</sub> positions are oxidized to aldehyde groups.

3,691,154

## ABSORBENT FIBERS OF PHOSPHORYLATED CELLULOSE WITH ION EXCHANGE PROPERTIES

Leo J. Bernardin, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 5, 1970, Ser. No. 34,878

Int. Cl. C08b 5/00; D06m 11/08, 13/26

U.S. Cl. 260—219

9 Claims

Highly absorbent cellulose fibers with ion exchange properties are obtained by phosphorylating cellulose fibers, hydrolyzing the fiber walls with acid, converting the phosphorylated fibers to the sodium salt form, mechanically refining these fibers to rupture the primary fiber wall and permit subsequent swelling or ballooning, acidifying the refined fibers to reconvert the phosphorylated cellulose into the acid form, and drying the fibers in a manner to substantially avoid appreciable hydrogen bonding. The acid pH of these highly absorbent fibers makes them ideally suited as an absorbent component in catamenial tampons employed to establish and maintain a desirable acidic condition in the vagina.

3,691,155

## HEAT TREATMENT OF OXIDIZED STARCH

Jack H. Kolaian, c/o Texaco Inc., P.O. Box 509, Beacon, N.Y. Division of Ser. No. 837,887, June 3, 1969, Pat. No. 3,637,493.

This application Dec. 28, 1970, Ser. No. 102,165

Int. Cl. C08b 19/04

U.S. Cl. 260—233.3 R

4 Claims

A chemically oxidized starch drilling fluid dispersant having improved resistance to deterioration in the presence of bacteria in a low pH mud system by heating a chemically oxidized starch dispersant for 15 to 50 minutes at temperatures of 400°–475° F. and an aqueous drilling fluid containing the heated chemically oxidized starch dispersant.

3,691,156

Patent Not Issued For This Number

3,691,157

## PREPARATION OF 7-SUBSTITUTED-1-(2-DIETHYLAMINOETHYL)-5-(2-HALOPHENYL)-1,3-DIHYDRO-2H-1,4-BENZODIAZEPIN-2-ONES

Rodney Ian Fryer, 5 Elton Drive, North Caldwell, and Leo Henryk Sterbach, 10 Woodmont Road, Upper Montclair, N.J.

Continuation-in-part of Ser. No. 733,817, June 3, 1968,

abandoned. This application Aug. 12, 1970, Ser. No. 63,273

Int. Cl. C07d 53/06

U.S. Cl. 260—239.3 D

6 Claims

7-Substituted-1-(2-diethylaminoethyl)-5-(2-halophenyl)-1,3-dihydro-2H-1,4-benzodiazepin-2-ones are prepared starting with a 4-substituted-2-(2-halobenzoyl)aniline by a multi-step procedure. The product compounds produced by the process of the present invention are useful as tranquilizers, muscle relaxants, anti-convulsants and hypnotics.

3,691,158

## HEXACHLOROPENTADIENE ADDUCTS OF UNSATURATED AMIDES OF AZABICYCLONONANE

Robert R. Mod, 4600 San Harco Road, New Orleans, La.; Frank C. Magne, 2223 Franklin Ave., New Orleans, La., and Evald L. Skau, 6473 Memphis St., New Orleans, La.

Division of Ser. No. 878,922, Nov. 21, 1969. This application

Dec. 16, 1971, Ser. No. 208,948

Int. Cl. C07d 41/04

U.S. Cl. 260—239 BA

1 Claim

This invention relates to certain new nitrogen-containing compounds, more particularly to N-substituted and N,N-disubstituted amides, the acyl moieties of which are the acyl moieties of the hexachlorocyclopentadiene adducts of either 9-octadecenoic or 10-undecenoic acids.

The compounds which are the subject of this invention are characterized by the fact that as growth inhibitors they are effective against a variety of bacteria, yeasts, and molds, some of which are pathogenic. They are also useful as plasticizers.

3,691,159

## TRICYCLIC HETEROCYCLIC AMIDES OF DIALLYLAMINO-ALKANOIC ACIDS AND SALTS THEREOF

Gunther Schmidt, Joh.-Seb.-Bach-Strasse 27; Robert Engelhorn, Talfeldstrasse 45, and Matyas Leitold, Mozartstrasse 22, all of 795 Biberach/Riss, Germany

Filed July 13, 1970, Ser. No. 54,624

Claims priority, application Germany, July 18, 1969, P 19

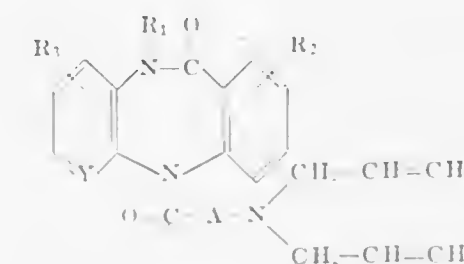
36 670.2

Int. Cl. C07d 53/02

U.S. Cl. 260—239.3 T

12 Claims

Compounds of the formula



wherein

R1 is hydrogen or alkyl of one to four carbon atoms,

R2 and R3 are each hydrogen or halogen,

Y is nitrogen or —CH—, and

A is alkylene of one to two carbon atoms,

and their non-toxic, pharmacologically acceptable acid addition salts; the compounds as well as their salts are useful as ulcer inhibitors and stomach juice secretion inhibitors in warm-blooded animals.

3,691,160

## 4-HYDRAZONOMETHYLTHIAZOLE

## ANTITRYPANOCIDES

Patrick Roffey, Camerley, and John Pomfret Verge, Henley-on-Thames, both of England, assignors to Lilly Industries, Ltd., London, England

Filed July 8, 1970, Ser. No. 53,305

Claims priority, application Great Britain, July 15, 1969,

35,593/69; April 20, 1970, 18,801/70

Int. Cl. C07d 91/32

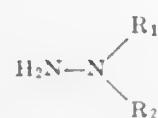
U.S. Cl. 260—240 A

12 Claims

2-(5-Nitro-2-furyl)-, 2-(5-nitro-2-thienyl)-, 2-[2-(5-nitro-2-furyl)vinyl]-, and 2-[2-(5-nitro-2-thienyl)vinyl]-4-hydrazonomethylthiazoles trypanocidally active compounds



are prepared by reacting the corresponding 4-(C<sub>1</sub>-C<sub>6</sub> alkylthio)thiazole with a hydrazine of the formula:



wherein R<sub>1</sub> and R<sub>2</sub> separately are H, C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>1</sub>-C<sub>6</sub> hydroxyalkyl, C<sub>1</sub>-C<sub>6</sub> alkoxyalkyl and R<sub>1</sub> and R<sub>2</sub> together are alkylene, oxaalkylene, thiaalkylene, thiooxyalkylene, thiodioxyalkylene or azaalkylene bridge.

3,691,161

## NOVEL DIPYRRYLMETHENE DYES

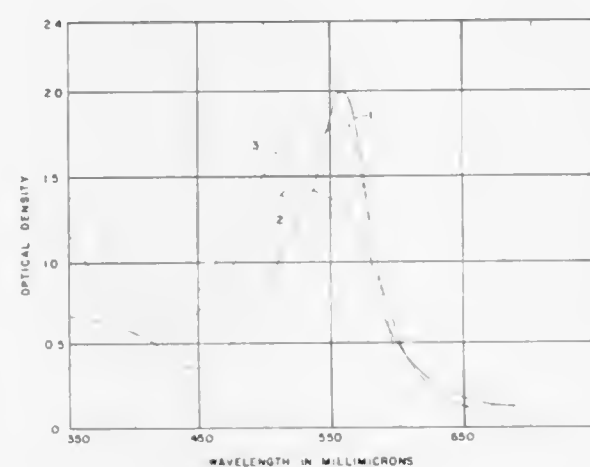
Stanley M. Bloom, Waban, and Paulina P. Garcia, Arlington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed April 23, 1968, Ser. No. 723,474

Int. Cl. C09b 23/04

U.S. Cl. 260—240.7

17 Claims



Novel dipyrromethene dyes, particularly 5 and/or 5'-o-dihydroxyphenyl dipyrromethene dyes, and 1:1 metal complexes thereof.

3,691,162

## DERIVATIVES OF 1,2,4-BENZOTHIADIAZINE-4-CARBOXALDEHYDE-1,1-DIOXIDE

Harry Louis Yale, New Brunswick, N.J., assignors to E. L. Squibb & Sons, Inc., Princeton, N.J.

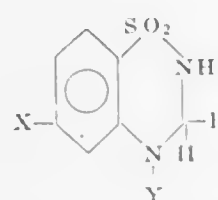
Filed Feb. 16, 1970, Ser. No. 11,906

Int. Cl. C07d 93/32

U.S. Cl. 260—243 D

6 Claims

The present invention pertains to hypotensive agents of the formula



wherein X may be halogen, lower alkyl, trifluoromethyl or nitro; Y may be lower alkyl or lower alkene of at least three carbon atoms or —CHO; and R may be hydrogen, lower alkyl, lower cycloalkyl or aralkyl.

3,691,163  
CERTAIN PHOSPHORUS-CONTAINING  
THIOMORPHOLINONES  
Karoly Szabo, Syracuse, N.Y., assignor to Esso Research and Engineering Company

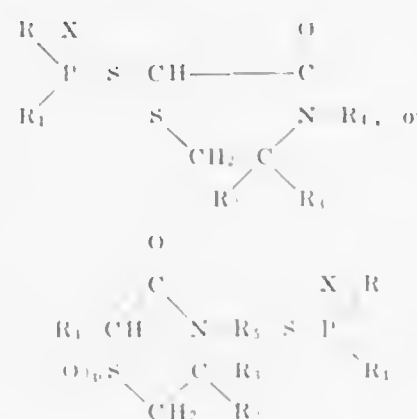
Filed Aug. 3, 1970, Ser. No. 60,774

Int. Cl. C07d 93/10

U.S. Cl. 260—243 B

18 Claims

Organophosphorus compounds containing the thiomorpholinone moiety have been found to be highly active both as contact and systemic insecticides and miticides. These compounds also possess excellent acaricidal activity. These compounds are represented by one of the following structural formulas:



wherein R and R<sub>1</sub> may be the same or different and are selected from the group consisting of C<sub>1</sub> to C<sub>6</sub> alkoxy, C<sub>1</sub> to C<sub>6</sub> alkyl, C<sub>2</sub> to C<sub>6</sub> alkoxyethyl, and C<sub>1</sub> to C<sub>6</sub> alkylthio; provided that at least one of them is alkoxy; R<sub>2</sub> and R<sub>3</sub> may be the same or different and are selected from the group consisting of hydrogen and C<sub>1</sub> to C<sub>6</sub> alkyl; R<sub>4</sub> is one selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>1</sub>-C<sub>6</sub> alkylthio, C<sub>1</sub>-C<sub>6</sub> alkoxy and C<sub>1</sub>-C<sub>6</sub> alkyl optionally substituted with hydroxyl, amino, cyano, C<sub>1</sub>-C<sub>6</sub> N alkyl carbamoyl, C<sub>1</sub>-C<sub>6</sub> alkoxy-carbamido, substituted and unsubstituted phenyl, C<sub>1</sub>-C<sub>6</sub> carboalkoxyalkyl and acetoxyl; R<sub>5</sub> is one selected from the group consisting of (CH<sub>2</sub>)<sub>n</sub> and CH<sub>2</sub>-CHR<sub>6</sub>, wherein R<sub>6</sub> is one selected from the group consisting of hydrogen, C<sub>1</sub> to C<sub>6</sub> alkyl, C<sub>1</sub> to C<sub>6</sub> alkylthio; X is O or S, n is an integer ranging from 1 to 6 and p is 0-2.

3,691,164

## PRODUCTION IMPROVEMENT FOR SUBSTITUTED TRIAZINES

Ronald Baker, and Thomas Kirkly Storer, both of Blackley, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 24, 1970, Ser. No. 66,579

Claims priority, application Great Britain, Nov. 20, 1969, 56,850/69

Int. Cl. C07d 55/46

U.S. Cl. 260—249.8

5 Claims

In the manufacture of the dyestuff intermediates of U.K. Pat. specification No. 914 932 by condensing 1 mole of an alkylene diamine and 1 mole of a N-(2,4-dihalogeno-s-triazin-6-yl) sulphonaniline or sulphonaphthylamine, products of higher purity are obtained by adding a neutral solution of the latter to an aqueous solution of a mineral acid salt of an alkylene diamine, the minimum amount of the diamine being 1.2 molecular proportions of the 1,3,5-triazine derivative, and the amount of mineral acid present being at least 1.9 molecular proportions, based on the alkylene diamine, and simultaneously adding an alkali to maintain the pH of the reaction mixture in the region of 6.5-7. A reaction temperature of 30° C. to 35° C is preferred.

Alternatively, instead of adding alkali, 1-2 moles of an alkali metal bicarbonate are added to the mineral acid solution of the alkylene diamine before starting to add the s-triazine compound.

3,691,165  
INTERMEDIATES FOR 3-HYDRAZINO-1,2,8,9-TETRAAZOPHENALENES

Karl J. Doehel, Ossining, N.Y., and John E. Francis, Pleasantville, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 715,555, March 25, 1968, Pat. No. 3,578,665, Continuation-in-part of Ser. No. 583,980, Oct. 3, 1966, abandoned, Continuation-in-part of Ser. No. 539,303, April 1, 1966, abandoned, Continuation-in-part of Ser. No. 445,762, April 5, 1965, abandoned. This application April 6, 1970, Ser. No. 31,068

Int. Cl. C07d 51/08, 51/04

U.S. Cl. 260—250 A

12 Claims

3-Hydrazino-1,2,8,9-tetraazaphenalenes optionally substituted in the 4, 5, 6, 7 and/or 9 positions and their salts are cardiovascular agents and are prepared from 3-thiono-2,3-dihydro-1,2,8,9-tetraazaphenalenes. Representative embodiments are 3-hydrazino-1,2,8,9-tetraazaphenalene and 3-hydrazino-9-phenyl-1,2,8,9-tetraazaphenalene.

3,691,166

## SUBSTITUTED QUINOXALINES

William A. Bolhofer, Frederick, and John J. Baldwin, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 19, 1969, Ser. No. 886,791 The portion of the term of this patent subsequent to May 5, 1987, has been disclaimed.

Int. Cl. C07d 51/78

U.S. Cl. 260—250 R

4 Claims

Novel 2,3-dichloro-5 or 6-hydroxyethylcarbamoyl-quinoxalines, further substituted with methyl and chloro radicals are disclosed, along with processes for their preparation. These compounds are prepared by the cyclization of a substituted diamino benzoic acid with diethyl oxalate, treating the dihydroxyquinoxalinecarboxylic acid obtained with phosphorus pentachloride in phosphorus oxy-chloride, which is reacted with ethanolamine to obtain the product. Compositions using these compounds as the active ingredient for the inhibition of gastric acidity are also disclosed.

3,691,167

## 5,6,7,8-TETRAHYDRO-2(2,3H)-QUINAZOLINONES

Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 792,891, Dec. 20, 1968, abandoned. This application March 18, 1971, Ser. No. 125,856

Int. Cl. C07d 51/48

U.S. Cl. 260—251 A

5 Claims

alkyl-4-aryl-5,6,7,8-tetrahydro-2(2,3H)-quinazolinones, e.g. 3-methyl-4-phenyl-5,6,7,8-tetrahydro-2(2,3H)-quinazolinone having pharmacological activity in animals and useful as anti-inflammatory agents. Also disclosed is process for preparation of said 2(2,3H)-quinazolinones involving reaction of a 2-benzoyl-cyclohexanone with a lower alkylurea.

3,691,168

## 5-ARYLBENZO [B] [1,7] NAPHTHYRIDINE DERIVATIVES

Milton Wolf, West Chester, and James L. Diebold, Havertown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed April 1, 1970, Ser. No. 24,836

Int. Cl. C07d 39/10

U.S. Cl. 260—283 S

5 Claims

This invention concerns 5-arylbenzo[b][1,7]naphthyridine derivatives which have pharmacological activity as antitubercular agents. Certain compounds also possess amebicidal or central nervous system depressant activity.

3,691,169

## 2-(ALKYLTHIOALKYL)-1,2,3,4-TETRAHYDROISOQUINOLINES

Allan Poe Gray, Chittenden, Vt., assignor to Neisler Laboratories, Inc.

Division of Ser. No. 680,354, Nov. 3, 1967, Pat. No. 3,549,640.

This application Sept. 3, 1970, Ser. No. 69,450

Int. Cl. C07d 33/62

U.S. Cl. 260—283 S

12 Claims

2-(Alkylthioalkyl)-1,2,3,4-tetrahydroisoquinolines such as 2-(3-ethylthiopropyl)-1,2,3,4-tetrahydroisoquinoline exhibit cardiovascular activity and are useful in the preparation of N-alkylsulfinylalkyl-1,2,3,4-tetrahydroisoquinolines.

3,691,170

## 2-(THIOCYANOALKYL)-1,2,3,4-TETRAHYDROISOQUINOLINES

Allan Poe Gray, P.O. Box 5439, St. Louis, Mo.

Division of Ser. No. 680,354, Nov. 3, 1967, Pat. No. 3,549,640. This application Sept. 3, 1970, Ser. No. 69,489

Int. Cl. C07d 33/60

U.S. Cl. 260—283 CN

4 Claims

2-(Thiocyanoalkyl)-1,2,3,4-tetrahydroisoquinolines such as 2-(thiocyanoethyl)-1,2,3,4-tetrahydroisoquinoline exhibit cardiovascular activity.

3,691,171

## PROCESS FOR MAKING 2-HYDROXYQUINOLINE-4-CARBOXYLIC ACIDS

Karl-Josef Boosen, La Neuveville, Switzerland, assignor to Lonza Ltd., Basle, Switzerland

Filed May 26, 1970, Ser. No. 40,696

Claims priority, application Switzerland, May 29, 1969, 8109/69

Int. Cl. C07d 33/48

U.S. Cl. 260—287 R

6 Claims

Process for the preparation of 2-hydroxyquinoline-4-carboxylic acids in which 2-hydroxy-4-halogeno-methyl-quinoline is oxidized with a controlled excess of alkaline hydrogen peroxide.

3,691,172

## HYDROXYPHENYL-2-DECAHYDROQUINOLYL-CARBINOLS

Carl Kaiser, Haddon Heights, N.J., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed Nov. 23, 1970, Ser. No. 92,161

Int. Cl. C07d 33/02

U.S. Cl. 260—289 R

8 Claims

Hydroxyphenyl-2-decahydroquinolylcarbinols prepared by the condensation of an appropriately substituted ether derivative of a hydroxybenzaldehyde with 2-quinolyl lithium followed by removal of the ether group/s and reduction have  $\beta$ -adrenergic stimulant activity. Erythro and threo diastereoisomers may be conveniently separated.

3,691,173

## N-SUBSTITUTED 1,2,3,4,4a,10a-HEXAHYDRO-(10H)-1-BENZOPYRANO-[3,2,c]-PYRIDINES

Gerhard Ohnacker, Helmut Daniel, and Hans Machleidt, all of Biberach, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim/Rhein, Germany

Filed June 20, 1968, Ser. No. 738,398

Claims priority, application Germany, June 21, 1967, T 34142

Int. Cl. C07d 39/00

U.S. Cl. 260—293.55

4 Claims

The compounds are N-substituted 4a-oxy-1,2,3,4,4a,10a-hexahydro-(10H)-1-benzopyrano-[3,2-c]-pyridines, useful as sedatives and antiphlogistics in warm-blooded animals.



3,691,174

## METALATION OF ALKYL SIDE CHAINS OF ALKYL PYRIDINES, ALKYL QUINOLINES AND ALKYL ISOQUINOLINES

Constantinos G. Screttas, 13 Antinoros Street, Athens, 516, Greece

Continuation-in-part of Ser. No. 646,208, June 15, 1967, abandoned. This application Aug. 7, 1970, Ser. No. 62,198 Int. Cl. C07d 31/20

U.S. Cl. 260—290 R

13 Claims

Metalating alkyl side chains of alkyl pyridines, alkyl quinolines and alkyl isoquinolines by means of certain organometal compounds, exemplified by alkali metal substituted furan compounds and alkali metal substituted methylpyrrole, and 2-thienyllithium. The metalation reaction advantageously is carried out in the presence of an ethereal solvent which forms a stable coordination complex with the metalated compound.

3,691,175

Patent Not Issued For This Number

3,691,176

## 1-(4-FLUOROPHENOXY)PROPYL-4-ANILINO-PIPERIDINES

Robert Hallas, Waukegan, and John Wayne Cole, Deerfield, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed May 25, 1970, Ser. No. 40,376 Int. Cl. C07d 29/28

U.S. Cl. 260—293.79

6 Claims

A new series of piperidine derivatives has been discovered; they are the N-[3-(p-fluorophenoxy)propyl]piperidines carrying in the 4-position of the piperidine ring a substituted anilino group. These new compounds and their non-toxic acid addition salts are highly effective analgesics of low toxicity.

3,691,177

## CYANOPHENYL-1,4-DIHYDROPYRIDINE DERIVATIVES

Friedrich Bossert, Wuppertal-Elberfeld, and Wulf Vater, Opladen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 11, 1970, Ser. No. 97,338

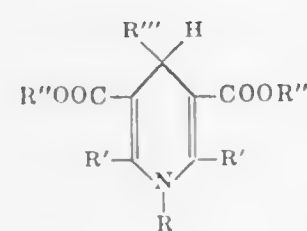
Claims priority, application Germany, Dec. 17, 1969, P 19 63 188.0

Int. Cl. C07d 31/46

U.S. Cl. 260—294.9

22 Claims

Cyanophenyl-1,4-dihydropyridine derivatives of the formula:



wherein

R is hydrogen, saturated or unsaturated, straight, branched or cyclic alkyl of one to six carbon atoms, unsubstituted or substituted by hydroxyl or alkoxy of one to three carbon atoms, or benzyl or phenethyl unsubstituted or substituted in the aryl moiety by 1, 2 or 3 members selected from the group consisting of 1 to 3 alkoxy moieties of one to three carbon atoms, 1 or 2 alkyl moieties of one to three carbon atoms and 1 or 2 halogen atoms.

R' is straight or branched chain alkyl of one to four carbon atoms,

R'' is straight, branched, cyclic, saturated or unsaturated alkyl of one to six carbon atoms, said alkyl interrupted by 1 or 2 oxygen atoms or said alkyl substituted by hydroxyl, and

R''' is aryl substituted by cyano or by cyano and 1 to 9 members selected from the group consisting of cyano, nitro, amino, acylamino of one to two carbon atoms, hydroxyl, acyloxy of one to two carbon atoms, 1 or 2 alkyl moieties of one to four carbon atoms, 1 or 2 alkoxy moieties of one to four carbon atoms, and 1 or 2 halogen atoms,

are useful for their coronary dilating effect and antihypertensive effects. Processes for the production of these compounds are set forth below.

3,691,178

## SUBSTITUTED IMIDAZOLES

John J. Baldwin, Lansdale, Pa., and Frederick C. Novello, Berwyn, Pa., assignors to Merck &amp; Co., Inc., Rahway, N.J.

Filed March 16, 1970, Ser. No. 20,126 Int. Cl. C07d 49/36

U.S. Cl. 260—294.9

11 Claims

Imidazoles substituted at the 2 and 4(5) positions having an optional substituent in the 1 position are provided. Methods of preparing the novel substituted imidazoles are described. The substituted imidazoles are useful as anti-gout and anti-hyperuricemic agents. Compositions useful in the treatment of gout and hyperuricemia containing a substituted imidazole as the active ingredient are provided.

3,691,179

## CYCLOALKANO[C]PYRAZOLE-3-ACIDS

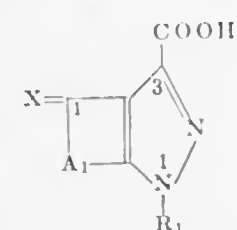
Robert Armistead Lucas, Mendham, N.J., and Herbert Morton Blatter, Summit, N.J., assignors to Ciba Corporation, Summit, N.J.

Filed July 31, 1970, Ser. No. 60,142 Int. Cl. C07d 49/18

U.S. Cl. 260—295.5 S

2 Claims

Cycloalkano[c]pyrazole-3-acids, e.g. those of the formula



R<sup>1</sup>=free or functionally converted hydroxy- or aminophenyl  
A<sup>1</sup>=alkylene  
X=HOH or O

and functional derivatives thereof, exhibit antiviral effects.

3,691,180

## CYCLOALKANO[C]PYRAZOLES

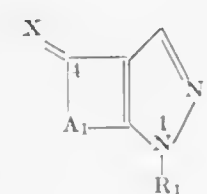
Herbert Morton Blatter, Summit, N.J., and Robert Armistead Lucas, Mendham, N.J., assignors to Ciba Corporation, Summit, N.J.

Continuation-in-part of Ser. No. 763,410, Sept. 27, 1968. This application July 31, 1970, Ser. No. 60,143 Int. Cl. C07d 49/18

U.S. Cl. 260—295.5 S

4 Claims

Cycloalkano[c]pyrazoles, e.g. those of the formula



R<sub>1</sub>=free or functionally converted hydroxy- or aminophenyl  
A<sub>1</sub>=alkylene  
X=2H, HOH, or O

quaternaries and salts thereof, exhibit antiviral effects and are also valuable intermediates in the preparation of other pharmacologically useful compounds.

3,691,181

## CERTAIN ACYL DERIVATIVES OF THE ANTIBIOTIC T-2636C

Toyokazu Kishi, Nara; Setsuo Harada; Komei Mizuno, both of Osaka; Eiji Higashide, Hyogo, and Motoo Shibata, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

Filed Oct. 27, 1969, Ser. No. 869,864

Claims priority, application Japan, Oct. 26, 1968, 43/7143 Int. Cl. C07d 31/36, 7/06

U.S. Cl. 260—295.5 P

18 Claims

Acyl derivatives of Antibiotic T-2636C useful for inhibiting the growth of Gram positive bacteria and being effective against strains resistant to *Oleandomycin* and *Erythromycin*, and method for production thereof.

3,691,182

Patent Not Issued For This Number

3,691,183

## 3,5-SUBSTITUTED-1,2,4 THIADIAZOLES

Warren A. Thaler, 133 Deerfield Lane, Matawan, N.J.

Filed May 12, 1970, Ser. No. 36,685

Int. Cl. C07d 91/60

U.S. Cl. 260—302 SD

17 Claims

3-Halo-1,2,4 thiadiazole-5 sulfonyl halides are produced by reacting cyanodithioimidocarbonate anion with the corresponding halogen. 3-Halo-1,2,4 thiadiazole-5 sulfonyl halides are useful as pesticides and chemical intermediates. Derivatives of the 3-halo-1,2,4 thiadiazole-5 sulfonyl halides include the di(3-halo-1,2,4 thiadiazol-5-yl) disulfides, and are useful as pesticide, antioxidants, and U.V. stabilizers.

3,691,184

CERTAIN 2-ALKOXYMETHYL-3-CHLORO-Δ<sup>3</sup>-1,2,4-THIADIAZOLIN-5-ONES AND THEIR PREPARATION

Peter Fischer, Odenthal-Osenau, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 18, 1970, Ser. No. 38,577

Claims priority, application Germany, May 21, 1969, P 19 25 995.1

Int. Cl. C07d 91/60

U.S. Cl. 260—302 D

15 Claims

2-Alkoxyethyl-3-chloro-Δ<sup>3</sup>-1,2,4-thiadiazolin-5-ones are obtained when a carbodiimide of the formula



in which R<sup>1</sup> is an aliphatic radical, is reacted with chlorocarbonylsulphenyl chloride in the presence of an inert, organic diluent in the temperature range of 0° to 100° C and the diluent and the chloromethylalkyl ether liberated on heating are removed at a temperature in the region of 50° to 120°C. The new compounds are useful as herbicides.

3,691,185

## 5-ARYL AND ARYLPHENYL SULFONIC ACIDS IN TREATING INFLAMMATION

Lewis H. Sarett, Rolling Hill Road, Skillman, N.J., and John Hannah, 155 Idlebrook Lane, Matawan, N.J.

Continuation-in-part of Ser. No. 836,610, June 25, 1969. This application April 20, 1970, Ser. No. 30,325

Int. Cl. A61k 27/00

U.S. Cl. 424—303

5 Claims

5-Aryl and heteroarylphenyl sulfonic acids and their derivatives are described and the processes for preparing the same are disclosed. These compounds exhibit anti-inflammatory properties and also possess an effective degree of anti-pyretic and analgesic activity.

3,691,186

## CERTAIN SUBSTITUTED BENZTHIAZOLE-N-OXIDES AND THEIR PREPARATION

Klaus Wagner, and Ernst Roos, both of Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 29, 1970, Ser. No. 6,922

Claims priority, application Germany, Jan. 31, 1970, P 19 04 653.8

Int. Cl. C07d 91/44

U.S. Cl. 260—304

10 Claims

Novel benzthiazole-N-oxides are obtainable by the reaction of halogenonitrobenzenes additionally activated by one or more electronegative substituents with mercaptomethyl compounds in an inert solvent in the presence of a base in the temperature range of from 20° to 160° C.

The new benzthiazole-N-oxides are suitable for use as colored pigments e.g. for dyeing plastics.

3,691,187

## CERTAIN BENZOTHAZOLYL-COUMARINS

Gerhard Grau, 17 Kirchenstrasse, 6703, Limburgerhof, Germany

Filed April 26, 1971, Ser. No. 137,681

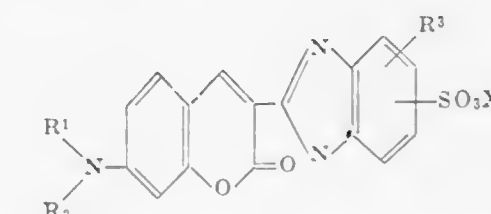
Claims priority, application Germany, May 5, 1970, P 20 21 899.9

Int. Cl. C07d 99/10

U.S. Cl. 260—304

2 Claims

Dyes of the formula:



especially in the form of the sodium, potassium or ammonium salts of the sulfonic acids. The dyes are particularly useful for dyeing synthetic polyamide textile materials.

3,691,188

## METHOD FOR PREPARING PENICILLIN SULFOXIDES

Douglas O. Spry, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 10, 1970, Ser. No. 62,717

Int. Cl. C07d 99/16

U.S. Cl. 260—396.7

7 Claims

6-Aminopenicillanic acid, 6-acylaminopenicillanic acids, 2-alkanoyloxymethyl-2-methyl-6-acylaminopenam-3-carboxylic acids and the esters thereof are oxidized to the corresponding penicillin sulfoxides in inert solvents with ozone at a temperature between about -10° and 35° C. The penicillin sulfoxides obtained thereby are useful for conversion to cephalosporin antibiotics.

3,691,189

## PREPARATION OF ISOXAZOLYL 5-HYDROXYHEPTANOIC AND LACTONES

Gabriel Saucy, Essex Fells, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 5, 1970, Ser. No. 811

Int. Cl. C07d 85/22

U.S. Cl. 260—307 H

6 Claims

Isoxazolyl-5-hydroxyheptanoic acid lactones which are intermediates useful in the total synthesis of steroids are prepared by reacting the corresponding isoxazolyl-5-oxo-heptanals with a metal alkoxide at a temperature in the range from about 20° C. to the reflux temperature of the reaction medium. Direct conversion of the precursor isoxazolyl-5-oxo-1-heptanol into the product lactone can be carried out in a single vessel by using a mixed reagent comprising an oxidizing re-



agent (silver carbonate) and the said metal alkoxide at the same conditions as for the above last step reaction.

3,691,190

**ISOXAZOLYL-SUBSTITUTED BENZINDENEDIONES**  
Gabriel Saucy, Durrmattweg 23, 4144 Arlesheim, Switzerland, and John William Scott, 125 Fells Road, Essex Fells, N.J.  
Continuation-in-part of Ser. No. 778,314, Nov. 22, 1968. This application May 21, 1970, Ser. No. 39,560  
Int. Cl. C07d 85/22

U.S. Cl. 260—307 H

7 Claims

Processes and intermediates leading to steroids of the 19-nor and estrane series are described. The A-ring of the steroid is constructed onto a BCD-tricyclic intermediate by degradation of a 3,5-disubstituted-4-isoxazolylmethylene group to a 3-oxoalkyl group, followed by cyclization.

3,691,191

**TETRAZOLE DERIVATIVES**

Alfred Sallmann, Bottmingen, and Rudolf Pfister, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 16, 1969, Ser. No. 842,355

Claims priority, application Switzerland, July 18, 1968, 10792/68

Int. Cl. C07d 55/56

U.S. Cl. 260—308 D

9 Claims

The compounds are of the class of substituted 5-(o-anilino-benzyl)-tetrazoles and the salts thereof with bases and have anti-inflammatory, analgesic and anti-pyretic activity; they absorb irritating rays of ultra-violet light; they are active ingredients of compositions and are useful for treating inflammatory diseases, alleviating pain and protecting skin against irritating ultra-violet light; an illustrative embodiment is 5-[o-(2,6-dichloro-anilino)-benzyl]-tetrazole.

3,691,192

**AN N-TRITYL-IMIDAZOLE**

Karl-Heinz Buchel, Wuppertal-Elberfeld; Erik Regel, Wuppertal-Cronenberg; Ferdinand Grewe, Burscheid; Hans Scheinplug, and Helmut Kaspers, both of Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany  
Division of Ser. No. 789,601, Jan. 7, 1969, abandoned. This application May 15, 1970, Ser. No. 37,841

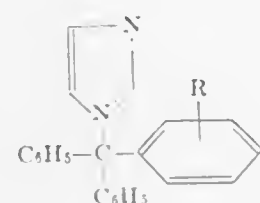
Claims priority, application Germany, Jan. 29, 1968, P 16 70 976.5

Int. Cl. C07d 49/36

U.S. Cl. 260—309

1 Claim

N-trityl-imidazoles of the formula:



in which R is selected from the group consisting of halo, nitro, cyano, alkyl of one to three carbon atoms, alkoxy of one to three carbon atoms, alkylmercapto of one to three carbon atoms and fluoro-substituted alkyl of one to two carbon atoms, are effective against fungi pathogenic to plants.

**3,691,193  
PYRAZOLE METHYLALKYL SULFOXIDES**

Tsung-Ying Shen, Westfield; Alexander R. Matzuk, Colonia, and Conrad P. Dorn, Jr., Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 783,430, Dec. 12, 1968, Pat. No. 3,551,444, which is a division of Ser. No. 592,977, Nov. 9, 1966, Pat. No. 3,438,992. This application June 10, 1970, Ser. No. 45,215

Int. Cl. C07d 49/18

U.S. Cl. 260—310 R

3 Claims

5- or 6-membered heterocyclic alkyl sulfoxides such as thiophene, pyrrole, pyrazole, imidazole, thiazole, oxazole, isoxazole, pyridine, quinoline, pyran, isothiazole, furan, indazole, benzimidazole, benzoxazole, benzisoxazole, benzothiazole, benzodioxane and indole derivatives having anti-inflammatory, analgesic and anti-pyretic activity.

3,691,194

**3-INDOLE-GLYOXAMIDES**

Zinin B. Papanastassiou, Lexington, and John L. Neumeyer, Wayland, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Division of Ser. No. 728,818, May 13, 1968, Pat. No. 3,591,603. This application July 30, 1970, Ser. No. 64,902

Int. Cl. C07d 27/56

U.S. Cl. 260—326.13 R

6 Claims

New 3-indole-glyoxamides and (3-indole)-lower-alkylamines having useful C.N.S. depressant activity and prepared, respectively, by reaction of a 3-indoleglyoxalyl halide or a (3-indole)-lower-alkyl halide with an appropriate amino.

3,691,195

**AZIRIDINE DERIVATIVES**

Joerg Sambeth, Carouge/Geneva, and Friedrich Grundschober, Confignon/Geneva, both of Switzerland, assignors to Societe Rhodiaceta, Paris, France

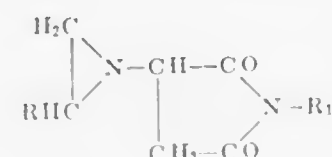
Division of Ser. No. 771,986, Oct. 30, 1968, Pat. No. 3,642,712, which is a continuation-in-part of Ser. Nos. 552,388, May 24, 1966, abandoned, and Ser. No. 552,403, May 24, 1966, abandoned. This application June 9, 1970, Ser. No. 57,018

Int. Cl. C07d 27/10

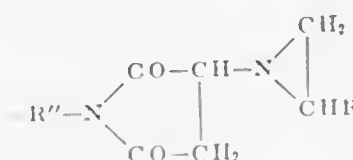
U.S. Cl. 260—326.3

1 Claim

Novel aziridine derivatives of the formula:

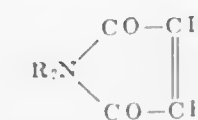


wherein R is hydrogen or methyl and R<sub>1</sub> is hydrogen, methyl, phenyl or a radical of the formula:

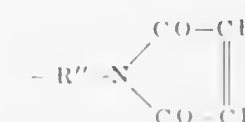


wherein R is as defined above and R'' is an alkylene radical of 2 to 12 carbon atoms or two phenylene residues bonded to

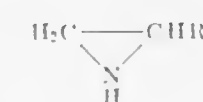
one another by —CH<sub>2</sub>—, —SO<sub>2</sub>— or —O— are produced by reacting stoichiometric amounts of an unsaturated dicarboxylic acid imide of the formula:



wherein R<sub>2</sub> is hydrogen, methyl, phenyl or a radical of the formula:



wherein R'' is as defined above with an aziridine of the formula:



wherein R is as defined above at a temperature of 20° to 200° C. for 10 minutes to 10 hours in the presence or absence of a solvent.

3,691,196

**ASYMMETRICAL DIAMIDES OF  
TETRAIODOTEREPTHALIC ACID**

Hans Suter, Dorfingen; Hans Zutter, and Josef Brunner, both of Schaffhausen, all of Switzerland, assignors to Eprova Aktiengesellschaft, Schaffhausen, Switzerland

Filed Nov. 10, 1969, Ser. No. 875,594

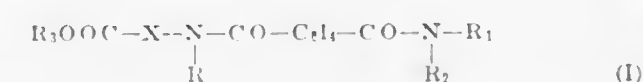
Claims priority, application Switzerland, Nov. 20, 1968, 17276/68

Int. Cl. C07d 27/04

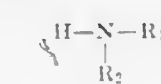
U.S. Cl. 260—326.3

12 Claims

Asymmetrical diamides of tetraiodoterephthalic acid having the general formula

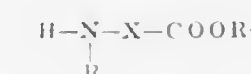


are relatively non-toxic and are preferentially accumulated in the gall bladder of warm-blooded animals when ingested, injected or applied rectally. Because of their high iodine content, they are effective contrast agents, particularly in cholecystography. They are prepared from mixed anhydrides of tetraiodoterephthalic acid by sequential reaction with amines of the formulas



(I)

and



(II)

In these formulas, X is lower alkylene or phenyl-lower-alkylene, R is hydrogen, lower alkyl or phenyl-lower alkyl. X and R may also jointly be alkylene forming a heterocyclic ring with the associated nitrogen atom. R<sub>1</sub> is hydrogen or lower alkyl, R<sub>2</sub> is lower alkyl, carboxy-lower-alkyl, or lower-carbalcoxy-lower-alkyl or R<sub>1</sub> and R<sub>2</sub> jointly are lower-alkyleneoxy-lower-alkylene, carboxy-lower-alkylene or lower-carbalcoxy-lower-alkylene. R<sub>3</sub> is hydrogen, lower alkyl, non-toxic amine

3,691,197

**PREPARATION OF 1-SUBSTITUTED-3-  
CHLOROPYRROLIDINES**

Bernard Beau Brown, 146 Tudor Oval, Westfield, N.J., and John Swidinsky, 1034 S. Orange Ave., Newark, N.J.

Continuation-in-part of Ser. No. 746,284, July 22, 1968, abandoned. This application Dec. 17, 1970, Ser. No. 99,252

Int. Cl. C07d 27/04

U.S. Cl. 260—326.8

14 Claims

A method for preparing a 1-hydrocarbyl-3-chloropyrrolidine, particularly, a method of preparing said pyrrolidine by rearrangement of an N-chloro-1-hydrocarbyl-amino-2-chlorobutane to a 1-hydrocarbyl-amino-2,4-dichlorobutane, which then is cyclized. This rearrangement is carried out by treatment of the 2-chlorobutane by treatment with a strongly ionized acid and a free radical generating catalyst. The intermediate dichlorobutane then is cyclized to the chloropyrrolidine by means of treatment with a base. The invention is also concerned with novel compositions including 1-hydrocarbyl-amino-2-chlorobutanes, N-chloro-1-hydrocarbyl-amino-2-chlorobutanes and 1-hydrocarbyl-amino-2,4-dichlorobutanes.

3,691,198

**SYNTHESIS OF 1-SUBSTITUTED-3-  
HALOPYRROLIDINES**

Bernard Beau Brown, Westfield, and Donald Carl Ruopp, Belleville, both of N.J., assignors to CPC International Inc.

Continuation-in-part of Ser. No. 748,618, July 30, 1968, abandoned. This application Dec. 21, 1970, Ser. No. 100,506

Int. Cl. C07d 27/04

U.S. Cl. 260—326.8

38 Claims

A method of preparing 1-substituted-3-halopyrrolidines, particularly a method of preparing said pyrrolidines by reacting a 1-substituted-Δ<sup>3</sup>-pyrroline with a concentrated hydrogen halide aqueous solution at a temperature greater than 100°C. In a preferred embodiment, a supersaturated hydrobromic acid solution is utilized, i.e., one containing about 60 percent hydrogen bromide. The 1-substituted-Δ<sup>3</sup>-pyrroline reactant is preferably made by reaction of a cis-1,4-dihalobutene-2 with a primary amine whereupon cyclization takes place. Said 1-substituted-3-halopyrrolidines are intermediates useful in making anti-cholinergics and like materials.

3,691,199

**2-HYDROXY-INDOLE-3-DITHIOCARBOXYLATES**

Goro Kobayashi; Shinichi Sugawara, both of Nagasaki, and Masatoshi Nagawa, Tokyo, all of Japan, assignors to Sankyo Company Limited

Filed April 15, 1970, Ser. No. 28,976

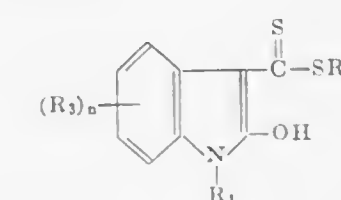
Claims priority, application Japan, April 19, 1969, 44/30478; Nov. 27, 1969, 44/95242

Int. Cl. C07d 27/56

U.S. Cl. 260—326.12 R

18 Claims

Novel 2-hydroxyindole-3-dithiocarboxylic acid ester derivatives having the formula



(I)

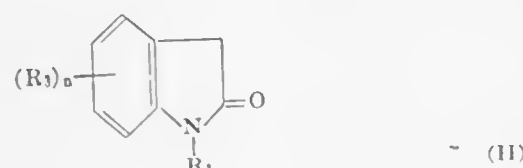
wherein R<sub>1</sub> is hydrogen atom, a lower alkyl group, an aryl group or an aralkyl group; R<sub>2</sub> is a lower alkyl group or an aralkyl group; R<sub>3</sub> is hydrogen atom, a lower alkyl group, a halogen



atom, nitro group or a lower alkoxy group; and  $n$  is an integer of 1–4 inclusive provided that where  $n$  is 2 or more  $R_3$  may be the same or different.

These indole derivatives (I) possess potent antibacterial activity against bacteria, particularly those causing bacillary dysentery, especially those resistant to prior art antibacterial agents, favorably via oral route and, thus, they are useful as a medicine for chemotherapeutic purpose.

These indole derivatives (I) can be prepared by reacting the oxyindole derivative having the formula



wherein  $R_1$ ,  $R_3$  and  $n$  are as defined above with carbon disulfide in the presence of a basic condensation catalyst followed by subjecting the resulting product to the reaction with a sufficient amount of an alkylating agent to introduce one alkyl group into said product.

3,691,200

Patent Not Issued For This Number

3,691,201

**CYANOIMINO-DITHIOLE-DICARBOXYLIC ESTERS**  
William Lindsay Mosby, North Plainfield, N.J., assignor to American Cyanamid Company, Stamford, Conn.

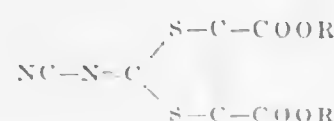
Filed May 13, 1970, Ser. No. 37,048

Int. Cl. C07d 71/00; A61k 27/00

U.S. Cl. 260—327 M

3 Claims

Novel lower alkyl 2-cyanoimino-1,3-dithiole-4,5-dicarboxylic acid esters are provided which are useful biocides, such as bactericides, fungicides or herbicides and have the following general formula:



wherein  $R$  represents an alkyl group of from one to five carbon atoms.

3,691,202

**PHENYL-THIENYL- AND PHENYL-FURYL MALONIC ACID DERIVATIVES**

Derrick Michael O'Mant, Macclesfield, England, assignor to Imperial Chemical Industries, Limited, London, England  
Division of Ser. No. 812,358, April 1, 1969, abandoned. This application July 7, 1970, Ser. No. 53,005

Claims priority, application Great Britain, March 17, 1969, 17,895/69; Oct. 25, 1968, 50,788/68; Dec. 10, 1968, 58,666/69

Int. Cl. A61k 27/00; C07d 63/12, 5/16

U.S. Cl. 260—332.2 A

4 Claims

Phenyl-thienyl-malonic acid derivatives and phenyl-furyl-malonic acid derivatives, processes for their preparation, and pharmaceutical compositions comprising them. Compounds have anti-inflammatory, hypocholesterolaemic, analgesic and antipyretic activity. A representative compound is dimethyl  $\alpha$ -(5-p-chlorophenyl-thien-2-yl)- $\alpha$ -methylmalonate.

### 3,691,203 FLUORAN DERIVATIVES FOR PRESSURE SENSITIVE COPYING PAPER

Koichi Koga, Toyonaka; Hideaki Suda, Takashi, and Takashi Akamatsu, Ashiya, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan

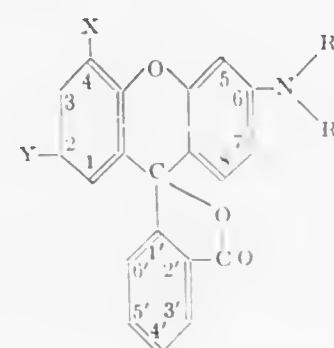
Filed April 7, 1970, Ser. No. 26,410

Int. Cl. C07d 05/34

U.S. Cl. 260—335

9 Claims

Novel 2,4-di-substituted-6-di-substituted-amino fluorans having the general formula:



wherein  $X$  and  $Y$  represent chlorine atoms, bromine atoms or  $C_{1-4}$  alkyl groups, provided the case where both  $X$  and  $Y$  are methyl groups is excluded; and  $R$  represents a hydrogen atom, a  $C_{1-4}$  alkyl group, a benzyl group, a methoxymethyl group, an ethoxymethyl group, a methoxyethyl group or an ethoxyethyl group. These compounds are useful for the production of pressure-sensitive copying paper.

3,691,204

**SULFODIHYDROFURAN SULFONES**

Hans-Peter Baumann, Munchenstein, and Robert-Christian Keller, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 620,231, March 3, 1967, Pat. No.

3,538,151. This application June 29, 1970, Ser. No. 60,170  
Claims priority, application Switzerland, March 11, 1966, 3577/66

Int. Cl. C07d 5/44

U.S. Cl. 260—346.2 M

2 Claims

Levelling agents for dyeing anionic dyestuffs are constituted by diphenylene oxide sulphones, hydroxy-diphenylene oxide sulphones, diphenyl oxide sulphones, diphenyl sulphide sulphones, mixtures of these with sulphonated aromatic hydrocarbon oils, their alkali metal and ammonium salts and/or condensation products, and reaction products of these sulphones with formaldehyde or dimethylol urea; an example of dyeing with such a levelling agent is also given. The use of these levelling agents avoids stripy or ring appearance of certain nylon yarns, especially when these are mixed with spandex type fibers.

3,691,205

**PRODUCTION OF 6-ALKOXY-5,6-DIHYDRO-4H-PYRANS**  
Herwig Hoffmann, 21 Knetschstrasse, 6710 Frankenthal; Gerhard Jeschek, 54 Pförtmüllerstrasse, 6718 Gruenstadt; Alfred Kuerzinger, 11 Weinbiestrasse, 6703 Limburgerhof; Erwin Schmidt, 21 Brunnstrasse, 6710 Frankenthal; Wilibald Schoenleben, 4 Gugenmus-Weg, 6900 Heidelberg; Dieter Voges, 28 Richard-Wagner-Strasse, 6800 Mannheim, and Siegfried Winderl, 27 Viernheimer Weg, 6900 Heidelberg, all of Germany

Filed Feb. 9, 1971, Ser. No. 113,888

Int. Cl. C07d 7/10

U.S. Cl. 260—345.9

8 Claims

A process for the production of 6-alkoxy-5,6-dihydro-4H-pyrans by reaction of  $\alpha,\beta$ -unsaturated aldehydes with vinyl ethers. The products are valuable intermediates, for example

for the production of glutaraldehyde or substituted glutaraldehydes which may be used for example as tanning agents for leather.

3,691,206

**PRIMER FOR CURED SILICONE RELEASE AGENTS**

Hal J. Northrup, c/o Dow Corning Corp., Midland, Mich.

Continuation of Ser. No. 739,967, May 22, 1968, which is a division of Ser. No. 491,414, Sept. 29, 1965, Pat. No.

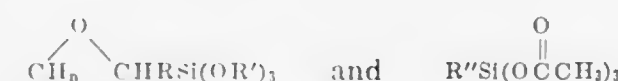
3,427,270. This application March 29, 1971, Ser. No. 129,214

Int. Cl. C08g 31/32; C07f 7/18

U.S. Cl. 260—348 SC

5 Claims

A composition useful as a coupling agent for promoting the adhesion of a cured organopolysiloxane release agent to a cellulosic substrate is the reaction product of



where  $R$  is a divalent or trivalent radical of carbon and hydrogen,  $R'$  is a lower alkyl,  $n$  is 1 to 2 and  $R''$  is a monovalent hydrocarbon radical. An example is a reaction product of



and vinyltriacetoxysilane.

3,691,207

**2 BETA-AZIDO-17 BETA-DIALKYLAMINOALKYLAMINO-5 ALPHA-ANDROSTAN-3 ALPHA-OLS, DERIVATIVES THEREOF AND INTERMEDIATES THEREOF**

Paul D. Klimstra, Northbrook, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed March 9, 1971, Ser. No. 122,527

Int. Cl. C07c 117/00

U.S. Cl. 260—349

4 Claims

The above-captioned compounds are produced from the appropriate 17-keto steroid by reaction with a dialkylaminoalkylamine; the imine thus afforded is reduced to the amine, which can be formylated to yield the formamide derivative. The instant compounds are useful as pharmacological agents as is evidenced by their anti-ulcerogenic, anti-viral, and anti-microbial activity.

3,691,208

Patent Not Issued For This Number

3,691,209

**ANTHRAQUINONE DYESTUFFS**

Colin William Greenhalgh, and David Francis Newton, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

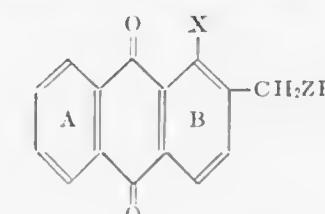
Filed May 15, 1969, Ser. No. 825,064

Int. Cl. C09b 1/50

U.S. Cl. 260—378

4 Claims

Anthraquinone dyestuff of the formula:



wherein  $X$  is hydroxy or amino;  $R$  is hydroxy, alkoxy, mercapto or alkylmercapto,  $Z$  is an optionally further substituted phenylene or naphthylene radical; and the rings  $A$  and  $B$  can contain substituents; and the use of the said dyestuffs for coloring textile materials.

3,691,210

**2-(OMEGA-HYDROQUINONYL-ALKYL)-ANTHRAQUINONES**

Warren E. Solodar, Newton Centre, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

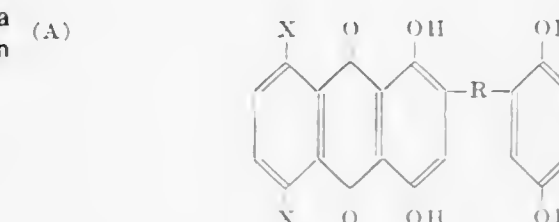
Division of Ser. No. 370,345, May 26, 1964, abandoned. This application Nov. 1, 1967, Ser. No. 703,197

Int. Cl. C07c 49/74

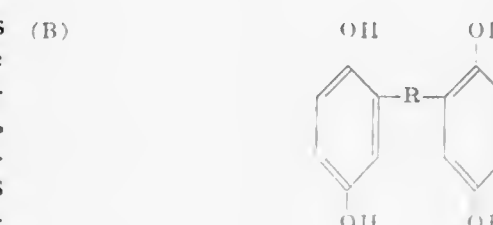
U.S. Cl. 260—380

4 Claims

This application relates to the synthesis of compounds having the formula:



wherein each  $X$  is hydroxy or amino (including secondary amino, e.g., alkylamino), and  $R$  is an alkylene radical, preferably a lower alkylene radical containing 1–6 carbon atoms; and to compounds having the formula:



wherein  $R$  is the same as above; as well as to the use of such compounds in photographic developer compositions and developing processes.

The compounds of formula (A) are also suitable for use as dyes for textile fibers.

3,691,211

**PROCESS FOR PREPARING STEROLS FROM TALL OIL PITCH**

Donald V. Julian, Colerain Township, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 7, 1970, Ser. No. 95,735

Int. Cl. C07c 167/38

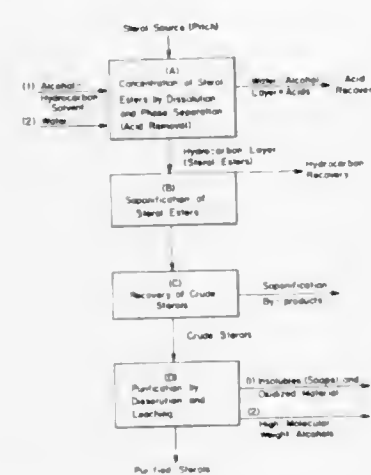
U.S. Cl. 260—397.25

6 Claims

Process for preparing sterols from plant sources, especially



tall oil pitch, by extraction in a water-alcohol-hydrocarbon



mixture followed by saponification and subsequent recrystallization and leaching.

3,691,212

# 17 $\alpha$ -(1',3'-ALKADIYNYL)-17 $\beta$ -ACYLOXY(17 $\beta$ -AROYLOXY)STEROIDS

Peter Feather, Burgess, and Colin Michael Burgess, both of London, England, assignors to The British Drug Houses Limited, London, England

Continuation of Ser. No. 728,884, May 14, 1968, abandoned. This application April 24, 1970, Ser. No. 29,747

Int. Cl. C07c 169/20

U.S. Cl. 260—397.4

3 Claims

17 $\alpha$ -(1',3'-Alkadiynyl)-17 $\beta$ -acyloxy(17 $\beta$ -aroyloxy) steroids of the androstane and oestrane series having utility in treatment of conditions or defects of the reproductive system are disclosed.

3,691,213

# 4-CHLORO-1 $\alpha$ ,2 $\alpha$ ,6 $\alpha$ ,7 $\alpha$ -DIMETHYLENE-3-KETO-4-PREGNENE AND METHOD OF MAKING THE SAME

Heinz Gries, Josef Hader, and Hermann Steinbeck, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Filed Feb. 12, 1970, Ser. No. 11,013

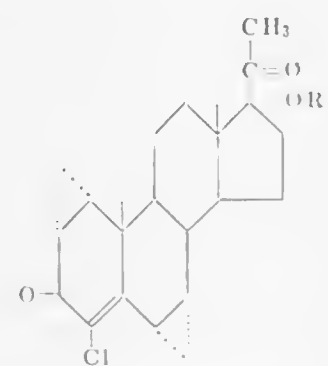
Claims priority, application Germany, Feb. 13, 1969, P 19 07 804.7

Int. Cl. C07c 169/20

U.S. Cl. 260—397.4

6 Claims

4-chloro-1 $\alpha$ ,2 $\alpha$ ,6 $\alpha$ ,7 $\alpha$ -dimethylene-3-keto-4-pregnene of the formula I



wherein R is hydrogen or an acid residue.

The compounds of the invention have a strong progestational and ovulation-inhibiting action.

The invention also embraces a method of making the compounds and pharmaceutical compositions in which the compounds defined above are the active ingredients.

## 3,691,214 17-VALERATE ESTER OF 6 $\alpha$ ,9 $\alpha$ -DIFLUOROPREDNISOLONE, ITS COMPOSITIONS AND USE AS AN ANTI-INFLAMMATORY AGENT

Alberto Ercoli, Milan, and Rinaldo Gardi, Carate Brianza, both of Italy, assignors to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 707,934, Feb. 26, 1968, abandoned. This application June 8, 1970, Ser. No. 44,560

Int. Cl. C07c 169/34

U.S. Cl. 260—397.45

1 Claim

This invention relates to the new 6 $\alpha$ ,9 $\alpha$ -difluoroprednisolone 17-valerate and to pharmaceutical compositions for topical and systemic use of said compound in the treatment of inflammatory conditions.

3,691,215

## THE PREPARATION OF 7 $\alpha$ -METHYL- $\Delta^4$ ,9 $\alpha$ ,11 $\alpha$ -ESTRATRIENES

Lucien Nedelec, Clichy-sous-Bois, Seine-Saint Denis, and Jean-Claude Gasc, Bondy, Seine-Saint Denis, both of France, assignors to Roussel-Uclaf, Paris, France

Filed Aug. 31, 1966, Ser. No. 576,240

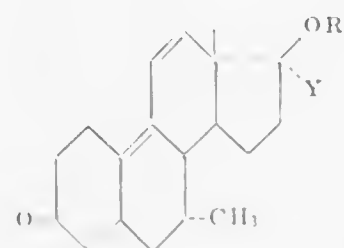
Claims priority, application France, Sept. 3, 1965, 30381. The portion of the term of this patent subsequent to June 21, 1983, has been disclaimed.

Int. Cl. C07c 169/08

U.S. Cl. 260—397.45

14 Claims

The preparation of 7 $\alpha$ -methyl- $\Delta^4$ ,9 $\alpha$ ,11 $\alpha$ -estratrienes of the formula



wherein R<sub>1</sub> is selected from the group consisting of hydrogen and an acyl radical of an organic carboxylic acid of one to 18 carbon atoms and Y is selected from the group consisting of unsaturated aliphatic and halogenated unsaturated aliphatic radicals of two to four carbon atoms.

3,691,216

## PGE<sub>2</sub> METHYL ESTER AND PGE<sub>2</sub> METHYL ESTER DIACETATE

Sune Bergstrom, and Jan Sjovall, both of Kemiska Institutionen, Karolinska Institutet, Stockholm 60, Sweden

Continuation-in-part of Ser. No. 203,752, June 20, 1962, Pat. No. 3,598,858, which is a continuation-in-part of Ser. No. 199,209, April 9, 1962, abandoned, which is a continuation-in-part of Ser. No. 738,514, May 28, 1958, Pat. No. 3,069,323.

This application Feb. 12, 1971, Ser. No. 115,112

Claims priority, application Great Britain, March 29, 1962, 12,139/62

Int. Cl. C07c 69/74

U.S. Cl. 260—468 R

3 Claims

The prostaglandins PGE<sub>2</sub> methyl ester and PGE<sub>2</sub> methyl ester diacetate are disclosed. These novel compounds are useful for a variety of pharmacological purposes, including use as smooth muscle stimulants and as cardiovascular agents.

3,691,217

## PROCESS FOR THE PREPARATION OF ACYL CHLORIDES AND BENZALDEHYDES

Thomas J. McCann, Brooklyn, N.Y., assignor to Argus Chemical Corporation, Brooklyn, N.Y.

Filed March 16, 1970, Ser. No. 20,142

Int. Cl. C11c 3/100

U.S. Cl. 260—408

23 Claims

A catalytic process is provided for the preparation of benzoyl chlorides and benzaldehydes comprising reacting benzo polychloromethanes with an organic carboxylic acid to produce the corresponding benzoyl chloride or benzaldehyde plus the acyl chloride corresponding to the organic carboxylic acid, the reaction being carried out in the presence of a tin chloride catalyst.

3,691,218

## PREPARATION OF VICINAL GLYCOLS FROM VICINAL DIHALIDES

David Clinton Heckert, Oxford, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed June 29, 1970, Ser. No. 51,024

Int. Cl. C07c 69/30

U.S. Cl. 260—410.7

12 Claims

Process for preparing vicinal glycols which comprises hydrolyzing vicinal dihalides in an amide solvent.

3,691,219

## GLYCERYL TRIMONTANATE

Jean Boussety, Paris, France, assignor to Societe Saphchim-Fournier-Cimag, Paris, France

Filed May 4, 1970, Ser. No. 34,642

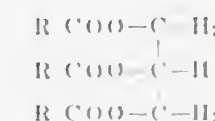
Claims priority, application France, May 7, 1969, 6914546

Int. Cl. C11c 3/02; C08k 1/36

U.S. Cl. 260—410.7

2 Claims

A composition, glyceryl trimontanate is of the class of esters of montanic acid and has the following structural formula:



wherein R is a linearly saturated hydrocarbon chain having 24 to 32 carbon atoms. Glyceryl trimontanate is formed by esterifying montanic acid with glycerol.

Glyceryl trimontanate has excellent lubricating properties which are displayed upon its addition as an auxiliary agent to the reactive mixture for a synthetic plastic material; the resultant synthetic material is more easily formed such as by extrusion, and has improved shock resistance and transparency.

3,691,220

## PROCESS FOR PREPARING OVERBASED ZINC PHOSPHORODITHIOATES

Andrew G. Horodysky, Beaumont, Tex., assignor to Mobil Oil Corporation

Continuation-in-part of Ser. No. 4,399, Jan. 20, 1970, abandoned. This application Dec. 9, 1971, Ser. No. 206,540

Int. Cl. C07f 3/06

U.S. Cl. 260—429.9

8 Claims

Overbased zinc diorganophosphorodithioates are prepared from a diorganophosphorodithioic acid and basic zinc compound in the presence of isopropyl alcohol. The reaction products obtained are used as additives for lubricating oils to impart useful properties thereto.

3,691,221

## CO-PRODUCTION OF ALKALI METAL ALUMINUM TETRAALKYLS AND TETRAALKYLLEAD

Paul Kobetz, Baton Rouge, La.; Kenneth L. Lindsay, Baton Rouge, La., and Shirl E. Cook, Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

Filed Nov. 12, 1970, Ser. No. 89,122

Int. Cl. C07f 7/24

U.S. Cl. 260—437 R

19 Claims

A process for the preparation of alkali metal aluminum tetraalkyls by a redistribution reaction between tetraalkyllead compounds and alkali metal aluminum tetraalkyls. Their use as intermediates for the production of triethyl aluminum compounds.

3,691,222

## METHOD OF PREPARING SILYL ALCOHOLS

Samuel R. Wendel, Missoula, Mont., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 837,296, June 27, 1969, abandoned. This application Feb. 26, 1971, Ser. No. 119,374

Int. Cl. C07f 7/08

U.S. Cl. 260—448 ZE

4 Claims

Silyl alcohols are prepared by reacting alkylene oxides (such as ethylene oxide) with alkoxy silanes or siloxanes containing the group SiRSH in an alcohol promoter and optionally in the presence of acid or base catalysts such as toluene sulfonic acid, zinc chloride or triethylamine. The product has the group SiRSH(R')CH(R')OH.

3,691,223

## ETHER DIISOCYANATES

Robert C. Kuder, Excelsior, Minn., and Marwan R. Kamal, Dhahran, Saudi Arabia, assignors to General Mills, Inc.

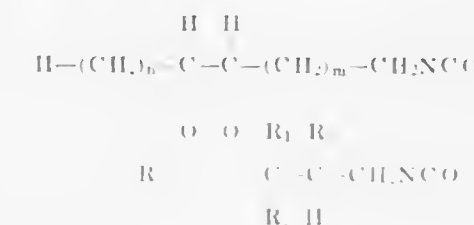
Filed April 25, 1969, Ser. No. 819,496

Int. Cl. C07c 119/04

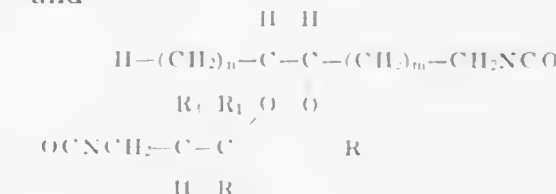
U.S. Cl. 260—453 AR

8 Claims

Ether diisocyanates of the formulas:



and



where n is 4 to 19, m is 0 to 15, the sum of n and m is 13 to 19, R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are hydrogen or short chain alkyl groups of one to four carbon atoms and R is a monovalent organic radical. Polymers prepared from such diisocyanates and organic compounds containing active hydrogens.

3,691,224

## PROCESS FOR THE CONTINUOUS PRODUCTION OF OLEFINICALLY UNSATURATED NITRILES

Giorgio Caporali, Natale Ferlazzo, and Nicola Giordano, all of Milan, Italy, assignors to Montecatini Edison S.P.A., Milan, Italy

Continuation-in-part of Ser. No. 632,635, April 21, 1967, abandoned. This application Aug. 10, 1970, Ser. No. 62,631

Int. Cl. C07c 121/32, 47/22, 45/10

U.S. Cl. 260—465.3

4 Claims

A process for the continuous production of unsaturated aldehydes or unsaturated nitriles by continuously reacting in











3,691,250

**2-METHYL-3-METHYLENE-1,5,7-OCTATRIENE, ITS OLIGOMETER, AND ITS PREPARATION FROM ALLENE AND BUTADIENE WITH PALLADIUM(O) CATALYSTS**  
Dale Robert Coulson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed March 9, 1971, Ser. No. 122,537

Int. Cl. C07c 11/02

U.S. Cl. 260—677 R

5 Claims

The tetraene 2-methyl-3-methylene-1,5,7-octatriene in both cis and trans forms is obtained by liquid-phase reaction between allene and butadiene in the presence of a Pd(O) complex catalyst. The tetraene readily forms an oligomer useful as a vehicle in air-dried finishes.

3,691,251

**DRYING OF GASES CONTAINING POLYMERS AND/OR POLYMERIZABLE CONSTITUENTS**

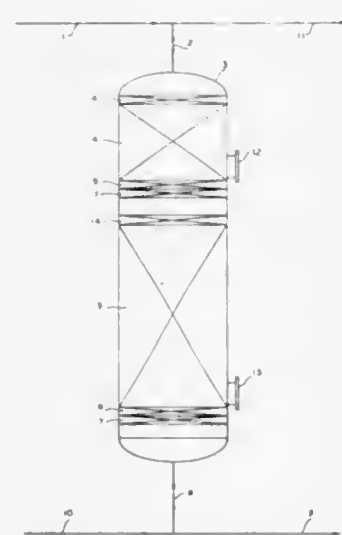
Robert D. Bauer, c/o Phillips Petroleum Co., Bartlesville, Okla.

Filed March 9, 1970, Ser. No. 17,449

Int. Cl. C07c 3/00

U.S. Cl. 260—683 R

8 Claims



A cracked gas, for example as derived from the cracking of ethane under conditions to produce an ethylene gas containing effluent also containing polymers and/or polymerizable constituents, is passed successively through a relatively cheap absorbent or drying material and then through a molecular sieve desiccant. The polymers or polymer-forming constituents are removed from the cracked gases, albeit they are contained therein in very small amount of the order of parts per million. During regeneration of the expensive desiccant bed, the relatively cheap material is discarded as required.

3,691,252

**REDUCTION OF HYDROCARBON CONTENT OF SPENT ACID FROM SULFURIC ACID RECOVERY**

Arthur R. Goldsby, Chappaqua, N.Y., assignor to Texaco Development Corporation, New York, N.Y.

Continuation of Ser. No. 740,586, June 27, 1968, abandoned.

Pat. No. 3,462,512. This application June 15, 1970, Ser. No. 48,893

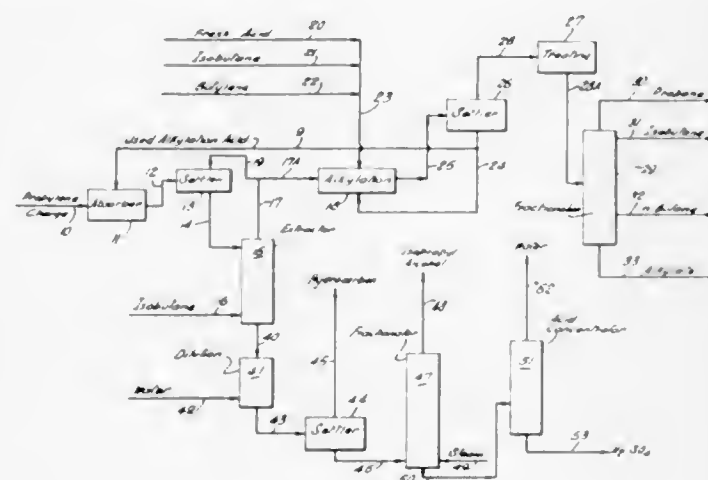
Int. Cl. C07c 3/54; C01b 17/88, 17/90

U.S. Cl. 260—683.62

7 Claims

Method for reducing hydrocarbon content of spent sulfuric acid obtained by absorbing olefin in used sulfuric acid catalyst, reacting with olefins to form dialkyl sulfates and extracting dialkyl sulfates with isobutane; the resulting spent sul-

furic acid is diluted with water to free polymeric oil and to hydrolyze alkyl sulfates to alcohols; and the polymeric oil and



alcohols are removed, leaving a dilute acid of reduced hydrocarbon content.

3,691,253

**CONVERSION OF OLEFINS USING COMPLEXES OF V OR N CONTAINING NO WITH ORGANOALUMINUMS**

William B. Hughes, and Ernest A. Zuech, both of c/o Phillips Petroleum Co., Bartlesville, Okla.

Division of Ser. No. 694,875, Jan. 2, 1968, Pat. No. 3,562,178, Continuation-in-part of Ser. No. 635,656, May 3, 1967, abandoned. This application Oct. 12, 1970, Ser. No. 80,230

Int. Cl. C07c 3/62

U.S. Cl. 260—683 D

10 Claims

A process for the conversion of olefinic hydrocarbons according to the olefin reaction including olefin disproportionation by contacting the olefinic hydrocarbon with a catalyst comprising a compound of vanadium or niobium complexed with NO and a selected complexing agent (e.g., benzoic acid) and combined with an organoaluminum compound (e.g., methylaluminum sesqui-chloride). The metal complexes which form a part of the catalysts are also claimed.

3,691,254

Patent Not Issued For This Number

3,691,255

**METHOD FOR THE PREPARATION OF ISOMERIZATION CATALYST AND PROCESS FOR THE ISOMERIZATION**

Shinji Takase, and Tomonori Shiomi, both of Kawasaki, Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Feb. 9, 1970, Ser. No. 10,044

Claims priority, application Japan, Feb. 20, 1969, 44/12457

Int. Cl. C07c 5/30; B01j 11/40

U.S. Cl. 260—683.68

2 Claims

Method for the preparation of isomerization catalysts which comprises supporting on crystalline aluminosilicate with openings of 6–15 Å. 0.01–5% by weight of palladium or platinum as calculated in terms of the metal by a conventional procedure and then contacting the aluminosilicate with one or more halogenated hydrocarbons wherein the halogen is fluorine and/or chlorine at a temperature from 0° to 350°C. to make a halogen content of 0.01–20 percent by weight, and process for the isomerization of hydrocarbons which comprises contacting straight or less branched hydrocarbons with said catalyst at a temperature from 15° to 400°C. in the presence of a hydrogen-containing gas to produce more highly branched hydrocarbons.

3,691,256

**ACETOXY FUNCTIONAL COPOLYMER COMPOSED OF MONOMETHYLSILOXANE UNITS AND DIPHENYLSILOXANE UNITS**

Robert C. Antonen, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 802,196, Feb. 25, 1969, Pat. No.

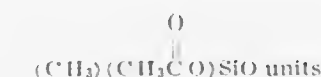
3,632,793. This application Oct. 27, 1970, Ser. No. 84,487

Int. Cl. C08g 47/02, 31/12, 31/32

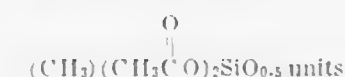
U.S. Cl. 260—825

5 Claims

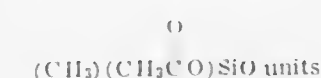
Acetoxymonomethylsiloxane-diphenylsiloxane copolymers of



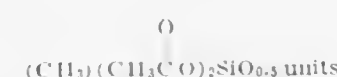
CH<sub>3</sub>SiO<sub>1.5</sub> units, (C<sub>6</sub>H<sub>5</sub>)<sub>2</sub>SiO units and



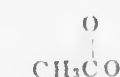
where the (C<sub>6</sub>H<sub>5</sub>)<sub>2</sub>SiO units are bonded to



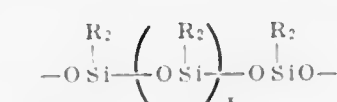
CH<sub>3</sub>SiO<sub>1.5</sub> units or



15 to 46 weight percent of the copolymer is



and 20 to 50 mol percent of the siloxane units are (C<sub>6</sub>H<sub>5</sub>)<sub>2</sub>SiO units is disclosed. Also disclosed are modified acetoxymonomethylsiloxane-diphenylsiloxane copolymers wherein molecules of the copolymer are linked together by segments of the formula



wherein x is at least 2 and R is methyl, phenyl or 3,3,3-trifluoropropyl and the segments being present in amounts of 1 to 50 weight percent. The copolymers and modified copolymers are useful as cross-linkers, intermediates and laminating resins.

3,691,257

**ORGANIC POLYMERS CONTAINING SILOXANE-ORGANIC BLOCK COPOLYMERS**

Thomas Charles Kendrick, Llanblethian, Cowbridge, Glamorgan, and Michael James Owen, Llandough, Penarth, Glamorgan, both of Wales, assignors to Midland Silicones Limited, Reading, England

Filed March 18, 1969, Ser. No. 808,355

Claims priority, application Great Britain, March 29, 1968, 15,281/68

Int. Cl. C08g 47/10; C08f 29/12, 33/08

U.S. Cl. 260—827

17 Claims

A composition comprising (1) an organic polymeric material selected from the group consisting of polyolefins,

polyethylene terephthalate, polyvinyl chloride, polyvinylidene chloride, polystyrene, polymethyl methacrylate, natural rubber, polyisoprene, butadiene-styrene copolymer, chloroprene polymers, isobutylene polymers, acrylic resins, epoxy resins, polyamides, butadiene-acrylonitrile copolymers, melamine-formaldehyde resins, phenol-formaldehyde resins, and urea-formaldehyde resins; and (2) from 0.001 to 10 percent by weight based on the weight of said organic polymeric material of a linear block copolymer comprising at least one organosiloxane block (A) containing at least 20 units of the formula R<sub>2</sub>SiO— wherein each R is selected from the group consisting of hydrogen atoms, monovalent hydrocarbon radicals, monovalent halogen-substituted hydrocarbon radicals and amino alkyl radicals and at least some of the R groups in said organosiloxane block are not hydrogen; and an organic block (B) selected from the group consisting of polymers formed by the polymerization of at least one compound selected from the group consisting of methyl methacrylate, styrene, chlorostyrene, alpha methyl styrene, vinyl chloride, vinyl pyridine, acrylonitrile, butadiene, isoprene, epsilon-caprolactum, and olefins, said organic block being at least partially compatible with said organic polymeric material; and said linear block copolymer being of the type BAB or of the type AB wherein B represents said organic block and A represents said organosiloxane block.

3,691,258

COATING COMPOSITIONS

Franz Riemhofer, Dormagener Str. 34; Walter Dittman, Kampstr. 135, Kampstr. 135; Uwe Blethan, Lipperweg. 197; Karl-Heinz Hornung, Brandenburgische Str. 15, and Ernst-Christian Schutze, Kampstr. 129, all of 4370 Marl, Germany

Filed Oct. 23, 1969, Ser. No. 868,910

Claims priority, application Germany, Oct. 25, 1968, P 18 05 187.1; Oct. 25, 1968, P 18 05 188.2; Oct. 25, 1968, P 18 05 195.1

Int. Cl. C08g 37/34

U.S. Cl. 260—850

21 Claims

Coating compositions resistant to yellowing, solvents, acids and alkalis and having the combination of high elasticity and good hardness are produced by using a mixture of

- a. an aminoplast and
- a polyester having an average weight molecular weight of 600–3,000 of
- an alcohol mixture which contains an aliphatic polyol having 3–4 hydroxy groups and three to six carbon atoms and a mixture which includes one or both of ethylene glycol and 1,2-propanediol, and
- an acid mixture which consists essentially of 91–33 percent of a cyclic dicarboxylic acid and 9–67 percent of an acyclic dicarboxylic acid.

3,691,259

Patent Not Issued For This Number

3,691,260

**IMPACT RESISTANT THERMOPLASTIC COMPOSITION**

Hans Mitnacht, 2 Rheinparkstrasse, 6800 Mannheim, and Edmund Priebe, 22 Brunnstrasse, 6710 Frankenthal, both of Germany

Filed Feb. 25, 1970, Ser. No. 14,247

Claims priority, application Germany, March 8, 1969, P 19 11 882.2

Int. Cl. C08f 41/12, 45/24, 19/18

U.S. Cl. 260—876 R

3 Claims

Impact-resistant thermoplastic molding composition comprising a mixture of a styrene-acrylonitrile copolymer and a styrene-acrylonitrile graft copolymer on polyacrylate backbone polymer latices. Backbone polymer latices are used



which have an average particle diameter between 0.15 and 0.8  $\mu$  and a narrow particle size distribution. The molding compositions can be used to make heavy duty utility articles which are resistant to the action of air and light.

3,691,261

**GRAFT COPOLYMER WITH AN ALKYL ACRYLATE AND ETHYLTHIAETHYL METHACRYLATE BACKBONE**  
Carmen M. Cusano, Poughkeepsie; Roy I. Yamamoto, and Isaac D. Rubin, both of Wappingers Falls, all of N.Y., assignors to Texaco, Inc., New York, N.Y.

Filed March 1, 1971, Ser. No. 120,069

Int. Cl. C08f 15/40, 19/10

U.S. Cl. 260—881

2 Claims

A thermoplastic terpolymer resin composition of improved resistance to ultraviolet light deterioration consisting essentially of a rubbery copolymer backbone of a  $C_2$  to  $C_{18}$  alkyl acrylate and a first member of ethylthioethyl methacrylate having grafted thereon a graft copolymer of acrylonitrile and styrene member, said terpolymer composed of between about 15 and 35 weight percent of said rubbery backbone and between 65 and 85 weight percent of said graft copolymer, said rubbery backbone component having a first weight ratio of said alkyl acrylate to said first member of between about 99:1 and 99:10 and said graft copolymer component having a weight ratio of said acrylonitrile to said styrene member of between about 15:85 and 30:70, said styrene member selected from the group consisting of styrene and between about 1:0 and 1:1 weight mixture of styrene to  $\alpha$ -methylstyrene, said terpolymer composition formed by the method consisting essentially of first polymerizing a mixture of said alkyl acrylate and said member under aqueous emulsion polymerization conditions in the presence of polymerization initiator, polymerization modifier and first anionic emulsifier to form an aqueous latex containing a copolymer of acrylate and said member, said first polymerization being conducted at a pH between about 2 and 7 at a first temperature between about 110° and 150° F. under conditions of vigorous agitation thereby forming the rubbery copolymer of alkyl acrylate and first member, then second polymerizing under aqueous emulsion conditions said formed alkyl acrylate-first member copolymer with a mixture of acrylonitrile and styrene member in the presence of polymerization initiator, polymerization modifier and a second anionic emulsifier, said second polymerization being conducted at a pH of between 2 and 7 at a second temperature between about 110° and 150° F. under vigorous agitation conditions until said terpolymer composition is formed.

3,691,262

**FIRE-RETARDANT BROMINATED ABS POLYMERS AND METHOD OF PREPARATION**

Edward M. Hagerman, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1970, Ser. No. 89,464

Int. Cl. C08f 41/12

U.S. Cl. 260—890

5 Claims

When an acrylonitrile-butadiene-styrene (ABS) latex is treated with elemental bromine the resin is simultaneously brominated, and coagulated and precipitated from the latex. When the isolated, brominated resin is mixed with a small amount of synergistic flame-retardant additive, such as antimony oxide, a nonburning ABS resin having good physical properties is produced.

## ERRATA

For Classes 260—961 thru 260—942 see:  
Patents Nos. 3,691,275 thru 3,691,278

3,691,263

**METHOD FOR MANUFACTURING ROTATION-SYMMETRIC ARTICLES BY CENTRIFUGAL CASTING**

Vladimir Stoy; Miroslav Stol; Helena Prokopova, and Karel Kliment, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie red, Prague, Czechoslovakia

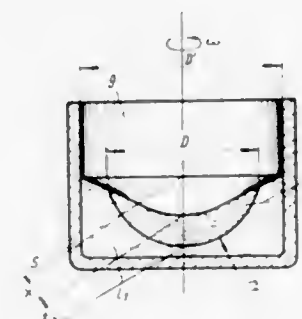
Filed Jan. 19, 1970, Ser. No. 3,908

Claims priority, application Czechoslovakia, Jan. 20, 1969, 366-69

Int. Cl. B29d 11/00

U.S. Cl. 264—1

8 Claims



The invention concerns centrifugal casting of articles which solidify either by a chemical reaction or by physical solidification, wherein a cast liquid is brought into contact only with at least one shaping liquid, or, if desired, also with a gas phase, at least one of the shaping liquids being specifically heavier and the other shaping liquid or liquids being specifically lighter than the cast liquid, all the liquids forming a sharp boundary with each other. Thus, any contact of the cast liquid with a solid phase such as with the wall of the rotating container is excluded and the cast article is shaped only by centrifugal force, gravity and surface tension.

3,691,264

**PROCESS FOR PRODUCING STABLE ELECTRET CONSISTING OF A CRYSTALLINE HIGH MOLECULAR WEIGHT MATERIAL**

Mitsuo Asahina, Tokyo, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

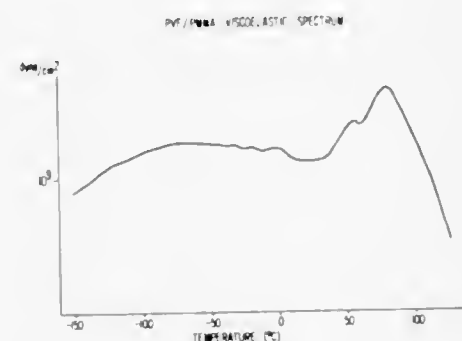
Filed July 16, 1970, Ser. No. 55,548

Claims priority, application Japan, July 17, 1969, 44/56614

Int. Cl. B29c 25/00

U.S. Cl. 264—22

1 Claim



A process for producing a crystalline high molecular weight material electret which comprises melting and molding a crystalline high molecular weight material, quenching said high molecular weight material to a temperature lower than the crystal dispersion temperature of the high molecular weight material and then applying a direct current field to the quenched material at temperatures between the crystal dispersion temperature and the melting point of the material is disclosed.

3,691,265

**PREPARATION OF VINYL-COATED POLYURETHANE FOAMS**

David S. Cobbledick, Kent, Ohio, assignor to The General Tire & Rubber Company

Continuation-in-part of Ser. No. 783,402, Dec. 12, 1968, Pat. No. 3,586,649. This application Aug. 31, 1970, Ser. No. 68,559

Int. Cl. B29d 27/04; C08g 22/46, 53/08

U.S. Cl. 264—45

4 Claims

Certain combinations of polyurethane foam ingredients which react essentially at room temperature are mixed and poured into vacuum-formed polyvinyl sheeting and allowed to cure thereby producing a polyurethane foam with a strongly adherent polyvinyl coating.

3,691,266

**SUPPORTING CARRIAGE FOR, AND METHOD OF CASTING IN, MOLDS FOR THE PRODUCTION OF CERAMIC HOLLOW WARE**

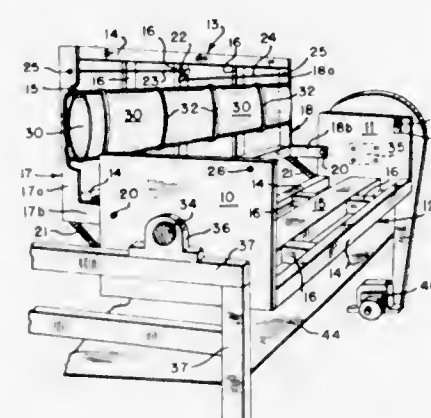
Jerome S. Greenberg, Chicago, Ill., assignor to Regal China Corporation, Antioch, Ill.

Filed Dec. 8, 1970, Ser. No. 96,140

Int. Cl. B28b 1/26

U.S. Cl. 264—86

3 Claims



A rotatable carriage for supporting split-type plaster molds used in the casting of ceramic hollow ware comprises two end frames and two normally oppositely facing supporting frames, one of the supporting frames being fixed to the end frames and the other supporting frame being pivotally mounted on the end frames to permit loading and unloading of the molds. The pivotally mounted supporting frame has an inflatable member on its inner face which, when inflated after the frame is locked in position, secures the molds in place while the carriage is rotated about its longitudinal axis to positions permitting the filling of the mold cavity, the emptying of excess casting slip from the mold cavity and the returning of the molds to a horizontal opening position. By handling the molds in this manner during filling, casting and emptying, a new casting method is obtained.

3,691,267

**SANITARY PROCESS OF PACKING A SUBJECT INTO A VESSEL**

Hiraki Takehara, Nigawa-cho 3-chome 40, 662 Hyogo-ken, Nishinomiyama, Japan

Filed Sept. 15, 1969, Ser. No. 857,772

Claims priority, application Japan, Sept. 25, 1968, 43/69693; Sept. 26, 1968, 43/69931; Sept. 26, 1968, 43/69932; Dec. 27, 1968, 44/458

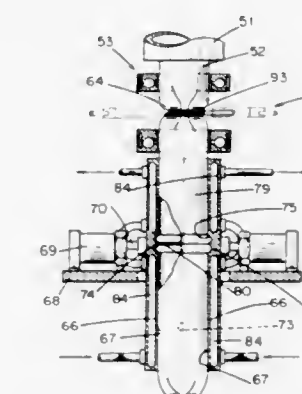
Int. Cl. B29c 17/07; B65b 3/06

U.S. Cl. 264—98

2 Claims

The present invention relates to a sanitary process of packing a subject into a vessel which comprises the steps of producing combined vessels each having vessels whose peripheral side walls at mouth portions we facing to each other and are continuously joined with each other, the said

combined vessels having inner spaces in communication with each other only through passages within the side walls at mouth portions and each of the combined vessels being so formed that when it is separated at the junction of the peripheral side walls at mouth portions the openings thus formed by separation serve as mouths of the vessels, the walls of vessels other than the mouth portions being perfectly closed; separating the combined vessels at the junction of the peripheral side walls before charging an object into vessels to



3,691,268

**METHOD OF MAKING A FLEXIBLE MEMBER HAVING INCREASED SERVICE LIFE**

Thomas E. Burkley, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

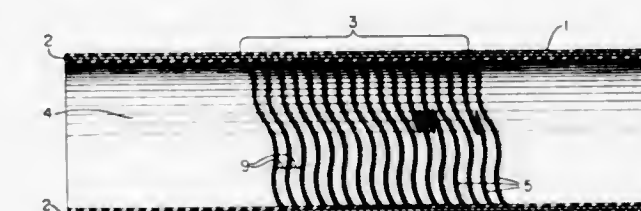
Division of Ser. No. 679,731, Nov. 1, 1967, Pat. No. 3,598,155.

This application March 23, 1970, Ser. No. 24,931

Int. Cl. B29c 1/02; B29h 21/08

U.S. Cl. 264—162

12 Claims



A method of making a flexible member having increased service life with the member being of the type designed for use in a fluid pressure system in which a predetermined flex wrinkle pattern or a modification thereof is imparted to a surface of the flexible member to improve the flexing properties while the member is operating in such system. This pattern may consist of a simulation of the actual flex wrinkle pattern of a previously operating flexible member or be a compromise which employs a plurality of grooves having substantially the same pitch as the wrinkles. This invention results in the increased flex life and improved low temperature performance of the flexible member.



3,691,269

**METHOD OF PREPARING A CONTAINER**

Keith D. Robinson, Mogadore, Ohio, and James D. Tremelin, Akron, Ohio, assignors to Goodyear Tire and Rubber Company, Akron, Ohio

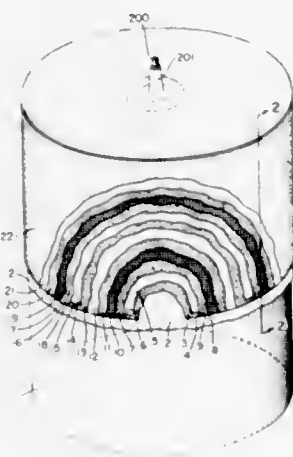
Continuation of Ser. No. 644,218, June 7, 1967, abandoned.

This application Aug. 7, 1969, Ser. No. 849,294

Int. Cl. B29c 13/04; B29h 9/02

U.S. Cl. 264—255

3 Claims



A method of preparing a container having at least two compartments therein by the sequential and alternate deposition of layers of release agents and flexible polymeric materials over at least a portion of a convex or concave surface of a building form.

3,691,270

**COSMETIC MAKEUP REMOVING OR TREATING COMPOSITION WHICH IS MICROENCAPSULATED AND INCORPORATED IN A FLEXIBLE SUPPORT**

Roger Charle, Soisy-sous-Montmorency; Charles Zviak, Franconville, and Gregoire Kalopissis, Paris, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed Feb. 4, 1970, Ser. No. 8,719

Claims priority, application Luxembourg, Feb. 4, 1969, 57,905

Int. Cl. A61k 7/02

U.S. Cl. 424—28

6 Claims

A cosmetic makeup base foundation cream composition for the skin comprises an alveolar polymeric support containing a multiplicity of rupturable microcapsules containing said makeup base foundation cream.

3,691,271

**SANITARY NAPKIN HAVING HOMOGENEOUSLY DISTRIBUTED MICROCAPSULES FILLED WITH DELAY RELEASABLE BACTERICIDAL AND FUNGICIDAL DEODORANT**

Roger Charle, 61, Avenue Gaviot, Soisy-sous-Montmorency; Charles Zviak, 1, Rue Soldini, Franconville, and Gregoire Kalopissis, 65, Rue Vauvenargues, Paris, all of France

Filed Feb. 4, 1970, Ser. No. 8,721

Claims priority, application Luxembourg, Feb. 4, 1969, 57,907

Int. Cl. A61k 7/00

U.S. Cl. 424—28

4 Claims

A sanitary napkin made of cellulose batting or layers of paper or cotton absorbent fabric and a multiplicity of in-

dividual microcapsules enveloping a deodorant agent. The microcapsules are homogeneously distributed in the cellulose batting or in alternating layers on the fabric to effect a delayed release of the deodorant therefrom, the walls of said microcapsules being permeable or soluble on contact with the fluid associated with menstrual discharge.

3,691,272

**TOOTH-PASTE**

Henning Asche, Riehen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 6,032, Jan. 23, 1970, abandoned, which is a continuation of Ser. No. 608,736, Jan. 12, 1967, abandoned. This application Sept. 22, 1970, Ser. No. 74,528

Int. Cl. A61k 7/16

U.S. Cl. 424—57

6 Claims

Tooth-paste compositions consisting essentially of sodium chloride or marine salt, hydroxy-ethyl or -methyl cellulose, glycerol, a condensation product of ethylene oxide and polyoxypropylene glycol, a polishing agent such as dicalcium phosphate dihydrate, sodium metaphosphate or calcium orthophosphate, colloidal dispersed silica, the sodium salt of saccharine and/or sodium cyclamate, flavorings and water in such proportions as to provide a paste of acceptable taste and consistency.

3,691,273

**LIQUID COSMETIC PRODUCT FOR FILLING APPLICATOR APPLIANCES AND ITS METHOD OF PREPARATION**

Jean Hrand Marcarian, Paris, and Roland Louis Julien Clemencet, Suresnes, both of France, assignors to L'Oreal, Paris, France

Continuation-in-part of Ser. No. 644,290, June 6, 1967, abandoned. This application April 28, 1970, Ser. No. 32,722

Claims priority, application France, Feb. 17, 1970, 7005646

Int. Cl. A61k 7/02

U.S. Cl. 424—63

5 Claims

The method of preparing a liquid cosmetic product is characterized in that finely crushed pigments are mixed with high organic polymers while dispersing them by means of a fatty oxyethylenated body, to the colloidal mass obtained are added polyols of low molecular weight in aqueous solution, then to the suspension thus obtained and kept in movement, the solution of polar compound is added.

3,691,274

**COMPOSITIONS CONTAINING A HEART EXTRACT**

Yvonne Thuillier, 16 rue Brunel, Paris, 16<sup>e</sup>, France

Filed April 16, 1968, Ser. No. 721,879

Claims priority, application France, April 17, 1967, 67102957

Int. Cl. A61k 17/00

U.S. Cl. 424—95

3 Claims

The invention provides myocardiotonic compositions comprising a non-specific heart extract and one or more of

adenosine-triphosphoric acid or salt thereof, aspartic acid or a salt thereof, and vitamin B<sub>6</sub>.

3,691,275

**DIESTERS OF HALO-SUBSTITUTED ALKYLPHOSPHONATES**

Isaac Benghiat, New City, N.Y., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 29, 1969, Ser. No. 888,965

Int. Cl. C07f 9/40; C08f 45/58

U.S. Cl. 260—961

5 Claims

Novel compositions of matter comprising diesters of polyhalo-substituted alkylphosphonates as exemplified by dimethyl 3-chloro-2,3-dibromopropylphosphonate are used as components in preparing compounds such as plastic, polymers, resins, etc. and will impart the desirable physical characteristics of flame retardancy or fire resistance to these compounds.

3,691,276

**PROCESS FOR PREPARING O-ARYL PHOSPHONCHLORIDOTHIONATES**

Peter E. Newallis, Leawood, Kans.; Hans L. Nufer, Creve Coeur, Mo., and John P. Chupp, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed March 13, 1970, Ser. No. 19,485

Int. Cl. C08f 9/20

U.S. Cl. 260—973

10 Claims

Preparation of O-aryl phosphonochloridothionates by the reaction of a phenolic compound with a thionophosphonic dichloride in the presence of a catalyst which can be metallic zinc, copper, aluminum, titanium, tin, antimony, iron or cobalt, or halides thereof.

3,691,277

**PHOSPHORYLATED AND PHOSPHONYLATED DERIVATIVES OF MERCAPTOACETIC ACID-N,N'-DIALKYLHYDRAZIDES**

Claus Stotzer, Wuppertal-Elberfeld; Ingeborg Hammann, Cologne, and Gunter Unterstenhofer, Opladen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed April 21, 1970, Ser. No. 30,577

Claims priority, application Germany, April 23, 1969, P 19 20 506.2

Int. Cl. C07f 9/16, 9/38; A01n 9/36

U.S. Cl. 260—923

10 Claims

Phosphorylated and phosphonylated derivatives of mercaptoacetic acid-N,N'-dialkylhydrazides, which are alkyl- or aryl-substituted in the 2-position, i.e. alkyl-esters of phosphoric or alkyl phosphonic (thiono) thiol acids attached through the thiol group to the 2-carbon of an alkyl- or aryl-substituted acetic acid whose carbonyl group is bound up as a dialkyl hydrazide, which possess arthropodocidal, especially acaricidal and insecticidal, properties, and processes for their production.

3,691,278

**AROMATIC POLYCARBOXYLIC ACID HALIDES CONTAINING PHOSPHORUS**

Hiroshi Kaminaka, Toyonaka; Norio Kotera, Amagasaki; Tatsuo Kanda; Hiroshi Kuruma, both of Toyonaka; Hideki Yanagihara, Takatsuki, and Yoshiro Murata, Minoo, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed June 3, 1970, Ser. No. 43,205

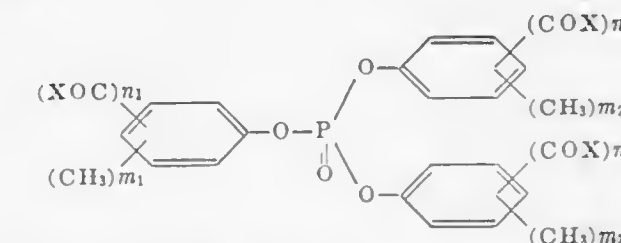
Claims priority, application Japan, June 3, 1969, 44/43899

Int. Cl. C07f 9/12; C08f 45/58

U.S. Cl. 260—942

5 Claims

A polyhaloformyltriphenyl phosphate represented by the formula,



wherein X is a halogen atom, and each of n's and of m's is an integer of 0 to 2, is produced by reacting a corresponding polycarboxytriphenyl phosphate with a halogenating agent. The novel phosphates are useful as an acylating agent in organic syntheses and as an intermediate in the synthesis of fire-retarding and antilaminating products such as polymers and industrial chemicals.

3,691,279

**ANTIBIOTIC NEBRAMYCIN AND PREPARATION THEREOF**

Robert Q. Thompson, Greenwood, Ind.; William M. Stark, Indianapolis, Ind., and Calvin E. Higgins, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. Nos. 488,109, Sept. 17, 1965, abandoned, and Ser. No. 798,587, Feb. 12, 1969, abandoned.

This application April 15, 1970, Ser. No. 28,212

Int. Cl. A61k 21/00

U.S. Cl. 424—116

7 Claims

Antibiotic complex nebramycin, obtained by culturing *Streptomyces tenebrarius* ATCC 17920 and isolated by elution from a cationic resin or precipitation as insoluble salts of alkylsulfoacetates, and the individual antibiotic factors thereof, said complex and factors having high gram-negative activity.

3,691,280

**ANTIBIOTIC B-5050 AND PRODUCTION THEREOF**

Eiji Higashide, Takarazuka; Toru Hasegawa, Kawanishi; Hideo Ono, Kobe; Mitsuko Asai; Masayuki Muroi, both of Osaka, and Toyokazu Kishi, Nara, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Aug. 13, 1970, Ser. No. 63,581

Claims priority, application Japan, Aug. 13, 1969, 44/64080

Int. Cl. A61k 21/00

U.S. Cl. 424—119

14 Claims

New antibiotic B-5050 is produced by culturing an antibiotic B-5050-producing micro-organism belonging to the genus *Streptomyces* in a culture medium containing assimilable carbon source and digestible nitrogen source under aerobic conditions until antibiotic B-5050 is substantially accumulated in the culture broth. Active ingredients of antibiotic B-5050 are antibiotics B-5050-A, B-5050-B, B-5050-C, B-5050-D, B-5050-E, and B-5050-F. The active ingredients and mixtures thereof are antimicrobially active.



3,691,281

# MICROCRYSTALLINE COLLAGEN, METHOD OF MAKING SAME AND FOODS, PHARMACEUTICALS AND COSMETICS CONTAINING SAME

Orlando A. Battista, Yardley, Pa., assignor to FMC Corporation, New York, N.Y.

Division of Ser. No. 586,969, Oct. 17, 1966, abandoned. This application Feb. 2, 1970, Ser. No. 12,504

Int. Cl. A61k 9/06

U.S. Cl. 424—195

7 Claims

Pharmaceutical compositions which include in addition to the pharmaceutical ingredient or ingredients a water-insoluble, ionizable, partial salt of collagen or microcrystalline collagen. The composition may be in the form of a pourable liquid, a gel or ointment or a solid compressed tablet. The microcrystalline collagen colloiddally dispersed in the liquid improves the stability of suspended ingredients in liquids and gels.

3,691,282

# METHOD FOR DESTROYING NEMATODES

Jacques Ducret; Daniel Pillon, both of Lyon, and Daniel Demozay, Villeurbanne, all of France, assignors to PEPRO, Societe pour Le Developpement et La Vente de Specialties Chimiques, Lyon, France

Filed Nov. 19, 1970, Ser. No. 91,162

Claims priority, application France, Nov. 26, 1969, 6940677

Int. Cl. A01n 9/36

U.S. Cl. 424—200

2 Claims

0-0-diethyl-0-3-pyridyl thiophosphate is used as a nematocide.

3,691,283

# METHOD FOR THE CONTROL OF HELMINTHS IN WARM-BLOODED ANIMALS USING BIS-N-PHOSPHORYLATED COMPOUNDS

Mary Ehlers Doscher, 147 Gary Drive, Trenton, N.J.

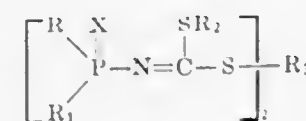
Filed April 15, 1971, Ser. No. 134,453

Int. Cl. A61k 27/00

U.S. Cl. 424—204

10 Claims

The present invention relates to a novel method of controlling helminths in warm-blooded animals and involves administering to said animals an anthelmintically effective amount of a bis-N-phosphorylated compound represented by the structure:



wherein R and R<sub>1</sub> each represent members selected from the group consisting of loweralkyl, loweralkoxy and phenyl; X is sulfur or oxygen; R<sub>2</sub> is loweralkyl, loweralkenyl, benzyl or halo-substituted benzyl; and R<sub>3</sub> is a loweralkylene radical, such as methylene, ethylene, loweralkyl substituted ethylene, trimethylene, loweralkyl substituted trimethylene, oxydimethylene, tetramethylene or loweralkyl substituted tetramethylene.

## ERRATUM

For Class 424—303 see:  
Patent No. 3,691,185

## ELECTRICAL

3,691,284

# TARGET SIMULATOR FOR AN OPTICAL SIGHT

Jan Lennart Borjeson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

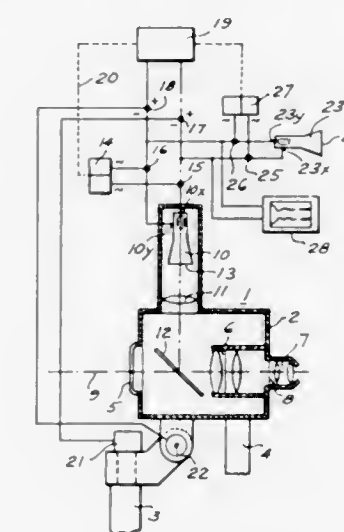
Filed Feb. 26, 1971, Ser. No. 119,329

Claims priority, application Sweden, March 6, 1970, 3048/70

Int. Cl. G09b 9/00; F41g 3/26

U.S. Cl. 35—10.2

6 Claims



The invention relates to a target simulator for optical aiming sights for simulating a moving target for the training of personnel in the use of the sight. The simulator device produces electronically a luminous dot, circle or ellipse, which appears within the field of view of the aiming sight and moves therein against the terrain or sky background in exactly the same manner as a real target and which can be tracked by operation of the aiming sight in exactly the same manner as when tracking a real target. A training instructor can continuously supervise the performances of the pupil when catching and tracking the simulated target and furthermore the tracking error can be automatically recorded for later analysis. The simulated target symbol can be moved within the field of view of the sight so as to duplicate practically any arbitrarily selected movements of a real target.

3,691,285

# MUSICAL INSTRUMENT

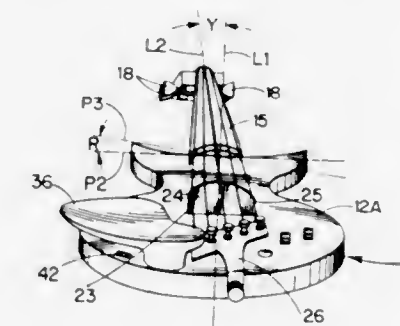
Spencer Lee Larrison, 23 Washburn St., Auburndale, Mass.

Filed July 9, 1970, Ser. No. 53,388

Int. Cl. G10h 3/00

U.S. Cl. 84—1.16

20 Claims



A stringed musical instrument, which is preferably adapted to be bowed, including a solid body and an elongated neck member attached to and extending from the body. Conventional means may be provided for securing a set of strings at one end to the body and at the other end to a head which forms part of the neck member at the end of the neck member

3,691,286

# MUSICAL BOX MOVEMENT

Fumito Komatsu, and Goro Adachi, both of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Suwa-gun, Nagano, Japan

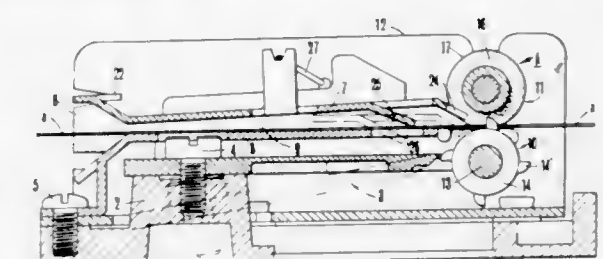
Filed Dec. 27, 1971, Ser. No. 212,164

Claims priority, application Japan, Dec. 25, 1970, 45/140554

Int. Cl. G10f 1/06

U.S. Cl. 84—101

16 Claims



A music box movement for playing a musical score provided in a tape or band in the form of perforations therein. The members required for playback or sound-reproduction of the tape are arranged in parallel manner on a horizontal die-cast base frame so that the movement can be incorporated in a jewel-box or the like.

3,691,287

# SUPPORT ARRANGEMENT FOR THE CONDUCTORS OF LOW TEMPERATURE CABLES

Henning Falke, Angermund, Germany, assignor to Vereinigte Draht-und Kabelwerke Aktiengesellschaft Berlin und Duisburg, Berlin, Germany

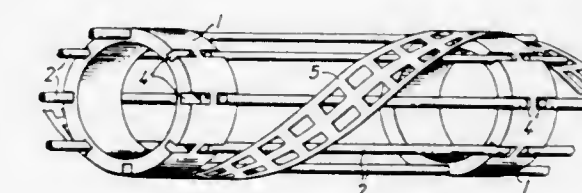
Filed April 22, 1971, Ser. No. 136,317

Claims priority, application Germany, April 22, 1970, P 20 20 735.6; April 22, 1970, P 70 15 981.8

Int. Cl. H01b 7/02

U.S. Cl. 174—28

8 Claims



A low temperature cable including support means for carrying electrical conductors on a cylindrical surface disposed concentrically of the axis of the cable and which is designed to reduce tensile stress and relative movement in the cable as it is cooled. A plurality of aligned supporting rings are initially



held in spaced relationship by means of a number of rod members that extend between adjacent rings with the ends of the rods loosely held in recesses near the outer peripheral surfaces of the rings. This structure is completed to a tube-like configuration by a wrapping of foil or tape. The rods and rings on the one hand and the foil or the tape on the other hand are usually, of different materials having different coefficients of contraction so that as the completed structure is cooled, the rods contract to an extent that they are disengaged from the rings and the movement of the rings, caused by the contraction of the foil or tape, relative to each other is not hampered.

3,691,288

### ELECTRICAL POWER OUTLET FOR TRAILER CAMP SITES AND THE LIKE

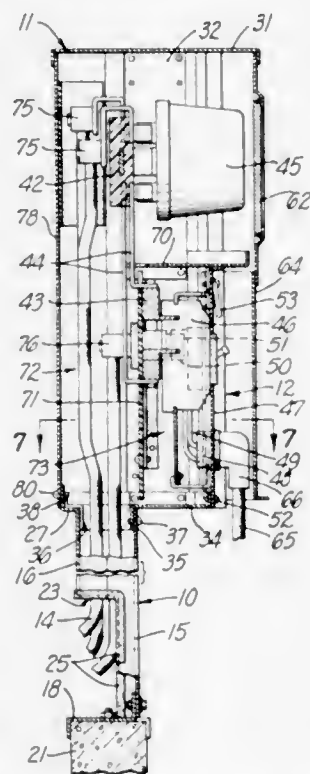
Rex E. Sturdivan, Jackson, Miss., assignor to Zinsco Electrical Products, Los Angeles, Calif.

Filed Dec. 14, 1970, Ser. No. 97,844

Int. Cl. H02b 9/00, 1/04, 1/10

U.S. Cl. 174—38

7 Claims



A power distribution system for mobile home parks and the like. A hollow post for mounting in the ground and a power panel box mounted thereon and carrying a plug-in meter and a plug-in outlet fitting with interchangeable circuit breakers and receptacles. A power panel box with separated line and load zones and a fully accessible line side cable path.

3,691,289

### PACKAGING OF SEMICONDUCTOR DEVICES

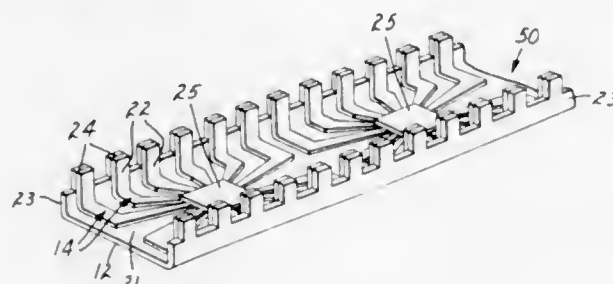
Robert R. Rohloff, Lakeland, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 22, 1970, Ser. No. 82,872

Int. Cl. H05k 5/00

U.S. Cl. 174—52 PE

8 Claims



A packaging device is provided for the housing of semiconductor devices to facilitate handling, testing and later at-

tachment thereof to further electrical circuitry. The packaging device comprises a self-supporting dielectric substrate in the form of a channel and a plurality of conductive land areas on the inner surfaces of the channel. The land areas define at least one site within the channel which is adapted to electrically receive a semiconductor device. The land areas extend outward from said site in the form of fingers, the fingers extending upwardly along the side walls of the channel so as to be exposed for later attachment thereof to further electrical circuitry.

3,691,290

### DELETABLE CONDUCTOR LINE STRUCTURE

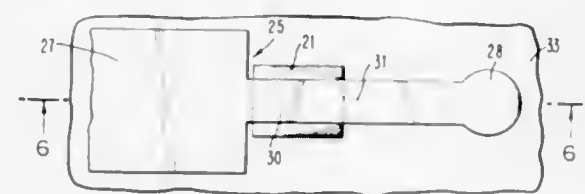
John Napier, Poughquag, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1970, Ser. No. 97,857

Int. Cl. H05k 1/02

U.S. Cl. 174—68.5

7 Claims



A deletable conductor line structure permits a variety of circuits to be made from a single master pattern. A thin film of metal, which has marginal adherence to the circuit supporting substrate material, is first deposited in a discontinuous pattern on the surface of the substrate. A master circuit pattern of conductive material is then deposited on the substrate such that portions of the master circuit conductor lines overlie the discontinuous metal pattern. A selected circuit is formed by deleting certain portions of the conductor lines at the point where they overlie portions of the metal film having marginal adherence to the substrate.

3,691,291

### SPLICE FOR JOINING HIGH VOLTAGE CABLES

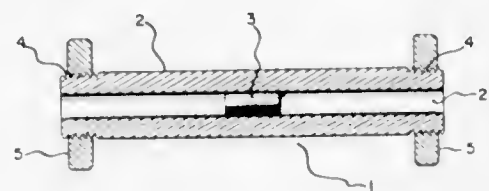
Hatim H. Taj, Schenectady, N.Y., assignor to General Electric Company

Filed April 19, 1971, Ser. No. 135,166

Int. Cl. H02g 3/06

U.S. Cl. 174—73 R

4 Claims



A connector for electric cable joints or splices has an adjustable collar on each connector end, the connector ends serving to join the cables and the collars serving to electrically connect the connector structure to the connector cavity shield, to provide an efficient heat path from the connector, and to prevent any cable adaptor tube from moving into the connector cavity.

3,691,292

Patent Not Issued For This Number

3,691,293

Patent Not Issued For This Number

3,691,294

### PACKAGE FOR ENCAPSULATED ELECTRICAL COMPONENTS

Joseph T. Charles, Mount Prospect, Ill., assignor to Coil Sales, Inc., Arlington Heights, Ill.

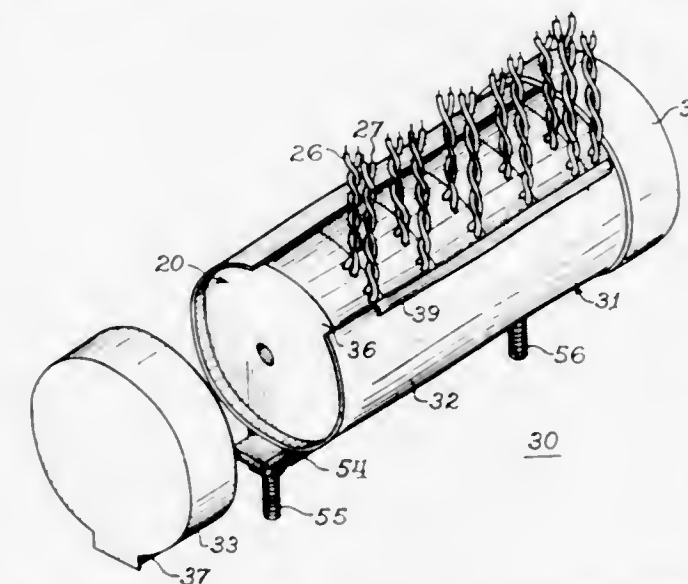
Continuation-in-part of Ser. No. 877,384, Nov. 17, 1969,

abandoned. This application Oct. 5, 1970, Ser. No. 78,630

Int. Cl. H01f 17/08, 15/02, 27/04

U.S. Cl. 178—46

11 Claims



A package for holding a plurality of encapsulated electrical components comprising a cylindrical case having a lengthwise slot through which the leads of the components extend, and an adjustable mounting means carried by the case which is offset from the lengthwise slot.

3,691,295

### TWO-WAY COMMUNICATION SYSTEM FOR VIDEO AND DIGITAL DATA

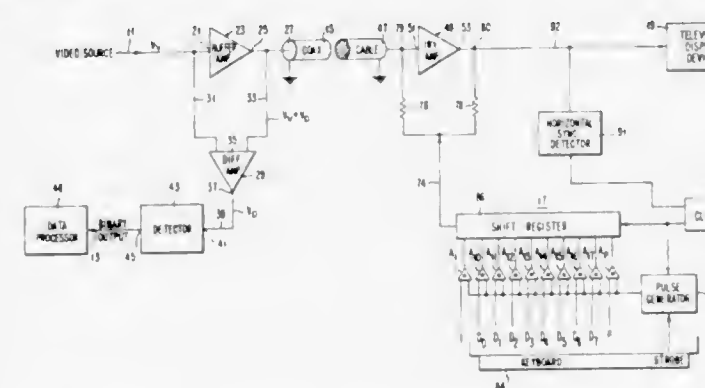
Dale E. Fisk, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed March 31, 1970, Ser. No. 24,264

Int. Cl. H04l 5/14

U.S. Cl. 178—58

12 Claims



Transmission system for jointly linking a video source to a television display device, and a digital data source to a digital data output by means of a single coaxial cable. A video source and the digital data output are located at one end of the coaxial cable, with the television display device and digital data source located in the vicinity of the other end of the cable. Circuit arrangements are provided at the video source end of the cable, and also at the digital data source end of the cable, for respectively separating the video signal and the digital data signal from each other to thereby facilitate the transmission of video information in one direction through the coaxial cable while digital data is simultaneously transmitted through the cable in the other direction.

3,691,296

### SYNCHRONIZING ARRANGEMENT FOR A MOTOR DRIVEN FACSIMILE SCANNING ASSEMBLY

Graham Edward Marshman, Ottawa, Ontario, Canada, assignor to Muirhead Limited, Beckenham, Kent, England

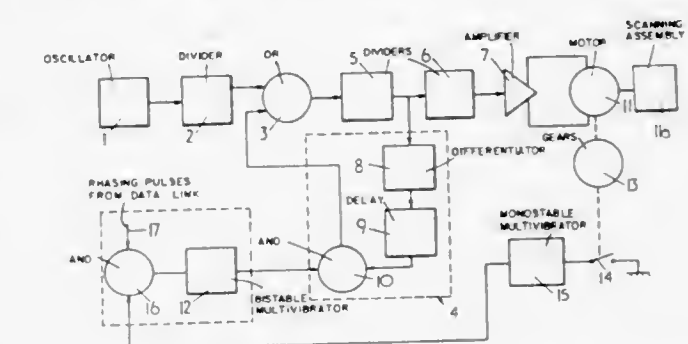
Filed June 3, 1970, Ser. No. 42,912

Claims priority, application Great Britain, June 11, 1969, 29,670/69

Int. Cl. H04n 1/36

U.S. Cl. 178—69.5 F

3 Claims



In facsimile apparatus including a motor driven scanning assembly, a speed control circuit for the motor and marker means providing a signal each time the scanning assembly is in the scan-start position are connected to a comparator. The comparator is adapted to receive phasing pulses from a facsimile data link and is arranged to switch the control circuit from a first to a second state when it detects a predetermined phase relationship between a signal from the marker means and a phasing pulse. In the first state of the control circuit the motor is run at a speed differing from a preselected synchronized speed, and in the second state the motor is run at the synchronized speed. When the apparatus is constructed as a facsimile receiver, the phasing pulses are provided by the scanning assembly of a remote facsimile transmitter. The occurrence of the predetermined phase relationship signifies that the transmitter and receiver scanning assemblies are at the scan-start position. The control circuit then switches the receiver assembly to the synchronized speed. The two assemblies then run in synchronism during scanning.

3,691,297

### SYNCHRONIZATION PHASE-LOCK SYSTEM FOR A DIGITAL VERTICAL SYNCHRONIZATION SYSTEM

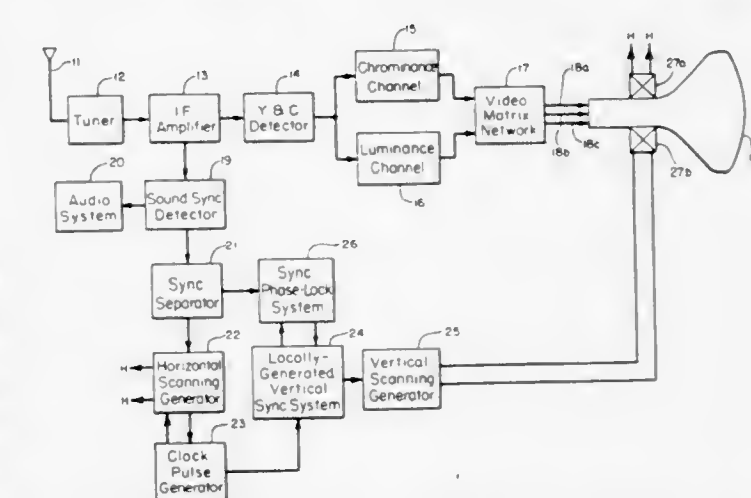
Richard G. Merrell, Darien, and Melvin C. Hendrickson, Elmhurst, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed May 6, 1971, Ser. No. 140,852

Int. Cl. H04n 5/04

U.S. Cl. 178—69.5 TV

10 Claims



A synchronization phase-lock system in a television receiver for maintaining coincidence between locally-generated vertical synchronization pulses and vertical synchronization pulses developed from received television transmissions. The phase-



lock system utilizes the received vertical sync pulses in conjunction with gating circuitry to condition an up/down binary counter to count, within predetermined limits, in a first, or "up", direction during the received vertical sync interval and in the opposite, or "down" direction during the vertical trace interval of the received signal. Locally generated vertical sync pulses are also applied to the up/down binary counter wherein each pulse initiates one count. A locally generated vertical sync pulse occurring during the received vertical sync pulse interval generates one "up" count representative of coincidence between the received and locally generated vertical sync pulses. If the locally generated vertical sync pulse occurs during the vertical trace interval, a "down" count indicating non-coincidence is initiated. The phase-lock system further includes a reset gating circuit activated by the up/down binary counter reaching its "down" counting limit for resetting the phase of the locally generated vertical sync pulses such that they will be coincident with the received vertical sync pulses.

3,691,298

## TOUCH TUNING AND CONTROL CIRCUITS

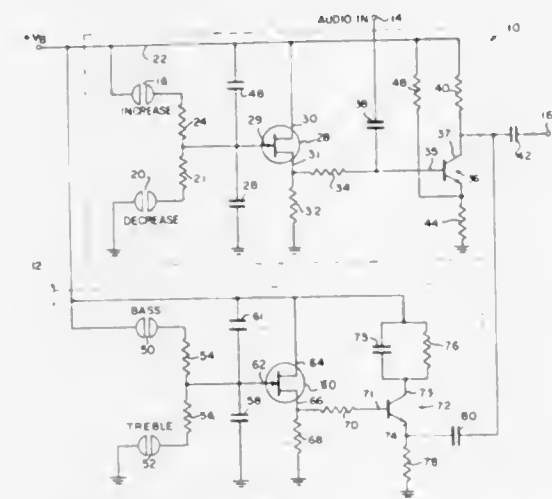
Carl R. Pittman, and James A. Long, both of Arvin Industries, Inc., Columbus, Ind.

Filed Dec. 3, 1970, Ser. No. 94,896

Int. Cl. H03g 1/02

U.S. Cl. 179-1 VL

16 Claims



An electronic circuit for adjusting the volume and tone of an audio signal is controlled by appropriately bridging contacts included therein with a human finger or other conductive means. The length of time that a contact is bridged, or closed, determines the conductive state of a field effect transistor associated therewith. One such FET controls the gain of an audio amplifier whereby the amplitude of the audio signal is controlled. The conductive state of a second such FET controls the biasing voltage on a junction transistor to control the shunting of the high frequency components of the audio signals.

The audio output is coupled to varactor tuning means so that a change in the conductive state of an FET changes the frequency to which the varactor tuning means is tuned.

3,691,299

Patent Not Issued For This Number

3,691,300

## TONE CONTROLLED DICTATION APPARATUS

Matthew P. Langendorf, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1965, Ser. No. 468,304

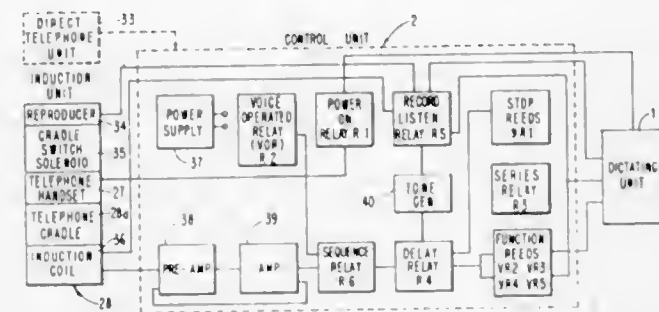
Int. Cl. H04m 1/110; G11b 19/02

U.S. Cl. 179-6 E

13 Claims

The invention relates to tone control arrangements for dictating apparatus using mechanical reed generators and

transistor-reed relay circuits. The apparatus has a central dictation unit with an associated control unit. The generators are operated by the dictator to generate tone signals of predeter-



mined frequency which are then transmitted and recognized by the control unit in order to control the action of the dictating apparatus.

3,691,301

## SWITCHING SYSTEM ARRANGED FOR TIME RESTRICTED FLAT RATE STATION-TO-STATION TOLL CALLING

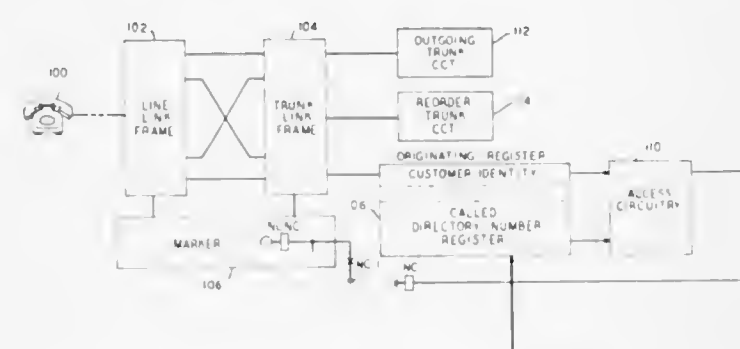
Alfred Zarouni, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 14, 1970, Ser. No. 97,566

Int. Cl. H04m 15/22

U.S. Cl. 179-7.1 R

7 Claims



A switching system is disclosed which allows subscribers to place calls at prescribed times on an abbreviated dialing basis to preselected directory numbers for a flat rate charge. A common memory is provided with a word storing the called directory number and a no-charge indication together with time restriction information as to the time period when the service is effective. When a customer desires to place a call to a preselected directory number, the time restriction information associated with that number is compared with the current time and, if the restriction is satisfied, the call is set up using the stored directory number. The no-charge indication is utilized to bypass the normal charging routine.

3,691,302

## AUTOMATIC LIGHT CONTROL FOR LOW LIGHT LEVEL TELEVISION CAMERA

Rolf Gaebele, Redwood City, and Jack H. Jones, Sunnyvale, both of Calif., assignors to GTE Sylvania Incorporated

Filed Feb. 25, 1971, Ser. No. 118,660

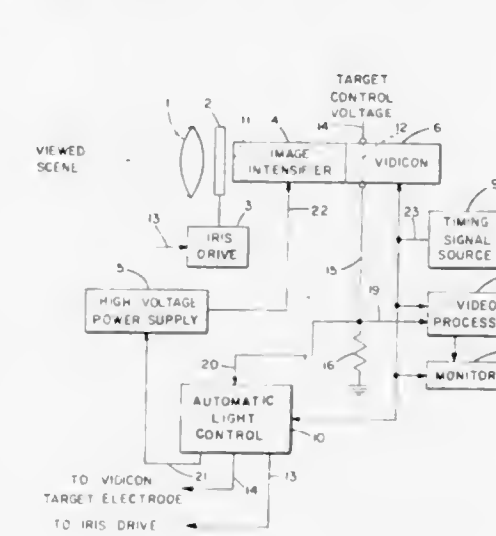
Int. Cl. H04n 5/14

U.S. Cl. 178-7.2

13 Claims

The video signal in a low light level television camera is fed to a first operational amplifier which continuously integrates this signal to produce an indication of the average value of the intensity of light in a viewed scene. The video signal is also applied to a pair of circuits that detect and store the peak values of the video signal in alternate fields formed by the scanning electron beam in the camera pick-up tube. During formation of one field, the peak value of the intensity of light in the

viewed scene is detected and stored in one circuit while the stored indication of the peak intensity of the light detected by the other circuit during the preceding field is integrated in a second difference amplifier. The output voltage of the second amplifier is a measure of the difference between the stored peak voltage applied thereto and a reference voltage. This difference voltage is passed by a diode switch to a summing am-



plifier where it is combined with the average value signal from the first amplifier if the peak value signal indicates that the intensity of light from the viewed scene exceeds a prescribed peak reference light intensity. The combined signal is applied to a voltage translator which produces signal voltages of the correct polarities for varying the gains of image intensifier and vidicon pickup tubes of the camera inversely with respect to changes in the intensity of light from the viewed scene.

3,691,303

## CIRCUIT USAGE ANALYZER

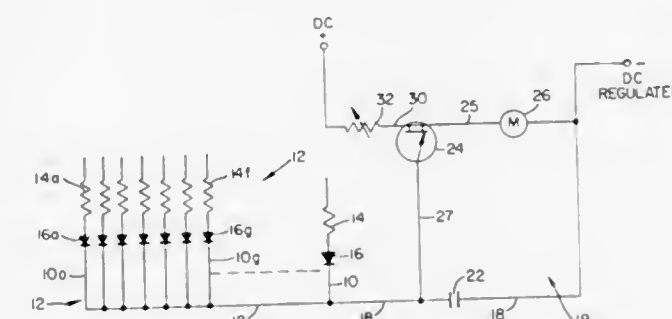
Dennis Davies, Tucker, and John P. Kern, Atlanta, both of Ga., assignors to Digital Telephone Systems, Inc., San Rafael, Calif.

Filed Jan. 19, 1970, Ser. No. 3,624

Int. Cl. H04m 15/32

U.S. Cl. 179-8 A

10 Claims



A telephone traffic usage analyzer and recorder providing a method of simultaneously reading all of a number of telephone circuits at one time so as to collect telephone traffic data from a plurality of such telephone circuits, known as sleeves, arranged in a trunk group. Each sleeve circuit has a resistor. A cumulative condenser is charged through the resistance in each sleeve, and the condenser is then discharged at a given voltage which provides an output signal to indicate one CCS unit which is the standard measure of telephone traffic data. In effect, this is a variable pulsing device with the rate of pulse being governed by the number of sleeve leads that are busy. By using the appropriate resistors and capacitors each pulse indicates one CCS.

3,691,304

## MULTIPLEXER TRANSMISSION LINE CIRCUIT

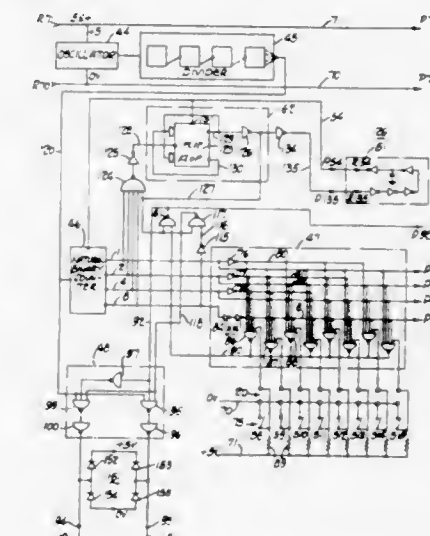
Werner P. E. Huebner, Toronto, Ontario, and Robert G. Long, Scarborough, Ontario, both of Canada, assignors to D. D. I. Communications, Inc., Lewiston, N.Y.

Filed June 30, 1971, Ser. No. 158,361

Int. Cl. H04j 1/00

U.S. Cl. 179-15 R

35 Claims



A transmission line circuit is disclosed for a multiplexer which has first and second transmission conductors on which a multiplexed signal of a pulsed message train is transmitted and received. The transmission line circuit limits the possible voltage across the transmission line by using a plurality of diodes. In one form a diode bridge is constructed and connected to two different voltages on a DC reference source so that should a voltage, for example, an extraneous noise voltage appear across the line, it will be conducted by the diode bridge so long as the voltage exceeds the voltage drop of the diodes and the voltage presented by the DC voltage source. In an alternative arrangement, breakdown diodes are connected across the transmission line and connected to a DC reference source such that if an extraneous voltage appears across the transmission line which exceeds the voltage drops of the connected breakdown diodes and any connected voltage of the DC reference source, then conduction will be effected through the breakdown diodes to limit the voltage.

A multiplexer transmission line circuit has an equalizing function and incorporates first and second voltage dividers to establish first points on two voltage dividers to which inputs to two amplifiers are connected. Second points at a potential different from the first points are also provided on the two voltage dividers and these second points are at the same potential and are connected to the first and second transmission lines. This establishes a polarizing voltage on each amplifier and the signal voltage must first be of the correct polarity and of sufficient magnitude to nullify the polarizing voltage on a particular amplifier before that amplifier will change its state of conduction. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,691,305

## MULTIPLEXER INTERVAL DETECTOR

Werner P. E. Huebner, Toronto, Ontario, and Robert G. Long, Scarborough, Ontario, both of Canada, assignors to D. D. I. Communications, Inc., Lewiston, N.Y.

Filed June 30, 1971, Ser. No. 158,375

Int. Cl. H04j 3/04

U.S. Cl. 179-15 AW

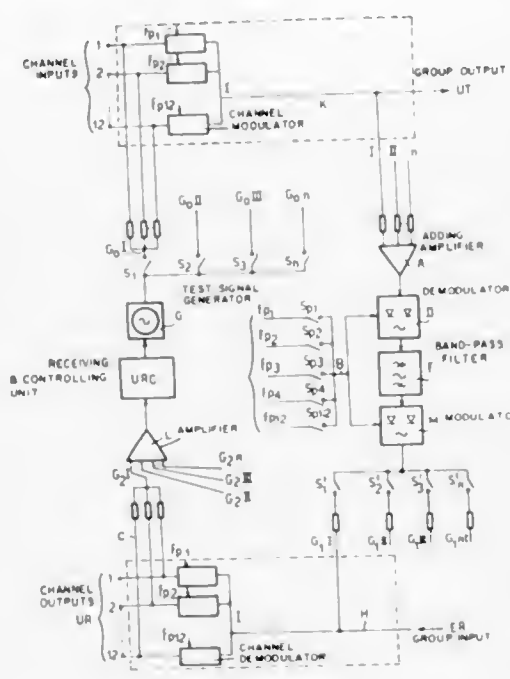
15 Claims

An interval detector for a multiplexer receiver is disclosed for determining the interval between pulses in a pulsed



message train which is a time division multiplexed signal. The pulsed message train has pulses occurring at a scanning frequency and in the interval detector there is a means to develop a checking pulse frequency which includes a crystal controlled oscillator and a series of dividers to develop this checking pulse frequency which is some multiple  $n$  higher than the scanning frequency. A decoding gate decodes 1 of  $n$  pulses from the checking frequency means and establishes an output pulse therefrom. The multiplexer receiver has a one-shot multivibrator which establishes a narrower pulse approximately  $n$  times narrower than each pulse in the pulsed message train and this is applied to one input of a comparator which includes a NAND reject gate. A second input of the comparator is supplied with the output pulse of the 1 of  $n$  decoding gate so

by introducing a test signal onto all of the channels at the



transmitting end and sequentially extracting the test signal and inserting it into the receiving end where it is then detected.

3,691,307

Patent Not Issued For This Number

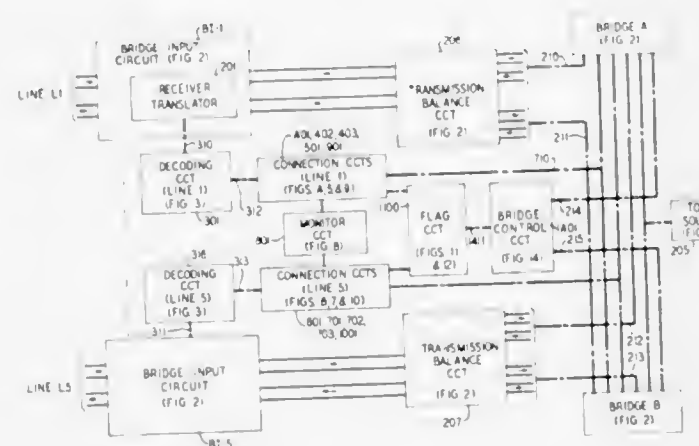
3,691,308

**MULTILINE SELECTIVE SIGNALING SYSTEM**  
 Ronald Joseph Angner, Freehold, and Anthony Kosinski, Brick Town, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 27, 1970, Ser. No. 93,158  
 Int. Cl. H04m 1/70, 13/00

U.S. Cl. 179—18 BH

18 Claims



A multiline selective signaling system is arranged to generate privacy lockout tones when a first station on any line goes off-hook. The first such station off-hook is designated a controlling station and circuitry at each station or common to a group of stations responds to the lockout tones by removing signaling and communicating capability from all but the controlling station. On interline calls single station control of the system is maintained by an interline control circuit which is arranged to inhibit the first station going off-hook in a called line from also becoming a controlling station. On interline override calls dialing capability is removed from the interference with previously established called line connections.

### 3,691,306 APPARATUS AND PROCESS FOR DETECTING MALFUNCTIONS IN A FREQUENCY DIVISION MULTIPLEX SYSTEM

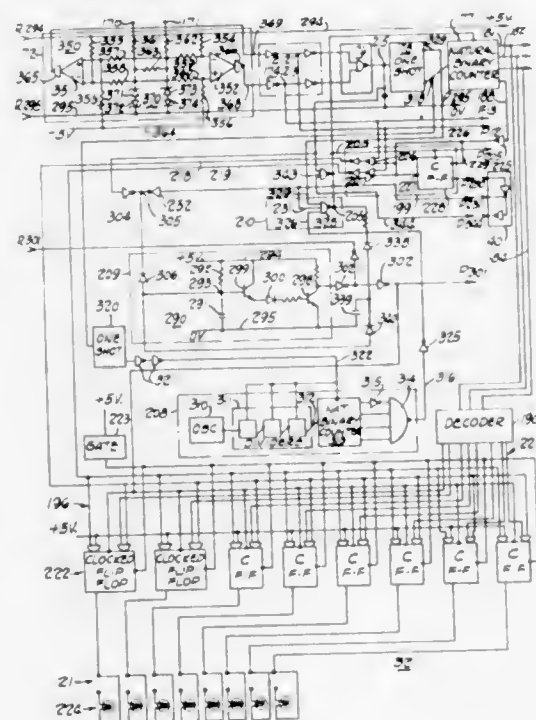
Francesco Molo, Corso Lodi 59, and Alberto Giacometti, via Il-lirico 12/4, both of Milan, Italy

Filed July 2, 1970, Ser. No. 52,054  
 Int. Cl. H04j 1/16

U.S. Cl. 179—15 BF

10 Claims

A process and an apparatus for automatically detecting malfunctions of an individual channel in a communication system



that the two input pulses are substantially coincident in time and in opposition to thus maintain the same output condition on the decoding gate. If a noise pulse is received which is out of order on the message pulse train, then this resets the checking frequency means and thus produces a pulse on the second input which is non-coincident with the pulse on the first input of the comparator and hence produces a change in the output of the comparator. An acceptance means thus rejects all the pulses in the message train received up to that time of the change of output of the comparator. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,691,309

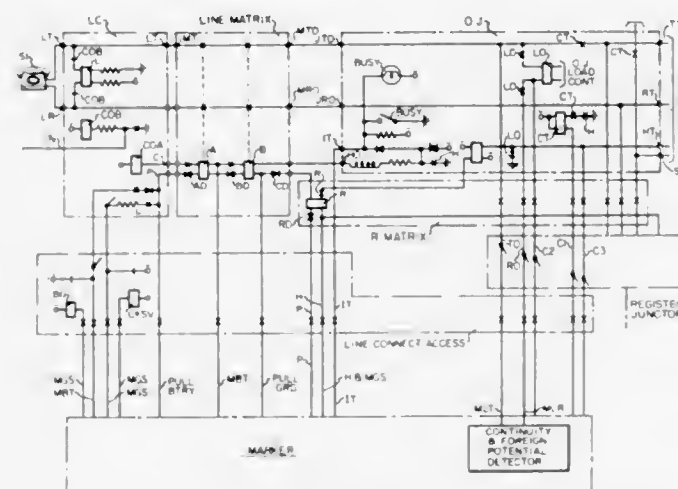
**CONTINUITY AND FOREIGN POTENTIAL DETECTOR**  
 Todd Gartner, Franklin Park, and Hendrik W. Van Huse, Glen Ellyn, both of Ill., assignors to Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Dec. 21, 1970, Ser. No. 99,935

Int. Cl. H04m 3/22

U.S. Cl. 179—18 AB

10 Claims



A marker controlled communications switching system is disclosed which is arranged to automatically and progressively test the talking path as it is set up, prior to completion of the communication connection. The equipment includes saturable core magnetic devices to which the conductors to be tested are connected. An alternating current drive winding and a test winding are also coupled to the cores. The resultant wave shape from the test winding is then compared with a predetermined test wave shape to provide a binary output indicative of the line conductor condition.

3,691,310

**BUSY AND TALKING LINK ALLOTTER CIRCUIT FOR  
 ELECTRONIC KEY TELEPHONE SYSTEM**

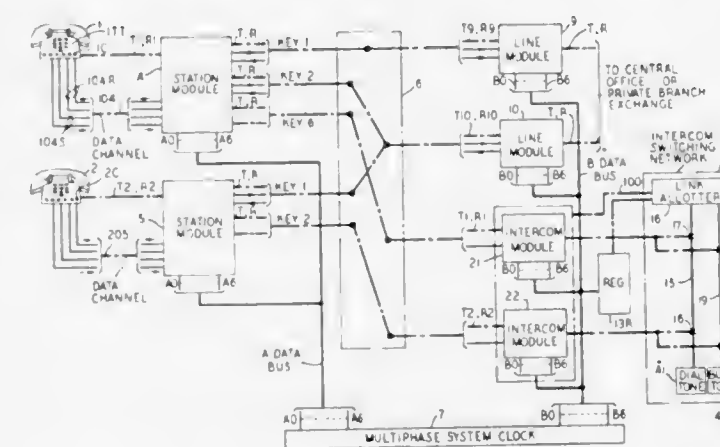
Francis Michael Fenton, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 21, 1970, Ser. No. 100,311

Int. Cl. H04m 3/22

U.S. Cl. 179—18 AD

12 Claims



An electronic key telephone system is disclosed in which each station set regardless of the number of pick-up keys with which it may be equipped may be connected to a local switching network via only a single pair of tip and ring conductors and a data link. The local switching network provides for intercom calls among the local key telephone sets through the use of an allotter circuit which detects an intercom service request during a predetermined time slot to accord a first station access to a talking link and to a call signaling register. When the called station is rung and answers the call, it is accorded access to the talking link by making a service request

in a manner similar to that of the first calling station. The allotter circuit connects any other service requesting station to a busy link. Provision is made for compensating for variations in the operating times of the circuits in the allotter with respect to the assigned time slot during which operation is desired to take place. Simplification is achieved in that NOR gate flip-flops are used to connect stations to the busy link and the operation of one of these flip-flops may be canceled when desired by the simultaneous application of set and reset input signals.

3,691,311

TELEPHONE USER SET

Donald R. Wilson, Santa Cruz, Calif., assignor to Pacific Plantronics, Inc., Santa Cruz, Calif.

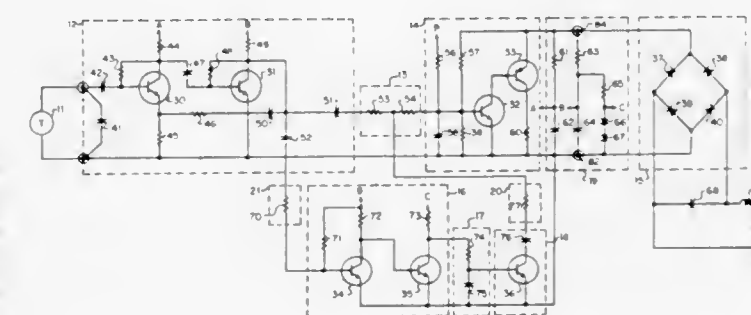
Continuation of Ser. No. 714,396, Feb. 27, 1968, abandoned.

This application Dec. 10, 1970, Ser. No. 96,685

Int. Cl. H04m 1/60

U.S. Cl. 179—81 B

8 Claims



Telephone user set including amplifier apparatus operating with an electroacoustic transducer provides signal output on a pair of lines which also supply the operating power. One embodiment operates at high gain in response to voice input signal and operates with low gain in the absence of voice input signal for providing suppression of background noise.

3,691,312

**TAPE RECORDING APPARATUS AND SYSTEM HAVING  
 A VERY THIN CASSETTE**

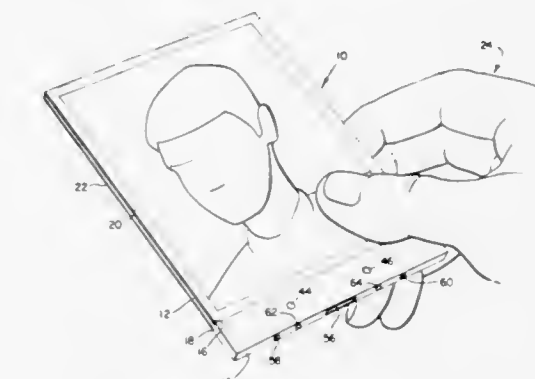
Christian C. Petersen, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 25, 1970, Ser. No. 40,898

Int. Cl. G11b 23/04, 23/44

U.S. Cl. 179—100.2 Z

26 Claims



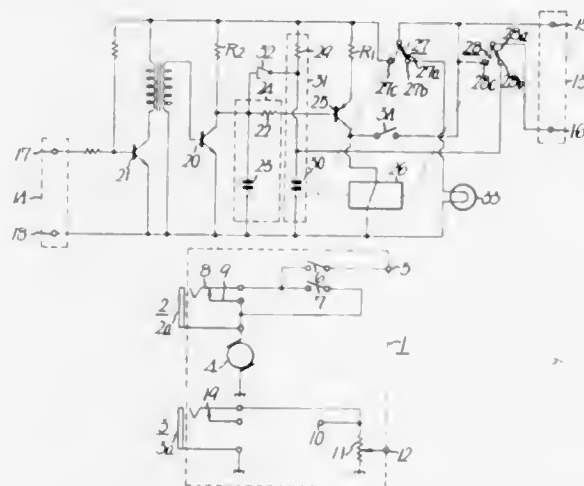
An audio-visual recording system featuring a magnetic tape cassette in combination with a surface for supporting one or two photographic prints. The tape cassette portion of the assembly is very thin, having a width approximating the sum of the widths of the supporting surface and two photographic prints. The cassette is configured having a length coextensive with one peripheral edge of a photograph of standard size. Magnetic tape wound within the cassette may have a width of about 0.050 inch (0.127 cm).



3,691,313  
SIGNAL RESPONSIVE CONTROL CIRCUIT FOR  
MAGNETIC RECORDING AND REPRODUCING  
APPARATUS

Hiroshi Kobayashi, and Sukeyori Shiba, both of Tokyo, Japan,  
assignors to Kabushikikaisha Nippon Recruit Center,  
Tokyo, Japan

Filed June 4, 1970, Ser. No. 43,364  
Claims priority, application Japan, June 14, 1969,  
44/47128; June 14, 1969, 44/47129  
Int. Cl. G11b 15/22  
U.S. Cl. 179—100.2 S 2 Claims

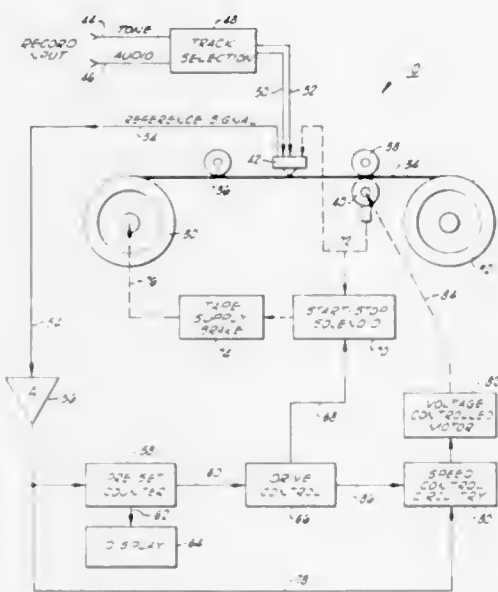


A magnetic recording and reproducing apparatus comprising a magnetic tape, means for driving said magnetic tape, and means for automatically stopping the operation said magnetic tape driving means upon arrival of a signal on which a learner or an operator is required to think or perform some function.

3,691,314  
METHOD FOR RECORDING PREDETERMINED  
INFORMATION DURATION WITHIN PRE-SET RECORD  
LENGTH

Lawrence R. De Bell, Bethany, and David D. Price, Oklahoma City, both of Okla., assignors to Economy Co., Oklahoma City, Okla., by said De Bell

U.S. Cl. 179-100.2 S 8 Claims

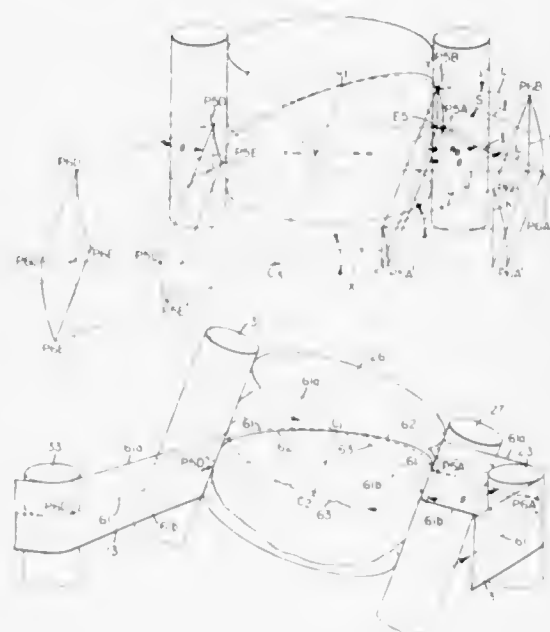


A method and apparatus for recording information of predetermined duration within allotted tape space of a recording track. The method is particularly applicable to plural track record mediums which include companion audio and control tone information recorded in adjacent disposition, and one record track is reserved for pre-recording of a plurality of pulses at a constant rate per linear measure. During recording of

audio information, the recording tape speed is controlled by analog computational apparatus which resolves information length versus the available recording space to vary the recording speed so that message termination occurs at a designated point on the record medium.

**3,691,315**  
**HELICAL SCAN MAGNETIC RECORDER HAVING A**  
**CRITICAL ANGLE FOR THE TAPE AT THE ENTRANCE**  
**AND EXIT GUIDES IN THE HEAD DRUM**

William A. Ellmore, Saratoga, Calif., assignor to Ampex Corporation, Redwood City, Calif.  
Filed Aug. 24, 1970, Ser. No. 66,253  
Int. Cl. G11b 5/52, 15/66; G03b 1/58  
U.S. Cl. 179—100.2 T 21 Claims



To facilitate automatic self-threading operation, a helical scan magnetic tape apparatus is arranged so that the tape centerline follows a path substantially parallel to the top plate of the machine, the scanning drum and guides therefor being tilted at an angle to the top plate. Exit and entrance guides for the tape at the drum are parallel to the drum axis and therefore also tilted, but all other tape guides are normal to the top plate. The tape is taken off the entrance and exit guides at a predetermined angle that ensures parallelism of the tape centerline to the top plate. A supply reel with the tape and a stiff leader mounted thereon is provided, together with means for driving the leader to the takeup reel, which is provided with means for securing and wrapping the leader and tape. The drum is also arranged for precise change of tilt to facilitate stop and slow motion effects. The tape supply reel is arranged for quick and easy mounting on, and removal from the apparatus. A scanner assembly transformer signal coupling and tachometer is also provided.

3,691,316  
SEMICONDUCTOR STRESS TRANSDUCER  
Fujio Oda, Ashiya, and Shuichi Obata, Kyoto, both of Japan,  
assignors to Matsushita Electric Industrial Co., Ltd.,  
Osaka, Japan

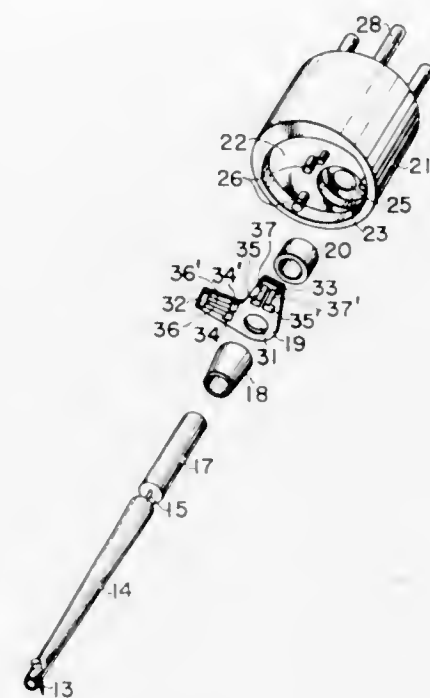
Filed May 4, 1970, Ser. No. 34,506  
Claims priority, application Japan, May 9, 1969, 44/36830;  
May 9, 1969, 44/36831; May 9, 1969, 44/36833; May 9,  
1969, 44/36832

Int. Cl. H04r 1/16, 9/12, 11/08  
U.S. Cl. 179-100.41 V 4 Claims

A semiconductor stress transducing apparatus in which a semiconductor layer having a large piezo-resistance effect is deposited by vacuum evaporation on a highly flexible thin-film

3,691,318  
**PRESSURE PICKUP TRANSDUCERS FOR  
 MECHANICALLY STORED SIGNALS**  
 Eduard Schuller, Wedel/Holstein; Horst Redlich, Berlin;  
 Gerhard Dickopp, Berlin, and Hans-Joachim Klemp,  
 Berlin, all of Germany, assignors to TED Bildplatten  
 Aktiengesellschaft Aeg-Telefunken-Teledec, Zug, Switzerland  
 Continuation-in-part of Ser. No. 798,709, Feb. 12, 1969, Pat.  
 No. 3,652,809. This application May 17, 1971, Ser. No.  
 144,116

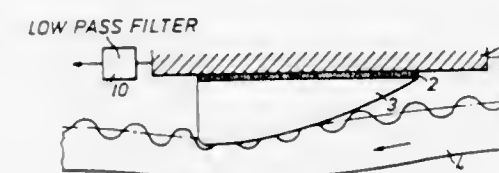
Claims priority, application Germany, May 15, 1970, P 20 25 032.2  
Int. Cl. H04r 17/04  
U.S. Cl. 179—100.41 P 38 Claims



ble viscous material, whereby a change in the internal resistance of the semiconductor layer is detected.

3,691,317  
**PRESSURE RESPONSIVE PLAYBACK DEVICE FOR  
 MECHANICALLY RECORDED SIGNALS**  
 Gerhard Dickopp, Hattenbelmer Strasse 15, D-1 Berlin, 28,  
 Germany  
 Continuation-in-part of Ser. No. 87,064, Nov. 5, 1970. This  
 application May 11, 1971, Ser. No. 142,237  
 Claims priority, application Germany, May 13, 1970, P 20  
 24 539.0

Int. Cl. H04r 17/04  
U.S. Cl. 179—100.41 P 14 Claims



A playback head for use with a record disc containing grooves whose walls undulate to constitute a spatial representation of the time variation of a signal to be reproduced, the head carrying a stylus which engages in the groove and elastically deforms the groove walls to a substantial degree, the playback head being arranged to produce an output proportional to the reaction force exerted on the stylus by the elastically deformed groove walls, the stylus being formed to have a shallow leading edge which extends in the direction of the groove axis to contact the groove walls for a distance equal to a plurality of wavelengths of the recorded signal and a steep trailing edge which contacts the groove walls for a distance no greater than one half of a wavelength of the recorded signal, the leading and trailing edges meeting at the lowermost point of the stylus, and a lowpass filter being connected to the head output for attenuating frequencies greater than twice the lowest recorded frequency.

3,691,319  
STABILIZER FOR HEADSET  
James William Moore Bee, Ottawa, Ontario, Canada, assignor  
to Northern Electric Company Limited, Quebec, Canada  
Filed May 3, 1971, Ser. No. 139,739  
Int. Cl. H04m 1/05  
U.S. Cl. 179—156 A 5 Claims



Stabilizer for a headset which fits around an ear of a user, in which the stabilizer has two substantially parallel webs which engage with the Helix of the ear approximately at the position just above where the Helix merges into the face of the user. A housing of the headset fits over and around the top of the ear, between the ear and the scalp, and the stabilizer prevents a boom extending from the housing from moving in a direction normal to the face of the user, which movement would cause movement of a mouthpiece away from the users mouth.



3,691,320

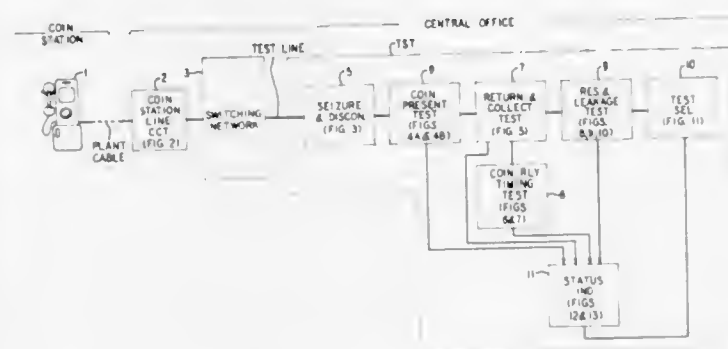
## COIN STATION TIMING TEST ARRANGEMENT

James Arthur Grandle, Jr., Marlboro, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 26, 1971, Ser. No. 146,916  
Int. Cl. H04m 3/22

U.S. Cl. 179—175.2 R

13 Claims



Test equipment connectable to a coin station for performing operational checks of the coin station apparatus is disclosed. The equipment is controlled by dialed signals and is capable of performing a timing test of the station coin relay. The equipment includes circuitry for indicating by tone signals or station ringing signals the test results.

3,691,321

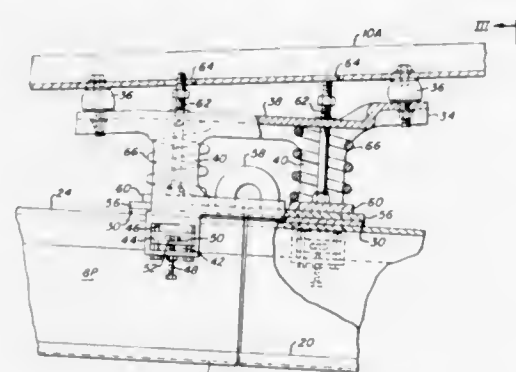
## POWER DISTRIBUTING SYSTEM

Joseph J. F. Rochefort, Montreal, Quebec, Canada, assignor to Quebec Cartier Mining Company

Filed April 14, 1971, Ser. No. 133,987  
Int. Cl. B60m 1/24

U.S. Cl. 191—44.1

10 Claims



A power distributing system includes two bus bars arranged end to end and connected by means of an inverted U-shaped bracket. Holes in the bus bars are aligned with holes in the webs or legs of the bracket and a shear pin extends through each set of aligned holes. A contact conductor plate rests on a smooth conducting surface at the end of each bus bar and is urged against the smooth surface by means of a spring extending between the bottom of the top of the bracket and the top of a pressure plate resting on the contact plate. A bolt welded to the pressure plate extends through the top of the bracket and has a nut threaded on its top.

3,691,322

## REVERSING SWITCH

Benjamin H. Matthews, Peninsula, Ohio, assignor to Lucerne Products, Inc., Northfield, Ohio

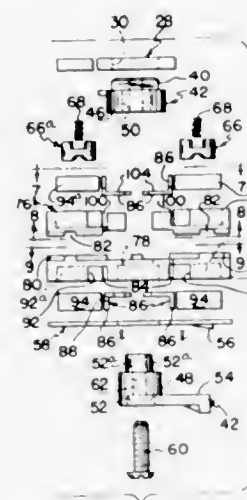
Filed Jan. 28, 1971, Ser. No. 110,515  
Int. Cl. H01h 21/10, 21/66

U.S. Cl. 200—1 V

18 Claims

A reversing switch for mounting in an electrically powered tool, utensil or other motor driven device for selectively reversing the direction of rotation of an electric motor, such as for instance, a universal type motor. The switch comprises a

compact switch body comprising a relatively stationary segment and a rotary segment with the stationary segment having a plurality of stationary contacts mounted thereon and the rotary segment having a plurality of contacts mounted thereon for rotation with the rotary segment, with the rotary segment being selectively movable into several operable positions,



wherein in one of the positions of the rotary segment, the motor is driven in the reverse direction. The stationary segment is formed of an assembled lower sector and upper sector, each sector mounting a plurality of stationary contacts, said stationary contacts disposed in a common generally horizontal plane in the assembled condition.

3,691,323

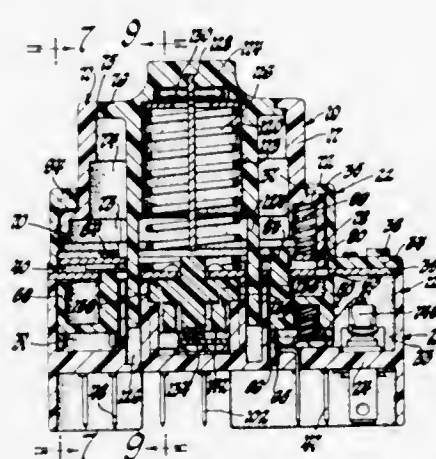
## COMBINATION LIGHTING SWITCH MECHANISM

Willis H. Anderson, and Willard E. Graddy, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed June 18, 1971, Ser. No. 154,423  
Int. Cl. H01h 9/00, 15/10

U.S. Cl. 200—4

6 Claims



In a preferred form, this disclosure relates to a light switch assembly for controlling the operation of a vehicle lighting system having a park lighting mode, a normal headlamp lighting mode, and an expressway driving headlamp lighting mode. A first switch means includes a manually manipulatable first actuator means which is rotatably supported by housing means for movement between an off position and first and second on positions in which it effects the park and normal headlamp lighting modes, respectively. A second switch means includes a second manually manipulatable actuator for alternately effecting the normal headlamp driving mode and the expressway driving headlamp lighting mode when moved between first and second positions. The second switch means and the first actuator means carry cooperable means which prevent the second switch means from effecting the expressway driving headlamp lighting mode when the first actuator means is in either its off or first on position and which allows

the second switch means to effect the expressway driving headlamp lighting mode when the first actuator is in its second on position. The cooperable means also actuates the second switch means to effect the normal headlamp lighting mode when the latter is in the expressway driving headlamp lighting mode and the first actuator means is rotated from its second on position toward its off position.

3,691,324

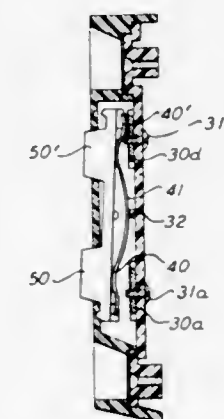
## MULTIPLE CIRCUIT SWITCH WITH PIVOTED CONTACT ONLY ONE SWITCH OPERABLE AT A TIME

Sigurd Brantingson, Short Hills, N.J., assignor to Brin Manufacturing Co., Inc., Newark, N.J.

Filed April 28, 1971, Ser. No. 138,142  
Int. Cl. H01h 9/26, 21/64

U.S. Cl. 200—5 E

3 Claims



A multiple action contact switch, adapted to provide selective completion of a particular one of a multiplicity of switching circuits, by means of actuation of a portion of a unitary resilient element with a multiplicity of movable centers and corresponding fixed centers.

3,691,325

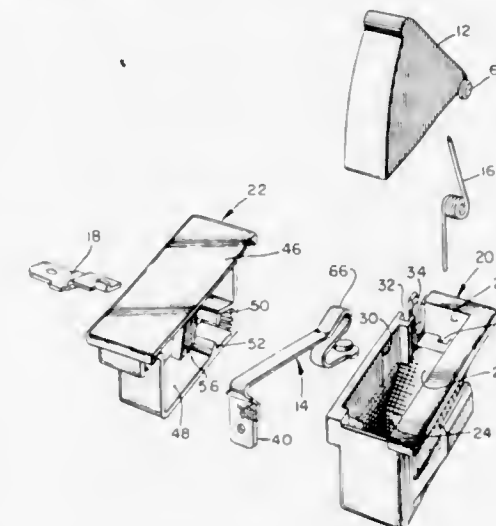
## NON-SNAP ACTING ROCKER SWITCH

Bela Bognar, Bellingham, Mass., assignor to TRW, Inc., Cleveland, Ohio

Filed May 18, 1971, Ser. No. 144,498  
Int. Cl. H01h 19/10, 21/00

U.S. Cl. 200—6 C

2 Claims



This is a cam actuated switch which has a two compartment housing and a plunger which has a shaft that is passed through the separation wall of the housing from one compartment to another. The shaft having a rat guard to prevent water from going from the plunger compartment to the contact compartment. The contact compartment houses the contacts and the end of the shaft has a cam portion extending therefrom adapted to engage against an arced portion of a spring contact.

3,691,326

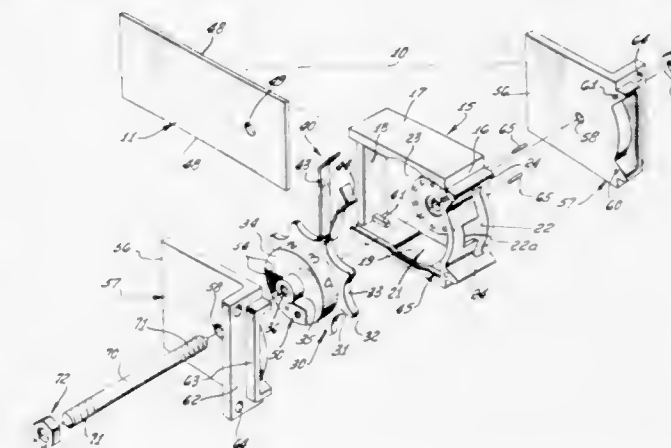
## ROTARY THUMBWHEEL SWITCH CONSTRUCTION

Abraham Grossman, and Eugene C. Lee, both of Northridge, Calif., assignors to Abraham Grossman, 4, Northridge, Calif.

Filed June 14, 1971, Ser. No. 152,665  
Int. Cl. H01h 19/58, 21/78

U.S. Cl. 200—11 TW

7 Claims



One or more rotary switch constructions or units, each including a plurality of interfitted component parts, arranged for rapid sequential production line assembly along a common assembly axis and held in assembly with housing portions under virtually uniform contact by a single shaft and external nut restraint means at opposite ends of the shaft. Each switch unit includes a switch housing having a sidewall and an open side opposite thereto, a printed circuit board positioned within said housing and selectively engageable by a circuit selecting brush carried on a rotatably mounted wheel having peripheral portions projecting through an opening in said housing for rotation of said wheel, means to selectively correlate rotation of the wheel with circuits to be selected, and a single shaft holding means extending through aligned ports in said end walls, sidewall, printed circuit board, and wheel.

3,691,327

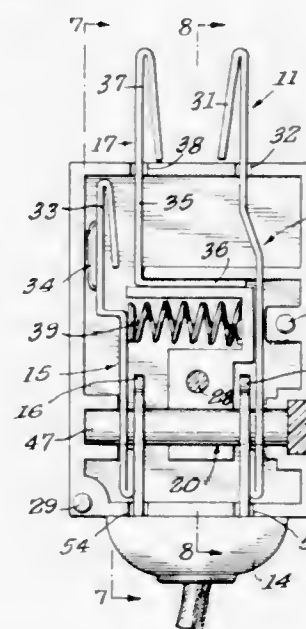
## CIRCUIT-CLOSING ADAPTER

Abraham Chesler, 59 Hanse Ave., Freeport, N.Y.

Filed April 22, 1971, Ser. No. 136,499  
Int. Cl. H01h 27/00

U.S. Cl. 200—42 R

8 Claims



A circuit-closing adapter is provided with a continuous contact extending beyond one end of the adapter body and with a two-part contact, one part of which extends beyond said body, said contact-extensions being adapted for insertion into an electrical receptacle, said parts of the latter contact being nor-



mally spaced apart. A dielectric member is removably affixed to the body, the same both physically and electrically connecting the opposite ends of the contacts to the respective prongs of an electric plug that is attached to a machine or appliance. Key-operated lock means to move one of the parts of the two-part contact into direct electrical contact with the other end of said parts and to retain such contact while the key remains in the lock, is provided. Upon removal of the key from the lock, the moved contact part is released so the same may resume its spaced position, thereby opening the operative circuit between the electrical receptacle and the machine or appliance. The adapter is provided with means to receive a third wire prong provided on the plug to enable grounding the ground line of a three-wire system.

3,691,328

## PERMUTATION SWITCH

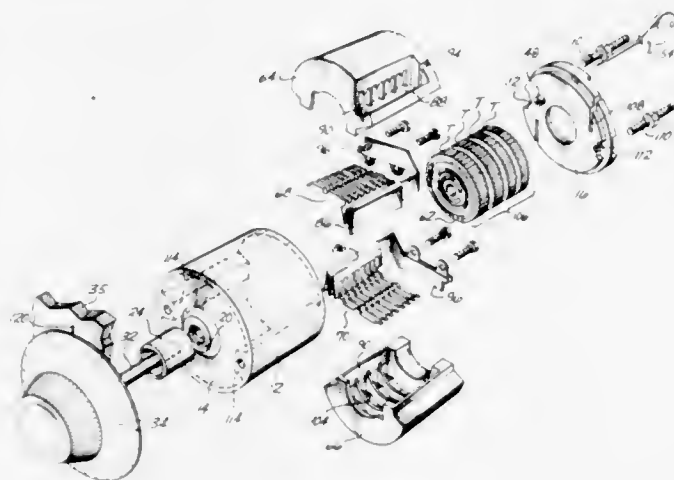
William J. Davidson, Scio, Oreg., assignor to Electronic Controls Corporation, Scio, Oreg.

Continuation-in-part of Ser. No. 29,528, April 17, 1970. This application Feb. 17, 1971, Ser. No. 116,172

Int. Cl. H01h 27/10

U.S. Cl. 200—43

14 Claims



A plurality of tumblers are rotated by means made operable by selective movements of a combination dial to place conductive or dielectric peripheral regions of the tumblers in circuit making or breaking contact with spring contact fingers. The tumblers comprise annular outer portions surrounding inner portions which are independently rotatably mounted on a shaft. Releasable lock members normally connect the two tumbler portions together for conjoint rotation. A pin is insertable from the rear of the switch through openings in the outer tumbler portions to both move the lock member into release positions and lock such outer portions together. This permits use of the dial to change the azimuthal position of the peripheral segments relative to the dial indicia to change the combination of the switch.

The spring fingers are portions of a circuit board which also includes conductors leading from the fingers to terminals. The circuit board is made flat and is then folded and installed into openings for same formed in a dielectric support member.

3,691,329

## CONTROL SWITCH FOR MICROWAVE OVEN

Wesley L. Ball, Marion, Ind., assignor to Appliance Manufacturing Company, Inc., Van Buren, Ind.

Filed Oct. 4, 1971, Ser. No. 186,332

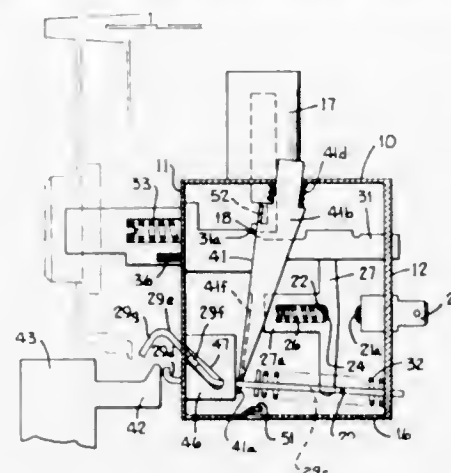
Int. Cl. H01h 9/22

U.S. Cl. 200—50 A

7 Claims

The switch structure disclosed coordinates the position of two plunger members, one manually actuated and one en-

gaged by an oven door, so that a switch operated member is incrementally moved into switch-closing position by sequen-



tial depression of the two plunger members. Both plunger members must be actuated before the switch member can reach its switch closing position.

3,691,330

## TRAILER BREAK AWAY SWITCH MOUNT

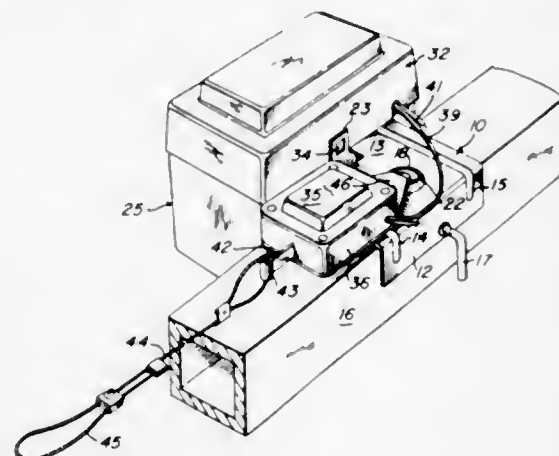
Irvin Hollander, 30 Knollview Place, Dayton, Ohio

Filed Oct. 1, 1971, Ser. No. 185,635

Int. Cl. H01h 27/04

U.S. Cl. 200—61.19

10 Claims



Apparatus comprising an improved mount for a break away switch and a battery box to the chassis or hitch frame of a trailer type vehicle. The mounting bracket protectively retains the switch for selective angular disposition relative the trailer vehicle and has a functional relation to the battery box.

3,691,331

## SWITCH MECHANISM WITH S-SHAPED SNAP ACTING SPRING MEMBER

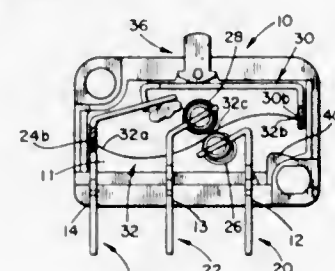
John S. Resh, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed March 11, 1970, Ser. No. 18,413

Int. Cl. H01h 13/48

U.S. Cl. 200—67 DB

4 Claims



A snap acting switch arrangement having a normally flat elongated spring member supported in compression to either

side of a pair of centrally located, spaced stop members to provide an S-shaped configuration whereby movement of one of the extremities thereof causes a change in the curvature, but not a reversal, of the S-shape and results in snap movement of the spring member from one stop member to the other.

3,691,332

## VACUUM-TYPE ELECTRIC SWITCHGEAR

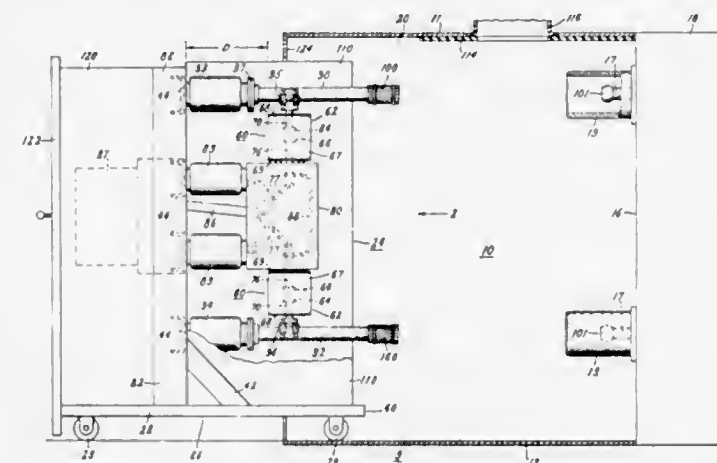
William T. Sharp, Philadelphia, Pa., assignor to General Electric Company

Filed Nov. 10, 1970, Ser. No. 88,503

Int. Cl. H01h 33/66

U.S. Cl. 200—144 B

5 Claims



Discloses a movable circuit breaker unit for polyphase metal-clad switchgear comprising a movable truck including a horizontally-extending base and a vertically-extending frame projecting upwardly from the base. In each phase of the circuit breaker, there are two vacuum interrupters mounted in vertically-spaced, axially aligned relationship on opposite sides of a casing that is supported on said framework by horizontally extending insulating structure. Horizontally extending studs at the outer ends of the two interrupters are supported on the frame by suitable insulators and are electrically connected to the interrupters by flexible braid. The studs project from the vacuum interrupters toward the rear end of the movable circuit breaker unit, and the interrupters are displaced by a substantial distance from the frame toward said rear end.

3,691,333

## ALTERNATE ACTION MECHANISM

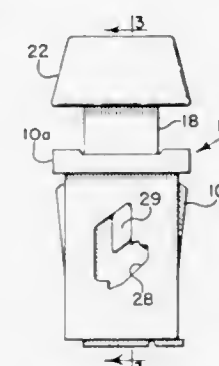
Phillip M. Elliott, Schiller Park, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed March 19, 1971, Ser. No. 126,162

Int. Cl. H01h 13/56

U.S. Cl. 200—153 J

6 Claims



The present invention relates to a new improved alternate action mechanism for control devices, such as switches, which utilizes a pawl mounted for free rotation on an actuator and for operative association with camming surfaces formed in an associated hollow casing. The camming surfaces act to partially rotate the pawl on an initial downward stroke of the actuator to such an extent that the pawl cooperates with the

3,691,334

## PUSH-BUTTON SWITCH

Olindo Baruffa, 81, avenue du Lignon, Alre-Geneva, Switzerland

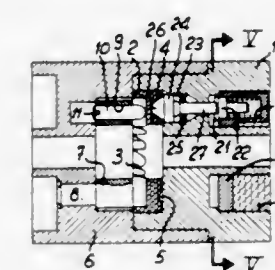
Filed Jan. 14, 1971, Ser. No. 106,338

Claims priority, application Switzerland, Jan. 15, 1970, 525/70

Int. Cl. H01h 13/58, 9/04

U.S. Cl. 200—153 J

7 Claims



The switch has a body containing a rotary disc, restrained from axial movement, with dog-teeth on one face and hollows of alternating depth on the other face. A fluid-tight push-button on the side of the body rotates the disc step-by-step by means of a hinged oscillating lever bearing a pawl cooperating with the dog-teeth. A piston plunger is elastically slidable in a bore to cooperate with the hollows at one end and with electrical contact studs at the other end. The disc and other members have a central cavity enabling the passage of a mechanical part, light-beam or a fluid in sealed manner through the switch. The switch can be easily positioned in the tubular casing of an electric motor and axially adjacent to the motor without increasing the diameter of the casing.

3,691,335

## KNIFE BLADE CONTACT ASSEMBLY WITH IMPROVED CONTACT ENGAGEMENT POSITION RETAINING MEANS

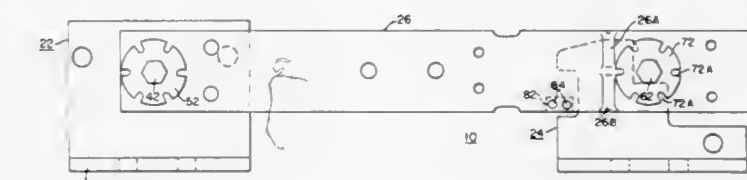
Charles M. Cleaveland, and Stanislaw A. Milianowicz, both of Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 1, 1971, Ser. No. 119,557

Int. Cl. H01h 1/50, 21/54

U.S. Cl. 200—162

10 Claims



An electrical switch comprising a pair of generally parallel spaced blades pivotally mounted on a hinge contact member and rotatably movable to engage a break contact member or jaw which is spaced away from the hinge contact member. A biasing means is mounted on the blades adjacent to the break contact member to bias the blades toward one another.



3,691,336

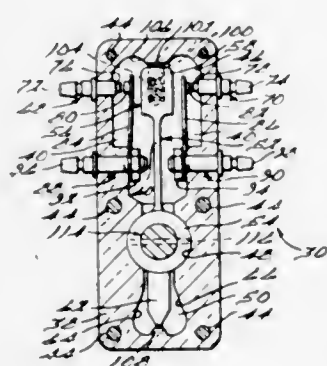
VEHICLE LEVELING SYSTEM SWITCH HAVING  
VIBRATING PREVENTING MEANSWilliam W. Higginbotham, Monroe, Mich., assignor to Monroe  
Auto Equipment Co., Monroe, Mich.

Filed Jan. 8, 1968, Ser. No. 722,505

Int. Cl. H01h 1/50

U.S. Cl. 200-166 H

20 Claims



An electrical switch adapted for operative association with a vehicle leveling system and comprising an exterior housing defining a fluid chamber. A pair of fixed terminal elements within the chamber each of which is cooperable with a movable terminal element, a pivotable actuating member movable toward and away from the movable terminal elements for biasing the same into engagement with the fixed terminal elements in order to complete an electrical circuit therebetween, and means including a quantity of fluid within the chamber for resisting movement of the actuating member therein.

3,691,337

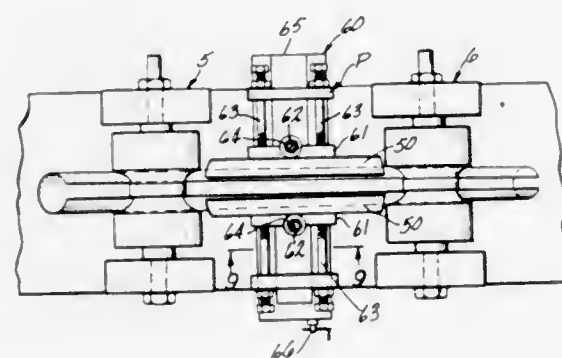
## FORMING MILL GUIDES

Jack Morris, Orange, Conn., assignor to Olin Corporation,  
Filed May 24, 1971, Ser. No. 146,138

Int. Cl. H05b 5/00

U.S. Cl. 219-8.5

13 Claims



Forming mill guides for use in an apparatus for forming a strip material into a tube wherein the strip thickness to tube diameter ratio is less than 3 percent. The guides are located intermediate each of the forming stands in the forming mill portion of the apparatus and prevent the edges of the strip or tube from popping out or buckling. The guides generally comprise a member having a concave face which is contoured to contact and support the strip or tube between each of the respective forming stands. The apparatus also includes means for aligning the guides with the strip or tube and is particularly applicable to the formation of non-ferrous alloy tubing, such as copper or copper base alloys. The guides are preferably formed of a plastic material, such as nylon.

3,691,338

## SOLID STATE MICROWAVE HEATING APPARATUS

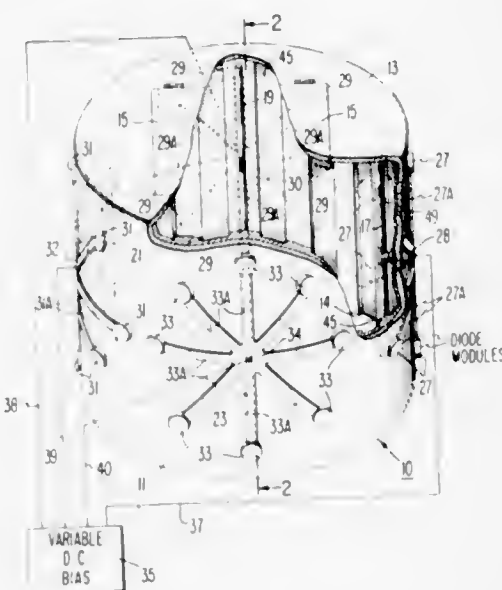
Kern KoNan Chang, Princeton, N.J., assignor to RCA Corporation

Filed Sept. 30, 1971, Ser. No. 185,067

Int. Cl. H05b 9/06

U.S. Cl. 219-10.55

7 Claims



Apparatus for the treatment of materials by the application of heat for rapid drying, cooking or the like of the materials includes an enclosure having a plurality of solid state microwave generators generating signals at microwave frequencies. The generators are heat sunk to the inner wall of the enclosure and are coupled to at least one dipole antenna radiating into the enclosure for providing microwave heating in the enclosure.

3,691,339

## MULTI-PHASE INDUCTION HEATING DEVICE

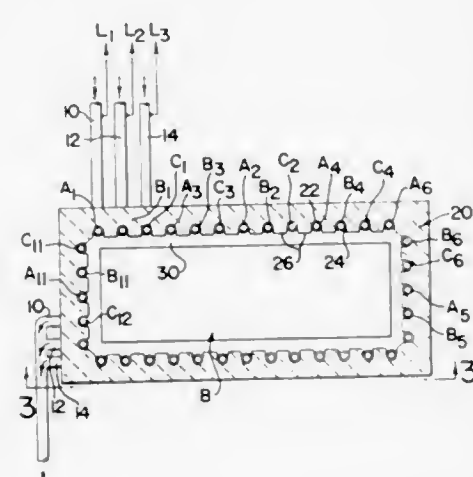
John F. Cachat, Cleveland, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed May 7, 1971, Ser. No. 141,676

Int. Cl. H05b 9/02

U.S. Cl. 219-10.57

1 Claim



An induction heating device comprising a frame generally defining a loading receiving chamber and at least three overlapping, electrically insulated, induction heating coils adapted to be magnetically coupled with a load within the chamber. Each of the induction heating coils has a series of repeating loops comprising two spaced, generally parallel legs, with the plane defined by the parallel legs of each loop and between these legs being generally exterior of the chamber.

3,691,340

WELDING ELECTRODE WITH LITHIUM SHIELDING  
METAL

George G. Landis, Cleveland; John M. Parks, Solon, and Kenneth L. Brown, South Euclid, all of Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 618,979, Feb. 27, 1967, abandoned, Continuation-in-part of Ser. No. 493,615, Sept. 24, 1965, abandoned, Continuation-in-part of Ser. No. 289,871, June 24, 1963, abandoned. This application Jan. 13, 1970, Ser. No. 2,643

Int. Cl. B23k 35/22

U.S. Cl. 219-146

12 Claims



An electric arc welding electrode comprised principally of an elongated steel member having associated therewith lithium alloyed with or coated over with other low boiling temperature metals plus metals of higher melting temperatures for delaying the boiling action of the low boiling temperature metals. The member may be striated and these metals fill the striations.

3,691,341

IMPROVEMENTS TO THE CONTROLLING OF  
FOCUSING OF ELECTRONIC BOMBARDMENT

Jean-Pierre Louis Rolron, Seyssinet Isere, and Guy Loyau, Mont-Pre Chambord, both of France, assignors to Societe Anonyme, Societe Alsacienne De Constructions Atomiques, De Telecommunications Et D'Electronique, "Alcatel", Paris, France

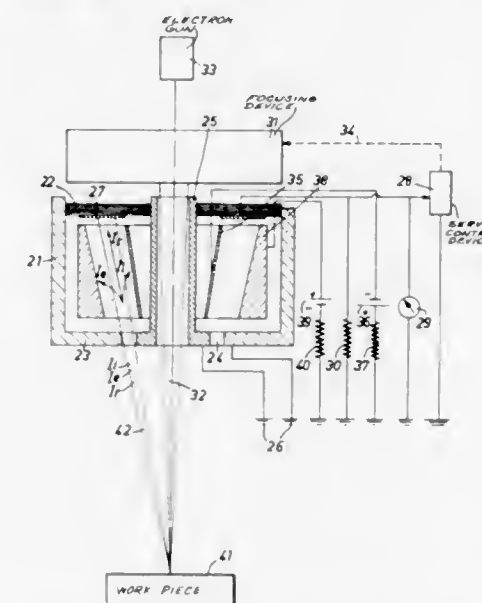
Filed Aug. 13, 1969, Ser. No. 849,848

Claims priority, application France, Aug. 14, 1968, 681631

Int. Cl. B23k 15/00

U.S. Cl. 219-121 EM

6 Claims



Optimum focusing of an electron beam on a metal part more particularly in electron beam welding is obtained by intercepting the ionic and/or electronic currents radiating from the metal part under the influence of the impact of the beam, and controlling the focusing of the electron beam as a function of the currents to bring the currents at a minimum.

3,691,342

## ELECTRIC SOLDERING IRONS

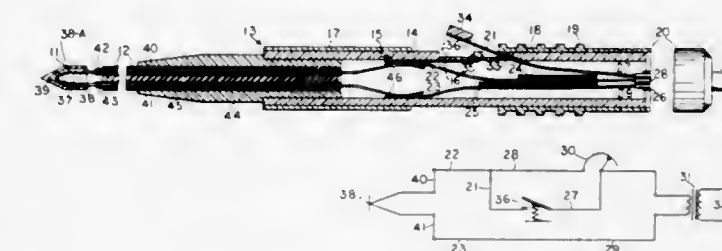
Walter W. Giles, and Norman W. Madden, both of 2631  
Locksley Place, Los Angeles, Calif.

Filed March 9, 1970, Ser. No. 17,533

Int. Cl. B23k 3/04; H05b 1/00

U.S. Cl. 219-233

2 Claims



An improved electric soldering iron of a type operable by one hand and adapted for working in restricted places with (1) safety to adjacent material and (2) minimal transference of heat from a heating element to the handle of the device, these aims being achieved by a specially structured tube of very small diameter and great length extended from the handle of the device and attached at the forward end to the soldering tip, with ventilating means being provided adjacent the tip to further reduce the transfer of heat from the tip to the handle.

3,691,343

## MODULAR SYSTEM OF ROOF HEATER SHINGLES

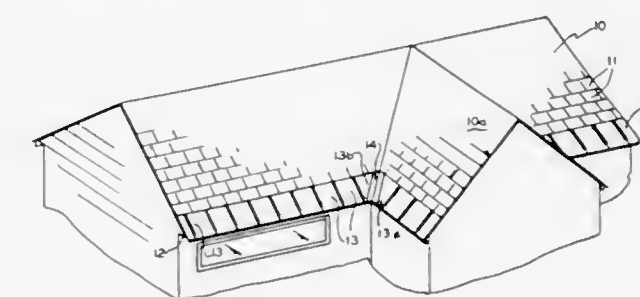
Victor B. Norman, 12 Barringer Rd., Ilion, N.Y.

Filed Sept. 23, 1971, Ser. No. 183,086

Int. Cl. H05b 1/00

U.S. Cl. 219-213

4 Claims



A modular system of sheetmetal de-icing shingles and valley sections for preventing the buildup of ice at the eaves of a roof has fine heater wires arranged in a trapezoid configuration on the under surface of the shingles, the shorter parallel side at the top, and a longer parallel side at the bottom, the non-parallel sides running up and down the roof from a point receiving heat from the building to a point adjacent the roof's edge. The wires are covered on the undersurface with a first layer of adhesive coated metal foil tape and a second layer of material nonconductive to heat and electricity. The shingles at their roof-end edge are bent back on themselves for gripping electrical harness clips and then formed in a depending drip edge and harness concealing flange. The electrical supply wires covered with protective insulation in the harness are supplied attached to each shingle and of such length as to

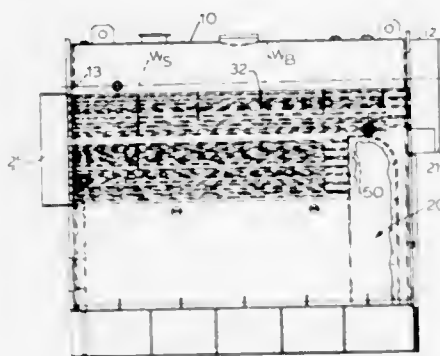


reach an appropriate point in the next shingle. Weatherproof, snap action, wire splicers are supplied for the ends of each wire for quick electrical connection, all wiring being concealed behind the drip flange and supported by clips. The shingles are locked to one another at each side and secured together by rivets to assure good ground connections. Shingles are provided for each end of a row furnished with connections for a ground wire and the connection to the house circuit is furnished with an indicator light and the wiring supplied with a thermostatic switch and suitable fuses.

### 3,691,344 ELECTRICALLY CONVERTED FIR TUBE BOILER AND METHOD

John A. Hoffman, 4010 Camelot Dr., Raleigh, N.C.  
Filed July 6, 1971, Ser. No. 159,960  
Int. Cl. F24h 1/00

U.S. Cl. 219—321

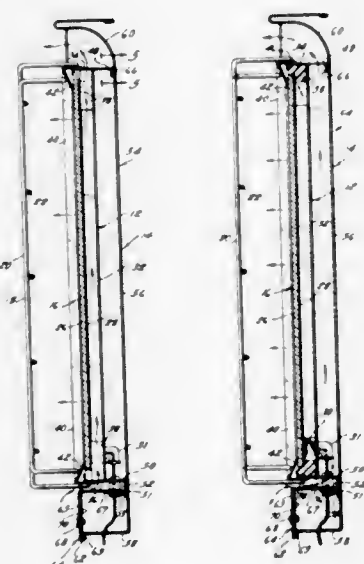


A modified fire tube boiler construction and method enables a conventional fossil fuel fired fire tube boiler to operate with electrical heating for the purpose of heating water and producing low and high pressure steam. The construction and method involve replacing a plurality of selected fire tubes with a like number of elongated electrical immersion heaters supported by heater support rods between the front and rear tube sheets and controlling the heaters selectively and electrically for temperature, pressure and water level sensing.

3,691,345  
RADIANT HEATER  
Robert L. Needham, Bayside, N.Y., and Continental Radiant Glass Heating Corporation, New York, N.Y., assignors to Continental Radiant Glass Heating Corporation, New York, N.Y.

Filed June 18, 1970, Ser. No. 47,410  
Int. Cl. H05b 3/22; F24h 9/02

U.S. Cl. 219—345



A radiant heater includes means for delivery of heat by convection as well as radiation. A heater subassembly is formed

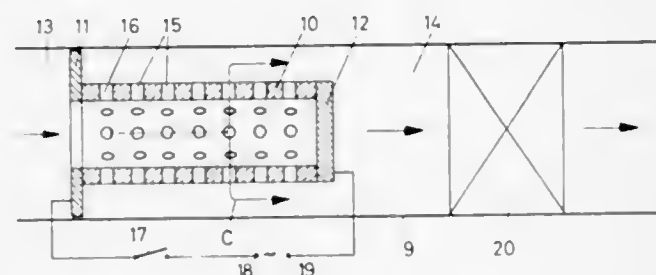
by a tempered glass electric radiant heating panel supported in spaced relation to a mounting panel by flanges extending forwardly from the top and bottom margins of the mounting panel. The heater subassembly is suspended within a main frame member in spaced relation to the walls thereof by a plurality of spaced flange members extending rearwardly from the top margin of the mounting panel and engaged with projections stuck out from the main frame member. A plurality of spaced, articulated, rearwardly extending flange members are provided at the bottom margin of the mounting panel to properly position the subassembly relative to the main frame member. The arrangement allows first convection air flow path between the heater panel and the mounting panel and a second convection air flow path between the mounting panel and the main frame member.

3,691,346  
ELECTRICALLY HEATED CATALYTIC AIR PURIFIER  
Mogens Dyre, Nordborg, and Jorgen Abildtrup, Augustenborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed July 13, 1970, Ser. No. 54,485  
Claims priority, application Germany, July 3, 1969, P 19 33 826.2

Int. Cl. F24h 3/04; H01b 1/00; B01j 9/04  
U.S. Cl. 219—374

1 Claim



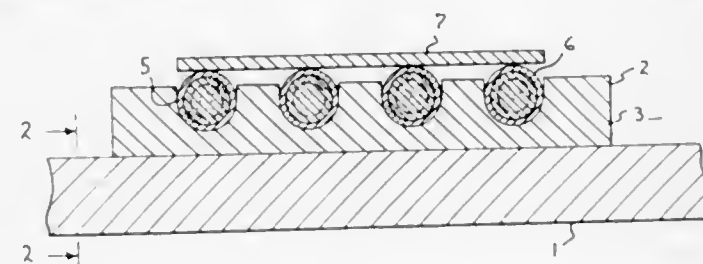
The invention relates to air treatment equipment for the removal of impurities from the air such as odorous substances and bacterial spores. The equipment includes a support member made of silicon carbide, preferably beta silicon carbide, which gives it good thermal conductivity and allows it to operate as an electrical heating element. The support member has air passages through which air to be purified passes, the walls of the air passages being coated with a catalyst material such as platinum. In a preferred embodiment the support member also contains silicon oxynitride which imparts a better mechanical stability to the supporting element and allows the conductivity to be reduced.

3,691,347  
ELECTRIC HEATER  
John J. Finn, Erie, Pa., assignor to Glenn Electric Heater Corporation, Erie, Pa., part interest

Filed June 18, 1971, Ser. No. 154,328  
Int. Cl. H05b 3/58

U.S. Cl. 219—535

3 Claims



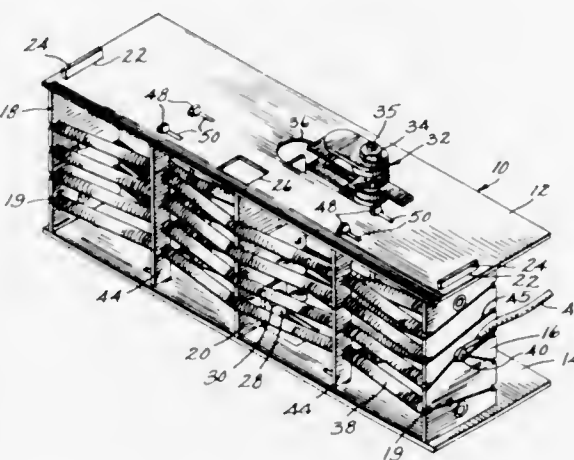
An electric heater having a ductile iron heat transfer body adapted to conform to the surface to be heated. The heater operates at temperatures up to 1,100°F and at a higher watt density input than comparable heaters with aluminum heat transfer bodies.

3,691,348  
HEATING ELEMENT ASSEMBLY  
Raymond W. Kunz, Monroe, Conn., assignor to General Electric Company

Filed Oct. 6, 1971, Ser. No. 186,959  
Int. Cl. H05b 3/06

U.S. Cl. 219—532

10 Claims



An electrical resistance heating element assembly for use in electric portable space heaters having a support structure comprising a top panel and a bottom panel in spaced relationship and end panels extending therebetween with outwardly directed open-ended vertically spaced peripheral notches. An electrical resistance heating element is wrapped around the end panels and seated in the end panel notches with the heating element retained in its proper position by retainer members having inwardly directed open-ended vertically spaced notches that engage the heating element between the end panels and depress the heating element inwardly.

3,691,349  
ELECTRICAL HEATING SHEET WITH SERIES OF EYELETS CONNECTIONS  
Donald MacColl, Ardrossan, and Hugh O'Pray, Stevenston, both of Scotland, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 16, 1971, Ser. No. 115,846

Claims priority, application Great Britain, March 9, 1970, 11,179/70

Int. Cl. H05b 3/34

U.S. Cl. 219—549  
Conductive silicone rubber heating elements having metal foil electrodes attached by eyelets formed by punching the foil through the conductive sheet.

3,691,350  
SYSTEM FOR VERIFYING AUTHORIZED USE OF A CREDIT CARD OR THE LIKE  
Roger J. Kuhns, Tower Rd., Lincoln, Mass., and Robert L. Nathans, 36 Stag Dr., Billerica, Mass.

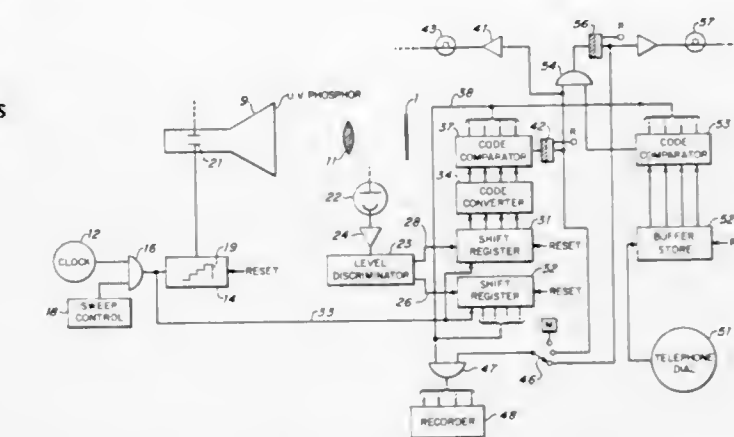
Filed July 21, 1970, Ser. No. 56,771

Int. Cl. G06k 7/12, 5/02, 19/02; G06n 21/36  
U.S. Cl. 235—61.7 B

9 Claims

A system is disclosed for machine scanning a first and second set of identification indicia recorded upon a credit card or the like wherein said first set of identification indicia is visible to the human eye and a second set of identification indicia is invisible to the human eye. Circuitry is provided for comparing the visible and invisible sets of identification indicia to determine whether or not they correspond, lack of correspondence thereof indicating the possible presence of a counterfeited card. Further circuitry is provided for having a bank teller, for example, manually insert the card holder's identification number, which is orally transmitted to the teller by the card holder, into the system whereby the manually inserted identification number is compared with the machine

scanned coding associated with the card. If all three codes correspond, it is extremely unlikely that unauthorized use of the



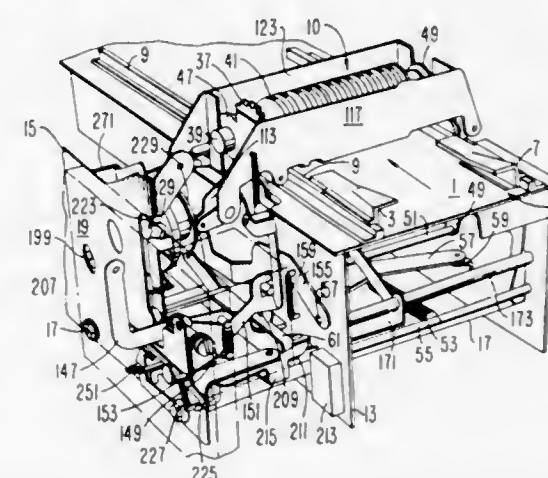
credit card is occurring or that coded indicia has been misread by the scanner.

3,691,351  
Patent Not Issued For This Number

3,691,352  
DOCUMENT READING APPARATUS  
Earl E. Brinning, Detroit, Mich., assignor to Burroughs Corporation, Detroit, Mich.  
Filed June 9, 1971, Ser. No. 151,174  
Int. Cl. G06k 7/015

U.S. Cl. 235—61.11 C

16 Claims



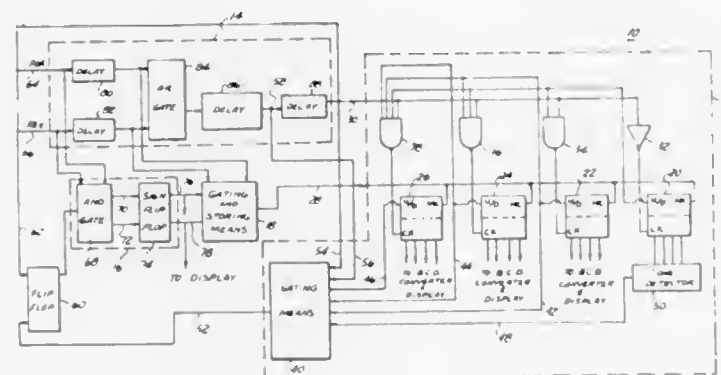
Apparatus is provided for receiving punched documents of predetermined varying widths and lengths, and for readably feeding such variously dimensioned documents through a read station. During this readable feeding of the documents, a column count circuit is triggered in synchronism with the reading of columns of coded information and inhibited through the sensing of the trailing edges of the documents when the last column of coded information has been read. By this means embossed areas that may be present on certain of the documents following the last column of coded information may be fed through the read station without the risk of false reading resulting from spurious signals generated by such embossed areas.

3,691,353  
MULTIMODE COUNTING DEVICE  
Jimmie A. Michaud, Dayton, Ohio, assignor to The Bendix Corporation  
Filed Dec. 14, 1970, Ser. No. 97,648  
Int. Cl. H03k 21/02; G06m 3/14

U.S. Cl. 235—92 EV  
A multimode counting device that utilizes number incrementing and number decrementing signals to change the value



of a stored number. The counting device includes a storage register and switching or gating circuitry that causes the device to switch between a first mode of operation for altering a stored number having a positive polarity and a second mode of operation for altering a stored number having a negative polarity. The device also includes additional gating circuitry



responsive to the stored number and to signals in transmission to the storage register to initiate a change in the operating mode when the stored number is unity and a signal that will cause that number to become zero is in transmission to that register instead of waiting until the stored number actually reaches zero.

3,691,354

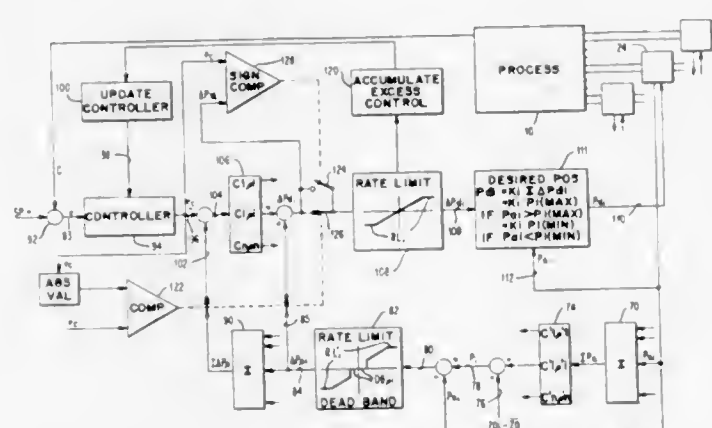
# SYSTEM FOR CONTROLLING A SINGLE CONTROL VARIABLE BY PROPORTIONING A PLURALITY OF RELATED MANIPULATED VARIABLES

Thomas A. Green, Roslyn, and Charles W. Ross, Hatboro, both of Pa., assignors to Leeds & Northrup Company, Philadelphia, Pa.

Filed June 18, 1971, Ser. No. 154,370  
Int. Cl. G05b 15/02

U.S. Cl. 235—150.1

8 Claims



A digital control system determines a control signal in accordance with proportional and integral control responses. The control signal is proportioned among a plurality of final control elements so as to modify related manipulated variables. The values of the manipulated variables are summed and that sum is similarly proportioned. The resulting individual portions are then compared with the value of the associated manipulated variable and the difference is added to the corresponding proportions of the control signal to correct the divergence of the response of the control elements from the desired proportioned response.

3,691,355

Patent Not Issued For This Number

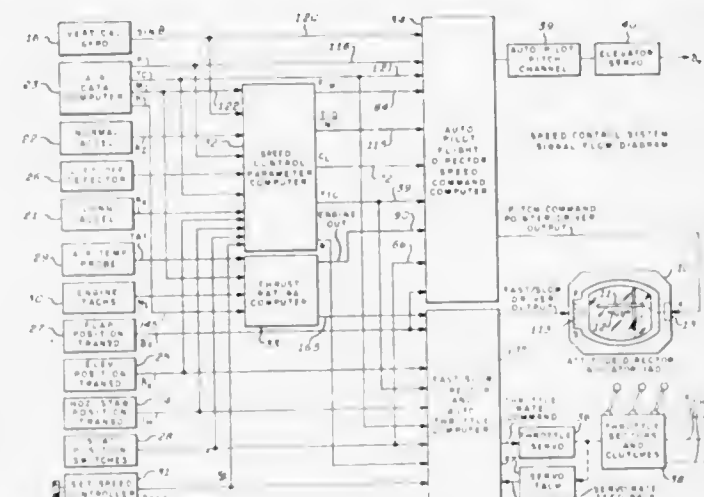
## 3,691,356 SPEED COMMAND AND THROTTLE CONTROL SYSTEM FOR AIRCRAFT

Harry Miller, Scottsdale, Ariz., assignor to Sperry Rand Corporation

Filed Dec. 10, 1970, Ser. No. 96,796  
Int. Cl. G06g 7/78; B64c 13/50

U.S. Cl. 235—150.22

31 Claims



Aircraft control apparatus for providing pitch guidance to the pilot during the takeoff acceleration phase between rotation airspeed and steady climbing speed in accordance with Federal Airworthiness Standards for takeoff safety speeds. The steady climbing target speed is determined from computed values of actual coefficient of lift of the aircraft compared to a reference value of coefficient of lift which is programmed in accordance with the number of operating engines, existing thrust to weight ratio, flap position, and leading edge slat extension. The pitch guidance is derived from a control equation which generates a regulating signal for driving the pitch command pointer of an attitude flight director display. Pitch guidance is provided for the pushover acceleration mode during which the aircraft's takeoff flap-slat configuration is retracted and the aircraft is stabilized on a new climb path at a preset airspeed. Pitch guidance is also provided for a missed approach procedure. Further provision is made for the automatic or manual control of engine throttles to maintain an optimum thrust condition or to maintain a pilot set airspeed, including override means whereby a minimum safe speed based on flap position and computed gross weight will override the selected speed if it is below the computed minimum. An additional override is provided to inhibit pilot selection of airspeeds which are above structural limitations of the flaps.

The system requires speed control parameters which are computed by apparatus which provides a measure of the angle of attack and coefficient of lift of an aircraft without external probes or vanes, which measure is derived from computations involving measurements of aircraft longitudinal acceleration, normal acceleration, vertical speed, calibrated airspeed, Mach number, and positions of the movable aerodynamic surfaces which affect the coefficient of lift of an airplane. Supplementary outputs of the computer are signals proportional to acceleration along the flight path, thrust over weight ratio, gross weight of the airplane, potential flight path angle of the airplane, and actual flight path angle.

3,691,357

## POSITIONING CONTROL SYSTEM HAVING MEMORY FOR A MACHINE TOOL

Michael D. McIntosh, Greencastle, Pa., assignor to Litton Industries, Inc., Beverly Hills, Calif.

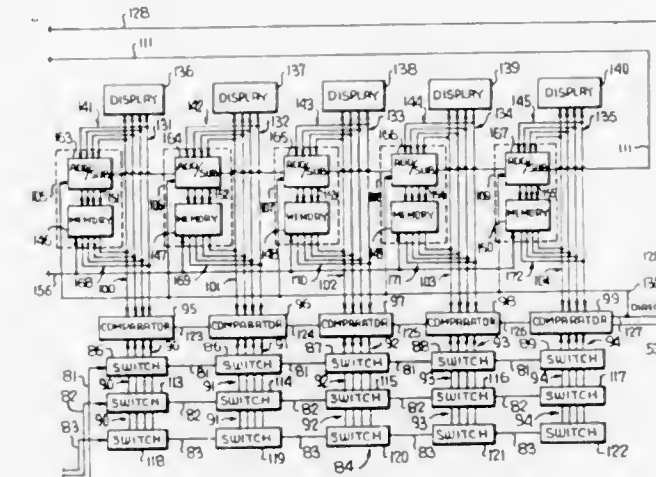
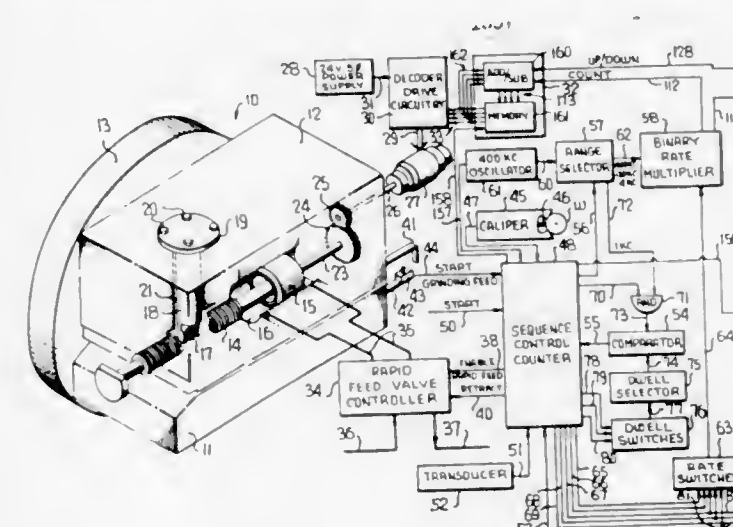
Filed Sept. 21, 1970, Ser. No. 73,739  
Int. Cl. G06f 15/46

U.S. Cl. 235—151.11

20 Claims

A feed positioning control system having a non-volatile memory for a machine tool is described which utilizes an electro-hydraulic pulse motor to move a grinding wheel support

predetermined distances during a grinding operation. A control counter is arranged, via rate selecting switches to select pulses of various predetermined pulse repetition rates for controlling the rates at which the electro-hydraulic pulse motor moves during a grinding operation. End point selecting switches and comparators are provided for determining the distance moved by the support during a grinding operation to signal the control counter to change rates or to select a dwell period. Dwell selecting switches, responsive to the control counter, are provided to establish the duration of dwell periods between application of selected rates and to signal the



control counter at the end of each dwell period, including a spark out period at the end of a grinding operation. The comparators are connected to pulse counting devices, which are responsive to the pulse input to the electro-hydraulic pulse motor. The pulse counting devices comprise five binary coded decimal up/down counters each having four-bit output. Each counter contains a distinct non-volatile memory device, each of which has four magnetic core storage elements, one for each bit. The system includes means for retrieving the data stored in the memory elements prior to shut will re-establish the output of the up/down counters to the same point, subsequent to the power failure.

3,691,358

## DECIMAL-POINT INDICATING SYSTEM, ESPECIALLY FOR ELECTRONIC CALCULATOR

Stefan Christov Angelov; Snezhanka Vladimirova Hristova, and Srebrin Yovtchev Srebrev, all of Sofia, Bulgaria, assignors to Zentralen Institut Po Istchislitelna Technika, Sofia, Bulgaria

Continuation-in-part of Ser. No. 672,500, Oct. 3, 1967, Pat. No. 3,548,180. This application Aug. 31, 1970, Ser. No. 68,191

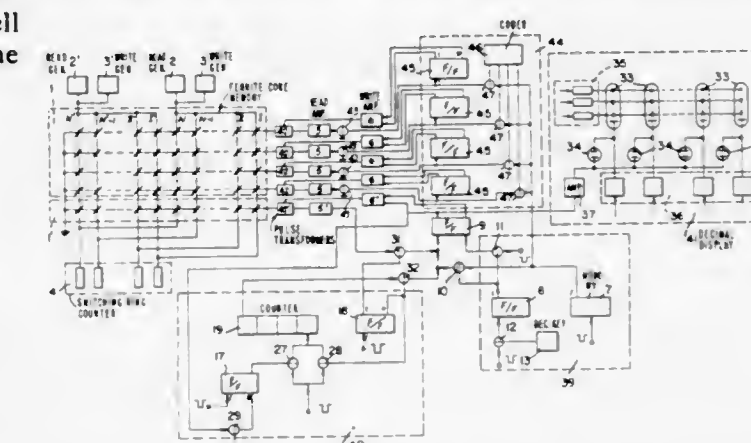
Claims priority, application Bulgaria, Oct. 4, 1966, 1-1,175  
Int. Cl. G06f 7/48

U.S. Cl. 235—159

9 Claims

An electronic calculator or computer with a magnetic-core memory having a number of columns corresponding to the

number of digits which may be manipulated and four lines connected with a binary encoder. The latter transforms the numerical value into a binary code for each digit with these binary codes being recorded in the respective columns. An additional line, having the same columns, is provided into which the decimal position is registered by a flip-flop or bistable multivibrator such that, whether or not the decimal key is depressed, each addition of a digit in the memory introduces a



decimal point on the additional line while erasing all previous decimal-points. When the decimal point key is depressed, e.g. to introduce a fractional number, the multivibrator is controlled by controlled gates to enable the decimal point to shift with the last digit order recorded prior to depression of the decimal point. Decimal-point indication uses glow lamps between the numeral-display or counter tubes, the glow lamp associated with the digit of the corresponding column being illuminated when the particular column is "read."

3,691,359

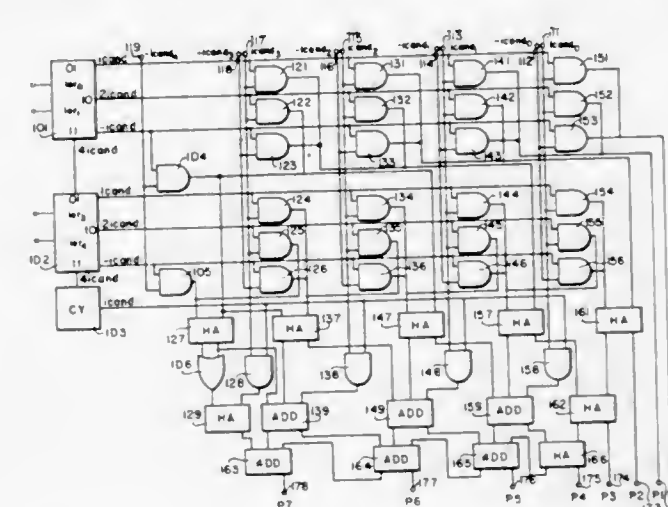
## ASYNCHRONOUS BINARY MULTIPLIER EMPLOYING CARRY-SAVE ADDITION

Harold R. Dell, Palo Alto, and Eduardo D. Lara, Cupertino, both of Calif., assignors to Singer-General Precision, Inc., Binghamton, N.Y.

Filed July 28, 1970, Ser. No. 58,956  
Int. Cl. G06f 7/54

U.S. Cl. 235—164

9 Claims



An arithmetic unit for accomplishing the multiplication of two binary numbers at high speeds is described herein. By utilizing a plurality of gates connected in successive stages, the combinations of individual digits of a multiplicand and a multiplier to produce the product thereof is accomplished. The gates of the successive stages are so connected as to shift the partial product produced at each stage by one digit to the right, the least significant digit of that stage being shifted out as a product digit. In the simplest case, there will be as many stages as there are multiplier digits. However, a modification of the basic system provides for the simultaneous combination of the multiplicand with a plurality of individual multiplier digits to reduce the number of stages required in the apparatus. Each stage produces carries which are added in by



means of inter-spaced adders or half-adders at each stage. No timing signals are required since this apparatus operates as an asynchronous device. Therefore, each stage occupies only the time required to transfer the function through it, and the total multiplication process is speeded up thereby. The modification which permits simultaneous combination of a plurality of multiplier digits with the multiplicand shortens the required multiplication time even further, and if special encoders are utilized, the total multiplication time can be even further reduced. Since no timing pulses are required, information flows through the multiplier as a ripple.

3,691,360

### CASH REGISTERS AND OTHER ACCOUNTING MACHINES

Henry Gross, and Samuel Gross, both of London, W. 10, England, assignors to Gross Cash Register Limited, London, England

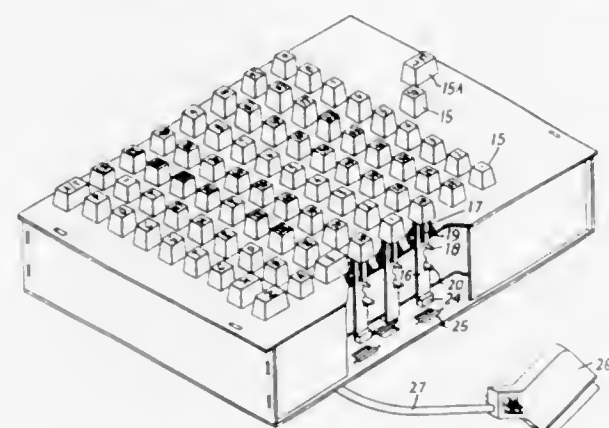
Filed Dec. 10, 1970, Ser. No. 96,942

Claims priority, application Great Britain, Dec. 22, 1969, 62226/69

Int. Cl. G06f 3/12; G06k 15/06

U.S. Cl. 235—168

6 Claims



According to the invention we provide an apparatus for calculating and indicating information data applied thereto comprising keyboard or other input means, means including a series of elements adapted to receive information applied thereto, a corresponding series of switches adapted to produce electric signals, an electronic means responsive to said signals for transferring the information and for effecting calculations from the information; toothed movable elements; mechanical indicator means operatively connected with the teeth on the toothed elements; power operable means for driving the apparatus through a cycle of operations such that at the beginning of the cycle all the toothed elements are brought to their zero positions and in a later part of the cycle said power operable means permit the toothed elements to advance through a series of positions corresponding to series of numbers, and a series of stop means operable by the electronic means and serving to stop the toothed elements in various of said positions corresponding to the transferred or calculated result figures required to be indicated.

3,691,361

### AREA NAVIGATION SYSTEM FOR AUTOMATICALLY SELECTING WAYPOINTS ON THE TRACK AND LYING AT A RIGHT ANGLE FROM A MASTER STATION

Carl Stuart Perkins, Oak Brook, Ill., assignor to Butler National Corporation, Oak Brook, Ill.

Filed Nov. 13, 1970, Ser. No. 89,364

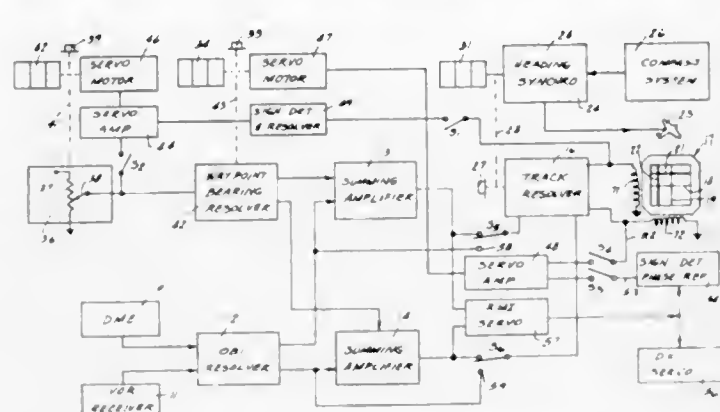
Int. Cl. G06g 7/78

U.S. Cl. 235—150.27

7 Claims

An area navigation system which provides for the automatic selection of waypoints on the track at a point which is at right angles from the track to the master station. Means are provided for determining the distance from the aircraft to the

waypoint and the distance of the waypoint from the master station and these signals are utilized to automatically set the



coordinates of the waypoint into the area navigation equipment.

3,691,362

Patent Not Issued For This Number

3,691,363

### METHOD AND APPARATUS FOR BORE HOLE DIRECTIONAL LOGGING

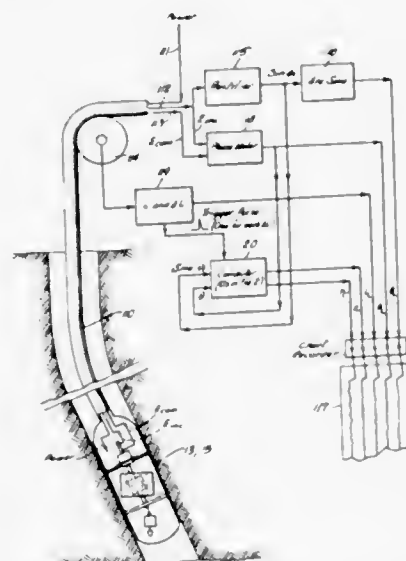
Fontaine C. Armistead, Darien, Conn., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 727,141, April 30, 1968. This application July 17, 1970, Ser. No. 62,778

Int. Cl. G06g 7/22, 7/78

U.S. Cl. 235—186

2 Claims



A method and apparatus for borehole directional logging. The apparatus includes first and second coils. The first coil is adapted for rotation about an axis aligned with the longitudinal axis of the borehole. A gimbal mounted magnetic field producing coil is provided for generating a first magnetic field of predetermined direction with respect to the vertical in the space occupied by the first coil whereby an alternating signal is induced therein representative of the inclination angle of the borehole. The second coil is adapted for rotation at the same rate as the first coil while being subjected to a second magnetic field having at least a component of known azimuth direction, thereby generating an alternating signal in the second coil, the phase angle of which, with respect to the first coil signal is representative of the azimuth angle of the borehole. A further embodiment provides computing apparatus for determining the location of a selected segment of the borehole at any depth including mathematical and trigonometric function operators for generating signals representative of the incremental changes of the borehole position and of the corresponding incremental length seg-

ments along the borehole. Also included are computing elements for summing the latter signals thereby obtaining the location of the borehole at any depth. The method includes generating first and second signals representative of the borehole inclination and azimuth, respectively, and in response thereto generating signals of the incremental changes in the location of successive segments of the borehole correlated with a signal representation of the length of said segments, and generating signals representative of the borehole location along its length by summing the latter signals.

3,691,364

### CONTINUOUS ANALYZING DEVICE

Tatsuo Baba, and Katsuo Abe, both of Tokyo, Japan, assignors to Ohkura Electric Co., Ltd., Tokyo, Japan

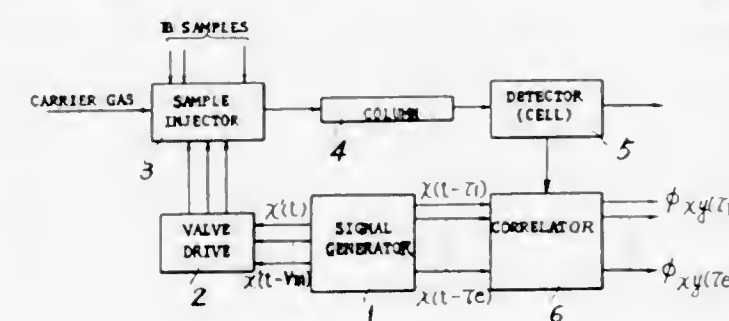
Filed March 16, 1970, Ser. No. 19,779

Claims priority, application Japan, Mar. 20, 1969, 44/21506

Int. Cl. G06f 15/34

U.S. Cl. 235—181

3 Claims



Continuous analysis is performed by continuously injecting a plurality of samples according to a pulsed pseudo-random binary signal, and by computing a cross-correlation function of the pseudo-random binary signal or its linear function and a detector output whereby to detect, the cross-correlation as the response corresponding to the result of measurement.

3,691,365

### ELECTRONIC FLASH LIGHTING SYSTEM

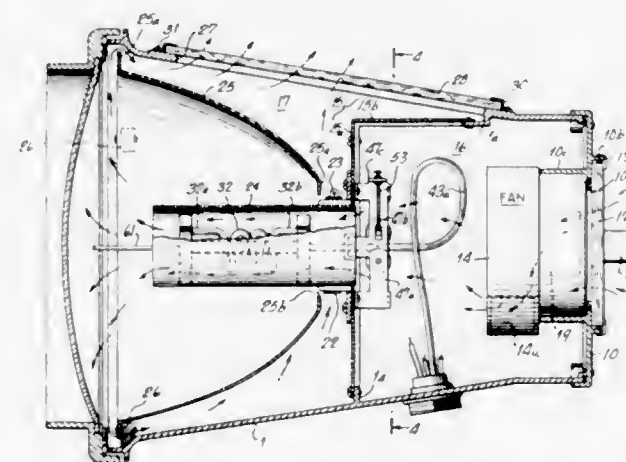
Richard J. Sequerra, Forest Hills; Sidney S. Smith, Sea Cliff; Fred J. Assenza, Brooklyn, all of N.Y., and William H. Greenbaum, Demerest, N.J., assignors to Unilux, Inc., Woodside, N.Y.

Filed Aug. 11, 1970, Ser. No. 62,811

Int. Cl. G03b 15/02

U.S. Cl. 240—1.3

17 Claims



Electronic flash lighting system with helical flash tube and forced draft air cooling system producing a flow of air closely confined to a region adjacent the surfaces of the flash tube. This provides a high rate of heat dissipation and hence allows a high rate of flash repetition and/or high average power. The flash tube is mounted for adjustable movement with respect to a lens and reflector system so as to change the focus of the light beam passing through the lens.

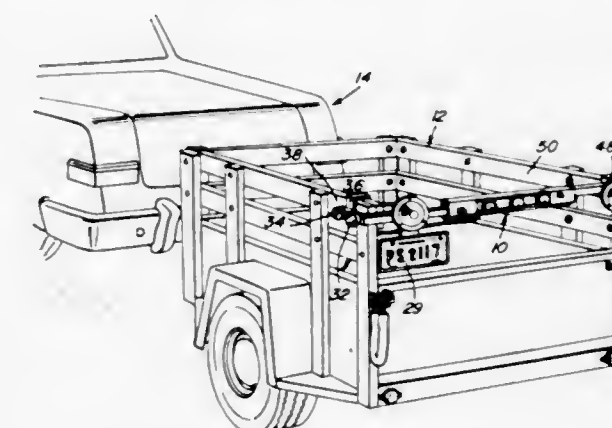
3,691,366

### TELESCOPING LIGHT BAR

Phillip M. Spreuer, Rt. 1, La Grange, Ind.  
Filed Sept. 23, 1970, Ser. No. 74,720  
Int. Cl. B60q 7/00

U.S. Cl. 240—8.3

8 Claims



A structural assembly having a central tubular section telescopically mounting two longitudinally extending members that are adjusted for attachment at the outward ends thereof to a vehicle. Coiled power cords are received in the assembly and furnish selective energization for various lights fastened to the tubular section and the telescoping members. The coiled power cords facilitate extension and retraction of the telescoping members without snagging.

3,691,367

Patent Not Issued For This Number

3,691,368

### VEHICLE DETECTION SYSTEM AND METHOD

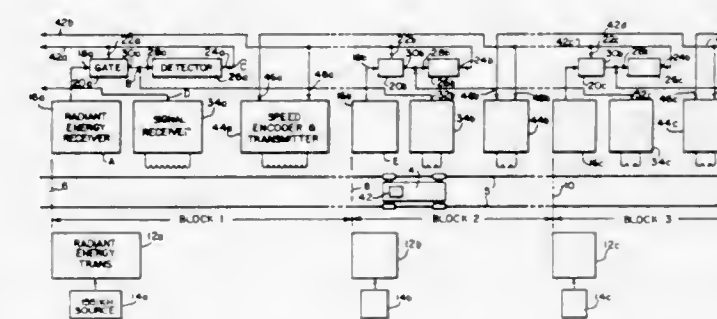
Robert C. Hoyler, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 3, 1970, Ser. No. 94,845

Int. Cl. B61l 21/06

U.S. Cl. 246—29 R

5 Claims

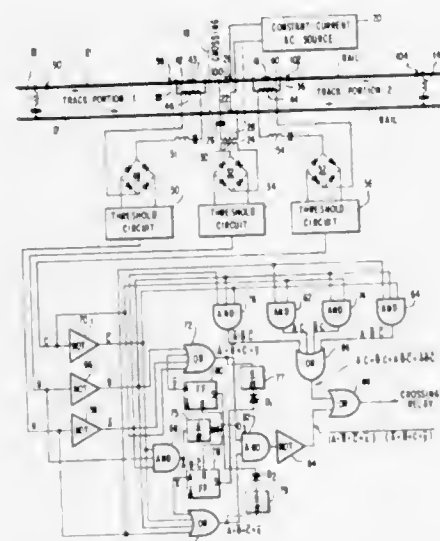


A vehicle to be detected is moved along a track divided into a plurality of sections, with a boundary between each adjacent pairs of sections. A radiant energy transmitter is situated at one side of the track at each such boundary, and a radiant energy receiver is situated on the other side of the track for receiving the transmitted radiant energy. The passing of a train through a boundary blocks the transmission of the radiant energy from the transmitter to the latter receiver. A radio (high frequency) signal receiving means is situated at each boundary adjacent the radiant energy receiver, for receiving a radio signal from a train carried antenna each time a train passes the boundary. In response to the sensing of radiant energy at a given boundary, concurrent with the reception of a radio signal from a given train passing the succeeding boundary, a signal is generated for controlling the speed of another train in at least the section preceding the given boundary.



3,691,369  
Patent Not Issued For This Number

3,691,370  
LOGIC TRACK CIRCUIT  
Ajoy Kumar Pal, 2035 Prentiss Drive, Apt. 210, Downers  
Grove, Ill.  
Filed May 7, 1971, Ser. No. 141,269  
Int. Cl. B611 1/02  
U.S. Cl. 246—125  
14 Claims

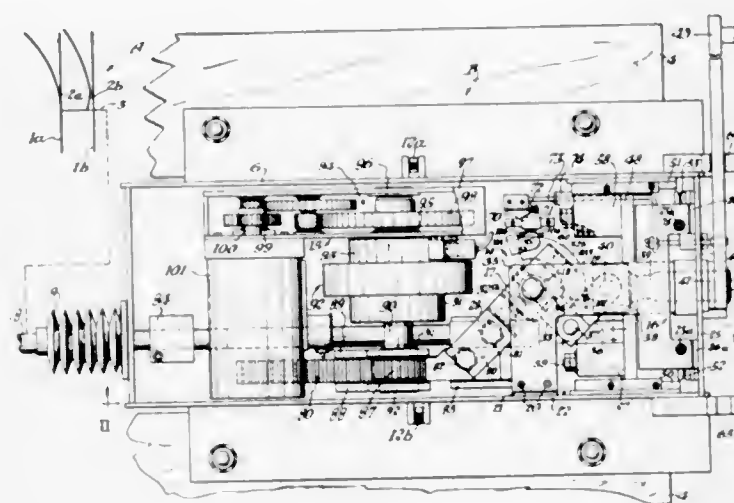


A binary logic circuit responsive to three binary logic input signals produced by respective railway signalling circuit means coupled to a section of track and located at a train highway crossing and track portion on either side thereof for activating a warning system or crossing gate when a train is approaching or traversing a crossing from either direction and thereafter deactivating the system in a fail safe manner. The logic circuit includes a plurality of interconnected AND, OR, AND NOT logic gates. Additionally, a pair of flip-flop circuits are also connected into the circuitry for providing a determination of whether the train is approaching or receding from the crossing. The logic combination of the input signals also checks the condition of the circuit itself and provides an output indicative thereof to the system whenever the circuit adopts an abnormal state of operation.

3,691,371  
TRAILABLE RAILWAY SWITCH MACHINE  
Lyle L. Hylen, Wilkinsburg, Pa., assignor to Westinghouse Air  
Brake Company, Swissvale, Pa.  
Filed July 23, 1970, Ser. No. 57,571  
Int. Cl. B611 5/06  
U.S. Cl. 246—393  
9 Claims

This disclosure relates to a trailable railway switch machine for use in classification yards and the like for moving the switch points between their two extreme positions. The switch machine includes a motion translating mechanism having a box shaft, a pivot block, a clevis, a link and a hand throw toggle shaft. A hand throw lever is connected to the hand throw toggle shaft. An electric motor is connected through a gear train, an electric clutch, a pinion and rack to a roller engaging a slotted arm of the box shaft. The switch points are connected through an operating rod by a cam roller engaging the slotted arm. The switch points may be selectively shifted either when

the hand throw lever is manipulated or when the electric motor is energized. No movement is imparted to the hand



throw lever or the motor and gear train when the switch points are trailed to the wheels of a railway vehicle.

3,691,372  
PHOTOELECTRIC TAPE READER HAVING READ HEAD  
DISPOSED ABOVE A LINE JOINING THE TOPMOST  
POINTS OF TWO DRIVE SPROCKETS  
Arlon G. Sangster, Sterling, Mass., assignor to Jamesburg  
Corp., Worcester, Mass.  
Continuation of Ser. No. 864,944, Sept. 25, 1969, which is a  
continuation-in-part of Ser. No. 693,778, Dec. 27, 1967. This  
application Feb. 11, 1971, Ser. No. 114,663  
Int. Cl. G01n 21/30; G06k 7/00  
U.S. Cl. 250—219 D  
1 Claim

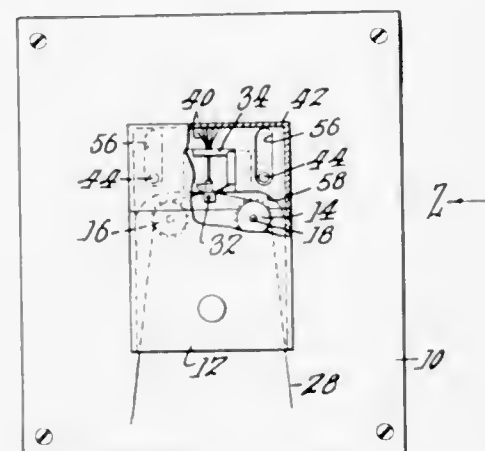
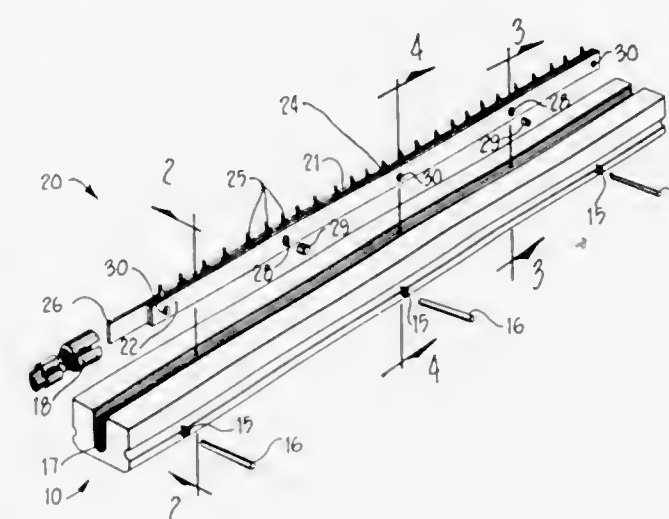


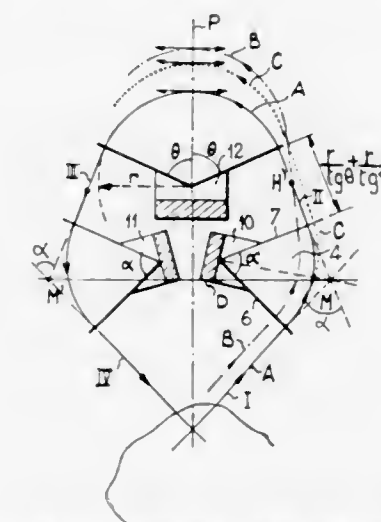
Photo-optical tape reader comprising a pair of toothed tape feeding sprocket areas arranged in alignment on parallel closely spaced axes, spaced from each other only sufficiently to provide room for a photosensitive device between them, a lamp source, improved guiding and tension control of the tape leaving the side edges of the tape free and unencumbered, all of the guiding being done by the sprocket teeth; and including mechanical hold-down means for the tape relative to the sprocket areas by means of a pivoted cover allowing the tape to be manually loaded and unloaded, the cover confining the tape and insuring that it is in position to be correctly driven, said cover also shielding ambient light and protecting the photosensitive device from dirt and dust.

3,691,373  
CORONA DEVICE  
Robert G. Compton, Albuquerque; Ray S. Richmond, Placitas,  
and Robert A. Tracy, Albuquerque, all of N. Mex., assignors  
to First City National Bank of Houston, as Trustee of the  
Francis A. Callery 1968 Trust  
Filed April 20, 1970, Ser. No. 29,926  
Int. Cl. G03g 15/00  
U.S. Cl. 250—49.5 ZC  
11 Claims



A corona device for charging insulating surfaces comprising an electrically nonconductive U-shaped base having a corona generating member mounted in the central slot. The corona generating member comprises two electrically conductive side strips and an electrically conductive central strip having a number of projections along the top edge, the member being held together and fastened to the base by a number of transverse pins fitted into matching holes in the three strips.

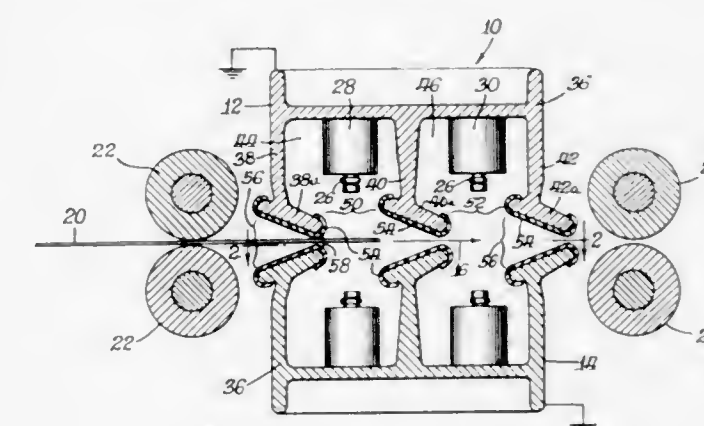
3,691,374  
STIGMATIC AND ACHROMATIC SYSTEM FOR  
DEFLECTING A PARTICLE BEAM  
Hubert Leboutet, Paris, France, assignor to Thomson CSF  
Filed Aug. 25, 1970, Ser. No. 66,849  
Claims priority, application France, Sept. 10, 1969,  
6930797  
Int. Cl. H01j 37/00; G01n 23/00  
U.S. Cl. 250—49.5 D  
8 Claims



The present invention relates to magnetic deflection devices for beams of charged particles.

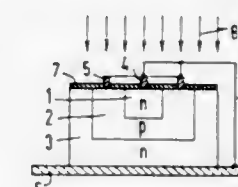
The system according to the invention comprises four deflecting elements arranged in pairs symmetrically with respect to a plane perpendicular to the plane containing the path of the beam. The distance between the faces of the deflecting elements is adjusted so that the energy conjugates of the two intermediate deflecting element coincide with the energy foci of the terminal deflecting elements. The device is thus achromatic.

3,691,375  
CHARGING DEVICE  
Stanley A. Gawron, Mount Prospect, and Kristian L. Helland,  
Schaumburg, both of Ill., assignors to Addressograph-Multi-  
graph Corporation, Mount Prospect, Ill.  
Continuation of Ser. No. 726,793, May 6, 1968, abandoned.  
This application Sept. 8, 1970, Ser. No. 70,512  
Int. Cl. G03g 15/00  
U.S. Cl. 250—49.5 ZC  
10 Claims



Corona discharge electrodes for applying a sensitizing charge to a moving sheet of photoelectrostatic paper are equipped with paper guide elements which support the sheet as it moves along a path of travel so that the sheet is kept clear of the fine wire electrodes. The fine wire electrodes are stretched inside an elongated housing, one side of which is open so as to freely emit the corona discharge. The opening is provided with laterally extending, spaced apart guides having a narrow flat support attached to the lead edges of the opening of the housing so that the sheets of paper may bridge the opening without entering and at the same time leaving an uninterrupted path for the corona discharge to reach the paper.

3,691,376  
METHOD OF INCREASING THE CURRENT  
AMPLIFICATION AND THE RADIATION RESISTANCE  
OF SILICON TRANSISTORS WITH SILICON OXIDE  
COVER LAYER  
Rudolf Bauerlein, and Dieter Uhl, both of Erlangen, Germany,  
assignors to Siemens Aktiengesellschaft, Berlin, Munich,  
Germany  
Filed Jan. 29, 1970, Ser. No. 6,724  
Claims priority, application Germany, Jan. 31, 1969, P 19  
04 763.3  
Int. Cl. H01j 37/00; G01n 23/00  
U.S. Cl. 250—49.5 TE  
8 Claims



Method of increasing the current amplification and the radiation resistance of silicon transistors having a silicon oxide cover layer. The transistor is first exposed to an ionizing X-ray, gamma or electron radiation of such energy that the silicon oxide layer is penetrated by at least a portion of the radiation, and of a dose between  $10^4$  and  $10^6$  rad. The transistor is subsequently subjected to an electric charge, without radiation effect whereby a blocking-layer temperature of about  $50^\circ$  to  $250^\circ$  C. occurs, and the sequence of irradiation and electric charges without radiation is repeated at least once.



3,691,377

# **AUTOMATIC CONTROL SYSTEM FOR VARYING A D.C. HIGH VOLTAGE FOR ACCELERATING TUBE OF ELECTRON MICROSCOPE AND THE LIKE**

Isao Matsui, 1030, Ichige; Yoshihisa Minamikawa, 663, Ichige, both of Katsuta-shi; Shinjiro Katagiri, 73, Dalmachi, Hachioji-shi, and Teruo Nakahara, 663, Ichige, Katsuta-shi, all of Japan

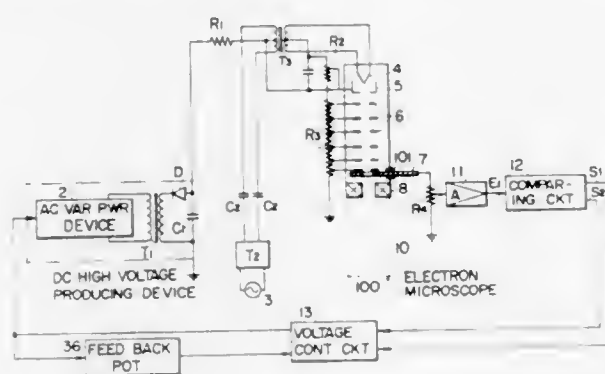
Filed Jan. 6, 1971, Ser. No. 104,418

Claims priority, application Japan, Jan. 16, 1970, 45/4332

Int. Cl. H01j 37/26; G01n 23/00

U.S. Cl. 250—49.5 A

10 Claims



The discharge which occurs in an accelerating tube of an electron microscope is detected by a detector and a comparing circuit determines whether or not the value of the detected discharge is larger or smaller than a predetermined value at which a spark occurs to produce a high level signal or a low level signal, respectively. The d. c. high voltage applied to respective accelerating electrodes in the accelerating tube is decreased or increased in response to said high level signal or said low level signal so as to suppress any undesired large discharge in the tube, and thereby prevent sparking therein.

3,691,378

# **SIMULTANEOUS PULSED NEUTRON WELL LOGGING**

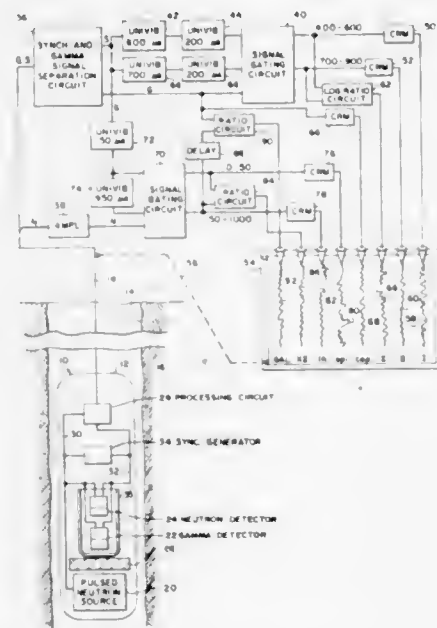
Eric C. Hopkinson, and Arthur H. Youmans, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed June 26, 1970, Ser. No. 50,268

Int. Cl. G01v 5/00

U.S. Cl. 250—71.5 R

27 Claims



Methods and apparatus are disclosed for obtaining simultaneously a well log of the macroscopic thermal neutron cross-section (Neutron Lifetime Log) of formations adjacent a well bore and logs of the capture gamma rays, epithermal neutrons and thermal neutrons returning to a well bore as a result of ir-

radiating the formations adjacent the well bore with pulses of neutrons. The thermal and epithermal neutron logs are obtained by separating the signal from a single detector into two time-dependent groups.

Methods and means are also disclosed for combining the capture gamma ray log with the thermal neutron log to obtain a log indicating the salinity of the fluids contained within said formations. Methods and means are also disclosed for combining the epithermal neutron log with the thermal neutron log to obtain a log related to the macroscopic thermal neutron cross-section of the formations. Either or both of these derived logs may be obtained simultaneously with the first suite of logs.

The preferred embodiment of the apparatus disclosed herein includes a pulsed source of 14-mev neutrons, a gamma ray detector, and a neutron detector sensitive to both thermal and epithermal neutrons in the subsurface instrument. Surface apparatus includes the appropriate gating circuits and ancillary circuits whereby the gamma rays detected while the neutron source is quiescent are used to form three signals corresponding to the gamma rays detected in three time periods. Similarly, the surface apparatus includes gating and ancillary circuits to separate the detected neutrons into two time groups.

3,691,379

# **SCINTILLATION CAMERA DEVICE**

Eichi Tanaka, Tokyo; Toshiyuki Hiramoto, and Norimasa Nohara, both of Chiba, all of Japan, assignors to Director National Institute of Radiological Sciences, Science and Technology Agency, Chiba-shi, Japan

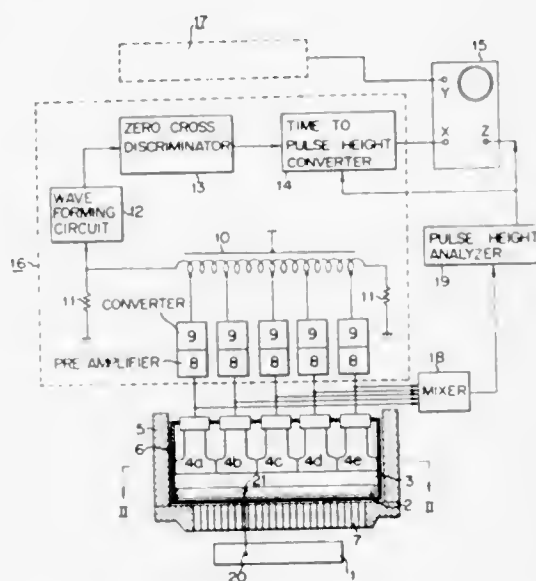
Filed Oct. 1, 1970, Ser. No. 77,305

Claims priority, application Japan, Oct. 1, 1969, 44/77803

Int. Cl. G01t 1/20

U.S. Cl. 250—71.5 R

5 Claims



A scintillation camera device wherein output pulse signals from photomultipliers optically coupled with a scintillator giving forth light upon absorption of radiation from a radioactive isotope taken into a foreground subject are supplied to a delay element such as a delay line for separating said output signals in time sequence so as to render them proportionate to the co-ordinate position of said photomultipliers; output signals from the delay element are shaped into bipolar symmetrical waves in a double delay line type wave forming circuit in such a manner that the zero-crossing time of a composite of wave forms is obtained in accordance with the co-ordinate position of the scintillation point; and the zero-crossing time of said composite wave form is converted to voltage, which is indicated on a cathode ray tube as the position of the scintillation point.

3,691,380

# **THRESHOLD VALUE DOSAGE METER**

Klaus Hubner; Konrad Prokert, and Werner Stolz, all of Dresden, Germany, assignors to VEB Fluorwerke Dohna, Dohna/Sa., Germany

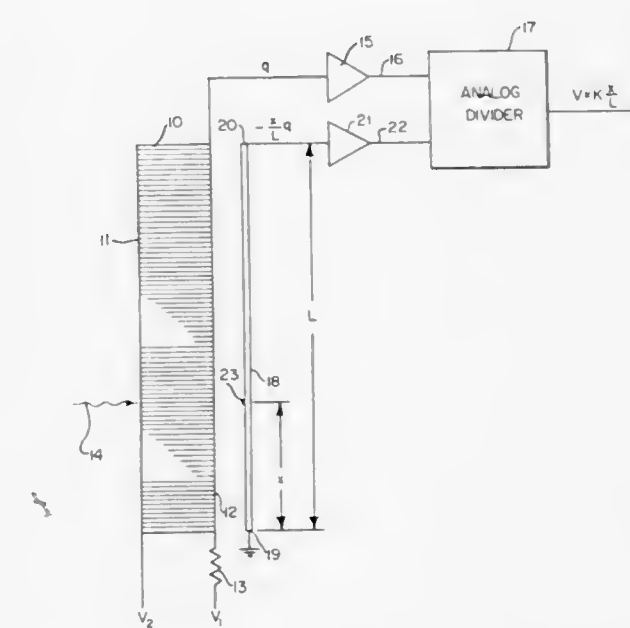
Filed Aug. 26, 1969, Ser. No. 853,205

Int. Cl. G01t 1/04

U.S. Cl. 250—83 CD

5 Claims

An indicator for dosage control in radiation processes in the Megarad range, consisting of a threshold-value dosage meter which comprises a transparent plastic material and incorporated therein an indicator for color change, a water-soluble organic halogen compound, and a water-soluble buffer compound, the color change being adjustable to energy doses between 0.5 and 10 Mrad by varying the contents of the buffer compound and the concentration of the halogen compound in the plastic material. The device is very useful in the sterilization of medical equipment by radiation and in the pasteurization of foodstuffs and for other purposes of radiation technique.



3,691,381

# **LOW ENERGY SUPERCONDUCTING PARTICLE COUNTER**

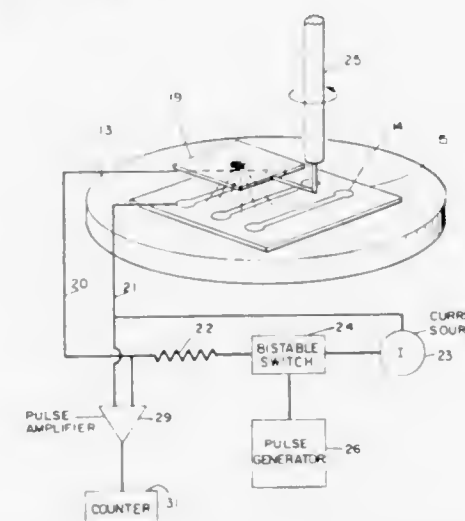
Daniel Kleppner, Belmont, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed March 19, 1970, Ser. No. 20,977

Int. Cl. G01t 1/16

U.S. Cl. 250—83.3 R

7 Claims



tested particle impacted the input end of the detector. Accordingly, the number of detectable charges which impinged upon the input end of the detector within a chosen period of time can be counted, and the positions at which they struck the detector can be recorded.

3,691,383

# **DEVICE TO MEASURE INFRARED RADIATION**

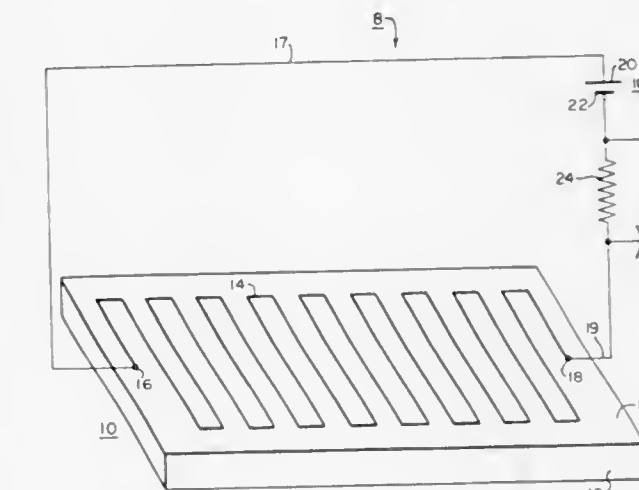
Peter D. Fisher, Okemos, Mich.; Dickron Mergerian, Baltimore, and Ronald W. Minarik, Lutherville, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 9, 1970, Ser. No. 45,100

Int. Cl. G01j 1/00, 5/00

U.S. Cl. 250—83.3 H

9 Claims



Apparatus having a superconductive thin film triggered by an energy pulse detects and counts the incidence of radiant energy upon the film. The film or a portion of the film is driven normal by means of a regenerative process initiated by the temperature rise caused by the energy pulse. A sensing circuit detects the presence of the energy pulse, and then resets the film to its superconductive state.

3,691,382

# **LOW ENERGY PARTICLE COUNTER WITH ONE-DIMENSIONAL POSITION SENSING**

Tolvo A. Somer, Lake Orion, Mich., assignor to The Bendix Corporation

Filed Oct. 30, 1970, Ser. No. 85,592

Int. Cl. G01t 1/16

U.S. Cl. 250—83.3 R

9 Claims

The invention provides one-dimensional position information relating to the detection of low energy particles such as photons or charged particles and also provides the capability of counting the detected particles. A particle detection device of known type is combined with a linear resistor which splits the charge emanating from the detection device in a ratio which is proportional to the position of the charge on the linear resistor. An analog divider divides the proportional charge on the linear resistor into the output charge from the

A device for detecting and measuring the output of a specific laser. The detector is a crystal which absorbs the light from the laser and converts the light into heat energy. A heat responsive, variable resistor-type element is located on the crystal to sense the heat. By measuring the change in current and voltage through the resistor-type element, the intensity of the laser light can be determined.



3,691,384

**NEUTRON-ABSORPTION CONTROLLER FOR NEUTRON ACTIVATION LOGGING**

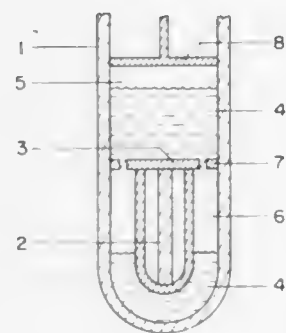
John C. Robinson, and Myron K. Horn, both of Tulsa, Okla., assignors to Cities Service Oil Company, Tulsa, Okla.

Filed Sept. 2, 1969, Ser. No. 854,425

Int. Cl. G21g 3/02

U.S. Cl. 250—84.5

13 Claims



The flux emitted during neutron activation logging is controlled by introducing a neutron-absorbing medium about the neutron-emitting section of a logging tool or sonde. Means are provided to control the rate of neutron-absorbing medium transportation so that a predetermined rate of flux is emitted from the sonde. By controlling the rate of flux emitted from the sonde, an energy gradient is produced such that at a later period of time a gamma ray measuring device may be utilized to log the well which will detect substantially equal levels of radiation at every depth in the well. The tendency of a high degree of gamma radiation existing in the latter portions of the irradiated wellbore is eliminated, thus allowing the use of a singularly scaled detector over the entire wellbore. A more easily measured radiation level results in greater resolution of the reservoir composition, and detection of specific elemental concentration is enhanced.

3,691,385

**CONTROL SYSTEM FOR WELDING INSPECTION MACHINE**

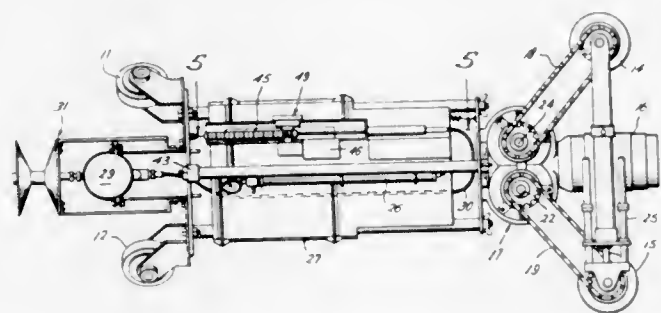
Thomas E. Ketchbaw; Robert D. Foster, and Kiyako Arvanetakis, all of Houston, Tex., assignors to Houston Gamma Ray Company, Houston, Tex.

Filed June 6, 1968, Ser. No. 735,061

Int. Cl. G03b 4/16; G01t 1/16

U.S. Cl. 250—91

13 Claims



This patent discloses a crawler for moving through a pipeline and emitting rays at the location of circumferential welds in the pipeline to expose film positioned about the exterior of the pipe to check the weld. Movement of the crawler and control of the emission of the rays is provided by control circuitry responsive to a signal received from exterior of the pipeline.

3,691,386

**DATA PROCESSING SYSTEM EMPLOYING QUENCH SIMULATION FOR ENABLING ACCURATE COMPUTATION OF SAMPLE ACTIVITY LEVELS IN LIQUID SCINTILLATION SPECTROMETRY**

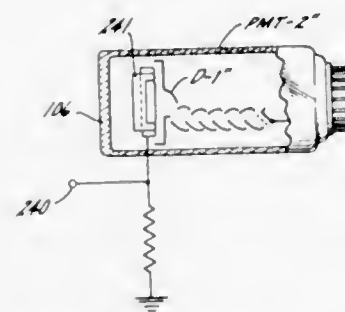
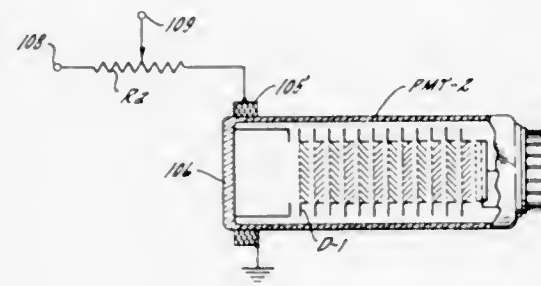
Robert E. Cavanaugh, Jr., La Grange Park, Ill., assignor to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed April 14, 1967, Ser. No. 630,891

Int. Cl. G01t 1/20

U.S. Cl. 250—106 SC

29 Claims



A data processing system for scintillation spectrometers of the type for measuring activity levels of samples containing radioactive isotopes and subjected to varying degrees of quench, including methods and apparatus for imposing a controlled simulated quench condition on each sample which, when added to the actual internal quench condition of the sample, creates an effective quench condition equal to a known predetermined actual quench condition for which counting efficiency is known with a high degree of accuracy, whereby true activity levels can be accurately computed in decay events per minute without incurring statistical errors inherent in interpolation and extrapolation techniques employed with conventional quench correlation data. Various methods and apparatus are described for creating a controlled simulated quench for each sample, together with an automatic computational system which permits direct display of activity levels in units of decay events per minute.

3,691,387

**ERROR-CORRECTING OPTICAL PCM DETECTOR**

Owen Edward DeLange, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 691,764, Dec. 19, 1967,

abandoned. This application May 6, 1971, Ser. No. 140,778

Int. Cl. H04b 9/100

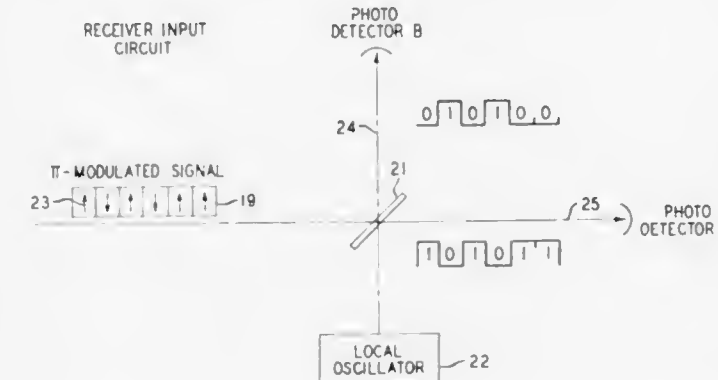
U.S. Cl. 250—199

2 Claims

The application describes an arrangement for correcting detection errors in an optical PCM receiver. It is recognized that there is a finite probability that an incident low level pulse of light will not result in an output from an optical detector. Similarly, in the presence of background light, there is a finite probability that a spurious output pulse will be produced. In the detector to be described, the incident optical signal, which has been encoded in the so-called "even-parity" coding system, is converted into two complementary "on-off" PCM signals, each of which is coupled to a separate detector. The

baseband output signals are then compared and any detection errors corrected by deleting spurious pulses inserted by one or

sides of the slabs, in p-i and n-i junctions lying within the ribs.



the other detectors, or by inserting pulses omitted by one or the other detectors.

3,691,388

**RECEIVER FOR A TIME-DIVISION-MULTIPLEXED TRAIN OF MODULATED PULSES EMPLOYING STROBED PHOTON-DRAW-EFFECT DEVICES**

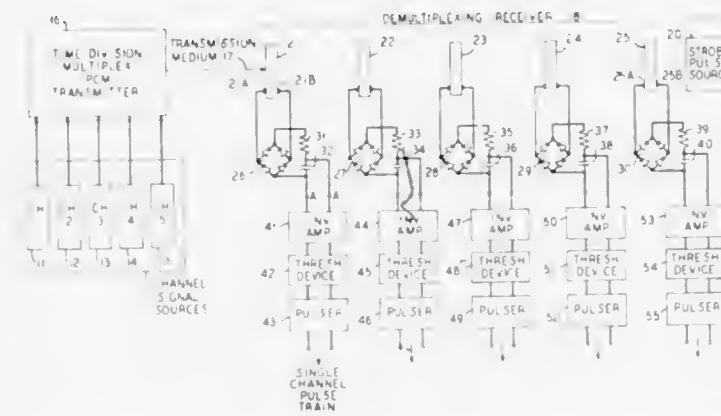
Chandra Kumar Naranbhai Patel, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 25, 1971, Ser. No. 109,173

Int. Cl. H04b 9/00

U.S. Cl. 250—199

5 Claims



There is disclosed a receiver for a time-division-multiplexed train of modulated pulses in which a tandem strobed arrangement of demultiplexing devices for respective channels employ thin wafers of semiconductor material in which a photon-draw effect is sensed. The photon-draw effect is sensitive to the coincidence of oppositely-directed modulated pulses and strobe pulses. A like arrangement for measuring very short optical pulses is disclosed, as is also an alternative method for making the measurement.

3,691,389

**RADIATION DETECTOR COMPRISING SEMI-CONDUCTOR BODY INCORPORATING A TWO-DIMENSIONAL ARRAY OF P-I-N-DEVICES**

Ronald Ellis, 125 Cavalier Road, Basing, near Basingstoke, and James Leonard Wankling, 162 Reading Rd., Wokingham, both of England

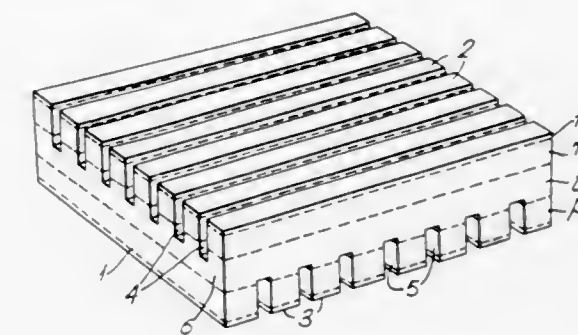
Filed June 9, 1969, Ser. No. 831,639

Int. Cl. H01j 39/12

U.S. Cl. 250—211 J

5 Claims

A radiation detector comprises a slab of semi-conductor material having a p-i-n structure with ribs formed on opposite



The ribs on one side of the slab are so aligned as to traverse those on the other side of the body.

3,691,390

**COMPOSITE LIGHT SOURCE**

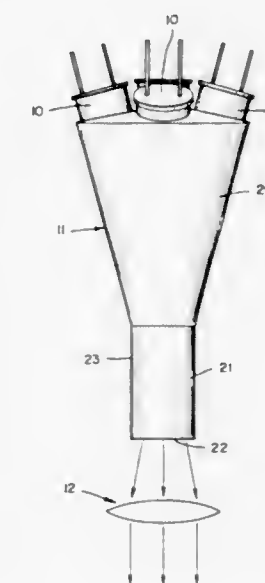
Ken-Tang Chow, Portola Valley; John William Stull, Livermore, and Charles Edward Bates, Campbell, all of Calif., assignors to Electric-Nuclear Laboratories, Inc., Menlo Park, Calif.

Filed Oct. 10, 1969, Ser. No. 865,461

Int. Cl. G02f 1/28

U.S. Cl. 250—217 SS

10 Claims



Each of an array of "n" number of similar light sources is repetitively energized in sequence to stimulate emission of light energy therefrom into an optical system which sums the output of the individual devices and forms a composite output into a single beam having a frequency that is "n"-times the frequency of each individual light source.

3,691,391

**OPTICAL TESTING APPARATUS COMPRISING MEANS FOR FLOWING LIQUIDS IN FREE FALL CONDITION AT CONSTANT FLOW RATE**

Hirotohi Kishi, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1970, Ser. No. 78,112

Claims priority, application Japan, Nov. 15, 1969, 44/91172

Int. Cl. G01n 1/10, 21/06, 21/26

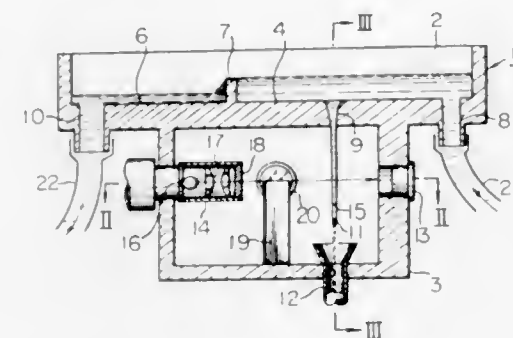
U.S. Cl. 250—218

10 Claims

Improved photo-electric colorimeter possesses a flow system, wherein one part of a liquid to be measured falls at a constant flow rate defined substantially by a slit orifice for



falling thereof and a weir for overflowing the remainder of the liquid, said falling liquid being transformed by a guiding means



into a successive liquid film in a position between a light source and a photo-electric cell.

3,691,392

# PHOTOELECTRIC SCANNING HEAD

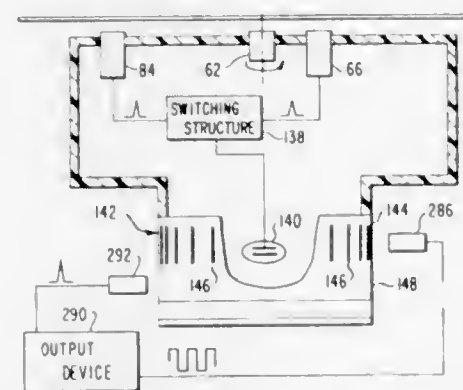
Dominick Tringali, Columbia, S.C., assignor to Universal Business Machines Incorporated, Columbia, S.C.

Filed June 9, 1970, Ser. No. 44,741

Int. Cl. G08c 9/06

U.S. Cl. 250—219 DD

21 Claims



There is disclosed a photoelectric scanner head for reading information pertaining to actual time, elapsed time or the like from a card or other record-bearing member, and for providing output signals that are a function of the information read; the output signals are used to obtain the usable electrical analogue of the information read from the member. The scanner comprises a rotatably driven body member mounting a source of light, read photoelectric devices and a switching circuit for retrieving information from the record member. A source of signals is supported by the body member and operably connected to the photoelectric devices by the switching circuit such that the source generates scanner output signals as a function of the information retrieved. Scanner output signals are detected, and in most disclosed embodiments, are useful to controllably gate timing pulses into counters such that the counters provide on their outputs a raw electrical analogue of the information read from the recorded member. Means may be connected to the counters for correcting the analogue to account for error in the recording made on the record member.

3,691,393

# AUTOMATIC STARTER FOR INTERNAL COMBUSTION MACHINES

Christos Papachristou, Vassiliko, Halkis, Greece

Filed March 30, 1971, Ser. No. 129,485

Claims priority, application Greece, Apr. 1, 1970, 39,620

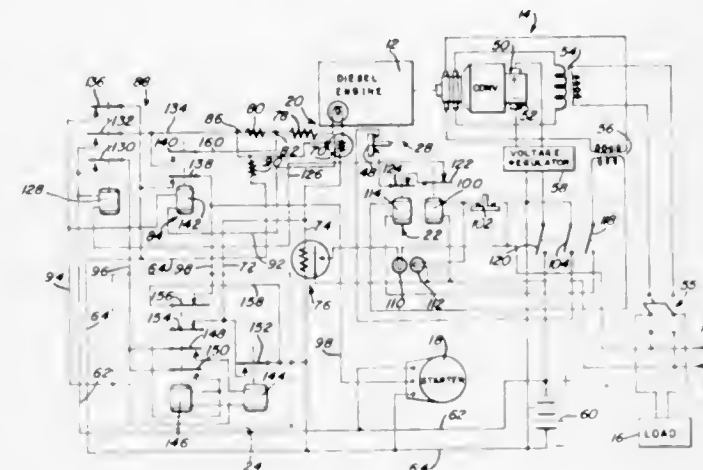
Int. Cl. F02n 11/08

U.S. Cl. 290—30

14 Claims

An engine driven generator is associated with a current responsive relay to a signal from a preheating control circuit in response to loss of power from a main supply. The preheating control circuit sequentially effects energization of an engine

glow plug and a starter to automatically start the engine. When a combustion gas sensor detects proper engine opera-



tion, the starter is disconnected and isolated. Restoration of power to the load from the generator latches the starter in its isolated condition.

3,691,394

# FREQUENCY BAND SHIFTER

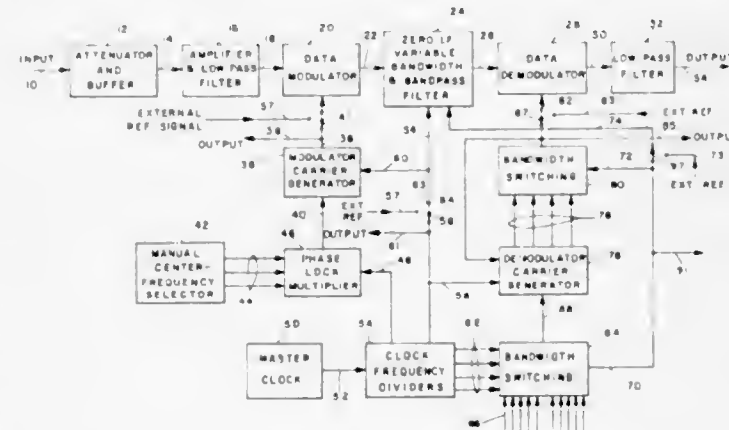
Robert D. Davis, Spring Valley, Calif., assignor to Spectral Dynamics Corporation, San Diego, Calif.

Filed Aug. 25, 1971, Ser. No. 174,672

Int. Cl. H03d 7/00

U.S. Cl. 307—3

16 Claims



A frequency band shifter for shifting a selected frequency band in a complex waveform, which frequency band is translated with its relative frequency, phase and amplitude relationships maintained to a reproduced lower frequency and, if desired, to a smaller frequency band for analysis, which translation is processed by manual or digital control with a master local oscillator control clock that provides protection against drift in frequency and phase throughout the system.

3,691,395

Patent Not Issued For This Number

3,691,396

# ELECTRONIC COMBINATION DOOR AND IGNITION LOCK

Gordon Hinrichs, Meguon, Wis., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 9, 1971, Ser. No. 170,191

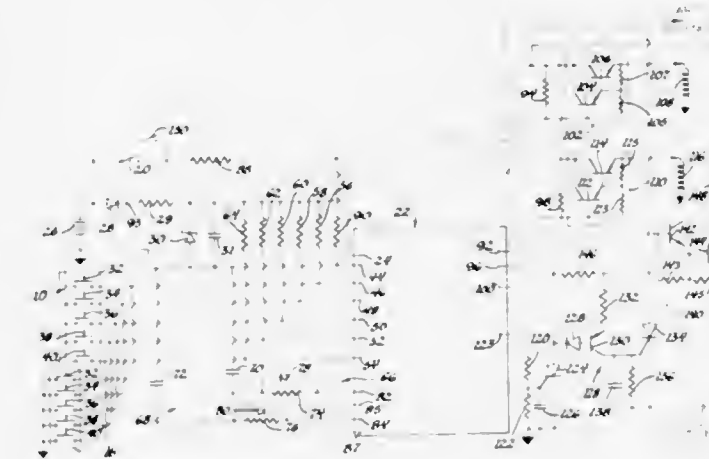
Int. Cl. H02J 3/14

U.S. Cl. 307—40

3 Claims

A circuit is disclosed for unlocking the door and energizing the ignition circuit of a motor vehicle in response to manual insertion of a predetermined 5-digit code selected from a choice of four digits. The circuit includes a four stage solid state register, a six stage counter and logic gates which are intercon-

nected to energize a door unlocking solenoid in response to insertion of the code in the proper sequence from a pushbutton keyboard unit located on the door of the vehicle. A five stage counter and additional logic means is provided which responds to actuation of any of the four digits out of sequence or to actuation of any digit not forming a part of the code to



reset the two counters and the register. Upon entry into the vehicle and closure of the ignition switch, the last stage in the door unlocking logic is disabled and a parallel connected logic stage is enabled. The operator must then reinsert the code from a dash mounted pushbutton keyboard in the proper sequence to arm the ignition circuit.

3,691,397

# CONTROL SYSTEM FOR BATTERY REGULATED POWER SUPPLY

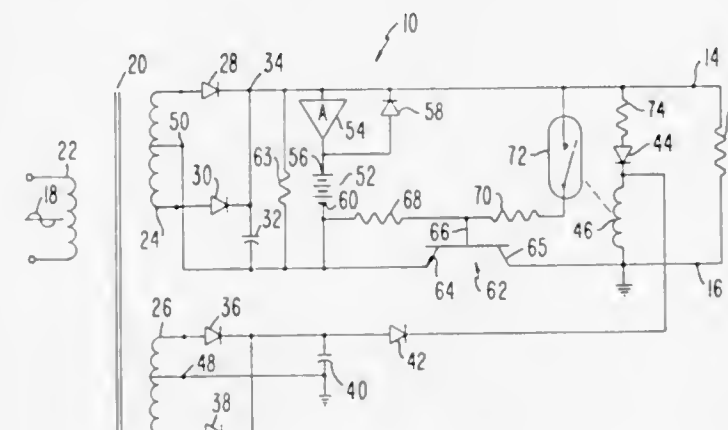
Jack Beery, Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 10, 1971, Ser. No. 114,206

Int. Cl. H01j 7/00

U.S. Cl. 307—66

4 Claims



A control system utilizing a magnetic reed switch responsive to the output of a battery regulated power supply for controlling an impedance means to maintain the voltage output of the supply within a predetermined range. In the preferred embodiment, the power supply transformer has a separate secondary winding for controlling the energization of a relay coil to initially activate the reed switch. When the a.c. power is removed, particularly under adverse conditions, the battery maintains the output supply voltage within a predetermined voltage range until the relay coil senses a predetermined minimum voltage and in response thereto opens the reed switch effectively changing the impedance value of the impedance means from a finite value to an infinite value.

3,691,399

# SAFETY CIRCUIT FOR ELECTRONIC MACHINE CONTROLS OF THE PLUG-IN MODULAR TYPE

Angelo N. Vinch, Warren, and David A. Kamulski, Detroit, both of Mich., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

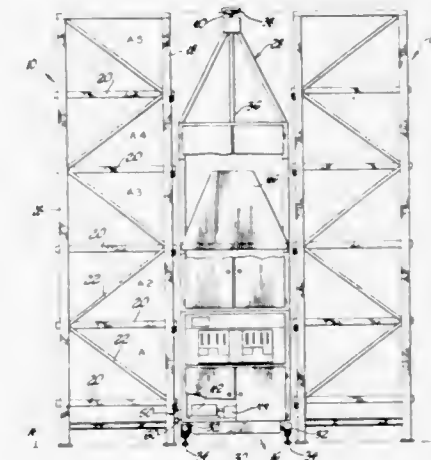
Filed Feb. 11, 1971, Ser. No. 114,511

Int. Cl. H02j

U.S. Cl. 307—149

13 Claims

A safety circuit for preventing an electronic control from supplying signals to operate a machine whenever a circuit card is removed from the control. Removal of a circuit card causes a flip-flop to be set and to remain in that state until the



3,691,398  
STATION ADDRESS AND CONTROL SYSTEM FOR MATERIAL HANDLING VEHICLES  
Arthur R. Burch, Plainwell, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed June 15, 1970, Ser. No. 45,981

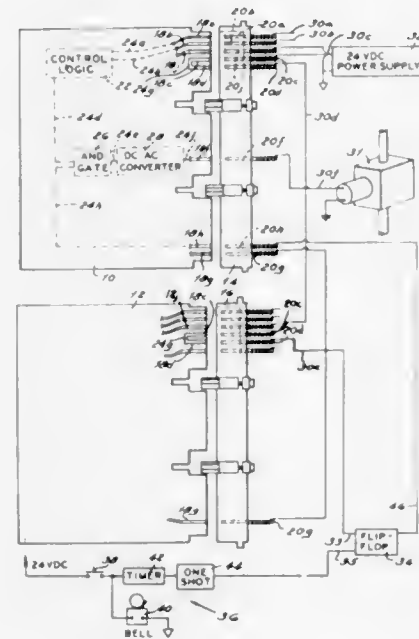
Int. Cl. H01h 35/00

U.S. Cl. 307—116

14 Claims



removed card is re-inserted, and a manually operated push button is actuated to reset the flip-flop. Operation of the push



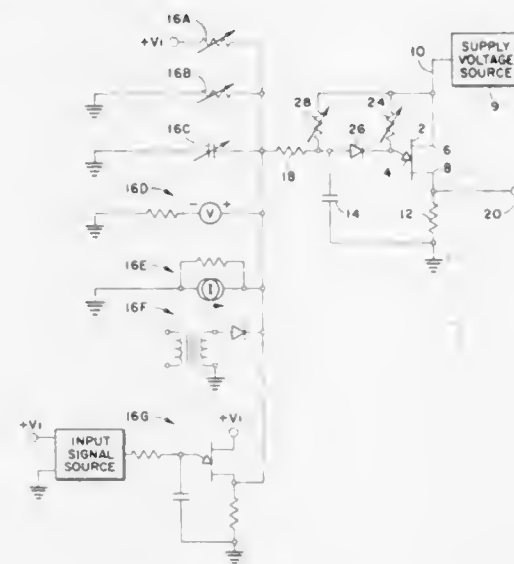
button sounds a warning bell and resets the flip-flop after a predetermined time.

3,691,400

**UNIUNCTION TRANSISTOR ARTIFICIAL NEURON**  
William J. Askew, Arlington, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed Dec. 13, 1967, Ser. No. 690,357  
Int. Cl. H03k 19/08

U.S. Cl. 307—201



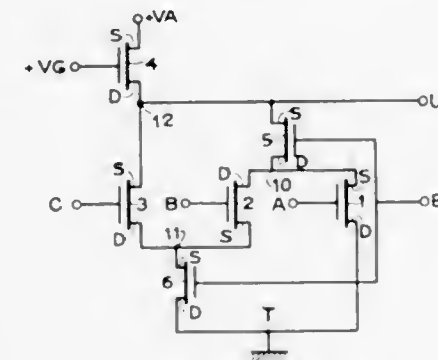
A circuit capable of large ranges of pulse rates and pulse widths and comprising a unijunction transistor having one base connected to a d-c source and the other base connected to ground through a resistor. An RC circuit consists of a second resistor and a capacitor connected between the d-c source and ground to determine pulse rate. A diode connects the junction between the second resistor and the capacitor to the emitter electrode to provide a discharge path for the capacitor through the transistor and the first resistor to ground to determine pulse width. A third resistor connects the d-c source to the emitter to bias the transistor to near its firing threshold. Input signal means supply an input signal to said junction to vary pulse rate.

**3,691,401**  
**CONVERTIBLE NAND/NOR GATE**  
Franco Forlani, Rho, and Gianpiero Rodari, Milan, both of Italy, assignors to Honeywell Information Systems Italia, Milan, Italy

Filed March 10, 1971, Ser. No. 122,714  
Int. Cl. H03k 19/34, 19/36

U.S. Cl. 307—215

8 Claims



A novel integrated circuit element for use as a dual functioning NAND/NOR gate for a digital data processing circuit is herein disclosed. The integrated circuit element contains a first set of field effect transistors that can be operatively connected in either series or parallel to thus perform a NAND or NOR function on any input signals. The operative interconnections are implemented by a second set of field effect transistors which provide either the series or parallel interconnections by appropriately responding to a command signal.

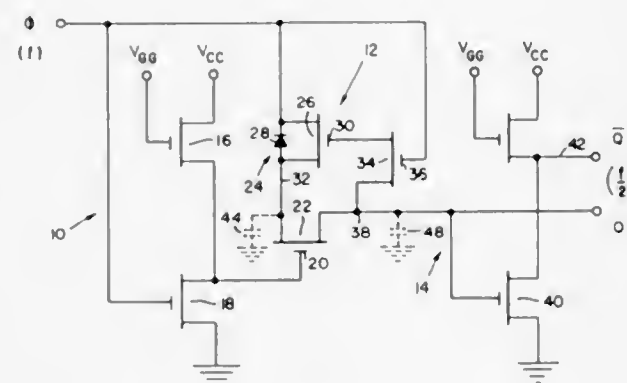
3,691,402

**FREQUENCY DIVIDER CIRCUIT**  
Alton O. Christensen, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed April 29, 1971, Ser. No. 138,416  
Int. Cl. H03k 21/00, 23/08

U.S. Cl. 307—225 C

6 Claims



A clockless FARMOST toggle flip-flop circuit is combined with a pair of ratioed inverters, a clock supply, and a DC power supply to form a simple, low-power frequency divider.

3,691,403

**OPTICALLY COUPLED LOGIC CIRCUIT**  
Reed A. Newmeyer, Glendale, Ariz., assignor to Solid State Devices, Inc., Tempe, Ariz.

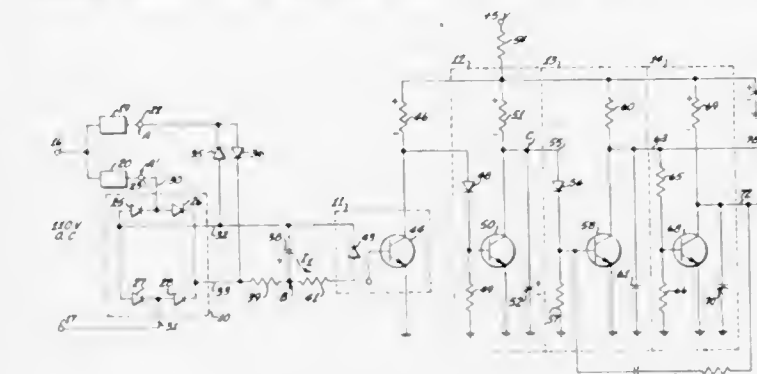
Filed Sept. 27, 1971, Ser. No. 183,965  
Int. Cl. H03k 3/42

U.S. Cl. 307—231

6 Claims

A full-wave bridge rectifier, an optical coupler, and a delay circuit provide electrical noise isolation between a pair of

signal-input terminals and a pair of output terminals. Output signals are provided at the output terminals whenever a full-



wave a.c. input signal or a half-wave signal is applied to either signal-input terminal.

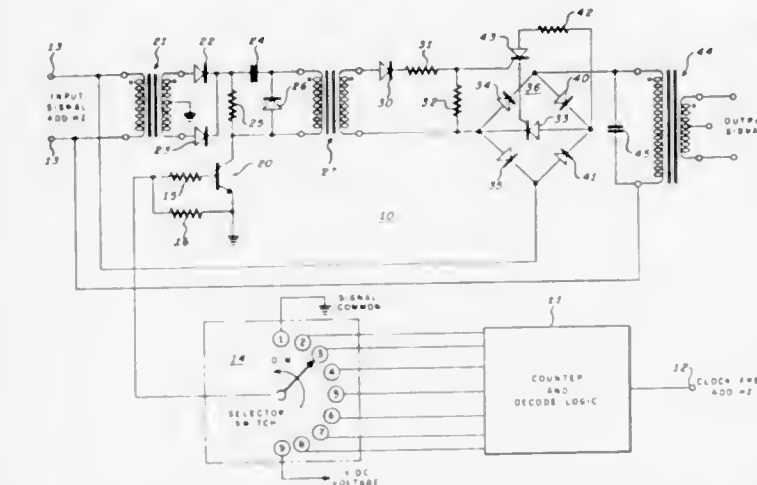
3,691,404

**VARIABLE DUTY CYCLE CONTROL CIRCUIT**  
Wilbert E. Swygert, Jr., Charlottesville, Va., assignor to Sperry Rand Corporation

Filed Sept. 1, 1971, Ser. No. 176,923  
Int. Cl. H02m 1/08, 5/16; H03k 17/28

U.S. Cl. 307—252 W

12 Claims



A control circuit includes counter and decode logic which divides down a basic clock frequency signal to provide control signals at specified pulse repetition rates and selectable duty cycles which are coupled through a selector switch and applied to a trigger generator circuit. An alternating signal to be controlled having a frequency equal to the frequency of the basic clock signal and being phase-locked thereto is applied to a full wave rectifier which is coupled to the trigger generator circuit. The control signals gate the trigger generator circuit into conduction to produce trigger pulses from the rectifier output signals. The alternating signal is simultaneously coupled through a transmission gate circuit which is gated into conduction by the application of the trigger pulses to SCRs within the transmission gate circuit. The duty cycle of the alternating output signal produced by the transmission gate circuit is proportional to the duty cycle of the selected control signal. Generation of the trigger pulses occurs substantially at the zero-crossovers of the alternating signal thereby eliminating the electro-magnetic interference coupled into the alternating output signal from the transmission gate circuit.

3,691,405

**THERMOCOUPLE RESPONSE TIME COMPENSATION CIRCUIT ARRANGEMENT**  
Roy Kendell, Harrow, England, assignor to Ultra Electronics Limited, London, England

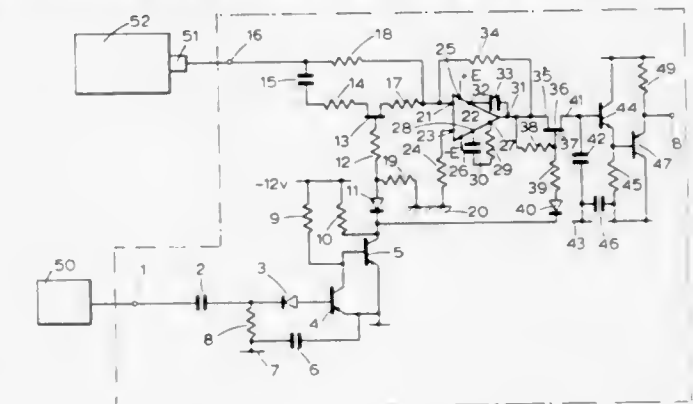
Filed Aug. 10, 1971, Ser. No. 170,459  
Int. Cl. F02g 3/00

U.S. Cl. 307—295

7 Claims

A circuit for use in a gas turbine engine system with a gas temperature-sensing thermocouple to compensate for time lag

in the response of the thermocouple to gas temperature change and, particularly, to compensate for increase in the time lag with decrease in engine speed. In addition to a continuous proportional signal, a periodical pulse signal is produced at a frequency proportional to the engine speed and an amplitude proportional to the change of thermocouple out-



put voltage over each period. The amplitudes of the two signals are sampled by a sample-and-hold circuit to produce an output. Since the frequency of the pulse signal is proportional to engine speed, sampling intervals are longer the slower the engine, with a corresponding increase in the amplitudes of the pulses. A change in thermocouple output voltage is thus accentuated more, the slower the engine speed.

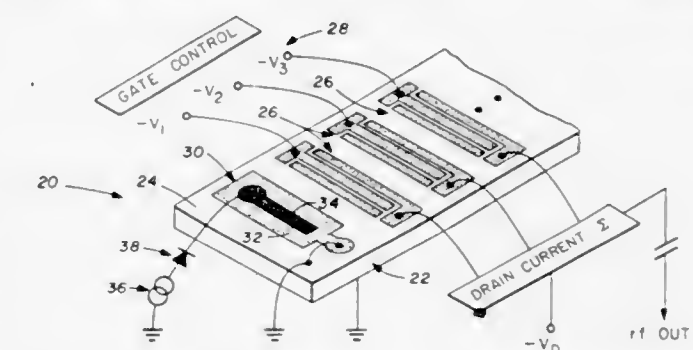
3,691,406

**SURFACE ACOUSTIC WAVE GENERATING SYSTEM**  
Jack P. Mize, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 13, 1971, Ser. No. 171,678  
Int. Cl. H03k 3/26

U.S. Cl. 307—308

25 Claims



In a surface acoustic wave generating system, a portion of a body of semiconductor material is incorporated in structure having electrical capacitance. The capacitive structure is energized to produce mechanical stress in the body of semiconductor material and thereby generate surface acoustic waves on a surface of the body of semiconductor material. In one embodiment of the invention the capacitive structure comprises one or more p-n junctions formed in the body of semiconductor material and intersecting the surface. In another embodiment the capacitive structure comprises one or more MOS capacitors disposed on the body of semiconductor material.

3,691,407

**TOY ELECTRIC POWER TOOL**  
Erich Klett, Stuttgart-Bad Cannstatt; Kurt Paule, Stuttgart, and Alfred Hettich, Echterdingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 17, 1970, Ser. No. 90,409  
Claims priority, application Germany, Nov. 18, 1969, P 19 57 896.2

U.S. Cl. 310—1

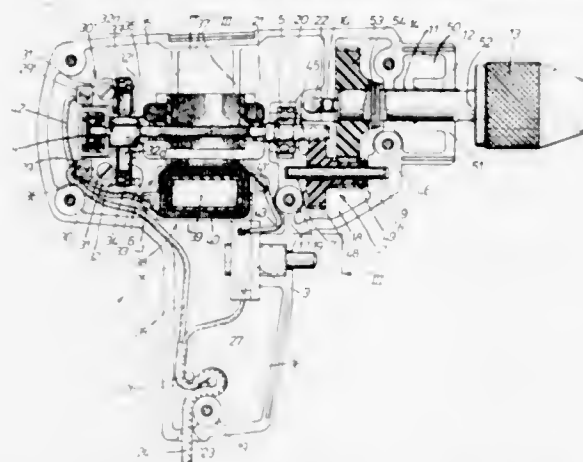
Int. Cl. H02k 7/14

4 Claims

A toy device which is a full-size replica of an electric power tool, particularly of a portable electric drill. Its housing is at



least partially transparent to permit observation of the assembled parts and/or the operation of its motor which is connectable only to a source of low-voltage current. The tool spindle of the toy device can carry a chuck, a gear, a grinding wheel, a pulley or it can be connected to another torque transmitting or



receiving component, for example, to the driven part of another toy device such as a toy saw, a toy grinder, a toy fan or the like. The housing of the toy device carries markings to facilitate the laying of conductors. When taken apart, the components of the toy device are stored in the compartments of a box.

3,691,408

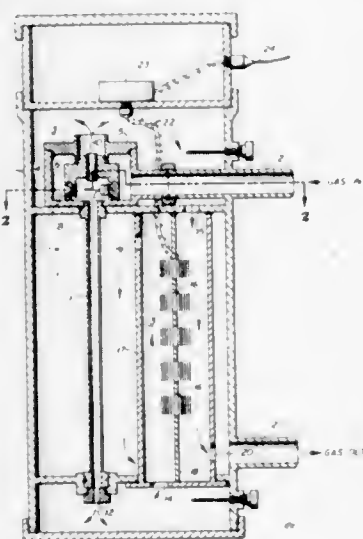
#### METHOD AND MEANS FOR THERMOELECTRIC GENERATION OF ELECTRICAL ENERGY

John B. Rosso, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.

Filed Jan. 27, 1970, Ser. No. 6,160  
Int. Cl. H02n 3/00

U.S. Cl. 310-4

9 Claims



A system is disclosed in which gas produced from a hydrocarbon reservoir is directed through a vortex tube to separate hot and cold fractions therefrom. The fractions are passed across heat exchange elements in contact with a thermopile to produce an electric current.

3,691,409

#### VIBRATION GENERATING DEVICE FOR VIBRATORY MACHINE

Hisamine Kobayashi, Nagoya, Japan, assignor to Kabushiki Kaisha Shikishima Tipton, Nagoya, Japan  
Division of Ser. No. 787,534, Dec. 27, 1968, abandoned. This application Nov. 2, 1970, Ser. No. 86,170

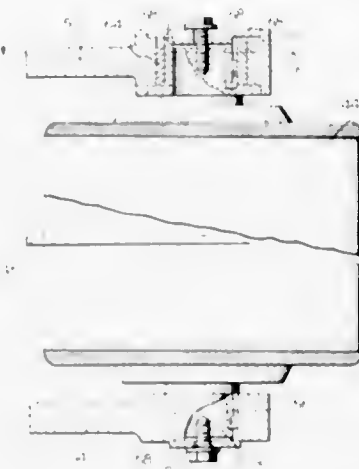
Claims priority, application Japan, Dec. 28, 1967, 42/84917; Apr. 20, 1968, 43/32278; May 10, 1968, 43/38696  
Int. Cl. H02k 7/06

U.S. Cl. 310-81

3 Claims

A vibration generating device for a vibratory machine has a reversible electric motor with at least two eccentric weights on

the opposite ends of the shaft thereof, the position of which is automatically changeable upon reversal of the direction of



rotation of the motor. The weights act during rotation of the motor to cause the machine to effect different vibratory motion depending on the direction of rotation of the motor.

3,691,410

#### METHOD OF OPERATING PIEZOELECTRIC TRANSFORMERS

Takehiko Kawada, Yokohama, Japan, assignor to Denki Onkyo Company, Limited, Tokyo, Japan

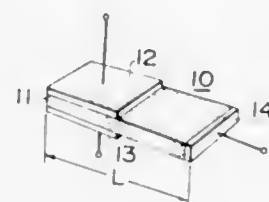
Filed Sept. 23, 1970, Ser. No. 74,549

Claims priority, application Japan, Sept. 29, 1969, 44/77675

U.S. Cl. 310-8.1

Int. Cl. H01v 7/00

7 Claims



In a high voltage generating device comprising a piezoelectric transformer having a pair of driving electrodes and an output electrode, and a driving source for applying a driving voltage across the driving electrodes, the frequency of the driving source is shifted a predetermined value about a frequency equal to  $n/2$  times (where  $n$  is an integer) of the natural frequency of the mechanical vibration of the piezoelectric transformer.

3,691,411

#### PIEZOELECTRIC QUARTZ ELEMENT

Albert Pavlovich Fedorkov, ulitsa Lobachevskogo, 18, kv. 14; Mikhail Iosifovich Yaroslavsky, Baikalskaya ulitsa, 30, korpus 2, kv. 44, and Galina Yankelevna Orlovskaya, Istrinskaya ulitsa, korpus 1, kv. 55, all of Moscow, U.S.S.R.

Filed Jan. 19, 1971, Ser. No. 107,708

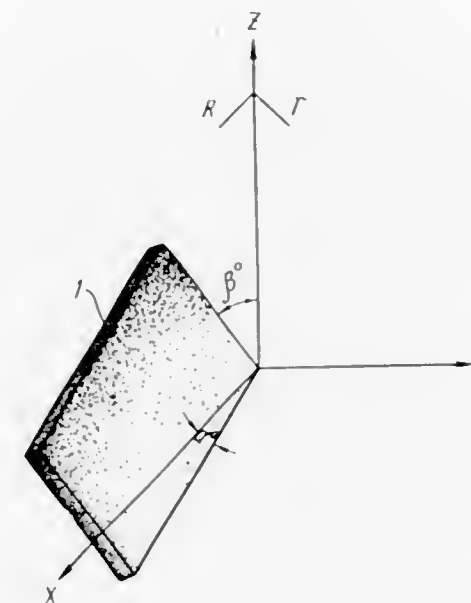
Int. Cl. H01v 7/00

U.S. Cl. 310-9.5

1 Claim

A piezo-electric quartz element, which is a parallelepiped cut from a slab of quartz crystal, having the XYZ coordinate axes. The edges of the parallelepiped perpendicular to the Y-axis of the crystal are turned through an angle of  $25^\circ$  to  $30^\circ$  relative to the X and Z axes of the crystal. Each of the major

faces of this parallelepiped makes an angle of  $64^\circ$  to  $73^\circ$  with the Z-axis of the crystal. With the faces of the element thus



oriented, the second and third order temperature coefficients of frequency are practically zero.

3,691,412

#### SUBSTANTIALLY RIPPLE-FREE FAST-RESPONSE VOLTAGE REGULATED DIRECT-CURRENT POWER SUPPLY

Theodore A. Hedman, Davenport, Iowa, assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed May 13, 1971, Ser. No. 142,973  
Int. Cl. H02m 7/20; H01m 3/32

U.S. Cl. 321-18

11 Claims



An alternating-current to direct-current power converter is provided in which alternating-current input is rectified to direct-current and the direct-current voltage is chopped into high frequency alternating current by a free-running, current-limited blocking oscillator. A delay network is provided for squelching high voltage spikes which would otherwise be induced by rate of change of current in transformer inductance. A clamp circuit is provided for holding transformer-generated energy, which is periodically released according to the demands of the power supply. High clamp clamping current-resistance losses are thus avoided.

3,691,413

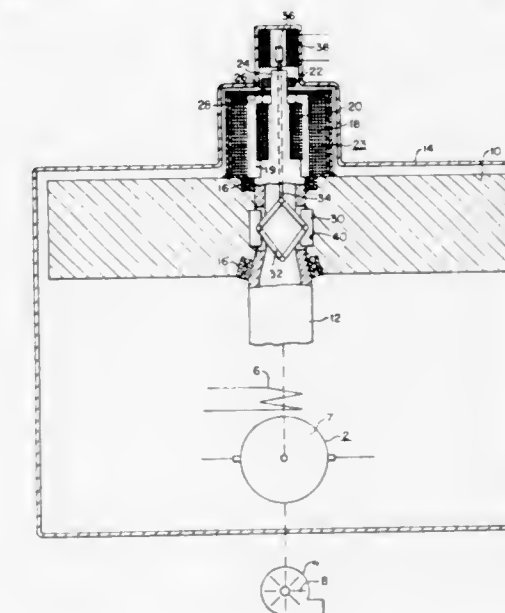
#### METHOD AND MEANS FOR STARTING HIGH INERTIA MOTORS

James G. Russell, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed April 16, 1970, Ser. No. 29,169  
Int. Cl. H02k 7/10

U.S. Cl. 310-41

4 Claims



The motor associated with a high inertia flywheel is started with the flywheel disconnected therefrom. A separate device is utilized to bring the flywheel to the speed of the motor, which device comprises a stator coil mounted integral with the flywheel and concentric with a rotor coil which is mounted integral with a shaft extending from the motor. Coupling bars are also provided internal of the flywheel for positively locking the flywheel to the motor shaft extension when same is brought to synchronous speed therewith.

3,691,414

#### STEPPING MOTOR FOR SMALL DRIVING POWER

Friedrich Kappius; Reiner Kristen; Hanns Ott, and Heinz Reinholdt, all of Nuernberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

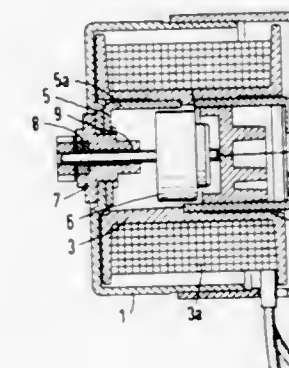
Filed May 21, 1971, Ser. No. 145,626

Claims priority, application Germany, June 3, 1970, P 20 27 138.9

Int. Cl. H02k 37/00

6 Claims

U.S. Cl. 310-49



The stator winding carrier of a stepping motor has guide slots formed in an axially extending bore formed therein. The guide slots extend substantially parallel to the axis of the carrier. A thrust bearing plate is formed in the carrier across the bore. The pole tips of each of first and second claw pole stator parts of different widths are fittedly inserted in corresponding guide slots of the carrier with the axial position of the rotor being determined by the plate.



3,691,415

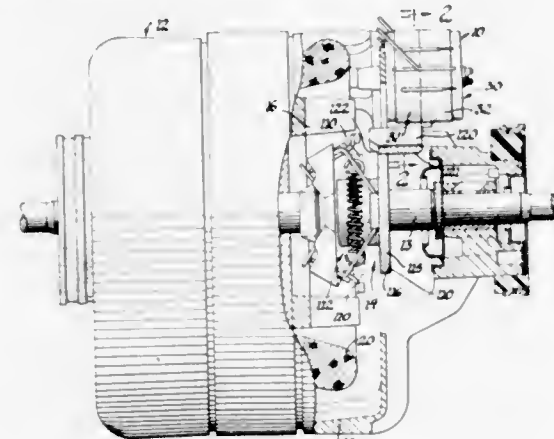
## DRYER MOTOR SWITCH AND ACTUATOR

James L. Hancock, Fairborn, and Joseph A. Bliss, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 16, 1971, Ser. No. 181,066

Int. Cl. H02k 11/00

U.S. Cl. 310—68 E



In the preferred form, this disclosure relates to a plunger actuated switch assembly for controlling energization of the start and run winding circuits of a dynamoelectric machine having a rotatable output shaft and a centrifugal governor for shifting a collar between a standstill position and a second position when the speed of the output shaft attains a predetermined value. The switch assembly includes a plunger or actuator having an elongated boot portion which rides on the annular periphery of the collar during standstill, the collar holding the switch means in a first position in which it effects energization of both the start and run windings. The switch plunger is spring biased toward a second position in which it effects energization of only the run windings and moves to its second position when the collar is shifted toward its second position.

3,691,416

## FLEXIBLE SUPPORT STRUCTURE FOR END WINDING CONNECTIONS

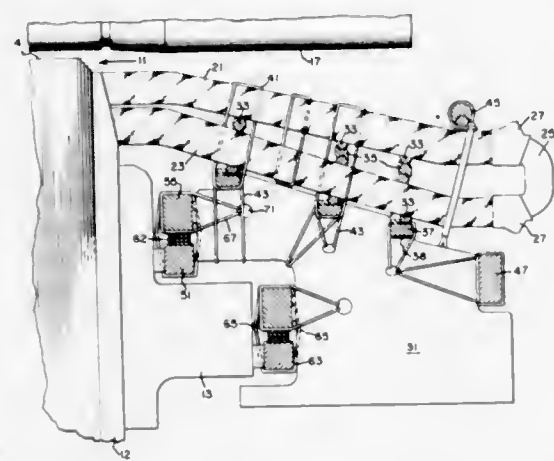
Karl F. Drexler, Burnt Hills, and Edward E. Gibbs, Schenectady, both of N.Y., assignors to General Electric Company

Filed June 14, 1971, Ser. No. 152,698

Int. Cl. H02k 3/46

U.S. Cl. 310—260

11 Claims



In a dynamoelectric machine, an insulating end winding support providing unidirectional flexibility in response to axial thermal excursions of the end winding members. An insulating support ring is concentrically mounted on the dynamoelectric machine while a floating outer support is fixed to the end winding members. A spacer is positioned between the first support ring and the floating support and a kinked tie wrap is secured around the first support ring, the floating outer support and the spacer. A second embodiment requires the use of

two concentrically mounted support rings with a spacer there between secured with a kinked tie wrap. A third embodiment discloses a flanged support ring and a "phase jumper" with a spacer there between secured by a kinked tie wrap.

3,691,417

## X-RAY GENERATING ASSEMBLY AND SYSTEM

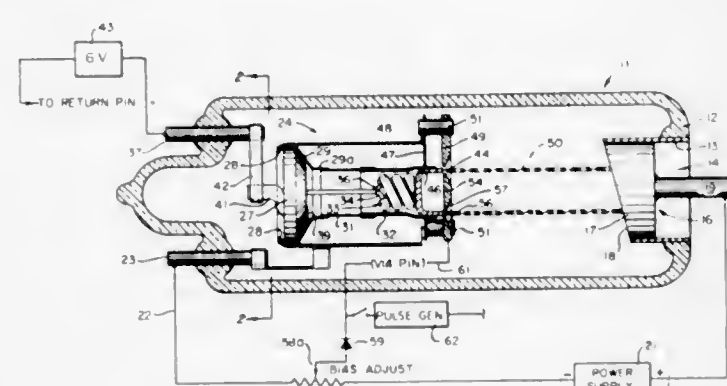
Nicholas M. Gralenski, Aptos, Calif., assignor to Watkins-Johnson Company, Palo Alto, Calif.

Filed Sept. 2, 1969, Ser. No. 854,393

Int. Cl. H01j 35/06, 35/14, 35/16

U.S. Cl. 313—57

1 Claim



An X-ray generating tube of a type employing a target of material disposed to be struck by high energy electrons to develop X-rays employs a hollow beam of electrons impinging upon the target. An oxide type, highly emissive cathode assembly provides much higher emission at lower temperatures and with prolonged life against the normally deleterious effects of ion bombardment using an ion collector surface within the hollow beam to intercept ions attracted into the beam in favor of the actively emitting portion of the cathode. A control grid serves to form the hollow beam, provide the shield, and when connected to a pulse generator, serves to modulate or pulse the beam.

3,691,418

## HIGH VOLTAGE SPARKPLUG

Otto Beesch, Stuttgart-Sonnenberg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Continuation-in-part of Ser. No. 20,275, March 17, 1970,

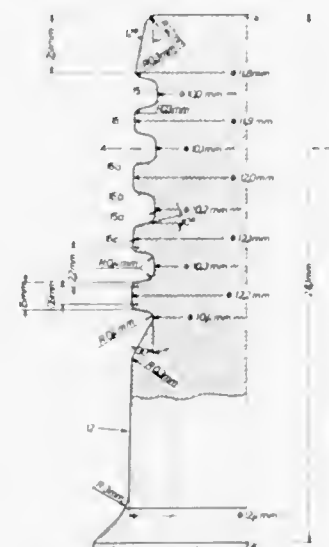
abandoned. This application July 22, 1971, Ser. No. 165,151

Claims priority, application Germany, March 18, 1969, P 19 13 582.1

Int. Cl. H01t 13/20

U.S. Cl. 313—131

9 Claims



A high-voltage sparkplug has an electrically conductive housing from one end of which a ground electrode projects. An elongated center electrode extends through the housing

and has a first end portion projecting from the one end and defining a spark gap with the ground electrode and a second end portion projecting from the opposite end of the housing and having a free terminal. An electrical insulator insulates the center electrode from the housing and includes an elongated insulator portion which surrounds the second end portion of the center electrode intermediate the housing and the terminal and is provided in its outer circumferential surface with a plurality of axially spaced grooves which serve to retard current leakage between the terminal and the housing by increasing the sparkover potential between the two. The grooves are provided at least in that part of the insulator portion which is nearer to the free terminal and are separated from each other by ribs having flanks which make with a plane normal to the axis of the insulator an angle of about 10°.

3,691,419

## IGNITER PLUG WITH IMPROVED ELECTRODE

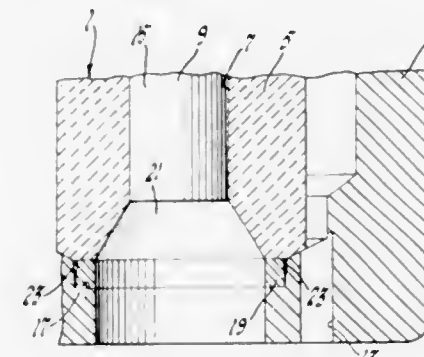
Donald R. Van Uum, Davison, and John I. Jalbing, Millington, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 25, 1971, Ser. No. 118,862

Int. Cl. H01t 13/20

U.S. Cl. 313—138

3 Claims



This invention relates to an igniter plug adapted for continuous sparking operation for extended periods of time at temperatures as high as about 2,000° F. wherein the shell body constituting the ground electrode is provided with a ductile iridium metal insert ring having high oxidation and spark erosion resistance, the insert being positioned in the spark gap area and being either electron or laser beam welded to the shell in order to produce a narrow weld zone of well-alloyed material with minimum recrystallization of the insert metal.

3,691,420

Patent Not Issued For This Number

3,691,421

## DOUBLED LAYER HEATER COATING FOR ELECTRON DISCHARGE DEVICE

John J. Decker, and Donald R. Kerstetter, both of Emporium, Pa., assignors to GTE Sylvania Incorporated

Filed July 15, 1971, Ser. No. 162,992

Int. Cl. H01j 1/14, 19/06

U.S. Cl. 313—345



A double layer heater coating on a wire support comprises a first layer of aluminum oxide and an overcoating layer com-

prising particles of aluminum oxide, zirconium oxide or beryllium oxide overcoated with metallic tungsten which in turn is overcoated with a layer of a different material whereby oxidation of the tungsten is substantially prevented. The different material can be aluminum oxide, zirconium oxide, platinum, or iridium.

3,691,422

## CIRCUIT ARRANGEMENT FOR GENERATING A SAWTOOTH CURRENT IN A LINE DEFLECTION COIL FOR A DISPLAY TUBE CONVEYING A BEAM CURRENT AND FOR GENERATING AN EHT

Antonius Boekhorst; Peter Johannes Hubertus Janssen, both of Emmasingel, Eindhoven, Netherlands, and Jorg Wolber, Hamburg, Germany, assignors to U. S. Philips Corporation, New York, N.Y.

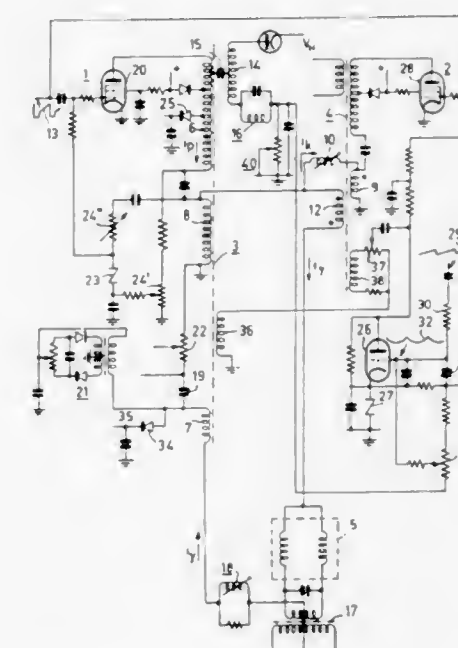
Filed Feb. 18, 1970, Ser. No. 12,346

Claims priority, application Netherlands, Feb. 21, 1969, 6902807

Int. Cl. H01j 29/70

U.S. Cl. 315—19

15 Claims



A circuit for generating both line deflection current and final anode voltage that has main and auxiliary generators. The main generator supplies part of the deflection current and the anode voltage, while the auxiliary generator supplies the remaining part of the deflection current. The main generator is stabilized against anode voltage variations as a result of the beam current variations and component ageing, its operating line being located just above or at the limit of saturation. The auxiliary generator is stabilized against supply voltage variations and its stabilizing circuit can also be modulated by a parabola voltage of field frequency in order to correct the East-West pincushion distortion.

3,691,423

## METHOD OF IMPROVING THE RESOLUTION OF AN IMAGE CONVERTER SYSTEM

Mituhiko Yoshikawa; Hiroshi Nibel, both of Mobara, and Hiroichi Shibasaki, Chiba-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 627,076, March 30, 1967, abandoned.

This application Dec. 30, 1969, Ser. No. 889,354

Claims priority, application Japan, April 6, 1966, 41/21197

Int. Cl. H01j 29/70

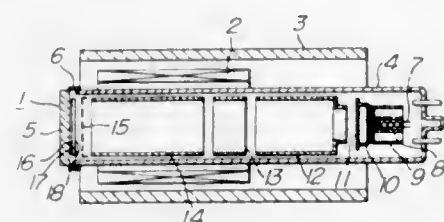
U.S. Cl. 315—31 TV

5 Claims

A method of improving the resolution of an image converter system having a pickup tube is related to the selective adjustment of currents applied to an electromagnetic focusing



means and an electrostatic focusing means so that the electromagnetic focusing means provides no more than 80 percent



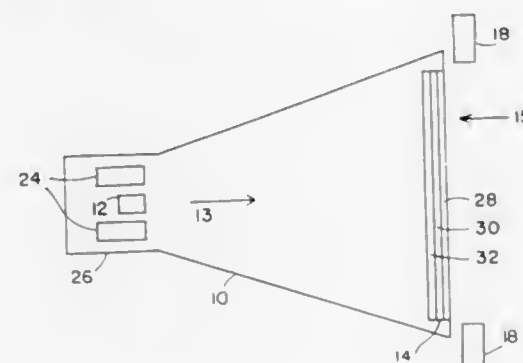
and not less than 20 percent of the total focusing field provided by the electromagnetic means and the electrostatic means in combination.

**3,691,424**  
**TARGET SCREENS FOR CATHODE RAY TUBES**  
**UTILIZING INDEX GENERATING MATERIALS THAT**  
**EMIT X-RAYS**

David M. Goodman, 3843 Debra Court, Seaford, N.Y.  
Division of Ser. No. 800,854, March 20, 1959, Pat. No.  
3,081,414. This application Jan. 27, 1961, Ser. No. 85,353  
Int. Cl. H01j 29/70

U.S. Cl. 315-21 C

7 Claims

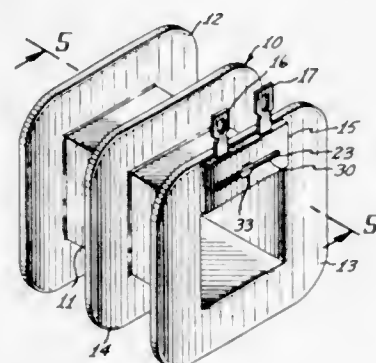


Beam-index cathode ray tubes comprising target screens structured with index generating materials that emit X-rays which are detected to provide index signals indicative of the position of impact of the cathode rays on the screen. The screen is comprised of special X-ray emitting regions, including thin narrow strips in register with different color-producing phosphors. Embodiments are disclosed with and without an electron-transparent aluminum layer overlaying the phosphors and the index strips.

**3,691,425**  
**TRANSFORMER WITH A FUSE**  
Arthur G. Weyrich, Rolling Meadows; Richard R. Bertrand, Skokie, and Edwin D. Karinski, Chicago, all of Ill., assignors to Certron Corporation, Anaheim, Calif.  
Filed April 15, 1971, Ser. No. 134,340  
Int. Cl. H02h 7/04

U.S. Cl. 317-15

9 Claims



A plastic bobbin-like body for a fused coil, such as a primary winding of a power transformer, is provided with end

flanges. A fuse-mounting groove is provided on the outside of a thickened section of one flange. A fuse strip made of a metal having a suitably low melting point is placed in the groove and is held in position by barbed connecting lugs inserted into passages which run parallel to the flange walls to the bottom of the groove. The coil is connected in series with the fuse through the lugs. A large cavity around the center of the groove allows liquid metal to quickly fall away from the fuse when excessive current heats the fuse to its melting temperature. Alternatively, the lugs may be provided with tabs which project out of the thickened section. The tabs are then rolled over the fuse mounted on the outside of the thickened section.

**3,691,426**  
**CURRENT LIMITER RESPONSIVE TO CURRENT FLOW**  
**AND TEMPERATURE RISE**

Roy J. Mankovitz, Tarzana, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Oct. 26, 1971, Ser. No. 192,232  
Int. Cl. H02h 3/08, 5/04

U.S. Cl. 317-23

10 Claims



A current limiting circuit for controlling the flow of current in which a primary current conducting path includes the emitter-collector circuit of a power transistor. A driver transistor provides base current to the power transistor, thereby controlling the magnitude of current flow through the power transistor. A constant current is applied to the base electrode of the driver transistor. Shunt means are provided which are responsive to the magnitude of current flowing in the power transistor for shunting a portion of the constant current away from the base electrode of the driver transistor whenever the magnitude of the current in the power transistor exceeds a predetermined value, thereby diminishing the output current from the driver transistor and thus the base current in the power transistor.

**3,691,427**  
**PROTECTIVE CIRCUIT FOR AN ALL STAGE DIRECT-**  
**COUPLED TRANSISTOR OUTPUT TRANSFORMERLESS-**  
**OUTPUT CONDENSERLESS AMPLIFIER**

Masatsugu Honda, Odawara, and Masanobu Shinozaki, Sagami-hara, both of Japan, assignors to Victor Company of Japan, Ltd., Kanagawa-ku, Yokohama, Kanagawa-ken, Japan

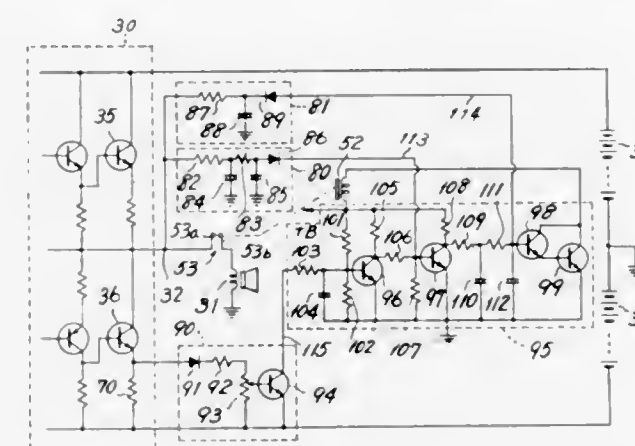
Filed March 29, 1971, Ser. No. 128,865  
Claims priority, application Japan, March 29, 1970, 45/29640; June 14, 1970, 45/51252  
Int. Cl. H02h 3/20

U.S. Cl. 317-31

6 Claims

A protective circuit comprises a detecting circuit for detecting an unbalanced DC voltage developed in an output of an all stage direct-coupled transistor output transformerless-output condenserless amplifier and means for disconnecting a load

from the amplifier and thereby protecting the load when a detected output is developed in the detecting circuit. The means

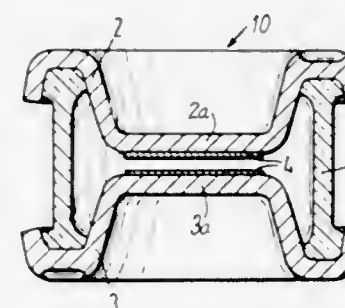


for protection is so constructed that it will operate irrespective of polarity of the unbalanced DC voltage.

**3,691,428**  
**VOLTAGE OVERLOAD ARRESTER**  
Alex Bahr, and Gerhard Peché, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft  
Filed July 13, 1970, Ser. No. 54,312  
Claims priority, application Germany, July 14, 1969, P 19 35 734.7  
Int. Cl. H02h 1/04

U.S. Cl. 317-61

10 Claims

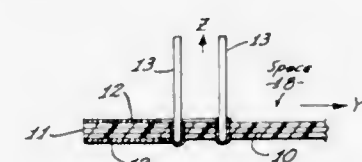


A voltage overload arrester comprising a pair of shaped electrodes having surface portions in spaced adjacent relation to each other and gas tightly sealed in an insulating housing. The adjacent surface portions of each electrode are provided with a thin coating of a sintered mixture of a material having a high thermal electron-emission ability and including Ni, a mixture of Ni and ThO<sub>2</sub>, and a mixture of Ni, MgO and ThO<sub>2</sub>.

**3,691,429**  
**MOUNTING STRUCTURE FOR MINIATURE CIRCUIT**  
**ELEMENTS**  
Peter S. Glaser, Culver City, Calif., assignor to Electronic Arrays, Inc., Mountain View, Calif.  
Filed March 18, 1971, Ser. No. 125,585  
Int. Cl. H05k 1/18, 3/32

U.S. Cl. 317-101 CC

5 Claims

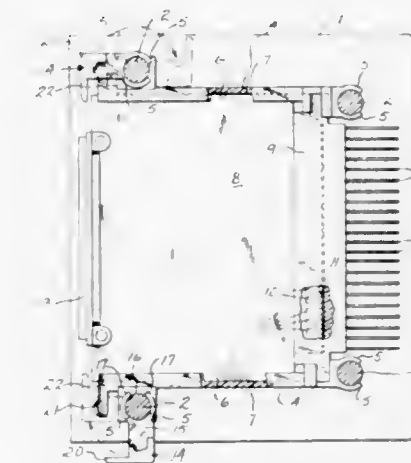


LC circuits are mounted on a board in rows of sockets along rows of pins on the same side of the board, and interconnected by strung wires. The sockets are interconnected with the pins transverse to the direction of the rows on the other side of the board.

**3,691,430**  
**CIRCUIT BOARD ASSEMBLY WITH POSITIVE LATCH**  
Lawrence F. Freitag, Bayside, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.  
Filed April 29, 1971, Ser. No. 138,419  
Int. Cl. H02b 1/02

U.S. Cl. 317-101 DH

7 Claims

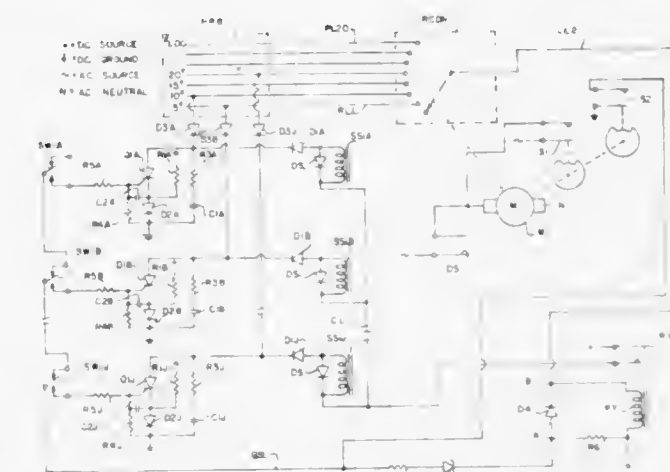


A circuit board assembly has a series of sets of parallel spaced and oppositely disposed guide rails with integral mounting portions that are snapped on and partially encircle support bars. Each set of guide rails supports an electrical connector for a circuit board at one end. Mirrored longitudinal channels are formed in the guide rails. Latch members are adapted to be pivotally affixed to said support bars between adjacent sets of said guide rails in order that they may be moved to an open or closed position. When in an open position the latch members allow the circuit boards to be individually inserted into the mirrored channels of the sets of guide rails, and into engagement with the corresponding electrical connector. The latch members are then pivoted to a closed position with overlying portions of the latch members obstructing the channels of the guide rails to prevent unintentional removal of the inserted circuit boards.

**3,691,431**  
**INTERLOCKED SELECTION CONTROL APPARATUS**  
William M. Hendrickson, St. Louis, and Patrick J. Davis, Florissant, both of Mo., assignors to UMC Industries, Inc., New York, N.Y.  
Filed Sept. 1, 1971, Ser. No. 176,855  
Int. Cl. H03k 17/06

U.S. Cl. 317-137

8 Claims



Apparatus especially useful for vending selection control. A plurality of triggerable semi-conductor current switching devices are provided for selectively energizing a plurality of vend control means each causing the dispensing of a respective article. The switching devices are triggered by respective ones of selector switches which draw current through a source having a predetermined source impedance. A respective diode



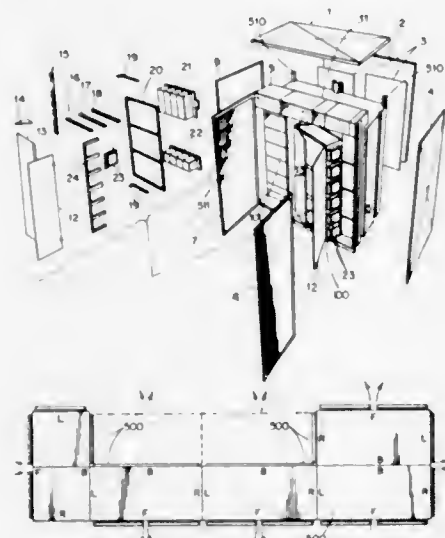
connects each of the switching devices to the source so that conduction through any one of the devices immediately shunts the source thereby preventing triggering of any of the other devices, preventing selection of more than one article for each vend operation.

### 3,691,432 COMPUTER PACKAGE CABINET AND MODULE SYSTEM

John Eric Edfors, Townsend; Domenic Romano, Chelmsford, and Victor Quattrini, Holliston, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.  
Filed Nov. 12, 1970, Ser. No. 88,899  
Int. Cl. H05k 5/02

U.S. Cl. 317-100

10 Claims

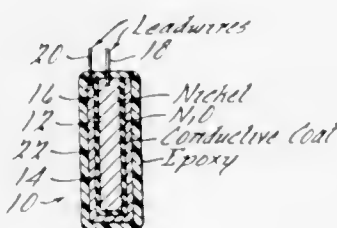


The present invention relates in general to improved modular means for packaging electronic equipment and more particularly to the application of such packaging to the computer. The modular packaging means house a multiplicity of plug-in units, electrical connectors, associated wiring and cooling means and can be arranged in a system of abutting modular package means characterized (a) by the one sided access of each of the plug-in units and their appurtenances, (b) for their easy testing and replacement in the field from outside the package means and without disturbing the position of any of the modular package means, (c) for their space saving characteristics, (d) and by the flexibility of internal electrical connection of the plug-in units from plug-in unit to plug-in unit and from modular package to modular package.

3,691,433  
ALLOYED METAL OXIDE CAPACITOR  
William W. Garstang, Belgium, Wis., assignor to Syncro Corporation, Oxford, Mich.  
Division of Ser. No. 736,672, June 13, 1968, Pat. No. 3,561,085. This application Sept. 14, 1970, Ser. No. 80,516  
Int. Cl. H01g 9/04, 3/075

U.S. Cl. 317-230

4 Claims

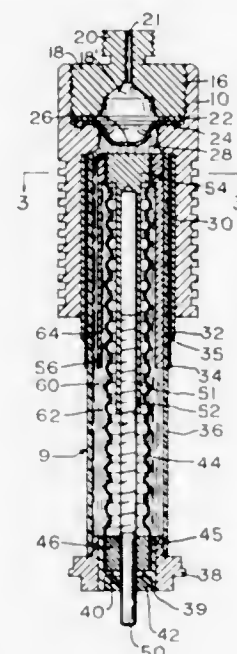


A novel construction for a nickel oxide capacitor including the use of a novel alloy and a novel method of manufacturing a nickel oxide capacitor.

3,691,434  
HIGH TEMPERATURE VARIABLE CAPACITOR  
Frank G. J. Mezey, Centerport, N.Y., assignor to American Technical Ceramics, Huntington Station, N.Y.  
Filed June 28, 1971, Ser. No. 157,099  
Int. Cl. H01g 1/08

U.S. Cl. 317-243

9 Claims

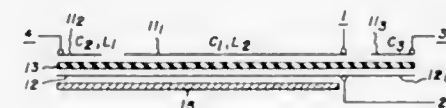


A variable capacitor has an electrically conductive piston secured to one end of a metal bellows in a dielectric cylinder which carries a metal sleeve and comprises a first electrical terminal. The second end of the bellows is fixed to a second electrical terminal which closes one end of the cylinder. A liquid dielectric fills the chamber inside the cylinder and flows through a groove in the piston when the piston moves axially contracting or expanding the bellows. A flexible diaphragm closes the second end of the chamber.

3,691,435  
WOUND IMPEDENCE DEVICE  
Oliver H. Winn, Cazenovia, N.Y., assignor to General Electric Company  
Filed Nov. 23, 1970, Ser. No. 91,674  
Int. Cl. H01g 1/00, 1/16

U.S. Cl. 317-256

3 Claims



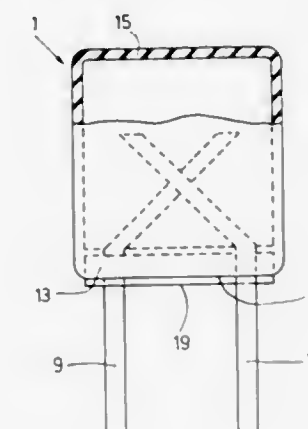
A cap-reactor power groove ballast circuit of the type including first and second, spaced-apart, elongated tape-like conductive foils having intervening layers of electrical insulation rolled together to form a compact cylindrical roll having combined capacitor-inductor-reactor characteristics. One of the spaced-apart conductive foils has its width separated into multiple, electrically isolated, strip-like separate foil areas coacting with the common remaining conductive foil to function in the manner of multiple capacitor-inductor components electrically interconnected in circuit relationship. By appropriate connection of terminal tap points to the structure, the device can be made to operate in the manner of a power groove ballast circuit having improved wave shaping characteristics.

3,691,436  
ELECTRICAL CIRCUIT ELEMENT HAVING A DIAGONAL ABUTMENT STRIP, AND METHOD OF MANUFACTURING THE SAME  
Andries Cornelis Majiers, and Jacob Ketel, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.  
Filed May 11, 1971, Ser. No. 142,240  
Claims priority, application Netherlands, May 22, 1970, 7007403

U.S. Cl. 317-261

Int. Cl. H01g 1/03

4 Claims

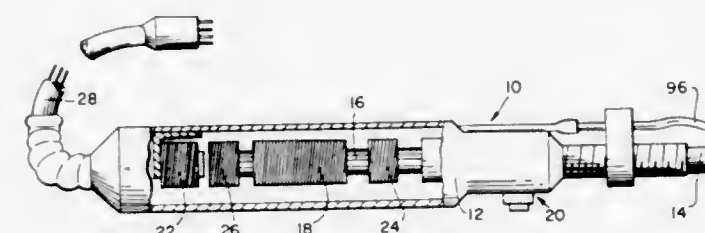


An electrical circuit element having an abutment strip of insulating material extending diagonally between the connecting wires and engaging, with its flat sides, the connecting wires and more or less adjoining the circuit element. The circuit element is covered by an insulating lacquer extending from the circuit element up to the abutment strip, but does not cover that side of the abutment strip which is remote from the circuit element.

3,691,437  
CONTROL MEANS FOR ELECTRIC TOOLS  
Arne Hilding Andersson, 5 Videgaten, and Lennart Axel Durén, 23 Fagelgaten, both of Nyashamn, Sweden  
Continuation-in-part of Ser. No. 9,703, Feb. 9, 1970, abandoned. This application Oct. 4, 1971, Ser. No. 186,260  
Int. Cl. H01v 9/00

U.S. Cl. 318-118

9 Claims

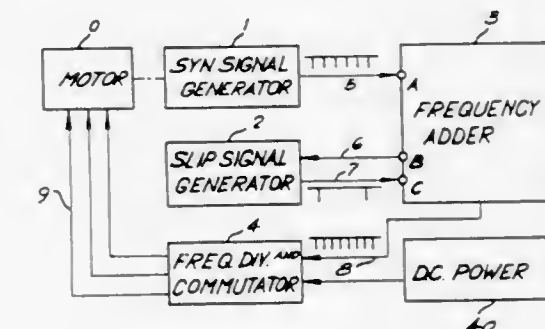


A magnetostrictive transducer is vibrated at an ultra-sonic frequency by a driver winding supplied with energizing current from a generator, the output level of which is changed through a signal responsive device. The oscillating magnetic field of the driver winding is disturbed by short-circuiting of a control winding in the field. The disturbance is sensed by detector means to produce a signal fed to the signal responsive device.

3,691,438  
SIGNAL GENERATOR FOR ELECTRONIC COMMUTATION OF A MOTOR  
Robert Favre, 36 Rue du Servan, 1000, Lausanne, Switzerland  
Continuation-in-part of Ser. No. 674,968, Oct. 12, 1967, abandoned. This application July 6, 1970, Ser. No. 52,669  
Int. Cl. H02k 29/00

U.S. Cl. 318-138

8 Claims

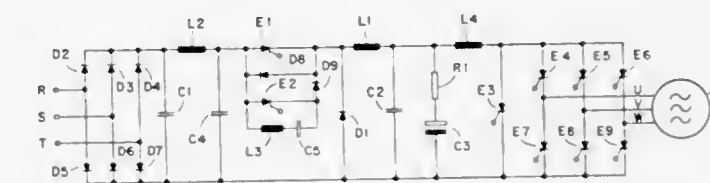


Control signals for electronic commutation of an electric motor have three related frequencies, namely a "synchronous" frequency proportional to the speed of rotation of the motor, a control or "resultant" frequency representing the frequency of pulses controlling commutation of the motor and hence characteristic of the rotation or commutation of the motor field and a "slip" frequency representing the difference between the "resultant" frequency and the "synchronous" frequency and hence characteristic of the "slip" of the rotor of the motor with respect to the rotation or commutation of the motor field. A signal generator for controlling the commutation of an electronically commutated motor comprises means for individually generating two of these three characteristic frequencies and means for electronically deriving the third characteristic from the other two.

3,691,439  
CONTROL ARRANGEMENT FOR A THREE PHASE MOTOR WITH INTERMEDIATE D.C. REGULATION  
Arne Jensen, and Tom Kastrup Petersen, both of Nordborg, Denmark, assignors to Danfos A/S., Nordborg, Denmark  
Continuation of Ser. No. 792,744, Jan. 21, 1969, abandoned. This application Jan. 28, 1971, Ser. No. 110,666  
Int. Cl. H02d 5/40

U.S. Cl. 318-227

5 Claims



The invention relates to a motor control which comprises a D.C. voltage regulator and an inverted converter. The voltage regulator has a periodically actuable switch and filter means are provided between the voltage regulator and the converter for smoothing the voltage from the regulator. A series arranged resistor and condenser are disposed in parallel to the condenser of the filter means for damping pulsations in the voltage regulator output which cause motor torque fluctuations.



3,691,440

## OVERSPEED DETECTOR

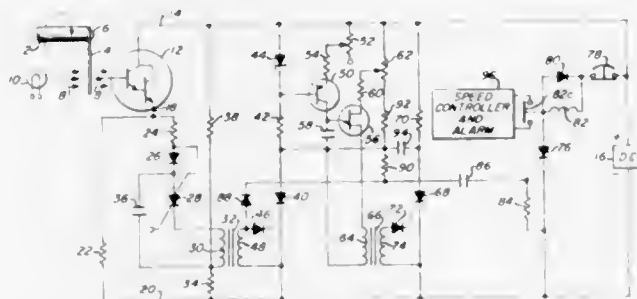
Logan D. Haddock, Provo, Utah, assignor to United States Steel Corporation

Filed April 16, 1971, Ser. No. 134,563

Int. Cl. A02p 5/16

U.S. Cl. 318—313

4 Claims



A shaft overspeed detector has a shaft-mounted strip which periodically interrupts a light beam falling on a photosensitive cell as the shaft rotates. An electrical circuit provides a time-based pulse for each interruption and if a second interruption occurs before the time-based pulse has risen to a cutoff level, a speed controller is activated.

3,691,441

## POWER CONNECTION SELECTION APPARATUS

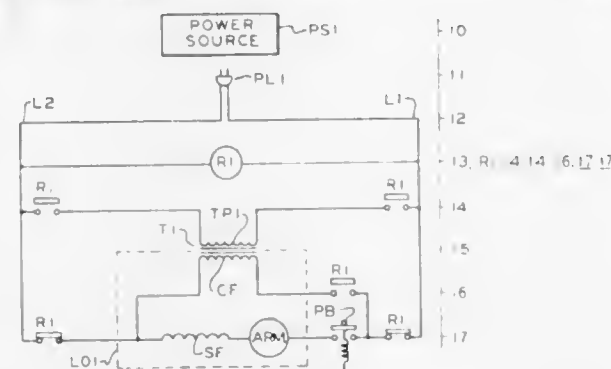
Werner Hasselbach, Ann Arbor, Mich., and Peter L. Pomplil, Toledo, Ohio, assignors to Sel-Con, Inc., Ann Arbor, Mich. and Verti-Case, Inc., Toledo, Ohio, part interest to each

Filed Feb. 19, 1971, Ser. No. 116,934

Int. Cl. H02k 23/64

U.S. Cl. 318—441

12 Claims



In a preferred embodiment the invention is illustrated in apparatus for improving the power factor and efficiency of a universal motor when the motor is to be used with either an alternating or direct current power source. The universal motor disclosed has a series winding, a compensating winding and an armature. The series winding and the compensating winding are connected in series with the armature. A first circuit includes a transformer having a primary winding and having the compensating winding of the motor as a secondary winding. A second circuit has the series winding and the armature connected in series. The output of a power source is sensed and connects the first circuit to the power source when alternating current is supplied, and connects the second circuit to the power source when direct current is supplied.

3,691,442

## CONTROL CIRCUIT FOR AUTOMATICALLY SHUTTING OFF THE WINDSHIELD WIPERS SUBSEQUENT TO WASHER OPERATION

Leonard J. Sheldrake, Noblesville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 25, 1971, Ser. No. 174,603

Int. Cl. H02p 3/16

U.S. Cl. 318—443

3 Claims

In a preferred form, this disclosure relates to an electrical control system having a control circuit means for initiating

conjoint operation of a windshield wiper unit and washer unit for an automotive vehicle in response to momentary depression of a washer button switch and for automatically shutting off the wiper unit subsequent to the cessation of washer operation. The electrical control system comprises a power source, an electric motor means, an electrically operated washer unit



and a first control circuit means including a manual switch for effecting either low or high speed continuous operation of the wipers and a second control circuit means including a manually operated washer switch for controlling operation of the washer unit and for initiating conjoint operation of the wiper unit with the wiper unit shutting off automatically subsequent to the cessation of washer operation.

3,691,443

## WINDSHIELD WIPER MECHANISM

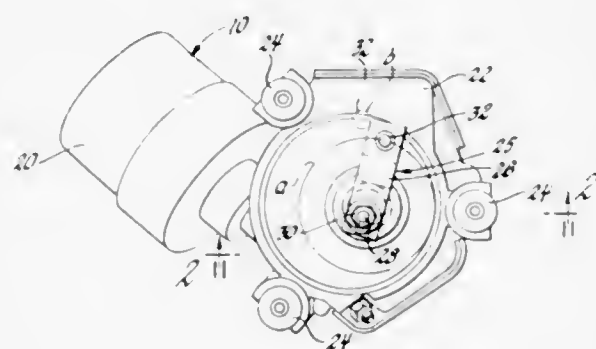
Dale F. Hammer, Bellbrook, and Leo E. Bischoff, Centerville, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 1, 1971, Ser. No. 176,824

Int. Cl. H02p 3/00

U.S. Cl. 318—443

3 Claims



This disclosure relates to an actuating mechanism for oscillating a windshield wiper through an outboard and inboard stroke during each cycle of operation during running operation and for moving the wiper to a depressed, park position when wiper operation is being terminated. The actuating mechanism includes an electric motor, an energizing circuit for the electric motor including a park switch and a momentarily depressible manual on and off switch, a rotatable driving member connected with the motor, a variable throw crank means eccentrically journaled within the driving member and a coupling means for drivingly interconnecting the crank means to the driving member during running operation to

3,691,445

## EXCESSIVE MOTOR LOAD INDICATOR AND VOLTAGE CUT-OUT DEVICE

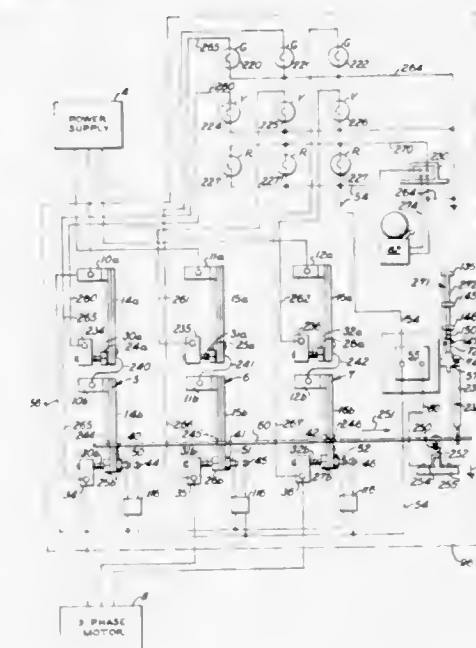
Thomas Moore, 8737 Leavitt Road, Elyria, Ohio

Continuation-in-part of Ser. No. 74,277, Sept. 22, 1970, which is a continuation-in-part of Ser. No. 773,923, Nov. 6, 1968, Pat. No. 3,530,337. This application March 4, 1971, Ser. No. 121,028

Int. Cl. H02h 7/08

U.S. Cl. 318—472

3 Claims



oscillate the wipers through its cycle of operation and for disconnecting the driving connection therebetween to effect an increase in the throw of the crank means to move the wiper to the depressed park position when wiper operation is being terminated. The coupling means includes a drive pawl having an upstanding lug and a latch supported for limited universal movement and which is biased toward a first position for intercepting the lug of the drive pawl to effect interruption of the driving connection between the crank means and the driving means to substantially arrest rotation of the crank means whereby continued rotation of the driving member will vary the throw of the crank means which in turn will move the latch means to open the park switch to de-energize the wiper motor when the throw of the crank means is substantially a maximum. The electric motor is energized by a relay means which is operable to move the latch laterally to a position where it is disengaged from the lug of the drive pawl and releases the park switch for movement to its closed position. When the manual on-off switch is momentarily depressed and then released a latch retarding means engages the latch to retard the movement of the latter towards its first position as the lug of the pawl is being disengaged therefrom whereby energization of the wiper motor through a single cycle of operation is assured.

3,691,444

## REMOTE CONTROLLED TELEVISION TUNER MOTOR SWITCHING CIRCUIT

Lyle Bruce Juroff, Greenwood, and Lawrence Mark Lunn, Indianapolis, both of Ind., assignors to RCA Corporation

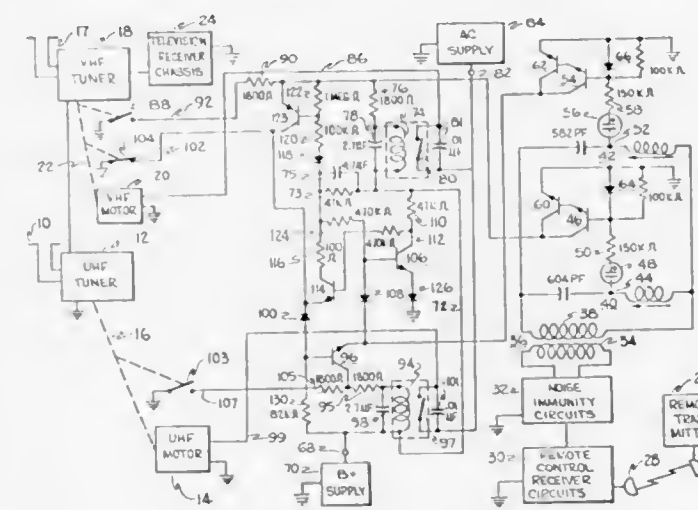
Division of Ser. No. 36,149, May 11, 1970, Pat. No. 3,648,135.

This application Oct. 12, 1971, Ser. No. 188,068

Int. Cl. A05d 3/00

U.S. Cl. 318—467

7 Claims



A remote controlled television receiver includes a VHF and a UHF tuner each having tunable resonant circuits which are adjusted by the gear train of a remotely controlled motor. The tuners are connected so that during UHF operation the VHF tuner provides amplification of the UHF tuner IF signal output. A relay switch is operatively connected to the VHF motor to control the motor energization. Switch means are coupled to the VHF tuner motor gear train and provide an indication when the VHF tuner is adjusted for amplification of the UHF tuner IF signal output. A bistable multivibrator is coupled to the switch means in a manner so that the multivibrator changes states in response to the switch indication. A relay winding current control means responds to the change in state to prevent current from flowing into the relay winding. This causes the relay switch to open and de-energizes the VHF motor. A second relay switch is operatively connected to the UHF motor to control the motor energization. A second relay current control means is connected to permit a flow of current through the second relay winding only when the switch indication is present.

3,691,446

## TRACTION MOTOR TEMPERATURE CONTROL OF LOCOMOTIVE POWER

Max Ephraim, Jr., Evergreen Park, and Earl D. Smith, Naperville, both of Ill., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 26,861, April 9, 1970. This application June 30, 1971, Ser. No. 158,470

Int. Cl. H02p 5/22

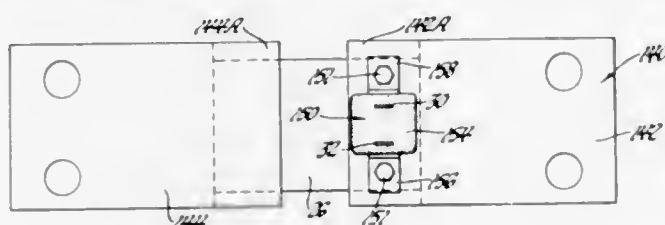
U.S. Cl. 318—472

1 Claim

A system for controlling the power output of the generator of a locomotive as a function of the temperature of the trac-



tion motors connected to the generator. The system utilizes an electrical heater element connected in series with at least one traction motor and the heater generates an amount of heat which is a function of the amount of current being supplied to the traction motor. The heater element forms part of a simulator such that the temperature developed by it simulates the operating temperature of the traction motor for a given trac-



tion motor current. A temperature sensitive resistance element senses the temperature of the simulator and is connected with a control circuit so as to vary the excitation and output power of the generator as a function of the temperature sensed by the resistance element. The simulator and traction motors are arranged such that they both are at substantially the same ambient temperature.

3,691,447

# DEVICE FOR FEEDING OBJECTS BETWEEN TWO POINTS

Gottfried Sperandio, 8304 Wallisellen, Steinackerweg 3, Switzerland

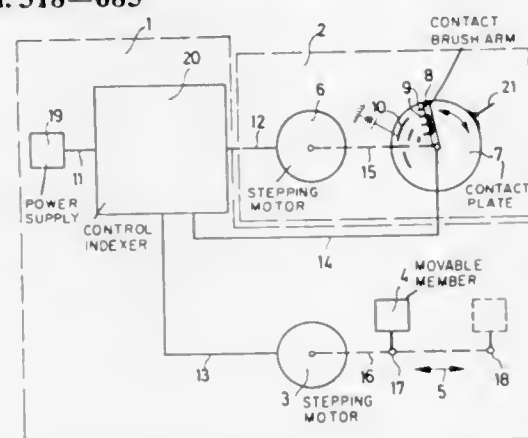
Filed Sept. 28, 1970, Ser. No. 75,946

Claims priority, application Germany, July 9, 1970, P 20 34 003.8

Int. Cl. G05b 19/40

U.S. Cl. 318—685

3 Claims



In the present stepping mechanism two stepping motors are driven in synchronism with each other by drive pulses, the supply of which is controlled by an output pulse from an electromechanical comparing device which is stepped by one of the two motors whereas the other motor steps a movable member, for example, a tool support from one point to another.

3,691,448

# AUTOMATIC BATTERY CHARGING SYSTEMS FOR A VARIABLE LOAD

Gilbert Harold Milward, North Baddesley, England, assignor to Bardic Systems Limited

Filed Oct. 7, 1970, Ser. No. 78,699

Claims priority, application Great Britain, Oct. 9, 1979, 49633/69

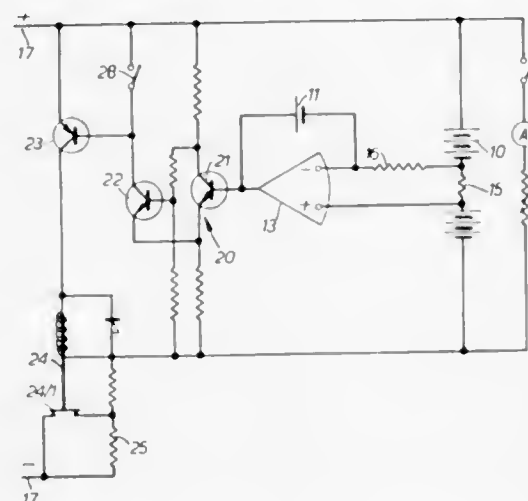
Int. Cl. H02j 7/04

U.S. Cl. 320—39

3 Claims

In an automatic battery charging system a small pilot cell is connected in the feedback circuit of an amplifier of which the input is proportional to both the direction and magnitude of the main battery current. Thus the pilot-cell is charged at a rate proportional to the discharge of the main battery and vice

versa, and so arranged to be partially charged when the main battery is fully discharged, and fully discharged when the main battery is fully charged, and in the latter condition the



decreased voltage of the pilot cell causes the amplifier output to terminate or modify the charge. The charging current may be controlled by a transistor which also adjusts it to provide the load current if and when the supply is available.

## ERRATUM

For Class 321—18 see:  
Patent No. 3,691,412

3,691,449

# STATIC INVERTER HAVING AUTOMATIC MEANS FOR PROVIDING A HIGHLY REGULATED A.C. OUTPUT DESPITE CHANGES IN THE INPUT D.C. LEVEL

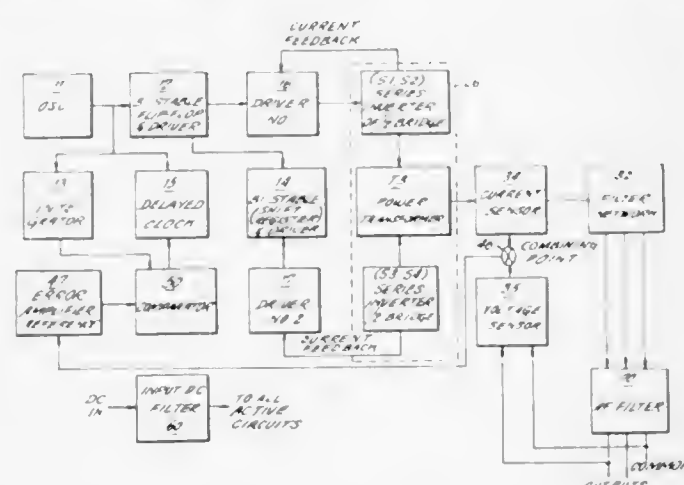
Stanley Feltman, Butler, N.J., assignor to Rea International Corporation, Rahway, N.J.

Filed Feb. 25, 1971, Ser. No. 118,849

Int. Cl. H02m 7/00

U.S. Cl. 321—27 MS

15 Claims



An inverter for supplying AC power from a DC input. The DC input is employed to operate a pulse generator functioning at a frequency which is twice the desired AC frequency. A pair of bistable multivibrators are continuously triggered by the pulse generator in such a manner that the state of one multivibrator controls the change of state of the remaining multivibrator. The outputs of the bistable multivibrators are employed to operate a pair of driver circuits whose outputs are transformer coupled into a bridge circuit to develop a quasi-square-wave output whose fundamental frequency is the frequency of the desired AC output signal. The quasi-square-wave output is filtered to obtain the AC signal which is monitored by voltage and current sensing circuits to yield a combined output signal representative of the RMS value of the

output AC signal. This resultant signal is utilized to establish a reference level developed by a comparator circuit.

The DC input level of the static inverter is employed to charge an integrator circuit which is reset every half-cycle of the output AC frequency. When the output of the integrator exceeds the reference level, a signal is developed to trigger the slave multivibrator to establish a timing relationship between the changeover states of the multivibrators which functions to instantaneously regulate the magnitude of the output signal regardless of changes in the input DC level. This is made possible by use of the integrator circuit which functions so that a constant fundamental frequency content of the quasi-square-wave is held at the desired frequency regardless of changes in the DC input, thus providing instantaneous compensation for variations in the DC line and inherent rejection of conducted audio frequencies on the DC line.

3,691,450

# POWER INVERTER OSCILLATOR CIRCUIT

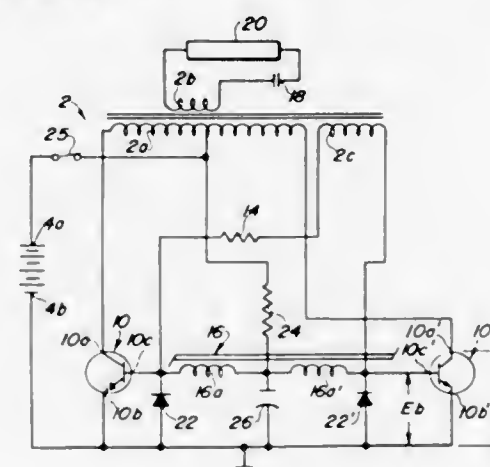
Jay A. Cox, Rolling Hills Estates, Calif., assignor to Gulton Industries, Inc., Metuchen, N.J.

Continuation-in-part of Ser. No. 20,609, March 18, 1970. This application June 14, 1971, Ser. No. 152,615

Int. Cl. H02m 7/52

U.S. Cl. 321—45 R

10 Claims



A power inverter oscillator circuit including an output transformer with a primary winding, the opposite end of which are connected to the load terminals of a pair of power transistors and to the center-tap of which is connected a source of D.C. voltage. The transformer is provided with a feed-back secondary winding connected to the base terminals of the transistors. The oscillator circuit is provided with output transformer saturation and current overlap prevention means operable at least under load conditions and comprising resonant circuit-forming means coupled to a secondary winding of the transformer and inductance means coupled between the bases of the transistors for producing a sinusoidal-like waveform of voltage in the transformer windings, effecting the alternate switching of said transistors into conduction without the saturation of said output transformer, and effecting the complete cessation of flow of current through one of the transistors before current begins to flow in the other switch device.

3,691,451

Patent Not Issued For This Number

3,691,452

# CONTROL OF AC POWER BY A LOGIC COMPARATOR

Gabriel A. Aguiar, Riverdale, N.Y., assignor to The Watson Union Telegraph Company, New York, N.Y.

Filed May 3, 1971, Ser. No. 139,690

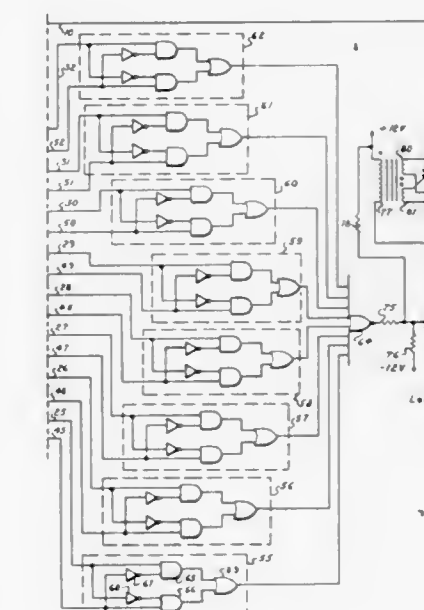
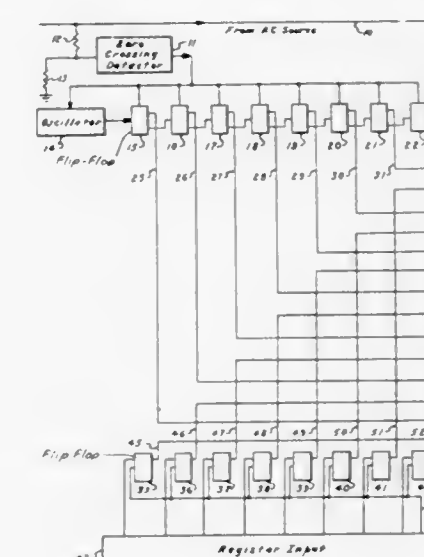
Int. Cl. G05f 3/04

U.S. Cl. 323—19

4 Claims

Apparatus for controlling the amount of power applied to a given load from a periodic voltage source, such as an AC source,

indirect response to a digital control signal. The method involves a principle of operation in which the AC source is applied to the load over measured time portions of the successive periods of the source voltage to obtain the desired average power applied to the load. Equal increments of time are measured in each half-wave of the source and a first digital signal is generated corresponding to the time elapsed from the zero voltage crossing point. A second digital signal is generated corresponding to a time portion of the source's half-wave over which the source voltage ought to be applied to the load to obtain the desired average power. The source is then switched on and off the load in each half-wave in response to a comparison of the first and second digital signals.



3,691,453

# COMPACT MICROWAVE SPECTROMETER

Louis William Rupp, Jr., Warminster, Pa., and Walter Michael Walsh, Jr., Berkeley Heights, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed April 28, 1970, Ser. No. 32,538

Int. Cl. G01n 27/78

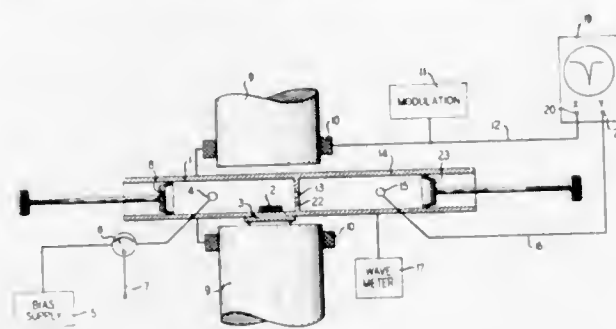
U.S. Cl. 324—0.5 R

2 Claims

The development of a simple and inexpensive microwave spectrometer for the study of spin resonance phenomena has been made possible by the inclusion of a solid state microwave energy source within the same resonant cavity as the sample to be investigated. A hypersensitive condition of oscillation of the microwave source has been found which leads to a spectrometer rivaling the sensitivity of much more complex and expensive conventional apparatus. Development models con-



structed using Gunn type microwave oscillator diodes show that, in addition to the use of conventional microwave detector,



tion, the output signal can be detected by observation of the diode bias current, obviating the use of a separate microwave detector.

3,691,454

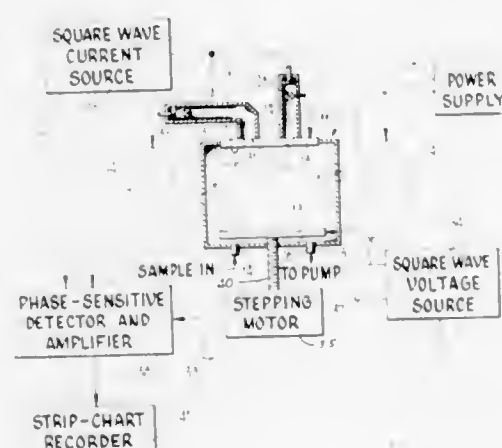
## MICROWAVE CAVITY GAS ANALYZER

Lawrence W. Hrubesh, 934 El Rancho Drive, and Roger E. Anderson, 4354 Guilford Avenue, both of Livermore, Calif., assignors to said Hrubesh, by said Anderson

Filed Oct. 19, 1970, Ser. No. 81,798

Int. Cl. G01n 27/78

U.S. Cl. 324-0.5 R



A gas analyzer is described which uses a solid state source of microwave energy to excite a cavity resonator of the Fabry-Perot type which is adapted to accommodate a sample of a gas to be analyzed. A detector and recorder arrangement is provided for detecting the frequencies of the microwave energy within the cavity at the time a portion of the energy is absorbed by the gas sample. Since such frequencies of absorption are different for different gases, such absorption provides a means of detecting the presence of particular gases within the sample as well as determine other characteristics thereof. One plate of the Fabry-Perot cavity resonator is moveable toward and away from the other to simultaneously vary the resonant frequency of the cavity and the output frequency of the solid state source.

3,691,455

## MEASURING METHOD FOR ANALYZING MATERIAL CONTAINING FAT AND WATER

Tauno V. Moisio, and Matti S. Kreula, both of Helsinki, Finland, assignors to Valio-Meijerien Keskusosuusliike, Helsinki, Finland

Filed Jan. 11, 1971, Ser. No. 105,567

Claims priority, application Finland, Jan. 28, 1970, 23970

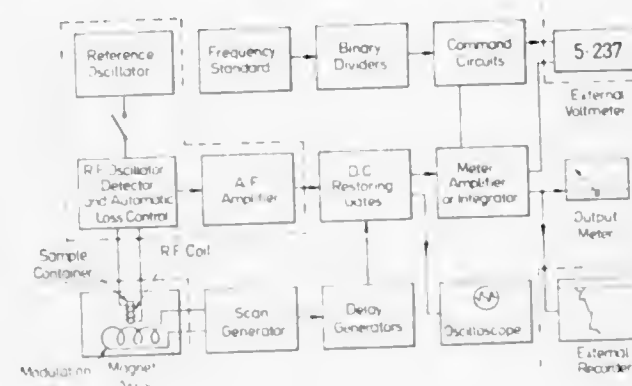
Int. Cl. G01n 27/78

U.S. Cl. 324-0.5 R

7 Claims

In materials containing fat and water simultaneously the water share is determined separately by making use of an ordinary NMR analyzer which is usually capable of measuring only the total sum of said components. In such analyzers the

strength of the magnetic field of the r.f. coil, in which the sample is inserted, is kept constant by a correction amplifier controlling current flow through the r.f. coil. The r.f. losses of said



coil depend essentially on the water content of the sample but not on the fat content and the water share is separately determined by using the output of said correction amplifier preferably by directly measuring this output.

3,691,456

## METHODS AND APPARATUS FOR INVESTIGATING THE SPONTANEOUS POTENTIAL OF EARTH FORMATIONS

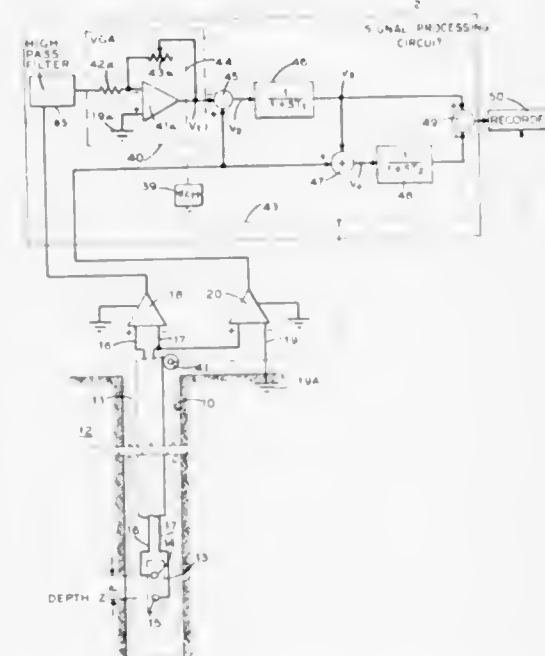
John P. Warren, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,448

Int. Cl. G01v 3/18

U.S. Cl. 324-10

5 Claims



In accordance with illustrative embodiments of the present invention, a technique is disclosed for substantially eliminating noise from measurements of the spontaneous potential made in a borehole drilled into the earth. An exploring device in the borehole carries two closely spaced electrodes and the potential is measured between these two electrodes to provide a first differential type measurement as a function of the movement of the electrodes. A converting circuit converts this first measurement from a function of such movement to a function of time. The potential between one of these two electrodes and a remote point is measured to produce a second measurement. The converted first measurement and the second measurement are combined to provide a substantially error free spontaneous potential measurement. To compensate for errors produced in the converting circuit by acceleration of the electrodes, the low frequency components of the first measurement are eliminated prior to combining the two measurements.

3,691,457

## MOISTURE MEASUREMENT OF GRAIN

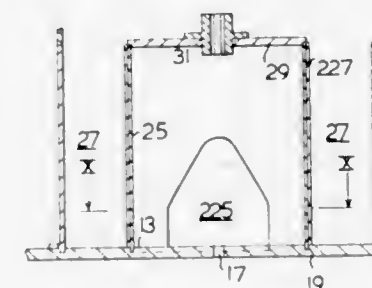
Johannes Cornelius Kriellaars, St. Boniface, Manitoba, Canada, assignor to CAE Industries Ltd.

Filed Aug. 28, 1970, Ser. No. 67,683

Int. Cl. G01r 27/26

U.S. Cl. 324-61 R

13 Claims



Apparatus for the measurement of moisture in grain and other material. It weighs the sample as added, to ensure a constant sample weight; it dumps the sample in a predictable manner into a capacitive cell; it effects a capacitive measurement and compensates for the temperature of the specimen. The measurement of capacitance provides a measure of the moisture content. In order to compensate for variations in the volume of a weighed sample, arising from grain size, the capacitive cell is cylindrical in form and extends vertically, but lower parts of its metal walls are cut away to provide a lesser capacitance per unit height over the lower parts of the cell compared with upper parts of the cell.

3,691,458

Patent Not Issued For This Number

3,691,459

## MICROWAVE POWER DENSITY METER

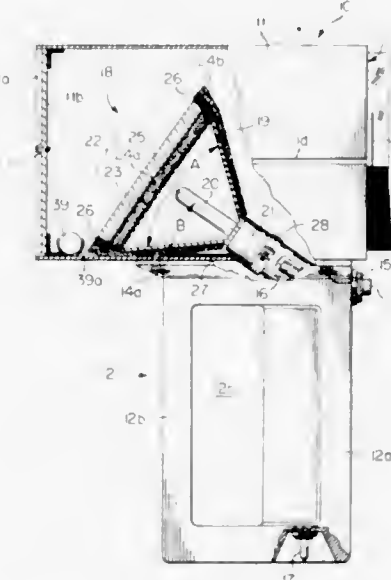
Harold C. Anderson, New Brighton, Minn., assignor to Litton Systems, Inc.

Filed Oct. 23, 1970, Ser. No. 83,314

Int. Cl. G01r 23/04

U.S. Cl. 324-95

10 Claims



A power density meter for monitoring the energy density of an electromagnetic field, having a first radiant field and a stationary field, in the near-zone region of an electromagnetic apparatus. The power density meter comprises an antenna arrangement having a conical horn, a stub, an output portion and an input portion. The electromagnetic wave energy of the radiant field is received by the horn and stub. The input portion is located in front of the horn and comprises a sheet of

lossy material sandwiched between a pair of thin sheets of plastic. When the lossy material is brought into the stationary field, a current is induced into the material which is representative of the electromagnetic energy of the stationary field. The current established in the lossy material generates a second radiant field which is additive to the first radiant field of the electromagnetic wave energy. The output portion includes a crystal detector receiving the combined electromagnetic energy from the first and second radiant fields. A circuit is provided for coupling the detector to a meter so that a signal representative of the value of the power density in the near-zone region may be displayed on the meter.

3,691,460

## APPARATUS FOR THE NOISE-COMPENSATED MEASUREMENT OF HIGH D.C. CURRENTS

Walter Busing, Bergisch-Gladbach/Schildgen, and Wolfgang Gebauer, Leverkusen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

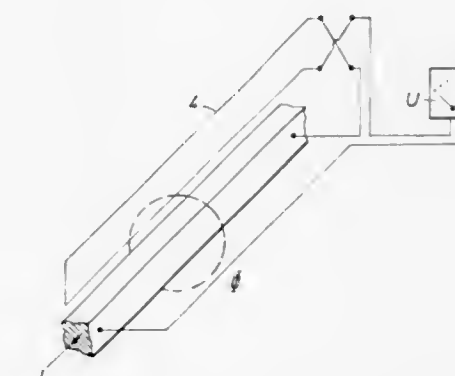
Filed Oct. 7, 1970, Ser. No. 78,709

Claims priority, application Germany, Oct. 30, 1969, P 19 54 635.1

Int. Cl. G01r 1/38; H02h 1/04

U.S. Cl. 324-126

4 Claims



The invention relates to an apparatus for measuring current intensity in a direct current circuit through which much current flows, e.g., electrolysis of sodium chloride, by measuring the voltage drop in a conductor included in the high current circuit. Noise would normally be generated in the measuring circuit by changes in the magnetic field surrounding the conductor as a result of changes in current flow in the conductor and this would cause errors in current measurement corresponding to said changes. Accordingly, a multi-turn coil is included in the measuring circuit and it is positioned in such a way that the voltage induced into the coil by changes of the magnetic field compensates the noise voltage induced into the other part of the measuring circuit. The exact magnitude of the voltage induced into the coil is controlled by a variable resistor so that it can be equated to said noise voltage.

3,691,461

## ELECTROMAGNETIC DEVICE

Virgil Erbert, Albuquerque, N. Mex., assignor to Rolamite, Incorporated, San Francisco, Calif.

Filed Oct. 29, 1970, Ser. No. 84,985

Int. Cl. G01r 1/16, 15/10

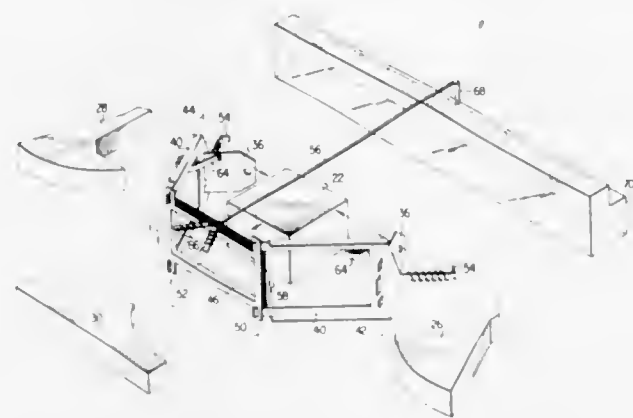
U.S. Cl. 324-151 R

12 Claims

An electromagnetic device in which a coil is mounted in a magnetic field for movement in proportion to the electrical current flowing in the coil. The magnetic air gap is divided into two sections with separated centers and the coil is supported for swinging movement in both arcuate sections of the magnetic field. The linkages supporting the coil are selected so that a pointer attached to the coil moves along a straight



line at a predetermined distance from the coil. The coil is continuous between the two sections of the magnetic field and the



resultant force due to current in the coil causes the coil to swing the pointer along a straight path a distance proportional to the current in the coil.

3,691,462

### RATE PARAMETER INDICATOR HAVING METER MOVEMENT SMOOTHING AT LOW RATES

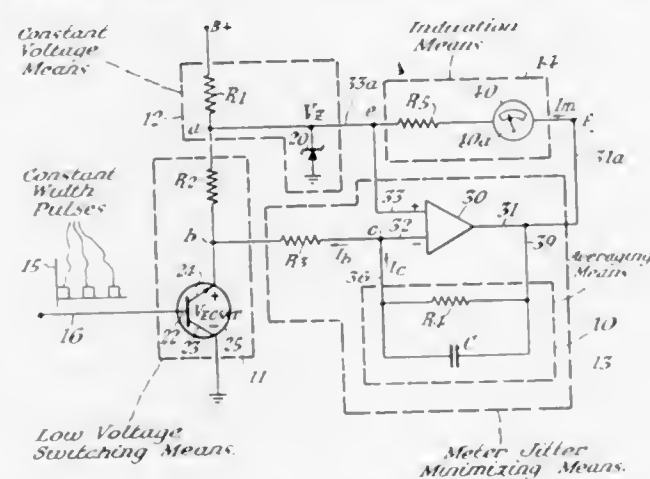
Reed H. Grundy, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Division of Ser. No. 879,716, Nov. 25, 1969, Pat. No. 3,638,115. This application Oct. 21, 1971, Ser. No. 191,412

Int. Cl. G01p 3/48, 3/54

U.S. Cl. 324-166

15 Claims



This disclosure relates to a rate parameter indicator which uniquely allows extremely accurate measuring and indicating of a rate parameter at low rates due to provision of a smooth linear signal to an indication meter circuit. The system incorporates a low voltage drift switching circuit which is coupled to a constant-width pulses, the frequency of which is proportional to a rate parameter. A meter jitter minimizing circuit is electrically coupled to the low voltage drift switching circuitry, as well as the constant voltage source, and includes an averaging circuit which allows the meter jitter minimizing means to provide the aforementioned smooth linear signal to the indication meter circuit in a unique manner.

3,691,463

### LEAKAGE WAVEGUIDE LINE FROM WHICH ENERGY IS CONTINUALLY LEAKED ALONG THE PATH FOLLOWED BY THE LEAKAGE WAVEGUIDE LINE

Tsuneo Nakahara, and Kenichi Yoshida, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 9, 1970, Ser. No. 79,414

Claims priority, application Japan, Oct. 9, 1969, 44/80918

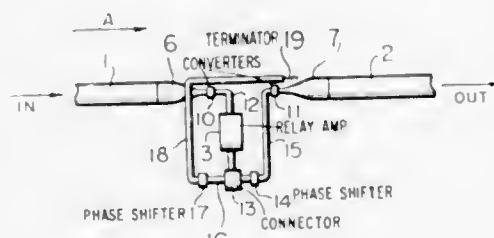
Int. Cl. H04b 7/20

U.S. Cl. 325-1

3 Claims

A leakage waveguide line in which a circular to rectangular converter is connected to the end of a circular leakage guide.

A relay amplifier is connected to the rectangular waveguide, one end of which is connected to the converter. Most of the power in the output of the relay amplifier is transmitted to another circular leakage waveguide by a circuit comprising a



phase shifter, a rectangular to circular converter and tapered tubes. The rectangular leakage waveguide is positioned to cover the two tapered tubes and the top portion of the relay amplifier.

3,691,464

### ASYNCHRONOUS, SWEEP FREQUENCY COMMUNICATION SYSTEM

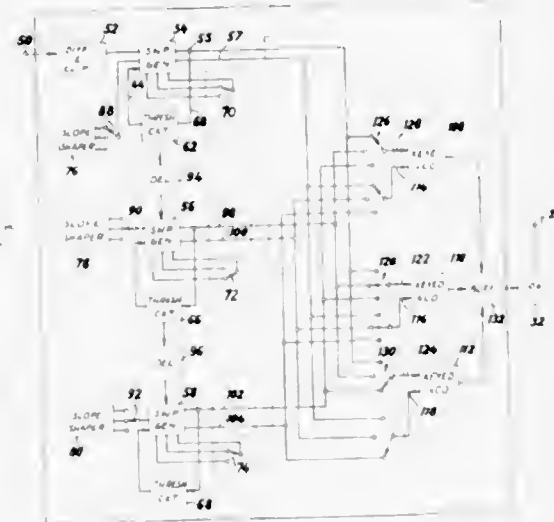
David S. Dayton, Acton, and Alfred L. Girard, Billerica, both of Mass., assignors to Technical Communications Corporation, Lexington, Mass.

Continuation-in-part of Ser. No. 518,901, Jan. 5, 1966, abandoned. This application Nov. 25, 1968, Ser. No. 789,631

Int. Cl. H04j 7/00

U.S. Cl. 325-55

14 Claims



A communication system for transmitting information in digital form from a transmitter to a receiver through a noisy or disturbed channel. Each digit of the digital data to be transmitted is modulated or encoded as one or more radio frequency pulses, each radio frequency pulse being frequency modulated in a distinctive manner in accordance with a predetermined continuous function for at least a portion of its duration. The receiver is constructed to uniquely receive data so modulated or encoded. Two embodiments are described. In one embodiment the data to be transmitted is in the form of pulses and each data pulse is encoded into a plurality of frequency modulated radio frequency pulses. In a second embodiment the data is a series of "ones" and "zeros" and each one and zero is represented by a pulse of radio frequency energy. Each pulse is frequency modulated in a distinctive manner to identify it as a "1" or a "0."

3,691,465

### LOW LEVEL AM DETECTOR AND AUTOMATIC GAIN CONTROL NETWORK

Robert I. McFadyen, 4892 South Salina St., Syracuse, N.Y.

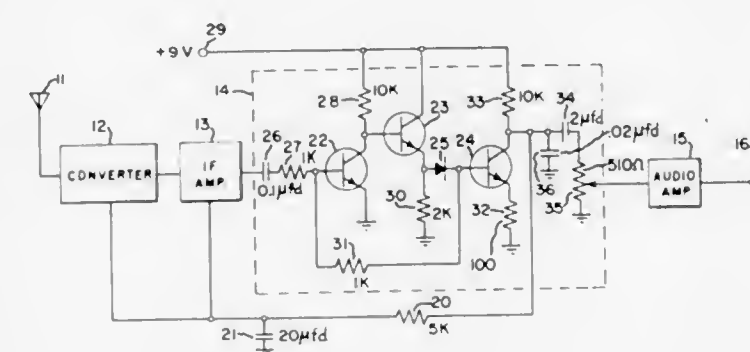
Continuation-in-part of Ser. No. 5,819, Jan. 26, 1970,

abandoned. This application Dec. 14, 1970, Ser. No. 97,680

Int. Cl. H04b 1/16

U.S. Cl. 325-319

15 Claims



An improved low level AM detector and automatic gain control network is described. The network includes a degenerative feedback amplifier and a semiconductor detector diode connected at the output of the amplifier to rectify the amplified signal and the signal in the feedback path. The amplifier includes high voltage gain transistor input amplification and a unity gain transistor output amplifier in emitter follower configuration coupled to the detector diode. A subsequent stage produces amplified audio and a.g.c. signals. In one embodiment average detection is employed, while in another peak detection is employed. The network exhibits high detection sensitivity, improved detection linearity and permits highly sensitive a.g.c. operation. While using solid state active devices, both discrete and monolithic modes of circuit assembly are contemplated.

3,691,466

### PHASE DISTORTIONLESS LIMITER

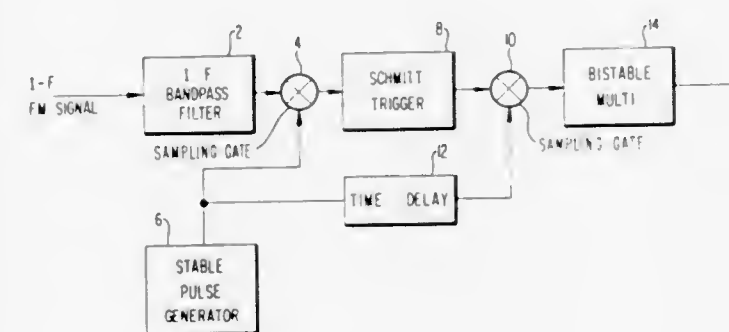
Marvin Richard Wachs, Bowie, Md., assignor to Communications Satellite Corp.

Filed Dec. 8, 1970, Ser. No. 96,121

Int. Cl. H04b 1/10

U.S. Cl. 325-347

3 Claims



An FM limiter in which the FM signal is applied to a Schmitt trigger through a sample gate. The sampling time of the gate is controlled by a stable pulse generator. The output of the Schmitt trigger is sampled by a second gate and these samples are applied to a bistable multivibrator. The second gate is controlled by a delayed output from the stable pulse generator. The output of the bistable multivibrator is a frequency modulated square wave which is phase locked to the input FM wave form.

3,691,467

### DEMODULATING APPARATUS

Michael Patrick Mansfield, Ingatestone, and Howard John

Prangnell, Harlow, both of England, assignors to A. C.

Cosser Limited, Harlow, Essex, England

Filed April 22, 1970, Ser. No. 30,782

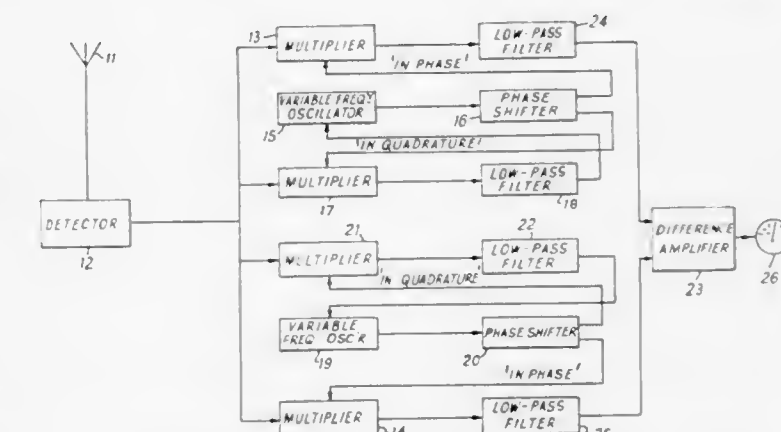
Claims priority, application Great Britain, April 22, 1969,

20,607/69

Int. Cl. H04b 1/00

U.S. Cl. 325-363

6 Claims



Demodulating apparatus for indicating the difference in depth of modulating of a carrier oscillation by two modulating signals of different frequencies  $f_1$  and  $f_2$  comprising an aerial with a detector which provides an input to two switching modulators. A first variable-frequency oscillator providing a first reference signal of substantially the same frequency and phase as the signal of frequency  $f_1$  is connected to an input of one of the modulators. A second variable-frequency oscillator providing a second reference signal of substantially the same frequency and phase as the signal of frequency  $f_2$  is connected to an input of the other modulators. The outputs of the modulators are connected through low-pass filters to a differential amplifier with an associated meter for indicating the difference in the magnitudes of the d.c. components of the outputs of the two modulators.

3,691,468

Patent Not Issued For This Number

3,691,469

### COUNTERS WITH SCALING FOR DIGITAL CONTROL OF OBJECT'S POSITION

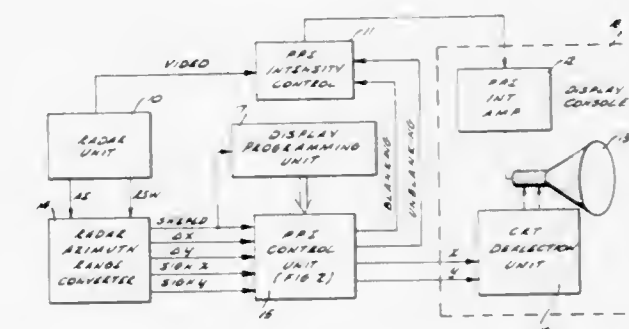
Phillip J. Joujon-Roche, Anaheim, and Loyd D. Smith, Fullerton, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 13, 1970, Ser. No. 36,737

Int. Cl. H03k 21/00

U.S. Cl. 328-46

13 Claims



A PPI deflection control system is disclosed employing synchronous counters for accumulating pulses representing  $\Delta x$  and  $\Delta y$  increments generated by an azimuth-range sweep converter. Range scaling to produce real time X and Y com-



ponents of a radar sweep for PPI display is achieved by a control signal applied to one of several stages of lower order than fixed stages from which digital outputs are taken for deflection control. The control signal is ORed with the logic input signal for that stage to cause it to change state with each pulse to be counted. Scaled off-center display coordinates may be preset, and overflow may be detected to determine when the electron beam is off the PPI display surface.

3,691,470

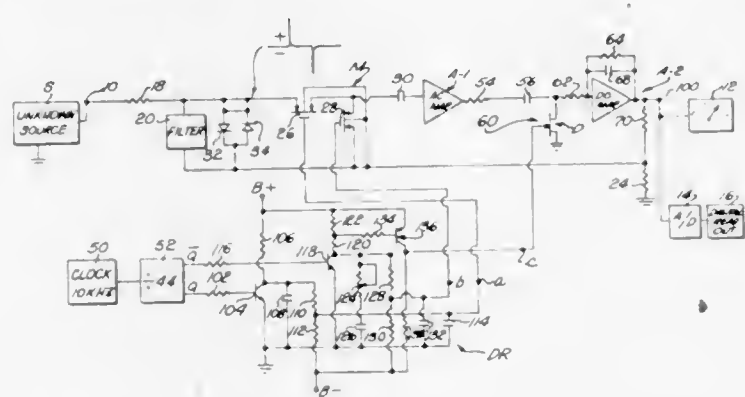
## CHOPPER AMPLIFIER

Joseph Edward Naylor, Mayfield Heights, Ohio, assignor to Keithley Instruments, Inc., Solon, Ohio  
Filed March 10, 1971, Ser. No. 122,908

Int. Cl. H03k 5/04

U.S. Cl. 328—58

13 Claims



A chopper amplifier is disclosed which is particularly applicable for use in conjunction with amplifying low level signals to higher level signals suitable for use with electrical measuring circuitry. The amplifier includes a modulator circuit for receiving a low level signal from an unknown source and providing therefrom an amplitude modulated AC signal at the modulating frequency and of an amplitude proportional to that of the low level signal. The modulated signal is then amplified by an AC amplifier and demodulated at the modulating frequency to obtain a DC output signal. The modulator circuit includes first and second switches, such as solid state switches, which serve when actuated to respectively apply either the low level signal or a reference level signal to the AC amplifier. A driver circuit is employed for purposes of alternately actuating the switches at the modulating frequency, and in such a manner that the switches are both deactivated during each switching cycle for a common off period during which neither the low level signal nor the reference level signal is applied to the AC amplifier. In this manner the chopper amplifier presents a high input impedance to the source to thereby minimize loading of the unknown source.

3,691,471

## KEY MODULATED PULSE-TRAIN GENERATOR FOR TELECOMMUNICATION SYSTEM

Enrico Cicognani, and Evangelo Lyghounis, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Dec. 10, 1970, Ser. No. 96,747

Claims priority, application Italy, Dec. 10, 1969, 25562 A/69

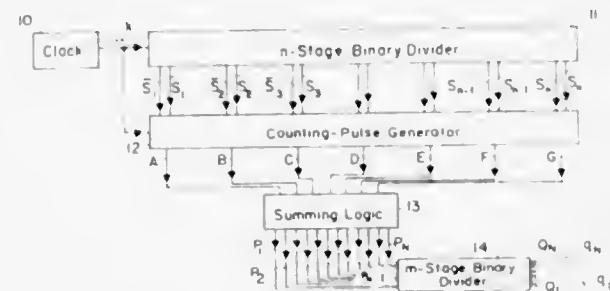
Int. Cl. H03k 3/72

U.S. Cl. 328—6 Z

5 Claims

A train of regularly recurring clock pulses of cadence  $f_k = 2^{m-n}d$ , with  $m > n$ , is fed to an  $n$ -stage binary frequency divider generating at its various stage outputs a set of square waves whose fundamental frequencies are subharmonically related to that cadence. Selective combination of the original clock pulses with one or more of these square waves, at least one of them in negated form, by means of different NAND gates yields sequences of short equispaced pulses recurring at these subharmonic frequencies in mutually staggered relation-

ship; thus, a superposition of all or less than all of these pulse sequences by means of OR gates produces up to  $2^n - 1 = N$  regular and irregular pulse groupings each recurring at the lowest subharmonic frequency  $f_k/2^n = 2^m d$ , the number  $K$  of pulses in these groupings ranging between 1 and  $N$ . Upon further subdivision by  $m$  cascaded flip-flops, there is obtained



a final square wave of mean fundamental frequency  $Kd$  whose pulses may vary in length by only a small fraction of a cycle, depending upon the magnitude of  $m$ , and which may be frequency-modulated by the selective suppression of one or more constituent pulse sequences supplied to the corresponding OR gate.

3,691,472

## ARRANGEMENT FOR THE GENERATION OF PULSES APPEARING AS PSEUDO-RANDOM NUMBERS

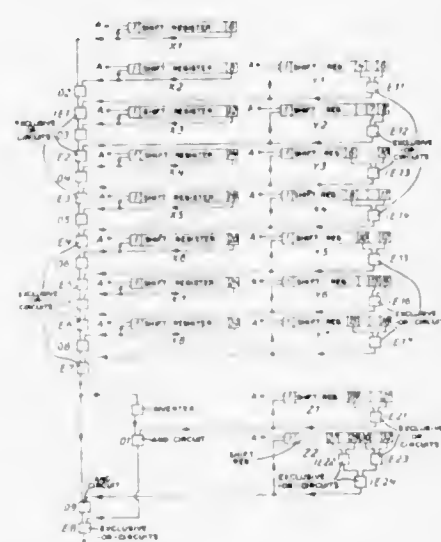
Erik Harald Bohman, Saltsjobaden, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed June 29, 1967, Ser. No. 650,102

Int. Cl. H03k 13/00

U.S. Cl. 328—63

5 Claims



An arrangement for generating a binary pulse code in which pulses appear as pseudo-random numbers, the pulse code preferably being used for ciphering binary information, comprises a number of shift registers in which the output of one or several stages is connected to the input of the first stage of the register via logical circuits, the registers being cyclically shifted from a common pulse generator. The input of the first stage of each shift register is also connected to one input of a gate. The gates are interconnected so as to form a chain in which each gate has one input connected to the output of the preceding gate, and the other input being connected to the output of the last gate in the chain constituting the output of the arrangement.

3,691,473

## VOLTAGE RATIO APPARATUS WITH LOGARITHMIC OUTPUT

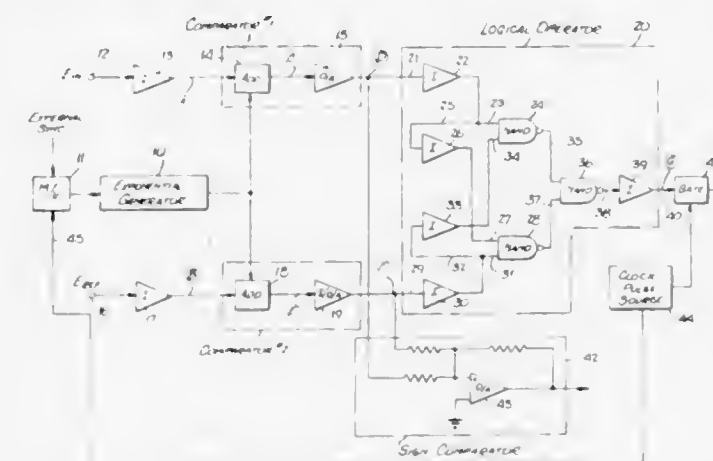
John T. Boatwright, Hopkinton, N.H., assignor to Northeast Electronics Corporation, Concord, N.H.

Filed Aug. 19, 1968, Ser. No. 753,520

Int. Cl. G06g 7/24

U.S. Cl. 328—145

9 Claims



Both an input voltage signal and an adjustable reference voltage signal are compared with an exponential wave for providing, through a logic circuit, an output pulse whose width is proportional to the logarithm, either to the base 10 or to the natural base, of the ratio of the input signal to the reference signal. The output pulse controls a gate supplied with clock pulses for providing a digital output.

3,691,474

## PHASE DETECTOR INITIALIZER FOR OSCILLATOR SYNCHRONIZATION

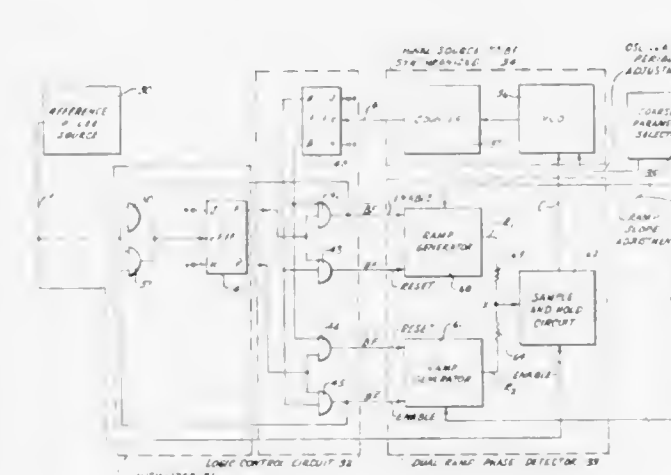
Ward M. Calaway, Sierra Madre, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 4, 1970, Ser. No. 95,206

Int. Cl. H03b 3/04

U.S. Cl. 331—1 A

13 Claims



In a synchronization system having a phase detector, a voltage controlled oscillator, and a source of a reference signal, an initializer prevents the establishment of a regenerative mode. The output signal of the voltage controlled oscillator and the reference signal are applied to the inputs of the phase detector, which develops a control signal to adjust the period of the oscillator. The initializer couples the reference signal to the input of the phase detector either directly or inverted in phase, depending upon whether the reference signal leads the oscillator signal by less than 180° or lags the oscillator signal by less than 180°. As a result, the control signal does not change responsive to changes in the phase difference between the oscillator signal and the reference signal unless the synchronization system is operating in a degenerative mode.

3,691,475

## VOLTAGE CONTROLLED OSCILLATOR

Katsuo Mouri, Yokohama; Gentaro Miyazaki, Fujisawa, and Hiroaki Nabeyama, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

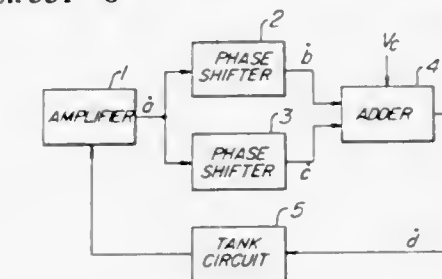
Filed June 21, 1971, Ser. No. 154,841

Claims priority, application Japan, July 24, 1970, 45/54404; July 24, 1970, 45/54406

Int. Cl. H03b 3/04, 5/36; H04n 9/46

U.S. Cl. 331—8

9 Claims



An oscillation circuit loop includes two phase shifters for advancing and delaying the phase of an input signal respectively, an adder for obtaining the vector sum of the output signals of these two phase shifters, and feedback means for the positive feedback of the output signal of the adder to an oscillation amplifier through a tank circuit. An external control voltage is applied to the adder so as to continuously vary the relative magnitude of the two signals added to each other by the adder. With an oscillator having such a construction, the degree of phase shift by the phase shifters and the value of  $Q$  of the tank circuit can be freely selected, and as a result, any desired sensitivity and phase control range can be freely obtained.

3,691,476

## DOUBLE HETEROSTRUCTURE LASER DIODES

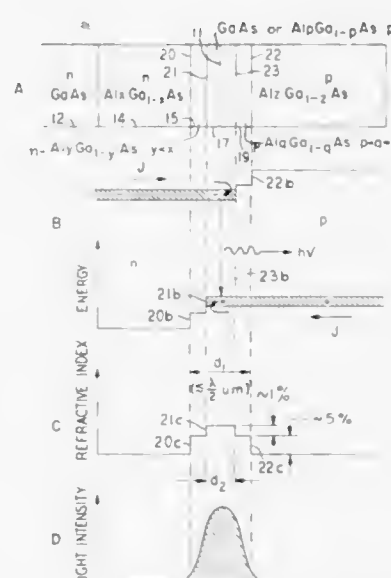
Izuo Hayashi, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 31, 1970, Ser. No. 103,252

Int. Cl. H01s 3/18

U.S. Cl. 331—94.5

16 Claims



A double heterostructure laser diode, which includes a first narrow bandgap active region sandwiched between opposite conductivity type wider bandgap regions, is improved by the inclusion of a second narrow bandgap active region intermediate the first active region, with the bandgap of the second region being narrower than that of the first region. The first active region is preferably between about  $\lambda/2$  and  $\lambda$  in thickness and serves to provide optical confinement, whereas the second active region may approach an electron diameter in thickness and serves to provide carrier confinement.



3,691,477

**DIFFRACTION GRATING COUPLED LASER RING RESONATORS**

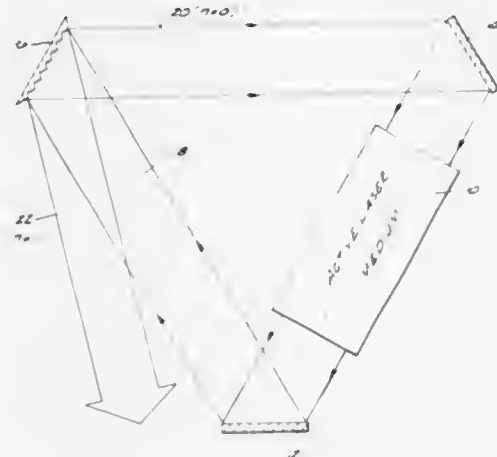
Gareth M. Janney, Pacific Palisades, Calif., assignor to Hughes-Aircraft Company, Culver City, Calif.

Filed Sept. 4, 1970, Ser. No. 78,323

Int. Cl. H01s 3/00; G01b 9/02

U.S. Cl. 331—94.5

10 Claims



In the disclosed laser ring resonators a pair of mirrors and at least one diffraction grating are disposed relative to an active laser medium, such as CO<sub>2</sub>, such that laser energy generated in the medium traverses a unidirectional closed circulation path through the medium. The diffraction grating has a groove spacing  $d$  related to the laser energy wavelength  $\lambda$  by  $1 < \lambda/d < 2$  and diffracts a portion of the incident laser energy along the circulation path and another portion out of the circulation path. A wavelength selecting embodiment utilizes two diffraction gratings in the circulation path through the laser medium, while a wavelength selecting and axial mode selecting embodiment further employs an additional mirror to provide an axial mode selecting closed optical path partially coincident with a wavelength selecting closed optical path through the laser medium.

3,691,478

**LASER ENERGY MONITOR AND CONTROL**

Harold Jacobs, West Long Branch; Albert J. Kerecman, Asbury Park, and James D. Schumacher, Eatontown, all of N.J., assignors to The United States of America as represented by the Secretary of the Army

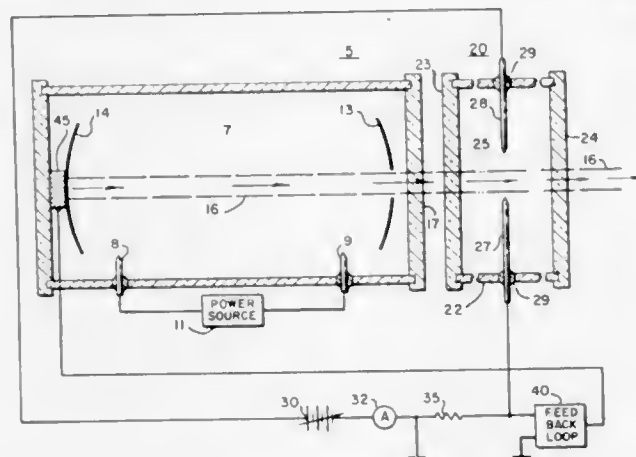
Continuation of Ser. No. 740,140, June 26, 1968, abandoned.

Filed Nov. 9, 1970, Ser. No. 88,245

Int. Cl. H01s 3/22

U.S. Cl. 331—94.5

6 Claims



An energy monitor for lasers which includes a chamber filled with a gas and containing electrodes to which an adjustable source of voltage is applied to establish a glow discharge. The gas-filled chamber can be integral with the laser or can be separate from the laser. In either case, the laser beam passes between the electrodes without impinging upon the electrodes. The laser beam passes through the monitor with no

energy loss and, in some cases, with energy gain. The current flowing in the gas discharge of the monitor is a function of the laser energy and this current, or the voltage resulting from this current, may be measured by a suitable measuring device, such as a calibrated meter or cathode ray oscilloscope.

The aforesaid voltage may be used as a control voltage and fed back to control means associated with the laser to adjust the energy output.

The invention described herein may be manufactured, used, and licensed by or for the Government for governmental purposes without the payment to us of any royalty thereon.

3,691,479

**MULTI-DIODE SINGLE CAVITY MICROWAVE OSCILLATORS**

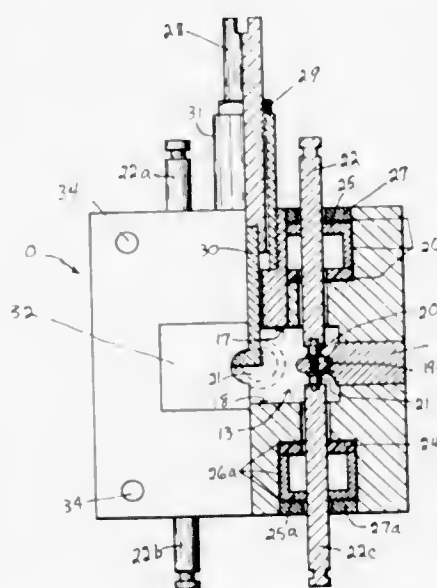
Bruce G. Malcolm, 38 Arundel Place, Clayton, Mo.

Filed Aug. 24, 1970, Ser. No. 65,910

Int. Cl. H03b 7/06

U.S. Cl. 331—107 G

7 Claims



The disclosure herein relates to single-cavity microwave oscillators in general, and multi-diode single cavity microwave oscillators in particular. The disclosure further relates to methods for combining the microwave power of a plurality of bulk negative resistance diodes in a single resonant cavity, for electronically and mechanically tuning oscillator circuits, for frequency-temperature compensation of the oscillator, and for obtaining low frequency modulated noise from the oscillator.

3,691,480

Patent Not Issued For This Number

3,691,481

**NEGATIVE RESISTANCE ELEMENT**

Shoei Kataoka, 2071, Tanashi-shi; Hiroshi Tateno, 1212 Tanashi-shi, both of Tokyo-to; Hiroyuki Fujisada, 444-1-504, 6-chome, Fujimi-cho, Tachikawa-shi, Tokyo-to; Mitsuo Kawashima, 49, Jiyugaoka, Meguro-ku, Tokyo-to; Yasuo Komamiya, 13, 1-chome, Midori-cho, Tokorozawa-shi, Saitama-ken, and Hideo Yamada, 7, Kikuna-machine, Kohoku-ku, Yokohama, all of Japan

Continuation-in-part of Ser. No. 776,292, Aug. 20, 1968, abandoned. This application July 29, 1971, Ser. No. 167,410

Claims priority, application Japan, Aug. 22, 1967, 42/53488; Nov. 27, 1967, 42/75628; Nov. 27, 1967, 42/75629; Nov. 27, 1967, 42/75630; Nov. 27, 1967, 42/75631

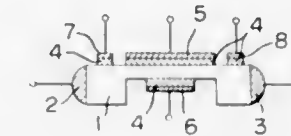
Int. Cl. H03b 7/14

U.S. Cl. 331—107 G

31 Claims

Occurrence of high field domain in the conventional Gunn diode is prevented by covering a solid body such as a semicon-

ductor element partially or wholly by a dielectric member or by a control element such as a metallic layer coupled reactively with the solid body through a dielectric member, whereby a solid state element having a negative differential conductivity



is obtained. Such a type of negative-resistance solid state element, together with its various modes of embodiment construction disclosed herein, affords a superior solid state element which is applicable to amplifiers, oscillators, logic memories, and the like of millimeter or submillimeter bands.

**ERRATUM**

For Class 331—176 see:  
Patent No. 3,690,546

3,691,482

**DISPLAY SYSTEM**

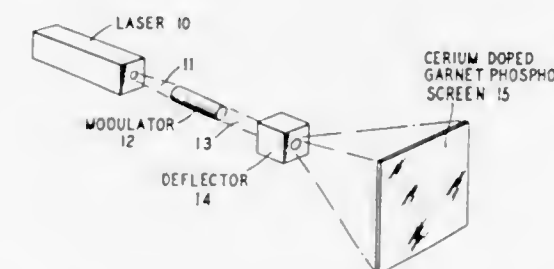
Douglas Arthur Pinnow, Berkeley Heights, and Le Grand Gerard Van Uitert, Morris Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Jan. 19, 1970, Ser. No. 3,636

Int. Cl. H01s 3/10

U.S. Cl. 332—7.51

9 Claims



A single color display is produced by projection using a scanning laser beam operating in the visible or ultraviolet and a photoluminescent screen which emits in the visible. Combinations of phosphors may be employed to simulate white or desired colors.

3,691,483

**PHASED ARRAY LASER SOURCE**

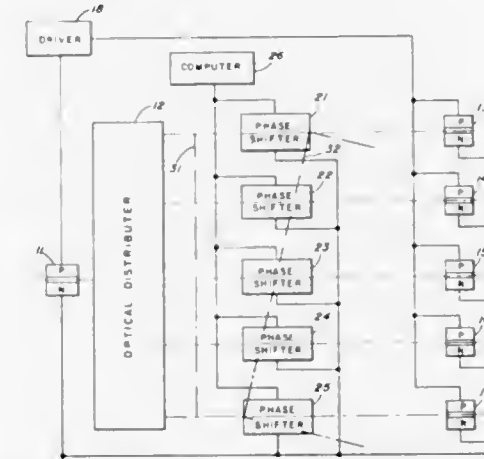
Aaron David Klein, 261 Congressional Lane, Rockville, Md.

Filed Feb. 9, 1970, Ser. No. 14,823

Int. Cl. H01s 3/02; H04b 9/00

U.S. Cl. 332—7.51

5 Claims



This invention is directed to an electronically scanned laser array. It utilizes a phase-locking laser, an array of variable

phase shifters, an array of semiconductor lasers and a control computer. The output of the phase-locking laser is optically coupled, by means of reflective or transmission optics, to the phase shifters which are controlled in a predetermined pattern by the computer. The phase shifters are optically coupled to the array and cause uniform shifts in the phase front of the arrayed lasers to provide a scanning effect of the output beam.

3,691,484

**ELECTRO-OPTICAL MODULATORS**

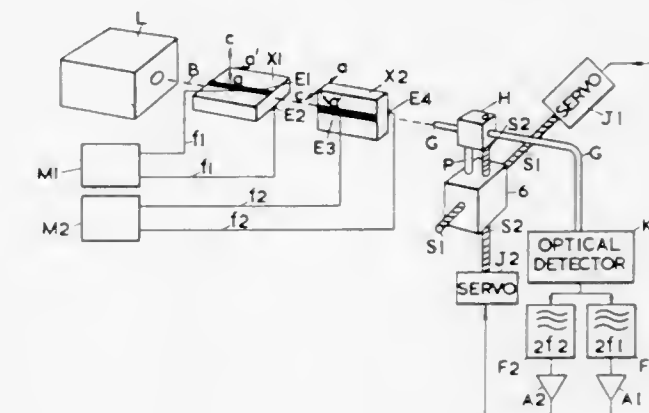
Marcus John Dore, Bournemouth, England, assignor to National Research Development Corporation, London, England

Filed Aug. 13, 1969, Ser. No. 849,643

Int. Cl. H01s 3/10

U.S. Cl. 332—7.51

1 Claim



An electro-optical modulator comprising an electro-optic crystal, means for projecting a beam of light through the crystal on to an optical aperture, and means for applying to the crystal a variable electric field which will be substantially non-uniform across the beam of light in any plane transverse to the path of the beam so as to cause a variable spreading of the beam and thereby modulate the amount of illumination passing through the optical aperture. The electric field may be applied to the crystal by means of two narrow linear electrodes on opposite sides of the crystal and parallel to the path of the beam. The optical aperture may be a translucent aperture in an opaque screen, or it may be one end of a fiber-optic light guide.

An optical alignment system may be formed of one or two such electro-optic modulator crystals, an optical detector for producing an electrical signal representing the amount of illumination passing through the optical aperture and frequency selective means responsive to the said signal. Servo systems may be provided for adjusting the position of the aperture transversely so as to maximize the output of the frequency selective means.

3,691,485

**THREE-PORT QUADRATURE HYBRIDS**

Alfred B. Beck, Torrance, Calif., assignor to TRW, Inc., Los Angeles, Calif.

Filed Aug. 3, 1970, Ser. No. 60,325

Int. Cl. H01p 5/12, 3/08, 9/00

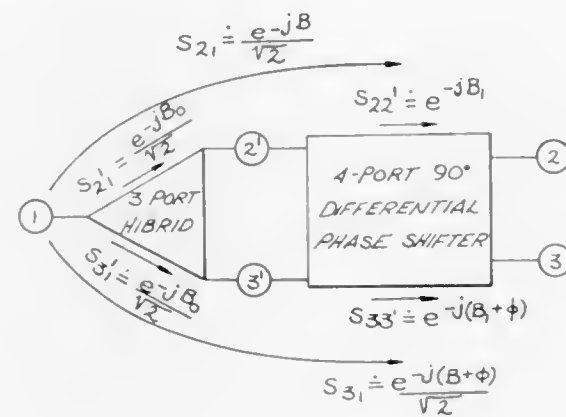
U.S. Cl. 333—11

4 Claims

Three-port impedance-transforming microwave circuit characterized by an extremely low input VSWR, and having a



four-port 90° differential phase shifter coupled to the paired ports of a three-port hybrid. Broadbanding can be accomplished through the use of phase-shifting transmission line sections in the hybrid and the phase shifter.



plished through the use of phase-shifting transmission line sections in the hybrid and the phase shifter.

3,691,486

## MODIFIED TIME DOMAIN COMB FILTERS

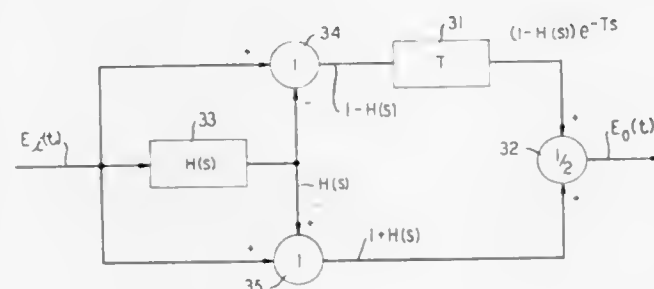
Michael Howard Borsuk, Red Bank, and Paul Nolan Browne, Shrewsbury, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 2, 1970, Ser. No. 68,905

Int. Cl. H03h 7/28

U.S. Cl. 333-70 T

11 Claims



A delay line type comb filter is adapted to produce a response in which a selected portion of the comb characteristic is modified. This is accomplished by attenuating the signal through the delay line in a predetermined manner over a selected frequency range and inversely modifying the non-delayed transmission in that range. These two functions are provided by applying the input signal to a filter element having a transfer function appropriate to the desired modification and combining the filtered output with the input signal in two combiners (one additive and one subtractive). The differential resultant signal is applied to the delay line to produce the prescribed attenuation and the additive resultant signal (enhanced inversely to the differential resultant) is added to the output of the delay line producing the desired modified comb transmission characteristic.

3,691,487

## HELICAL RESONATOR TYPE FILTER

Keizo Yoshimoto, Tokyo-to, Japan, assignor to Toko Kabushiki Kaisha, Tokyo-to, Japan

Filed April 24, 1970, Ser. No. 31,622

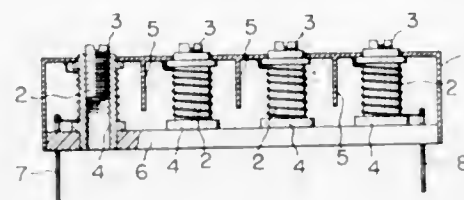
Int. Cl. H03h 7/10; H01p 7/06

U.S. Cl. 333-73 R

1 Claim

A helical coil resonator type filter employable in the television broadcasting frequency range can be obtained by an improved construction of the resonator filter wherein a frequen-

cy adjusting core inside of each of a plurality of helical coils, enclosed in a metal casing, is made of a ferromagnetic ferrite



so that the operable frequency range of the filter can be varied by adjusting the position of the cores in the helical coils.

3,691,488

## RADIATING COAXIAL CABLE AND METHOD OF MANUFACTURE THEREOF

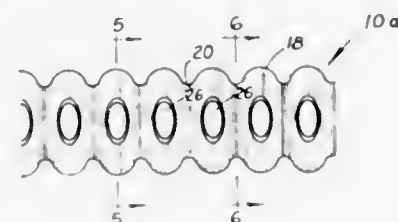
Alfred G. Holtum, Jr., Oak Forest, Ill., assignor to Andrew Corporation, Orland Park, Ill.

Filed Sept. 14, 1970, Ser. No. 71,804

Int. Cl. H01p 1/00, 11/00; H01q 13/22

U.S. Cl. 333-84 R

12 Claims



The crests of the corrugated outer conductor of a coaxial cable are partially removed along the length of one portion of its circumference to produce apertures in the corrugation crests while leaving the corrugation roots intact. The cable is thus made "leaky" for use as a radiator for tunnel communications systems and the like. Desirable aperture sizes and shapes are described.

3,691,489

## ELECTRICAL DISTRIBUTING APPARATUS PROTECTIVE DEVICES THEREFOR

Gunther Knirsch, Bretten, and Herrmann Schmitt, Heidelberg, both of Germany, assignors to Brown, Boveri & Cie Aktiengesellschaft, Pastfach, Mannheim, Germany

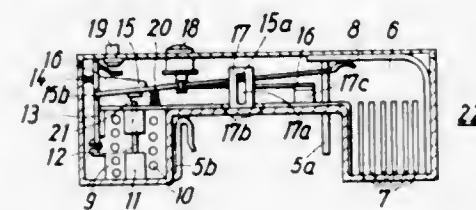
Filed Sept. 20, 1971, Ser. No. 181,728

Claims priority, application Germany, Sept. 26, 1970, P 20 47 521.2

Int. Cl. H01h 9/30

U.S. Cl. 335-201

22 Claims



Plug-in circuit breakers are mounted on a distribution panel. In each circuit breaker, a contact lever engages a contact in a quenching chamber. A current-responsive release mechanism disengages the lever from the contact in response to short-circuit currents. The chamber is located in one arm of a U-shaped housing and the release mechanism in the other arm. The lever extends between the arm through the narrow central portion joining the arms. Plugs adapted to receive current extend from the housing into the space between the arms. The plugs engage jacks in the distribution panel while the U-

shaped housing fits around the jacks. The release mechanism includes a spring that pushes the lever against the contact while the non-contacting end of the lever is held by a catch. A release magnet or a bimetallic member, responding to the excess current displaces the catch and releases the lever.

3,691,490

## MAGNETIC SWITCH APPARATUS

Luigi Ragni, Brescia, Italy, assignor to Oxford Electric Corporation, Pittsburgh, Pa.

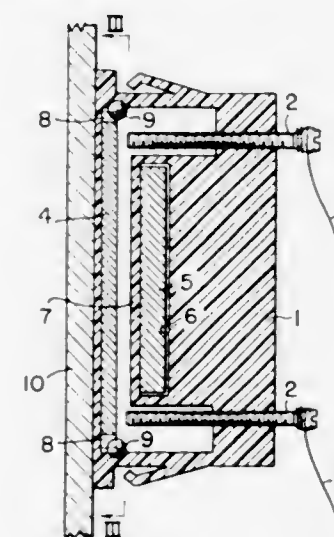
Filed June 15, 1971, Ser. No. 153,369

Claims priority, application Italy, Nov. 9, 1970, 5235-A/70

Int. Cl. H01h 36/00

U.S. Cl. 335-205

7 Claims



A magnetic electric switch comprising a sealed body of electrical insulating material forming a cavity, fixed contact members having one end located within said cavity and the other end located exteriorly of said body, a movable contact plate located within said cavity to electrically connect the ends of said fixed contact members located within said cavity and stationary magnetic means located within said body spaced from said cavity and from said movable contact plate to exert a magnetic force on said movable contact plate to pull said plate into contact with said fixed contact members.

3,691,491

## SUPERCONDUCTIVE SWITCHING PATH FOR HEAVY CURRENT

Ernst Massar, Mozartstr. 36, and Hans Voigt, Furstenweg 19, both of Erlangen, Germany

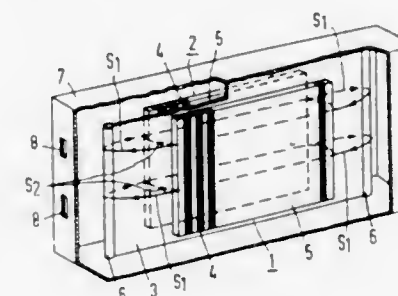
Filed Dec. 4, 1970, Ser. No. 95,088

Claims priority, application Germany, Dec. 13, 1969, P 19 62 704.4

Int. Cl. H01f 7/22

U.S. Cl. 335-216

20 Claims



A magnetic shield of superconducting material is positioned in the vicinity of a superconductive winding having current flowing therethrough. When the shield is in a superconductive condition, the magnetic lines of force produced by the winding are forced into a longer path than without the shield, so that the magnetic field within the winding is smaller than the

lowest critical field intensity at any point of the winding. When the current in the winding reaches a predetermined intensity, the shield loses its shielding effect at least partially, due to the increased magnetic field, so that the magnetic lines of force are shortened and the magnetic field increases within the winding to a magnitude above the highest critical magnetic field intensity at any point of the winding passed by the predetermined current.

3,691,492

## CHOKE

Walter Muller, Schwabach, Germany, assignor to Transformator Union Aktiengesellschaft, Stuttgart-Bad Cannstatt, Germany

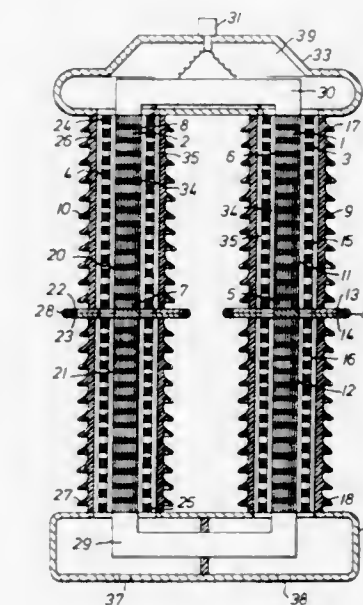
Filed Dec. 10, 1971, Ser. No. 206,828

Claims priority, application Germany, Dec. 10, 1970, P 20 60 682.0; Dec. 10, 1970, HGM 70 45 527.5

Int. Cl. H01f 27/10, 15/04

U.S. Cl. 336-60

20 Claims



A choke for high voltage mains. The choke includes two identical partial windings having turns wound in opposite directions to one another. The magnetic circuit includes a ferromagnetic upper yoke and a ferromagnetic lower yoke. The upper ends of the partial windings are electrically connected to the upper yoke to which is applied the full potential to be applied to the choke and the lower ends of the partial windings are electrically connected to the lower yoke. The magnetic circuit includes two magnetic core members extending between the upper yoke and the lower yoke. The partial windings are each disposed respectively about individual ones of the magnetic core members. Two insulating columns each having an upper opening and a lower opening surround respectively individual ones of the partial windings. Two shielding members are positioned respectively about individual ones of the yoke members. The shielding members and the yoke members are effective to close off the upper and lower openings of the insulating columns from space outside of the choke.

3,691,493

## COIL PLATE ASSEMBLY

Gerd C. Boysen, Milwaukee, and Raymond H. Hannula, West Allis, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Sept. 30, 1971, Ser. No. 185,102

Int. Cl. H01f 15/02, 27/30

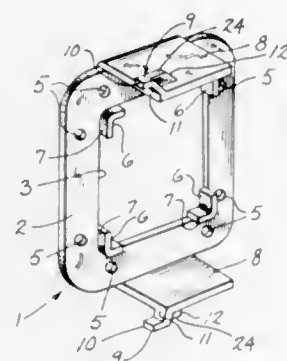
U.S. Cl. 336-65

9 Claims

A coil plate assembly having a pair of coil plates with an electrical coil interposed therebetween to position the coil in a molding die for encapsulation in an insulating material. The coil plates each have a pair of side shrouds extending along-



side the coil and a boss is formed on the remote end of each shroud. A terminal clasp encircles each pair of bosses of adjacent shrouds to connect the shrouds of the two plates



together. In addition, the terminal clasps are electrically connected to the coil and extend outward from the coil plates to act as terminals for making connection in a circuit.

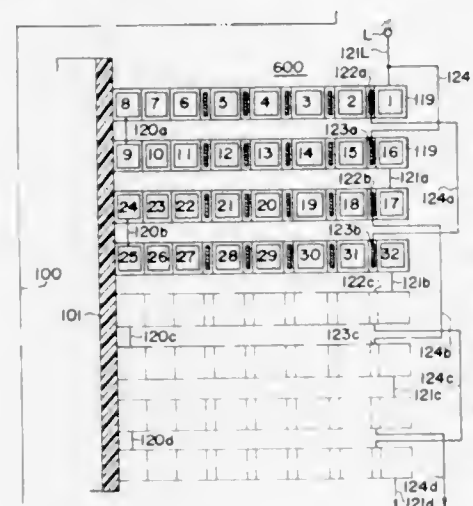
3,691,494

**WINDING OF STATIONARY INDUCTION APPARATUS**  
Kenichi Okuyama, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 829,982, June 3, 1969, abandoned, Continuation-in-part of Ser. No. 645,980, June 14, 1967, Pat. No. 3,560,902, which is a continuation-in-part of Ser. No. 326,845, Nov. 29, 1963, abandoned. This application Nov. 30, 1970, Ser. No. 93,872  
Int. Cl. H01f 15/14

U.S. Cl. 336—70

6 Claims



A disk winding of a stationary induction apparatus such as a power transformer or reactor in which, in order to improve the initial potential distribution due to intrusion of impulse voltage so as to distribute the potential substantially linearly over the entire length of the winding, the outer end of a shielding conductor incorporated in each coil section is connected solely with the outer end of a shielding conductor in the coil section which is spaced even-numbered layers of at least four layers from the first-mentioned coil section including the said coil section.

3,691,495

**NON-SHORTING WINDING CONNECTION FOR TAP CHANGER ON SERIES-MULTIPLE TRANSFORMER**  
Gerard V. Conway, Pittsfield, Mass., assignor to General Electric Company

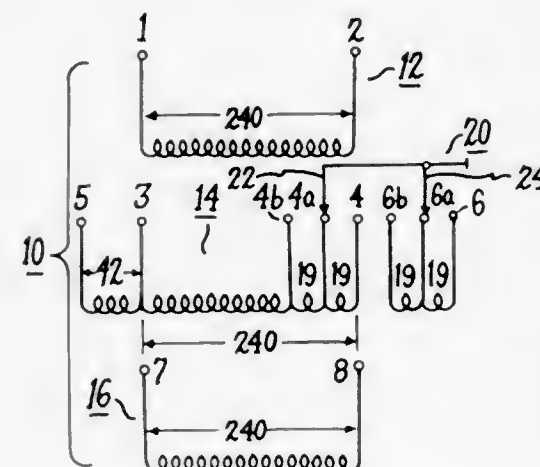
Filed Dec. 10, 1971, Ser. No. 206,726  
Int. Cl. H01f 21/12

U.S. Cl. 336—147

4 Claims

A tap changer winding connection for a series-multiple transformer. One of the windings is provided with a plurality of continuous turns equal to the multiple or parallel voltage of

the transformer. The winding is also provided with a plurality of tap connections. A second winding portion, discontinuous from the first winding is also provided having a plurality of tap connections. One or more other windings are provided also having sufficient continuous turns equal to the multiple or parallel voltage of the transformer. A series-multiple switch is



provided for connecting the windings in series or in parallel. When connected in parallel, the winding having the tap connections is connected in parallel with all of the continuous turns equal to the parallel voltage connected, thus effectively disconnecting the tap changer from the parallel connected windings.

3,691,496

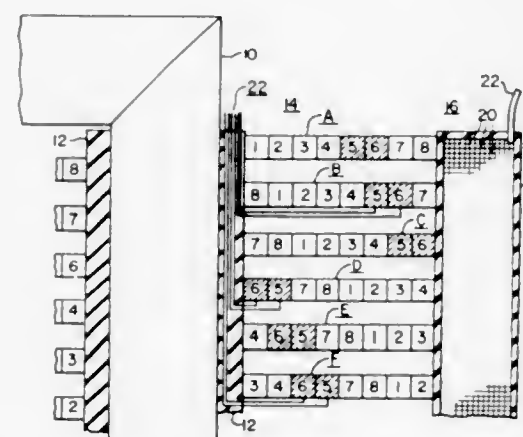
**HELITRAN WINDING FOR ELECTRICAL INDUCTIVE APPARATUS**

Nicholas G. Beavo, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed April 20, 1971, Ser. No. 135,712  
Int. Cl. H01f 21/12

U.S. Cl. 336—150

9 Claims



This invention relates to electrical inductive apparatus comprising tapped helitran windings. A plurality of separate conductors are simultaneously wound to form the helitran winding. One group of conductors provides a path for the load current of the winding. Another group of conductors has tap leads attached to the conductors. This group is used as a tapped winding for connection to tap changing apparatus. By winding the load and tapped windings simultaneously, the electrical and mechanical properties of tapped helitran windings may be economically improved.

3,691,497

**LEADLESS MICROMINIATURE INDUCTANCE ELEMENT WITH A CLOSED MAGNETIC CIRCUIT**

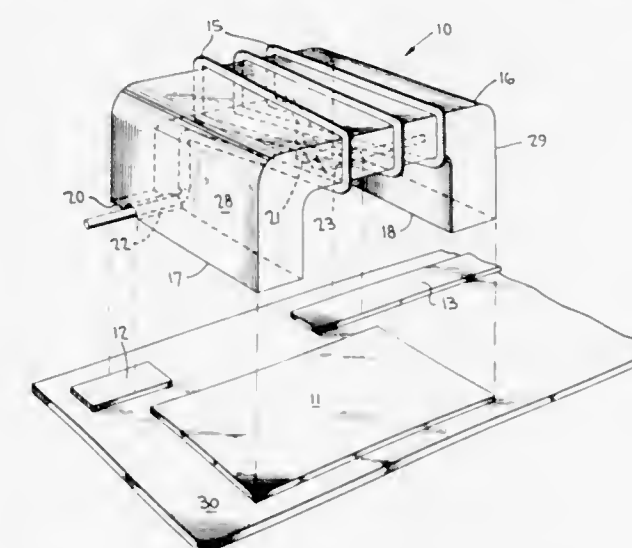
John P. Bailey, Atlanta, Ga., and William L. Muckelroy, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army

Filed Oct. 15, 1970, Ser. No. 80,851

Int. Cl. H01f 15/10, 27/26

U.S. Cl. 336—192

18 Claims



A Microminiature leadless inductance element having a closed magnetic loop. The inductance element comprises a conventional U-shaped ferromagnetic core having a wire winding around its center. Grooves are provided at the underside of the feet of the U-shaped core so as to receive the terminal portions of the wire winding. The grooves are coated with an electrical conductor and a similar electrically conductive coating is provided on the substrate such that an electrical connection is made without the use of soldering wires. A closed magnetic loop is achieved by applying a ferromagnetic coating along a portion of the substrate surface such that when the U-shaped core is placed on the substrate, all the flux lines generated within the core are conducted through the ferromagnetic coating on the substrate. This eliminates stray flux lines and materially enhances the Q of the system.

3,691,498

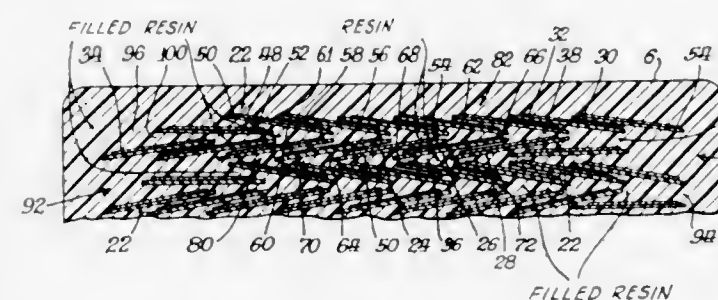
**RESIN IMPREGNATED TRANSFORMER COIL ASSEMBLY**

Martin I. Zwelling, Zanesville, and Robert W. Russell, New Concord, both of Ohio, assignors to McGraw-Edison Company, Elgin, Ill.

Filed March 24, 1971, Ser. No. 127,725  
Int. Cl. H01f 27/32

U.S. Cl. 336—205

4 Claims



A transformer coil assembly having a strip conductor wound to form a plurality of helix-shaped winding layers positioned concentrically and impregnated and encapsulated with a solidified unitary resinous mass. The strip conductor has a strip of conductive material and a strip of insulative material engaging one of the faces of the conductive strip and extending beyond both edges of the conductive strip which separates

and electrically insulates adjacent turns in a layer and adjacent layers from each other. The resinous mass includes a filler which is unevenly distributed within the resin such that pure resin is in the smaller interstices of the coil, between turns in a layer and between turns of adjacent layers and a resin and filler in the larger interstices of the coil and encapsulating the coil.

3,691,499

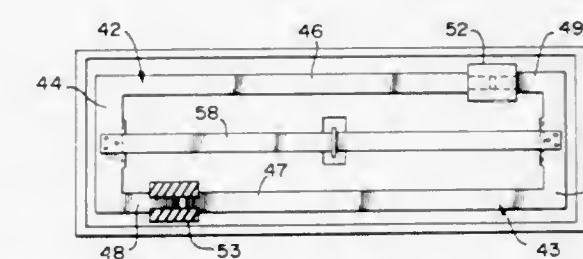
**ACTUATING DEVICE EMPLOYING A HEAT EXPANSIBLE WIRE**

Hugh J. Tyler, Santa Ana, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Sept. 10, 1971, Ser. No. 179,372  
Int. Cl. H01h 71/18

U.S. Cl. 337—123

3 Claims



The present actuator employs a heat expansible element and is of the type actuator known as a "hot-wire" actuator. The present actuator has an extremely simplified structure formed by two substantially J-shaped frame members, the arms of which are interconnected by insulating members; a thermally expansible element extending between the base portions of the frame members, which base portions also have depending legs serving both as terminals and supports for the frame; and linkage means responsive to the tension of the element as it expands and contracts to produce movement useful for actuating switches, valves, etc.

3,691,500

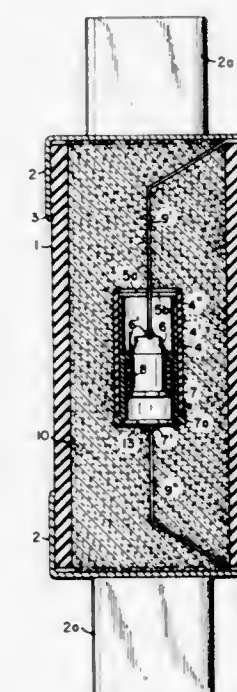
**ELECTRIC CARTRIDGE FUSE WITH EXTERNAL SOLDER JOINTS**

Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed April 16, 1971, Ser. No. 134,801  
Int. Cl. H01h 85/16

U.S. Cl. 337—232

7 Claims



A cartridge fuse with "exposed" solder joints conductively interconnecting the fusible element means and the terminal

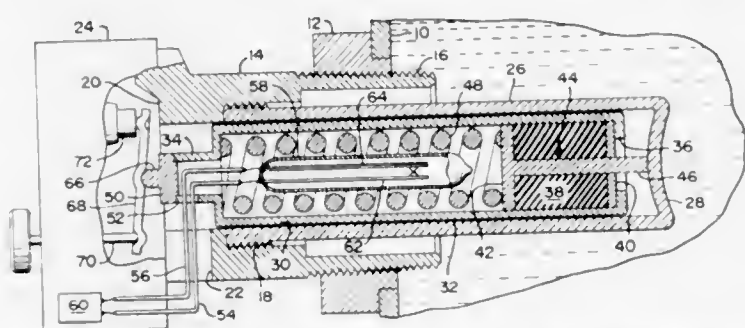


caps on the casing of the fuse (as distinguished from a cartridge fuse having "blind" solder joints serving the same purpose) is provided with a novel kind of "exposed" solder joints. The axially outer ends of the fusible element means are clamped between the outer surface of the casing and the inner lateral surfaces of the terminal caps. The lateral surfaces of the terminal caps have apertures in registry with the ends of the fusible element means. The apertures form cavities for solder joints conductively connecting the ends of the fusible element means and the terminal caps.

3,691,501

### THERMOSTAT ASSEMBLIES UTILIZING A HEAT EXPANSIVE AND CONTRACTIVE ELASTOMERIC MATERIAL

Jay R. Katchka, Long Beach; Michael J. Caparone, Arcadia, and Louis P. Morris, Garden Grove, all of Calif., assignors to Robertshaw Controls Company, Richmond, Va.  
Continuation-in-part of Ser. No. 25,194, April 2, 1970, abandoned. This application April 30, 1971, Ser. No. 139,105  
Int. Cl. H01h 37/06, 37/46  
U.S. Cl. 337—393 58 Claims

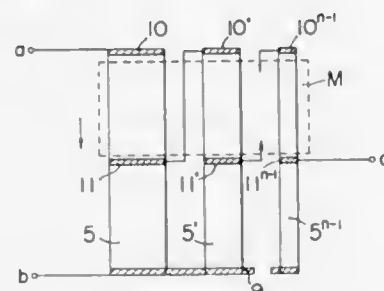


A thermostat assembly including a tubular housing, a thermal element including a heat expansive and contractive, elastomeric material, an actuator adapted to operate a control device through an open end of the housing, and a retainer slidably disposed within the housing and engaging the thermal element and the actuator to move the actuator in response to expansion and contraction of the material. Various embodiments of the thermostat assembly utilize a removable retainer capsule enclosing the material and an operator member, a thermal element having a central bore to permit withdrawing of the actuator into the housing with heat increase, and a hollow cylindrical retainer to accommodate a temperature responsive switch.

3,691,502

### SEMICONDUCTOR TYPE POTENTIOMETER DEVICE

Shoei Kataoka, Tokyo-to, Japan, assignor to Kogyo Gijutsuin (a/k), Tokyo-to, Japan  
Filed April 21, 1969, Ser. No. 817,934  
Claims priority, application Japan, April 24, 1968, 43/27059; Nov. 20, 1968, 43/84456; Nov. 30, 1968, 43/87324; Feb. 19, 1969, 44/11812; Feb. 20, 1969, 44/12127; Feb. 21, 1969, 44/12591  
Int. Cl. H01c 7/16  
U.S. Cl. 338—32 R 27 Claims



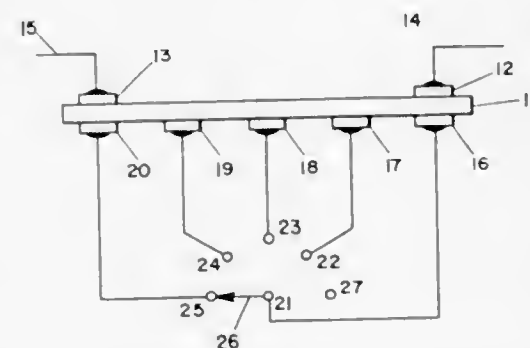
Various improvements of a semiconductor type potentiometer device comprising one or more three electrode

semiconductor elements each having two end electrodes and an intermediate electrode provided at its intermediate portion, and a magnetic field applying device for applying a magnetic field to the semiconductor element while being moved along the element; these improvements being made to extend greatly the variable range of the output voltage of the device and to obtain an output voltage corresponding to one-dimensional variation as well as two-dimensional variation of the magnetic field.

3,691,503

### VARIABLE RESISTANCE RESISTOR ASSEMBLY

James Battle, Tonawanda, N.Y., and Richard A. Phillips, Myrtle Beach, S.C., assignors to The Carborundum Company, Niagara Falls, N.Y.  
Filed Sept. 29, 1971, Ser. No. 184,742  
Int. Cl. H01c 13/00  
U.S. Cl. 338—95 8 Claims

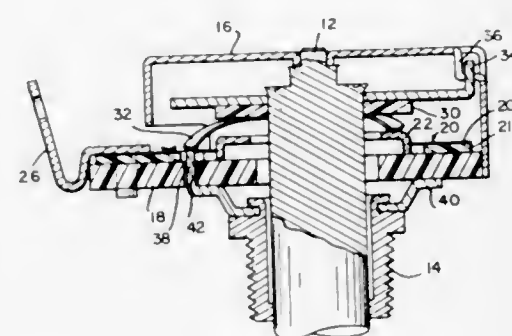


A variable resistance resistor assembly comprises as its central component a resistance element in sheet form, which can be an ohmic resistor, a thermistor having a positive or negative temperature coefficient of resistivity, a varistor, or the like. One side of the resistance element sheet is provided with a pair of terminal electrodes, between which the resistance of the resistor assembly is varied. On the opposite side of the resistance element sheet there is provided a plurality of resistance variance electrodes, which can be shorted out to vary the resistance of the resistor assembly.

3,691,504

### VARIABLE RESISTOR WITH COLLECTOR AND GROUNDING CONTACT

George O. Puerner, Frankford, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.  
Filed Oct. 27, 1971, Ser. No. 192,908  
Int. Cl. H01c 9/02  
U.S. Cl. 338—174 4 Claims

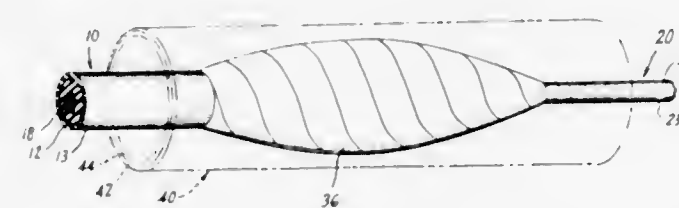


A tab is connected to a mounting plate for a control means, the tab terminating at a predetermined position along a resistive path of the control means to provide selective positioned grounding of the contact arm.

3,691,505

### HEATER CABLE SPLICE AND METHOD OF FORMING

Ralph L. Graves, East Greenwich, R.I., assignor to General Electric Company  
Continuation-in-part of Ser. No. 733,369, May 31, 1968, abandoned. This application Aug. 20, 1970, Ser. No. 65,532  
Int. Cl. H01c 3/00; H02g 15/08  
U.S. Cl. 338—214 3 Claims

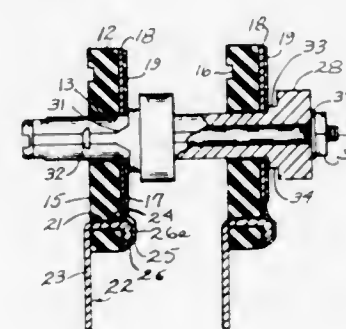


Moisture resistant splicing of heater cable for subsoil or other high moisture installation and use is provided by progressively exposing the lengths of the surfaces of the superposed layers of the ends of cables to be spliced, electrically engaging the current carrying conductors, applying a semi-cured vulcanizable insulation layer about the conductors, to contact sections of the surfaces of exposed layers, heat shrinking a two layer shrink tube as an outer jacket of the splice and simultaneously heating and compressing the semi-cured vulcanizable insulating layer to partially fuse the layer and to bond the layer to the exposed surfaces.

3,691,506

### RESISTORS AND STACKED PLURALITY THEREOF

Stanley O. Bender, Berne, and Joseph Di Girolama, Elkhart, both of Ind., assignors to CTS Corporation, Elkhart, Ind.  
Filed April 5, 1971, Ser. No. 131,029  
Int. Cl. H01c 1/02  
U.S. Cl. 338—317 15 Claims



An electrical assembly comprises a plurality of discrete resistors connected together in stacked relationship. Each of the discrete resistors comprises a dielectric substrate having an aperture extending therethrough and a film of resistance material secured thereon. A spacer supported in each of the apertures has means preventing rotation of the spacer relative to the dielectric substrate and interfits with an adjacent spacer to prevent relative rotation of the two spacers. Terminals extend through the dielectric substrate and are electrically connected to the film of resistance material such that forces applied to the end of a terminal are not transferred to the point of electrical connection between the terminal and the film of resistance material. Each of the spacers is provided with a hole extending therethrough such that a bolt passing through the holes maintains the discrete resistors in stacked relationship.

3,691,507

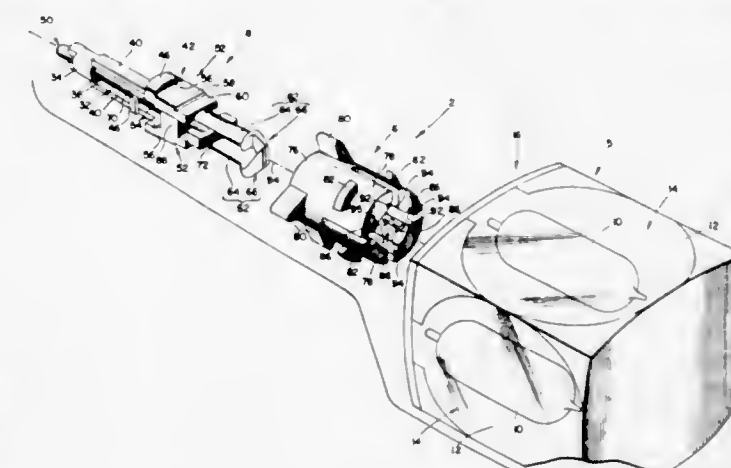
Patent Not Issued For This Number

902 O.G.—26

3,691,508

### NOVEL PLUG AND SOCKET ASSEMBLIES FOR FLASH CUBES

John B. Morse, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.  
Filed June 30, 1970, Ser. No. 51,249  
Int. Cl. G03b 9/70; H01r 13/62  
U.S. Cl. 339—45 T 28 Claims

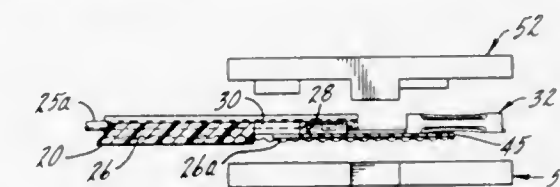


A novel plug and socket assembly is provided for releasably securing flash cubes wherein said novel socket is adapted to selectively reject predetermined plugs while said novel plug is adapted to mate with said novel socket and with all sockets common to the prior art.

3,691,509

### SHIELDED FLAT CABLE CONNECTOR ASSEMBLY

Stanley J. Krol, Chicago, Ill., assignor to Malco Manufacturing Company, Inc., Chicago, Ill.  
Filed Aug. 17, 1970, Ser. No. 64,527  
Int. Cl. H01r 13/58  
U.S. Cl. 339—14 R 7 Claims



A connector assembly for shielded multi-conductor, flat cable wherein a connector housing is anchored through the cable matrix and shield material. The conductors are shielded, yet insulated from the shielding, in the connector housing as well as along the length of the cable.

3,691,510

### QUICK REPLACEMENT, SLACK TAKE-UP ELECTRIC CORD FOR LAMPS, RADIOS, CLOCKS AND THE LIKE

Herbert G. Lehmann, 5 Kent Road, Easton, Conn.  
Filed April 15, 1970, Ser. No. 28,762  
Int. Cl. H01r 11/00, 11/20  
U.S. Cl. 339—28 3 Claims



A quick replacement, slack take-up electric cord for small appliances such as lamps, clocks, radios, etc. comprising a



length of two-conductor lamp cord which is preferably coiled and permanently set in a helix, one end of the lamp cord having attached to it a conventional two-prong electric plug adapted to be inserted in a wall receptacle. The other end of the two-conductor cord carries, and extends into one end of a special elongate receptacle having a socket or recess at its other end, opposite the entrance of the two-conductor cord. Within the special receptacle are two metal connector pieces having sharp prongs, the latter being located at the inner end of the socket. The socket is of substantially oblong cross sectional configuration, whereby it is adapted to receive the freshly-cut end portion of the original, somewhat flat electric cord from the appliance, which cord has been cut close to the appliance. The receptacle also has a manually operable lever which is adapted to force the said cut end of the appliance cord laterally against the prongs, causing the latter to pierce the insulation of the appliance cord and make electrical connections thereto. Thus, replacement of a lamp or appliance cord involves merely cutting the cord an inch or so from the lamp base or appliance casing, inserting the cut cord end deeply in the receptacle of the replacement electric cord, and then operating the lever to cause the cut end to be impaled on the sharp prongs of the receptacle so that the prongs effect electrical connections to the conductors of the appliance cord. The plug of the replacement cord is then inserted in the wall receptacle, whereupon the installation is complete.

3,691,511

#### PLUG CONNECTION CONTACT WITH HIGH SECURITY AGAINST BURNING OFF

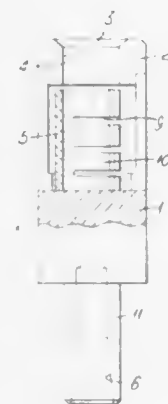
Gerhard Leonhard Emil Billmann, Bad Rappenau, Germany, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Oct. 5, 1970, Ser. No. 77,903

Int. Cl. H01r 13/52

U.S. Cl. 339—111

6 Claims



An electric connector for high circuit loads having an inner contact portion and an outer contact portion for the purposes of minimizing the arc encountered in switching high circuit loads. In an assembled position, a mating contact is electrically engaged by both the inner and the outer contact portions of the connector. When being removed from the connector, the mating contact disengages from the inner contact portion of the connector first, while maintaining electrical contact with the outer portion of the connector. As the mating contact element is further withdrawn, it disengages from the outer contact portion of the connector, and any arcing, occurring as a result of the discontinuity of low resistance contact, will occur between the mating contact element and the outer portion of the connector plug. The outer portion of the connector plug is composed of a material offering a high resistance to burning-off and is provided with an inwardly inclined surface at the entry portion of the connector to cause arcing to take place on such incline. The inner portion makes low resistance connection with the mating connector, and, by the action of the outer connector portion, is protected against the effects of arcing.

#### 3,691,512 IMPREGNATED CERAMIC INSULATORS AND METHOD OF MAKING SAME

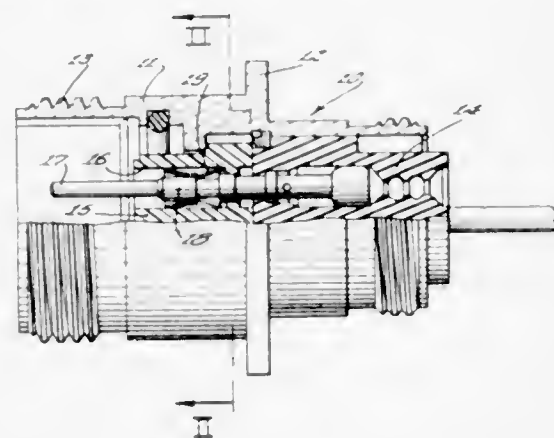
William E. Exner, Elmhurst, Ill., assignor to The Pyle-National Company, Chicago, Ill.

Filed Sept. 16, 1970, Ser. No. 72,595

Int. Cl. H01r 23/02, 13/46

U.S. Cl. 339—176 M

7 Claims



Moisture resistant electrical insulators particularly for use in electrical connectors including a matrix of a normally porous ceramic material which is impregnated with a thermoset electrically insulating resinous composition.

3,691,513

#### VELOCITY MEASURING SYSTEM

Wolfgang Richard Ernst Stednitz, Neukrug, Germany, assignor to Fried Krupp Gesellschaft mit beschränkter Haftung, Essen, Germany

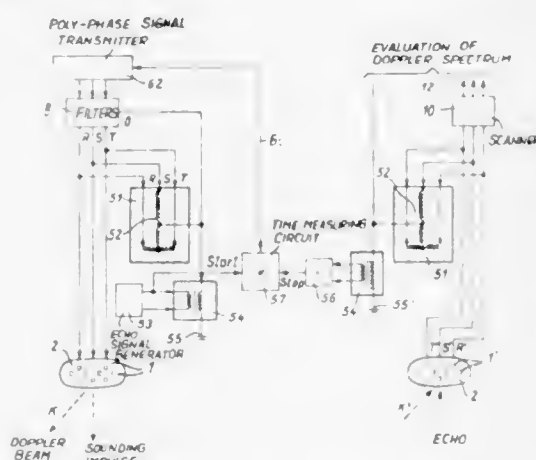
Continuation-in-part of Ser. No. 850,146, Aug. 14, 1969, Pat. No. 3,603,920. This application March 3, 1971, Ser. No. 120,608

Claims priority, application Germany, Sept. 19, 1968, P 17 98 276.2; Mar. 5, 1970, P 20 10 348.4

Int. Cl. G01s 9/66

U.S. Cl. 340—3 D

6 Claims



Apparatus for determining the velocity and direction of movement of a vehicle by measuring the Doppler effect, which apparatus includes an array of individual transducer elements mounted on the bottom of the vehicle for sending and receiving sound signals. Multi-phase signal generating means are provided to generate a plurality of signals of substantially similar frequency to produce sound waves from the transducer elements, with the signals each having a different phase. The transducer elements of an array are equidistantly spaced from one another and electrically connected into groups, the number of groups being a multiple of the number of phase signals produced by the multi-phase generator. The transducer elements of each group are arranged in a line, and the lines formed by each group are parallel to the lines formed by other groups and occupy a common plane. A signal of a single phase is applied to each group in cyclical repetition to produce a directive signal from the entire array of transducer

elements. A frequency evaluating circuit is provided to evaluate the frequency of signals produced by sound waves striking the transducer elements and a scanner means is provided to successively connect each group of transducer elements to the frequency evaluating circuit in a cycle having substantially the same period as the cyclical repetition of the sound radiating signal. In order to prevent interferences from undesired lobes of the transmitted and received signals the spacing between adjacent transverse rows of similar phased transducers in each row, in a three-phase system is less than  $\lambda/3$ , where  $\lambda$  is the wavelength of the sound waves, and a Scott or T-connection transformer is connected in parallel with the three-phase inputs and outputs respectively of the transducers.

3,691,514

#### METHOD AND APPARATUS FOR DETERMINING THE DIRECTION OF PROPAGATION OF A PLANE WAVE

Anne-Marie Jeanne Goursolas, Paris, and Andre Simon Georges Lambert, Fresnes, both of France, assignors to Societe Alsacienne De Constructions Atomique De Telecommunications Et D'Electronique "Alcatel", Paris, France

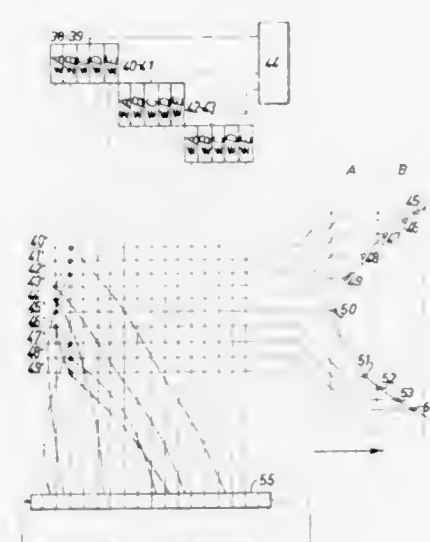
Filed June 16, 1970, Ser. No. 46,667

Claims priority, application France, June 16, 1969, 6920024

Int. Cl. G01s 3/00

U.S. Cl. 340—6 R

8 Claims



A method and apparatus for determining the direction of propagation of a plane wave, wherein the analog signals occurring at preselected time intervals from a plurality of detectors spaced along a predetermined direction are converted to digital signals. The difference between the aggregated value of the digital signals of the detected wave and a wave in the predetermined direction providing an indication of the deviation of the path of the wave from the predetermined direction.

3,691,515

#### VARIABLE RELUCTANCE MAGNETIC FIELD TRANSDUCER

George Pida, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 29, 1960, Ser. No. 59,453

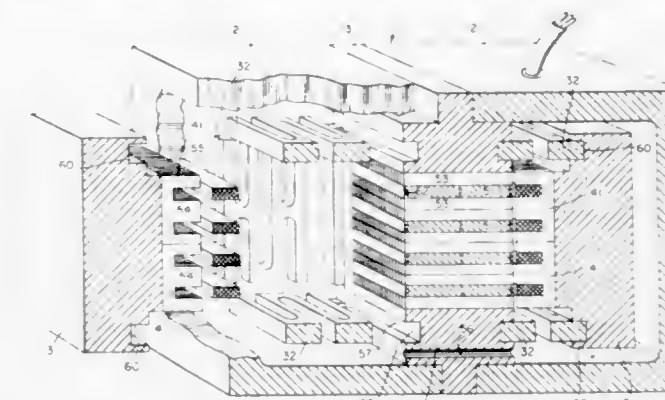
Int. Cl. G01v 1/00

U.S. Cl. 340—8 R

6 Claims

A magnetic field transducer of the variable reluctance type provided with permanent magnetic biasing having a high

degree of electromechanical coupling. The arrangement of the mechanical system is such as to isolate the dynamic



changes of the air gap from hydrostatic pressures to thereby avoid deterioration of transducer calibration which would result from changes in the air gap length.

3,691,516

#### ACOUSTIC PULSE GENERATOR UTILIZING A MECHANISM FOR CHANGING THE NATURAL FREQUENCY OF OSCILLATION

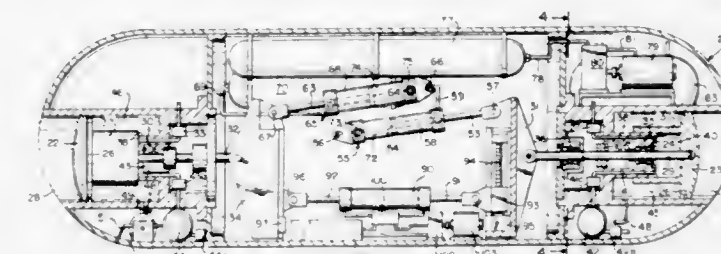
Walton Graham, Roslyn; Irving E. Melnick, Syosset, and Tulio De Filippis, Garden City, all of N.Y., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Nov. 21, 1969, Ser. No. 878,776

Int. Cl. G01v 1/02

U.S. Cl. 340—8 R

29 Claims



An acoustic pulse generator for generating acoustic pulses of varying frequency in water is disclosed including a mechanically resonant structure, a drive mechanism for causing the mechanically resonant structure to oscillate, a mechanism for changing the natural frequency of oscillation of the mechanically resonant structure, and one or more transducers for transmitting the oscillations of the mechanically resonant structure to the water in which the acoustic pulse is to be generated.

3,691,517

#### SEISMIC HOLOGRAPHY

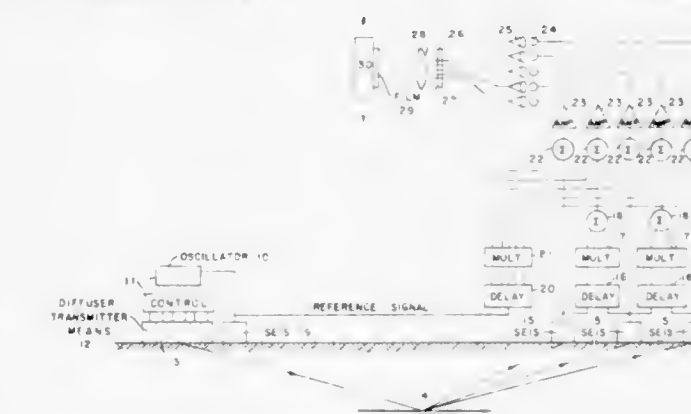
Emmet D. Riggs, Dallas, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Filed July 25, 1969, Ser. No. 844,864

Int. Cl. G01v 1/00

U.S. Cl. 340—15.5 CP

3 Claims



By utilization of the principles of holography, a remote object, usually a seismic anomaly, is made visible and subject to



detail examination by visual or optical means. Coherent acoustical energy is transmitted into the earth or other elastic medium and the energy received with areal detector means. A reference signal obtained from the energy source is delayed, amplified, and mixed with the signals from the areal detector means to obtain a conventional holographic interference pattern. Scaling is accomplished by an optical reduction. A seismic model is used to provide an ultrasonic test signal equivalent in major respects to seismic field conditions for recording acoustical holograms.

3,691,518

# **METHODS AND APPARATUS FOR ACOUSTIC TRAVEL TIME AND CEMENT BOND LOGGING**

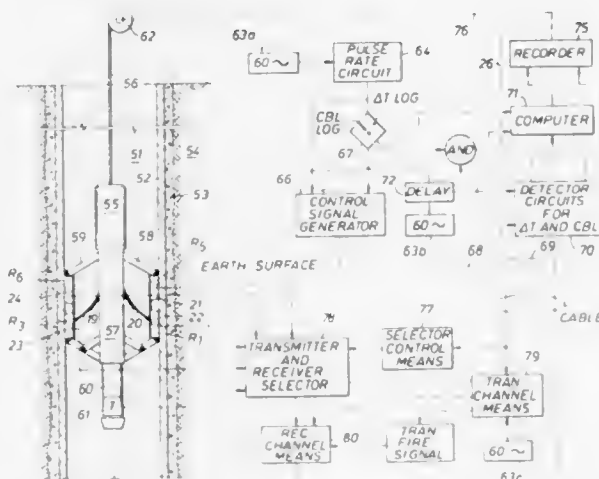
Nick A. Schuster, Darien, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed April 7, 1970, Ser. No. 26,265

Int. Cl. G01v 1/16

U.S. Cl. 340—18 P

17 Claims



An illustrative embodiment of the present invention includes an acoustic well logging sonde having four articulated arm members disposed at quadrant intervals about a central tubular body member and having an acoustic transmitting transducer disposed on the lower portion of the body member. A total of six acoustic transducers are carried by the four quadrant spaced arms of the tool. A switching arrangement is provided for selecting groups of four of the six articulated transducers for making either cement bond log measurements or acoustic travel time measurements.

3,691,519

# **PULSE REFLECTING HIGHWAY SIGNALLING SYSTEM**

David Wolf, 67 Brackett Road, Newton, Mass.

Continuation-in-part of Ser. No. 29,122, April 16, 1970, abandoned. This application Aug. 10, 1970, Ser. No. 62,417

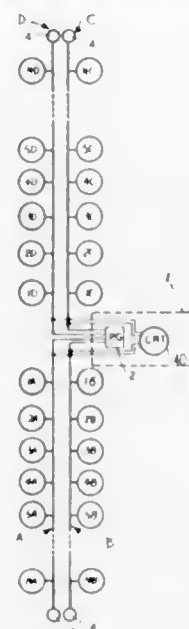
Int. Cl. G01r 3/111

U.S. Cl. 340—22

19 Claims

A signaling system designed primarily for use on limited access highways. A plurality of individual stations positioned along the right of way of a highway are connected to a master control by a coaxial cable. Each individual station consists of a means for varying the impedance of the coaxial cable to one of a selected number of different impedances including for example an open circuit, a short circuit, a partial open circuit and a partial short circuit. The stations of each are located at different distances along the length of the cable as for example every tenth of a mile. The cable is constantly monitored from the master control by pulse signals. Reflections of the pulse signals are displayed on an oscilloscope which is calibrated for an A scope visual display and indication of the particular station from which a pulse signal is reflected or partially reflected

by an impedance mismatch. In a modification, in place of a coaxial cable with individual stations there is provided a parallel pair of normally spaced wires supported by a dielectric



whereby the conductive wires may be moved toward one another to change the characteristic impedance at a given location.

3,691,520

# **MANEUVERING COMMAND DISPLAY FOR AIRCRAFT**

Knut Lennart Nordstrom, Saab-Scania Aktiebolag S-581-88, Linköping, Sweden

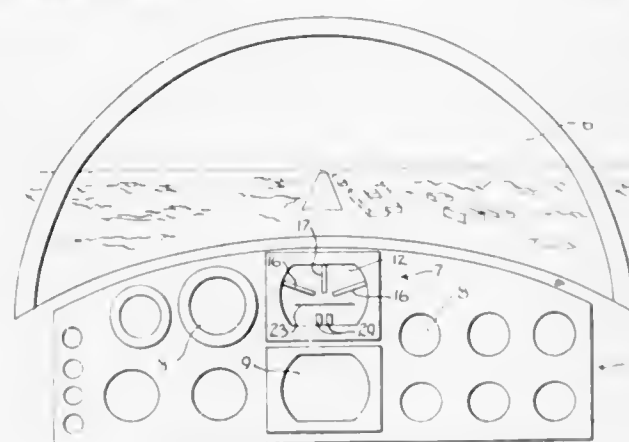
Filed May 5, 1971, Ser. No. 140,340

Claims priority, application Sweden, May 11, 1970, 6389/70

Int. Cl. G05d 1/08; B64d 43/00

U.S. Cl. 340—27 AT

5 Claims



Maneuvering commands are displayed to an aircraft pilot by three conspicuous bars on a background panel that has horizontal and vertical axes of symmetry. The bars swing about their ends nearest the intersection of said axes. Two bars, extending symmetrically to opposite sides of the vertical axis signify pitch maneuvers, being aligned with the horizontal axis when pitch is satisfactory or inclined to it in the direction of required pitch change. The third bar is aligned with the vertical axis when heading is satisfactory or inclined to it in the direction of required heading change.

3,691,521

# **LOW PRESSURE INDICATOR FOR AIR BAG SAFETY SYSTEM**

Michael D. Schaefer, Sterling Heights, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed May 3, 1971, Ser. No. 139,492

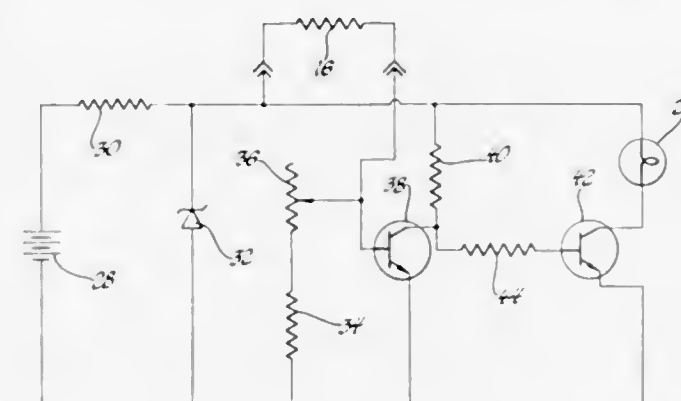
Int. Cl. B60r 21/00

U.S. Cl. 340—52 R

9 Claims

An indicator light is energized when the pressure in a nitrogen storage tank forming part of an air bag safety system falls below a predetermined level. A carbon resistor disposed

within the tank is connected in a voltage divider circuit feeding the input of a first transistor switching circuit. When normal high pressure is maintained in the tank the resistor has a relatively low resistance value so as to maintain a first transistor in a conductive state. A second transistor switching circuit is thereby maintained in a non-conductive state, effec-



tively opening the indicator light circuit. When the pressure in the tank falls below a predetermined threshold the resistance increases to a point where the first transistor circuit becomes non-conductive forcing the second transistor in a conductive state so that the lamp is energized signalling the driver of this failure condition.

3,691,522

# **EARLY WARNING BRAKE FAULT SYSTEM**

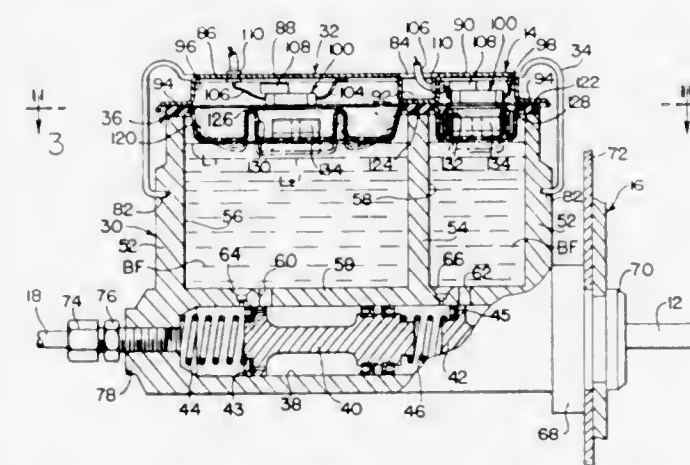
Loren P. Hocking, East Detroit, Mich., and Louis B. Lotti, Clair Shores, Mich., assignors to Benjamin W. Colman, Southfield, Mich., part interest

Filed June 7, 1971, Ser. No. 150,522

Int. Cl. B60q 1/00

U.S. Cl. 340—52 C

24 Claims



An early warning system, in a motor vehicle having a hydraulic brake system, to signal potential brake failure due to either a loss or leakage of brake fluid from the brake system, or to excessive wear of lining on the brake shoes or disc pads at the wheels is disclosed. The loss of measured as a volume loss of brake fluid.

3,691,523

# **VEHICLE WHEEL TEMPERATURE MONITORING SYSTEM**

Millard O. Helms, R.F.D. 2, and Oris G. Dunbar, 817 Reservoir, both of Hannibal, Mo.

Filed June 3, 1971, Ser. No. 149,728

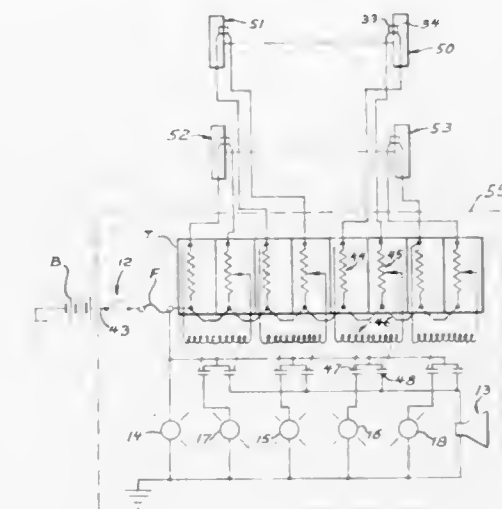
Int. Cl. G08b 21/00; B60q 1/00

U.S. Cl. 340—57

6 Claims

A temperature-compensated system for monitoring excessive heat build-up at any wheel of a vehicle includes first and second temperature sensitive elements mounted on either side of each wheel backing plate. The pairs of sensors are con-

nected in circuit with each other and with the vehicle's battery to generate an alarm in the vehicle cab when excessive heat is



3,691,524

# **TIRE INFLATION MONITORING SYSTEM**

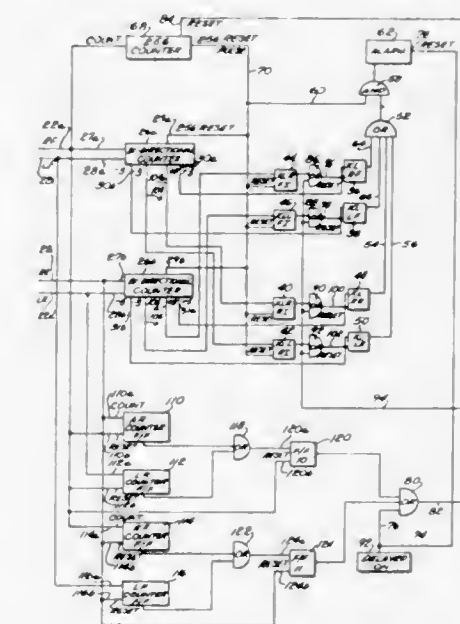
Harold A. Frost, Durham, N.C., and Melvin R. Simpson, Chardon, Ohio, assignors to Eaton Yale & Towne, Inc., Cleveland, Ohio

Filed June 15, 1970, Ser. No. 45,954

Int. Cl. B60c 23/00

U.S. Cl. 340—58

17 Claims





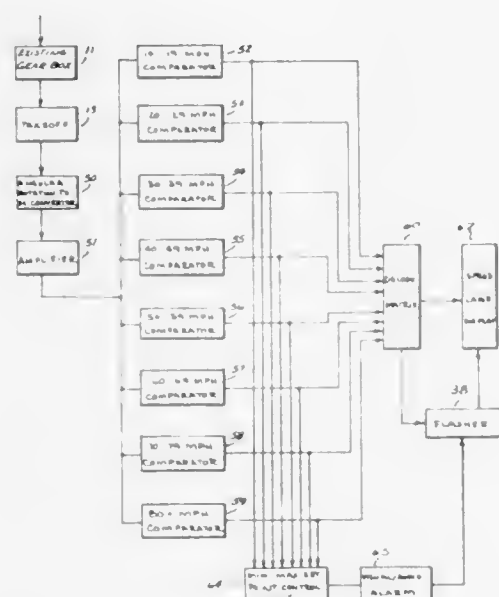
3,691,525

## VEHICLE SPEED INDICATOR SYSTEM

Rudolph M. McClellan, Sr., and Rudolph M. McClellan, Jr., both of 1622 Crestdale, Houston, Tex.  
Division of Ser. No. 786,291, Dec. 23, 1968, Pat. No. 3,597,730. This application May 27, 1971, Ser. No. 147,526  
Int. Cl. B60q 1/54

U.S. Cl. 340—62

9 Claims



A vehicle speed indicating system comprises indicating lamps mounted on the vehicle and operated in a predetermined pattern to indicate the speed of the vehicle to those remote therefrom.

3,691,526

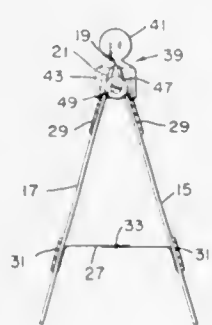
## SAFETY DEVICE FOR DIRECTING TRAFFIC

Jack F. Huntington, 213 Avenue B, Redondo Beach, Calif.  
Filed June 8, 1970, Ser. No. 44,209

Int. Cl. E01H 9/01

U.S. Cl. 340—119

6 Claims



A traffic barricade-type structure constructed entirely of polymeric material such as high impact styrene and vinyl and including a pair of spaced A-shaped elongated strip supports with a pair of generally horizontal spaced elongated strips disposed on each side of the A-shaped supports. These supports are hinged at the apex thereof by resilient straps and the spacing between the legs of the supports is limited by transversely disposed resilient straps which may be temporarily uncoupled to allow the supports to be reversed to expose different safety indicia.

3,691,527

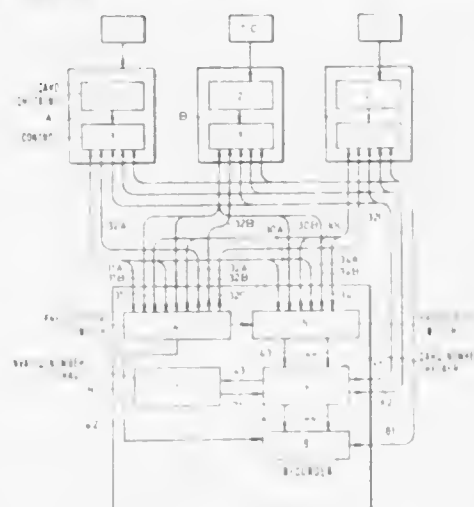
## CREDIT CARD ACTUATED VENDING MACHINE SYSTEM

Mititaka Yamamoto, Kyoto, Japan, assignor to Tateisi Electronics Co., Kyoto-shi, Japan  
Continuation of Ser. No. 563,158, July 6, 1966, abandoned.  
This application April 6, 1970, Ser. No. 26,095

Int. Cl. H04q 9/00

U.S. Cl. 340—149 A

1 Claim



Apparatus for checking whether a credit card inserted into a vending machine is valid and, additionally, assigning priority of operation of the vending machine to owners of credit cards, based on the order of insertion of the credit cards into the machine.

3,691,528

## CONTROL SYSTEM FOR AUDIO-VISUAL DEVICES CONNECTED BY CABLES

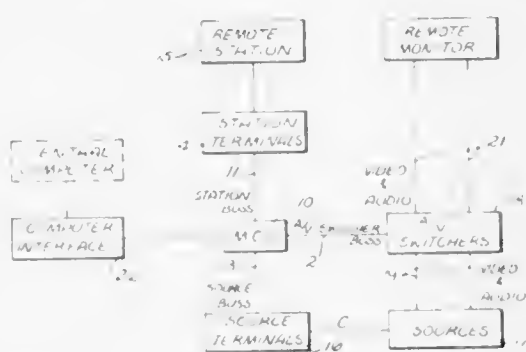
James F. Calvagna, Anaheim, and Roger A. Balling, Santa Ana, both of Calif., assignors to Community Bank, Downey, Calif.

Filed April 15, 1970, Ser. No. 28,698

Int. Cl. H04q 3/00, 5/00

U.S. Cl. 340—152 R

20 Claims



A system for controlling any of a plurality of information storage or generating devices which are grouped in operative association with common connectors along a cable common thereto by any of a plurality of remote stations which are also grouped in operative association with common connectors along a common cable. Means are provided for generating from a station a signal representative of a device address to transfer such signal to each of the devices. Means are provided for comparing the generated signal with device addresses registered in association with the devices whereby, upon identity therebetween, control of the device is effected to the generating station first to request such control. Feedback means are provided operative with the generating station and other stations to indicate the status of the device and its function, and to indicate when control thereof has been relinquished. Means enabling an overriding control station are also provided.

3,691,529

## METHOD FOR LOCATING IMPEDANCE

DISCONTINUITIES IN A WAVE PROPAGATING MEDIUM  
Jack H. Pizante, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 8, 1970, Ser. No. 53,064

Int. Cl. G01v 1/28

U.S. Cl. 340—15.5 DP

19 Claims



A method for digitally processing seismic data, or other similar data derived for propagating wave energy to produce a data image comprised of a plurality of coordinate points is described. Each coordinate point has a value which is a combination of the amplitude values taken from a plurality of primary seismic traces at the travel times on the respective primary traces required for energy to travel from the respective source points to the coordinate point and return to the respective receiving points of the seismic traces. More particularly, the combination is accomplished in such a way as to increase the signal-to-noise ratio by selected data to be combined at the respective coordinate points either on a predetermined basis or automatically by an analysis of the data.

3,691,530

Patent Not Issued For This Number

3,691,531

## ELECTRONIC COMPUTER WITH CYCLIC PROGRAM MEMORY

Fabrizio Saltini, Modena, and Vittorio Ecceutuato, Cornaredo, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

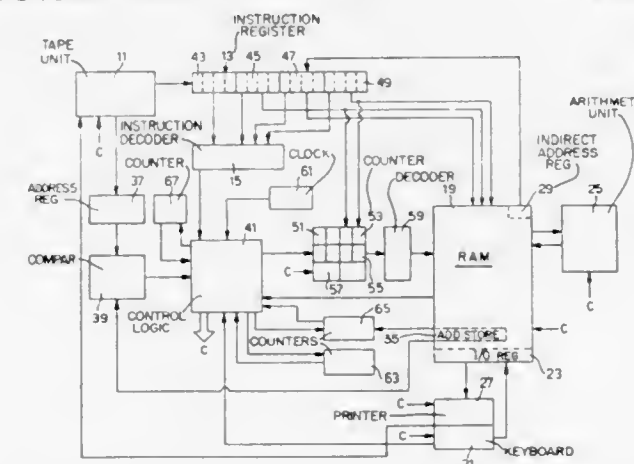
Filed June 18, 1970, Ser. No. 47,338

Claims priority, application Italy, June 21, 1969, 52336 A/69

Int. Cl. G06F 13/02

U.S. Cl. 340—172.5

13 Claims



An electronic computer having a cyclic, serial access program storing tape memory and a random access memory for

storing data. The random access memory also includes an input-output register and portions for storing the address of the next instruction to be executed in the program memory and an indirect address. A predetermined time after transferring an instruction to an instruction register the program memory checks to see if the execution of the instruction has been completed. If it hasn't been, the motion of the tape is stopped until it is completed. Also provided are means for shifting the contents of a selected data memory register.

3,691,532

Patent Not Issued For This Number

3,691,533

## ELECTROCHEMICAL DATA STORAGE WITH ELECTRON BEAM ACCESSING

Richard Bogenberger, Oberneuching; Conrad Helmcke, Munich-Perlach; Athanasios Kritikos; Walter Kroy, both of Munich, and Walter E. Mehnert, Ottobrunn, all of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

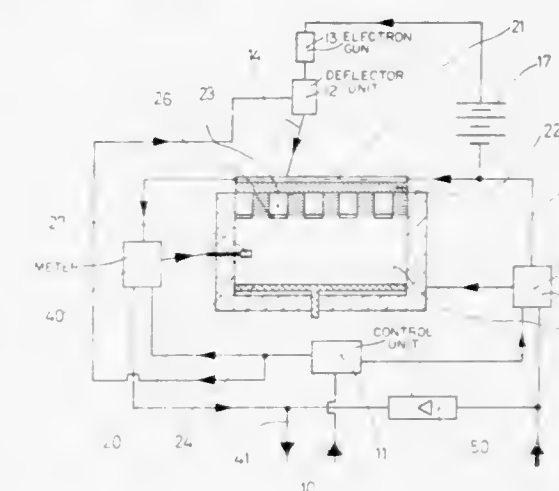
Filed April 20, 1970, Ser. No. 29,828

Claims priority, application Germany, May 23, 1969, P 19 26 529.3

Int. Cl. G11c 13/02, 11/00

U.S. Cl. 340—173 CH

6 Claims



Storage element for information using electrochemical means. Multiple, polarizable storage electrodes are provided and arranged spaced from and opposed to a nonpolarizable counterelectrode, all the electrodes being arranged within a chamber containing an electrolyte. Information is recorded onto the polarizable electrodes in a desired pattern by causing an electron beam to impinge thereon through a junction contact. Information is digitally obtained by directing the electron beam to selected locations which develops a voltage between one of the storage electrodes and the counterelectrode the magnitude of which depends upon the state of polarization of the storage electrode. Such voltage is then measured by an auxiliary electrode and delivered as an output.

3,691,534

## READ ONLY MEMORY SYSTEM HAVING INCREASED DATA RATE WITH ALTERNATE DATA READOUT

Andrew G. Varadi, Briarwood; Richard B. Rubinstein, New York, both of N.Y., and Steven Radoff, Nashua, N.H., assignors to General Instrument Corporation, Newark, N.J.

Filed Nov. 4, 1970, Ser. No. 86,882

Int. Cl. G11c 7/00, 19/00

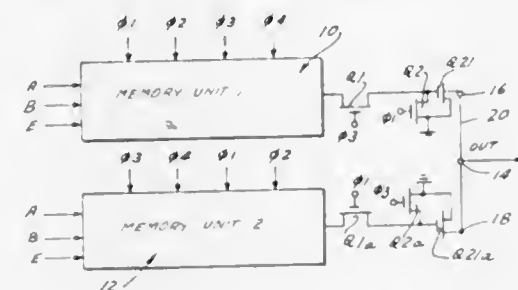
U.S. Cl. 340—173 R

7 Claims

A permanent storage memory system comprises first and second memory units each having data stored thereon in different predetermined patterns. The outputs of each memory



unit are connected to a common memory output. Timing signals are applied to each memory unit in reverse order and the selected data is transferred to the common memory output from one unit and then the other during the first and second of these signals, respectively. For each memory unit, data is blocked from the output during the period of the timing signal in which the data is not being transferred, thereby to enable



ready combination of the data signals from each unit at the memory output. Data from each unit may be scanned in a predetermined sequence, that sequence being initiated from a location in that unit determined by an address signal applied to the unit. The selection of that initial memory location is performed by means of a shift register in combination with a logic unit. The latter receives an address signal and presets the shift register in accordance therewith.

3,691,535

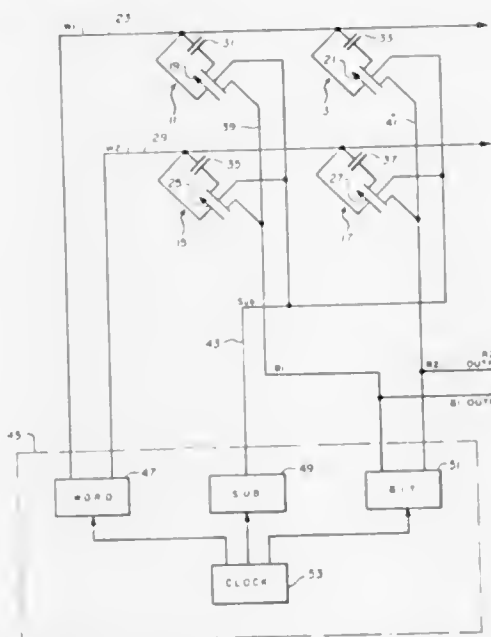
## SOLID STATE MEMORY ARRAY

Thomas R. Williams, Stow, Mass., assignor to Sperry Rand Corporation

Filed June 15, 1970, Ser. No. 46,350

Int. Cl. G11c 11/40, 7/00, 11/00

U.S. Cl. 340—173 PP



A memory array is made up of rows and columns of memory elements. Each memory element includes a known type of variable threshold insulated gate field effect transistor characterized by electrically controllable conduction thresholds established by potentials applied between the respective gate electrodes and substrates. Each of the variable threshold transistors in a given row has its gate electrode connected to a word line common to that row and its drain electrode capacitively coupled to the same word line. Each of the variable threshold transistors in a given column has its source electrode connected to a bit line common to that column. Information is written into the memory by first setting all of the variable threshold transistors to a given threshold and then reversing the threshold of certain variable threshold transistors selected in accordance with the information to be stored. Information is read out of the memory by means of a two-part readout

cycle in which all of the variable threshold transistors corresponding to a selected word are subjected to a sampling pulse during which time actual readout occurs; then to a restoration pulse which subjects the variable threshold transistors corresponding to the selected word to potentials opposite to that of the sampling pulse.

3,691,536

## VARIABLE LENGTH STORING DEVICE

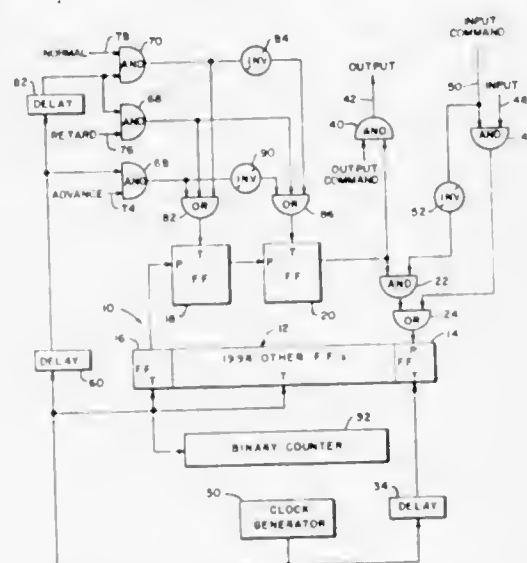
John L. Peterson, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Oct. 9, 1970, Ser. No. 79,593

Int. Cl. G11c 21/00, 19/00

U.S. Cl. 340—173 RC

12 Claims



A system for controlling the operation of a recirculating memory having a binary counter to indicate the address of data in the memory, including two storage stages in the recirculating path of the memory, with gating to deliver timing pulses to the two storage stages so as to cause them selectively to provide two, one, or zero elements of data storage in the recirculation of data in order to influence the phasing between the recirculating memory and the binary counter.

3,691,537

## HIGH SPEED SIGNAL IN MOS CIRCUITS BY VOLTAGE VARIABLE CAPACITOR

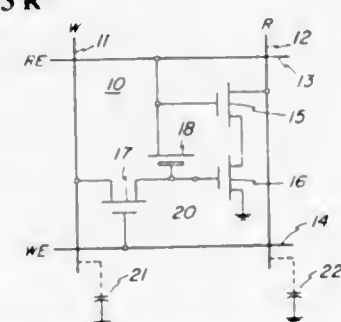
James F. Burgess, and Constantine A. Neugebauer, both of Schenectady, N.Y., assignors to General Electric Company

Filed May 26, 1971, Ser. No. 146,968

Int. Cl. G11c 11/24, 11/40

U.S. Cl. 340—173 R

6 Claims



Voltage losses, and consequent reduced transconductance, can be overcome in metal-oxide-semiconductor (MOS) circuits by the use of a voltage variable coupling capacitor comprising a drain and a gate electrode. Since the capacitor is voltage variable, selective coupling is obtainable. In a dynamic memory cell, a voltage variable capacitor connected to the storage node selectively couples enabling to the storage node to increase the transconductance of the read transistor. Selective coupling is also used in apparatus ancillary to the memory cell to enhance the "refresh" operation. A flip-flop type of memory is also disclosed in which an enhanced output signal is obtained by selective coupling.

3,691,538

## SERIAL READ-OUT MEMORY SYSTEM

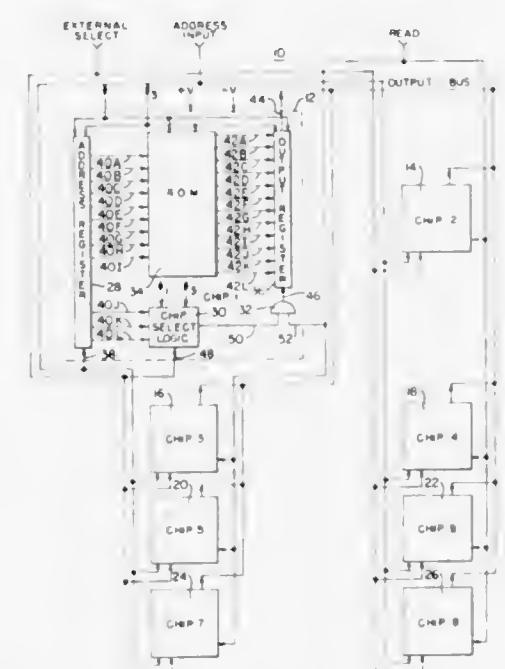
Ralph D. Haney, Dayton, and Nicholas E. Aneshansley, Centerville, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed June 1, 1971, Ser. No. 148,596

Int. Cl. G11c 17/00

U.S. Cl. 340—173 SP

10 Claims



There is disclosed a read-only memory system which is constructed from integrated circuits. Each integrated circuit is responsive to a serial-by-bit address signal and provides a serial-by-bit output signal. Each integrated circuit includes an address and an output register, a read-only memory matrix, and integrated circuit select logic.

3,691,539

## SUPERCONDUCTIVE DEVICE FOR ELECTRONIC STORAGE OF LARGE QUANTITIES OF DATA USING MAGNETIC PARTICLES

Klaus Dieter Erben; Walter Kroy; Sigmund Manhart, all of Munich, and Walter E. Mehnert, Ottobrunn, all of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Munich, Germany

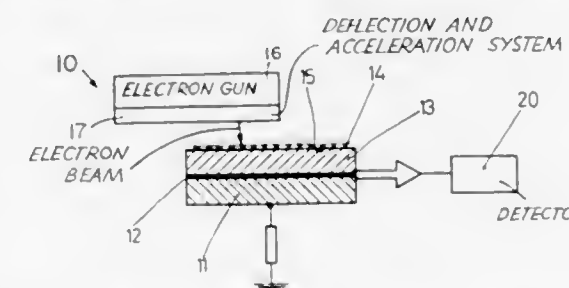
Filed April 20, 1970, Ser. No. 29,827

Claims priority, application Germany, April 28, 1969, P 19 21 700.6

Int. Cl. G11c 11/44

U.S. Cl. 340—173.1

8 Claims



Data storage device particularly for large quantities of data for program or film storage systems. The device contemplates a three layered storage element comprising a substrate which is superconductive at the operating temperature of the device, and insulating film applied thereto and an upper layer which also is superconductive at the operating temperature with magnetic particles applied thereto. Information is applied to the unit by an electron beam of sufficient strength to modify the magnetic orientation of the particles. Information is read out from said unit by an electron beam of insufficient strength to modify the magnetic orientation of the particles but which will be affected by the magnetic field of said particles. Such

modification is reflected in the frequency and intensity of the electromagnetic wave emitted from the three layered unit which can then be read by any convenient frequency discriminating device.

3,691,540

## INTEGRATED MAGNETO-RESISTIVE SENSING OF BUBBLE DOMAINS

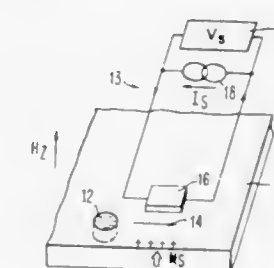
George S. Almasi, Purdy Station; Hsu Chang, Yorktown Heights; George E. Keefe, Montrose, and David A. Thompson, Somers, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 6, 1970, Ser. No. 78,531

Int. Cl. G11c 11/14

U.S. Cl. 340—174 TF

29 Claims



An integrated magneto-resistive sensor for detection of magnetic bubble domains. The sensor is located on the chip in which the bubble domains propagate and can be an integral part of the propagation circuitry. Any material exhibiting a magneto-resistive effect can be used, and permalloy is a preferred material. The sensing element can be made very small, and has a length which is usually about equal to a bubble domain diameter.

3,691,541

## READ ONLY MEMORY

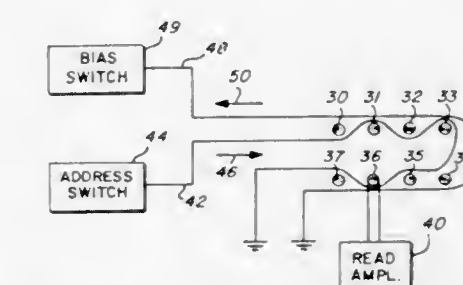
John F. Bruder, Phoenix, Ariz., assignor to Quadri Corporation

Filed Jan. 25, 1971, Ser. No. 109,340

Int. Cl. G11c 17/00

U.S. Cl. 340—174 SP

3 Claims



A read only memory is provided utilizing a plurality of storage cells, each including a cylindrical slug of ferrite material having a read winding thereon: address lines pass between the storage cells and inductively couple the slugs in either a predetermined sense or an opposite sense. An electrostatic shield is provided and a bias winding is inductively coupled to each of the slugs to facilitate error-free reading of the memory contents.

3,691,542

## MAGNETIC MEMORY DISK DRIVE APPARATUS WITH REDUCED R. F. NOISE

Andrew Gabor, Danville, Calif., assignor to Diablo Systems, Inc., Hayward, Calif.

Filed Nov. 2, 1970, Ser. No. 85,844

Int. Cl. G11b 23/02

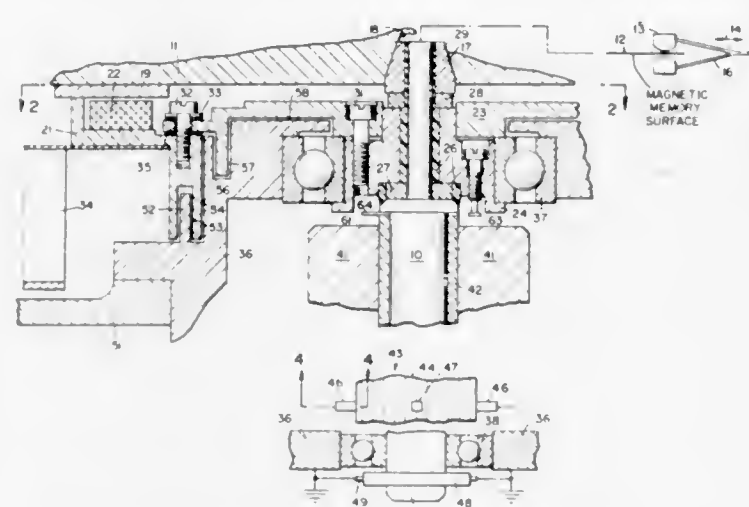
U.S. Cl. 340—174.1 B

15 Claims

A magnetic memory disk drive apparatus with reduced R.F. noise includes a d.c. drive motor. The disk is coupled to the



motor shaft by a drive plate and a drive plate hub which have surfaces interleaved with a grounded housing to provide a



shunt capacitance which reduces the noise signal produced by commutation reaching the magnetic disk.

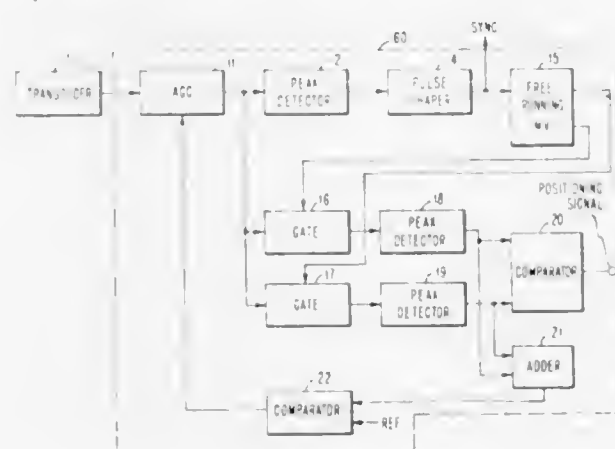
3,691,543

**POSITIONING SYSTEM INCLUDING SERVO TRACK CONFIGURATION AND ASSOCIATED DEMODULATOR**  
Francis E. Mueller, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 8, 1971, Ser. No. 113,484  
Int. Cl. G11b 5/02

U.S. Cl. 340—174.1 B

10 Claims



The invention relates to a positioning system which provides a series of adjacent servo tracks, the boundary between adjacent servo tracks defining a path for the servo system to follow. The servo track configuration generating an output signal in a transducer which has positive pulses for synchronization and negative pulses for positioning information and gain control information. A demodulator is used for separating the synchronization signal from the position and gain control signals. The synchronization signal is used to separate portions of the positioning and gain control signal so as to generate a positioning signal that is indicative of the position of the transducer with respect to the servo tracks and for generating an automatic gain control signal for the demodulator itself.

3,691,544

**CONTROL CIRCUIT RESPONSIVE TO SYNCH SIGNALS**  
Harold Gallina, 40 Parkview Ave., Belleville, N.J.

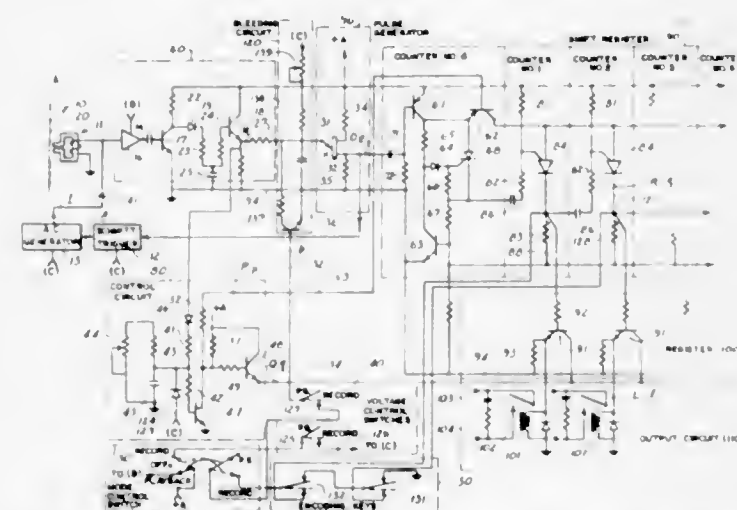
Filed June 22, 1971, Ser. No. 155,430  
Int. Cl. G11b 15/02

U.S. Cl. 340—174.1 B

10 Claims

An electronic programmer includes means for writing and reading a control signal from a recording medium, and means for switching the programmer from the writing to the reading mode of operations and vice versa. For the readout mode of operation the programmer is provided with means for detecting bursts of a.c. signals from the recording medium and

means responsive to the a.c. signals for generating a pulse train having a number of pulses corresponding to the number of the a.c. signal bursts, a control circuit responsive to the detected a.c. signals for generating a reset signal and a register signal, a shift register responsive to the reset signal for counting the number of pulses from the pulse generating means and generating an output signal, and a register responsive to the register signal for applying the output signal to a load. To



change to the writing mode of operation, the programmer is provided with switching means for turning off the detecting means and means for setting the pulse generator to generate only a predetermined number of pulses, means for encoding the pulses into a series of bursts of a.c. signals and writing the bursts of the encoded a.c. signals on the recording medium. The programmer may be also provided with means for erasing any prerecorded signal on the recording medium while the control signal is being recorded.

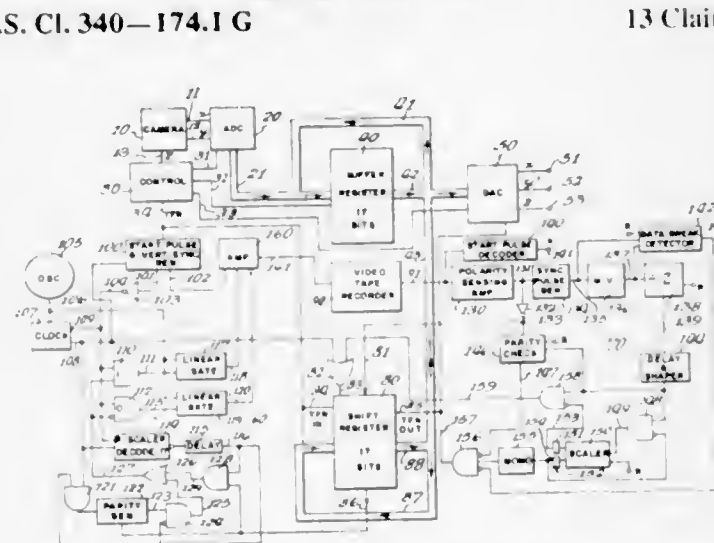
3,691,545

**DIRECT DATA STORAGE SYSTEM FOR SCINTILLATION CAMERA**  
Gene E. Clark, Arlington Heights, Ill., assignor to Nuclear-Chicago Corporation, Des Plaines, Ill.

Filed June 23, 1969, Ser. No. 835,671  
Int. Cl. G11b 5/02

U.S. Cl. 340—174.1 G

13 Claims



System for storing coordinate signals from Anger-type scintillation camera on magnetic tape in a video tape recorder system. An ADC circuit digitizes the coordinate signals and a buffer register stores the digitized signals as a binary digital word. The randomly occurring words are written on the video tape as they occur by transferring each word into a shift register and producing a start data pulse followed by a series of PSK waveforms representing the bits of the word. A parity bit and a series of synchronizing bits are produced until the next data word appears. The data words are recovered in the sequence and timing of their occurrence by replaying the video tape into a simple synchronized demodulation apparatus.

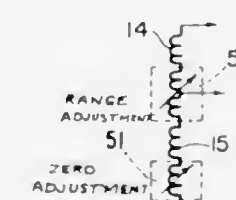
3,691,546

**VARIABLE RELUCTANCE TRANSMITTER**  
Craig E. Ebner, Ambler, and Jeffry V. Markley, Sellersville, both of Pa., assignors to Ametek, Inc., New York, N.Y.

Filed April 29, 1970, Ser. No. 32,830  
Int. Cl. G08c 19/08

U.S. Cl. 340—196

2 Claims



A variable reluctance transmitter is disclosed wherein a pair of axially positioned coils have annular magnetic pole members on their inner peripheries, and an armature member of magnetic material moves linearly within the pole members. Sensor means moves the armature within the pole members and electrical means are provided for adjusting selectively the voltage range transmitted by the movement of the armature within the coils.

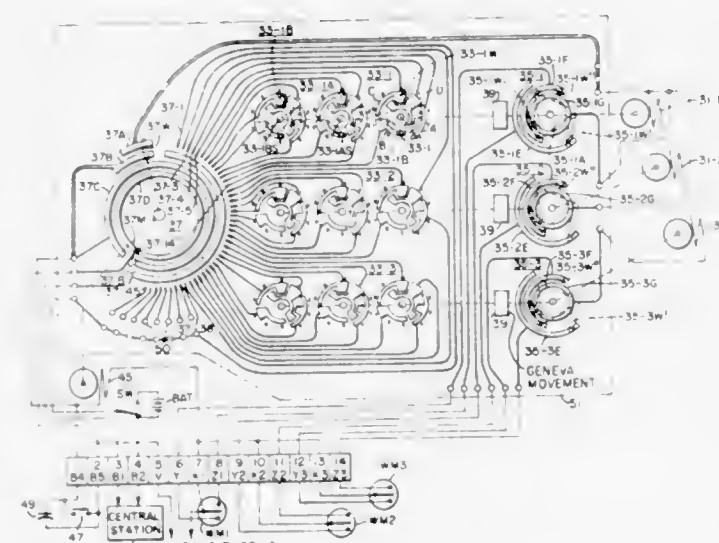
3,691,547

**METER READING SYSTEM HAVING DIGITAL ENCODER**  
George Winfred Lipscomb, Raleigh, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 30, 1970, Ser. No. 85,514  
Int. Cl. G08c 19/28, 9/08

U.S. Cl. 340—204

7 Claims



Pulses from a watt-hour meter pulse transmitter are supplied to an electric motor having a rotation controller which includes control tracks and brushes. This controller causes the motor to operate for a definite angular rotation for each received pulse. Rotation of the motor shaft supplies an input to an analog-to-digital converter. The converter has two segmented tracks and two brushes which provide a two-out-of-four code. A scanning device has scan contacts connected to the segments of the tracks for transmitting coded information from the converter to a receiving station. The scanning device may interrogate sequentially a number of similar converters. The controller scanning device and converter have components printed on a common printed-circuit board.

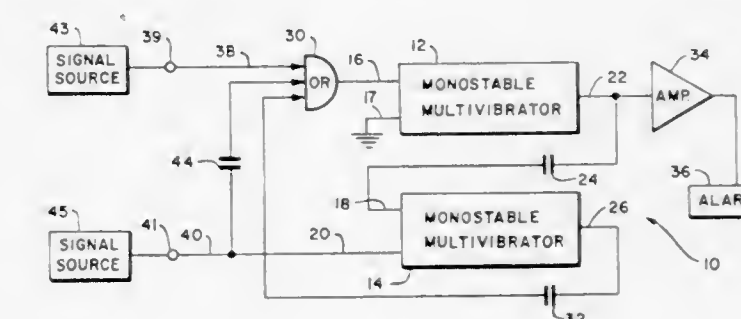
3,691,548

**ALARM CIRCUIT**  
Patrick J. Heneghan, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Aug. 19, 1970, Ser. No. 65,069  
Int. Cl. G08b 21/00

U.S. Cl. 340—248 P

11 Claims



Two monostable multivibrators are interconnected to provide a single alarm output whenever a signal is applied to the circuit over a first input lead, and to provide a repetitive alarm output whenever a signal is applied to the circuit over a second input lead. The alarm is driven by the output from the first multivibrator, which output occurs once with each individual signal applied over the first input lead. Whenever a signal is applied over the second input lead the two multivibrators operate alternately for the duration of the signal, the output from the first multivibrator both driving the alarm and providing an input to the second multivibrator, and the output from the second multivibrator providing an input to the first multivibrator.

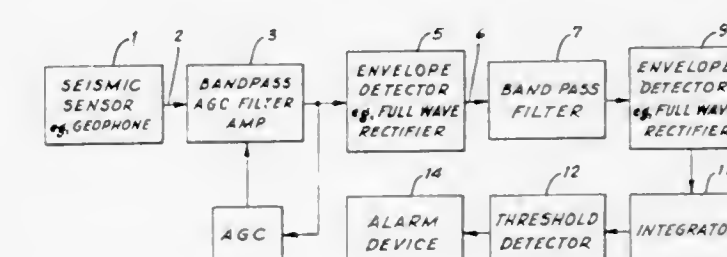
3,691,549

**SIGNAL PROCESSOR**  
Dennis L. Wilson, Palo Alto, Calif., assignor to Sylvania Electric Products, Inc.

Filed Dec. 2, 1970, Ser. No. 94,404  
Int. Cl. G08b 21/00

U.S. Cl. 340—261

10 Claims



A geophone senses seismic vibrations in the earth and converts them to electrical seismic signals which are amplified and filtered in an active bandpass filter-amplifier having automatic gain control and a 10-40 Hz. passband. The amplified and filtered signal is rectified in a first full-wave rectifier, is subsequently filtered in a circuit having a 1-4 Hz passband, characteristic, and is again rectified in a second full-wave rectifier. The latter rectified signal is summed by an integrator over a 10-second time interval and is applied to a threshold circuit. If the sum signal exceeds a prescribed threshold level, the threshold circuit produces an output signal indicating that the seismic vibrations are burst-type seismic vibrations such as are produced by a man walking in the area of detection of the geophone.

3,691,550

Patent Not Issued For This Number



3,691,551

SYSTEM FOR GENERATING TRACING SIGNALS FOR  
DISPLAYING OR RECORDING CHARACTERSToshio Kashio, Tokyo, Japan, assignor to Casio Computer  
Kabushiki Kaisha, Tokyo, Japan

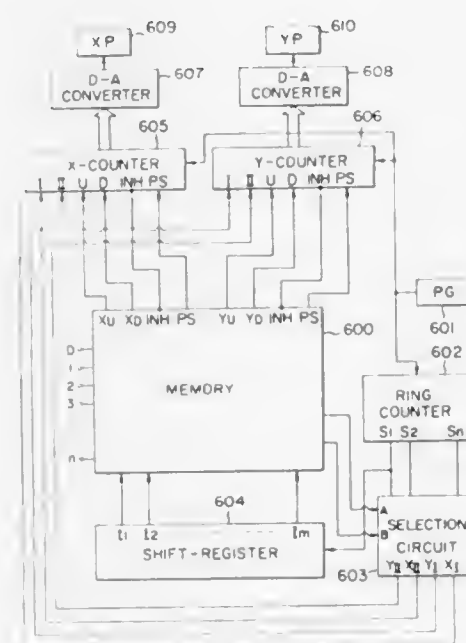
Filed April 28, 1970, Ser. No. 32,539

Claims priority, application Japan, May 2, 1969, 44/33587

Int. Cl. G06f 3/14

U.S. Cl. 340—324 A

4 Claims



In a display or recording device such as cathode ray tube or ink jet recording apparatus, the characters or indicia to be displayed or recorded are resolved into a plurality of strokes representative of X and Y components of the X-Y coordinate system to electrically store them in a memory. Then, the memory is interrogated to read out the information stored therein, and in accordance with the read-out information, control signals are generated to control the horizontal and vertical deflection electrodes to synthesize one stroke with another stroke for display or record of the characters or indicia. The strokes are classified into linear segments and arc segments. The arc segments which represent the curved portions of the characters are quantized into a plurality of steps and are formed by one of eight quadrant strokes by employing X and Y up-down counters. After the counters are set to an initial value representing the starting point of the arc segment, the X and Y counters are incremented in a plurality of steps each having values of 0, 1, or 2 in either the up or down direction.

3,691,552

## INVERSE DIGITAL TO ANALOG CONVERTER

James T. Shiosaki, Azusa, Calif., assignor to Honeywell Inc.,  
Minneapolis, Minn.Division of Ser. No. 806,366, March 12, 1969, Pat. No.  
3,588,871. This application May 17, 1971, Ser. No. 143,886

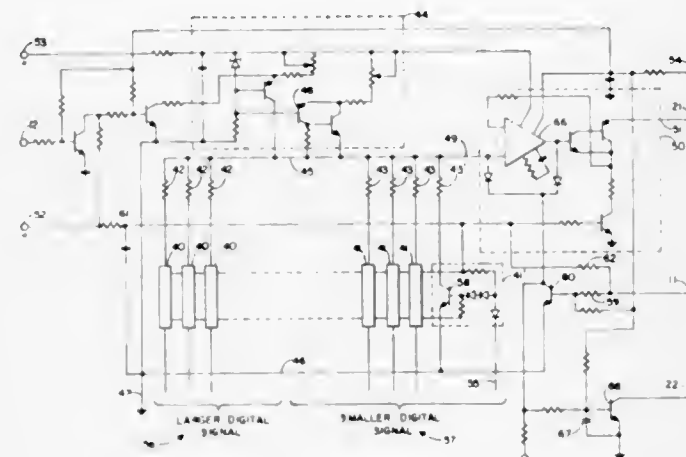
Int. Cl. H03k 13/14

U.S. Cl. 340—347 DA

8 Claims

A digital to analog conversion circuit for producing an analog signal proportionally related to the length of a line segment whose quadrature components are represented by a pair of digital signals. The circuit comprises a constant current source and a current sink connected by current path means whose impedance is varied in accordance with the sum of first and second fractions of the larger and smaller digital signals respectively to produce the analog voltage at the input to the

current path means. The current path means may comprise a plurality of parallel weighted resistive elements, each in series



with a digitally controlled switching element. A logic circuit is provided for directing the larger and smaller digital signals to the appropriate switching elements.

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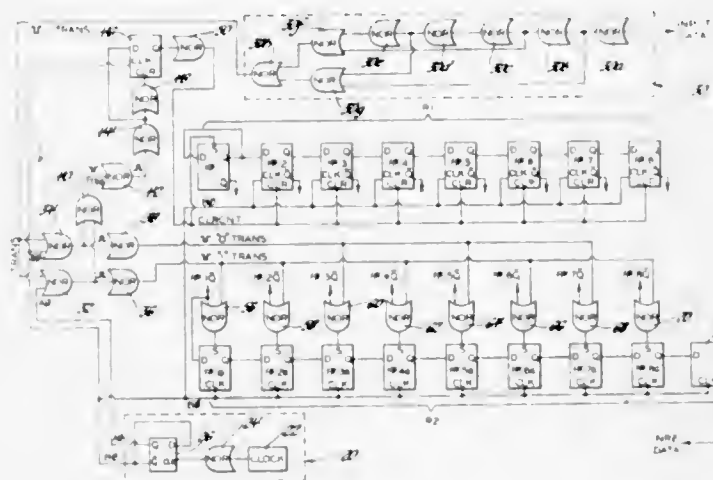
METHOD AND APPARATUS FOR DECODING DIGITAL  
INFORMATIONDuane E. McIntosh, Palmyra, Wis., assignor to General Motors  
Corporation, Detroit, Mich.

Filed Dec. 1, 1970, Ser. No. 93,983

Int. Cl. H03k 13/24

U.S. Cl. 340—347 DD

7 Claims



An apparatus and method is disclosed for constructing a non-return-to-zero bit stream from a coded bit stream containing transitions which occur at the boundary of a bit cell to represent a pair of '1's' and between the boundaries of a bit cell to represent a pair of '0's'. Logic gate means determine which pair of like bits caused a transition in the coded bit stream by comparing the time of the transition with respect to bit cell time. The pairs of like bits so determined are stored in a shift register and the intervening data between the pairs of like bits is placed in the shift register with the sequence being determined by the number of bits between successive transitions and the pair of like bits which caused the second of the successive transitions in the coded bit stream.

3,691,554

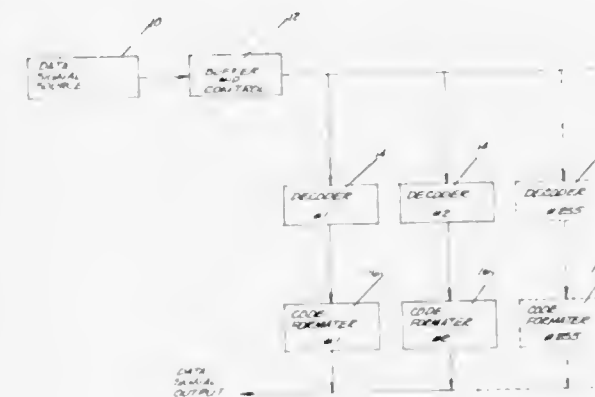
## CODE CONVERTERS

Peter Marshall, 6040 Seiler Dr., Cincinnati, Ohio  
Continuation-in-part of Ser. No. 877,975, Nov. 19, 1969. This  
application June 18, 1971, Ser. No. 154,570

Int. Cl. G06f 3/00

U.S. Cl. 340—347 DD

5 Claims



An electronic code converter which will accept data signals of a predetermined format having a specified number of bits from a first data processing apparatus and converts such data signals to a different code format having a specified number of bits for use by a second data processing apparatus.

3,691,555

## ELECTRONIC KEYBOARD

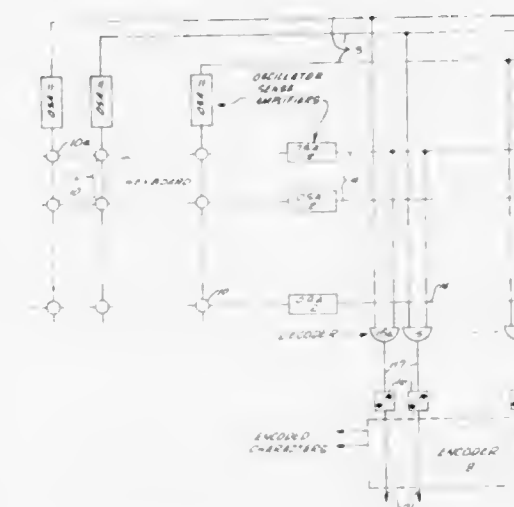
Floyd W. Looschen, Arcadia, Calif., assignor to Burroughs  
Corporation, Detroit, Mich.

Filed March 30, 1970, Ser. No. 23,712

Int. Cl. G08c 1/00

U.S. Cl. 340—365

9 Claims



An all-electronic keyboard avoiding mechanical motion of keys, and particularly suitable for digital computer input is described. The keyboard has a matrix of keys located at intersections of columns and rows and electronic oscillations are established in circuits including keys of the keyboard. When an individual key is contacted manually, the change in capacitance detunes the oscillating circuit in the column and row in which the selected key lies. Electronic sensors and decoders note the column and row involved and provide a signal unique to the key touched. In one embodiment a separate oscillator is employed for each line of the matrix, and in another embodiment a single oscillator is employed for the entire matrix. Geometrical arrangements of conductors on individual keys are described with the branches of forked conductors interlaced for capacitive coupling. In one embodiment an additional conductor is sinusously interposed between branches of a pair of forked conductors.

3,691,556

## DETECTION OF MOVEMENT IN CONFINED SPACES

John Anthony Bloice, Richmond, Surrey, England, assignor to  
Memco (Electronics) Limited, Middlesex, England

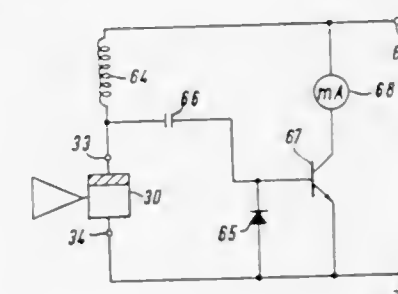
Filed Jan. 19, 1971, Ser. No. 107,808

Claims priority, application Great Britain, May 3, 1970,  
26,858/70; July 28, 1970, 36,521/70

Int. Cl. G01s 9/42; G08b 13/24

U.S. Cl. 343—5 PD

6 Claims



A radar unit comprises a single microwave launching and receiving antenna, and a microwave oscillator feeding microwave energy to the antenna. A second oscillator is arranged to oscillate at a frequency much lower than that of the microwave energy, and includes an element common to the microwave oscillator. This common element is adapted to respond to load changes on the microwave oscillator, caused by changes in the standing wave pattern of the antenna, by varying at least one oscillation characteristic of the signal provided by the second oscillator. These changes are monitored to provide an indication of the presence and movement of objects in front of the antenna. The microwave oscillator includes a Gunn diode mounted within a resonant cavity and tuned to oscillate at the microwave frequency. An inductance connected in series with the cavity provides a series-tuned circuit of the second oscillator, the cavity providing the common element. The lower frequency oscillations are limited to lie within a predetermined range to improve the sensitivity of the arrangement. This may be done with a feedback circuit. Three such units may be mounted on a common support so as to lie in respective vertical planes at 120° to one another, their combined responses overlapping to provide unbroken coverage in horizontal plane surrounding the common support. The aerials may be shaped to have lobes such that the unbroken coverage extends to a range of some 30 feet from the support.

3,691,557

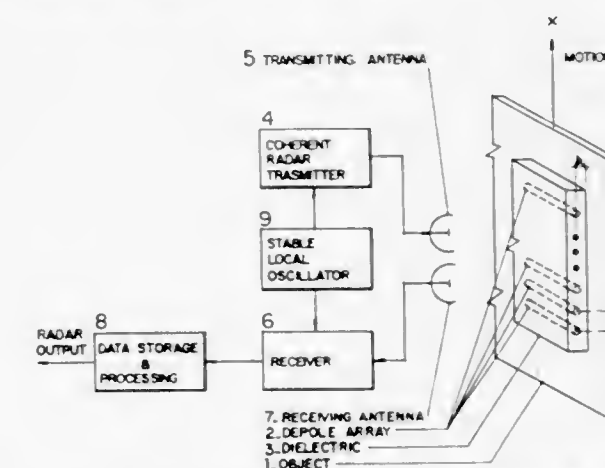
SYSTEM FOR IDENTIFYING OBJECTS USING AN  
ENCODING ARRAY FOR EACH OBJECTJames Nickolas Constant, 1603 Danbury Dr., Claremont,  
Calif.

Filed Sept. 22, 1969, Ser. No. 870,598

Int. Cl. G01s 9/56

U.S. Cl. 343—6.5 SS

5 Claims



A system for identifying binary coded objects. A passive encoding array for an object and having dipoles at selected



dipole locations in the array, and a synthetic aperture radar for scanning the arrays as the objects move relative to the radar. The radar output is a pulse train with pulses corresponding to dipoles of arrays illuminated by the radar.

3,691,558

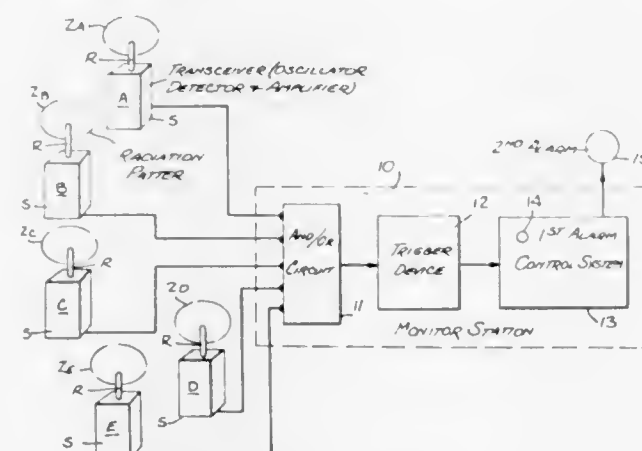
**MOVING OBJECT MICROWAVE DETECTION SYSTEM**  
Norman F. Hoard, Milton, Mass., and Lee Edick, Manasquan, N.J., assignors to Entron, Inc., Glendale, N.Y.

Filed June 25, 1970, Ser. No. 49,602

Int. Cl. G01s 9/42

U.S. Cl. 343—7.7

8 Claims



A moving object microwave detection system for sensing the presence of objects moving within a radiation zone and for sounding an alarm in the event the disturbing factor is a human intruder. The system includes one or more field transceivers placed at suitable points in the areas to be protected, each transceiver including a microwave oscillator and an antenna coupled thereto to radiate continuous wave energy covering a limited zone. Coupled to the antenna is a mixing detector which provides a low-frequency beat signal in response to energy reflected back to the antenna and resulting from the presence of a moving object in the zone. The signal from the detector is fed to an amplifier having a narrow frequency band-pass characteristic which limits the response thereof to bear signals indicative of the movement of human intruders. The output of the transceiver is fed to a monitoring station which is adapted to activate a low-intensity alarm for short-term disturbances, a high-intensity alarm being sounded only when the disturbance persists.

3,691,559

**AIRCRAFT COLLISION WARNING SYSTEM**

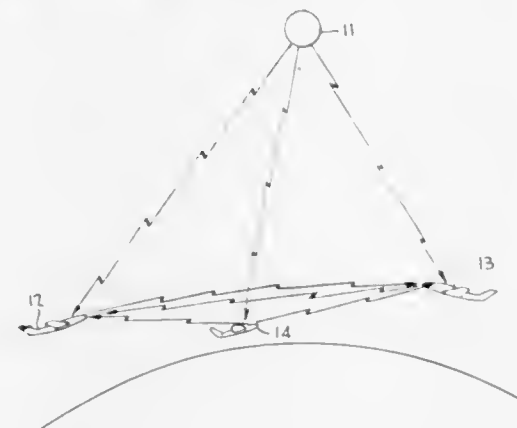
Homer E. Jackson, McLean, Va., assignor to Navsat Corporation

Filed March 28, 1969, Ser. No. 811,287

Int. Cl. G01s 11/00

U.S. Cl. 343—112 D

28 Claims



An aircraft collision avoidance system and method involves transmitting a stable reference frequency from a synchronous

satellite to aircraft in a region being monitored. Each aircraft in the region receives the reference frequency and transmits a carrier, modulated with the received reference frequency, to other aircraft in a collision avoidance zone. At the other aircraft, an indication of impending collision is provided by measuring the rate of change of the carrier Doppler frequency shift received thereby from the first named aircraft. Sync pulses periodically modulate the reference frequency transmitted from the satellite for aircraft ranging and data control purposes. To limit the collision warning zone relative to each aircraft, the receiver thereof is deactivated at a predetermined time after each sync pulse is received from the satellite.

3,691,560

**METHOD AND APPARATUS FOR GEOMETRICAL DETERMINATION**

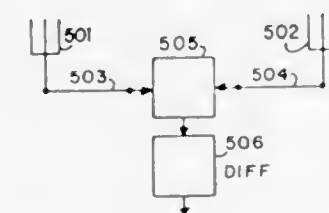
Calvin M. Hammack, P.O. Box 516, Los Gatos, Calif.

Division of Ser. No. 420,623, Dec. 23, 1964, Pat. No. 3,445,847, and a continuation-in-part of Ser. Nos. 86,770, Feb. 2, 1961, Ser. No. 278,191, May 6, 1963, abandoned, Ser. No. 335,454, Dec. 5, 1963, Pat. No. 3,242,487, Ser. No. 289,609, June 21, 1963, Pat. No. 3,286,263, and Ser. No. 312,598, Sept. 30, 1963, Pat. No. 3,270,340. This application April 21, 1969, Ser. No. 817,765

Int. Cl. G01s 3/46

U.S. Cl. 343—113 R

67 Claims



This invention relates to a method and means of determining at least one dimension of the position-motion state of one or more points relative to a number of reference points by performing measurements of angular variations or angular differences, or of functions of such angular variations or angular differences. The position-motion state of said point or points is unknown and unbounded by any "a priori" information. The apex of such angular variations or differences are located at the reference points.

3,691,561

**ANTENNA FOR DIRECTION FINDING SYSTEMS**

Gerhard Jager, Gunzburg, Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt, Germany

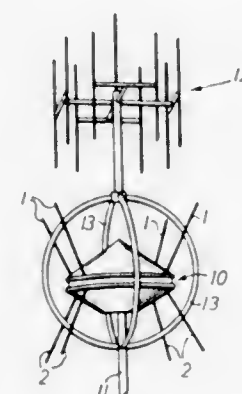
Filed Nov. 18, 1970, Ser. No. 90,616

Claims priority, application Germany, Nov. 18, 1969, P 19 57 787.8

Int. Cl. H01q 9/28

U.S. Cl. 343—727

3 Claims



An antenna arrangement for a shipboard direction finding system is designed to be carried on the ship mast and includes electrically parallel connected, substantially vertically

polarized dipole antennas which are uniformly distributed circumferentially in a circle with their radiating elements outwardly inclined from the antenna mast and forming an angle of approximately 30° therewith. A motor controlled rotating differential condenser is connected between the dipole halves and ground to provide means for bringing the dipoles into capacitive symmetry. The antenna arrangement is adapted to be used in proximity to a mast-carried UHF direction finding antenna system through the use of two-terminal networks connected to the dipole elements.

3,691,562

**OMNIDIRECTIONAL BEACON ANTENNA**

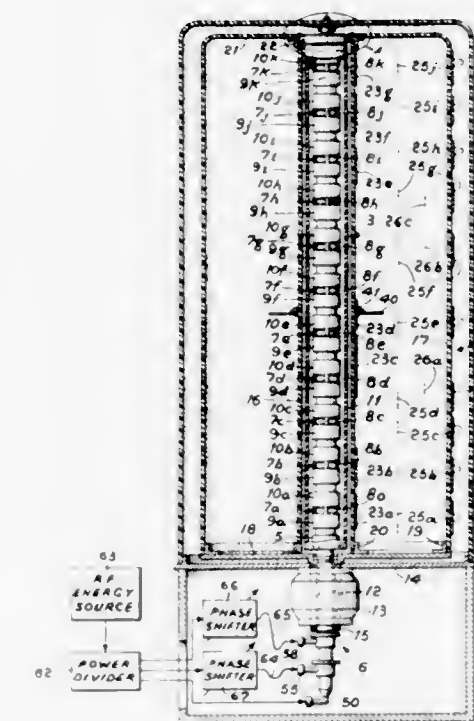
Ernest G. Parker, Convent Station, and Richard W. Craine, Nutley, both of N.J., assignors to International Telephone and Telegraph Corporation

Filed Jan. 4, 1971, Ser. No. 103,458

Int. Cl. H01q 3/12

U.S. Cl. 343—761

12 Claims



A TACAN beacon antenna is disclosed having a central radiating element including eleven vertically stacked half wavelength tubular dipoles. A first dielectric cylinder carries the 15 cycle modulating parasitics including seven vertically aligned and spaced circumferentially parasitics coextensive with the central radiating element and a metallic disc below the central dipole. A second dielectric cylinder carries the 135 cycle modulating parasitics including nine circumferentially

spaced groups of parasitic components, each group containing 10 vertically aligned and spaced parasitics and three vertically aligned and spaced parasitics intermediate adjacent groups. The radiating elements are fed by three concentric coaxial lines disposed coaxially of the vertical axis of the radiating elements and extending through the hollow drive shaft of a motor disposed coaxially of the vertical axis to drive the two modulating cylinders. The outer conductor of an inner coaxial line is the center conductor of an outer coaxial line such that the inner coaxial line feeds energy to the upper five radiating elements through metallic and dielectric impedance transformers the intermediate coaxial line feeds energy to the four intermediate radiating elements through metallic and dielectric impedance transformers and the outermost coaxial line feeds energy to the lower two radiating elements through dielectric impedance transformers.

3,691,563

**DUAL BAND STRIPLINE ANTENNA**

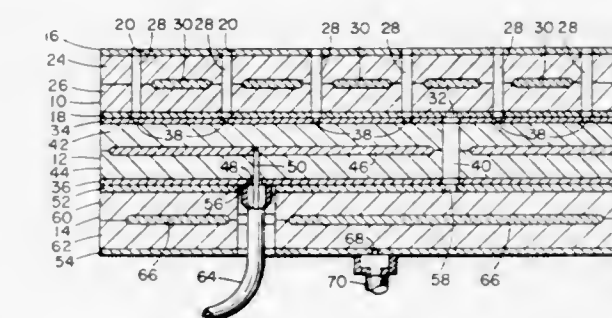
Philip L. Shelton, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 11, 1970, Ser. No. 97,147

Int. Cl. H01q 13/10

U.S. Cl. 343—771

5 Claims



A dual band antenna is disclosed in which the radiating elements for each band are slots in a conductive sheet and in which the slots are fed by wave guides and stripline distribution means. The conductive sheet is an outside layer of a sandwich comprising two outside conductive layers and two sheets of dielectric between said outside layers and said stripline distribution means or transmission line, between the dielectric sheets. Two additional similar sandwiches are used having therein transmission lines and couplings thereto for the two waves to be radiated. The outside layer of a middle sandwich is in close contact with an outside layer of the two other sandwiches, whereby there is no radiation from between the sandwiches. To make this close contact possible, the sandwiches are made with flat smooth outside surfaces and the sandwiches are not held together in a manner that may cause a bumpy surface.



# DESIGNS

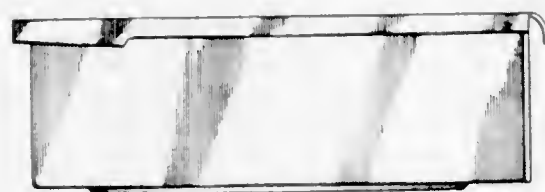
SEPTEMBER 12, 1972

224,730

**DRAWER FOR A CABINET OR SIMILAR ARTICLE**  
Robert L. Propst, Ann Arbor, and James O. Kelley, Saline, Mich., assignors to Herman Miller Inc., Zeeland, Mich.

Filed Oct. 26, 1970, Ser. No. 25,646  
Term of patent 14 years  
Int. Cl. D6—04

U.S. Cl. D6—191



224,732  
BOTTLE

James C. McKinney and William D. West, Greenville, S.C., assignors to Morton-Norwich Products, Inc.

Filed May 3, 1971, Ser. No. 140,002  
Term of patent 14 years  
Int. Cl. D9—01

U.S. Cl. D9—40



224,731  
BOTTLE

Le Roy B. Nathan, 1446 Ashbel Ave., Berkeley, Ill. 60163

Filed Nov. 24, 1970, Ser. No. 26,143  
Term of patent 14 years  
Int. Cl. D9—01

U.S. Cl. D9—23

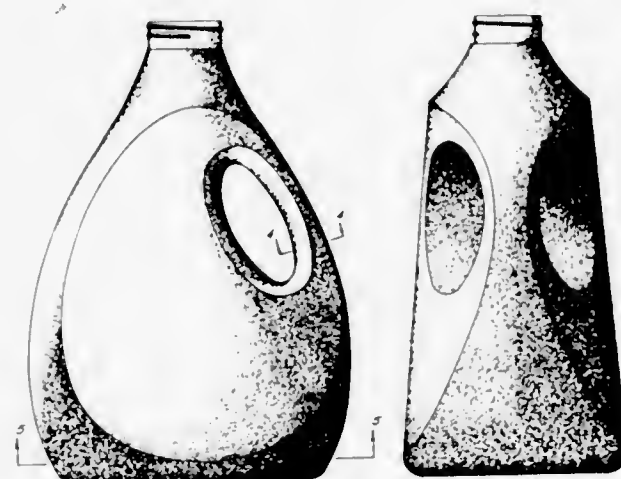


224,733  
JUG

Harold J. Vanderhyde, North Merrick, N.Y., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 30, 1971, Ser. No. 176,425  
Term of patent 14 years  
Int. Cl. D9—01

U.S. Cl. D9—42



SEPTEMBER 12, 1972

U. S. PATENT OFFICE

743

224,734

**MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE**

Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.

Filed Jan. 27, 1971, Ser. No. 110,377  
Term of patent 14 years  
Int. Cl. D9—03

U.S. Cl. D9—219



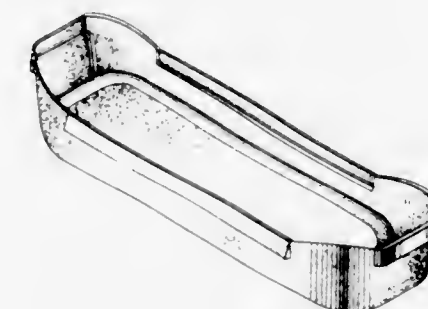
224,735

**PACKAGING DISPLAY TRAY**

Richard F. Reifers, New Canaan, Conn., assignor to Diamond International Corporation, New York, N.Y.

Filed Dec. 17, 1970, Ser. No. 26,551  
Term of patent 14 years  
Int. Cl. D9—03

U.S. Cl. D9—243



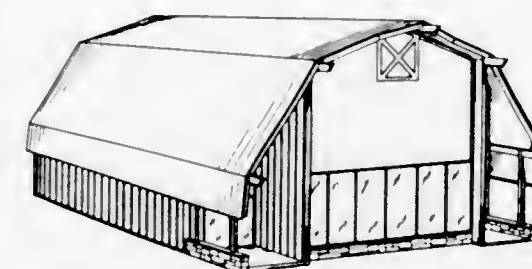
224,736

**DRIVE-IN FOOD PREPARATION BUILDING**

Gerald B. Cox, Bettendorf, Iowa, assignor to Yum-Yum Barns, Inc., Davenport, Iowa

Filed Nov. 18, 1970, Ser. No. 26,067  
Term of patent 14 years  
Int. Cl. D25—03

U.S. Cl. D13—1



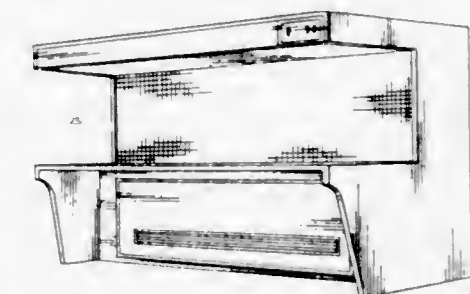
224,737

**CLEAN AIR WORK STATION**

Anthony M. Diccianni, Norristown, Pa., assignor to Laminar Flow, Inc., Conshohocken, Pa.

Filed Oct. 27, 1969, Ser. No. 19,738  
Term of patent 14 years  
Int. Cl. D24—01

U.S. Cl. D16—2



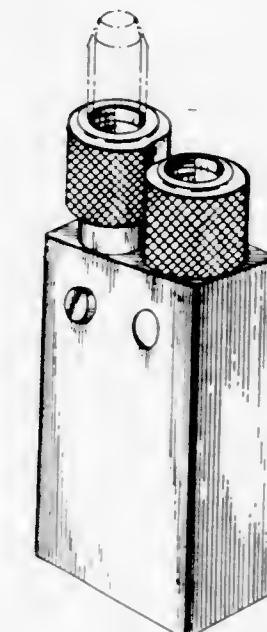
224,738

**CHEMICAL DISCHARGE DEVICE**

Albert R. Hogarth, Carrell Road, Phoenix, Md. 21131, and James R. Dickson, 127 Hanover Road, Hanover, Md. 21076

Filed Nov. 20, 1970, Ser. No. 26,099  
Term of patent 14 years  
Int. Cl. D22—99

U.S. Cl. D22—99



224,739

**TEACHING DEVICE**

Jack L. Lamberson, Baytown, Tex. (101-K Chestnut St., Foxboro, Mass. 02035)

Filed Mar. 17, 1971, Ser. No. 125,461  
Term of patent 14 years  
Int. Cl. D19—07

U.S. Cl. D25—1





224,740

**HOOD FOR ELECTRICAL CONNECTOR**

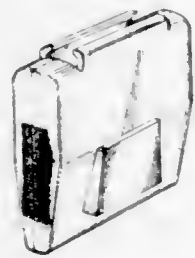
Gerald J. Galang, Canoga Park, David E. Rienhardt, Santa Susana, and George G. Weaver, Chatsworth, Calif., assignors to American Data Systems, Inc., Canoga Park, Calif.

Filed Jan. 7, 1971, Ser. No. 104,846

Term of patent 14 years

Int. Cl. D13—03

U.S. Cl. D26—1



224,741

**BAPTISTRY CONTROL CONSOLE**

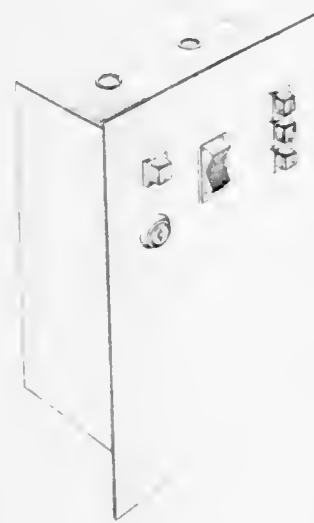
Robert Norman Klob, Arlington, Tex., assignor to Hydrodynamics, Inc., Fort Worth, Tex.

Filed Dec. 24, 1970, Ser. No. 26,637

Term of patent 14 years

Int. Cl. D13—03

U.S. Cl. D26—13



224,743

**SPINNING TOY**

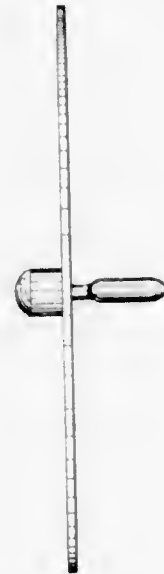
Wolfgang Harzmann, 228 E. 95th St., New York, N.Y. 10028

Filed Dec. 15, 1970, Ser. No. 26,516

Term of patent 14 years

Int. Cl. D21—01

U.S. Cl. D34—15



224,744

**TOY AUTOMOTIVE VEHICLE**

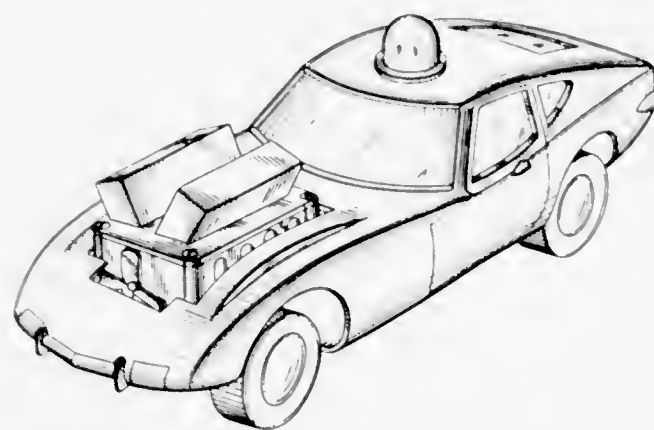
Norman Spiegel, New York, N.Y., assignor to Nasta Industries, Inc.

Filed Apr. 5, 1971, Ser. No. 131,286

Term of patent 14 years

Int. Cl. D21—01

U.S. Cl. D34—15



224,742

**COMBINED 8-TRACK TAPE TRANSPORT, AMPLIFIER AND TUNER THEREFOR**

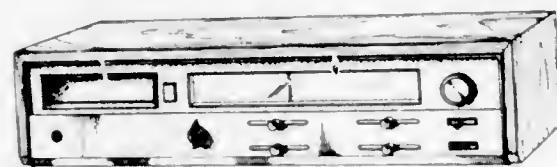
Naoki Tominaga, Osaka, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed June 28, 1971, Ser. No. 157,798

Term of patent 14 years

Int. Cl. D14—03

U.S. Cl. D26—14



224,745

**SEED PLACEMENT TUBE FOR AGRICULTURAL PLANTERS**

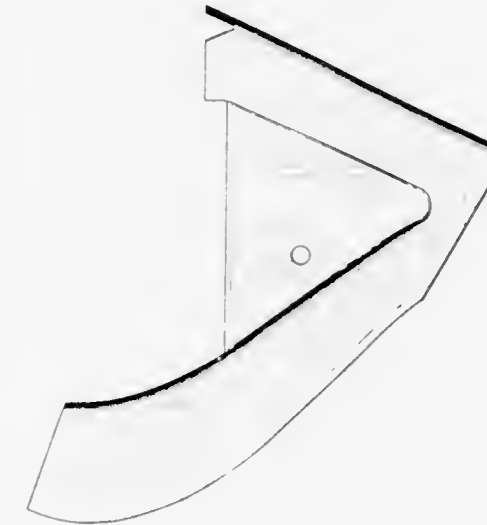
Donald E. Williams, Garden City, Kans., assignor to Acra-Plant, Inc., Newton, Kans.

Filed Mar. 25, 1971, Ser. No. 128,216

Term of patent 14 years

Int. Cl. D8—01

U.S. Cl. D35—2



224,746

**HYDROPONIC GARDEN UNIT**

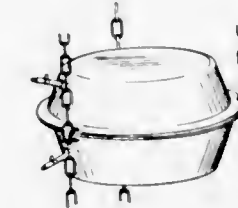
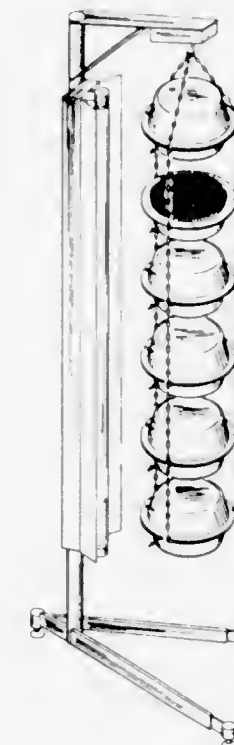
Leslie B. Kyle, Indianapolis, Ind., assignor to Key Hydroponics Ltd., Vancouver, British Columbia, Canada

Filed Jan. 6, 1971, Ser. No. 104,548

Term of patent 14 years

Int. Cl. D11—02

U.S. Cl. D35—3



224,747

**CLOCK OR SIMILAR ARTICLE**

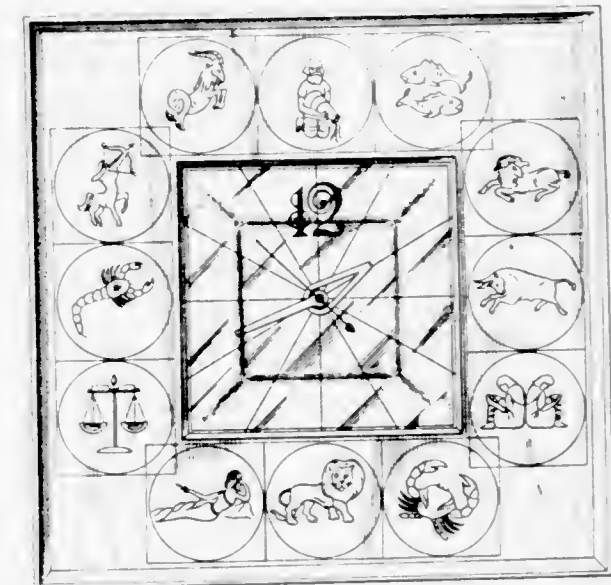
Theodore G. Daher, Stratford, Conn., assignor to General Electric Company

Filed Mar. 11, 1971, Ser. No. 123,482

Term of patent 3½ years

Int. Cl. D10—01

U.S. Cl. D42—7



224,748

**CLOCK OR SIMILAR ARTICLE**

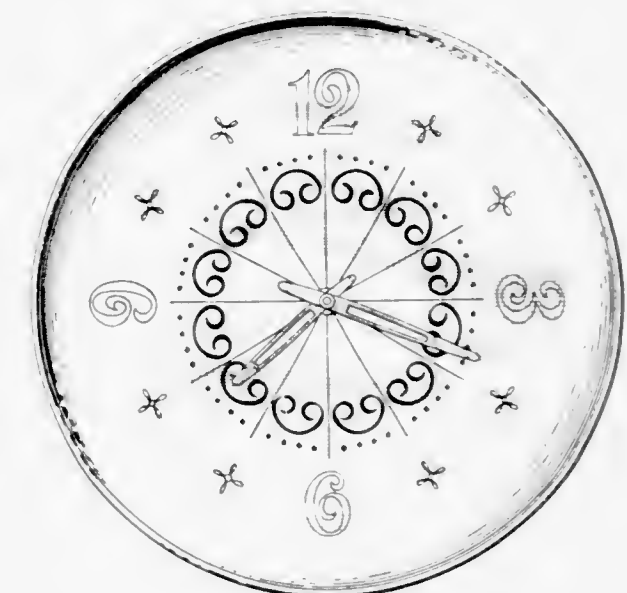
Theodore G. Daher, Stratford, Conn., assignor to General Electric Company

Filed May 10, 1971, Ser. No. 142,094

Term of patent 3½ years

Int. Cl. D10—01

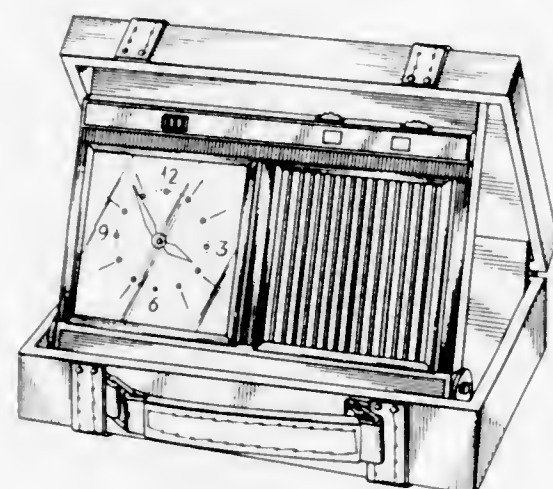
U.S. Cl. D42—7





224,749  
CLOCK RADIO  
Samuel Cohen, 666 Wildwood Road,  
West Hempstead, N.Y. 11552  
Filed June 8, 1971, Ser. No. 151,159  
Term of patent 14 years  
Int. Cl. D10—01

U.S. Cl. D42—7



224,751  
TRAY  
Robert L. Propst, Ann Arbor, and James O. Kelley,  
Saline, Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

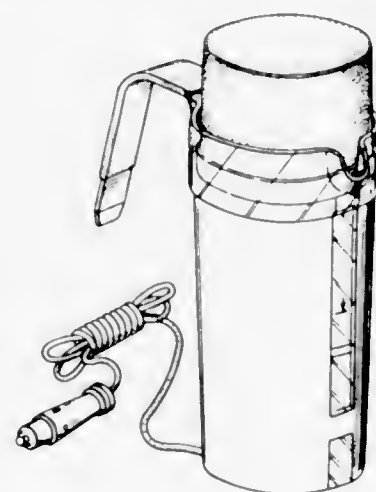
Filed Oct. 26, 1970, Ser. No. 25,637  
Term of patent 14 years  
Int. Cl. D7—99

U.S. Cl. D44—10



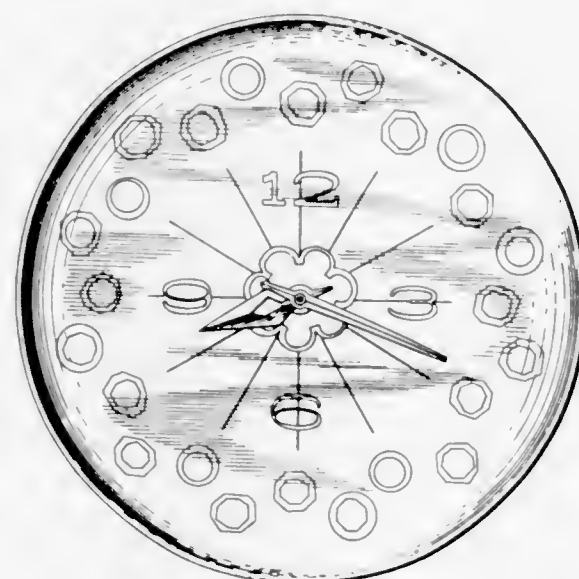
224,752  
PLUG-IN FOOD AND BEVERAGE WARMER  
FOR AN AUTOMOBILE  
Lawrence W. Bonzer, Long Beach, Calif., assignor to  
Lear-Siegler, Incorporated, Santa Monica, Calif.  
Filed July 24, 1970, Ser. No. 24,122  
Term of patent 14 years  
Int. Cl. D7—04

U.S. Cl. D44—26



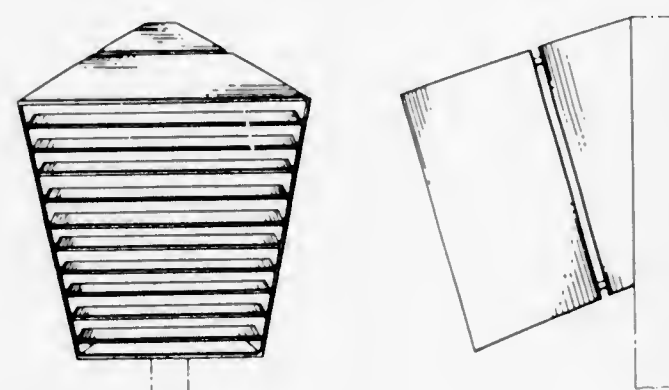
224,750  
CLOCK OR SIMILAR ARTICLE  
Theodore G. Daher, Stratford, Conn., assignor to  
General Electric Company  
Filed June 10, 1971, Ser. No. 152,003  
Term of patent 3½ years  
Int. Cl. D10—01

U.S. Cl. D42—7



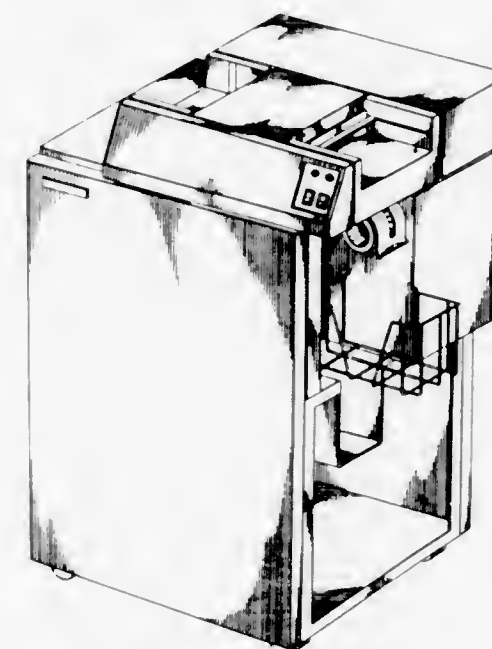
224,753  
LUMINAIRE  
Charles P. Breed, Alexandria, Va., Edmund L. Izzi, Pittsburgh, Pa., and Donald E. Husby, Fairview Park, Ohio, assignors to Westinghouse Electric Corporation  
Filed Mar. 17, 1971, Ser. No. 125,457  
Term of patent 14 years  
Int. Cl. D26—03

U.S. Cl. D48—31



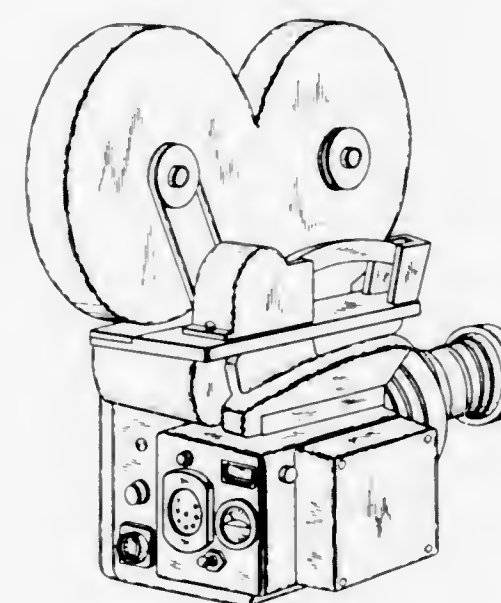
224,754  
XEROGRAPHIC LABEL MAKING MACHINE  
John F. Zinni, Rochester, N.Y., assignor to  
Xerox Corporation, Stamford, Conn.  
Filed Apr. 5, 1971, Ser. No. 131,007  
Term of patent 14 years  
Int. Cl. D16—03

U.S. Cl. D61—1



224,755  
MOTION PICTURE CAMERA  
James Frezzolini, Ringwood, N.J., assignor to  
Frezzolini Electronics Inc., Hawthorne, N.J.  
Filed Apr. 28, 1971, Ser. No. 138,388  
Term of patent 14 years  
Int. Cl. D16—01

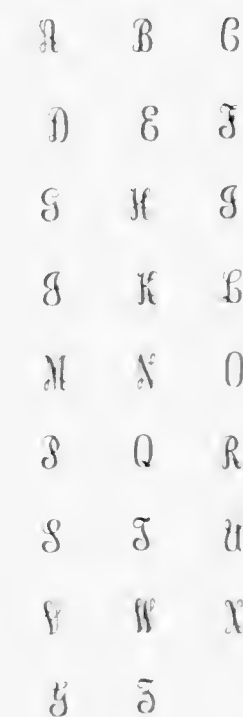
U.S. Cl. D61—1



224,756  
ALPHABET FOR MONOGRAMS OR THE LIKE  
George Berlant, Bellerose, N.Y., assignor to New Hermes  
Engraving Corporation, New York, N.Y.  
Original design application Nov. 12, 1969, Ser. No.  
20,033. Divided and this application Feb. 8, 1971, Ser.  
No. 113,815

Term of patent 14 years  
Int. Cl. D18—03

U.S. Cl. D64—16



224,757  
BOAT HOOK  
Hugh R. Bolen, Jr., Lexington, Va., assignor to Magnetic  
Forming Corporation, Lexington, Va.  
Filed Nov. 2, 1970, Ser. No. 25,791  
Term of patent 14 years  
Int. Cl. D12—99

U.S. Cl. D71—1



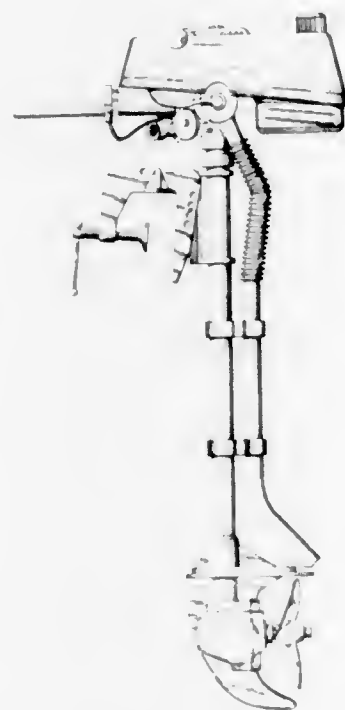


224,758

## BOAT ENGINE

William P. Kitovich, Hampden, Mass., assignor to K & P Products, Inc., Chicopee Falls, Mass.  
Filed Feb. 23, 1971, Ser. No. 118,214  
Term of patent 14 years  
Int. Cl. D15—01

U.S. Cl. D71—1

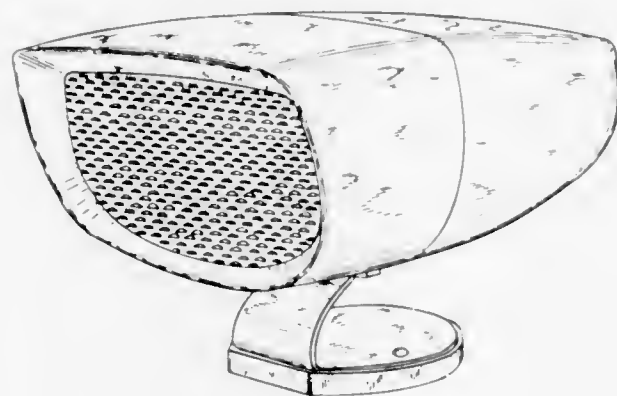


224,759

## MARINE HORN

Harry R. Bingham, 1110 Polynesia Drive, San Mateo, Calif. 94404  
Filed Nov. 6, 1970, Ser. No. 25,861  
Term of patent 14 years  
Int. Cl. D29—02

U.S. Cl. D72—1



224,760

## CIGARETTE HOLDER

Milton P. Chernack, West Hempstead, N.Y., assignor to Deleron Products, Inc., New York, N.Y.  
Filed Dec. 14, 1970, Ser. No. 26,466  
Term of patent 14 years  
Int. Cl. D27—02

U.S. Cl. D85—8



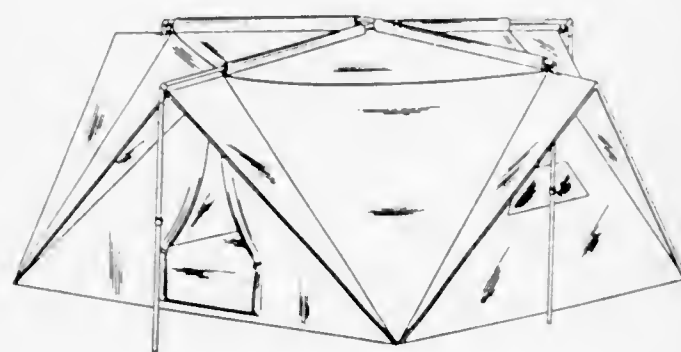
224,761

## TENT

Harold J. Pohl, Washington, and Norman J. Diederich, New Haven, Mo., assignors to Kellwood Company, St. Louis, Mo.

Filed June 17, 1971, Ser. No. 154,267  
Term of patent 14 years  
Int. Cl. D3—03

U.S. Cl. D88—3

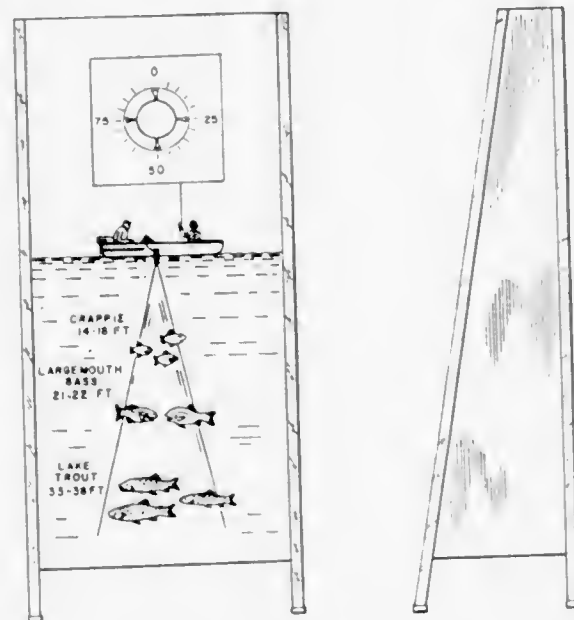


224,762

## SIGN

Ronald F. Gentzen, Tulsa, Okla., assignor to Lowrance Electronics Manufacturing Corporation, Tulsa, Okla.  
Filed Sept. 28, 1970, Ser. No. 25,224  
Term of patent 14 years  
Int. Cl. D20

U.S. Cl. D96—12



## LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF SEPTEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A/S Dansk Lecabeton. See—

Kamstrup-Larsen, Harry, 3,690,628.

A/S Norsk Kahelfabrik. See—

Jacobsen, Arnulf Moe, 3,690,087.

AB Emmaboda Glusverk. See—

Nilsson, Leif Billy, 3,690,477.

AB Kockum Landsverk Landskrona. See—

Sarnik, Stanislaw, and Olofsson, Mans Olof, 3,690,099.

Abbott Laboratories. See—

Chittenden, Richard Marion, Whittom, Alden William, Macalalad,

Fidel Villaluna, Massman, Richard, and Wilson, Earl David,

3,690,315.

Hallas, Robert, and Cole, John Wayne, 3,691,176.

Abe, Katsuo. See—

Baba, Tatsuo, and Abe, Katsuo, 3,691,364.

Abildtrup, Jorgen. See—

Dyre, Mogens, and Abildtrup, Jorgen, 3,691,346.

Abitibi Paper Company, Ltd. See—

Vemuri, Krishna P., 3,691,153.

Abos, Ralph L., to Ecom-Systems, Inc., mesne Diverter valve,

3,690,565, Cl. 239-447,000.

Abraham, William W. See—

Lanahan, John H., and Abraham, William W., 3,690,457.

Adachi, Goro. See—

Komatsu, Fumito, and Adachi, Goro, 3,691,286.

Addressograph Multigraph Corporation. See—

Gawron, Stanley A., and Helland, Kristian I., 3,691,375.

Kolbas, James A., 3,690,646.

Fandy, William H., 3,690,878.

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Anderson, George J.; and Dahms, Ronald H., to Monsanto Company. Resole varnishes prepared from substituted phenols. 3,691,121, Cl. 260-29,300.  
Anderson, Harold C., to Litton Systems, Inc. Microwave power density meter. 3,691,459, Cl. 324-95,000.  
Anderson, Howard H.: *See—*  
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Andersson, Arne Hilding; and Duren, Lennart Axel. Control means for electric tools. 3,691,437, Cl. 318-118,000.  
Andoniev, Sergei Mikhailovich; Alexandrov, Nikolai Nikitovich; Klochev, Nikolai Ivanovich; Kulikov, Vasily Ivanovich; and Filipiev, Oleg Vladimirovich, to Vsesojuzny Nauchno-Issledovatel'skiy i Proektny Institut po Ochestke Tekhnologicheskikh Gazov i Stochkiy Vod i Ispolzovanizu Vtorichnykh Energoresursov Predpriyatiya Chernoi Metallurgii. Cooling components for cooling systems of metallurgical furnaces and method for producing the same. 3,690,633, Cl. 266-32,000.  
Andreski, Mitchell. Method of forming seamless flooring. 3,690,914, Cl. 117-26,000.  
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Angelov, Stefan Christov; Hristova, Snejanka Vladimirova; and Srebrev, Srebryu Yovtchev, to Zentralen Institut po Iztchislitelna Tekhnika. Decimal point indicating system, especially for electronic calculator. 3,691,358, Cl. 235-159,000.  
Angelstrand, Borje; Ragnar, Mostrom; and Yngvesson, Henry, to Saab-Scania Aktiebolag. Means for confining a translatable member to straight line motion. 3,690,642, Cl. 269-56,000.  
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Arai, Hiroshi; Nakamura, Akira; Ikamoto, Atutosi; Okumura, Shunki; Suzuki, Motoyoshi; and Sugiura, Akio, to Toyota Jidosha Kogyo Kabushiki Kaisha and Nippondenso Kabushiki Kaisha. Anti-skid device for vehicles. 3,690,735, Cl. 303-21,00p.  
Arai, Kiyoyuki: *See—*  
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Armstrong, William S., Jr.; Edwards, Webster H.; Laird, Joseph P.; and Vining, Roy H., to Du Pont de Nemours, E. I., and Company. Method and apparatus for instrumentally shading metallic paints. 3,690,771, Cl. 356-176,000.  
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Ashton, William B.; and Morris, Herbert C., to Texaco Inc. Production of lubricating oils by hydrotreating and distillation. 3,691,067, Cl. 208-264,000.  
Askew, William J., to LTV Aerospace Corporation. Unijunction transistor artificial neuron. 3,691,400, Cl. 307-201,000.  
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Ataka, Hisanori, to Ricoh Co., Ltd. Real image viewfinder employing roof-type reflecting mirror assemblies. 3,690,214, Cl. 88-1,50r.  
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Bacon, Robert Elwon; Perry, Ernest John; and Jones, Evan Thomas, to Eastman Kodak Company. Process of making silver halide emulsions having polyvalent metal ions occluded therein. 3,690,888, Cl. 96-94,000.  
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- Baetz, Herbert Barclay; and Lightbourne, Robert C. Ore extraction. 3,690,828, Cl. 423-149,000.  
Bahr, Alex; and Peché, Gerhard, to Siemens Aktiengesellschaft. Voltage overload arrester. 3,691,428, Cl. 317-61,000.  
Bahman, Wilbur N. Grab hook assembly. 3,690,712, Cl. 294-82,00r.  
Bailey, John P.; and Muckelroy, William L., to United States of America, Army. Leadless microminature inductance element with closed magnetic circuit. 3,691,497, Cl. 336-192,000.  
Baker, Joseph W.; and Howe, Robert K., to Monsanto Company. Anilomethynmalonitriles. 3,691,227, Cl. 260-465,00c.  
Baker, Robert G.; and Rosen, Samuel R., to Seaquist Valve Company, Division of Pittway Corporation. Modular applicator system. 3,690,515, Cl. 222-504,000.  
Baker, Robert G.; and Rosen, Samuel R., to Nordson Corporation. Modular applicator system. 3,690,518, Cl. 222-504,000.  
Baker, Ronald; and Storer, Thomas Kirkly, to Imperial Chemical Industries Limited. Production improvement for substituted triazine. 3,691,164, Cl. 260-249,800.  
Bakewicz, Frank J.; and McGarvey, Robert G., to General Motors Corporation. Retractable closure. 3,690,722, Cl. 296-137,00r.  
Bakolelis, Andrew G., to Olin Corporation. Powder-actuated tool. 3,690,536, Cl. 227-10,000.  
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Baldwin, John J.; and Novello, Frederick C., to Merck & Co., Inc. Substituted imidazoles. 3,691,178, Cl. 260-294,900.  
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Ball, Wesley L., to Appliance Manufacturing Company, Inc. Control switch for microwave oven. 3,691,329, Cl. 200-50,00a.  
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Barabas, Eugene S.; and Fein, Marvin M., to GAF Corporation. Stable aqueous emulsions. 3,691,125, Cl. 260-29,6wb.  
Barassi, Carlo; Lugli, Giuseppe; Mezzanotte, Mario; and Guermandi, Romano, to Industrie Pirelli S.p.A. Radial tire having breaker structure. 3,690,364, Cl. 152-361,000.  
Bardic Systems Limited: *See—*  
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Barna, Peter. Center, diameter and wall thickness determining device. 3,690,012, Cl. 33-178,000.  
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Battista, Orlando A., to FMC Corporation. Microcrystalline collagen, method of making same and foods, pharmaceuticals and cosmetics containing same. 3,691,281, Cl. 424-195,000.  
Battle, James; and Phillips, Richard A., to Carborundum Company, The. Variable resistance resistor assembly. 3,691,503, Cl. 338-95,000.  
Bauer, Johann; Fendel, Kurt; and Balwe, Thomas, to Wacker-Chemie G.m.b.H. Nitrites in vinyl chloride polymerization. 3,691,080, Cl. 260-78,5cl.  
Bauer, Robert D. Drying of gases containing polymers and/or polymerizable constituents. 3,691,251, Cl. 260-683,00r.  
Bauerlein, Rudolf; and Uhl, Dieter, to Siemens Aktiengesellschaft. Method of increasing the current amplification and the radiation resistance of silicon transistors with silicon oxide cover layer. 3,691,376, Cl. 250-49,5te.  
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Beck, Alfred B., to TRW Inc. Three-port quadrature hybrids. 3,691,485, Cl. 333-11,000.  
Becker, Norman. Board game apparatus. 3,690,665, Cl. 273-130,0ab.  
Bee, James William Moore, to Northern Electric Company Limited. Stabilizer for headset. 3,691,319, Cl. 179-156,00a.  
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Beesch, Otto, to Bosch, Robert, G.m.b.H. High voltage sparkplug. 3,691,418, Cl. 313-131,000.  
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Bell & Howell Company: *See—*  
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Bell, Stanley C.: *See—*  
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Belleau, Bernard R.; and Kavadias, Gerry, to Bristol-Myers Company. Process for the preparation of 1-indanecarboxylic acids. 3,691,231, Cl. 260-523,00r.  
Bellon Plumbing Company, Incorporated: *See—*  
Montesdioca, Renaldo, 3,690,609.  
Bender, Stanley O.; and Di Girolama, to CTS Corporation. Resistors and stacked plurality thereof. 3,691,506, Cl. 338-317,000.  
Bendix Corporation, The: *See—*  
Michaud, Jimmie A., 3,691,353.  
Millman, William V., 3,690,317.  
Scppey, Robert E., 3,690,157.  
Somer, Toivo A., 3,691,382.  
Benghiat, Isaac, to Universal Oil Products Company. Diesters of halo-substituted alkylphosphonates. 3,691,275, Cl. 260-961,000.  
Bennett, William Coffey; and Stastny, Edwin O., to Nour Corporation. Coaxial tape cartridge. 3,690,590, Cl. 242-194,000.  
Benoit, Yvonne R.: *See—*  
Baxter, Frederick J.; and Benoit, Yvonne R., 3,690,277.  
Berestov, Evgeny Stepanovich: *See—*  
Bekhtle, Georgiy Alexandrovich; Myasnikov, Nikolai Fedorovich; Mitrofanov, Jury Eremeevich; Berestov, Evgeny Stepanovich; Kauvasinsky, Albert Frantsevich; Leibson, Mark Lazarevich; and Derkach, Viktor Gershevich, 3,690,454.  
Berg, Bengt Henrik: *See—*  
Edstrom, John Olof; Innerman, Sven Eric; Berg, Bengt Henrik; and Mills, Brian Edward, 3,690,850.  
Bergh, Arpad Albert; Paola, Carl Ralph; and Saul, Robert H., to Bell Telephone Laboratories, Incorporated. Semiconductor epitaxial growth from solution. 3,690,965, Cl. 148-172,000.  
Berghezan, Aurel I., to Cabot Corporation, mesne. Method for producing composite article. 3,690,961, Cl. 148-11,50f.  
Bergstrom, Sune; and Sjoval, Jan. PGE2 methyl ester and PGE2 methyl ester diacetate. 3,691,216, Cl. 260-408,00r.  
Berlin, Aaron S.; Little, Vincent C.; and Leadore, Toney, to United States of America, Army. Primer retainer bushing. 3,690,258, Cl. 102-70,00r.  
Bernardin, Leo J., to Kimberly-Clark Corporation. Absorbent fibers of phosphorylated cellulose with ion exchange properties. 3,691,154, Cl. 260-219,000.  
Berthold, Walter: *See—*  
Spiller, Richard; Moser, Gottfried, and Berthold, Walter, 3,690,395.  
Bertolini, Natale: *See—*



- Calcagno, Benedetto, Ghirga, Marcello, and Bertini, Natale, 3,691,098.
- Bertoglio, Guido, to S. A. Albe. Machine for the high speed, extremely precise mass working of pieces having small dimensions and complex forms, in particular of metallic small articles. 3,689,965, Cl. 29-38.00c.
- Bertrand, Richard R.: See—  
Weyrich, Arthur G., Bertrand, Richard R., and Karinski, Edwin D., 3,691,425.
- Besant, Robert W.: See—  
McKinnon, Murdoch G., Wilson, James N., and Besant, Robert W., 3,690,339.
- Beshtee International Corporation: See—  
Wasp, Edward J., 3,690,732.
- Bestt Rollr, Inc.: See—  
Ellis, Donald A., 3,690,779.
- Biechele, Dallas J., Jr. Processing carp for human consumption. 3,690,899, Cl. 99-111.000.
- Biederman, Stuart J., and Jezewski, Walter E. Air operated terminal feed device. 3,689,984, Cl. 29-203.00s.
- Biesecker, Douglas A.: See—  
Lewis, Donald E., and Biesecker, Douglas A., 3,690,616.
- Biesinger, Erwin. Apparatus for continuously treating textile material. 3,690,128, Cl. 68-20.000.
- Biethan, Uwe.: See—  
Riemhofer, Franz, Dittmann, Walter, Biethan, Uwe, Hornung, Karl-Heinz, and Schutze, Ernst-Christian, 3,691,258.
- Bigelow-Sanford, Inc.: See—  
Norris, Alan H., 3,690,057.
- Peters, Robert I., 3,690,056.
- Bihler, Otto, to Bihler, Otto, KG. Feeding apparatus for wire and like elongated material. 3,690,533, Cl. 226-165.000.
- Bihler, Otto, KG.: See—  
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- Biller, Efim, Huettner, Rudolf, and Velling, Gunter, to Union Rheinische Braunkohlen Kraftstoff Aktiengesellschaft. Process for the treating crude alkylated phenols. 3,691,238, Cl. 260-621.00a.
- Billings, William G., to Phillips Petroleum Company. Selectively removing monoalkylbenzenes from mixtures thereof with dialkylbenzenes. 3,691,247, Cl. 260-674.00a.
- Billingsley, James D., to LTV Aerospace Corporation. Photographing means. 3,690,233, Cl. 95-11.000.
- Billmann, Gerhard Leonhard Emil, to Bunker-Ramo Corporation. The Plug connection contact with high security against burning off. 3,691,511, Cl. 339-111.000.
- Bilton, John, to Fluidrive Engineering Company Limited. Geared drives incorporating fluid couplings. 3,690,196, Cl. 74-730.000.
- Bio Data, Inc.: See—  
Collins, Ronald J., 3,690,404.
- Bio Cal Instrument Company: See—  
Endl, Alfons, 3,690,772.
- Bird, J. Vincent. Method of making powdered silicone rubber. 3,691,128, Cl. 260-34.200.
- Biron, Jules N. Cable handling system. 3,690,534, Cl. 226-172.000.
- Bischoff, Leo E.: See—  
Hammer, Dale F., and Bischoff, Leo E., 3,691,443.
- Bjelland, John Louis, Flynn, Floyd W., and Schutt, Norman C., to Powers Chemco, Inc. Vacuum actuated rotary drill. 3,690,780, Cl. 408-58.000.
- Black and Decker Manufacturing Company, The.: See—  
Wood, John W., 3,690,051.
- Blamschein, Gottfried, to GFM Gesellschaft für Fertigungstechnik und Maschinenbau Aktiengesellschaft. Swaging machine for a continuous swaging of rod-shaped workpieces. 3,690,142, Cl. 72-402.000.
- Blair, Charles M., Jr., to Magna Corporation. Method of controlling aquatic weeds, and other undesired forms of aquatic life, without adversely affecting fish. 3,690,857, Cl. 71-66.000.
- Blair, Gerald E.: See—  
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- Blandin Paper Company: See—  
Dentch, Milton P., Jodrey, Robert M., Guestella, Samuel L., and Larriee, Jerry J., 3,690,297.
- Blandy, William. Impregnated corrugated board. 3,691,002, Cl. 161-137.000.
- Blatter, Herbert Morton: See—  
Lucas, Robert Armistead, and Blatter, Herbert Morton, 3,691,179.
- Blatter, Herbert Morton, and Lucas, Robert Armistead, to Ciba Corporation. Cycloalkano [c] pyrazoles. 3,691,180, Cl. 260-295.500.
- Blavo, Nicholas, to Westinghouse Electric Corporation. Helitran winding for electrical inductive apparatus. 3,691,496, Cl. 336-150.000.
- Bliss, Joseph A.: See—  
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- Bloedel, MacMillan Limited.: See—  
Worster, Hans Edmund, and Pudek, Marian Franciszek, 3,691,008.
- Blouce, John Anthony, to Memco (Electronics) Limited. Detection of movement in confined spaces. 3,691,556, Cl. 343-5.00p.
- Bloom, Stanley M., and Garcia, Paulina P., to Polaroid Corporation. Novel dipyrromethene dyes. 3,691,161, Cl. 260-240.700.
- Blumhertz, John H., and Menicks, Paul R., to FMC Corporation. Sodium malate peroxyhydrate. 3,691,139, Cl. 2-78.40r.
- Bnaks, Willard K., and Lyon, James L., to International Business Machines Corporation. Electrostatic printing system. 3,690,760, Cl. 355-16.000.
- Boatwright, John T., to Northeast Electronics Corporation. Voltage ratio apparatus with logarithmic output. 3,691,473, Cl. 328-145.000.
- Bocalo, Louis. Termal actuator and method of making. 3,690,065, Cl. 60-23.000.
- Bock, Elmer E., to Textile Machinery Company, Inc. Creel. 3,690,586, Cl. 242-131.000.
- Bodenseewerk Geratetechnik: See—  
Buchholz, Hans-Dieter, and Reerink, Hans-Peter, 3,690,598.
- Boehringer Ingelheim G.m.b.H.: See—  
Ohnacker, Gerhard, Daniel, Helmut, and Machleidt, Hans, 3,691,173.
- Boekhorst, Antonius, Janssen, Peter Johannes Hubertus, and Wolber, Jorg, to U.S. Philips Corporation. Circuit arrangement for generating a sawtooth current in a line deflection coil for a display tube conveying a beam current and for generating an Eht. 3,91,422, Cl. 315-19.000.
- Bofinger, Karl, and Hake, Walter Thomas, to American Can Company. Apparatus for securing strip members to container bodies. 3,690,997, Cl. 156-567.000.
- Bogenberger, Richard, Helmcke, Conrad, and Kritikos, Athanasios, to Messerschmitt-Bolkow-Blohm GmbH. Electrochemical data storage with electron beam accessing. 3,691,533, Cl. 340-173.00c.
- Bognar, Bela, to TRW Inc. Non-snap acting rocker switch. 3,691,325, Cl. 200-66.000.
- Bogusz, Frank J. Door guard. 3,690,709, Cl. 292-262.000.
- Bohanski, John S. Hand propelled vehicles. 3,690,697, Cl. 280-247.000.
- Bohlmann, Willy Frank, Jr.: See—  
Pattison, Martin Oren, and Bohlmann, Willy Frank, Jr., 3,690,112.
- Bohman, Erik Harald, to Telefonaktiebolaget LM Ericsson. Arrangement for the generation of pulses appearing as pseudo-random numbers. 3,691,472, Cl. 328-63.000.
- Boik, Arnold R., and Holk, Albert J., Jr. Single operation rivet. 3,690,706, Cl. 287-20.300.
- Boise Cascade Corporation: See—  
Bokovoy, Ronald D., and Luvisotto, Roy G., 3,690,399.
- Bojyo, Takuro, and Yamashita, Katsuyuki, to Victor Company of Japan Limited. Tape end detection device for tape recorder. 3,690,589, Cl. 242-191.000.
- Bokovoy, Ronald D., and Luvisotto, Roy G., to Boise Cascade Corporation. Axle assembly for an automotive vehicle. 3,690,399, Cl. 180-75.000.
- Bolhofer, William A., and Baldwin, John J., to Merck & Co., Inc. Substituted quinoxalines. 3,691,166, Cl. 260-750.00r.
- Bolkow Gesellschaft mit beschränkter Haftung.: See—  
Dederra, Carl-Helmut, and Butter, Karl, 3,690,103.
- Bolton, Benjamin A.: See—  
Serres, Carl, Jr., and Bolton, Benjamin A., 3,691,136.
- Bonnefond, Georges.: See—  
Lansaque, Rene, and Bonnefond, Georges, 3,690,684.
- Bonny, Jean-Pierre, to Portescap, L.e. Porte-Echappement Universel S.A. Piezoelectric microphone. 3,690,144, Cl. 73-6.000.
- Boosen, Karl-Josef, to Lonza Ltd. Process for making 2-hydroxyquinoline-4-carboxylic acids. 3,691,171, Cl. 260-287.00r.
- Boren, Morris G.: See—  
Amadon, Roger M., and Boren, Morris G., 3,690,895.
- Boresta, John G., to Chemical Construction Corporation. Adjustable venturi gas scrubber. 3,690,044, Cl. 55-223.000.
- Borjeson, Jan Lennart, to Aktiebolaget Bofors. Target simulator for an optical sight. 3,691,284, Cl. 35-10.200.
- Borneman, Lawrence A. Electric arc welding gun having a nozzle with a removable metal liner to protect the nozzle from weld splatter. 3,690,567, Cl. 239-591.000.
- Borsuk, Michael Howard, and Browne, Paul Nolan, to Bell Telephone Laboratories, Incorporated. Modified time domain comb filters. 3,691,486, Cl. 333-70.00t.
- Borsvold, Herbert H., to Goodrich, B. F., Company, The. Apparatus for vulcanizing elastomeric hose. 3,690,796, Cl. 425-90.000.
- Bos, Hendrikus J.: See—  
Van de Belo, Roelof, Begemann, Heinrich K. S. P., Bos, Hendrikus J., and Mann, Adriaan B., 3,690,389.
- Bosch, Robert, G.m.b.H.: See—  
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- Klett, Erich, Paule, Kurt, and Hettich, Alfred, 3,691,407.
- Krauss, Rudolf, and Walch, Eugen, 3,690,566.
- Nier, Johannes, 3,689,985.
- Widmaier, Dieter, 3,690,097.
- Bosisto, Carlos Alberto.: See—  
Lozano, Gustavo Jimenez, Bosisto, Carlos Alberto, and Weinbaum, Alejan Dro Sise, 3,690,006.
- Bossert, Friedrich, and Vater, Wulf, to Farbenfabriken Bayer Aktiengesellschaft. Cyanophenyl-1a,4-dihydropyridine derivatives. 3,691,177, Cl. 260-294.900.
- Boughton, Lowell D.: See—  
Tregembo, Rhoderic, Dolezal, Wayne R., Boughton, Lowell D., and Stewart, John D., 3,690,106.
- Bouligny, R. H., Inc.: See—  
Dixon, William Jennings, 3,690,387.
- Boulva, Paul. Marble game device with removable inserts. 3,690,663, Cl. 273-110.000.
- Bourns, Inc., mesne.: See—  
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- Boussely, Jean, to Societe Saphim-Fournier-Cimag. Glyceryl trimonatanate. 3,691,219, Cl. 260-410.700.

- Bouthors, Pierre, and Quemerais, Philippe, to Regie Nationale des Usines Renault and Automobiles Peugeot. Transmission mechanisms for automobiles and other vehicles. 3,690,192, Cl. 74-199.000.
- Bowen Tools, Inc.: See—  
Slator, Damon T., and Wilson, Archie R., 3,690,136.
- Slator, Damon T., and Peil, Archie W., 3,690,381.
- Bown, Delos E., Neureiter, Norman P., Schutze, Henry G., and Williams, Herschel, to Esso Research and Engineering Company, mesne. Stabilizer system. 3,691,132, Cl. 260-45.850.
- Boyd, John A. Chute sanitizer and fire extinguisher. 3,690,560, Cl. 239-195.000.
- Boyne, Ivor Fenwick, to G. K. N. Windsor Limited. Twin screw extrusion presses. 3,690,623, Cl. 259-192.000.
- Boysen, Gerd C., and Hannula, Raymond H., to Allen-Bradley Company. Coil plate assembly. 3,691,493, Cl. 336-65.000.
- Bradbury, Keith Douglas. Apparatus for pulling out row crop plants. 3,690,382, Cl. 171-56.000.
- Brandon, William D., and Drais, Jack A., to Caterpillar Tractor Company. Helically wound laminated bearings and method of manufacture. 3,690,639, Cl. 267-57.100.
- Brantington, Sigurd, to Brin Manufacturing Co., Inc. Multiple circuit switch with pivoted contact, only one switch operable at a time. 3,691,324, Cl. 200-5.00c.
- Braun, Richard H.: See—  
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- Bredas, Nikolajs, and Miller, Forbes M., to Wall Colmonoy Corporation. Cermet-type alloy. 3,690,849, Cl. 29-182.5.
- Bredas, Nikolajs, and Miller, Forbes M., to Wall Colmonoy Corporation. Method of making a cermet-type alloy. 3,690,875, Cl. 75-202.000.
- Bremner, David F., and Smith, Stephen B., to National Cash Register Company, The. Compact label printer. 3,690,250, Cl. 101-95.000.
- Brennan, Francis P. Edge conditioning mechanism. 3,690,139, Cl. 72-199.000.
- Breuer, Hubert, to Uniroyal Englebert Deutschland AG. Apparatus for pressing the seams or splices of raw tires. 3,690,992, Cl. 156-412.000.
- Bridger, William.: See—  
Derderian, Edward J., and Bridger, William, 3,690,224.
- Briggs, Walton F., to Norton Company. Leak detector. 3,690,151, Cl. 73-40.700.
- Brimhall, Ray S., deceased (by Walker Bank and Trust Co., administrator). Retorting apparatus with hood shaped unitary coolant jacket disposed over screw conveyor. 3,691,019, Cl. 202-118.000.
- Brin Manufacturing Co., Inc.: See—  
Brantington, Sigurd, 3,691,324.
- Brinkman, Eric Maria.: See—  
Van Den Heuvel, Walter August, Vanhalst, Johan Eugene, and Brinkman, Eric Maria, 3,690,886.
- Brimming, Earl F., to Burroughs Corporation. Document reading apparatus. 3,691,352, Cl. 235-61.11.
- Brint, Norman Trevor, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Cartridge clips. 3,690,217, Cl. 89-34.000.
- Brint, Norman Trevor, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Loading mechanisms for guns. 3,690,216, Cl. 89-33.00a.
- Brissard, Gerard, to Etablissement Muller & Cie. Vehicle suspension testing apparatus. 3,690,145, Cl. 73-11.000.
- Bristol-Myers Company.: See—  
Bellean, Bernard R., and Kavadias, Gerry, 3,691,231.
- British Drug Houses Limited, The.: See—  
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- British Petroleum Company Limited, The.: See—  
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- British Railways Board.: See—  
Hobbs, Anthony Edward Walter, 3,690,271.
- Bromer, Heinz, Meinert, Norbert, Wetzlar, Johann Spineic, and Staaden, Hans, to Leitz, Ernst, G.m.b.H. Optical glass having anomalous partial dispersion. 3,690,905, Cl. 106-47.00q.
- Brookhyser, Byron B., to Weyerhaeuser Company. Automatic sheet stacker. 3,690,649, Cl. 271-68.000.
- Brothers, Doris Le Roy.: See—  
Kircher, Charles E., Jr., McAlister, Donald R., and Brothers, Doris Le Roy, 3,691,240.
- Browatzki, Kurt.: See—  
Herzhoff, Peter, Platz, Stephan, Gref, Hans, Schwenger, Willi, Maus, Fritz, Schweicher, Wolfgang, Koepke, Gunther, Wasser, Willi, and Browatzki, Kurt, 3,690,917.
- Brown, Bernard Bean, and Ruopp, Donald Carl, to CPC International Inc. Synthesis of 1-substituted-3-halopyrrolidines. 3,691,198, Cl. 260-326.800.
- Brown, Bernard Beau, and Swidinsky, John. Preparation of 1-substituted-3-chloropyrrolidines. 3,691,197, Cl. 260-326.800.
- Brown, Boveri & Cie Aktiengesellschaft.: See—  
Knirsch, Gunther, and Schmitt, Herrmann, 3,691,489.
- Brown, George J., and Ewing, Robert J., to Worthington Biochemical Corporation. Means and method for chemical analysis. 3,691,017, Cl. 195-103.50r.
- Brown, Gordon T.: See—  
James, Barry A. J., and Brown, Gordon T., 3,690,868.
- Brown, Kenneth L.: See—  
Landis, George G., Parks, John M., and Brown, Kenneth L., 3,691,340.
- Brown, Richard H., to Pivot Punch Corporation. Composite plastic punch press stripper. 3,690,205, Cl. 83-139.000.
- Brownhill, Thomas Duncan, to Dale, John, Limited. Taper-expanding mandrel. 3,690,141, Cl. 72-370.000.
- Browne, Paul Nolan.: See—  
Borsuk, Michael Howard, and Browne, Paul Nolan, 3,691,486.
- Bruass, Albert, to Spider Staging, Inc. Level winding winch mechanism and heavy duty drive therefor. 3,690,409, Cl. 182-142.000.
- Brucker, Henry J.: See—  
Klausmann, Milton H., and Brucker, Henry J., 3,690,223.
- Bruder, John F., to Quadri Corporation. Read only memory. 3,691,541, Cl. 340-174.0sp.
- Bruggess, Colin Michael.: See—  
Feather, Peter, and Bruggess, Colin Michael, 3,691,212.
- Bruggeman, Frans, and Schmidt, Fernand, to N. V. Bekiert S.A. Cages for rearing animals. 3,690,301, Cl. 119-18.000.
- Brumm, Richard S., to Grove Valve and Regulator Company. Silent flexible tube type valve. 3,690,344, Cl. 137-625.280.
- Brummett, Paul L., and Isley, Sigmund G., to Amerel Company Inc. Apparatus and method for conveying and sorting non-uniform articles and intra-factory system. 3,690,478, Cl. 214-16.40r.
- Bruninghaus, Gisela.: See—  
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- Bruninghaus, Walter.: See—  
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- Brunner, Josef.: See—  
Suter, Hans, Zutter, Hans, and Brunner, Josef, 3,691,196.
- Brunner, Josef Alphons, deceased (by Brunner-Rohrer, Pia Beatrice, Brunner, Josef Moritz Hugo, and Brunner, Urs Viktor Hohann, legal heirs), to Spemog AG. Processing and mixing machine. 3,690,622, Cl. 259-169.000.
- Brunner, Josef Moritz Hugo.: See—  
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- Brunner, Robert H.: See—  
Kraft, Paul, and Brunner, Robert H., 3,691,127.
- Brunner, Urs Viktor Hohann.: See—  
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- Brunner-Rohrer, Pia Beatrice.: See—  
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- Brunswick Corporation.: See—  
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- Bruton, James Isaac.: See—  
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- Bruun, Jean Eskild.: See—  
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- Bryan, John, to Pilkington Brothers Limited. Welded double glazing units. 3,690,856, Cl. 65-287.000.
- Brynjegard, Olaf G. Dodecahedron ornament. 3,690,998, Cl. 161-16.000.
- Buchanan, Harry C., Jr.: See—  
Fannin, Wayne V., and Buchanan, Harry C., Jr., 3,690,689.
- Buchel, Karl-Heinz, Regel, Erik, Grewe, Ferdinand, Scheimpflug, Hans, and Raspers, Helmut, to Farbenfabriken Bayer Aktiengesellschaft. N-Triyl-imidazole. 3,691,192, Cl. 260-309.000.
- Buchholz, Hans-Dieter, and Reerink, Hans-Peter, to Bodenseewerk Geratetechnik. Speed control for aircraft with extensible landing flaps. 3,690,598, Cl. 244-77.00d.
- Buckley, Charles Harold, Mitchell, John, and Collier, Geoffrey Lionel, to Imperial Chemical Industries Limited. Chrome pigments. 3,690,906, Cl. 106-302.000.
- Bueyrus-Eric Company.: See—  
Kraschewski, Melvin W., and Lesniewski, Gerald F., 3,690,483.
- Bugaut, Andree, and Estradier, Francoise, to Societe Anonyme dite L'Oreal. Benzomorpholine couplers and oxidation bases for dyeing live human hair. 3,690,810, Cl. 8-10.200.
- Bulders Sand Company.: See—  
Livingood, Harry Harlan, 3,690,183.
- Bursiere, Jean, Colobert, Louis, and Montagnon, Paul A. F., to Promoveo. Device for use in the study of chemical and biological reactions and method of making same. 3,690,836, Cl. 23-253.00p.
- Buldm, Daniel A., to Polaroid Corporation. Nonsynchronous transfer apparatus. 3,690,433, Cl. 198-19.000.
- Bullen, Ronald S., to Dresser Industries, Inc. Placement and detonation method for explosive fracturing. 3,690,379, Cl. 166-299.000.
- Bunker-Ramo Corporation, The.: See—  
Billmann, Gerhard Leonhard Emil, 3,691,511.
- Bunn, Dorrance P., Jr., and Hack, Werner L. Steam distributor for fluid catalytic cracker stripper. 3,690,841, Cl. 23-288.00s.
- Burch, Arthur R., to Clark Equipment Company. Station address and control system for material handling vehicles. 3,691,398, Cl. 307-116.000.
- Burchell, Wesley. Variable pattern recorder. 3,690,011, Cl. 33-27.00j.
- Burgess, James F., and Neugebauer, Constantine A., to General Electric Company. High speed signal in MOS circuits by voltage variable capacitor. 3,691,537, Cl. 340-173.00r.
- Burke, Oliver W., Jr. Elastomer-silica pigment masterbatches and production processes relating thereto. 3,691,129, Cl. 260-33.6a0.
- Burkley, Thomas E., to Goodyear Tire & Rubber Company, The. Method of making a flexible member having increased service life. 3,691,268, Cl. 264-162.000.
- Burroughs Corporation.: See—



- Beery, Jack, 3,691,397.  
 Brinning, Earl E., 3,691,352.  
 Calaway, Ward M., 3,691,474.  
 Looschen, Floyd W., 3,691,555.  
 Busby, Lloyd H. Combination ladder and hoist apparatus. 3,690,282, Cl. 114-43.500.  
 Busing, Walter; and Gebauer, Wolfgang, to Farbenfabriken Bayer Aktiengesellschaft. Apparatus for the noise-compensated measurement of high D.C. currents. 3,691,460, Cl. 324-126.000.  
 Bustos, Ray T.: *See—*  
 Weeks, James F.; and Bustos, Ray T., 3,690,668.  
 Bustraen, Daniel J.; Gossie, Mijo A.; Sundstrom, Roy N.; and Wisner, William R. Article handling apparatus and method. 3,690,527, Cl. 225-4.000.  
 Butler, Cornelius, Jr. Reel trailer. 3,690,491, Cl. 214-506.000.  
 Butler, David B., to Kendall Company. The. Headrest with adhesive attachment. 3,691,005, Cl. 161-167.000.  
 Butler, Lloyd V. Water counterweight system for theatrical props and curtains. 3,690,617, Cl. 254-141.000.  
 Butler National Corporation: *See—*  
 Perkins, Earl Stuart, 3,691,361.  
 Butter, Karl: *See—*  
 Dederra, Carl-Helmut, and Butter, Karl, 3,690,103.  
 Butts, Earl E., to Clark Equipment Company. Mechanism for predicting food temperatures. 3,690,175, Cl. 73-343.00r.  
 Byland, Henry L., to Futuristic Building Products Inc. Door frame. 3,690,082, Cl. 52-213.000.  
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 Douglas, Ormond S.; and Byrd, Warnell M., 3,690,724.  
 Cabot Corporation, *mesne: See—*  
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 Cachat, John F., to Park-Ohio Industries, Inc. Multi-phase induction heating device. 3,691,339, Cl. 219-10.570.  
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 Kriellaars, Johannes Cornelius, 3,691,457.  
 Cahill, Thomas J., Jr., to Rapid-American Corporation. Bowling ball carrier. 3,690,360, Cl. 150-52.00a.  
 Calaway, Ward M., to Burroughs Corporation. Phase detector initializer for oscillator synchronization. 3,691,474, Cl. 331-1.00a.  
 Calcagno, Benedetto; Ghirga, Marcello; and Bertlini, Natale, to Societa Italiana Resine S.p.A. Process for manufacturing oxychlorination catalysts. 3,691,098, Cl. 252-441.000.  
 California Institute of Technology: *See—*  
 Lovelock, James E., 3,690,835.  
 Calvagna, James F., and Balling, Roger A., to Community Bank, *mesne*. Control system for audio-visual devices connected by cables. 3,691,528, Cl. 340-152.00r.  
 Campbell, Ian Wallace. Apparatus and method for cable covering. 3,689,982, Cl. 29-430.000.  
 Canadian Cane Equipment, Ltd.: *See—*  
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 Carruthers, John; Knight, Warren Nevin Norton; and Dodwell, Christopher Henry, to British Petroleum Company Limited, The. Hydrogenation of unsaturated gasolines. 3,691,066, Cl. 208-255.00r.  
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 Charle, Roger; Zviak, Charles; and Kalopissis, Gregoire. Sanitary napkin having homogeneous distributed microcapsules filled with delay releasable bactericidal and fungicidal deodorant. 3,691,271, Cl. 424-28.000.  
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 Chlystun, Walter K. Container with recloseable, collapsible pouring spout. 3,690,522, Cl. 222-529.000.  
 Chow, Ken-Tang; Stull, John William; and Bates, Charles Edward, to Electric Nuclear Laboratories, Inc. Composite light source. 3,691,390, Cl. 250-217.0ss.  
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 Coulson, Dale Robert, to Du Pont de Nemours, E. I., and Company. 2-Methyl-3-methylene-1,5,7-octatriene, its oligomer, and its preparation from allene and butadiene with palladium(0) catalysts. 3,691,950, Cl. 260-677 00r.  
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 Dantro, Horace F., to Knorr-Bremse GmbH. Photosensitive sub pigmentary titanium dioxide produced by calcinating titanium hydrate from 725°C to 825°C. 3,690,887, Cl. 96-88 000.  
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 David, Billy W., to Texas Instruments, Incorporated. Acoustic energy source utilizing the waterhammer phenomenon. 3,690,403, Cl. 181-5 000.  
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 Davidson, William J., to Electronic Controls Corporation. Permutation switch. 3,691,328, Cl. 200-43 000.  
 Davies, Dennis, and Kern, John P., to Digital Telephone Systems, Inc., mesne. Circuit usage analyzer. 3,691,303, Cl. 179-8 00a.  
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 Day, Christopher C., to American Optical Corporation. Self-calibrating tidal volume impedance pneumograph. 3,690,143, Cl. 73-1 00r.  
 Dayton, David S., and Girard, Alfred L., to Technical Communications Corporation. Asynchronous, swept frequency communication system. 3,691,464, Cl. 325-55 00.  
 De Bell, Lawrence R., and Price, David D., Jr., said De Bell assor. to Economy Co. Method for recording predetermined information duration within pre-set record length. 3,691,314, Cl. 179-109 20s.  
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 Deakin, Gordon Asquith, Eastwood, Alan, and Vinnucimbe, Gordon. Transfer mechanism. 3,690,204, Cl. 83-112 000.  
 Deaton, James M., to Vendmart, Inc. Conveying rod for vending machines. 3,690,510, Cl. 221-75 000.  
 Decker, John J., and Kerstetter, Donald R., to GFE, Sylva, Inc. Incorporated. Doubled layer heater coating for electron discharge device. 3,691,421, Cl. 313-345 000.  
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 DeLange, Owen Edward, to Bell Telephone Laboratories, Incorporated. Error correcting optical PCM detector. 3,691,387, Cl. 250-199 000.  
 Dell, Harold R., and Lara, Edward D., to Singer General Precision, Inc. Asynchronous binary multiplier employing carry save addition. 3,691,359, Cl. 235-164 000.  
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 Derossi, Piero. Device for standing projection of single photograms in a cinematographic projector. 3,690,752, Cl. 352-174 000.  
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- Dreyer, Allen E., to Universal Research Company. Puzzle. 3,690,672, Cl. 273-155.000.
- Dreyer, Paul E. Sheet feed press for printing small size sheets on both sides simultaneously. 3,690,253, Cl. 101-217.000.
- Drum, Edward W., to Ransburg Electro-Coating Corporation. Condition responsive valve. 3,690,336, Cl. 137-75.000.
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- Du Pont de Nemours, E. I., and Company: *See—*
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- Edwards, Ralph W., to General Motors Corporation. Worm drive mechanism. 3,690,194, Cl. 74-427.000.
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- Ellis, Ronald; and Wankling, James Leonard. Radiation detector comprising semi-conductor body incorporating a two-dimensional array of P-I-N-devices. 3,691,389, Cl. 250-211.00j.
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- Elmore, William A., to Ampex Corporation. Helical scan magnetic recorder having a critical angle for the tape at the entrance and exit guides in the head drum. 3,691,315, Cl. 179-100.200.
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- Emerson Electric Co.: *See—*
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- Eppensteiner, Frederick; Walter, and Woehrl, Richard E., to M & I Chemicals, Inc. Wire and strip line electroplating. 3,691,049, Cl. 204-206.000.
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- Erbert, Virgil, to Rolamite, Incorporated. Electromagnetic device. 3,691,461, Cl. 324-151.00r.
- Ercoli, Alberto, and Gardi, Rinaldo, to Warner-Lambert Pharmaceutical Company. 17-Valerate ester of 6a,9a-difluoro-prednisolone, its compositions and use as an anti-inflammatory agent. 3,691,214, Cl. 260-397.450.
- Erdy, Nicholas Z., to Stauffer Chemical Company. Novel detergent compositions. 3,691,106, Cl. 252-544.000.
- Erdy, Nicholas Z. and Yu, Arthur J., to Stauffer Chemical Company. Novel detergent compositions. 3,691,107, Cl. 252-544.000.
- Erickson, Marlin D., 1/2 to Erikson, Janet E. Releasable button-like element. 3,689,962, Cl. 24-108.000.
- Erenson, Donald W. Electrohydraulic servo valve. 3,690,345, Cl. 137-625.620.
- Eriksen, Merrill K.: *See—*
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- Escobedo, Francisco, to Fresco Industries, Inc. Helicallly-tracking milling assembly with tiltable thread cutting head. 3,690,220, Cl. 90-17.000.
- Esso Production Research Company: *See—*
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- Eso Research and Engineering Company: *See—*
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- Estes, John H.; and Bartley, Burton H. Selective temperature control of catalysts. 3,691,065, Cl. 208-159.000.
- Estes, Phillip W., to Grace, W. R., & Co. Pressure sensitive adhesive articles having a release coating. 3,690,924, Cl. 117-68.500.
- Estradier, Francoise: *See—*
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- Kobetz, Paul; Lindsay, Kenneth L.; and Cook, Shirl E., 3,691,221.
- Ettischer, Helmut, to Eastman Kodak Company. Synchronizing mechanism for photographic cameras adapted to use mechanically fired flash lamps. 3,690,236, Cl. 95-11.50r.
- Etudes et Fabrication Aeromautiques: *See—*
- Lemoigne, Pierre Marcel, 3,690,603.
- Eutzler, Betty J. Device to prevent pilferage of merchandise. 3,690,130, Cl. 70-18.000.
- Evans, John S., Jr.; and Jasper, Leslie L., to Mark Products, Inc. Orienting apparatus. 3,690,487, Cl. 214-340.000.
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- Fa, Charles H.; and Suzuki, Clarence K., to Advanced Memory Systems, Inc. Method for forming a field effect device. 3,690,968, Cl. 148-188.000.
- Fabi, Franco: *See—*
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- Facchini, Alessandro, to Snam Progetti S.p.A. Device and apparatus suitable to pulsed and controlled transfer of solids in liquid phase. 3,690,729, Cl. 302-15.000.
- Fairbanks, Charles W.; and Rosecrants, William J., Jr., to Eastman Kodak Company. Eliminating processing defects in light-sensitive silver halide materials. 3,690,892, Cl. 96-110.000.
- Falck-Muus, Rolf: *See—*
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- Falke, Henning, to Vereinigte Draht- und Kabelwerke Aktiengesellschaft Berlin und Duisburg. Support arrangement for the conductors of low temperature cables. 3,691,287, Cl. 174-28.000.
- Falkner, Raimund, to Rapena Patent & Verwaltungs AG. Method and device for making up metal bands into hollow rails. 3,689,970, Cl. 29-155.00r.
- Fannin, Wayne V.; and Buchanan, Harry C., Jr., to General Motors Corporation. Combination valve for controlling two pressure sources. 3,690,689, Cl. 280-6.00h.
- Farbenfabriken Bayer Aktiengesellschaft: *See—*
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- Farmer, Stanley E., to Cascade Corporation. Roll clamp. 3,690,714, Cl. 294-88.000.
- Farrington, Allan P.; and Nastus, Anthony J., to Johnson & Johnson. Aspirator assembly. 3,690,563, Cl. 239-346.000.
- Farrow, Desmond J. Turbine. 3,690,784, Cl. 415-55.000.
- Faulkner, Bonnie G. After burning device for internal combustion engines. 3,690,105, Cl. 60-283.000.
- Faulkner, William G., to Fletcher, Peter S. Rocking mount for chairs. 3,690,725, Cl. 297-258.000.
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- Feather, Peter, and Bruggess, Colin Michael, to British Drug Houses Limited, The 17 $\alpha$ -17,3'-alkadienyl-17 $\beta$ -acyloxy (17 $\beta$ -aroyloxy) steroids. 3,691,212, Cl. 260-397,400.  
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 Fischer, Peter, to Farbenfabriken Bayer Aktiengesellschaft. Certain 2-alkoxymethyl-3-chloro-2',1,2,4-thiadiazolin-5-ones and their preparation. 3,691,184, Cl. 260-302,00d.  
 Fischer, Stellan. Apparatus for the manufacture of hollow objects, in particular bottles of thermoplastic material utilizing injection blowing method. 3,690,802, Cl. 425-326,000.  
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Hays, Robert Guy; Pennell, Charles Ronald; Reed, Edwin Emmett; and Volk, Charles Edward, to Motorola, Inc. Method of doping semiconductor substrates, 3,690,969, Cl. 148-188.000.  
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Kishi, Hirotoshi, 3,691,391.  
Izumi, Yasuhiro. Apparatus for manufacture of non-woven fabric. 3,690,990, Cl. 156-441,000.  
Jackson, Bossie, Jr. See—  
Kaye, Seymour M., and Jackson, Bossie, Jr., 3,690,972.  
Jackson, Homer E., to Navsat Corporation. Aircraft collision warning system. 3,691,559, Cl. 343-112,00d.  
Jackson, Wendell T.; and Balaban, Martin M., to Hexcel Corporation. Method and apparatus for testing thin webs in shear. 3,690,161, Cl. 73-101,000.  
Jacobs, Harold, Kerecman, Albert J., and Schumacher, James D., to United States of America, Army. Laser energy monitor and control. 3,691,478, Cl. 331-94,500.  
Jacobsen, Arnulf Moe, to A/S Norsk Kabelfabrik. Method of packaging telephone cable. 3,690,087, Cl. 53-21,0fw.  
Jacobson, Robert L. See—  
Haunschild, Willard M., Jacobson, Robert L., and McCoy, Charles S., 3,691,062.  
Jager, Gerhard, to Licentia Patent-Verwaltungs-G.m.b.H. Antenna for direction finding systems. 3,691,561, Cl. 343-727,000.  
Jahnke, Robert E. See—  
Mann, George, and Jahnke, Robert E., 3,690,288.  
Jalbing, John L. See—  
Van Uum, Donald R.; and Jalbing, John L., 3,691,419.  
Jalowiecki, Jerzy George; and Metelski, Jan. Combination boat trailer. 3,689,950, Cl. 9-1,00f.  
James, Barry A. J.; and Brown, Gordon T., to G.K.K. Group Services Limited. Method of making steel having an improved hardenability. 3,690,868, Cl. 75-49,000.  
James, David W. F.; Spiller, David O.; and Colman, Harvey D., to University College of North Wales. Getter-sputtering apparatus. 3,691,053, Cl. 204-298,000.  
Jamesburg Corporation, mesne. See—  
Sangster, Arlon G., 3,691,372.  
Janney, Gareth M., to Hughes Aircraft Company. Diffraction grating coupled laser ring resonators. 3,691,477, Cl. 331-94,500.  
Janssen, Peter Johannes Hubertus. See—  
Bockhorst, Antonius; Janssen, Peter Johannes Hubertus; and Wolber, Jorg, 3,691,422.  
Janzon, Karl-Heinz; Simon, Eugen Meyer; and Schwab, Heinrich, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of colloidal silicic acid coated with mixture of metallic oxides, and product. 3,691,089, Cl. 252-313,00s.

- Jarvela, Gary Nicholas; and Klink, Howard Nassime, to Motorola, Inc. Apparatus for providing epitaxial layers on a substrate. 3,690,290, Cl. 118r48,000.  
Jarvi, Reino A., to Simpson Timber Company. Method of laying up plywood panels. 3,690,979, Cl. 156-182,000.  
Jasnusz, John J., Jr., to Petrochemicals, Inc. Particled urea coated with magnesium dodecyl benzene sulfonate. 3,690,931, Cl. 117-100,00a.  
Jasper, Leslie L. See—  
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Jedynak, Leo, to Oak Electro Nettes Corporation. Control knob for multiturn rotary switch. 3,690,287, Cl. 116-124,000.  
JEN AER Glaswerk Schott & Gen. See—  
Geffken, Walter; and Paquet, Volker, 3,690,932.  
Jensen, Arne; and Petersen, Tom Kastrup, to Danfoss A/S. Control arrangement for a three phase with intermediate DC regulation. 3,691,439, Cl. 318-227,000.  
Jensen, Kristian Stistrup. See—  
Nielsen, Vagn, Lauridsen, Jens Birk, and Jensen, Kristian Stistrup, 3,691,150.  
Jernstrom, Hans E. I. Simulated container. 3,690,542, Cl. 229-30,000.  
Jerue, Richard A., to Devlieg Machine Company. Machine tool with automatic tool changing mechanism. 3,689,988, Cl. 29-568,000.  
Jescher, Gerhard. See—  
Hoffman, Herwig, Jescher, Gerhard, Kuerzinger, Alfred, Schmidt, Erwin, Schoenleben, Willibald, Voges, Dieter, and Winderl, Siegfried, 3,691,205.  
Jespersen, Paul W. Dispenser for convention rolls of flexible sheet material. 3,690,580, Cl. 242-55,300.  
Jezewski, Walter E. See—  
Biederman, Stuart J., and Jezewski, Walter E., 3,689,984.  
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Johns Mansville Corporation. See—  
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Farrington, Allan P., and Nastus, Anthony J., 3,690,563.  
Link, Martin, 3,690,523.  
Johnson, Frances H. Pet door apparatus. 3,690,299, Cl. 119-1,000.  
Johnson, Joseph A., to Jomat Industries, Inc. Multiple injection blow molding machine. 3,690,799, Cl. 425-168,000.  
Johnson, Matthey & Co. Limited. See—  
Teague, Ernest Douglas, 3,689,987.  
Johnson, Norman A. Chocker grapple. 3,690,716, Cl. 294-111,000.  
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Johnson, Russell D. Hygienic unit. 3,690,555, Cl. 239-61,000.  
Johnston, John S., and St-Laurent, Andre, to Canadian Patents and Development Limited. Free cross-cutting blade assembly. 3,690,353, Cl. 144-34,00r.  
Johnston, Thomas Emmett, and Sommers, Earl Eugene, to Du Pont de Nemours, E. I., and Company. Oil compositions containing ethylene copolymers. 3,691,078, Cl. 252-59,000.  
Jomar Industries, Inc. See—  
Johnson, Joseph A., 3,690,799.  
Jones, Anthony Ronald. See—  
Scholes, Geoffrey William, and Jones, Anthony Ronald, 3,689,996.  
Jones, Derek, and Lu, Sun, to Texas Instruments, Incorporated. Electro-optical devices using lyotropic nematic liquid crystals. 3,690,745, Cl. 350-160,00r.  
Jones, Edwin K., to Universal Oil Products Company. Heat exchange apparatus. 3,690,839, Cl. 23-260,000.  
Jones, Evan Thomas. See—  
Bacon, Robert Elwon, Perry, Ernest John, and Jones, Evan Thomas, 3,690,888.  
Jones, Faber B. See—  
Doss, Richard C.; and Jones, Faber B., 3,690,936.  
Jones, Jack H. See—  
Gachele, Rolf, and Jones, Jack H., 3,691,302.  
Jones, John Leslie, Sr. Personnel restraint system for vehicular occupants. 3,690,695, Cl. 280-150,00b.  
Jones, John T., Ludt, William C., and Kellogg, Hudson W., to Ethyl Corporation. Automatic antiknock rating and adjustment apparatus. 3,690,851, Cl. 44-2,000.  
Jones, Leon. Parachute release mechanism. 3,690,605, Cl. 244-149,000.  
Joujon-Roche, Phillip J.; and Smith, Loyd D., to Hughes Aircraft Company. Counters with scaling for digital control of objects position. 3,691,469, Cl. 325-46,000.  
Judd, Joseph H., and Clark, Raymond L., to United States of America, National Aeronautics and Space Administration. Deposition apparatus. 3,690,291, Cl. 118-49,100.  
Julian, Donald V., to Procter & Gamble Company, The. Process for preparing sterols from tall oil pitch. 3,691,211, Cl. 260-397,250.  
Juna, Kiyoshi, Shinada, Noboru, and Tuchiya, Masuo. Compositions for electroresistive recording material. 3,691,105, Cl. 252-519,000.  
Juroff, Lyle Bruce; and Lunn, Mark Lawrence, to RCA Corporation. Remote controlled television tuner motor switching circuit. 3,691,444, Cl. 318-467,000.  
Kabushiki Kaisha Koparu. See—  
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Kabushiki Kaisha Nakamura Seisakusho. See—  
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Kabushiki Kaisha Ricoh. See—  
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Kadowaki, Takashi; Iwasaki, Takao; Mitsuta, Yutaka; and Shimada, Kenji, to Denki Kagaku Kogyo Kabushiki Kaisha and Nippon Alpin Rubber Co., Ltd. Method for recovering a solvent and an elastomeric polymer from an elastomeric polymer solution. 3,691,143, Cl. 260-94,70r.  
Kaess, Frank R. See—  
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Kagan, Efim Solomonovich. See—  
Potak, Yakov Mikhailovich, Orzhekovsky, Julian Felixovich; Sachkov, Vladimir Vladimirovich, Kagan, Efim Solomonovich; Valdman, Anna Ivanovna; Shpagina, Nadezhda Nikolaevna; Poplavko-Mikhailov, Mikhail Vasilievich; Fomin, Alexandr Pavlovich, and Natapov, Leon Leibovich, 3,690,869.  
Kagari, Yoshitaru; Hirokawa, Koichi; and Hasegawa, Toru, to Ricoh Co., Ltd. Etching solution application device for offset printing machines. 3,690,251, Cl. 101-142,000.  
Kaiser, Carl, to Smith Kline & French Laboratories. Hydroxyphenyl-2-decahydro-umolylcarbinols. 3,691,172, Cl. 260-289,00r.  
Kalantarov, Karl Davidovich. See—  
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Kallel, Allen, and Gowing, Arthur F., to Wemac Company. Air valve with fan actuator. 3,690,244, Cl. 98-40,00a.  
Kallnin, Ilmar L., to Celanese Corporation. Glass fiber reinforced composite article exhibiting enhanced longitudinal tensile and compressive moduli. 3,691,000, Cl. 161-60,000.  
Kalopissis, Gregoire. See—  
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Charle, Roger, Zviak, Charles; and Kalopissis, Gregoire, 3,691,271.  
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Kamal, Marwan R., and Kuder, Robert C., to General Mills, Inc. Dicyanates. 3,691,225, Cl. 260-453,00a.  
Kamieniski, Conrad W., and Merkley, Joseph H., to Lithium Corporation of America. Preparation of polymers and telomers using complexes of organomagnesiums with certain hydrides as catalysts. 3,691,241, Cl. 260-668,00b.  
Kaminaka, Hiroshi, Kotera, Norio, Kanda, Tatsuo; Kuruma, Hiroshi, Yanagihara, Hideki, and Murata, Yoshiro, to Sumitomo Chemical Company, Ltd. Aromatic polycarboxylic acid halides containing phosphorus. 3,691,278, Cl. 260-942,000.  
Kammann, Werner. See—  
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Kammann, Wilfried, to Kammann, Werner. Apparatus for aligning and arranging articles in upright position. 3,690,477, Cl. 198-33,00a.  
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Kamstrup-Larsen, Harry, to A/S Dansk Lecaetone. Method and a rotary kiln for producing a bloated clay product. 3,690,628, Cl. 263-21,00b.  
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Kanda, Tatsuo. See—  
Kaminaka, Hiroshi, Kotera, Norio, Kanda, Tatsuo, Kuruma, Hiroshi, Yanagihara, Hideki, and Murata, Yoshiro, 3,691,278.  
Kappius, Friedrich; Kristen, Reiner; Ott, Hanns; and Reinholdt, Heinz, to Siemens Aktiengesellschaft. Stepping motor for small driving power. 3,691,414, Cl. 310-49,000.  
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Kashio, Toshio, to Casio Computer Kabushiki Kaisha. System for generating tracing signals for displaying or recording characters. 3,691,551, Cl. 340-324,000.  
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- Kataoka, Shoji, Tateno, Hiroshi, Fujisada, Hiroyuki, Kawashima, Mitsuo, Komamiya, Yasuo, and Yamada, Hideo, to Kogyo Gijutsuin; a/k/a Industrial Science and Technology, Ministry of International Trade and Industry, Agency of Negative resistance element 3,691,481, Cl. 331-107.00g.
- Kataoka, Shoji, to Kogyo Gijutsuin, a/k/a Industrial Science and Technology Ministry of International Trade and Industry, Agency of Semiconductor type potentiometer device 3,691,502, Cl. 338-32.00r.
- Katchka, Jay R., Caparone, Michael J., and Morris, Louis P., to Robertshaw Controls Company, Thermostat assemblies utilizing a heat expansive and contractive elastomeric material 3,691,501, Cl. 337.393.000.
- Kato, Takaaki, *See*—  
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- Katz, Edward, Ehrenthal, Irving, and Scallet, Barrett L., to Anheuser-Busch, Incorporated, Process of making high D.E. fructose containing syrups 3,690,948, Cl. 127.46.00a.
- Kavasinsky, Albert Frantsevich, *See*—  
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- Kavadias, Gerry, *See*—  
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- Kawada, Takehiko, to Denki Onkyo Company, Limited, Method of operating piezoelectric transformers 3,691,410, Cl. 310-8.100.
- Kawasaki Steel Corporation, *See*—  
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- Kawashima, Mitsuo, *See*—  
Kataoka, Shoji, Tateno, Hiroshi, Fujisada, Hiroyuki, Kawashima, Mitsuo, Komamiya, Yasuo, and Yamada, Hideo, 3,691,481.
- Kawazoe, Toshinobu, Method for manufacturing a temperature detecting wire 3,690,974, Cl. 156.51.000.
- Kawasuga, Yasuaki, *See*—  
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- Kay, Seymour M., and Jackson, Bossie, Jr., to United States of America, Army Green flare composition 3,690,972, Cl. 149-19.000.
- Kear, Bernard H., *See*—  
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- Keele, George F., *See*—  
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- Kellogg Hudson W., *See*—  
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- Kelly, Vincent J., Smalligan, Wayne J., and Cloud, Larry L., to Gerber Products Company, Preparing a dried rice cereal product 3,690,894, Cl. 99.82.000.
- Kelmchuk, Peter, to Ciba Geigy Corporation, Stabilized polyamide compositions 3,691,131, Cl. 260.45.75c.
- Kelso, Robert E., to Dowley Manufacturing, Inc., Wheel or gear puller 3,689,978, Cl. 29.259.000.
- Kemmerer, Kenneth C., to Ametek, Inc., Segment range adjustment clamp 3,690,181, Cl. 73.418.000.
- Kempel, John J., to Taylor Garage Doors, Inc., Prefabricated door and frame assembly 3,690,037, Cl. 49.380.000.
- Kendall Company, The, *See*—  
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- Kendall, Giles A., to Menasco Manufacturing Company, Energy absorbing guardrail 3,690,619, Cl. 256.13.100.
- Kendell, Roy, to Ultra Electronics Limited, Thermocouple response time compensation circuit arrangement 3,691,405, Cl. 307-295.000.
- Kendrick, Thomas Charles, and Owen, Michael James, to Midland Silicones Limited, Organic polymers containing siloxane-organic block copolymers 3,691,257, Cl. 260-827.000.
- Kennametal Inc., *See*—  
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- Kennedy, James E., and Koboldt, Melvin A., to Container Corporation of America, Easy open container with pressure release and safety feature 3,690,506, Cl. 220-54.000.
- Kennedy Von Saun Corporation, *See*—  
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- Kenny, John, to Devices Limited, Implantable electric device 3,690,325, Cl. 128-419.00r.
- Kenville, Cyril P., *See*—  
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- Kerestury, Richard D., *See*—  
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- Kern, John P., *See*—  
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- Keresh, Leonard A., and Champagne, Edwin B., to GCOpironics, Inc., Holographic interferometry employing image plane holograms 3,690,159, Cl. 73-88.00a.
- Kerstetter, Donald R., *See*—  
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- Ketel, Jacob, *See*—  
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- Ketelsen, Broder, and Kiene, Wilfried, to Fischer & Porter Company, Magnetic flowmeter having ferrous field armature 3,690,172, Cl. 73.194.0em.
- Kettering, Dale O., to Diebold Incorporated, Pneumatic carrier load ejector construction 3,690,593, Cl. 243.34.000.
- Keunecke, Gerhard, and Kramer, Johannes, to Chemiebau, Dr. A. Zieren GmbH & Co., KG, Process for the evaporation of phthalic anhydride from the sump of a distillation zone 3,691,022, Cl. 203.71.000.
- Keyes, Karl A., *See*—  
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- Kiedrowski, Hugh P., and Friksen, Merrill K., to Super Mold Corporation, Matrix selector for tire casings 3,690,010, Cl. 33-174.00r.
- Kiefer, Hans, and Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, N-acylated cycloalkyldioxyamines 3,691,234, Cl. 260.545.00r.
- Kiene, Wilfried, *See*—  
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- Kikuchi, Sigeito, Takeuchi, Hiroshi, and Aman, Norio, to Nakagima Precision Industries, Ltd., Magnetic key device 3,690,432, Cl. 197.98.000.
- Kikuchi, Ietsuya, *See*—  
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- Kikuchi, Tomio, and Arai, Kiyoyuki, to Kabushiki Kaisha Kōpatsu, Exposure control apparatus for photographic cameras 3,690,229, Cl. 95.10.0ct.
- Kilgour, John, Payne, Peter Charles John, Reid, John Stewart, and Everett, Eric George, Agricultural machine 3,690,048, Cl. 56.13.500.
- Kilgour, John, Payne, Peter Charles John, Reid, John Stewart, and Everett, Eric George, Agricultural machine 3,690,050, Cl. 56-129.000.
- Kimberly Clark Corporation, *See*—  
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- Kimura, Kazuo, *See*—  
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- Kindig, Guilford Edwin, to Eastman Kodak Company, Print stripping mechanisms 3,690,239, Cl. 95.13.000.
- King, Geo W., *See*—  
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- King, James Frank, Beamon, Howard L., Lathery, Willie M., and Newlen, Kenneth W., Label sewing machine with thread cutter 3,690,276, Cl. 112-252.000.
- King, John W., and Sweeney, John D., Article conveyor system 3,690,435, Cl. 198.20.000.
- King, Michael Charles, to Bell Telephone Laboratories, Incorporated, Moore pattern aligning of photolithographic mask 3,690,881, Cl. 96.27.000.
- Kinoian, George H., *See*—  
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- Kinoian, George H., and Zuljvech, Jeri, to Kinoian, George H. and Zuljvech, Jeri, Hygiene mouth protectors 3,690,509, Cl. 220.90.600.
- Kirby, David B., *See*—  
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- Kircher, Charles E., Jr., McAlister, Donald R., and Brothers, Doris Le Roy, to Detrex Chemical Industries, Inc., Process for chlorination, dehydrochlorination and purification of organic compounds 3,691,240, Cl. 260-654.00d.
- Kirk, Merritt C., Jr., to Sun Oil Company, Residual fuel oil hydrocracking process 3,691,063, Cl. 208-91.000.
- Kishi, Hirotoshi, to Iwatsu Electric Co., Ltd., Optical testing apparatus comprising means for flowing liquids in free fall condition at constant flow rate 3,691,391, Cl. 250.210.000.
- Kishi, Toyokazu, Harada, Setsuo, Misuno, Kohei, Higashide, Eiji, and Shibata, Motoo, to Takeda Chemical Industries, Ltd., Carton acyl derivatives of the antibiotic T-2636C 3,691,181, Cl. 260-295.50p.
- Kishi, Toyokazu, *See*—  
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- Kisling, James W., III, and Nutter, Benjamin P., to Schlumberger Technology Corporation, Flexible tool joint 3,690,122, Cl. 64-23.000.
- Kisner, Clinton E., *See*—  
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- Kitajima, Masao, Yamaguchi, Tsutomu, Kondo, Asaji, and Murcya, Noriyuki, to Photo Film Co., Ltd. and Toyo Jozo Co., Ltd., Encapsulation method 3,691,090, Cl. 252-316.000.
- Kitaura, Shigeo, *See*—  
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- Kitazawa, Ryozo, to Nippon Columbia Kabushikikaisha (Nippon Columbia Co., Ltd.), Automatic tape cassette recording and playback apparatus 3,690,587, Cl. 242-181.000.
- Klappenecker, Karl, to Licentia Patent-Verwaltungs-G.m.b.H., Conveying device with two end positions connected by a conveyor belt and including a controllable drive connection 3,690,474, Cl. 214-7.000.
- Klausmann, Milton H., and Brueker, Henry J., to Seal-Spout Corporation, Carton feed mechanism for spout inserting machine 3,690,223, Cl. 93-53.00r.
- Kleemann, Alois, *See*—  
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- Klein, Aaron David, Phased array laser source 3,691,483, Cl. 332-7.510.
- Klein, Andre, to Societe Anonyme, Ugine Kuhlmann, Process for chromium tanning and bath for carrying out said process 3,690,812, Cl. 8-94.270.
- Klein, William C., *See*—  
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- Klemp, Hans-Joachim, *See*—  
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- Kleppner, Daniel, to Massachusetts Institute of Technology, Low energy superconducting particle counter 3,691,381, Cl. 250-83.30r.
- Klett, Erich, Paule, Kurt, and Hettich, Alfred, to Bosch, Robert, G.m.b.H., Toy electric power tool 3,691,407, Cl. 310-1.000.
- Klick, Douglas H., *See*—  
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- Kliklok Corporation, *See*—  
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- Kliment, Karel, *See*—  
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- Klimstra, Paul D., to Searle, G.D., & Co., 2-Beta-azido-17-beta-dialkylaminoalkylamino-5-alpha-androstan-3-alpha-ols, derivatives thereof and intermediates thereof 3,691,207, Cl. 260-349.000.
- Klink, Howard Nassime, *See*—  
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- Klochnev, Nikolai Ivanovich, *See*—  
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- Knapp, Philip B., to Aptek Industries, Inc., Environmental seed cell 3,690,034, Cl. 47.57.600.
- Knapsack Aktiengesellschaft, *See*—  
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- Knechtel, Wilhelm Josef, and Schaffer, Detlef, Tank filled with developing liquid in electrophotographic apparatus 3,690,758, Cl. 355.10.000.
- Knight, Bruce L., to Marathon Oil Company, Consolidation of unconsolidated formations 3,690,377, Cl. 166-288.000.
- Knight, Warren Nevin Norton, *See*—  
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- Knirsch, Gunther, and Schmitt, Herrmann, to Brown, Boveri & Cie Aktiengesellschaft, Electrical distributing apparatus protective devices therefor 3,691,489, Cl. 335-201.000.
- Knorr-Bremse GmbH, *See*—  
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- Knowles, Richard N., to Du Pont de Nemours, E. I., and Company, N-acylcyclohexylamines 3,691,236, Cl. 260-561.00r.
- Kobayashi, Goro, Sugawara, Shinichi, and Nagawa, Masatoshi, to Sankyo Company, 2-Hydroxy-indole-3-dithiocarbonylates 3,691,199, Cl. 260-326.12r.
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- Kobayashi, Hisamine, to Kabushiki Kaisha Shikishima Tipton, Vibration generating device for vibratory machine 3,691,409, Cl. 310-81.000.
- Kobayashi, Wagi, and Narisawa, Fumitugu, to Asahi Carbon Co., Method of preparing carbon black of large particle size and low structure 3,690,831, Cl. 423-449.000.
- Kohetz, Paul, Lindsay, Kenneth L., and Cook, Shirl E., to Ethyl Corporation, Co-production of alkali metal aluminum tetraalkyls and tetraalkyllead 3,691,221, Cl. 260.437.00r.
- Koboldt, Melvin A., *See*—  
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- Koga, Koichi, Suda, Hideaki, and Akamatsu, Takashi, to Sumitomo Chemical Company, Ltd., Fluorane derivatives for pressure sensitive copying paper 3,691,203, Cl. 260-335.000.
- Kogyo Gijutsuin, *See*—  
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- Kotler, Max, and Ravese, Frank E., to DeJur-Amseo Corporation, Feed means for optical display device and control system therefor 3,690,746, Cl. 352-12.000.
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- Kovaes, Lloyd, to Midland-Ross Corporation, Extrusion die head with reversed-flow and adjustable-choke structure 3,690,806, Cl. 425-467.000.
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- Krafft, Werner, Kruck, Peter, Meyer, Rudolf, and Scheibitz, Maria, to Agfa-Gevaert Aktiengesellschaft, Image receiving layer for the silver salt diffusion process 3,690,885, Cl. 96-29.00r.
- Kraft, Paul, and Brunner, Robert H., to Stauffer Chemical Company, Fire retardant vinyl chloride copolymer latices 3,691,127, Cl. 260-29.60l.
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- Kraschewski, Melvin W., and Lesniewski, Gerald F., to Bucyrus-Erie Company. Power shovel front end. 3,690,483, Cl. 214-137.000.
- Krauss, Rudolf, and Walch, Eugen, to Bosch, Robert, G.m.b.H. Fuel injection valve. 3,690,566, Cl. 239-453.000.
- Krekeler, Claude B., to Cincinnati Mine Machinery Co., The. Resilient retaining means for joining work tool and work tool holders. 3,690,728, Cl. 299-92.000.
- Kreula, Matti S., *See—*
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- Krochert, Karl-Heinz, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Ink fountain roller device for a printing press. 3,690,254, Cl. 101-350.000.
- Kroening, Roger D., and Kirby, David B., to Dow Chemical Company, The. Method of producing clay-base pigment. 3,690,907, Cl. 106-306.000.
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- Kroll, Wolfram R., Doyle, Gerald, and Ruhle, Helmut W., to Esso Research and Engineering Company. Catalyst for olefin reactions. 3,691,095, Cl. 252-428.000.
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- Kruger, Joachim; Schabert, Hans-Peter; Schubert, Franz; and Weber, Robert, to Siemens Aktiengesellschaft. Loading device for fuel elements and control rods in a nuclear reactor. 3,691,011, Cl. 176-30.000.
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- Kuder, Robert C., and Kamal, Marwan R., to General Mills, Inc. Ether diisocyanates. 3,691,223, Cl. 260-453.00r.
- Kuehl, Guenther L., and Coellin, Axel, to Guenther Systems, Inc. Accumulating conveyor. 3,690,439, Cl. 198-110.000.
- Kueneman, Don, and Kenville, Cyril P. Cylindrical crusher securing and adjusting mechanisms. 3,690,573, Cl. 241-207.000.
- Kuenzler, Howard W., to Massachusetts Institute of Technology. Torsional vibration densitometer. 3,690,147, Cl. 73-32.000.
- Kuerzinger, Alfred, *See—*
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- Kurita, Masahiro, to Kabushiki Kaisha Suwa Seikosha. Electric or electronic timepiece. 3,690,058, Cl. 58-23.00r.
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- La Valle, Thomas Alvin, to Western Electric Company, Incorporated. Methods of assembling electrical components. 3,689,981, Cl. 29-203.000.
- Laerdal, Asmund S. Stretchers. 3,689,945, Cl. 5-82.000.
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- Lanahan, John H., and Abraham, William W., to Mohawk Industrial Laboratories, Inc. Card sorting device. 3,690,457, Cl. 209-80.500.
- Land, Edwin H., to Polaroid Corporation. Photographic diffusion transfer color process and composite film unit for use therein. 3,690,879, Cl. 96-3.000.
- Land, Karl M., to Cities Service Oil Company. Method and apparatus for well completion explosive stimulation. 3,690,378, Cl. 166-299.000.
- Landis, George G.; Parks, John M., and Brown, Kenneth L., to Lincoln Electric Company, The. Welding electrode with lithium shielding metal. 3,691,340, Cl. 219-146.000.
- Landis Tool Company, *mesne: See—*
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- Lansaque, Rene, and Bonnefond, Georges, to Societe Chimique de Gerland Gaskets. 3,690,684, Cl. 277-207.000.
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- Lees, Ronald D., and Smith, Ronald W., to Hercules Incorporated. Oil-water separations. 3,691,086, Cl. 252-329.000.
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- Lewis, Donald E., and Biesecker, Douglas A. Pilot-operated valves. 3,690,616, Cl. 251-38.000.
- Lewis, Leo J.; Lewis, William L., and Lewis, Mark T. Trellis arm post. 3,690,033, Cl. 47-46.000.
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- Livingood, Harry Harlan, to Builders Sand Company. Method and apparatus for testing fine aggregate samples. 3,690,183, Cl. 73-432.00p.
- Lockheed Aircraft Corporation, *See—*
- Spangler, Earl G., 3,690,904.
- Lockwood, Lawrence S., to Universal Oil Products Company. Reactor for fluidized particles with adjustable level weir to particle outlet. 3,690,842, Cl. 23-288.00s.
- Loft, John T.; Plovay, Steven G.; and Vogt, Clifford M., to Celanese Corporation. Method for making air-permeable waterproof products having fabric-like aesthetic properties. 3,690,977, Cl. 156-167.000.
- Logan, Ted Joe, *See—*
- Wann, Robert Earl; Nicholson, Denzel Allan; and Logan, Ted Joe, 3,691,077.
- Logvinenko, Dmitry Danilovich. Method of producing metal-polymer compositions. 3,691,130, Cl. 260-41.00b.
- Lolkema, Jan, *See—*
- Dolfing, Thale; and Lolkema, Jan, 3,690,107.
- Lone Star Steel Company, *See—*
- Patterson, Billy R., 3,690,348.
- Loned, Aldo, to U.S. Philips Corporation, *mesne: Dry shave appliances.* 3,690,000, Cl. 30-34.100.
- Long, Dorothy Dolores. Long shoulder pad. 3,690,211, Cl. 84-280.000.
- Long, James A., *See—*
- Pittman, Carl R., and Long, James A., 3,691,298.
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- Huebner, Werner P. E., and Long, Robert G., 3,691,305.
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- Gahillard, Robert; Louage, Francois, and Desbrandes, Robert, 3,690,164.
- Louzos, Demetrios V., to Union Carbide Corporation. Lead fibers useful for galvanic cell electrodes. 3,690,866, Cl. 75-500.
- Lovelock, James E., to California Institute of Technology. Method and apparatus for analyzing gaseous chromatographic effluents. 3,690,835, Cl. 23-232.00c.
- Low, David N., to Du Pont de Nemours, E. I., and Company. Scrubbing of gases containing  $TiCl_4$ . 3,690,041, Cl. 55-71.000.



Loy, George W., to Scio Cabinet Company. Plastic laminating apparatus. 3,690,995, Cl. 156-478,000.

Loyau, Guy: *See—*

Roiron, Jean-Pierre Louis; and Loyau, Guy, 3,691,341.

Lozano, Gustavo Jimenez; Bosisto, Carlos Alberto; and Weinbaum Alejan Dro Sise. Extractor for dental crowns and bridges. 3,690,006, Cl. 32-43,000.

LTV Aerospace Corporation: *See—*

Askew, William J., 3,691,400.

Billingsley, James D., 3,690,233.

Lu, Sun: *See—*

Jones, Derick; and Lu, Sun, 3,690,745.

Luborsky, Fred E.; and Skoda, Raymond E., to General Electric Company. Permalloy film plated wires having superior non-destructive read-out characteristics and method of forming. 3,691,032, Cl. 204-40,000.

Lucas, Joseph, (Industries) Limited: *See—*

Munhy, Harry, 3,690,096.

Ormskirk, Leonard William Eyles, 3,690,098.

Lucas, Robert Armistead: *See—*

Blatter, Herbert Morton, and Lucas, Robert Armistead, 3,691,180.

Lucas, Robert Armistead; and Blatter, Herbert Morton, to Ciba Corporation. Cycloalkano [c]pyrazole-3-acids. 3,691,179, Cl. 260-295,500.

Lucerne Products, Inc.: *See—*

Matthews, Benjamin H., 3,691,322.

Luckey, Manley J. Apparatus for universal blood alcohol determination. 3,690,838, Cl. 23-254,00r.

Ludt, William C.: *See—*

Jones, John T.; Ludt, William C., and Kellogg, Hudson W., 3,690,851.

Luedeman, Robert T., and Troeger, Walter Alvin, to Weston Instruments Division. Thermoelectric converters and method of making same. 3,690,955, Cl. 136-226,000.

Lugli, Giuseppe: *See—*

Barassi, Carlo; Lugli, Giuseppe; Mezzanotte, Mario, and Guermandi, Romano, 3,690,364.

Lugo, Roberto. Adjustable depth groove cutter and support therefor. 3,690,357, Cl. 144-232,000.

Lugscheider, Walter, to Siemens Aktiengesellschaft. Method of applying a niobium layer to a copper carrier by electrolytic deposition from fused salts. 3,691,031, Cl. 204-39,000.

Lummus Nederland N.V.: *See—*

Schoonman, Willem; and Oey, Djin Kian, 3,690,505.

Lumney, Frank B., and Eberhardt, Ronald P., to Wurlitzer Company. The Electromechanical selector unit. 3,690,680, Cl. 274-10,00d.

Lunde, George G., to Minnesota Mining and Manufacturing Company. Photographic film duplicator. 3,690,766, Cl. 355-111,000.

Lunn, Mark Lawrence: *See—*

Juroff, Lyle Bruce; and Lunn, Mark Lawrence, 3,691,444.

Lupica, Sebastian B.: *See—*

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Luthi, Oscar; and Schlenkofer, Rudi W., to Improved Machinery Inc. Fluid suspension apparatus for disintegrating and separating material. 3,690,571, Cl. 241-46,00r.

Luvissotto, Roy G.: *See—*

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Lyghounis, Evangelo: *See—*

Cicognani, Enrico; and Lyghounis, Evangelo, 3,691,471.

Lynch, Charles L., to United States of America, Army. Ground for fiberglass solid rocket motor case. 3,690,101, Cl. 60-255,000.

Lyon Industries: *See—*

Lindboe, Clifford L., 3,690,460.

Lyon, James L.: *See—*

Braks, Willard K., and Lyon, James L., 3,690,760.

Lyon, Robert E., d/b/a: *See—*

Lindboe, Clifford L., 3,690,460.

Lyon, Roselene M.: *See—*

Lindboe, Clifford L., 3,690,460.

Lyon, Ross W.: *See—*

Lindboe, Clifford L., 3,690,460.

M & T Chemicals Inc.: *See—*

Eppensteiner, Frederick Walter, and Wochle, Richard E., 3,691,049.

Macalalad, Fidel Villaluna: *See—*

Chittenden, Richard Marion; Whitton, Alden William; Macalalad, Fidel Villaluna; Massman, Richard; and Wilson, Earl David, 3,690,315.

MacColl, Donald; and O'Pray, Hugh, to Imperial Chemical Industries Limited. Electrical heating sheet with series of eyelets connections. 3,691,349, Cl. 219-549,000.

Machleidt, Hans: *See—*

Ohnacker, Gerhard; Daniel, Helmut; and Machleidt, Hans, 3,691,173.

Macpherson, Duncan H., to Western Gear Corporation. Self-energizing retractable powered drive roller assembly. 3,690,440, Cl. 198-127,00r.

Madden, Norman W.: *See—*

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Maeda, Hiroshi; Hasegawa, Koichi; Sekiguchi, Hisashi; and Hayakawa, Fumio, to Dainippon Ink and Chemicals Incorporated. Process for the preparation of halohydrin esters. 3,691,228, Cl. 260-468,00r.

Macjima, Kazutaka: *See—*

Isono, Masao; Tomoda, Katsumi; Miyata, Koichi; Macjima, Kazutaka; and Kodama, Reijiro, 3,691,014.

Magee, Kenneth L., to Case, J. I. Company. Angle and tilt mechanism for dozer blade. 3,690,386, Cl. 172-304,000.

Magna Corporation: *See—*

Blair, Charles M., Jr., 3,690,857.

Magne, Frank C.: *See—*

Mod, Robert R.; Magne, Frank C.; and Skau, Evald L., 3,691,158.

Mago, Brii Mohan; and Bruton, James Isaac, to Allied Chemical Corporation. High strength polyethylene terephthalate yarn and cord produced therefrom. 3,690,362, Cl. 152-359,000.

Mahe, Yves; Letourneur, Gilbert, and Devillas, Jean-Luc, to La Celophane, Societe Anonyme. Coating process for regenerated cellulose film. 3,690,910, Cl. 117-7,000.

Maier, Robert E., Jr.; McGinnis, Joseph P.; and Simon, Paul R., to Harris-Intertype Corporation. Method and apparatus for feeding sheet material into a hopper. 3,690,650, Cl. 271-89,000.

Majers, Andries Cornelis; and Ketel, Jacob, to U.S. Philips Corporation. Electrical circuit element having a diagonal abutment strip, and method of manufacturing the same. 3,691,436, Cl. 317-261,000.

Maillard, Bernard. Breech mechanism for automatic or semi-automatic guns. 3,690,218, Cl. 89-185,000.

Main, George; and Jahnke, Robert E., to Republic Steel Corporation. Apparatus for processing coiled tubing having turns prebent to varying radii of curvature. 3,690,288, Cl. 118-6,000.

Malco Manufacturing Company, Inc.: *See—*

Krol, Stanley J., 3,691,509.

Malcolm, Bruce G. Multi-diode single-cavity microwave oscillators. 3,691,479, Cl. 331-107,000.

Malley, Frank, to Unilex, Inc. Dual photoconductive cell photometer. 3,690,773, Cl. 356-181,000.

Malley, William G., and Cayton, David W., to International Business Machines Corporation. Soil molding harvester pickup. 3,690,383, Cl. 171-126,000.

Mallory, P. R., & Co., Inc.: *See—*

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Manhart, Sigmund: *See—*

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Mankovitz, Roy J., to Teledyne, Inc. Current limiter responsive to current flow and temperature rise. 3,691,426, Cl. 317-23,000.

Mann, Adriaan B.: *See—*

Van de Belo, Roelof; Begemann, Heinrich K. S. P.; Bos, Hendrikus J.; and Mann, Adriaan B., 3,690,389.

Manning, Maurice, to Medical College of Ohio, The. (4-L Threonine)-oxytocin. 3,691,147, Cl. 260-112,500.

Mansfield, Michael Patrick; and Prangnell, Howard John, to Cossor, A. C., Limited. Demodulating apparatus. 3,691,467, Cl. 325-363,000.

Maran, Mario: *See—*

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Marathon Oil Company: *See—*

Knight, Bruce L., 3,690,377.

Turzillo, Lee A., 3,690,109.

Marcarian, Jean Hrand, and Clemence, Roland Louis Julien, to L'Oreal. Liquid cosmetic product for filling applicator appliances and its method of preparation. 3,691,273, Cl. 424-63,000.

Marco, John L., and Saxe, Irving Henry. Douche bag. 3,690,319, Cl. 128-251,000.

Mard, Kenneth C. Vibration isolation system. 3,690,607, Cl. 248-20,000.

Mark Products, Inc.: *See—*

Evans, John S., Jr.; and Jasper, Leslie L., 3,690,487.

Markakis, Costas E. Stabilized floating structure. 3,689,953, Cl. 14-27,000.

Markley, Hannes, to Toe-or heel-holding device for safety ski bindings. 3,690,690, Cl. 280-11,35t.

Markley, Jeffrey V.: *See—*

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Marschall, Peter. Code converters. 3,691,554, Cl. 340-347,00d.

Marsh, Jean S.: *See—*

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Marsh, John, deceased (by Marsh, Jean S.; administratrix), to United Aircraft Corporation. Automatic cargo release mechanism. 3,690,602, Cl. 244-137,00r.

Marshall, Michael Charles: *See—*

Thompson, Eric William; and Marshall, Michael Charles, 3,691,081.

Marshman, Graham Edward, to Muirhead Limited. Synchronizing arrangement for a motor driven facsimile scanning assembly. 3,691,296, Cl. 178-69,50c.

Martin, Robert Bruce: *See—*

Matson, Carl G., and Martin, Robert Bruce, 3,690,620.

Martin, Roger: *See—*

Wells, Frank Herbert; and Martin, Roger, 3,690,154.

Marumoto, Ryuji; Yoshioka, Yoshio; Aoki, Hisashi; and Toda, Jun, to Takeda Chemical Industries, Ltd. Seasoning compositions containing 2-(lower-alkoxy) inosine-5'-phosphates. 3,690,900, Cl. 99-140,00n.

Mason, Ralph B.: *See—*

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Massachusetts Institute of Technology: *See—*

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Massar, Ernst; and Voigt Hans, to Siemens Aktiengesellschaft. Super-conductive switching path for heavy current. 3,691,491, Cl. 335-216,000.

Massey-Ferguson G m b H.: *See—*

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Matay, Inc., to TRW Inc. Ultrasonic distance amplitude correction unit. 3,690,153, Cl. 73-67,80r.

Mathe, Tibor: *See—*

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Matossi, Dario: *See—*

Howard, Donald Kearey; Thomas, Brian Martin; Popplewell, Alan Francis; and Matossi, Dario, 3,691,033.

Matson, Carl G., and Martin, Robert Bruce. Road marker, temporary barricade or the like. 3,690,620, Cl. 256-64,000.

Matsui, Isao; Minamikawa, Yoshihisa; Katagiri, Shinjiro, and Nakahara, Teruo. Automatic control system for varying a D.C. high voltage for accelerating tube of electron microscope and the like. 3,691,377, Cl. 250-49,50a.

Matsui, Kazuma; and Tsuhouchi, Hideo, to Nippondenso Kabushiki Kaisha. Fluidic control system of fuel injection device for internal combustion engines. 3,690,306, Cl. 123-119,00r.

Matsumoto, Hiroshi: *See—*

Nishizawa, Hirofumi; Kitaura, Shigeo; Sumoto, Misao; Komagata, Hideki; and Matsumoto, Hiroshi, 3,690,978.

Matsuou, Masaharu. Sheet feeding apparatus. 3,690,647, Cl. 271-49,000.

Matsushita Electric Industrial Co., Ltd.: *See—*

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Mattel, Inc.: *See—*

Garcia, Armando J.; Gunther, Gregory M., and Villanueva, Juanito O., 3,690,030.

Matthews, Benjamin H., to Lucerne Products, Inc. Reversing switch. 3,691,322, Cl. 200-1,00r.

Matthews, Jamie F., Jr., to Esso Production Research Company. Offshore pipeline installation method. 3,690,111, Cl. 61-72,300.

Matzuk, Alexander R.: *See—*

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Maus, Fritz: *See—*

Herzhoff, Peter; Platz, Stephan; Gref, Hans; Schwenger, Willi; Maus, Fritz; Schweicher, Wolfgang; Koepke, Gunther; Wasser, Willi; and Browatzki, Kurt, 3,690,917.

Maxwell, Donald L., to General Mills, Inc. Process for forming a multi-colored food product. 3,690,896, Cl. 99-81,000.

Mayer, Dietmar: *See—*

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Futterer, Bodo; Stemme, Otto; and Mayer, Jurgen, 3,690,043.

Maynard, Baylor H., Jr., to Versadome Corporation. Modular tubular-skeleton building adapted to be readily assembled and disassembled and re-assembled. 3,690,078, Cl. 52-86,000.

Mayo, Alfred M. Rail suspension arrangement. 3,690,266, Cl. 104-123,000.

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Mc Fadyen, Robert J. Low level detector and automatic gain control network. 3,691,465, Cl. 325-319,000.

Mc Lean, Robert E., to Rival Manufacturing Company. Electric can opener with removable hand lever and frame engaging pin assembly. 3,689,997, Cl. 30-4,00r.

Mc Millen, Bobby E., to AMBAC Industries, Incorporated. Engine starter drive assembly. 3,690,188, Cl. 74-7,00r.

Mc Nabney, John C., to Trane Company. The Air distribution control. 3,690,548, Cl. 236-1,00c.

Mc Namara, Thomas F., and Winer, Richard A., to Warner-Lambert Company. Diagnostic method for periodontal disease. 3,691,018, Cl. 195-103,50r.

McAlister, Donald R.: *See—*

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McBratnie, Karen Ann, to Hueschen, Gordon. Instructional device for children with learning disabilities. 3,690,020, Cl. 35-37,000.

McCabe, Francis J. Press. 3,690,207, Cl. 83-627,000.

McCafferty, Robert F., and Riggie, Gerald D., to Akron Standard, division of Eagle-Picher Industries, Inc. Tire head handling apparatus. 3,690,989, Cl. 156-403,000.

McCann, Samuel B., to Vertecs Corporation, Inc. Combined froth-pour spray system for resin foam. 3,690,556, Cl. 239-112,000.

McCann, Thomas J., to Argus Chemical Corporation. Process for the preparation of acyl chlorides and benzaldehydes. 3,691,217, Cl. 260-408,000.

McCauly, Ronald J., and Bell, Stanley C., to American Home Products Corporation. Preparation of N-substituted 2-aminophenyl aryl ketone. 3,691,235, Cl. 260-545,00r.

McClain, Douglas; and Osborn, Lemuel E., to Relax-O-Jounger, Inc. Reclining chair construction. 3,690,723, Cl. 297-85,000.

McClamrock, Grady L., to Western Electric Company, Incorporated. Process of assembling solid electrolytic capacitors using vibration step with both low and high frequency components. 3,689,989, Cl. 29-570,000.

McClellan, Rudolph M., Jr.: *See—*

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McClellan, Rudolph M., Sr., and McClellan, Rudolph M., Jr. Vehicle speed indicator system. 3,691,525, Cl. 340-62,000.

McCombs, Howard L., Jr. Afterburner fuel manifold flow sensor and igniter control. 3,690,094, Cl. 60-39,82r.

McCormick, Harold E.: *See—*

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McGinnis, Joseph P.: *See—*

Maier, Robert E., Jr.; McGinnis, Joseph P., and Simon, Paul R., 3,690,650.

McGinnis, Philip Roswell; and O'Brien, Gerald Joseph, to Du Pont de Nemours, E. I., and Company. Permeation separation element. 3,690,465, Cl. 210-321,000.

McGraw-Edison Company: *See—*

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Zwelling, Martin I., and Russell, Robert W., 3,691,498.

McIntosh, Duane E., to General Motors Corporation. Method and apparatus for decoding digital information. 3,691,553, Cl. 340-347,00d.

McIntosh, Michael D., to Litton Industries, Inc. Positioning control system having memory for a machine tool. 3,691,357, Cl. 235-151,110.

McKay, Robert Bruce, to Ciba-Geigy AG. Synthetic resin compounds of the phthalocyanine series. 3,691,116, Cl. 260-18,00n.

McKinnon, Murdoch G., Wilson, James N., and Besant, Robert W., to Atomic Energy of Canada Limited. Fluidic position sensor. 3,690,339, Cl. 137-81,500.

Mead, Dennis E. Insertor for putting objects in moving holes. 3,690,436, Cl. 198-22,000.

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Memco (Electronics) Limited: *See—*

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Menke, Joseph F., to Eltro GmbH, Co. Method and apparatus for the determination of coordinates. 3,690,594, Cl. 244-3,130.

Mennen-Greatbatch Electronics, Inc.: *See—*

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Merck & Co., Inc.: *See—*

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- Merkel, Hans, and Leibenzeder, Siegfried, to Siemens Aktiengesellschaft. Method of producing highly pure, particularly silicon free gallium arsenide. 3,690,847, Cl. 23-294.000
- Merkley, Joseph H.: *See—*
- Kamienski, Conrad W., and Merkley, Joseph H., 3,691,241.
- Merrell, Richard G., and Hendrickson, Melvin C., to Zenith Radio Corporation. Synchronization phase-lock system for a digital vertical synchronization system. 3,691,297, Cl. 178-69.5tv.
- Mertzweiler, Joseph K., and Cull, Neville L., to Esso Research and Engineering Company. High activity zeolite catalysts and their preparation. 3,691,101, Cl. 252-455.00f.
- Mervis, Lawrence J.: *See—*
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- Messer, Thomas V. Combined brush and comb. 3,690,331, Cl. 132-120.000.
- Messervy, Alfred E. Polyurethane compositions of matter and methods of manufacture. 3,691,117, Cl. 260-18.0tn.
- Messerschmitt-Bolkow-Blohm GmbH: *See—*
- Bogenberger, Richard, Helmcke, Conrad, and Kritikos, Athanasios, 3,691,533.
- Erben, Klaus Dieter, Kroy, Walter, Manhart, Sigmund, and Mehnert, Walter E., 3,691,539.
- Messina, Joseph F., and Gisser, Henry, to United States of America. Army. Extreme pressure, rust preventive nonreactive greases. 3,691,074, Cl. 252-25.000.
- Metallgesellschaft A.G.: *See—*
- Sibakin, Jaroslav George, Roeder, Gordon Alan, and Hookings, Paul Henry Heathcote, 3,690,867.
- Metelski, Jan: *See—*
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- Meyers, George Leroy, to American Can Company, Inc. Reducible, reclosable carton. 3,690,544, Cl. 229-51.0tc.
- Mezey, Frank G. J., to American Technical Ceramics, a division of Phase Industries Inc. High temperature variable capacitor. 3,691,434, Cl. 317-243.000.
- Mezzanotte, Mario: *See—*
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- Mica Corporation, The: *See—*
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- Michaud, Jimmie A., to Bendix Corporation, The. Multimode counting device. 3,691,353, Cl. 235-92.0cv.
- Michigan Technological University, Board of Control: *See—*
- Santeford, Henry S., Jr., Meier, John G., and Alger, George R., 3,690,169.
- Middleton, Edward B. Container including a rotatable spherical valve with ring drive gear teeth. 3,690,521, Cl. 222-507.000.
- Middleton, William J., to Du Pont de Nemours, E. I., and Company. 2,2,5,5-Tetrakis(polyhalomethyl)-4-oxazolidinone herbicides. 3,690,862, Cl. 71-88.000.
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- Miller, Harry, to Sperry Rand Corporation. Speed command and throttle control system for aircraft. 3,691,356, Cl. 235-150.220.
- Miller, Herbert Boyd, 10% to Lee, Raymond, Organization, Inc., The. Portable hunting blind. 3,690,334, Cl. 135-1.00r.
- Miller, Mark A. Panel mounting construction. 3,690,083, Cl. 52-481.000.
- Miller, Victor R.: *See—*
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- Miller, Warren J., to Eastman Kodak Company. Photographic element and process. 3,690,918, Cl. 117-34.000.
- Millman, William V., to Bendix Corporation, The. Sonic nebulizer. 3,690,317, Cl. 128-194.000.
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- Milward, Gilbert Harold, to Bardic Systems Limited. Automatic battery charging systems for a variable load. 3,691,448, Cl. 326-39.000.
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- Missio, Danilo V., Wollman, Herbert, and Englander, Irving G., to Syston-Danner Corporation, mesne. Optical tanker-docking system. 3,690,767, Cl. 356-5.000.
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- Moore, Thomas. Excessive motor load indicator and voltage cut-out device. 3,691,445, Cl. 318-472.000.
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- Morgan, Bert B., and Schroeder, George F., to Northrop Carolina, Inc. Textile thread winder with grooved drive roll. 3,690,578, Cl. 242-18.0dd.
- Mori, Chiharu, and Ota, Katsumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electronic circuits for automatic camera controls. 3,690,230, Cl. 95-10.0et.
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- Mueller, Francis E., to International Business Machines Corporation. Positioning system including servo track configuration and associated demodulator. 3,691,543, Cl. 340-174.10b.
- Mueller, Thomas L.: *See—*
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- Muhlemann, Ernst, and Bruun, Jean Eskild, to Werkzeugmaschinenfabrik Oerlikon-Buhle AG. Gas-operated automatic firearm having thermal firing rate control. 3,690,219, Cl. 89-193.000.
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- Mullen, John S., to Esso Research and Engineering Company. Pipe line leak detection and location system. 3,690,150, Cl. 73-40.50r.
- Muller, Hans, to Grapha Maschinenfabrik Hans Muller A.G. Variable speed drive mechanism. 3,690,208, Cl. 83-643.000.
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- Munby, Harry, to Lucas, Joseph, (Industries) Limited. Igniter arrangement for a gas turbine engine. 3,690,096, Cl. 60-38.82p.
- Munch, Wilhelm. Rail-fastening devices. 3,690,551, Cl. 238-349.000.
- Munson, William A., to Westinghouse Electric Corporation. Blast furnace control based on measurement of pressures at spaced points along the height of the furnace. 3,690,632, Cl. 266-30.000.
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- Myers, Clyde B. Highly siliceous solid sodium silicate. 3,690,822, Cl. 423-334.000.
- Myers, Lester L., to Mobile Aerial Towers. Torsion bar stabilizing apparatus for vehicles. 3,690,693, Cl. 280-124.00r.
- Mytting, Lauritz E., to Envirotech Corporation, mesne. Apparatus and method for unloading bulk fluent materials. 3,690,731, Cl. 302-42.000.
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- Nagasawa, Shigeo, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Diesel fuel injection system with improved starting performance. 3,690,768, Cl. 123-32.00g.
- Nagata, Keniti: *See—*
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- Nakahara, Tsuneo, and Yoshida, Kenichi, to Sumitomo Electric Industries, Ltd. Leakage waveguide line from which energy is continually



- leaked along the path followed by the leakage waveguide time. 3,691,463, Cl. 325-1,000.
- Nakajima, Tutomu; and Shyaku, Tadasi, to Asahi Fancy Flywood Co., Ltd. Method of making decorative wood panels. 3,690,976, Cl. 156-90,000.
- Nakamichi, Niro, to Nakamichi Research Incorporated. Tape guide device of a tape recorder. 3,690,535, Cl. 226-190,000.
- Nakamichi Research Incorporated. *See—*  
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- Nakata, Koreaki; and Iida, Yoshio. Method of making an electrical capacitor. 3,689,990, Cl. 29-570,000.
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- Naumann, Fritz A., to Daimler-Benz Aktiengesellschaft. Five speed gear-type change speed transmission. 3,690,193, Cl. 74-473,000.
- Nave, Thomas J., to Phillips Petroleum Company. Retractable blow pin for use with prepinched parisons. 3,690,804, Cl. 425-326,000.
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- Nazzer, Don Barkley, to Canadian General Electric Company, Limited. Isotope separation with heat balancing. 3,690,830, Cl. 423-580,000.
- Nedelec, Lucien, and Gase, Jean-Calude, to Roussel-UCLA. Preparation of 7 $\alpha$ -methyl-2 $\alpha$ ,3 $\alpha$ -estratriene. 3,691,215, Cl. 260-397,450.
- Nedham, Robert L., to Continental Radiant Glass Heating Corporation. Radiant heater. 3,691,345, Cl. 219-345,000.
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- Neitzel, Ulrich E. G., and Flint, Hans Gerhard, to Great Salt Lake Minerals and Chemicals Corporation. Recovery of sulfate-free hydrated magnesium chloride from sulfate-contaminated brines. 3,690,844, Cl. 23-296,000.
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- Nelson, Gerald V., Coons, William R., Jr., and Wray, Glenn C., to Texaco Inc. Hydrodesulfurization and blending of residue-containing petroleum oil. 3,691,152, Cl. 208-210,000.
- Nerwin, Hubert, to Eastman Kodak Company. Stripping mechanism. 3,690,238, Cl. 95-13,000.
- Nerwin, Hubert, to Eastman Kodak Company. Reduction of initial film winding resistance in camera film magazines. 3,690,451, Cl. 206-52,000.
- Neufeld, Harold A. *See—*  
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- Newark Tool & Machine Limited. *See—*  
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- Nielsen, Vagn, Lauridsen, Jens Birk, and Jensen, Kristian Sustrup, to Aktieselskabet Grindkiedvaerket. Process for preparing propylene glycol alginate. 3,691,150, Cl. 260-209,600.
- Nier, Johannes, to Bosch, Robert, G.m.b.H. Method of making a semiconductor unit. 3,689,985, Cl. 29-471,300.
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- Nihira, Shohachi, Okawara, Yasuo, Naito, Takehisa, and Moriya, Mikio, to Citizen Watch Co., Ltd. Type wheel setting and re setting means in selective bed and platen printing machines. 3,690,249, Cl. 101-95,000.
- Niklaus, Ulrich, and Baumann, Dieter, to Ciba Geigy AG. Curing agent mixtures for epoxide resins. 3,691,083, Cl. 252-182,000.
- Nilsen, Leif Billy, to AB Emmaboda Glasverk. Machine for handling sheet glass. 3,690,477, Cl. 214-8,500.
- Nippon Air Brake Company, Ltd. *See—*  
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- Nippon Alpin Rubber Co., Ltd. *See—*  
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- Nippon Columbia Kabushiki Kaisha (Nippon Columbia Co., Ltd.) *See—*  
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- Nippon Electric Company, Limited. *See—*  
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- Nippon Kokan Kabushiki Kaisha. *See—*  
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- Nippon Oil Company, Limited. *See—*  
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- Nippon Oil Seal Industry Co., Ltd. *See—*  
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- Nippon Piston Ring Co., Ltd. *See—*  
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- Nippondenso Kabushiki Kaisha. *See—*  
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- Matsui, Kazuma, and Tsubouchi, Hideo, 3,690,306.
- Sumiyoshi, Masaharu, Sakakibara, Shigeru, Wakamatsu, Hisato, and Kato, Takaaki, 3,690,197.
- Nishizawa, Hirofumi, Kitaura, Shigeo, Sumoto, Misao, Komagata, Hideki, and Matsumoto, Hiroshi, to Toyo Boseki Kabushiki Kaisha. Method of producing tape-shaped assembly of elastic filaments. 3,690,978, Cl. 156-167,000.
- Nissan Jidosha Kabushiki Kaisha. *See—*  
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- Nissan Motor Company, Limited. *See—*  
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- Yamada, Katsuo, 3,690,416.
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- Nomura, Katsuhiko, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera structure for positioning a photosensitive component. 3,690,241, Cl. 95-42,000.
- Nooker, Eugene L., Thompson, Luther G., Varney, Glenn E., and Dietz, Victor J., to United States of America, Navy. Continuous rod warhead. 3,690,257, Cl. 102-67,000.
- Nordskog Company, Inc. *See—*  
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- Nordskog, Robert A., to Nordskog Company, Inc. Wheel lock assembly. 3,690,415, Cl. 188-69,000.
- Nordson Corporation. *See—*  
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- Nordstrom, Knut Lennart. Maneuvering command display for aircraft. 3,691,520, Cl. 340-27,000.

- Norman, Victor B. Modular system of roof heater shingles. 3,691,343, Cl. 219-213,000.
- Norris, Alan H., to Bigelow-Sanford, Inc. Anti-static yarn and fabrics. 3,690,057, Cl. 57-167,000.
- North American Rockwell Corporation. *See—*  
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- Porter, William D., 3,690,530.
- Porter, William D., and Taylor, Larry H., 3,690,579.
- Schroeder, George F., 3,690,576.
- Schroeder, George F., 3,690,577.
- Northrup, Hal J. Primer for cured silicone release agents. 3,691,206, Cl. 260-348,500.
- Norton Company. *See—*  
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- Briggs, Walton E., 3,690,151.
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- N.V. Ingenieursbureau voor Systemen en Oetrooten. *See—*  
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- O.F.D. Corporation. *See—*  
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- Oak Electro Nics Corporation. *See—*  
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- O'Brien, John A., to United States of America, Navy. Floating suction head. 3,690,463, Cl. 210-242,000.
- Ocechipinti, Peter W. Selectively contourable putting green. 3,690,673, Cl. 273-176,000.
- O'Connor, Richard J., to Pinkerton's Incorporated. Watchlock tape storage unit. 3,690,528, Cl. 225-37,000.
- Oda, Fujio, and Obata, Shuichi, to Matsushita Electric Industrial Co., Ltd. Semiconductor stress transducer. 3,691,316, Cl. 179-100,410.
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- Ogle, Paul E., Coleman, Kenneth L., Wagner, Ross W., and Harter, Lynn J., said Ogle and Coleman, assors. to O.F.D. Corporation. Railroad car. 3,690,272, Cl. 105-366,000.
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- Ohira, Atsuo. Zigzag sewing machine with a control device for varying the overstretch width. 3,690,274, Cl. 112-158,000.
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- Ohmura, Ryjichi. Integral guide device for fishing lines. 3,690,027, Cl. 43-24,000.
- Ohnacker, Gerhard, Daniel, Helmut, and Machleidt, Hans, to Boehringer Ingelheim G.m.b.H. N-substituted 1,2,3,4,4a,10a-hexahydro-10H-1-benzopyrano-[3,2,c]-pyridines. 3,691,173, Cl. 260-293,550.
- Ohta, Hiroshi, to Toyoda Koki Kabushiki Kaisha. Workpiece locating apparatus for use in multiwheel grinding machines. 3,690,070, Cl. 51-105,000.
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- Okada, Tsuneo, Onodera, Yutaka; Mitsuoka, Takeshi; Saito, Yukinori, Muto, Yoshio; Anayama, Takeshi; and Yasukochi, Ko, to Tokyo Shihaura Electric Co., Ltd. Method for manufacturing a superconductive coil element. 3,691,046, Cl. 204-192,000.
- Okamoto, Mitsuhiro. *See—*  
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- Olin Corporation. *See—*  
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- Morris, Jack, 3,691,337.
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- Olkowski, William. Horseshoe catapulting apparatus having a remote control feature. 3,690,660, Cl. 273-101,000.
- Olofsson, Mans Olof. *See—*  
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- O'Mant, Derrick Michael, to Imperial Chemical Industries, Limited. Phenyl-thienyl and phenyl-fury-malonic acid derivatives. 3,691,202, Cl. 260-332,000.
- OMEGA Louis Brandt & Frere S.A. *See—*  
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- O'Neill, Cormac G., to Physics International Company. Vapor venting and purging system for engines. 3,690,307, Cl. 123-136,000.
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- Orelup, Richard B., to Morton International, Inc. Liquid azo dye composition and process therefor. 3,690,809, Cl. 8-6,000.
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- Oswow Products Company, Inc.: *See—*  
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- Ott, Reuben C., to Du Pont de Nemours, E. I., and Company. Process for the preparation of globular sodium bisulfate. 3,690,825, Cl. 423-264,000.
- Ott, Richard J., to Respond Inc. Automatic ladler. 3,690,517, Cl. 222-358,000.
- Ouska, Ralph C., to FMC Corporation. Apron conveyor. 3,690,445, Cl. 198-196,000.
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- Packard Instrument Company, Inc.: *See—*  
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- Pal, Ajay Kumar. Logic track circuit. 3,691,370, Cl. 246-125,000.
- Palat, William. Apparatus and method for replacing a defective gate valve. 3,689,979, Cl. 29-401,000.
- Pall Corporation: *See—*  
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- Pall, David B., to Pall Corporation. Anisometric compressed and bonded multilayer knitted wire mesh composites. 3,690,606, Cl. 245-1,000.
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- Papanastassiou, Zinn B., and Neumeyer, John L., to Little, Arthur D., Inc., incense. 3-indole-glyoxamides. 3,691,194, Cl. 260-326,13r.
- Papiano, Francis John, to RCA Corporation. Method of alloying two metals. 3,690,943, Cl. 117-212,000.
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- Parker, Ernest G.; and Craine, Richard W., to International Telephone and Telegraph Corporation. Omnidirectional beacon antenna. 3,691,562, Cl. 343-761,000.
- Parker, Gordon M.; and Heuser, Raymond C., to PPG Industries, Inc. Acryloxy esters of anhydrides and coating compositions derived therefrom. 3,690,927, Cl. 117-93,310.
- Parker, Levi Christy, Cooper, Thomas Allen, and Meadows, James Lawson, to Texaco Inc. Olefin separation process. 3,691,246, Cl. 260-671,00r.
- Parker, Louis W. Electric automobile. 3,690,397, Cl. 180-65,00r.
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- Pasley, Robert H., Sr., to Royalty Designs of Florida, Inc. Apparatus for fabricating highly resilient polyvinyl chloride layers and the like. 3,690,292, Cl. 118-59,000.
- Pasqualini, Joseph. Towed aerial target. 3,690,662, Cl. 273-105,300.
- Patel, Chandra Kumar Naranbhai, to Bell Telephone Laboratories, Incorporated. Receiver for a time-division-multiplexed train of modulated pulses employing stroked photo-drag-effect devices. 3,691,388, Cl. 250-199,000.
- Patel, Jashwant D. Absorption refrigeration system. 3,690,121, Cl. 62-476,000.
- Patel, Ravindra P., to Monsanto Company. Process for the preparation of insoluble enzymes. 3,691,016, Cl. 195-68,000.
- Patterson, Billy R., to Lone Star Steel Company. Traveling valve. 3,690,348, Cl. 138-97,000.
- Patterson, Luther E. Combined lawn mower and edger. 3,690,384, Cl. 172-15,000.
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- Paxton, Douglas R.; and Talbott, George Robert, to Paxve, Inc. Burner. 3,690,807, Cl. 431-1,000.
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- Kilgour, John, Payne, Peter Charles John, Reid, John Stewart, and Everett, Eric George, 3,690,050.
- Pearl, David L.; Harris, George E.; Waller, John G.; and Head, Beverly P., Jr., to Grace, W. R., & Co. Carton labeling method. 3,690,986, Cl. 156-257,000.
- Pech, Hans Peter, to Schloemann Sktiengesellschaft. Reel for rod or wire. 3,690,631, Cl. 266-6,00r.
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- Peck, James G., Jr., to PPG Industries, Inc. Method of operating a mercury-amalgam cathode electrolytic cell. 3,691,036, Cl. 204-99,000.
- Pedersen, James M. Controllable pitch propeller. 3,690,788, Cl. 416-157,000.
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- Pelletier, Marc, to Ehensterie Pelletier Enr. Apparatus to displace a snowmobile. 3,690,481, Cl. 214-85,000.
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- Perkins, Earl Stuart, to Butler National Corporation. Area navigation system for automatically selecting waypoints on the track and lying at a right angle from a master station. 3,691,361, Cl. 235-150,270.
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- Peters, Robert I., to Bigelow-Sanford, Inc. Cabled yarn. 3,690,056, Cl. 57-139,000.
- Petersen, Alex, to Danfoss A/S. Toothed wheel machine. 3,690,792, Cl. 418-61,000.
- Petersen, Christian C., to Polaroid Corporation. Tape recording apparatus and system having a very thin cassette. 3,691,312, Cl. 179-100,202.
- Petersen, Niel R., to MTS Systems Corporation. Four square test device with torque stabilization. 3,690,168, Cl. 73-162,000.
- Petersen, Robert E. A., to Du Pont de Nemours, E. I., and Company. Control system for an ethylene copolymerization process. 3,691,142, Cl. 2-80,780.
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- Peterson, Carl, to Foster-Miller Associates, Inc. Trencher-scraper machine. 3,690,023, Cl. 37-90,000.
- Peterson, John L., to Teletype Corporation. Variable length storing device. 3,691,536, Cl. 340-173,00r.
- Peterson, Neil W. Eyelet for track driven vehicle. 3,690,741, Cl. 305-38,000.
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- Petrochemicals, Inc.: *See—*  
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- Pezzi, Giovanni. Electropneumatic cigarette inspection. 3,690,149, Cl. 73-38,000.
- Pfaffle, Ernst, to Sickinger, Hans Company. Mechanism for dividing stacks of paper sheets. 3,690,475, Cl. 214-8,555.
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- Salemink, Willard L. Portable apparatus for removing particulate material from exhaust gases, 3,690,039, Cl. 55-228 000.
- Sallmann, Alfred, and Pfister, Rudolf, to Ciba-Geigy Corporation. Tetrazole derivatives, 3,691,191, Cl. 260-308 000.
- Saltini, Fabrizio, and Eccettuato, Vittorio, to Olivetti, Ing., C., & C., S.p.A. Electronic computer with cyclic program memory, 3,691,531, Cl. 340-172 500.
- Salutsky, Murrell L.; and Shair, Salem, to Chemed Corporation. Method for controlling slime in aqueous systems, 3,690,860, Cl. 71-67 000.
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- Sarett, Lewis H., and Hannah, John. 5-Aryl and arylphenyl sulfonic acids in treating inflammation, 3,691,185, Cl. 424-303 000.
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Hutz, Gerhard, and Muller, Karl, 3,690,801.

Siler AG. *See—*

Mischeck, Hugo, 3,690,489.

Silver, Julian, to U S Dynamics Inc., mesne. Method of producing a microfiche. 3,690,762, Cl. 355-77.000.

Silver, Spencer Ferguson. Acrylate copolymer microspheres. 3,691,140, Cl. 260.78.500.

Silvestri, George J., Jr., to Westinghouse Electric Corporation. Low pressure end diffuser for axial flow elastic fluid turbines. 3,690,786, Cl. 415-121.000.

Simon, Eugene Meyer. *See—*

Janzon, Karl Heinz, Simon, Eugen Meyer, and Schwab, Heinrich, 3,691,089.

Simon Handling Engineers Limited. *See—*

Rust, William, 3,690,391.

Simon, Paul R. *See—*

Mair, Robert E., Jr., McGinnis, Joseph P., and Simon, Paul R., 3,690,650.

Simplmatic Engineering Co. *See—*

East, Jerry L., 3,690,486.

Simpson, Melvin R. *See—*

Frost, Harold A., and Simpson, Melvin R., 3,691,524.

Simpson Timber Company. *See—*

Jarvi, Reino A., 3,690,979.

Singer-General Precision, Inc. *See—*

Dell, Harold R., and Lara, Edward D., 3,691,359.

Singh, Jagmohan, to North American Rockwell Corporation. Independent needle knitting machines. 3,690,124, Cl. 66-8.000.

Sipin, Anatole J. Fluid proportioning system. 3,690,340, Cl. 137-93.000.

Sitter, Spencer B. Limb holder. 3,690,052, Cl. 56-328.000.

Sjovall, Jan. *See—*

Bergstrom, Sune, and Sjovall, Jan, 3,691,216.

Skau, Evald L. *See—*

Mod, Robert R., Magne, Frank C., and Skau, Evald L., 3,691,158.

Skime, Roger H., to Arctic Enterprises, Inc. Shock mounted suspension system. 3,690,394, Cl. 180-5.00r.

Skinner, Wilson M. *See—*

French, Lawrence R., and Skinner, Wilson M., 3,691,248.

Skoda, Raymond E. *See—*

Luhorsky, Fred E., and Skoda, Raymond E., 3,691,032.

Slator, Damon T., and Wilson, Archie R., to Bowen Tools, Inc. Well tubing guide and straightener apparatus. 3,690,136, Cl. 72-160.000.

Slator, Damon T., and Peil, Archie W., to Bowen Tools, Inc. Tubing hanger assembly and method of using same for hanging tubing in a well under pressure. 3,690,381, Cl. 166-315.000.

Slutsky, Linda F. Educational color association game. 3,690,671, Cl. 273-153.00r.

Smale, Charles H., to General Motors Corporation. Jet propulsion nozzle. 3,690,562, Cl. 239-265.290.

Smalley, Edmund W. *See—*

Hartford, Winslow H., and Smalley, Edmund W., 3,691,027.

Smalligan, Wayne J. *See—*

Kelly, Vincent J., Smalligan, Wayne J., and Cloud, Larry L., 3,690,894.

Smerz, Otto. *See—*

Rosch, Gunter, Linke, Werner, Smerz, Otto, and Schinzel, Erich, 3,690,947.

Smirl, Richard L., and Kerestury, Richard D. Fluid pressure modulating apparatus. 3,690,736, Cl. 303-21.00f.

Smith, A. O., Corporation. *See—*

Donovan, Glenn R., 3,689,976.

Smith, Earl D. *See—*

Ephraim, Max, Jr., and Smith, Earl D., 3,691,446.

Smith, Irving N., and Pfeiffer, Jack R., to Owen-Corning Fiberglass Corporation. Method of producing graded fibrous filter media. 3,690,852, Cl. 65-3.

Smith, James M., to Great Western Sugar Company, The. Continuous flow scale with preliminary volumetric measurement. 3,690,392, Cl. 177-59.000.

Smith, James S., Clare, Leslie Paul, and Kubicki, Robert M., to GTE Sylvania Incorporated. Method for producing sintered cobalt-base alloy containing gold. 3,690,876, Cl. 75-211.000.

Smith Kline & French Laboratories. *See—*

Kaiser, Carl, 3,691,172.

Smith, Loyd D. *See—*

Joujon Roche, Philip J., and Smith, Loyd D., 3,691,469.

Smith, Norman S. *See—*

Dawson, Peter H. V., and Smith, Norman S., 3,689,952.

Smith, Richard D. Board game apparatus. 3,690,667, Cl. 273-134.00b.

Smith, Ronald T. *See—*

Ross, John M., and Smith, Ronald T., 3,690,092.

Smith, Ronald W. *See—*

Lees, Ronald D., and Smith, Ronald W., 3,691,086.

Smith, Sidney S. *See—*

Sequeria, Richard I., Smith, Sidney S., Assenza, Fred J., and Greenbaum, William H., 3,691,365.

Smith, Stephen B. *See—*

Bremner, David F., and Smith, Stephen B., 3,690,250.

Smith, William A., to Xerox Corporation. Color xerography. 3,690,756, Cl. 355.4.000.

Snam Progetti S.p.A. *See—*

Corradini, Giorgio, Ghetti, Giuseppe, Cesca, Sebastiano, and Arighetti, Sergio, 3,691,141.

Facchini, Alessandro, 3,690,729.

Snowdon, Charles. Pressure transducers. 3,690,148, Cl. 73-37.000.

Snyder, James R., to Teledyne, Inc. Turn conveyor. 3,690,443, Cl. 198-182.000.

Societa Italiana Resine S.p.A. *See—*

Calcagno, Benedetto, Ghirga, Marcello, and Bertini, Natale, 3,691,098.

Societe Alsacienne de Constructions Atomiques de Telecommunication et d'Electronique. *See—*

Goursolas, Anne-Marie Jeanne, and Lambert, Andre Simon Georges, 3,691,514.

Societe Anonyme des Usines Chausson. *See—*

Chartet, Andre, 3,689,941.

Societe Anonyme dite L'Oreal. *See—*

Bugaut, Andree, and Estrader, Francoise, 3,690,810.

Charle, Roger, Zviak, Charles, and Kalopissis, Gregoire, 3,691,270.

Societe Anonyme, Societe Alsacienne de Constructions Atomiques de Telecommunications et d'Electronique "Alcatel". *See—*

Rorion, Jean-Pierre Louis, and Loyal, Guy, 3,691,341.

Societe Anonyme, Uguine Kuhlmann. *See—*

Klein, Andre, 3,690,812.

Societe Chimique de Gerland. *See—*

Lansaque, Rene, and Bonnetfond, Georges, 3,690,684.

Societe dite Kuhn Freres & Cie, Societe en Commandite Simple. *See—*

Reber, Walter, 3,690,055.

Societe Generale de Constructions Electriques et Mecaniques (Alstom). *See—*

Warszawski, Bernard, and Vandenbergh, Henri, 3,690,954.

Societe Generale de Constructions Electriques et Mecaniques (Alstom). *See—*

Chadenson, Pierre, 3,690,184.

Societe Italiana Telecomunicazioni Siemens S.p.A. *See—*

Cicognani, Enrico, and Lyghounis, Evangelo, 3,691,471.

Societe Rhodiacta. *See—*

Sambeth, Joerg, and Grundshober, Friedrich, 3,691,195.

Societe Saphim Fournier-Cimag. *See—*

Boussely, Jean, 3,691,219.

Sokolov, David A., to Xerox Corporation. Lithographic inking apparatus. 3,690,252, Cl. 101-147.000.

Solid State Devices, Inc. *See—*

Newmeyer, Reed A., 3,691,403.

Solodiar, Warren E., to Polaroid Corporation. 2-(Omega-hydroquinonyl-alkyl)-anthraquinones. 3,691,210, Cl. 260-380.000.

Somer, Toivo A., to Bendix Corporation, The. Low energy particle counter with one-dimensional position sensing. 3,691,382, Cl. 250-83.30r.

Sommerfeld, Louts. Method of assembling a frame and panel. 3,689,940, Cl. 29-157.00r.

Sommermeier, Heinrich, to Sommermeier, Heinrich, KG. Filter and housing for the same. 3,690,461, Cl. 210-222.000.

Sommermeier, Heinrich, KG. *See—*

Sommermeier, Heinrich, 3,690,461.

Sommers, Earl Eugene. *See—*

Johnston, Thomas Emmett, and Sommers, Earl Eugene, 3,691,078.

Song, Wonjin. *See—*

Schorum, Stanley W., and Song, Wonjin, 3,690,311.

Southern Research Institute. *See—*

Tanquary, Albert Charles, 3,691,119.

Spaeth, Albert J. *See—*

Harlan, Warren H., and Spaeth, Albert J., 3,690,484.

Spainhour, Bettye G., and Willis, Jack B. Vehicle litter receptacle. 3,690,446, Cl. 206-1.000.

Spangler, Earl G., to Lockheed Aircraft Corporation. Ceramics produced from spodumene, petalite and clay. 3,690,904, Cl. 106-39.00r.

Spectral Dynamics Corporation. *See—*

Davis, Robert D., 3,691,394.

Spemog AG. *See—*

Brunner, Josef Alphons, 3,690,622.

Spence, Douglas Roy. *See—*

Ingram, Brian, Spence, Douglas Roy, and Cochrane, Robin Adam, 3,690,738.

Spence, John, Gilman, Paul Brewster, Jr., and Ulbing, Cynthia Geer, to Eastman Kodak Company. Infrared-sensitized silver halide systems. 3,690,891, Cl. 96-108.000.

Spence, Peter, to Dowty Technical Developments Limited. Hydraulic apparatus. 3,690,789, Cl. 417-203.000.

Sperandio, Gottfried. Device for feeding objects between two points. 3,691,447, Cl. 318-68.000.

Sperry Rand Corporation. *See—*

Miller, Harry, 3,691,356.

Swygert, Wilbert E., Jr., 3,691,404.

Williams, Thomas R., 3,691,535.

Speziale, Angelo John. *See—*

Hamm, Philip C., and Speziale, Angelo John, 3,690,864.

Spider Staging, Inc. *See—*

Brauns, Albert, 3,690,409.

Spiller, David O. *See—*

James, David W. F., Spiller, David O., and Colman, Harvey D., 3,691,053.

Spiller, Richard, Moser, Gottfried, and Berthold, Walter, to Klockner-Humboldt-Deutz Aktiengesellschaft. Motor vehicle with two driving units especially for agricultural purposes. 3,690,395, Cl. 180-6.480.

Spink, Donald R., and Goodrich, Allen C., to Amax Specialty Metals, Inc. Compactible fused and atomized metal powder. 3,690,963, Cl. 148-126.000.

Spivaek, Mayer D. Baby's pacifier. 3,690,324, Cl. 128-359.000.

Spreuer, Philip M. Telescoping light bar. 3,691,366, Cl. 240-8.300.

Spry, Douglas O., to Lilly, Eli, and Company. Method for preparing penicillin sulfoxides. 3,691,188, Cl. 260-306.700.

Squirb, F. R., & Sons, Inc. *See—*

Yale, Harry Louis, 3,691,162.

Squire, Herbert D., to Admiral Corporation. Adjustable-refrigerator shell. 3,690,744, Cl. 312-351.000.

Srebray, Srebray Yostchev. *See—*

Angelov, Stefan Christov, Hristova, Snejanka Vladimirova, and Srebray, Srebray Yostchev, 3,691,358.

St Pierre, George R., to Ohio State University, The. Method and apparatus for sulfur dioxide emission control in combustion systems. 3,690,808, Cl. 431-4.000.

St Laurent, Andre. *See—*

Johnston, John S., and St Laurent, Andre, 3,690,353.

Stadden, Hans. *See—*

Bromer, Heinz, Meinert, Norbert, Wetzlar, Johann Spincic, and Stadden, Hans, 3,690,905.

Stachowiak, John E. *See—*

Goss, John B., and Stachowiak, John E., 3,690,067.

Stacy, Edson H. Apparatus for feeding lifts of sheets without marking same. 3,690,476, Cl. 214-8.55s.

Stafford, Jay H., to Continental Oil Company. Vibrator stabilization system. 3,690,402, Cl. 181-5vm.

Staley, A. E., Manufacturing Company. *See—*

Swift, Thomas G., 3,690,938.

Standard Oil Company. *See—*

Fields, Ellis K., and Feinstein, Allen I., 3,691,243.

Serres, Carl, Jr., and Bolton, Benjamin A., 3,691,136.

Standard Products Co., The. *See—*

Dieterich, Melvin L., 3,690,038.

Stapp, Hans. *See—*

Werner, Helmut, and Stapp, Hans, 3,691,004.

Stark, William M. *See—*

Thompson, Robert Q., Stark, William M., and Higgins, Calvin E., 3,691,279.

Stastny, Edwin O. *See—*

Bennett, William Coffey, and Stastny, Edwin O., 3,690,590.

Stauffer Chemical Company. *See—*

Erdy, Nicholas Z., 3,691,106.

Erdy, Nicholas Z., and Yu, Arthur J., 3,691,107.

Kraft, Paul, and Brunner, Robert H., 3,691,127.

Stearns-Roger Corporation. *See—*

Vanlingen, George A., and Pickett, Eugene W., 3,690,715.

Stecher, Friedhelm, to Goetzwerke Friedrich Goetze A.G. Device for testing components which are subjected to alternating stresses. 3,690,162, Cl. 73-119.00r.

Stednitz, Wolfgang Richard Ernst, to Fried Krupp Gesellschaft mit beschränkter Haftung. Velocity measuring system. 3,691,513, Cl. 340-3.00d.

Steel Company of Canada, Limited, The. *See—*

Herman, Hans, 3,690,583.

Sibakin, Jaroslav George, Roeder, Gordon Alan, and Hookings, Paul Henry Heathcote, 3,690,867.

Steinbeck, Hermann. *See—*

Gries, Heinz, Hader, Josef, and Steinbeck, Hermann, 3,691,213.

Stemme, Otto. *See—*

Futterer, Bodo, Stemme, Otto, and Mayer, Jurgen, 3,690,043.

Sterly, Glenn E., to Ampex Corporation. Repeat means for a cassette changer. 3,690,679, Cl. 274-4.00f.

Sternbach, Leo Henryk. *See—*

Fryer, Rodney Ian, and Sternbach, Leo Henryk, 3,691,157.

Stewart, John D. *See—*

Tregembo, Rhoderie, Dolezal, Wayne R., Boughton, Lowell D., and Stewart, John D., 3,690,106.

Stile-Craft Manufacturers, Inc. *See—*

Rogers, Gerald L., 3,690,615.

Stiles, Alvin B. Uniform composite structures of catalyst and fibrous refractory. 3,691,097, Cl. 252-440.000.

Stimberg, Hans-Joef, Galinke, Joachim, and Schmadel, Edmund. Low-foaming rinsing, washing and cleaning compositions. 3,691,082, Cl. 252-98.000.

Stoddard, Edgar S. Filter structure and method of making the same. 3,689,994, Cl. 29-611.000.

Stoetzer, Ernst-Joachim. *See—*

Schreiner, Gunther, and Stoetzer, Ernst-Joachim, 3,690,970.

Stol, Miroslav. *See—*

Stoy, Vladimir, Stol, Miroslav, Prokopova, Helena, and Kliment, Karel, 3,691,263.

Stolz, Werner. *See—*

Hubner, Klaus, Prokert, Konrad, and Stolz, Werner, 3,691,380.

Stolzer, Claus, Hammann, Ingeborg, and Unterstenhofer, Gunter, to Farbenfabriken Bayer Aktiengesellschaft. Phosphorylated and phosphorylated derivatives of mercaptoacetic acid-N',N'-dialkylhydrazides. 3,691,277, Cl. 260-923.000.

Stop-Motion Devices Corporation. *See—*

Tellerman, Edward M., and Deniega, Castillo, 3,690,127.

Storch, Leonard. Photocomposition error correction system. 3,690,231, Cl. 95-4.50r.

Storer, Thomas Kirkly. *See—*

Baker, Ronald, and Storer, Thomas Kirkly, 3,691,164.

Stoy, Vladimir, Stol, Miroslav, Prokopova, Helena, and Kliment, Karel, to Ceskoslovenska akademie ved. Method for manufacturing rotation-symmetric articles by centrifugal casting. 3,691,263, Cl. 264-1.000.

Strachan, Robert, to Robertshaw Controls Company. Digital clock structure and parts therefor. 3,690,063, Cl. 58-125.00c.

Strain, Clifford R. *See—*

Anderson, Eugene A., and Strain, Clifford R., 3,690,643.

Stralser, Bernard J. Recovering water from spent sulfite liquor. 3,691,041, Cl. 204-152.000.

Strickland, Carl G., and Clark, Walter D. Limb removing apparatus. 3,690,351, Cl. 144-2.00r.

Strohmeier, Harold, to Gehr, Bohler & Co., AG. Apparatus for supplying flowable material. 3,690,513, Cl. 222-55.000.

Stroszynski, Joachim. Process and apparatus for the continuous production of a lithographic surface. 3,691,030, Cl. 204-32.00r.

Studer, Jean-Fred. *See—*

Humbert, Jean, and Studer, Jean-Fred, 3,690,061.

Stull, John William. *See—*

Chow, Ken-Tang, Stull, John William, and Bates, Charles Edward, 3,691,390.

Sturdivan, Rex E., to Zinsco Electrical Products. Electrical power outlet for trailer camp sites and the like. 3,691,288, Cl. 174-38.000.

Sturmo, Giuseppe, and Maran, Mario, to F.A.V.S.R.L. Automobile tester. 3,690,165, Cl. 73-117.000.

Suda, Hideaki. *See—*

Koga, Koichi, Suda, Hideaki, and Akamatsu, Takashi, 3,691,203.

Suda, Tetuo. *See—*

Yoshida, Shoushi, Iwama, Atsuki, Okada, Takashi, and Suda, Tetuo, 3,690,795.

Sudrablin, Leon P., and Neugold, Harry, Jr., to Pennwalt Corporation. Electrical shield for cathodic protection systems. 3,691,040, Cl. 204-147.000.

Suehiro Sen-I Kogyo Kabushiki Kaisha. *See—*

Endo, Hiroshi, Tokoyoda, Kazuo, Fujiyu, Takemi, Kayasuga, Yasuaki, and Kunii, Tokio, 3,690,911.

Sugawara, Shinichi. *See—*

Kobayashi, Goro, Sugawara, Shinichi, and Nagawa, Masatoshi, 3,691,199.

Sugiura, Akio. *See—*

Arai, Hiroshi, Nakamura, Akira, Ikamoto, Atutoshi, Okumura, Shunki, Suzuki, Motoyoshi, and Sugiura, Akio, 3,690,735.

Sulzer Brothers, Ltd. *See—*

Dolezal, Richard, 3,690,303.

Sumitomo Chemical Co., Ltd. *See—*

Ichiki, Eiichi, Iida, Kazuo, Inoue, Yashuhiko, and Uyco, Keizo, 3,691,108.



- Sumitomo Chemical Company, Ltd.: *See—*  
Kaminaka, Hiroshi; Kotera, Norio; Kanda, Tatsuo; Kuruma, Hiroshi; Yanagihara, Hideki; and Murata, Yoshiro, 3,691,278.  
Koga, Koichi; Suda, Hideaki; and Akamatsu, Takashi, 3,691,203.  
Sumitomo Electric Industries, Ltd.: *See—*  
Akai, Shin-Ichi; and Aoyagi, Katsunosuke, 3,690,846.  
Nakahara, Tsuneo; and Yoshida, Kenichi, 3,691,463.  
Sumiyoshi, Masaharu; Sakakibara, Shigeru; Wakamatsu, Hisato; and Kato, Takaaki, to Nippondenso Kabushiki Kaisha. Automatic transmission, 3,690,197, Cl. 74-731.000.  
Summers, James E.: *See—*  
Turner, Lyman H.; Kuckucka, William P.; and Summers, James E., 3,690,537.  
Sumoto, Misao: *See—*  
Nishizawa, Hirofumi; Kitaura, Shigeo; Sumoto, Misao; Komagata, Hideki; and Matsumoto, Hiroshi, 3,690,978.  
Sun Oil Company: *See—*  
Kirk, Merritt C., Jr., 3,691,063.  
Sunder, Sham: *See—*  
Swearingen, Judson S., and Sunder, Sham, 3,690,114.  
Sundstrand Corporation: *See—*  
Pollman, Frederic W.; Frandsen, Lee R.; and Throckmorton, Charles D., Sr., 3,690,793.  
Sundstrom, Roy N.: *See—*  
Bustrian, Daniel J.; Gossie, Myo A.; Sundstrom, Roy N.; and Wisner, William R., 3,690,527.  
Sung, Fu-Tien, to Grove Manufacturing Company. Crane boom, 3,690,742, Cl. 308-3.00r.  
Sunkist Growers, Inc.: *See—*  
Ross, John M., and Smith, Ronald T., 3,690,092.  
Super Mold Corporation: *See—*  
Kiedrowski, Hugh P., and Eriksen, Merrill K., 3,690,010.  
Superior Plating Company: *See—*  
Raymond, Louis W., and Gussack, Mark C., 3,691,029.  
Supreme Equipment & Systems Corporation: *See—*  
Castaldi, John A., 3,690,479.  
Sura, James J., to Union Carbon Corporation. Polyepoxide compositions containing dicyandiamide and an iodonium, phosphonium, or sulfonium salt, 3,691,133, Cl. 260-47.00c.  
Suzuki, Rinnosuke; Hoshi, Hiroshi; Satto, Jiro; and Okada, Minoru, to Lion Fat & Oil Co., Ltd. Hot-metal adhesive, 3,691,120, Cl. 260-27.00v.  
Suter, Hans, Zutter, Hans, and Brunner, Josef, to Eprova Aktiengesellschaft. Asymmetrical diamides of tetraiodoterephthalic acid, 3,691,196, Cl. 260-326.300.  
Sutko, Adolph A., to Continental Oil Company. Equal flow distributor, 3,690,341, Cl. 137-101.000.  
Sutton, James F. Public transportation system, 3,690,267, Cl. 104-165.000.  
Suzuki, Clarence K.: *See—*  
Fu, Charles H., and Suzuki, Clarence K., 3,690,968.  
Suzuki, Motoyoshi: *See—*  
Arai, Hiroshi; Nakamura, Akira; Ikamoto, Atutosi; Okumura, Shunki; Suzuki, Motoyoshi; and Sugiura, Akio, 3,690,735.  
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Yonemitsu, Eiichi; Isshika, Tomiya; Suzuki, Tsuyoshi; and Sanada, Akihiko, 3,691,232.  
Swanke, Roy L.; Valbona, Bruno M.; and Samuelian, Maurice P., to Dynamics Corporation of America. Can opener, 3,689,999, Cl. 30-4.00r.  
Swartz, Elmer L., to United States of America, Army. One shot fluid gate, 3,690,338, Cl. 137-81.500.  
Swearingen, Judson S., and Sunder, Sham. Refrigeration process for use in liquefaction of gases, 3,690,114, Cl. 62-40.000.  
Sweeney, John D.: *See—*  
King, John W., and Sweeney, John D., 3,690,435.  
Swidinsky, John: *See—*  
Brown, Bernard Beau; and Swidinsky, John, 3,691,197.  
Swift, Harold E., to Gulf Research & Development Company. Group VIII metal-tin catalyst and method of making same, 3,691,102, Cl. 252-469.000.  
Swift, Thomas G., to Staley, A. E., Manufacturing Company. Remoistenable adhesive composition for prepasted wall coverings, 3,690,938, Cl. 117-122.00s.  
Switzer, James A. Paint brush storing sealable plastic bag, 3,690,448, Cl. 206-15.100.  
Swygert, Wilbert E., Jr., to Sperry Rand Corporation. Variable duty cycle control circuit, 3,691,404, Cl. 307-252.00w.  
Sylvania Electric Products, Inc.: *See—*  
Pelton, Dean E., 3,691,088.  
Wilson, Dennis L., 3,691,549.  
Synco Corporation: *See—*  
Garstang, William W., 3,691,433.  
Synons Corporation: *See—*  
Shoemaker, James C., 3,690,613.  
Syston-Donner Corporation, mesne: *See—*  
Missio, Danilo V.; Wollman, Herbert; and Englander, Irving G., 3,690,767.  
Syva Company, mesne: *See—*  
Goldstein, Avram; Leute, Richard K.; and Ullman, Edwin F., 3,690,834.  
Szabo, Karoly, to Esso Research and Engineering Company. Phosphorus-containing thiomorpholinones, 3,691,163, Cl. 260-243.00b.  
Tabor, John R. Tunneling machine with concrete form transfer apparatus, 3,690,470, Cl. 214-1.00b.  
Faillon, John Kellner, to Bell & Howell Company. Control system, 3,690,750, Cl. 352-124.000.  
Taj, Hatim H., to General Electric Company. Splice for joining high voltage cables, 3,691,291, Cl. 174-73.00r.  
Takahashi, Kentaro, and Sato, Yoshihito, to Nippon Piston Ring Co., Ltd. Method of casting composite cam shafts, 3,689,986, Cl. 29-527.600.  
Takahashi, Nagashige; and Oouchi, Teruo, to Olympus Optical Co., Ltd. Flexible protecting sheath of an elongated flexible optical fiber bundle, 3,691,001, Cl. 161-96.000.  
Takahashi, Tadao: *See—*  
Yamagishi, Hidehisa; Yokoi, Fumitoshi; and Takahashi, Tadao, 3,690,940.  
Takaoda, Tsuneo; Ohta, Tetsuya, and Itoh, Masaru, to Nippon Oil Seal Industry Co., Ltd. Epihalohydrin polymers, 3,691,111, Cl. 260-2.00a.  
Takase, Shinji, and Shioiri, Tomonori, to Nippon Oil Company, Limited. Method for the preparation of isomerization catalyst and process for the isomerization, 3,691,255, Cl. 260-683.680.  
Takeda Chemical Industries, Ltd.: *See—*  
Higashide, Eiji; Hasegawa, Toru; Ono, Hideo; Asai, Mitsuko; Murai, Masayuki; and Kishi, Toyokazu, 3,691,280.  
Isono, Masao; Tomoda, Katsumi; Miyata, Koichi; Maejima, Kazutaka; and Kodama, Reijiro, 3,691,014.  
Kishi, Toyokazu; Harada, Setsuo; Misuno, Komei; Higashide, Eiji; and Shibata, Motoo, 3,691,181.  
Marumoto, Ryun; Yoshioka, Yoshio; Aoki, Hisashi; and Toda, Jun, 3,690,900.  
Takechara, Hiraki. Sanitary process of packing a subject into a vessel, 3,691,267, Cl. 264-98.000.  
Takeuchi, Hiroshi: *See—*  
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Talbot, George Robert: *See—*  
Paxton, Douglas R., and Talbot, George Robert, 3,690,807.  
Tam, William A., to Chicago Bridge & Iron Company. Stable offshore structures, 3,690,108, Cl. 61-46.000.  
Tanaka, Enchi; Hiramoto, Toshiyuki; and Nohara, Norimasa, to Director National Institute of Radiological Sciences, Science and Technology Agency. Scintillation camera device, 3,691,379, Cl. 250-71.50r.  
Tanaka, Itsuko: *See—*  
Tanaka, Masatami; and Hirotani, Tadashi, 3,690,621.  
Tanaka, Katsunobu; Kimura, Kazuo; and Yamaguchi, Ken, to Kyowa Hakko Kogyo Co., Ltd. Process for producing citric acid, 3,691,012, Cl. 195-28.00r.  
Tanaka, Masatami, deceased (by Tanaka, Itsuko, administratrix), and Hirotani, Tadashi, to Kyowa Hakko-Kogyo Co., Ltd. Agitator, 3,690,621, Cl. 259-96.000.  
Tanaka, Susumu: *See—*  
Kushima, Feizo; Tanaka, Susumu; and Ogawa, Masaya, 3,690,759.  
Tanaka, Yasuto: *See—*  
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Tandy, William H., to Addressograph-Multigraph Corporation. Planographic printing element having carboxylic acid treated image areas, 3,690,878, Cl. 96-1.800.  
Tanigami, Satoshi, to Elm Industry Co., Ltd. Tape feed apparatus for use in electro-motive tape cutter, 3,690,531, Cl. 226-136.000.  
Tanquary, Albert Charles, to Southern Research Institute. Oxysilylene fluorochemical polymers and process for preparing same, 3,691,119, Cl. 260-2.00s.  
Tarshis, Lemuel A., and Walker, James L., to General Electric Company. Grain size of metal castings, 3,690,874, Cl. 75-170.000.  
Tarui, Yasuo: *See—*  
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Tateisi Electronics Co.: *See—*  
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Tateno, Hiroshi: *See—*  
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Taylor, Cecil R. Putting practice device, 3,690,674, Cl. 273-176.00g.  
Taylor Garage Doors, Inc.: *See—*  
Kempel, John J., 3,690,037.  
Taylor, Glenn Edward. Vehicle transport, 3,690,717, Cl. 296-1.00a.  
Taylor, Glenn N., to Kendall Company, The. Neck closing smock or gown, 3,689,939, Cl. 2-114.000.  
Taylor, Larry H.: *See—*  
Porter, William D.; and Taylor, Larry H., 3,690,579.  
Teague, Ernest Douglas, to Johnson, Matthey & Co. Limited. Method of making metal articles, 3,689,987, Cl. 29-527.200.  
Tebbo, Walter J., to Emhart Corporation. Sensor control for tool breakage, 3,690,202, Cl. 82-34.00f.  
Technical Communications Corporation: *See—*  
Dayton, David S.; and Girard, Alfred L., 3,691,464.  
Technical Operations, Incorporated: *See—*  
Prest, Robert J., 3,690,529.  
Teczky, Melvin: *See—*

- Hurley, Forrest R.; Tecotzy, Melvin; and Vanik, Milton C., 3,691,087.  
TED Bildplatten Aktiengesellschaft: *See—*  
Dickopp, Gerhard, 3,691,317.  
Schuller, Eduard; Redlich, Horst; Dickopp, Gerhard; and Klemp, Hans-Joachim, 3,691,318.  
Teggors, Hans: *See—*  
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Snyder, James R., 3,690,443.  
Telefonaktiebolaget LM Ericsson: *See—*  
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Schutze, Hans-Jürgen; and Hennings, Klaus, 3,689,992.  
Teletype Corporation: *See—*  
Heneghan, Patrick J., 3,691,548.  
Peterson, John L., 3,691,536.  
Tellerman, Edward M., and Deniega, Castillo, to Stop-Motion Devices Corporation. Defective latch needle detector and control network therefor, 3,690,127, Cl. 66-157.000.  
Teneoni, Riccardo. Device for a multi-feed circular knitting machine, 3,690,125, Cl. 66-42.000.  
Texaco Development Corporation: *See—*  
Goldsby, Arthur R., 3,691,252.  
Texaco Inc.: *See—*  
Armistead, Fontaine C., 3,691,363.  
Ashton, William B.; and Morris, Herbert C., 3,691,067.  
Chafetz, Harry; Canning, William H.; and Morissette, Bertrand G., 3,691,076.  
Cusano, Carmen M.; Yamamoto, Roy I.; and Rubin, Isaac D., 3,691,261.  
Nelson, Gerald V.; Cuons, William R., Jr.; and Wray, Glenn C., 3,691,152.  
Parker, Levi Christy; Cooper, Thomas Allen; and Meadows, James Lawson, 3,691,246.  
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Wolf, Robert L.; and Cowlin, Christopher J., 3,690,100.  
Texas Instruments, Incorporated: *See—*  
David, Billy W., 3,690,403.  
Jones, Derrick; and Lu, Sun, 3,690,745.  
Mize, Jack P., 3,691,406.  
Pizante, Jack H., 3,691,529.  
Tolar, Neal Jay, 3,689,993.  
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Textron Inc.: *See—*  
Earl, I. T. Desmond, 3,690,401.  
Thaler, Warren A., to Esso Research and Engineering Company. Preparation of acid halides from paraffins, 3,691,043, Cl. 204-163.00c.  
Thaler, Warren A., to Esso Research and Engineering Company. 3,5-Substituted-1,2,4-thiadiazoles, 3,691,183, Cl. 260-302.00d.  
Thamm, Rudolf: *See—*  
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Tho Pesch, Albert: *See—*  
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Thoen, Roy M., and Kassulke, Leander. Combination lawn mowing and snow throwing machine, 3,690,047, Cl. 56-13.300.  
Thomas, Brian Martin: *See—*  
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Thomka, Laddie M., to Dow Chemical Company, The. Pre-formed meat package, 3,690,903, Cl. 99-174.000.  
Thompson, David A.: *See—*  
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Thompson, Earl A., to Lamb, F. Jos., Company and Thompson, Earl A., Manufacturing Company. Valve, 3,690,956, Cl. 148-2.000.  
Thompson, Earl A., to Lamb, F. Jos., Company. Camshaft, 3,690,957, Cl. 148-3.000.  
Thompson, Earl A., to Lamb, F. Jos., Company. Rocker arm, 3,690,958, Cl. 148-3.000.  
Thompson, Earl A., to Lamb, F. Jos., Company. Alloy, article of manufacture, and process, 3,690,959, Cl. 148-2.000.  
Thompson, Earl A., Manufacturing Company: *See—*  
Thompson, Earl A., 3,690,956.  
Thompson, Eric William; and Marshall, Michael Charles, to Imperial Chemical Industries Limited. Detergent compositions, 3,691,081, Cl. 252-89.000.  
Thompson, George W.; and Oak, John T., to Continental Can Company, Inc. Necked-in can body and method and apparatus for making same, 3,690,279, Cl. 113-120.00a.  
Thompson, Luther G.: *See—*  
Nooker, Eugene L.; Thompson, Luther G.; Varney, Glenn E.; and Dietz, Victor J., 3,690,257.  
Thompson, Robert O.; Stark, William M.; and Higgins, Calvin E., to Lilly, Eli, and Company. Antibiotic nebramycin and preparation thereof, 3,691,279, Cl. 424-116.000.  
Thompson, Walter W., to Emerson Electric Co. Portable partition system, 3,690,365, Cl. 160-135.000.  
Thomson CSF: *See—*  
Leboutet, Hubert, 3,691,374.  
Thomson, Meredith C.: *See—*  
Frederick, Charles D.; Demhiv, Kenneth D.; and Thomson, Meredith C., 3,690,002.  
Thorn, Roy B. Mobile hydraulic fruit picker, 3,690,053, Cl. 56-328.00r.  
Throckmorton, Charles D., Sr.: *See—*  
Pollman, Frederic W.; Frandsen, Lee R.; and Throckmorton, Charles D., Sr., 3,690,793.  
Thuillier, Yvonne. Compositions containing a heart extract, 3,691,274, Cl. 424-95.000.  
Thumm, Helmut; and Schaich, Willy, to Voith, J. M., GmbH. Two press grinder constructed for easy wheel replacement, 3,690,572, Cl. 241-151.000.  
Tilby, Sydney Edward, to Canadian Cane Equipment, Ltd. Apparatus for processing sugarcane, 3,690,358, Cl. 146-119.000.  
Tippetts, John Russell; Golder, Jack Alexander; and Grant, John, to United Kingdom Atomic Energy Authority. Fluid flow measurement, 3,690,171, Cl. 73-194.00b.  
Toda, Jun: *See—*  
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Toe-or-heel-holding device for safety ski: *See—*  
Marker, Hannes, 3,690,690.  
Toi, Toshio: *See—*  
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Tokyo Shibaura Electric Co., Ltd.: *See—*  
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Okada, Tsuneo; Onodera, Yutaka; Mitsuoka, Takeshi; Saito, Yukinori; Muto, Yoshio; Anayama, Takeshi; and Yasukochi, Ko, 3,691,046.  
Tolar, Neal Jay, to Texas Instruments, Incorporated. Fabrication of semiconductor devices having low thermal impedance bonds to heat sinks, 3,689,993, Cl. 29-583.000.  
Tomasi, Biagio J.: *See—*  
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Tomoda, Katsumi: *See—*  
Isono, Masao; Tomoda, Katsumi; Miyata, Koichi; Maejima, Kazutaka; and Kodama, Reijiro, 3,691,014.  
Tonelli, Guido Antonio, to Alfa-Laval AB. Apparatus for removing teat cups, 3,690,300, Cl. 119-14.080.  
Toray Industries, Inc.: *See—*  
Ito, Shoji; Fujoka, Kotaro; Okamoto, Mitsuhiro; and Kikuchi, Tetsuya, 3,690,575.  
Torii, Tatuki: *See—*  
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Townsend, Bruce A. Apparatus for coating cylindrical object, 3,690,296, Cl. 118-227.000.  
Toyo Buseki Kabushiki Kaisha: *See—*  
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Toyo Jozo Co., Ltd.: *See—*  
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Toyoda Koki Kabushiki Kaisha: *See—*  
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Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*  
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Tregembo, Rhoderic; Dolezal, Wayne R.; Boughton, Lowell D.; and Stewart, John D., to Dow Chemical Company, The. Method of treating permeable formations, 3,690,106, Cl. 61-36.000.  
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Tringali, Dominick, to Universal Business Machines, Incorporated. Photoelectric scanning head, 3,691,392, Cl. 250-219.00d.



- Troeger, Walter Alvin. *See—*  
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- Trongeau, William J., to Miner Enterprises, Inc. Combination silastic and friction shock absorber. 3,690,423, Cl. 188-271.000.
- Tru-Line, Inc. *See—*  
Truxillo, Ruffin G., 3,689,968.
- Trupp, Garrison G., and Trupp, Marc A. Faucet and plumbing attachment for interdental mouth wash dispenser. 3,690,314, Cl. 128-66.000.
- Trupp, Marc A. *See—*  
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- Truxillo, Ruffin G., to Tru-Line, Inc. Method of aligning bearings of shafting systems. 3,689,968, Cl. 29-149.50r
- TRW Inc. *See—*  
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Bognar, Bela, 3,691,325.  
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- Tsubouchi, Hideo. *See—*  
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- Tsunoda, Jitensha, Kabushiki Kaisha. *See—*  
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- Tsunoda, Masashi, to Tsunoda, Jitensha, Kabushiki Kaisha. Method of forming a claw portion of the front wheel journal fork of a bicycle. 3,689,969, Cl. 29-150.000.
- Tuchiya, Masuo. *See—*  
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- Tuckey, Charles H. *See—*  
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- Tungler, Antal. *See—*  
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- Turner, Lloyd S. Security closure for a screw type container. 3,690,495, Cl. 215-9.000.
- Turner, Lyman H., Kukucka, William P., and Summers, James E., to Xerox Corporation. Staple forming and fastening apparatus. 3,690,537, Cl. 227-88.000.
- Turzillo, Lee A., to Marathon Oil Company. Method and means for producing pile or like structural columns in situ. 3,690,109, Cl. 61-53.640.
- Tuttle, Gary G., and Kleck, Douglas H. Multi patient dental instruction console. 3,690,008, Cl. 32-71.000.
- Tuttle, Phillip E., to Federal Screw Works. Hydraulic cleaning device. 3,690,558, Cl. 239-127.000.
- Tweedie, Ellsworth. *See—*  
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- Tyler, Hugh J., to Robertshaw Controls Company. Actuating device employing a heat expandable wire. 3,691,499, Cl. 337-123.000.
- Uchiyama, Hiromichi, and Inoue, Naohiko, to Nissan Motor Company, Limited. Vehicle power steering control device. 3,690,400, Cl. 180-79.20r
- Ueda, Takeshi. *See—*  
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- Uehara, Kiyoshi, to Nippon Electric Company, Limited. Temperature compensating circuit for an oscillator. 3,690,546, Cl. 331-176.000.
- Uhl, Dieter. *See—*  
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- Ulbing, Cynthia Geer. *See—*  
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- Ullberg, Sven Gustav Folke, to Incentive Research & Development AB. Microtome with means for collecting sections of the specimen on a tape. 3,690,988, Cl. 156-353.000.
- Ullman, Edwin F. *See—*  
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- Ultra Electronics Limited. *See—*  
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- Umahashi, Minoru, Yamakawa, Hitoshi, and Suzuki, Motoyuki, to Kabushiki Kaisha Ricoh. Heating device for sheet-like object. 3,690,015, Cl. 34-95.000.
- UMC Industries, Inc. *See—*  
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- Umeda, Kaoru, Ishii, Kenjiro, and Endo, Hiroshi, to Minolta Camera Kabushiki Kaisha. Device for intermittently transporting roll film. 3,690,532, Cl. 226-149.000.
- Ungar, Leslie A., and Rosenthal, Arthur. Applicator assembly. 3,690,452, Cl. 206-56.00c.
- Ungnadner, Peter. *See—*  
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- Unilex, Inc. *See—*  
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- Union Carbide Corporation. *See—*  
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- Union Carbon Corporation. *See—*  
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- Union Oil Company of California. *See—*  
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- United Kingdom Atomic Energy Authority. *See—*  
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- Atomic Energy Commission. *See—*  
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- Updyke, Lionel Joe, to FMC Corporation. Mercury recovery from chlorine cells utilizing mercury cathodes. 3,691,037, Cl. 204-99.000.
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- Urbanek, Edwin A., to Xerox Corporation. Control system for an optical imaging system. 3,690,754, Cl. 355-3.000.
- Urbatus, Algimantas Povilas, to Union Carbide Corporation. Method and apparatus for shirring delicate and fragile food casings. 3,689,960, Cl. 17-51.000.
- U.S. Dynamics Inc., *mesne See—*  
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- U.S. Philips Corporation. *See—*  
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- Valonis, Edmund J., to Inland Steel Company. Apparatus for confining cobbles. 3,690,134, Cl. 72-37.000.
- Van Cleven, Rene Eugene, and Van Cleven, Willy Emile, to Koelinstallaties Van Cleven Gebroeders, personevennootschap met beperkte aansprakelijkheid. Potato chip dispensing apparatus. 3,690,247, Cl. 99-355.000.
- Van Cleven, Willy Emile. *See—*  
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- Van de Belo, Roelot, Begemann, Heinrich K. S. P., Bos, Hendrikus J., and Mann, Adriaan B. Method and an apparatus for taking an undisturbed soil sample. 3,690,389, Cl. 175-59.000.
- van de Bilt, Pieter Arnoldus. Apparatus for applying, tensioning and sealing a synthetic band around a package. 3,690,090, Cl. 53-198.00r
- Van De Stadt, E. G., Schweepwert N.V. *See—*  
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- Van De Stadt, Ericus Gerhardus, to Van De Stadt, E. G., Schweepwert N.V. Rudder or keel for a wind and/or power propeller vessel. 3,690,284, Cl. 114-152.000.
- Van Den Heuvel, Walter August, Vanhalst, Johan Eugene, and Brinckman, Eric Maria, to Gevaert-Agfa N.V. Print-out process utilizing chemically sensitive lead salt in organophilic binder. 3,690,886, Cl. 96-88.000.
- van der Veen, Romke, to N.V. Ingenieursbureau voor Systemen en Oortroen en "Spanstaal". Dredger vessel and a method of determining the loaded weight of sedimented material in a dredger vessel. 3,690,180, Cl. 73-432.00r
- Van Hecke, George J., and Cassell, Robert D., to Huck Manufacturing Company. Fastener installation system. 3,689,951, Cl. 10-155.00r
- Van Husen, Hendrik W. *See—*  
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- Van Leer (U.K.) Limited. *See—*  
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- Van Rooij, Petrus Johannes Cornelius. Connection of two members shrunk on each other. 3,690,707, Cl. 287-52.00r
- Van Ryn, Arthur L., to American Seating Company. Three-quarter fold chair. 3,690,726, Cl. 297-332.000.
- Van Soest, Cornelius J. M. *See—*  
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- Van Utert, Le Grand Gerard. *See—*  
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- Van Uum, Donald R., and Jalhm, John I., to General Motors Corporation. Igniter plug with improved electrode. 3,691,419, Cl. 313-138.000.
- Vandenbergh, Henri. *See—*  
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- Vandermaas, Joseph K., Rikard, Larry J., Dunlap, Robert K., and Lavender, James F., to Celanese Corporation. Stain release and durable press finishing using solution polymers. 3,690,942, Cl. 117-138.80f
- VanDest, Jean Claude, to Massey-Ferguson Services N.V. Tractor controlled trailer brake. 3,690,734, Cl. 303-7.000.
- Vanhalst, Johan Eugene. *See—*  
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- Vanik, Milton C. *See—*  
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- Vanlingen, George A., and Pickett, Eugene W., to Stearns-Roger Corporation. Traveling crane head subassembly for atomic reactor fuel cells. 3,690,715, Cl. 294-88.000.
- Varadi, Andrew G., Rubinstein, Richard B., and Radoff, Steven, to General Instrument Corporation. Read only memory system having increased data rate with alternate data readout. 3,691,534, Cl. 340-173.00r
- Varney, Glenn E. *See—*  
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- Vass, Edward J., Braun, Richard H., and Platt, Conrad R., to United States of America, Air Force. Liquid propellant cartridge. 3,690,255, Cl. 102-39.000.
- Vater, Wulf. *See—*  
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- Vaughn, Charles A. Animation system. 3,690,747, Cl. 352-87.000.
- Vaughn, Walter L. *See—*  
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- VEB Fluorwerke Dohna. *See—*  
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- Velavicius, Allonsas, and Wanlass, Bert R., to General Motors Corporation. Control unit for window regulator and closure latch. 3,690,036, Cl. 49-279.000.
- Velling, Gunter. *See—*  
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- Vemuri, Krishna P., to Abitibi Paper Company, Ltd. Polysaccharide oxidized products. 3,691,153, Cl. 260-209.00r
- Vendmart, Inc. *See—*  
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- Venturi, Enrico. Apparatus for coating articles with a dry powdered material. 3,690,298, Cl. 118-629.000.
- Vercillo, Peter A. *See—*  
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- Verenigte Draht- und Kabelwerke Aktiengesellschaft Berlin und Dushurg. *See—*  
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- Verge, John Pomfret. *See—*  
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- Vernazza, Julius, to Krantz, H. Method and equipment for heating gas and maintaining a desired temperature in a plurality of feed ducts. 3,690,626, Cl. 263-19.00a
- Veronica, Giacinto. Process for the preparation of potassium nitrate. 3,690,819, Cl. 23-102.000.
- Versadome Corporation. *See—*  
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- Verti-East, Inc. *See—*  
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- Vessie, Alexander McIntosh, to Price Company Limited, The. Frozen fish package. 3,690,923, Cl. 117-68.000.
- Victor Company of Japan Limited. *See—*  
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- Vinch, Angelo N., and Kamulski, David A., to Westinghouse Electric Corporation. Safety circuit for electronic machine controls of the plug-in modular type. 3,691,399, Cl. 307-149.000.
- Vines, Sterling N. *See—*  
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- Volk, Charles Edward. *See—*  
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- Volker, Herbert. Apparatus for incinerating waste gases. 3,690,840, Cl. 23-277.00c.
- Vollhardt, Frohmuth, to Siegener Aktiengesellschaft Geisweid. Gas cooler, for cooling synthesis gas, fission gas, and similar gases. 3,690,374, Cl. 165-157.000.
- Vollkommer, Norbert, Ismail, Roshdy, and Moustafa, Troidorf, to Dynamit Nobel Aktiengesellschaft. Process for the polymerization of  $\alpha,\alpha$ -dialkyl-propiolactones. 3,691,138, Cl. 260-67.30r.
- von Fischern, Bernhard, Winkler, Alfred; Fuchsle, Klaus, Zanner, Johann, Jr., and Ungnadner, Peter, to Agfa-Gevaert Aktiengesellschaft. Projector for use with cassettes for motion picture film. 3,690,751, Cl. 352-125.000.



- Von Konig, Anita: *See—*  
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- Von Roepenack, Adolf, Wuethrich, Hans, and Schmidt, Wilhelm, to Det Norske Zinkkompani A/S. Process for the recovery of zinc from zinc- and iron-containing materials. 3,691,038, Cl. 204-119,000.
- von Schmeling, Bogislav: *See—*  
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- Vsesojuzny Nauchno-Issledovatel'skiy i Proektny Institut po Ochkiske Tekhnologicheskikh Gazov i Stoknykh Vod i Ispol'zovaniyu Vtorichnykh Energoresursov Predprinyaty Chernoi Metallurgii: *See—*  
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- Wachs, Marvin Richard, to Communications Satellite Corporation. Phase distortionless limited. 3,691,466, Cl. 325-347,000.
- Wacker-Chemie G.m.b.H.: *See—*  
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- Wagner, Klaus, and Roos, Ernst, to Farbenfabriken Bayer Aktiengesellschaft. Certain substituted benzothiazole-N-oxides and their preparation. 3,691,186, Cl. 260-304,000.
- Wagner, Ross I.: *See—*  
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- Wagner, Ross W.: *See—*  
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- Wainio, Allan C., to Honeywell Inc. Reel mount. 3,690,581, Cl. 242-68,300.
- Waite, Frederick Andrew: *See—*  
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- Wakamatsu, Hisato: *See—*  
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- Walbro Corporation: *See—*  
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- Walch, Eugen: *See—*  
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- Waldes Kohinoor, Inc.: *See—*  
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- Waldmann, Herbert. Anti-skid arrangement for wheeled vehicles. 3,690,361, Cl. 152-216,000.
- Walhof, Elmer T.: *See—*  
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- Walhof, Peter A., and Walhof, Elmer T. Screening attachment for grain dryer. 3,690,016, Cl. 34-174,000.
- Walker, Albert T., Jr. Lure. 3,690,028, Cl. 43-17,600.
- Walker Bank and Trust Co.: *See—*  
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- Walker, James L.: *See—*  
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- Wall Colmonoy Corporation: *See—*  
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- Bredtz, Nikolaj, and Miller, Forbes M., 3,690,875.
- Waller, John G.: *See—*  
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- Walsh, Walter Michael, Jr.: *See—*  
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- Walus, Aloysius N., to Du Pont de Nemours, E. I., and Company. Aqueous dispersions of aziridinyl acrylate or methacrylate acrylic graft copolymers. 3,691,126, Cl. 260-29,6rw.
- Wampetich, Matthias J., and Griehl, Wolfgang, to Inventa AG. Polyester fibres coated with an N-glycidyl compound embedded in a rubber matrix. 3,690,926, Cl. 117-77,000.
- Wanesky, William R., to Western Electric Company Incorporated. Releasable mounting method of placing an oriented array of semiconductor devices on the mounting. 3,690,984, Cl. 156-235,000.
- Wankling, James Leonard: *See—*  
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- Wanlass, Bert R.: *See—*  
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- Wann, Robert Earl, Nicholson, Denzel Allan, and Logan, Ted Joe. Lubricant composition. 3,691,077, Cl. 252-54,600.
- Ware Fuse Corporation: *See—*  
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- Ware, Gordon K., to Ware Fuse Corporation. Electrical outlet box. 3,690,501, Cl. 220-3,940.
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- Mrugala, Theodore A., 3,690,074.
- Warner-Lambert Company: *See—*  
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- Ercoli, Alberto, and Gardi, Rinaldo, 3,691,214.
- Warren, John P., to Schlumberger Technology Corporation. Methods and apparatus for investigating earth formations the spontaneous potential. 3,691,456, Cl. 324-10,000.
- Warszawski, Bernard, and Vandenberghe, Henri, to Societe Generale de Constructions Electriques et Mecaniques (Alshtom). Fuel cell and electrolyte supply system. 3,690,954, Cl. 136-86,000.
- Wasp, Edward J., to Beshtee International Corporation. Cap formation in slurry pipelines. 3,690,732, Cl. 302-66,000.
- Wasser, Willi: *See—*  
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- Wassilielf, Victor. Closures for containers. 3,690,519, Cl. 222-402,130.
- Waters, Charles A.: *See—*  
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- Watkins-Johnson Company: *See—*  
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- Watson, Richard D.: *See—*  
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- Weaver, Paul J., to Automatic Control Systems, Inc. Machine control utilizing a plurality of control templates and tracer mechanisms. 3,690,200, Cl. 82-14,00a.
- Webb, Paul D., to Fraser-Webb Corporation. Engine starter. 3,690,189, Cl. 74-8,000.
- Weber, Hans, to Demag Aktiengesellschaft. Process and apparatus for stretch forming metal. 3,690,138, Cl. 72-189,000.
- Weber, Paul, AG: *See—*  
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- Weber, Robert: *See—*  
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- Weeks, James F.: *See—*  
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- Weeks, James F., and Bustos, Ray T., said Bustos assor. to said Weeks, James F. Game apparatus. 3,690,668, Cl. 273-138,00r.
- Wegmann, Jacques, to Ciba Geigy AG. Process for the coating of textiles. 3,690,939, Cl. 117-126,00b.
- Wegmuller, Hans, Kleemann, Alois, and Keller, Rudolf, to Ciba-Geigy AG. Process for the continuous optical brightening of organic fibre material. 3,690,916, Cl. 117-33,50t.
- Weinbaum Alejan Dro Sise: *See—*  
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- Weinstein, James D., and Davidson, Barry A., to Scott Paper Company. Flotation apparatus. 3,689,949, Cl. 5-348,000.
- Weisgerber, Thomas W., to General Motors Corporation. Wheel lock control differential. 3,690,426, Cl. 192-4,00a.
- Weiss, Leopold. Exhaust noise silencer. 3,690,406, Cl. 181-36,00b.
- Weiss, Stanley Marian. Cultivating implements. 3,690,385, Cl. 172-604,000.
- Wells, Frank Herbert, and Martin, Roger, to United Kingdom Atomic Energy Authority. Apparatus for measuring thickness. 3,690,154, Cl. 73-67,900.
- Welty, Lloyd G. Frictional self draining structure. 3,690,227, Cl. 94-33,000.
- Wemac Company: *See—*  
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- Wendel, Samuel R., to Dow Corning Corporation. Method of preparing silyl alcohols. 3,691,222, Cl. 260-448,00e.
- Wenzel, Alfred Johannes, and Hantel, Alwin, to Massey-Ferguson G.m.b.H. Apparatus for mounting an accessory on a combine. 3,690,359, Cl. 146-123,000.
- Weppner, Benjamin H., Lefebvre, Leo P., and Miller, Victor R., to Mennen-Greatbatch Electronics, Inc. Electrically insulated signal path means for physiological monitor. 3,690,313, Cl. 128-2,06b.
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- Werner, Helmut, and Stapp, Hans, to Akzona Incorporated. Matting of melt-spun amorphous polymer filament and process. 3,691,004, Cl. 161-150,000.
- Werst, Gerhard: *See—*  
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- Wesselingh, Johannes A., to Shell Oil Company. Process for producing carboxylic acids and esters. 3,691,230, Cl. 260-497,00r.
- Western Electric Company Incorporated: *See—*  
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- La Valle, Thomas Alvin, 3,689,981.
- McClamrock, Grady L., 3,689,989.
- Wanesky, William R., 3,690,984.
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- Western Union Telegraph Company, The: *See—*  
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- Westfall, James E., Lawson, Arthur L., and Vercillo, Peter A., to Continental Can Company, Inc. Composite closure. 3,690,499, Cl. 215-40,000.
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- Hylen, Lyle I., 3,691,371.
- Westinghouse Bremsen- und Apparatebau GmbH: *See—*  
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- Westinghouse Electric Corporation: *See—*  
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- Fisher, Peter D., Mergerian, Dickron, and Minarik, Ronald W., 3,691,383.
- Hovler, Robert C., 3,691,368.
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- Munson, William A., 3,690,632.
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- Ruka, Roswell J., and Panson, Armand I., 3,691,023.
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- Weyerhaeuser Company: *See—*  
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- Weyrich, Arthur G., Bertrand, Richard R., and Karinski, Edwin D., to Certron Corporation. Transformer with a fuse. 3,691,425, Cl. 317-15,000.
- Wheaton, Ellis G., and Willmann, Norman I., to General Motors Corporation. Battery plate grid. 3,690,950, Cl. 136-37,000.
- Wheeler, J. Stanley, to United Industries, Inc. Apparatus for making cast chain. 3,690,369, Cl. 164-351,000.
- Whipple, William D., and Gifford, Howard W., to Prelude Corporation. Cable clamp and apparatuses for attaching and for detaching the clamp. 3,689,974, Cl. 29-200,00d.
- Whisler, Edwin Lee, to Deere & Company. Vehicle cab and safety frame assembly. 3,690,720, Cl. 296-28,00c.
- Whitbread, Frederick John: *See—*  
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- Widmaier, Dieter, to Bosch Robert G.m.b.H. Apparatus having inter connected hydraulic units operable as pumps, hydraulic motors, and as a hydrostatic transmission. 3,690,097, Cl. 60-53,00b.
- Wiesboeck, Robert A., to United States Steel Corporation. Manufacture of boron trifluoride. 3,690,821, Cl. 423-293,000.
- Wigham, Jack H. Conveyor belt spacer for potato planters. 3,690,511, Cl. 221-174,400.
- Wildhaber, Ernest. Rotary cutter with helically directed cutting teeth arranged in a circle. 3,689,966, Cl. 29-103,00c.
- Wilfert, Thomas. Safety control lever. 3,690,195, Cl. 74-473,00r.
- Wilhelm, Hans: *See—*  
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- Wilkerson, Philip E. Apparatus for maintaining uniform yarn tension during unwinding of a yarn package. 3,690,584, Cl. 242-128,000.
- Williams, Eugene, to United States Steel Corporation. Stainless steel. 3,690,870, Cl. 75-124,000.
- Williams, Herschel: *See—*  
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- Williams, Keith A., to Phillips Petroleum Company. Porous electrode having cavity with impervious dome. 3,691,051, Cl. 204-284,000.
- Williams, Thomas R., to Sperry Rand Corporation. Solid state memory array. 3,691,535, Cl. 340-173.
- Williams, Willie Vincent. Hand carried yarn splicing device. 3,690,994, Cl. 156-433,000.
- Willich, Jean Herbert, and Brunnghaus, Walter, deceased (by Brunnghaus, Gisela, administratrix). Hydraulically damped vehicle suspension device. 3,690,425, Cl. 188-321,000.
- Willis, Jack B.: *See—*  
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- Willis, William D., to Hercules Incorporated. Expandecross-linked polymers of ephalohydram. 3,691,113, Cl. 260-2,50r.
- Willmann, Norman I.: *See—*  
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- Wilson, Archie R.: *See—*  
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- Wilson, Dennis L., to Selvana Electric Products, Inc. Signal processor. 3,691,549, Cl. 340-261,000.
- Wilson, Donald R., to Pacific Plantronics, Inc. Telephone user set. 3,691,311, Cl. 179-81,00b.
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- Wilson, Woodrow S., to Polytop Corporation. Initially sealed closures with sealing structures. 3,690,514, Cl. 221-81,000.
- Winderl, Siegfried: *See—*  
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- Winer, Richard A.: *See—*  
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- Winkelmann, Herbert E., to General Motors Corporation. Window wiper system. 3,689,955, Cl. 15-250,300.
- Winkler, Alfred: *See—*  
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- Winn, Oliver H., to General Electric Company. Wound impedance device. 3,691,435, Cl. 317-256,000.
- Winona Industries, Inc.: *See—*  
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- Wise, Joseph E., to United States of America, Air Force. Vertical junction hardened solar cell. 3,690,953, Cl. 136-39,000.
- Wisner, William R.: *See—*  
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- Wiswell, George C., Jr. Repairing or rehabilitating steel supported H-piles. 3,690,110, Cl. 61-54,000.
- Witz, Samuel, Carleton, Lee T., Anderson, Howard H., Moyer, Rudolph H., and Seufeld, Harold A., said Witz, Anderson and assor. to Aerojet General Corporation and said Seufeld assor. to United States of America, Army. Automatic biological agent detector. 3,690,837, Cl. 23-254,00r.
- Woehrle, Richard E.: *See—*  
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- Wolber, Jorg: *See—*  
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- Wolf, Barnet, to Franco Manufacturing Co., Inc. Towel pillow combination. 3,689,947, Cl. 5-344,000.
- Wolt, David. Pulse reflecting highway signalling system. 3,691,519, Cl. 340-22,000.
- Wolt, Milton, and Diebold, James L., to American Home Products Corporation. 5-Arylbenzof[b][1,7]naphthyridine derivatives. 3,691,168, Cl. 260-283,00s.
- Wolt, Robert L., and Cowlin, Christopher J., to Texaco Inc., mesne. Method of operating a reaction propulsion engine and fuels therefor. 3,690,100, Cl. 60-206,000.
- Wollfram, Kittler: *See—*  
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- Wollman, Herbert: *See—*  
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- Wood, John W., to Black and Decker Manufacturing Company. The Safety lawnmower blade. 3,690,051, Cl. 56-295,000.
- Woodward, Robert Burns. Process for the manufacture of esterified hydroxy compounds. 3,691,042, Cl. 204-158,00r.
- Worley, Lajren D., and Conley, James R., to Coleman Company, Inc. The Pressure-releasing latch assembly for picnic coolers. 3,690,708, Cl. 292-101,000.
- Worster, Hans Edmund, and Pudek, Marian Franciszek, to Bloedel, MacMillan Limited. Two stage soda-oxygen pulping. 3,691,008, Cl. 162-25,000.
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- Wright, Felix William, to A.P.V. Company Limited, The. Plate heat exchangers. 3,690,373, Cl. 165-119,000.
- Wright, Leon W., to Atlas Chemical Industries, Inc. Tungsten oxide promoted and supported nickel catalyst. 3,691,100, Cl. 252-458,000.
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- Yamada, Hideo: *See—*



- Kataoka, Shoji, Tateno, Hiroshi, Fujisada, Hiroyuki, Kawashima, Mitsuo, Komamiya, Yasuo, and Yamada, Hideo, 3,691,481.
- Yamada, Katsuo, to Nissan Motor Company, Limited. Parking brake for automatic transmission. 3,690,416, Cl. 188-69.000.
- Yamagishi, Hidehisa; Yokoi, Fumitoshi; and Takahashi, Tadao, to Nippon Kokan Kabushiki Kaisha. Preventing rusting of steel sheets coated with aqueous slurry of metal powder. 3,690,940, Cl. 117-131.000.
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- Yokoi, Junichi. Device for making lists by copying portions of documents in an integrated form. 3,690,261, Cl. 40-104.040.
- Yokota, Yoshiyuki, Miyagawa, Takashi, Tanaka, Yasuto, and Torii, Tatuki. Stabilization of phosphor slurries. 3,690,929, Cl. 117-100.00b.
- Yonemitsu, Eiichi, Ishika, Tomiya, Suzuki, Tsuyoshi, and Sanada, Akihiko, to Mitsubishi Edogawa Kagaku Kabushiki Kaisha. Process for producing oxalic acid. 3,691,232, Cl. 260-531.00r.
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- Yoshikawa, Mitsuhiro, Nihei, Hiroshi, and Shibasaki, Hiroichi, to Hitachi, Ltd. Method of improving the resolution of an image converter system. 3,691,423, Cl. 315-31.01v.
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- Young, Dean Arthur. Treatment of aluminosilicate. 3,691,099, Cl. 252-450.000.
- Yount, Orrin A. Foldable canopy attachment for a pick-up truck. 3,690,719, Cl. 296-23.00f.
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- Zarouni, Alfred, to Bell Telephone Laboratories, Incorporated. Switching system arranged for time restricted flat rate station-to-station toll calling. 3,691,301, Cl. 179-7.10r.
- Zettler, Charles R., to Packaging Corporation of America. Folding carton. 3,690,543, Cl. 229-39.000.
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- Zwelling, Martin I., and Russell, Robert W., to McGraw-Edison Company. Resin impregnated transformer coil assembly. 3,691,498, Cl. 336-205.000.
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## LIST OF DESIGN PATENTEEES

TO WHOM

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- Breed, Charles P., E. L. Izzi, and D. E. Husby, to Westinghouse Electric Corp. Luminaires. 224,753, 9-12-72, Cl. D48-31.
- Chernack, Milton P., to Delcoron Products, Inc. Clearette holder. 224,760, 9-12-72, Cl. D85-8.
- Cohen, Samuel. Clock radio. 224,749, 9-12-72, Cl. D42-7.
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# CLASSIFICATION OF PATENTS

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230B	3,690,832	31C	3,690,018	167	3,690,057		1R	280	3,690,211	43R	3,690,256
230R	3,690,833	31R	3,690,019		CLASS 58	23R	3,690,143	478	3,690,212	67	3,690,257
232C	3,690,835	37	3,690,020	23R	3,690,058	24R	3,690,144		3,690,213	70R	3,690,258
253TP	3,690,836	39	3,690,021	28D	3,690,059	32	3,690,145	20C	3,690,213	70.2	3,690,259
254R	3,690,837		CLASS 36	63	3,690,061	37	3,690,146	CLASS 88	3,690,214	86.5	3,690,260
	3,690,838	2.5AL	3,690,022	88R	3,690,062	40.5R	3,690,148	1.5R	3,690,214		CLASS 104
260	3,690,839		CLASS 37	125C	3,690,063	40.7	3,690,149		3,690,215	7R	3,690,262
277C	3,690,840	90	3,690,023		CLASS 59	66	3,690,150	12	3,690,215	8	3,690,263
288S	3,690,841	69	3,690,024	35	3,690,064	67.5R	3,690,151	33A	3,690,216	17R	3,690,264
293R	3,690,843		CLASS 60		CLASS 60	67.8R	3,690,152	34	3,690,217	70	3,690,265
294	3,690,846	104.04	3,690,261	23	3,690,065	67.9	3,690,153	185	3,690,218	123	3,690,266
296	3,690,847	152.1	3,690,025	39.27	3,690,095		3,690,154	193	3,690,219	165	3,690,267
300	3,690,848		CLASS 42	39.74R	3,690,093		3,690,155		3,690,220	172S	3,690,268
301SP	3,690,848	77	3,690,026	39.82P	3,690,096	78	3,690,156	17	3,690,220		3,690,269
	CLASS 24		CLASS 43	53B	3,690,097	80	3,690,157		3,690,221		CLASS 105
108	3,689,962	17.6	3,690,028	53R	3,690,098	88A	3,690,159	35RB	3,690,221	197D	3,690,270
	CLASS 28	24	3,690,027		3,690,099	95	3,690,160	36.01	3,690,224	199R	3,690,271
1R	3,689,963	42.25	3,690,029	206	3,690,100	101	3,690,161	37R	3,690,225	366R	3,690,272
	CLASS 29	2	3,690,851	255	3,690,101	117	3,690,162	52	3,690,222		CLASS 106
38C	3,689,965		CLASS 44	267	3,690,103	119R	3,690,163	53R	3,690,223	39R	3,690,904
103C	3,689,966	17	3,690,031	269	3,690,102	151	3,690,164		3,690,226	47Q	3,690,905
116R	3,689,967	161	3,690,030	278	3,690,104		3,690,166	18	3,690,227	302	3,690,906
149.5R	3,689,968		CLASS 46	283	3,690,105	152	3,690,167	33	3,690,227	306	3,690,907
150	3,689,969	45	3,690,032		CLASS 61	155	3,690,167		3,690,231		CLASS 112
155R	3,689,970	46	3,690,033	36R	3,690,107	162	3,690,168	4.5R	3,690,231	121.11	3,690,273
156.8CF	3,689,971	57.6	3,690,034	36	3,690,106	171	3,690,169	10CE	3,690,232	158R	3,690,274
157R	3,689,940		CLASS 49	46	3,690,108	188	3,690,170	10CT	3,690,232	240	3,690,275
157.3R	3,689,941	192	3,690,035	53.64	3,690,109	194B	3,690,171	10C	3,690,233	252	3,690,276
	3,689,972	279	3,690,036	54	3,690,110	230	3,690,172	11R	3,690,235	267	3,690,277
182.5	3,690,849	380	3,690,037	72.3	3,690,111	343R	3,690,173		3,690,237		CLASS 113
183	3,690,850	489	3,690,038		CLASS 62	351	3,690,174	11	3,690,233	1G	3,690,278
200D	3,689,973		CLASS 51	6	3,690,113	361	3,690,175	11.5R	3,690,234	120AA	3,690,279
	3,689,974	9	3,690,066	40	3,690,114	416	3,690,176	13	3,690,238		CLASS 114
203B	3,689,984	11	3,690,067	49	3,690,115	418	3,690,177	42	3,690,240	41	3,690,281
203	3,689,981	13	3,690,068	58	3,690,116	424	3,690,178		3,690,241	43.5	3,690,282
205D	3,689,976	34A	3,690,069	115	3,690,117	429	3,690,179	82	3,690,242	67A	3,690,283
205E	3,689,975	105SP	3,690,070	250	3,690,118	432PS	3,690,180		3,690,877	152	3,690,284
253	3,689,977	165R	3,690,072	331	3,690,119	432R	3,690,181	1R	3,690,878	206R	3,690,285
259	3,689,978		3,690,073	353	3,690,120		3,690,182	1.8	3,690,879	219	3,690,280
401	3,689,979	165.78	3,690,073	476	3,690,121	517B	3,690,187	3	3,690,879		CLASS 116
408	3,689,980									86	3,690,286
										119	3,690,295



124	3,690,287	CLASS 117	37	3,690,950	CLASS 136	213	3,691,007	CLASS 186	206	3,691,049	39R	3,690,503			
6	3,690,909	CLASS 117	83R	3,690,952	CLASS 136	25	3,691,008	CLASS 186	219	3,691,050	42C	3,690,504			
7	3,690,910	86R	3,690,951	146	3,691,009	25	3,691,009	CLASS 187	245	3,691,048	46MS	3,690,505			
17	3,690,911	89	3,690,954	206	3,691,010	206	3,691,010	CLASS 188	284	3,691,051	54	3,690,506			
17.5	3,690,912	226	3,690,955	CLASS 164	25	3,690,966	CLASS 188	1B	298	3,691,052	66	3,690,507			
23	3,690,913	CLASS 137	335	3,690,967	CLASS 164	335	3,690,967	CLASS 188	299	3,691,053	90	3,690,508			
26	3,690,914	54	3,690,935	CLASS 137	335	3,690,967	CLASS 164	69	3,691,054	CLASS 206	75	3,690,509			
33.3	3,690,915	75	3,690,936	CLASS 137	335	3,690,967	CLASS 164	71	3,690,967	CLASS 221	174	3,690,510			
33.5T	3,690,916	81.5	3,690,937	CLASS 137	335	3,690,967	CLASS 164	75K	3,690,967	CLASS 221	188	3,690,512			
34	3,690,917	CLASS 137	335	3,690,967	CLASS 164	335	3,690,967	CLASS 188	1	3,690,967	CLASS 221	188	3,690,512		
39	3,690,918	93	3,690,938	CLASS 137	335	3,690,967	CLASS 164	134	3,690,967	CLASS 221	55	3,690,513			
45	3,690,919	101	3,690,939	CLASS 137	335	3,690,967	CLASS 164	195	3,690,967	CLASS 221	81	3,690,514			
54	3,690,920	344	3,690,940	CLASS 137	335	3,690,967	CLASS 164	203	3,690,967	CLASS 221	136	3,690,515			
57	3,690,921	CLASS 137	335	3,690,967	CLASS 164	335	3,690,967	CLASS 188	131	3,690,967	CLASS 221	136	3,690,515		
57	3,690,922	CLASS 137	335	3,690,967	CLASS 164	335	3,690,967	CLASS 188	131	3,690,967	CLASS 221	136	3,690,515		
68	3,690,923	625.28	3,690,944	CLASS 137	335	3,690,967	CLASS 164	321	3,690,967	CLASS 206	402	3,690,519			
68.5	3,690,924	625.62	3,690,945	CLASS 137	335	3,690,967	CLASS 164	321	3,690,967	CLASS 206	402	3,690,519			
76T	3,690,925	625.65	3,690,946	CLASS 137	335	3,690,967	CLASS 164	321	3,690,967	CLASS 206	402	3,690,519			
77	3,690,926	CLASS 138	30	3,690,947	CLASS 138	298	3,690,947	CLASS 191	44	3,691,012	CLASS 222	9	3,690,525		
93.31	3,690,927	CLASS 138	30	3,690,947	CLASS 138	298	3,690,947	CLASS 191	44	3,691,012	CLASS 222	9	3,690,525		
97	3,690,928	CLASS 138	30	3,690,947	CLASS 138	298	3,690,947	CLASS 191	44	3,691,012	CLASS 222	9	3,690,525		
100A	3,690,931	CLASS 140	63	3,690,949	CLASS 140	315	3,690,949	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
100B	3,690,932	CLASS 140	63	3,690,949	CLASS 140	315	3,690,949	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
106R	3,690,933	CLASS 144	27	3,690,951	CLASS 144	126	3,690,951	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
107.1	3,690,934	CLASS 144	27	3,690,951	CLASS 144	126	3,690,951	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
107.2P	3,690,935	CLASS 144	27	3,690,951	CLASS 144	126	3,690,951	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
122H	3,690,936	34R	3,690,952	CLASS 144	126	3,690,951	CLASS 144	126	3,690,951	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525
122P	3,690,937	39	3,690,953	CLASS 144	126	3,690,951	CLASS 144	126	3,690,951	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525
122S	3,690,938	136R	3,690,954	CLASS 144	126	3,690,951	CLASS 144	126	3,690,951	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525
126GB	3,690,939	232	3,690,955	CLASS 144	126	3,690,951	CLASS 144	126	3,690,951	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525
131	3,690,940	CLASS 146	119	3,690,956	CLASS 146	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
136	3,690,941	CLASS 146	119	3,690,956	CLASS 146	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
138 RF	3,690,942	119	3,690,956	CLASS 146	128	3,690,956	CLASS 146	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525
160R	3,690,944	123	3,690,959	CLASS 146	128	3,690,956	CLASS 146	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525
212	3,690,943	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
215	3,690,945	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
235	3,690,946	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
CLASS 118	3,690,957	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
6	3,690,958	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
48	3,690,959	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
49.1	3,690,960	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
59	3,690,961	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
63	3,690,962	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
112	3,690,963	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
227	3,690,964	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
410	3,690,965	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
629	3,690,966	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
CLASS 119	3,690,967	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
1	3,690,968	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
14.08	3,690,969	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
18	3,690,970	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
CLASS 122	3,690,971	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
11	3,690,972	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
406S	3,690,973	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
CLASS 123	3,690,974	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
32G	3,690,975	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
73V	3,690,976	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
97B	3,690,977	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
119R	3,690,978	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
136	3,690,979	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
CLASS 127	3,690,980	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
46A	3,690,981	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
CLASS 128	3,690,982	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
2A	3,690,983	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
2N	3,690,984	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
2R	3,690,985	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
2V	3,690,986	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
2.05D	3,690,987	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
2.06B	3,690,988	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
66	3,690,989	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
130	3,690,990	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
194	3,690,991	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
214E	3,690,992	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
251	3,690,993	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
275	3,690,994	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
283	3,690,995	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
285	3,690,996	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
305	3,690,997	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
350R	3,690,998	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
354	3,690,999	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192	4A	3,690,949	CLASS 222	9	3,690,525		
419R	3,691,000	CLASS 148	2	3,690,956	CLASS 148	128	3,690,956	CLASS 192							



174.1G	3,691,545	160R	3,690,745	77	3,690,762	58	3,690,780	82	3,690,817	95	3,691,274
196	3,691,546		CLASS 352	88	3,690,763	129	3,690,781	112	3,690,827	116	3,691,279
204	3,691,547	12	3,690,746	91	3,690,764	132	3,690,782	149	3,690,828	119	3,691,280
248P	3,691,548	87	3,690,747	97	3,690,765	146	3,690,783	228	3,690,816	195	3,691,281
261	3,691,549	91	3,690,748	111	3,690,766		CLASS 415	243	3,690,818	200	3,691,282
276	3,691,550	108	3,690,749		CLASS 356	55	3,690,784		3,690,824	304	3,691,185
324A	3,691,551	124	3,690,750	5	3,690,767		3,690,785	264	3,690,825		CLASS 425
347DA	3,691,552	125	3,690,751	41	3,690,769	121	3,690,786	293	3,690,821	21	3,690,794
347DD	3,691,553	174	3,690,752	152	3,690,770		CLASS 416	320	3,690,826	29	3,690,795
	3,691,554		CLASS 353	176	3,690,771	61	3,690,787	334	3,690,822	90	3,690,796
365	3,691,555	23	3,690,753	179	3,690,772	157	3,690,788	338	3,690,823	147	3,690,797
		103	3,690,186	181	3,690,773		CLASS 417	396	3,690,820	166	3,690,798
5PD	3,691,556		CLASS 355	206	3,690,774	203	3,690,789	397	3,690,819	128	3,690,801
6.5SS	3,691,557	3	3,690,754	241	3,690,775	331	3,690,790	561	3,690,829	326	3,690,802
7.7	3,691,558		3,690,757		CLASS 401		CLASS 418	580	3,690,830		3,690,803
112D	3,691,559	4	3,690,755		3,690,776	61	3,690,791		CLASS 424	352	3,690,805
113R	3,691,560		3,690,756	17	3,690,777		3,690,792	28	3,691,270	467	3,690,806
727	3,691,561	10	3,690,758	66	3,690,778	102	3,690,793		3,691,271		CLASS 431
761	3,691,562		3,690,759	266	3,690,779		CLASS 423	57	3,691,272	1	3,690,807
771	3,691,563	16	3,690,760		CLASS 408		3,690,831	63	3,691,273	4	3,690,808
	CLASS 350	43	3,690,761								

D 6—	191	224,730	D13—	1	224,736		14	224,742		224,748	D48—	31	224,753		224,758		
D 9—	23	224,731	D16—	2	224,737	D34—	15	224,743		224,749	D61—	1	224,754	D72—	224,759		
	40	224,732		99	224,738			224,744		224,750				D85—	8	224,765	
	42	224,733	D25—	1	224,739	D35—	2	224,745	D44—	10	224,751	D64—	16	224,756	D88—	3	224,761
	219	224,734	D26—	1	224,740			224,746		26	224,752	D71—	1	224,757	D96—	12	224,762
	243	224,735		13	224,741	D42—	7	224,747									

## (U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama.....	1	Kentucky.....	21	Oregon.....	41
Alaska.....	2	Louisiana.....	22	Pennsylvania.....	42
American Samoa.....	3	Maine.....	23	Puerto Rico.....	43
Arizona.....	4	Maryland.....	24	Rhode Island.....	44
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Canal Zone.....	7	Minnesota.....	27	Tennessee.....	47
Colorado.....	8	Mississippi.....	28	Texas.....	48
Connecticut.....	9	Missouri.....	29	Utah.....	49
Delaware.....	10	Montana.....	30	Vermont.....	50
District of Columbia.....	11	Nebraska.....	31	Virginia.....	51
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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1	3,690,009	3,690,344	3,690,837	7	3,691,085	3,691,100	3,690,134
	3,690,170	3,690,347	3,690,838	8	3,690,018	3,691,113	3,690,139
	3,690,472	3,690,367	3,690,852		3,690,080	3,691,142	3,690,140
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4	3,690,179	3,690,380	3,690,857		3,690,169	3,691,250	3,690,198
	3,690,211	3,690,383	3,690,904		3,690,377	3,689,998	3,690,225
	3,690,290	3,690,405	3,690,928		3,690,392	3,690,013	3,690,279
	3,690,969	3,690,413	3,690,931		3,690,715	3,690,053	3,690,311
	3,691,356	3,690,415	3,690,952		3,691,071	3,690,082	3,690,334
	3,691,395	3,690,417	3,690,968		3,691,109	3,690,119	3,690,410
	3,691,403	3,690,449	3,690,971		3,691,310	3,690,292	3,690,420
	3,691,541	3,690,453	3,690,998		3,690,057	3,690,397	3,690,427
	3,691,563	3,690,473	3,691,007	9	3,689,999	3,690,393	3,690,423
5	3,690,386	3,690,482	3,690,044		3,690,059	3,690,406	3,690,438
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6	3,689,942	3,690,509	3,691,062		3,690,063	3,690,599	3,690,447
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	3,690,004	3,690,555	3,691,099		3,690,337	3,690,702	3,690,467
	3,690,008	3,690,559	3,691,092		3,690,343	3,690,724	3,690,499
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	3,690,049	3,690,609	3,691,342		3,690,704	3,690,272	3,690,613
	3,690,076	3,690,610	3,691,359		3,690,709	3,690,365	3,690,620
	3,690,092	3,690,614	3,691,390		3,690,734	3,690,668	3,690,643
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	3,690,131	3,690,656	3,691,450		3,691,107	3,690,994	3,690,723
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	3,690,182	3,690,677	3,691,477		3,691,368	3,691,497	3,690,753
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	3,690,243	3,690,719	3,691,528		3,690,258	3,689,994	3,690,842
	3,690,244	3,690,732	3,691,528		3,690,302	3,690,002	3,690,860
	3,690,255	3,690,760	3,691,542		3,690,360	3,690,003	3,690,880
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	3,690,285	3,690,807	3,691,549		3,690,805	3,690,088	3,690,909
	3,690,299	3,690,813	3,691,552		3,690,863	3,690,108	3,690,938
	3,690,307	3,690,823	3,691,555		3,691,078	3,690,113	3,691,059
	3,690,318	3,690,827	3,691,557		3,691,097		
	3,690,342	3,690,834	3,691,560				



3,691,064	3,690,190	3,691,521	3,691,156	3,690,935	3,690,997
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3,691,243	3,690,297	3,690,047	3,691,172	3,691,027	3,691,114
3,691,249	3,690,324	3,690,075	3,691,179	3,691,028	3,691,134
3,691,266	3,690,371	3,690,132	3,691,180	3,691,029	3,691,147
3,691,294	3,690,433	3,690,168	3,691,183	3,691,032	3,691,211
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3,691,309	3,690,529	3,690,394	3,691,189	3,691,067	3,691,265
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3,690,212	3,690,174	3,690,042	3,690,121	3,690,579	3,689,964
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3,690,446	3,690,660	3,690,564	3,690,340	3,690,199	3,690,650
3,690,682	3,690,675	3,690,604	3,690,401	3,690,245	3,690,666
3,690,930	3,690,691	3,690,611	3,690,431	3,690,250	3,690,671
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3,691,058	3,690,711	3,690,669	3,690,439	3,690,288	3,690,712
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3,691,101	3,690,722	3,690,678	3,690,456	3,690,366	3,690,742
3,691,158	3,690,726	3,690,727	3,690,457	3,690,384	3,690,771
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3,690,257	3,690,907	3,690,806	3,690,606	3,690,592	3,690,876
3,690,314	3,690,956	3,690,809	3,690,632	3,690,593	3,690,889
3,690,323	3,690,957	3,690,881	3,690,665	3,690,601	3,690,919
3,690,369	3,690,958	3,690,887	3,690,680	3,690,636	3,690,927
3,690,463	3,690,959	3,690,901	3,690,754	3,690,646	3,690,984
3,690,468	3,690,973	3,690,943	3,690,756	3,690,664	3,690,987
3,690,658	3,691,049	3,690,944	3,690,762	3,690,689	3,691,023
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3,691,483	3,691,223	3,690,999	3,690,851	3,690,808	3,691,094
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3,690,023	3,691,256	3,691,017	3,690,872	3,690,825	3,691,166
3,690,056	3,691,262	3,691,040	3,690,874	3,690,866	3,691,168
3,690,071	3,691,336	3,691,043	3,690,877	3,690,878	3,691,178
3,690,073	3,691,352	3,691,052	3,690,882	3,690,899	3,691,182
3,690,074	3,691,382	3,691,092	3,690,888	3,690,912	3,691,233
3,690,079	3,691,383	3,691,095	3,690,891	3,690,933	3,691,235
3,690,129	3,691,397	3,691,125	3,690,892	3,690,953	3,691,281
3,690,143	3,691,398	3,691,133	3,690,908	3,690,981	3,691,332
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3,690,151	3,691,419	3,691,146	3,690,921	3,690,995	3,691,347

3,691,354	3,689,993	3,690,694	3,691,406	3,690,560	3,690,185
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3,691,368	3,690,046	3,690,774	3,691,517	3,690,811	3,690,267
3,691,371	3,690,052	3,690,841	3,691,525	3,690,915	3,690,296
3,691,413	3,690,067	3,691,048	3,691,529	3,690,985	3,690,435
3,691,421	3,690,111	3,691,050	3,690,022	3,690,985	3,690,450
3,691,451	3,690,122	3,691,084	3,690,844	3,691,404	3,690,470
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3,690,586	3,690,534	3,691,385	3,690,458	3,690,569	3,691,430
3,690,794	3,690,557	3,691,400	3,690,486	3,689,972	3,691,433
3,689,958	3,690,600	3,691,402	3,690,539	3,690,130	3,691,493
3,689,971					3,691,553

## DESIGN PATENTS

6 : 224,740	224,748	24 : 224,738	34 : 224,755	224,754	45 : 224,732
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U. S. DEPARTMENT OF COMMERCE  
UNITED STATES PATENT OFFICE  
TRADEMARK REGISTRATION TREATY

*The World Intellectual Property Organization (WIPO) released on July 30, 1972, in Geneva, Switzerland, the third draft of a proposed Trademark Registration Treaty designed to facilitate the international protection of trademarks. This draft Treaty is reproduced below together with the draft Regulations and some of the explanatory materials released by WIPO.*

*The United States has been invited to send a delegation to participate in the discussions of a Committee of Experts scheduled in Geneva from December 5 to 12, 1972, to consider the draft Treaty and Regulations prior to the convening of a Diplomatic Conference in Vienna, Austria, tentatively scheduled from May 7 to June 2, 1973.*

*These documents are published by the Patent Office at this time so that interested parties will have an opportunity to review them and offer comments for consideration in preparation for the December meeting.*

*Interested parties should submit their views or suggestions to the Commissioner of Patents, Washington, D.C., 20231, by November 20, 1972. Further notice concerning the Diplomatic Conference will be published after the Paris Union Assembly meeting in September, which will determine the final scheduling of the Diplomatic Conference.*

Aug. 10, 1972.

ROBERT GOTTSCHALK,  
Commissioner of Patents.

INTRODUCTORY MEMORANDUM  
TO THE JULY 30, 1972, DRAFT OF THE  
TRADEMARK REGISTRATION TREATY  
(prepared by the International Bureau)

[TRT/DC/3]

INTRODUCTION

1. This document, like all the other documents in the TRT/DC series, has been prepared by the International Bureau of WIPO for the diplomatic conference which will be convened for the adoption of the Trademark Registration Treaty. At the time of writing this document, the date and place of that conference are only tentatively fixed for May 7 to June 2, 1973, in Vienna.

2. Documents TRT/DC/1 and TRT/DC/2 contain the drafts of the Trademark Registration Treaty and the Regulations under that Treaty. They are based on the conclusions of the second session of the Committee of Experts on the International Registration of Marks which met at Geneva from May 2 to 8, 1972 (hereinafter referred to as "the Second Committee of Experts").

3. The member States of the Paris Union and 15 intergovernmental and 27 non-governmental organizations, primarily representing trademark owners (particularly private industry), trademark lawyers and trademark agents, were invited. The following were represented:

(a) States: Algeria, Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Cameroon, Canada, Czechoslovakia, Denmark, Finland, France, Germany (Federal Republic), Greece, Hungary, Italy, Japan, Monaco, Netherlands, Norway, Philippines, Poland, Portugal, Romania, San Marino, Senegal, Soviet Union, Spain, Sweden, Switzerland, United Kingdom, United States of America, Yugoslavia (34).

(b) Intergovernmental Organizations: United Nations Conference on Trade and Development, Benelux Trademark Office, Commission of the European Communities, Latin American Free Trade Association, Organization of American States (5).

(c) Non-governmental Organizations: American Bar Association (ABA), American Patent Law Association (APLA), Asian Patent Attorneys Association (APAA), Bundesverband der Deutschen Industrie (BDI), Chartered Institute of Patent Agents, Council of European Industrial Federations (CEIF), Deutsche Vereinigung für Gewerblichen Rechtsschutz und Urheberrecht, European Federation of Agents of Industry in Industrial Property (FEMIPI), Institute of Trade Mark Agents [UK], Inter-

American Association of Industrial Property (ASIPI), International Association for the Protection of Industrial Property (AIPPI), International Chamber of Commerce (ICC), International Federation of Agricultural Producers, International Federation of Patent Agents (FICPI), National Association of Manufacturers (NAM) [USA], New York Patent Law Association (NYPLA), Patent and Trademark Institute of Canada, Trade Marks, Patents and Designs Federation (TMPDF), Union des Fabricants [France], Union of European Patent Agents (UNEPA), Union of Industries of the European Community (UNICE), United States Trademark Association (USTA) (22).

4. Experts of intergovernmental and non-governmental organizations had the same opportunities to participate in the discussions as governmental experts.

5. The conclusions of the Second Committee of Experts are reflected in the report of that Committee (document TRT/II/15).

6. A Working Group consisting of eight States will meet in September 1972 in order to examine a proposal of the Government of Belgium relating to the extra-territorial effect of certain refusals and cancellations. The results of that meeting as well as any other meeting which might be held before the diplomatic conference will be the subject of separate documents.

7. The rest of this document is divided into two parts. Part I gives a brief summary of the Draft Treaty. Part II enumerates some of the main advantages expected from an international registration system of marks as proposed in the Draft Treaty.

8. It is to be noted that, the purpose of this document being to give concise information, many details—frequently quite important—had to be omitted. Only documents TRT/DC/1 and 2 are to be regarded as fully reflecting the proposals.

PART I: BRIEF SUMMARY OF THE DRAFT TREATY

9. *National Registration Effect of International Registrations.* The most important feature of the Draft Treaty, the provision which constitutes its *raison d'être*, is that marks—and by this term both trademarks and service



marks are meant—could be registered internationally, that is, with the International Bureau of the World Intellectual Property Organization (WIPO), and that international registration would have in each of the Contracting States (that is, States party to the Treaty) in which the owner of the mark desires protection the same effect as if the mark had been registered in each and every one of such States.

10. A corollary of this "national registration effect," as important as the effect itself, is that international registrations could be renewed every ten years, and such renewals would maintain the national registration effect in each and every one of such States for the periods for which the international renewal was effected.

11. *International Application.* To achieve protection by international registration of a mark, the owner would file an international application. Only residents and nationals of Contracting States would have the right to file international applications. The international application would identify the applicant, the mark, the goods and/or services in connection with which protection of the mark is desired, and the States ("designated States") in which protection is desired.

12. The goods and/or services would be listed and grouped according to the classes of the International ("Nice") Classification. That Classification has 34 classes for goods, and 8 classes for services. It is used by the national Offices of some 60 countries at the present time.

13. Any Contracting State, including the applicant's own, could be designated. Any number of Contracting States could be designated.

14. A representative may be appointed in the international application for contacts with the International Bureau.

15. The international application could be filed in either English or French. Preparation of the international application would essentially consist in filling in a printed form, distributed free of charge by the International Bureau. Listing the goods and/or services is facilitated by an alphabetical list of practically all conceivable goods and services which accompanies the International Classification of Nice. The said alphabetical list contains the names of some 20,000 products (goods) and services and is available in English, French, German and Spanish—and will soon be available also in Dutch, Italian and Portuguese—in official editions published by the International Bureau. The alphabetical list indicates, by its number, the class to which each product or service belongs and is brought up to date from time to time to cover goods or services which are new.

16. The international application would be subject to the payment of a fee. Part of the fee would be kept by the International Bureau to cover its expenses connected with the publication of the international registration and other processing of the international application. The other part of the fee would belong to the national Offices of the designated Contracting States to cover their expenses connected with the processing of the international registration notified to them by the International Bureau. The amount of the fees payable would depend on the number of the designated States and the number of classes of goods and/or services listed.

17. The International Bureau would check each international application to see whether it complied with the most elementary requirements of any application: Is the applicant sufficiently identified? Is he, on the basis of his nationality or residence indicated by him, entitled to file international applications? Is the reproduction of the mark included? Are goods and/or services listed? Is there at least one State designated? Have the fees been paid? Is the application in one of the prescribed languages (English, French)? Is it signed?

18. It is unlikely that the International Bureau would err in answering such elementary questions. However, if it did, the applicant's rights would still not be affected provided he turns to the national Office of one or more of the designated States for relief. He would have two kinds of relief at his disposal and he would be free to choose between them. One would consist in asking the national Office to request the International Bureau to proceed with the international registration as far as that State (i.e., the State of which it is the national Office) is concerned; if the national Office found that the International Bureau had erred, it would request the Bureau to proceed and that Bureau would comply. The other remedy would consist in filing an application with the national Office for the registration of the mark in the national register of marks of that State (i.e., the State of which it is the national Office); if the national Office found that the International Bureau had erred, it would treat the said national application as if it had been filed on the date on which the erroneously declined international application was filed.

19. *Later Designations.* Any Contracting State not designated in the international application itself could be designated later. This faculty is important because the applicant or owner might have no interest in a given State when he filed but develop an interest in the same State later, and also because a State might not have been a Contracting State when the international application was filed.

20. *Registration, Publication, and Notification.* Unless the international application is declined because of some formal defect, the mark would be registered in the International Register of Marks and all the relevant data—including the reproduction of the mark and the list of goods and/or services—would be promptly published and individually notified to the national Office responsible for the national registration of marks in each of the designated States.

21. The international registration would normally be effected within a few days after receipt of the international application. The international registration date would be the date on which the International Bureau had received the international application. This rule would be subject to an exception when the application contained some serious defect: in such a case the international registration date would be the date on which the defect is corrected ("later-dating"). Any mistake could be corrected within three months. Some less serious defects, if corrected within one month from the date of an invitation to correct, could even be corrected without any "later-dating."

22. The international publication would be made in a weekly gazette of the International Bureau.

23. The individual notifications could not be different from the contents of the publication because they would consist of reprints of the relevant parts of the gazette.

24. The above remarks also hold as far as later designations are concerned.

25. *Refusal of National Registration Effect.* Each designated State could, as far as it is concerned, refuse the national registration effect on the same grounds as those on which it could refuse an application filed with its national Office for registration in the national register of marks. However, grounds incompatible with the Treaty or with the Paris Convention would be excluded. For example, no designated State could require that the application be translated into its national language or that fees other than its share in the international fees be paid to it.

26. Any such refusal would, however, have to be pronounced, or its possible pronouncement announced ("notice of possible refusal")—for example, where the registration has been opposed by a third party and the refusal depends on whether the opposition will be successful—before the expiration of 15 months, counted from the date of the international publication of the interna-

tional registration, or of the later designation, as the case may be.

27. Furthermore, the refusal or notice of possible refusal would have to contain the grounds for the refusal or possible refusal. Although the final decision could be rendered after the expiration of the 15 months period, it would be effective only if it contained and was based on at least one of the grounds indicated in the notice of possible refusal. According to a possible variant, this condition would not apply where the decision was that of a court.

28. *Use of the Mark.* No designated State could refuse the registration effect, cancel it or otherwise impair the rights of the owner on the ground that he had not used his mark before the expiration of three years, counted from the date of the international registration (or the later, designation, as the case may be). No such moratorium on use is, however, required if the mark's international registration was preceded by a national registration or another international registration three years older than the international registration, and the term of this moratorium may be correspondingly reduced where the mark's international registration was preceded by a national registration or another international registration which is less than three years older than the international registration. The moratorium of three years would have to be extended, but never by more than two years, where at the expiration of the third year it was uncertain—because of a pending refusal proceeding—whether the national registration effect would obtain.

29. It is to be noted that the national law of any Contracting State could provide that any action for infringement by the owner of the international registration and based upon such registration may not be brought until the said owner has started using the mark in the said State and any remedy therefrom may relate only to the period of such use.

30. *Declaration of Actual Use.* Routine declarations of actual use could be filed with the International Bureau on an internationally agreed form or in the form prescribed by the national law of the State which requires such declarations.

31. *Declaration of Intent To Use.* Declarations of intent to use connected with any designation and filed with the International Bureau would have the same effect as declarations of intent to use connected with national applications and filed with national Offices.

32. *Preservation of Acquired Rights.* Whenever the owner of a national registration switches over to international registration, his rights acquired under the national registration would not be affected and would also be deemed to be included in the international registration. The same would apply to switching over from international registration under the Madrid Agreement to international registration under the new Treaty.

33. *Right of Priority.* International applications could invoke the priority of earlier national applications, and vice versa. In the former case, the single declaration of priority, made in the international application, would apply to all designated States.

34. *Assignments.* Although their substantive validity would be subject to the national law of each State, assignments and other changes in ownership with respect to some or all of the designated States, or concerning some or all of the goods and/or services listed, could be recorded in the International Register of Marks.

35. *"Union."* The Contracting States would constitute a Union with an Assembly and a Secretariat, the latter being provided by the International Bureau. The Assembly could amend the Regulations subject to a 2/3 and, in some cases, 3/4 majority vote.

36. *Financial Obligations of Contracting States.* Except for the possibility of having to contribute towards a working capital fund, the Contracting States would not

incur any financial obligations and would not have to pay any contributions.

37. *Becoming Party to the Treaty.* Only States members of the Paris Union could become party to the Treaty. Any State could make its acceptance of the Treaty conditional on the acceptance of the Treaty by one, one of two, or two other States specified by it.

38. *Regulations.* The Regulations would be attached to the Treaty and would be adopted at the same time as the Treaty itself.

#### PART II: MAIN ADVANTAGES

39. *Complexity of the Present System.* Today, the owner of a mark who wishes to secure protection of a mark in several States must—unless he can avail himself of the benefits of the Madrid Agreement and the said States are party to that Agreement—separately register the mark in each of those States. The number of such States may be very high. More than 50 is not unusual. The burden placed on the owner is consequently a heavy one: preparation of a separate application for each State; translation into the various languages of those States; filing separately in each of them; being familiar with their widely varying requirements, in particular with their fee structures; keeping an eye on as many different due dates for renewal as there are States in which he wishes protection; transfer of money in as many different currencies as there are such States; uncertainty as to whether he is aware of the latest requirements and the latest fee schedules; uncertainty as to whether the money he transfers to persons or authorities in so many States will arrive in time and will really be applied to the mark he wishes it to be applied to.

40. *Administrative Simplicity Under the Treaty.* Under the Draft Treaty, these difficulties would almost entirely disappear. There would be only one application; no translation, or only one, would be needed; that translation would mainly relate to the list of goods and/or services and would be easy to make on the basis of the official English and French lists of the International Classification; the amount of the fees payable would be easy to compute on the basis of a single schedule of fees; filing would be in one place (with the International Bureau); renewals would be in one place (the same Bureau); only one date repeated once every ten years would have to be remembered for renewal purposes; all fees would be paid in one currency (the Swiss), by a simple transfer, to an agency experienced in currency transfers; it would suffice to know the Treaty and its Regulations—rather than a great number of different national laws—in order to be sure that the application is correct and the renewal is correct.

41. *Shortening of Period of Uncertainty.* The fact that the Treaty would oblige each designated Office to notify refusals or notices of possible refusals within a period of 15 months would reduce the period of uncertainty prevailing without the Treaty as to the ultimate fate of applications in some of the States. Under the Treaty, the applicant would know, once the said period was over, whether he had acquired the national registration effect or, if there was still no final decision, the obstacles it would be necessary to overcome in order to secure that effect.

42. *Declarations of Intent to Use and Routine Declarations of Actual Use.* Such declarations are required in a number of States. Under the Treaty, they could be filed with the International Bureau.

43. *Requirement of Using the Mark.* Laws vary greatly from one another on the question whether the owner of the mark loses his rights because of non-use, particularly during the period around the initial registration. The Treaty would not create uniformity in this respect but it would guarantee to the owner that non-use before, at the time of, or during the first three years after the interna-



tional registration could not result in refusal or cancellation of his mark.

44. *Comparison With the System of the Madrid Agreement.* Most of the advantages mentioned in connection with applications and renewals exist also under the Madrid Agreement. But that Agreement also contains disadvantages. The most important of them is that any international application must be preceded by registration of the mark in the national register of marks of the country of origin of the mark. This may be impossible for reasons peculiar to the national law of that country or because of anticipations existing only in that country. Furthermore, the procedure leading to registration in the country of origin may last for a long time, and may even take years,

causing the loss of any priority right and, in countries whose laws follow the principle "the-earlier-registrant-has-the-stronger-right," even the loss of all rights. All these disadvantages would not exist under the Draft Treaty since, in the proposed system, international applications would be filed direct with the International Bureau and the existence of a registration in the country of origin would not be required.

45. None of the advantages mentioned in connection with the three-year moratorium on the requirement to use the mark, the declarations of intent to use, and the routine declarations of actual use, exists under the Madrid Agreement.

## DRAFT

### TRADEMARK REGISTRATION TREATY

[TRT/DC/1]

(prepared by the International Bureau)

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#### Trademark Registration Treaty

(Third Draft)

##### COMMENTS ON THE TITLE OF THE TREATY

The title proposed is "Trademark Registration Treaty." It is admitted that this title could be objected to on at least two grounds: first, that it uses the word "trademark" instead of "mark" and, second, that it does not specify that the registration in question is an international registration.

To the first objection, one could reply that, in the English language, the first meaning of the word "mark" is not "trademark." Thus "mark" could lead to misunderstandings. That is why it is proposed to use in the title the term "trademark"—which is unequivocal. The text itself uses the word "mark" to convey, to the specialist, the assurance that service marks have not been forgotten.

To the second objection, one could reply that, a treaty being an international matter *par excellence*, the word "Treaty" in the title already conveys the idea that the registration must be of some international kind. Here, too, it is of course true that the text uses the expression "international registration," but for a good reason, namely, to distinguish it from national registration. In the title, that distinction follows, as has been stated, from the juxtaposition of the words "Registration" and "Treaty."

Thus, the title—even if not quite in conformity with the terminology of the text—is believed to convey the essence of its subject matter and to be understandable also to the non-specialist.

Furthermore, it has the obvious advantage of being brief.

Finally, it has the advantage that its initials—TRT—give an abbreviated title which is easy to pronounce and easy to memorize.

The title of this Treaty in French is "Traité concernant l'enregistrement international des marques." It has been proposed that when referred to in French in an abbreviated form, the initials "TEM" be used. The French version of these comments refers to this possibility.

#### INTRODUCTORY PROVISIONS

##### ARTICLE 1

##### Establishment of a Union

The States party to this Treaty (hereinafter called "the Contracting States") constitute a Union for the international registration of marks.

##### COMMENTS ON ARTICLE 1

*Sole paragraph:* The Treaty would be a "special agreement" under Article 19 of the Paris Convention since it would be concluded among States party to that Convention (see Article 37(1) of the Draft Treaty). Article 19 of the Paris Convention reads as follows: "It is understood that the countries of the [Paris] Union reserve the right to make separately between themselves special agreements for the protection of industrial property, in so far as these agreements do not contravene the provisions of this [Paris] Convention."

Each of the seven agreements so far concluded under Article 19 of the Paris Convention, which provides also for the establishment of administrative organs (at least an Assembly of the Contracting States), provides for the constitution of a special "Union" under the "general" Paris Union (constituted by the Contracting States of the Paris Convention). Thus, the constitution of a Union is in conformity with tradition.

##### ARTICLE 2

##### Abbreviated Expressions

For the purposes of this Treaty and the Regulations and unless expressly stated otherwise:

- (i) "international registration" means a registration effected under this Treaty by the International Bureau in the International Register of Marks;
- (ii) "international application" means an application filed for international registration;
- (iii) "applicant" means the natural person who or legal entity which files the international application;
- (iv) "owner of the international registration" means the natural person or the legal entity in whose name the international registration stands in respect of all or fewer than all the designated States and in respect of all or some only of the goods and/or services listed in that registration;
- (v) "mark" means both a trademark and a service mark; \*\*[it also includes a certification mark and a collective mark;]
- (vi) "national mark" means a mark registered by a government authority of a Contracting State having the power to grant registrations with effect in that State; references to a *national mark* shall not be construed as referring also to regional marks;
- (vii) "regional mark" means a mark registered by an intergovernmental authority other than the International Bureau having the power to grant registrations with effect in more than one State;
- (viii) references to any *final decision* or *final refusal* shall be construed as references to a decision or refusal against which there is no remedy, or against which all

remedies have been exhausted, or where the time limit for asking for a remedy against the refusal or decision has expired;

(ix) references to any *publication by the International Bureau* shall be construed as references to publications effected in the official Gazette of that Bureau;

(x) references to the *date of the publication* of the international registration or to the *date of the publication* of the recording of the later designation shall be construed as references to the date of that issue of the official Gazette of the International Bureau in which the international registration or the recording of the later designation, as the case may be, has been published;

(xi) references to any *recording by the International Bureau* shall be construed as references to recordings made in the International Register of Marks;

(xii) "designated State" means any Contracting State in which the applicant or the owner of the international registration desires that such registration produce the effects provided for in this Treaty and which has been identified for that purpose in the international application or any request for the recording of later designations;

(xiii) "national Office" means the government authority of a Contracting State entrusted with the registration of marks; references to a *national Office* shall be construed as referring also to any intergovernmental authority which several States have entrusted with the task of registering regional marks, provided that at least one of those States is a Contracting State, and provided that such authority has been empowered to assume the obligations and exercise the powers which this Treaty and the Regulations provide for in respect of national Offices;

(xiv) "national register of marks" means the register of marks kept by a national Office in which national and/or regional marks are registered;

(xv) "designated Office" means the national Office of the designated State;

(xvi) references to *national law* shall be construed as references to the national law of a Contracting State and, where a regional mark is involved, to the regional treaty providing for the registration of regional marks;

(xvii) "Madrid Agreement" means the Madrid Agreement Concerning the International Registration of Marks;

(xviii) "Union" means the Union referred to in Article 1;

(xix) "Assembly" means the Assembly of the Union;

(xx) "Organization" means the World Intellectual Property Organization;

(xxi) "International Bureau" means the International Bureau of the Organization and, as long as it subsists, the United International Bureaux for the Protection of Intellectual Property (BIRPI); and where any provision refers to the receiving of documents, or of payments, by the International Bureau, it also includes any agency of that Bureau established under Article 30(2) (a) (ix);

(xxii) "Director General" means the Director General of the Organization;

(xxiii) "International Classification" means the classification established under the Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks;

(xxiv) "Regulations" means the Regulations referred to in Article 33.

##### COMMENTS ON ARTICLE 2

These abbreviated expressions seem to be self-explanatory. However, the following might be noted.

*ad (iii) and (iv):* The person who files an international application is called an *applicant* only as long as his application is not accepted. Once the international registration is effected, he is called the *owner of the international registration*.



See, however, Article 4(5) and Rule 1.3 (Associations), both appearing between brackets; they provide, in essence, that certain associations would be assimilated to legal entities.

*ad (iv):* Where any change in the ownership of an international registration is partial—that is, where it relates to fewer than all the designated States but to all or some only of the goods and/or services, or where it relates to all the designated States but to some only of the goods and/or services (see Article 14(1)(a))—the international registration will have at least two owners: the earlier owner, that is, the owner who is owner in respect of those designated State(s) and those goods and/or services for which no change in ownership is recorded in favor of the new owner(s), the new owner(s), that is, the owner(s) who is (are) recorded as such in respect of those designated State(s) and those goods and/or services for which the change in ownership is recorded. The provision means that whenever there is a reference in the Treaty or the Regulations to "the owner of the international registration" and, because of a partial change of ownership, an international registration has two or more owners, the expression shall be construed as referring to the earlier owner as far as the international registration concerns States and goods (and/or services) in respect of which he is still the owner, and it shall be construed as referring to the new owner(s) as far as the international registration concerns States and goods (and/or services) in respect of which the new owner(s) has (have) become owner(s). Consequently, any demand for renewal, any request for limitation of the goods and/or services, any request for recording further changes of ownership (subject to the latter part of Article 14(1)(c)), any appointment of a (new) representative, any withdrawal relating to the designated States and to the goods (and/or services) in respect of which the earlier owner remains owner or the new owner becomes owner will have to be signed by and will become effective in respect of the earlier owner only or the new owner only, as the case may be. However, any later designation of a State not yet designated in the international registration may be the subject of a request for recording by any of the owners. Furthermore, any notification or any refusal under Article 12 will be effective in respect to all the owners who are owners in respect of the State from which the said notification or refusal issues. The same is true in respect of any decision of cancellation where the cancellation proceedings started before the change in ownership.

*ad (v):* The reference to *certification marks* and *collective marks* is placed between brackets because views in the May 1972 Committee of Experts were divided on the question whether such marks should be registrable under the TRT or not. The main argument for making them registrable is that certification and collective marks are frequently used in international trade so that international facilities for their registration are preeminently desirable. The main argument against opening the "TRT route" to certification and collective marks is that national laws usually require more time to examine more evidence than in the case of "ordinary" marks and that the procedures of the TRT are not suitable for accommodating such evidence and time limits. Nevertheless, an attempt is made in this Draft to make such accommodations: see Article 12(2)(a)(i) as to the time limit and Article 18(6) as to evidence.

*ad (vi):* It is to be noted that, whereas in the expression "national mark" the word "national" does not include "regional," the word "national" does include "regional" in the expressions "national Office," "national register of marks," and "national law" (see Items (xiii), (xiv) and (xvi)).

*ad (x):* As to the *Gazette*, see Rule 35 (The Gazette).

It goes without saying that, as is usual in legislative texts, the singular stands also for the plural and masculine pronouns stand also for feminine and neuter pronouns, wherever appropriate.

## CHAPTER I: SUBSTANTIVE PROVISIONS

### ARTICLE 3

#### *International Registrations and International Applications*

(1) The International Bureau shall register marks in

the International Register of Marks according to the provisions of this Treaty and the Regulations.

(2) International registrations shall be effected on the basis of international applications.

#### COMMENTS ON ARTICLE 3

*Paragraph (1):* See Rule 3 (The International Register of Marks).

"Mark" is defined in Article 2(v).

"International Bureau" is defined in Article 2(xxi).

"Regulations" is defined in Article 2(xxiv).

*Paragraph (2):* See Article 4 (Right To File International Applications and To Own International Registrations) and Article 5 (The International Application).

"International registration" is defined in Article 2(ii).

"International application" is defined in Article 2(ii).

### ARTICLE 4

#### *Right To File International Applications and To Own International Registrations*

(1) Any resident or national of a Contracting State may file international applications and may own international registrations.

(2)(a) Any natural person shall be regarded as a resident of a Contracting State if:

(i) according to the national law of that State, he is a resident of that State, or

(ii) he has a real and effective industrial or commercial establishment in that State.

(b) Any natural person shall be regarded as a national of a Contracting State if, according to the national law of that State, he has the nationality of that State.

(3)(a) Any legal entity shall be regarded as a resident of a Contracting State if it has a real and effective industrial or commercial establishment in that State.

(b) Any legal entity shall be regarded as a national of a Contracting State if it is constituted according to the national law of that State.

(4) If the State of the residence and the State of the nationality of the applicant or owner of the international registration are different, and only one of those States is a Contracting State, the Contracting State alone shall be considered for the purposes of this Treaty and the Regulations.

[(5) Where under the national law of any Contracting State an association of natural persons or legal entities may own marks notwithstanding the fact that it is not a legal entity, it shall be entitled to file international applications and to own international registrations, provided it is a resident or national of that State within the meaning of paragraph (3).]

[(6) The national law of any Contracting State may provide that, where the applicant is both a resident and a national of that State, an international application may be filed only if the mark that is the subject of the international application is, at the time of the filing of that application, the subject of an application for registration or is registered, in the name of the said applicant, in the national register of marks of that State in respect of at least those goods and/or services listed in the international application.]

#### COMMENTS ON ARTICLE 4

*Paragraph (1):* See Article 5 (The International Application) and the comments thereon, as well as Rule 4 (Applicants: Owners of International Registrations).

According to Rule 5.2 (Indications Concerning the Applicant), the international application must indicate the nationality and the residence of the applicant. The International Bureau will not examine whether these allegations are true. It is not, and could not reasonably be expected to be, equipped to do so. Whether a person is the national of a State or not,

or the resident of a State or not, is a question which the national laws answer differently, and sometimes not very clearly, particularly in the case of dual nationality. Which law should the International Bureau follow? Thus, the question whether the applicant's allegation is true can be raised only before the national Office or other authorities of each designated State. If the allegation is held to be false, the effect of the Treaty on the protection of the mark can be refused or cancelled by such Office or authority on the ground that it was obtained by fraud or by virtue of some other reasoning compatible with the national law of the particular State.

If paragraph (6) is retained, any Contracting State could disallow the filing of an international application by any person who is both a resident and a national of that State if the mark that is the subject of the international application has not previously been the subject of an application for registration in the national register of marks of that State for the purposes of at least those goods and/or services listed in the international application.

*Paragraphs (2) and (3):* These provisions are based on the concepts used in the Paris Convention, which grants national treatment to "nationals of any country of the Union" (Paris Convention, Article 2(1)) and assimilates to such nationals those "who are domiciled or who have real and effective industrial or commercial establishments in the territory of one of the countries of the Union" (Paris Convention, Article 3). "National law" is defined in Article 2(xvi).

*Paragraph (3):* Supranational companies are entitled to file international applications and to own international registrations if they have a real and effective industrial establishment in at least one of the Contracting States (subparagraph (a)).

*Paragraph (4):* This provision means that it is not necessary that the applicant or owner should have both the nationality and residence in a Contracting State: compliance with one of these criteria is sufficient.

*Paragraph (5):* This paragraph is placed between brackets since there was no agreement in the preparatory discussions on the question whether it should be inserted or omitted.

*Paragraph (6):* The records of none of the preparatory meetings contain any indications as to what the arguments for such a provision would be. As to arguments against it, the report of the October 1971 Committee of Experts states that, without this provision, "the procedure would be uniform and more simple, and discrimination by any country against its own residents would be precluded" (TRT/1/11, paragraph 49). If the provision is retained, the question arises whether non-compliance with it should be sanctioned in the Treaty and, if so, how. If any such sanction had to be provided for, one would have to add to the requirements for international applications (Article 5(1)(a)) the stipulation that international applications filed by a person who is both a national and a resident of a Contracting State making use of the faculty in question must be accompanied by an attestation by the national Office of such State to the effect that a national application has been filed in that State; issuance of the attestation would have to be preceded by a comparison—by the national Office—between the mark and the lists of the goods and/or services appearing (in some cases, in different languages) in the national application and those appearing in the intended international application. Furthermore, the lack of such attestation would have to be included among the grounds (Article 7(2)) for which the international registration would have to be declined by the International Bureau. Such procedures would appear to be complicated. It is for this reason that the Treaty contains no sanction, the matter being left to the national law of the State of which the applicant is a resident and a national.

### ARTICLE 5

#### *The International Application*

(1)(a) The international application shall contain, as specified in this Treaty and the Regulations:

- (i) an indication that it is filed under this Treaty,
- (ii) indications concerning the applicant's identity, residence, nationality, and address,
- (iii) a reproduction of the mark,
- (iv) a list of goods and/or services in which the terms are grouped under the applicable classes of the International Classification and in which each term is com-

prehensible, permits classification in one class only of that Classification, and, as far as possible, is one that appears in the alphabetical list of goods and/or services of the said Classification,

(v) the identification of the designated State or States,

(vi) in respect of any designated State in which the effects provided for in this Treaty are available either as if the mark had been applied for an registered as a national mark or as if the mark had been applied for and registered as a regional mark, an indication of the choice between the two,

\* [(vii) in respect of any designated State in which the effects provided for in this Treaty are desired as for a certification mark or a collective mark, an indication to that effect].

(b) The international application may contain a declaration, as provided in the Regulations, claiming the priority of one or more earlier applications filed in or for any country party to the Paris Convention for the Protection of Industrial Property. Furthermore, the international application may contain such additional indications as are provided for in other provisions of this Treaty and in the Regulations.

(c) The international application shall be in a prescribed language and in the prescribed form, shall be signed as provided in the Regulations, and shall be subject to the payment of the prescribed fees.

(2) International applications shall be filed direct with the International Bureau.

\* [(3)(a) Notwithstanding paragraph (2) but subject to subparagraph (c), the national law of any Contracting State may provide that international applications of residents of that State may be filed through the intermediary of the national Office of the said State.]

(b) Where the international application is filed through the intermediary of a national Office competent under subparagraph (a), that Office shall indicate on the international application the date on which it received that application and shall promptly transmit the same to the International Bureau, as provided in the Regulations.

(c) Any Contracting State on whose territory an agency of the International Bureau, established under Article 30(2)(a)(ix), is functioning shall, at least for the time such agency functions, suspend the application of any provision of its national law referred to in subparagraph (a) and Article 6(3)(a).]

[(4) The national law of any Contracting State may provide that, where the applicant is both a resident and a national of that State, such State may be designated only if, at the time of the filing of the international application, the mark that is the subject of the international application is registered, in the name of the said applicant, in the national register of marks of the said State or, with effect in that State, in the international register under the Madrid Agreement, in respect of at least those goods and/or services listed in the international application.]

#### COMMENTS ON ARTICLE 5

*Paragraph (1)(a), introductory phrase:* See Rule 5 (Mandatory Contents of the International Application).

*Paragraph (1)(a)(i):* See Rule 5.1 (Indication that the International Application is Filed Under the Treaty).

*Paragraph (1)(a)(ii):* See Rule 5.2 (Indications Concerning the Applicant). "Applicant" is defined in Article 2(iii).

*Paragraph (1)(a)(iii):* See Rule 5.3 (Reproduction of the Mark; Colors, Transliteration and Translation). Paragraph (g) of that Rule is placed between brackets since the May 1972 Committee of Experts did not reach any conclusion on the question whether or not it should be retained.

*Paragraph (1)(a)(iv):* See Rule 5.4 (List of Goods and/or Services). It is to be noted that non-compliance with any of the criteria specified in this item cannot be a ground for declining the international application or the request for the



recording of later designation, "International Classification" is defined in Article 2(xiii).

*Paragraph (1)(a)(v):* See Rule 5.5 (Identification of States). The designation of one Contracting State is permitted. If paragraph (4) is retained, any Contracting State could disallow its designation by any applicant who is both a resident and a national of that State if, at the time of filing the international application, the mark that is the subject of the international application is not registered in the national register of marks of the said State for the purposes of at least those goods and/or services listed in the international application. "Designated State" is defined in Article 2(xii).

*Paragraph (1)(a)(vi):* See Rule 5.6 (Choice Between National and Regional Marks). "National mark" and "regional mark" are defined in Article 2(vi) and (vii), respectively. Where the applicant has no choice and can obtain only the effects of a regional mark, see Article 24.

*Paragraph (1)(a)(vii):* See Rule 5.7 (Certification and Collective Marks).

*Paragraph (1)(b):* As to the claiming of priority, see Rule 6.2 (Claiming of Priority). As to the effect of such claiming, see Article 26. "Earlier filings" could be applications under the Treaty (see Article 27) or under regional treaties (OAPI, Benelux); if they are, at least one of the countries "for" which they were filed will have to be indicated.

The additional optional indications provided for in other provisions of the Treaty concern:

the choice of a certain national register (see Article 11(3), and Rule 6.5; Option Under Article 11(3)).  
the declaration stating intent to use the mark in respect of any of the designated States (see Article 18(4), and Rule 6.3; Declaration of Intent To Use the Mark),  
the preservation of rights acquired through national registrations, or through international registrations under the Madrid Agreement (see Articles 20(2) and 21(2), Rule 6.4; Declarations Under Articles 20(2) and 21(2), and Rule 25; Declarations Concerning Earlier National or Madrid Registrations).

The additional optional indications provided for in the Regulations concern:

the appointment of a representative (see Rule 2; Duty Appointed Representatives, and Rule 6.1; Naming of a Representative),  
the indication that the mark is a three-dimensional mark or a sound mark (see Rule 5.3(d)),  
the indication of the trade or business of the applicant (see Rule 6.6; Trade or Business of the Applicant).

*Paragraph (1)(c):* As to language, see Rule 7.1 (Language of the International Application).

As to form, see Rule 8.1 (Printed Forms).

As to fees, see Rule 9 (Fees Payable With the Filing of the International Application), as well as Article 17 (Fees) and Rule 28 (Payment of Fees). Rule 9.3 is placed within brackets. The fees therein referred to are fees whose non-payment has no legal consequences. In view of this fact, the obligation to pay them seems to be illusory and it might be more realistic to omit Rule 9.3.

As to signature, see Rule 8.2 (Copies; Signature). The international application may be signed by the applicant's duly appointed representative (see Article 25(2), second sentence).

*Paragraph (2):* Filing may be made by deposit with the International Bureau or with any agency of that Bureau established according to Article 30(2)(a)(ix) (if and when such agency is established in a place other than Geneva, Switzerland), or through mailing to the said Bureau or such agency. See Rule 26 (Transmittal of Documents to the International Bureau).

If paragraph (3) is retained, it will constitute an exception to this paragraph.

*Paragraphs (3) and (4):* These paragraphs appear within brackets to indicate that opinions were divided in the May 1972 Committee of Experts on the question whether they should be included in the Treaty.

*Paragraph (3):* This paragraph, together with Articles 6(3), 7(1), 7(2)(viii), 7(6), 8(1), 8(2)(a), 27(2), 28(3) and 36(2)(b), as well as Rules 5.8, 10.3(a), 10.7, 14.4, 15.1 and 28.2(i), constitutes a system which, subject to one exception, permits applicants and owners of international registrations residing in a Contracting State whose national law so provides to file their international applications and requests for

the recording of later designations not with the International Bureau in Geneva (Switzerland) but with their own national Offices and ensures that the international registration date and the recording date of the later designation will be the date on which the said application or request reached the national Office, provided it reaches the International Bureau (after being forwarded by the national Office) within one month (see Articles 7(1) and 8(1)). The exception is that this "indirect filing system" is not available where there is an agency of the International Bureau functioning on the territory of the said State (see paragraph (3)(c)).

To the extent that the listed provisions deal with this system, they are not only placed within brackets in the draft texts of the Treaty and the Regulations but the brackets are also preceded by an asterisk to facilitate the location of those provisions.

The main reason advanced in the May 1972 Committee of Experts for this "indirect filing system"—without the said exception—was that it would eliminate the disadvantage from which applicants and owners of international registrations may suffer if they reside in countries at a considerable distance from the place—Geneva—where filings must be effected if they are effected direct, the said disadvantage consisting of the fact that they would have to mail their applications and requests several days earlier than those living closer to Geneva in order to make them arrive on the same day as papers mailed from places close to Geneva.

The main arguments against the indirect filing system were: that it was unnecessary since the said difference in time would not be more than a week if air mail was used, and that was an insignificant difference; that national Offices would assume a great responsibility since any delay in forwarding the papers might make the applicant or owner lose the date on which he had a right to count; that it would probably make the procedure more expensive since it was unlikely that many national Offices would perform the service of forwarding without requiring the payment of a fee; finally, that it complicated and lengthened the Treaty and the Regulations.

A substitute solution for the indirect filing system could consist in providing that international applications may be sent by telegraph or teletypewriter and—where the mark has figurative elements—by telegraph facsimile, and the filing date would be the date of receipt of the telegram, teletype message or telegraph facsimile, provided that it is confirmed, within one month, by an application written on a regular form and signed by the applicant.

Another substitute solution could consist in merely stating *expressis verbis* something that is already implied, namely that, if an international application is sent by telegram, teletypewriter or telegraph facsimile and contains all the required elements except signature, it preserves its date if the missing signature is furnished within one month from the date of an invitation that the International Bureau must issue (see Article 7(3)).

In either of the two cases, the Treaty could provide, as an additional facility, that the date of receipt by the International Bureau of the telegram, teletype message or telegraph facsimile would be considered the filing date even if the fees were received later; provided that they were received within 30 days from the said date.

*Paragraph (3)(a):* Paragraph (2) provides that international applications must be filed direct with the International Bureau.

Article 6(3)(a) contains the same provisions as Article 5(3)(a) but in respect of requests for the recording of later designations. "National Office" is defined in Article 2(xiii).

*Paragraph (3)(b):* See Rule 5.8 (Applications Filed Through the Intermediary of a National Office). As to the time limit of one month which is allowed to elapse between the filing of the international application in the National Office and its arrival in the International Bureau, see Articles 7(1) and 28(3) and (4).

*Paragraph (3)(c):* Article 30(2)(a)(ix) provides that the Assembly may decide upon the establishment of any agency of the International Bureau outside Geneva for the purposes of receiving documents and payments under the Treaty and the Regulations with the same effect as if they had been received by the International Bureau in Geneva. A typical agency under such a provision would consist of one—frequently only part-time—employee who would receive the papers and, before forwarding them to Geneva, would make a copy of them (in case they were lost or delayed in the mail) and would report once or twice a week to the International

Bureau on the numbers of papers sent so that the latter could check whether they had actually been received. Such an agency could, of course, receive international applications and any other documents and any payments under the Treaty irrespective of the nationality or residence of the applicant or the owner of the international registration and therefore could, in practice, serve the residents not only of the State in which it is established but also, for example, of a whole region.

The exception constituted by this provision to the rule contained in Articles 5(3)(a) and 6(3)(a) is motivated by the fact that the residents of a State in which the International Bureau has an agency do not need the indirect filing system since the advantages that the latter would ensure are ensured—without any of the risks inherent in the need for respecting the one-month time limit—by the existence of an agency in that State.

*Paragraph (4):* The main argument used by those in the October 1971 Committee of Experts who wished to retain a provision very similar to that contained in this paragraph was that "some States might wish to prohibit the so-called self-designation" (TRT/I/11, paragraph 49). Those opposing it argued that, without such a provision, "the procedure would be uniform and more simple, and discrimination by any country against its own residents would be precluded" (*loc. cit.*). Even if the provision is maintained, possible non-compliance with it does not seem to require any sanction in the Treaty since the simplest and most effective sanction would consist in refusing the effects provided for in Article 11 by the national Office of the self-designated State. "Madrid Agreement" is defined in Article 2(xvii).

## ARTICLE 6

### Later Designation

(1) Any Contracting State not designated in the international application or whose designation has ceased to have the effects provided for in Article 11 may be designated by the applicant or, once the international registration has been effected, by the owner of the international registration, as provided in the Regulations ("later designation").

(2)(a) Any later designation shall be the subject of a request for the recording of later designations. Several States may be designated in the same request. The request shall be filed direct with the International Bureau and shall contain, as specified in the Regulations:

- an indication that it is for the recording of later designations under this Treaty,
- indications concerning the identity, residence, nationality and address of the applicant or, where the international registration has already been effected, of the owner of the international registration,
- the identification of the international application or, where the international registration has already been effected, of such registration,
- the identification of the later designated State or States,
- in respect of any later designated State in which the effects provided for in this Treaty are available either as if the mark had been applied for and registered as a national mark or as if the mark had been applied for and registered as a regional mark, an indication of the choice between the two,

\* [(vi) in respect of any later designated State in which the effects provided for in this Treaty are desired as for a certification mark or a collective mark, an indication to that effect].

(b) The request may contain a declaration, as provided in the Regulations, claiming the priority of one or more earlier applications filed in or for any country party to the Paris Convention for the Protection of Industrial Property. Furthermore, the request may contain in respect of any State designated therein a list of goods and/or services, provided that, if that list is different from the list of goods and/or services included in the international

registration as published or, if the international registration has not yet been published, from the list of goods and/or services included in the international application after any limitation under Article 7(4), it shall conform with the concept of limitation as defined in the Regulations. Finally, the request may contain such additional indications as are provided for in other provisions of this Treaty and in the Regulations.

(c) The request shall be in a prescribed language and in the prescribed form, shall be signed as provided in the Regulations, and shall be subject to the payment of the prescribed fees.

\* [(3)(a) Notwithstanding the provisions of paragraph (2)(a) but subject to Article 5(3)(c), the national law of any Contracting State may provide that requests for the recording of later designations by residents of that State may be filed through the intermediary of the national Office of the said State.

(b) Where the request for the recording of later designations is filed through the intermediary of a national Office competent under subparagraph (a), that Office shall indicate on the request the date on which it received that request and shall promptly transmit the same to the International Bureau, as provided in the Regulations.]

[(4) The national law of any Contracting State may provide that, where the applicant or the owner of the international registration is both a resident and a national of that State, such State may be designated only if, at the time of the filing of the request, the mark that is the subject of the request is registered, in the name of the said applicant or owner, in the national register of marks of the said State or, with effect in that State, in the international register under the Madrid Agreement, in respect of at least those goods and/or services to which the request refers.]

### COMMENTS ON ARTICLE 6

*Paragraph (1):* Any later designation may relate not only to a State which was never designated but also to one whose designation ceased to have effect (because it was withdrawn, refused, cancelled or not renewed). Where it ceased to have effect because of refusal or cancellation, such designation would generally make sense only if the reason for refusal or cancellation no longer existed. "Owner of the international registration" is defined in Article 2(iv).

Requests for recording later designations may be filed before or after international registration. They may relate to one or several Contracting States.

*Paragraph (2)(a), introductory sentences:* See Rule 10 (Mandatory Contents of the Request for Recording of Later Designations).

In connection with the word *request*, the following terminology of the Draft may be noted: a petition for international registration is called an *application*, a petition for the recording of a later designation is called a *request*, a petition for renewal is called a *demand*; furthermore, only applications lead to registration, all other petitions lead to recording.

As to the word *direct*, see Rule 26 (Transmittal of Documents to the International Bureau); the transmittal of the request may consist in depositing with or mailing to the International Bureau or any agency thereof. See also paragraph (3).

As to the meaning of "recording," see Article 2(xi).

*Paragraph (2)(a)(i):* See Rule 10.1 (Indication that the Request is for Recording of Later Designations).

*Paragraph (2)(a)(ii):* See Rule 10.2 (Indications Concerning the Applicant or the Owner of the International Registration). The indication of the residence and nationality of the applicant or owner is necessary since between the time of the filing of the international application and the time of the filing of the request for recording later designations his residence or nationality may undergo changes which no longer allow him to own international registrations. His address may also have changed.

*Paragraph (2)(a)(iii):* See Rule 10.3 (Identification of the International Application or International Registration).



Paragraph (2)(a)(iv): See Rule 10.4 (Identification of the Later Designated State). See also paragraph (4).

Paragraph (2)(a)(v): See Rule 10.5 (Indication of the Choice Between National and Regional Marks).

Paragraph (2)(a)(vi): See Rule 10.6 (Certification and Collective Marks).

Paragraph (2)(b): As to the claiming of priority, see Rule 11.1 (Claiming of Priority) and the comments on Article 5(1)(b).

As to the possibility of presenting a more limited list of goods and/or services in respect of any later designated State than the list appearing in the international registration, etc., see Rule 11.4 (List of Goods and/or Services).

The additional optional indications provided for in other provisions of the Treaty concern:

the choice of a certain national register (see Article 11(3), and Rule 11.5: Option Under Article 11(3)),

the declaration of intent to use the mark in respect of the designated State (see Article 18(4), and Rule 11.2: Declaration of Intent To Use the Mark),

the preservation of rights acquired through national registrations, or through international registrations under the Madrid Agreement (see Articles 20(2) and 21(2), Rule 11.3: Declarations Under Articles 20(2) and 21(2), and Rule 25: Declarations Concerning Earlier National or Madrid Registrations).

Paragraph (2)(c): As to language, see Rule 7.2 (Language of the Request for Recording of Later Designations).

As to form, see Rule 12 (Form of the Request for Recording of Later Designations).

As to fees, see Rule 13 (Fees Payable With the Request for Recording of Later Designations), as well as Article 17 (Fees) and Rule 28 (Payment of Fees).

As to signature, see Rule 12.2 (Copies; Signature). The request may be signed by the duly appointed representative (see Article 25(2), second sentence).

Paragraph (3): See the comments on Article 5(3).

Paragraph (4): See the comments on Article 5(4).

#### ARTICLE 7

##### International Registration or Declining of the International Application

(1) [No Defects] Subject to paragraphs (2) to (5), the International Bureau shall promptly effect the international registration as applied for, and the date under which such registration shall be effected ("international registration date") shall be the date on which the international application was received by the International Bureau \* [or, in the case of an international application filed through the intermediary of a national Office under Article 5(3), the date on which it was received by that Office provided that the said application is received by the International Bureau before the expiration of one month from that date].

(2) [Defects Which Necessarily Entail a Later Registration Date]

(a) Where the International Bureau finds any of the following defects, that is to say, where:

- (i) the international application does not contain an indication that it is filed under this Treaty,
- (ii) the international application is in a language other than one of the prescribed languages,
- (iii) the international application contains no indications concerning the residence or nationality of the applicant or only such indications as do not permit the conclusion that he has the right to file international applications,
- (iv) the international application contains no indications concerning the applicant's identity and address or only such indications as do not permit him to be identified and reached by mail,
- (v) the international application does not include the reproduction of the mark,

(vi) the international application does not contain a list of goods and/or services,

(vii) the international application does not designate any Contracting State,

(viii) no fees have been received by the International Bureau on or before the date on which the international application is received by that Bureau \* [or, where the international application is filed through the intermediary of a national Office under Article 5(3), no fees have been received by the International Bureau within one month from the date on which that Office received the international application],

(ix) the amount of the fees received by the International Bureau by the date referred to in item (viii) does not attain the amount ("minimum amount") fixed in the Regulations,

it shall invite the applicant to correct the defect.

(b) If the defect is not corrected within three months from the date on which the International Bureau has received the international application, the International Bureau shall decline that application.

(c) If the defect is corrected within the time limit referred to in subparagraph (b) and unless the international application is declined under paragraph (3)(b), the International Bureau shall effect the international registration, and the international registration date shall be the date on which that Bureau receives the required correction or the prescribed amount of the fees, unless a later date is applicable under paragraph (3)(d).

(3) [Defects Which Do Not Necessarily Entail a Later Registration Date] (a) Where the International Bureau finds any of the following defects, that is to say, where:

- (i) the amount of the fees received by the International Bureau by the date referred to in paragraph (2)(a)(viii) is less than the amount prescribed but attains the minimum amount,
- (ii) the international application does not contain, in respect of any designated State to which Article 5(1)(a)(vi) applies, the indication of the choice referred to in the said provision,
- (iii) the international application is not signed,

it shall invite the applicant to correct the defect.

(b) If the defect is not corrected within three months from the date on which the International Bureau has received the international application, the International Bureau shall decline that application or, if the only defect which is not corrected within the said time limit is the defect referred to in subparagraph (a)(ii), the International Bureau shall decline to record the State concerned as a designated State.

(c) If the defect is corrected before the expiration of one month from the date of the invitation referred to in subparagraph (a) and unless the international application is declined under subparagraph (b) or paragraph (2)(b), the International Bureau shall effect the international registration, and the international registration date shall be the date referred to in paragraph (1), unless a later date is applicable under paragraph (2)(c).

(d) If the defect is corrected later than at the expiration of one month from the date of the invitation referred to in subparagraph (a) but earlier than at the expiration of three months from the date on which the International Bureau has received the international application, and unless the international application is declined under paragraph (2)(b), the International Bureau shall effect the international registration, and the international registration date shall be the date on which that Bureau receives the required correction or payment, unless a later date is applicable under paragraph (2)(c).

(4) [Classification Causing Increase in Fees] (a) Where the International Bureau finds that, by classifying any of the terms appearing in the list of goods and/or services in or also in a class or classes of the International Classification in which such term was not classified in the international application as filed, the amount of the fees required is higher than if that term had not been so classified, the invitation referred to in paragraph (2)(a) or (3)(a) shall contain appropriate explanations and shall indicate that the applicant may limit the list of goods and/or services.

(b) If, within three months from the date on which the International Bureau has received the international application, it receives from the applicant a statement which limits the list of goods and/or services in conformity with the concept of limitation as defined in the Regulations, the International Bureau shall modify the list of goods and/or services accordingly and, if such modification entails a change in the prescribed amount of the fees, such change shall be taken into account by the International Bureau in determining that amount and in applying paragraph (2)(b), (2)(c), (3)(b), (3)(c), or (3)(d), as the case may be.

(5) [Details] (a) The Regulations shall provide for the details of the procedure under paragraphs (1) to (4).

(b) Failure to send or receive any invitation referred to in paragraphs (2) to (4), or any delay in dispatching or receiving it, or any error therein, shall not extend the time limits fixed in those paragraphs and shall not affect any obligation to decline the international application.

(c) Where the international application is declined, the International Bureau shall reimburse to the applicant such amounts as are specified in the Regulations.

\* [(6) [Defects Peculiar to Indirect Filing] Where the international application filed through the intermediary of a national Office under Article 5(3):

- (i) does not indicate that the applicant is a resident of the State through the intermediary of whose national Office the international application was filed, or
- (ii) does not contain a statement by the said national Office indicating the date on which that Office received the international application, or
- (iii) contains the said statement indicating a date which precedes by more than one month the date on which the International Bureau receives the international application,

that application shall be treated as if it had been filed direct with the International Bureau on the date it reached that Bureau.]

#### COMMENTS ON ARTICLE 7

Generally: This Article mainly deals with the international registration, with the possible defects in the international application which may entail the declining of the international application, and with the possible defects in the international application as a consequence of which the international registration may not be effected under the date on which the international application was received but under the date on which the defect was remedied ("later-dating"). Insufficiency of fees is one of the possible "defects" in an international application.

Whereas paragraph (1) deals with the normal situation, namely, where there is no defect in the international application, the rest of the Article deals with abnormal situations.

It is to be noted that, where the International Bureau declines the international application or, more precisely, declines to give the status of an international application to what purports to be an international application and such declining is the result of an error by the International Bureau, the applicant may alert it to its error and the International Bureau may come back on its decision. But even if it perseveres in its error, all the consequences of that error can be avoided by making use of the possibilities offered to the applicant by Article 9 (Avoiding the Effects of Declining).

Where the error of the International Bureau does not result in declining the international application but causes some other prejudice—for example, unjustified later-dating—and the International Bureau perseveres in its error, that prejudice, too, can be avoided by making use of the possibilities offered by Article 29 (Correction of Errors of the International Bureau).

Paragraph (1): As to the registration, see Rule 3.1 (Keeping of the Register).

As to the provision placed between brackets, see the comments on Article 5(3).

Paragraph (2)(a): These are defects so basic that as long as they are not corrected the papers called an "international application" do not really amount to one. That is why the international registration date cannot be the date on which the papers were received but only the date on which the defects were corrected ("later-dating").

Paragraph (2)(a)(i): See Article 5(1)(a)(i) and Rule 5.1 (Indication that the International Application is Filed Under the Treaty).

Paragraph (2)(a)(ii): See Article 5(1)(c) and Rule 7.1 (Language of the International Application).

Paragraph (2)(a)(iii): It is to be noted that the ground for declining as defined in this provision allows non-compliance with certain provisions of Article 5(1)(a)(ii) and Rule 5.2 (Indications Concerning the Applicant). In particular, although Article 5(1)(a)(ii) and Rule 5.2(b) require that both the nationality and the residence of the applicant be indicated, the international application may not be declined if one of them is missing and the existence of the other permits the conclusion that the applicant has the right to file international applications.

Paragraph (2)(a)(iv): It is to be noted that the ground for declining as defined in this provision permits non-compliance with certain provisions of Article 5(1)(a)(ii) and Rule 5.2 (Indications Concerning the Applicant). In particular, although Article 5(1)(a)(ii) requires that the applicant's address be indicated and Rule 5.2(c) defines the meaning of address, any indication that permits him to be reached by mail will prevent declining of the international application.

Paragraph (2)(a)(v): See Rule 5.3 (Reproduction of the Mark, etc.).

Paragraph (2)(a)(vi): See Rule 5.4 (List of Goods and/or Services). As to certain defects in the list, see the comments on paragraph (4).

Paragraph (2)(a)(vii): See Rule 5.5 (Identification of the Designated State or States).

Paragraph (2)(a)(viii): See Rule 9 (Fees Payable with the Filing of the International Application). As to the provision appearing between brackets, see the comments on Article 5(3).

Paragraph (2)(a)(ix): See Rule 14.2 (Minimum Amount Under Article 7).

Paragraph (2)(a), last nine words: See Rule 14.1 (Invitations Under Article 7).

It is to be noted that certain imperfections in the international application are not sanctioned by declining the application. For example, where the requirement that the reproduction of certain marks must be accompanied by a transliteration or translation (Rule 5.3: . . . Transliteration and Translation), is not respected or where the requirement that goods and/or services must be grouped according to the classes of the International Classification (Rule 5.4: List of Goods and/or Services) is not respected, the International Bureau will itself proceed with the transliteration, translation or grouping (see the cited Rules).

Another example is that, although the applicant is supposed to use a printed form (see Rule 8.1: Printed Forms), there is no legal consequence if he does not do so.

Paragraph (2)(b): As to the procedure, see the comments on paragraph (5).

Paragraph (2)(c): This is one of the cases of "later-dating." Paragraph (3)(d) is another case of "later-dating," whereas paragraph (3)(b) deals with a case of declining.

Paragraph (3)(a): These are defects which, if corrected within a certain period of time, will not cause "later-dating."

Paragraph (3)(a)(i): The date referred to in paragraph (2)(a)(viii) is the date on which the International Bureau receives the international application or, where the application is filed through the intermediary of a national Office, the date is one month after that on which that Office received the application. As to the minimum amount, see Rule 14.2 (Minimum Amount Under Article 7).



Paragraph (3)(a)(ii): The choice referred to in Article 5(1)(a)(vi) is a choice between the effects of a regional mark and those of a national mark. See Rule 5.6 (Indication of the Choice Between National and Regional Marks).

Paragraph (3)(a)(iii): See Article 5(1)(c) and Rule 8.2 (Copies; Signature).

Paragraph (3)(a), last nine words: See Rule 14.1 (Invitations Under Article 7).

Paragraph (3)(b): As to procedure, see the comments on paragraph (5).

It is to be noted that, where the only defect is the defect referred to in subparagraph (a)(ii) and it concerns some only of the designated States, the international registration shall be effected but only in respect of the other designated States.

Paragraph (3)(c): This is a case where the international registration date will be the same as if the international application had contained no defect, and will therefore, in the case of direct filing, be the date on which the international application was received by the International Bureau (see paragraph (1)).

Paragraph (3)(d): This is one of the cases of "later-dating." Paragraph (2)(c) is another case of "later-dating," whereas paragraph (2)(b) deals with a case of declining.

Paragraph (4): According to Article 5(1)(a)(iv), the international application must contain a list of goods and/or services and in that list

- (i) the terms must be grouped under the applicable classes of the International Classification,
- (ii) each term must be comprehensible,
- (iii) each term must permit classification in one class only of the International Classification,
- (iv) each term must, as far as possible, be one which appears in the alphabetical list of goods and/or services of the International Classification.

If the international application contains no list at all, it will be declined unless a list is furnished within three months (see Article 7(2)(a)(vi), (b) and (c)).

If the terms are not grouped according to the International Classification or if any term is not shown under the class to which it belongs, the International Bureau will, after giving the applicant an opportunity to question its (the Bureau's) opinion, proceed with the grouping or the proper classification, as the case may be (see Rule 5.4(b)). Such an operation may or may not cause the paid amount of fees to be insufficient. If the amount of the fees is insufficient and if the difference is paid up within a certain time limit, the international registration will be effected without "later-dating" (see paragraphs (3)(b) and (4)(c)); if it is paid up within another time limit, it will be effected with "later-dating" (see paragraphs (2)(c), (3)(d) and (4)(b)); if it is not paid up within the latter time limit, the international application will be declined (see paragraphs (2)(b), (3)(b), (4)(b)), provided, however, that the applicant may, instead of paying the difference, choose to limit the list and, where such limitation reduces the difference in the fees, the limitation will have the same effect as if the difference had been paid (see paragraph (4)(b)).

If any term is incomprehensible, and if the International Bureau maintains that it is incomprehensible even after an explanation between the International Bureau and the applicant, it will be left in the class or classes in which it was indicated in the international application (see Rule 5.4(b)). If in respect of any incomprehensible term no class was indicated in the international application, it will be classified in all classes of the International Classification (see Rule 5.4(b)); such classification may result in the procedure and consequences described in the preceding paragraph.

If any term does not permit classification in one class only of the International Classification, it will be classified in each of the applicable classes (Rule 5.4(b)); such classification may result in the procedure and consequences described in the paragraph before the preceding paragraph.

If any of the terms is not a term appearing in the alphabetical list of goods and/or services of the International Classification, this fact will have no legal consequences except where the term is incomprehensible, in which case it will be treated as described in the paragraph before the preceding paragraph.

Paragraph (4)(a): See the comments on paragraph (4), above.

Paragraph (4)(b): See the comments on paragraph (4), above.

Paragraph (5)(a): See Rule 14 (Defects in the International Application).

Paragraph (5)(b): This provision means that, even where the invitation to correct a defect which causes the declining or the "later-dating" of the international application is not sent or is sent later than it should, or is not received or is received later than it should, or is not correct, the declining or "later-dating" will issue. The invitation to correct is, in fact, regarded as assistance to the applicant but not an assistance the lack of which could excuse defects for which the applicant alone is responsible. However, there is no reason to believe that the assistance will not be forthcoming or that it will not be forthcoming in time or that it will be incorrect.

Paragraph (5)(c): See Rule 14.3 (Notification, and Reimbursement of Certain Fees, Under Article 7(5)).

Paragraph (6): This provision deals with certain possible defects connected with indirect filing; the consequence of such defects will invariably be "later-dating" and never declining.

Paragraph (6)(i): See Article 5(3)(a), which allows filing through the intermediary of a national Office only to residents of the State whose national Office is the forwarding Office.

Paragraph (6)(ii): See Article 5(3)(b), which requires the indication of the date in question.

Paragraph (6)(iii): See the proviso of the text appearing within brackets in Article 7(1) ("provided that the said application is received by the International Bureau within one month from that date [i.e., the date on which it was received by the said Office]").

Paragraph (6), last twenty-three words: This provision means that, if the indirect filing suffers from any of the three defects described in items (i) to (iii), the only consequence will be "later-dating." In other words, these defects can never result in declining.

#### ARTICLE 8

##### Recording or Declining of Later Designations

(1) Subject to paragraph (2), the International Bureau shall promptly effect the recording of any later designation as requested, and the date under which such recording shall be effected ("recording date of the later designation") shall be the date on which the request for the recording of the later designation was received by the International Bureau \* [or, in the case of a request filed through the intermediary of a national Office under Article 6(3), the date on which it was received by that Office provided that the said request is received by the International Bureau before the expiration of one month from that date].

(2)(a) The provisions of Article 7(2) to (6) shall apply, *mutatis mutandis*, to the recording of later designations and declining of requests for the recording of later designations, provided that, once the international registration has been effected, any reference to the applicant shall be considered a reference to the owner of the international registration.

(b) Notwithstanding subparagraph (a), items (v) and (vi) of Article 7(2)(a) shall be considered to have been replaced by the following:

"(v) the request does not identify the international application or, once the international registration has been effected, such registration."

(c) Notwithstanding subparagraph (a), Article 7(3)(a) shall be considered to have been completed by the following:

"(iv) any list of goods and/or services contained in the request does not conform with the requirements of Article 6(2)(b), second sentence."

#### COMMENTS ON ARTICLE 8

Generally: This Article mainly deals with the recording of later designations, with the possible defects in the request for the recording of later designations ("request") which may entail the declining of the request, and with the possible defects in the request as a consequence of which the recording

of the later designation may not be effected under the date on which the request was received but under that on which the defect was remedied ("later-dating"). Insufficiency of fees is one of the possible "defects" in a request.

In its results, the Article parallels Article 7, which deals with the same questions as far as the international application is concerned. Consequently, the comments made under Article 7 apply also to this Article, subject to the following observations.

Paragraph (1): This paragraph deals with the normal situation, namely, where there is no defect in the request.

As to recording, see Rule 3.1 (Keeping of the Register).

As to the provision placed between brackets, see the comments on Article 5(3).

Paragraph (2)(a): As to Article 7(2) to (6), see the comments under those provisions.

Paragraph (2)(b): Among the grounds which always cause "later-dating" and may cause declining in the case of international applications, there are two which are inapplicable in the case of requests.

One is contained in Article 7(2)(v) and is the case where the international application does not include the reproduction of a mark; since a request necessarily relates to an international application or international registration in which the mark is already identified, this provision is replaced by one which requires that the request identify the said application or registration.

The other is contained in Article 7(2)(vi) and is the case where the international application does not contain a list of goods and/or services. The request does not have to contain such a list and, if it does not, the list contained in the international registration as first published or, if not yet published, that contained in the international application shall apply also to the States designated in the request. The request may, however, contain a list but, if it is different from the said "original" list, it must conform with the concept of limitation. That concept is defined in Rule 22.2 (Concept of Limitation). If non-compliance with this requirement is corrected within one month from the date of the invitation to correct, "later-dating" will be avoided. If corrected later but before the expiration of three months from the date of the filing of the request, it will cause "later-dating." Failure to correct will cause declining. All of this results from Article 8(2)(c).

Paragraph (2)(c): See the third paragraph of the comments on paragraph (2)(b).

#### ARTICLE 9

##### Avoiding the Effects of Declining

(1) Where the International Bureau has declined the international application or a request for the recording of later designation, the applicant or the owner of the international registration may, within two months from the date of the notification of the declining, file with the national Office of any State designated in the declined international application or declined request:

(i) a petition for the purpose of requesting the International Bureau to proceed, in respect of that State, where the international application was declined, with the international registration and the recording of the designation of the said State or, where the request for the recording of the later designation was declined, with the recording of the designation of that State, or

(ii) an application for the registration, in the national register of marks ("national application"), of the mark that is the subject of the declined international application or declined request, in respect of all or some of the goods and/or services indicated in the said international application or the said request, such application complying with all the requirements of the national law of the said State for the filing of applications for the registration of marks in the national register of marks.

(2) If the national Office or any other competent authority of the said State finds that the declining, by the

International Bureau, of the international application or of the request for the recording of the later designation of that State was unjustified under this Treaty or the Regulations, or that the declining was based on the fact that there was a delay in meeting a time limit which must be excused by virtue of Article 28(1), then:

(i) where a petition has been filed under paragraph (1)(i), the said national Office shall request the International Bureau to proceed as provided in that paragraph, and the International Bureau shall proceed as requested, and the international registration date or the recording date of the later designation shall be the same as if the declining had not taken place,

(ii) where a national application has been filed under paragraph (1)(ii), that application shall, provided it complies with all the requirements of the national law of the said State for the filing of applications for the registration of marks in the national register of marks, be treated as if it had been filed on the date which would have been the international registration date or the recording date of the later designation had the declining not taken place.

(3) The applicant or owner of the international registration who files a petition under paragraph (1)(i) shall, at the time of filing the petition, transmit a copy of that petition to the International Bureau. If the petition relates to a mark which is already registered in the International Register of Marks, the International Bureau shall, as provided in the Regulations, record and publish the fact that it has received a copy of such petition; otherwise it shall keep the said copy in its files.

#### COMMENTS ON ARTICLE 9

Paragraph (1): This paragraph provides for a choice between two possibilities of avoiding the effects of any error by the International Bureau resulting in the declining of the international application or of the request for the recording of a later designation. The choice lies with the applicant (or the owner of the international registration), and the decision on the question whether the International Bureau has erred or not rests with the national Office of any designated State. The applicant or owner may either ask the designated Office to request the International Bureau to proceed, in respect of the State of that Office, with the international registration or the recording of the later designation (item (i)), or, alternatively, he may ask for his mark to be registered in the national register of marks of the said State (item (ii)), and, if the designated Office finds that the International Bureau has made an error, the applicant's or owner's request will be fulfilled and the effective date of the registration or recording will be the same as if the error had not occurred (see paragraph (2)). Thus the Treaty provides for complete guarantees against any error made by the International Bureau in declining an international application or a request for the recording of a later designation. Guarantees against errors by the International Bureau in respects other than the said erroneous declining are provided for in Article 29.

See Rule 16.2 (Information Available to National Offices) and Rule 16.3 (Information Furnished by the National Office).

Paragraph (2): See the comments on paragraph (1), above.

Paragraph (3): See Rule 16.1 (Recording and Publication Under Article 9(3)).

#### ARTICLE 10

##### Publication and Notification

(1) International registrations and recordings of later designations shall be promptly published by the International Bureau, as provided in the Regulations.

(2) International registrations and recordings of later designations shall be promptly notified by the International Bureau to the national Offices of each designated State, as provided in the Regulations.



## COMMENTS ON ARTICLE 10

*Paragraph (1):* The publication will be effected in the Gazette of the International Bureau, since Article 2(1x) provides that "references to any publication by the International Bureau shall be construed as references to publications effected in the official Gazette of that Bureau."

As to the contents of the publication, see Rule 17.1 (Contents of Publication of International Registrations) and Rule 17.2 (Contents of Publication of Recordings of Later Designations). The publication will be effected in English and French (see Rule 34.3: Languages of the Gazette), normally within between ten and twenty days from the international registration date if it is assumed that preparations for the registration and publication will last approximately ten days and if it is considered that the Gazette will be weekly (see Rule 35.2: Frequency of Issue of the Gazette).

The Regulations contain no provision on the question whether the registration of a mark relating to goods and/or services belonging to several classes of the Nice Classification should be published as one item or as many items as there are classes. The matter will be regulated in the Administrative Instructions. The present intention is to proceed as follows. The Gazette will have a separate section for each class of the Nice Classification. Each registration which relates to one class only will be published in the section corresponding to that class. Where any registration relates to several classes it will be published in the section corresponding to that class which has the lowest number among the said classes, whereas in each other relevant section merely the international registration number or international later designation number, a reproduction of the mark, and the page number of the Gazette on which the registration appears will be mentioned. The same principle would apply also to the publication of the recording of later designations.

As to access to information through other means than the Gazette, see Rule 36 (Copies and Other Information Available to the Public).

*Paragraph (2):* See Rule 18 (Notification of International Registrations and Recordings of Later Designations), according to which the notification will essentially consist of a reprint of the relevant passages in the Gazette. However, where the international application or the request for the recording of the later designation contains a declaration of intent to use the mark, the notification to the interested designated Office will also include a copy in full of that application or request (see Rule 18.1(III)).

## ARTICLE 11

*Effects of International Registration and of Recording of Later Designation*

(1) [National Application Effect] The international registration of a mark and the recording of any later designation, published and notified as provided in Article 10, shall have the same effect in each designated State as if an application for the registration of the mark in the national register of marks had been filed with the national Office of that State on the international registration date or on the recording date of the later designation, as the case may be.

(2) [National Registration Effect] Furthermore, the said international registration and recording shall, subject to Articles 12 and 13, have the same effect in each designated State as if the mark had been registered in the national register of marks of that State; such effect shall come into existence in any designated State:

- (i) where no refusal or notice that a refusal may eventually be pronounced ("notice of possible refusal") has been notified by the national Office of that State within the time limit fixed in Article 12(2)(i), at the expiration of the said time limit or on such earlier date as may be prescribed by the national law of that State,
- (ii) where a refusal or a notice of possible refusal has been notified by the national Office of that State within the time limit fixed in Article 12(2)(i), if and when, and to the extent to

which, the refusal is reversed by a final decision or the final decision taken in the proceedings referred to in the notice of possible refusal results in acceptance of the effect provided for in this paragraph,

and shall be deemed to have started as of the international registration date or the recording date of the later designation, as the case may be.

(3) [Several National Registers] Where, in any designated State, there is more than one national register of marks, the reference in paragraphs (1) and (2) to the national register of marks shall be construed as a reference to that national register which affords the highest degree of protection, unless another register is indicated in the international application or the request for the recording of the later designation. In the case of such indication, the reference in paragraphs (1) and (2) to the national register of marks shall be construed as a reference to the register so indicated.

## COMMENTS ON ARTICLE 11

*Paragraphs (1) and (2):* These two paragraphs state the two effects of the international registration: the first is the same as that of national filing, the second is the same as that of national registration. In these comments, the first will sometimes be referred to as the "national application effect (of the international application)," and the second as the "national registration effect (of the international registration)."

These indications appear also at the beginning of the paragraphs, in brackets, as a sort of title. Neither these nor any other such paragraph titles are intended to remain in the text of the Treaty beyond the draft stages. "National register of marks" is defined in Article 2(xlv).

*Paragraph (1):* The national application effect comes into existence as of the international registration date, which is generally the date on which the international application was received by the International Bureau (see Article 7(1)) or, in the case of a later designation, as of the recording date of the later designation, which generally is the date on which the request for recording the later designation is received by the International Bureau (see Article 8(1)).

In essence, this paragraph provides that an international registration has the same effect as a national application. It should be noted that it contains no provision attempting to harmonize the effects attached to national applications under the various national laws. Consequently, each State's national law will continue to be completely free in this respect. Whatever effect is provided for national applications will be applicable under this paragraph to international registrations.

*Paragraph (2):* This provision, together with the provision on renewals, is the most important one of the Treaty. The Treaty is being concluded for the very reason that a single (international) registration should be able to take the place of the separate (national) registrations in each of those States in which the owner of the mark is interested in obtaining protection. This is the provision which accomplishes the desired aim.

The provision means that the effect of the international registration in each designated State (whether designated in the international application or later) is the same as that of the registration of the same mark, for the same goods and/or services, in the national register of marks of that State ("national registration effect").

It should be noted that neither this provision nor any other provision of the Treaty attempts to harmonize the effects attached to national registration under the various national laws. Consequently, each State's national law will be free to provide the effects it desires to provide for national registration and whatever effect is so provided will be applicable under this paragraph to international registrations. One of the examples of the freedom of national laws is that no given time limit has necessarily to be computed from the date of registration; thus, for example, any requirement of the national law concerning incontestability or the use of the mark may run from any point in time (subject, of course, as far as use is concerned, to respecting Article 18(3)), but any time limit or right which, according to the national law, runs from the national registration date (as distinguished from national

filing), will run from the international registration date unless the Treaty provides for exceptions or a different system. (For the sake of simplicity, the comments on this paragraph speak only of the international registration date; however, the expression should always be understood as including also the recording date of the later designation when the designation has not been made in the international application but in a later request.)

Furthermore, it should be noted that protection cannot be acquired, through international registration, in a designated State for marks which are unregistrable in the national register of that State, for example, service marks, three-dimensional marks or sound marks in States in which service marks, three-dimensional marks or sound marks are not registrable. If such a State is designated, its authorities should use the right of refusal given to it by Article 12; but, even if they fail to refuse, the designation will have the same effect as that of a national registration made in error (i.e., in most cases, none).

Finally, it should be noted that the fact that the effect, once acquired, is the same as that of a national registration implies that it can be taken away for the same reasons as those for which a national registration can be cancelled, for example, because it should never have been made (because accepting it for registration was contrary to the law), or because it has not been renewed, or because the mark is not being used when it should be. However, the Treaty provides for guarantees or alternative possibilities: cancellation must strictly follow the national treatment principle of the Paris Convention (see Article 13), renewal is to be effected internationally (see Article 16), and use generally cannot be required during an initial period, usually three years, after the international registration or the later designation (see Article 18(3)(a)).

As to "international registration date," see Article 7(1), (2)(c), (3)(c), (3)(d) and (4)(b). Article 8(1) and, *mutatis mutandis*, Article 7(2)(c), (3)(c), (3)(d) and (4)(b) indicate what the "recording date of the later designation" is.

*Paragraph (3):* This paragraph is intended, in particular, to cover the situation existing in the United States of America, the United Kingdom, and a number of States following the UK system, namely, where there are two registers of marks ("Principal" and "Supplemental" in the United States of America or "Part A" and "Part B" in the United Kingdom). The provision leaves it to the discretion of the applicant or the owner of the international registration to decide whether, in the said examples, the national registration effect will relate to the Principal Register or to the Supplemental Register, or to the Part A Register or to the Part B Register. If the application or the request for recording of a later designation does not contain an indication that the Supplemental Register or the Part B Register is chosen, the effect will relate to the Principal Register or the Part A Register, since they afford a higher degree of protection than the Supplemental Register and the Part B Register. See Rule 6.5 (Option Under Article 11(3)) and Rule 11.5 (Option Under Article 11(3)).

## ARTICLE 12

*Refusal of the Effects Provided for in Article 11*

(1) Subject to the provisions of paragraph (2) and Articles 18, 20(3) and 21(3), the effects provided for in Article 11 may, in respect of any designated State, be refused by the competent authorities of that State

(i) on the same grounds and to the same extent as those in respect of which applications for the registration of marks in the national register of marks may be refused under the national law of the said State, provided that such grounds are not incompatible with this Treaty and the Regulations or the most recent provisions of the Paris Convention for the Protection of Industrial Property by which that State is bound, and provided that Article 6quinquies of the Stockholm (1967) Act of the said Convention shall apply also to marks registered under this Treaty, the international registration taking the place, for the purposes of the said Article 6quinquies, of registration in the country of origin,

(ii) on the ground that the owner of the international registration is not entitled to own international registrations or that the applicant was not entitled to file international applications,

[(iii) on the ground that the designation of the said State was excluded under Article 5(4) or 6(4)].

(2)(a) Any refusal under paragraph (1) shall be effective only:

(i) if the refusal or notice of possible refusal is notified, as provided in the Regulations, by the national Office of the designated State to the International Bureau so that the latter receives it within 15 months \*\* [or, in the case of a certification mark or a collective mark, two years] from the date of the publication of the international registration, or, in the case of a later designation, of the publication of the recording of the later designation of such State, and

(ii) in the case of a refusal, if the grounds for the refusal are specified, and provided, where such refusal is not final, that the grounds given in the final decision of refusal include at least one of the grounds specified in the said refusal and the final decision is or is also based on at least one of the grounds specified in the said refusal,

(iii) in the case of a notice of possible refusal followed by a refusal, if the notice specifies, as provided in the Regulations, the grounds on which a refusal may eventually be pronounced, and provided that the grounds given in the final decision of refusal include at least one of the grounds specified in the said notice and the final decision is or is also based on at least one of the grounds specified in the said notice.

[(b) The proviso of subparagraph (a)(ii) and the proviso of subparagraph (a)(iii) shall not apply where the final decision is that of a court.]

(3)(a) The International Bureau shall, as provided in the Regulations, notify the owner of the international registration of any notification received under paragraph (2) and publish a notice concerning such notification.

(b) The owner of the international registration shall, with reasonable time limits, have in any designated State the same remedies against any decision of refusal and the same procedural and substantive rights in connection with any intended refusal, whether ex officio or based on the opposition of a third party, as have applicants who apply for the registration of marks in the national register of marks of the State in question.

(4)(a) Where the decision of refusal is final, the national Office of the designated State shall notify the International Bureau accordingly, and that Bureau shall notify the owner of the international registration, record the final decision, cancel the designation of that State, or, in a case where the final decision relates to some only of the goods and/or services listed, cancel in respect of the said State those goods and/or services to which the said decision relates, and publish such cancellation.

(b) Where a refusal which is not final or a notice of possible refusal has been notified under paragraph (2) and the final decision results in acceptance of the effect referred to in Article 11(2), the national Office of the designated State shall notify the International Bureau accordingly, and the International Bureau shall publish a corresponding notice.

(c) The details of the procedures referred to in subparagraphs (a) and (b) are provided in the Regulations.

## COMMENTS ON ARTICLE 12

*Paragraph (1)(i):* This provision enunciates the principle according to which the "national application effect" and the "national registration effect" may not, on the basis of an international registration, materialize for the same reasons



as those for which the national registration of a mark applied for direct in the national Office cannot be granted.

The principle is qualified in three respects. *First*, the refusal must follow certain procedural requirements (see paragraph (2)). *Secondly*, the refusal cannot be in violation of Article 18, which provides for the non-applicability of certain national requirements generally or for a limited period of time. *Thirdly*, the national registration effect cannot be put, so to speak, in double jeopardy by exposing the mark to a new possibility of refusal when it has already been exposed to such possibility because the mark which is the subject of the international registration is no more and no less than a mark which is already in the national register or which is already in the other international register, namely, that maintained under the Madrid Agreement (see Article 20 (Preservation of Rights Acquired Through National Registration) and Article 21 (Preservation of Rights Acquired Through International Filing Under the Madrid Agreement)). The question that may arise is why a State in which the mark is already protected (by virtue of a national registration or by virtue of the Madrid Agreement) should be designated at all under the Treaty. The answer is that under the Treaty the surveillance of renewals is much simpler if not also much cheaper (see Article 16(2) and the comments accompanying Article 20(1)).

The grounds on which the refusal is based must not be incompatible with the provisions of the Treaty and the Regulations or of the Paris Convention. That they must not be incompatible with the Treaty and the Regulations is a matter of course. That they cannot be incompatible with the Paris Convention follows from the fact that only States members of the Paris Union may become party to the Treaty (see Article 37(1)). The reference to "the most recent provisions" means that, for example, if a State is bound by the administrative provisions of the Stockholm Act but not by its substantive provisions, and if it is also bound by the Lisbon Act, it will have to apply, in connection with the paragraph in question, the provisions of the Lisbon Act since the provisions that are applicable under that paragraph are substantive (rather than administrative) in nature. These matters are dealt with in the first proviso of the provision under consideration.

The second proviso provides that the refusal must also respect Article *Gquinquies* of the Stockholm Act of the Paris Convention. In this case, the mere reference to the Paris Convention would not suffice since the said Article refers to the notion of country of origin, and marks which are the subject of international registration do not have a country of origin when the international registration is not preceded by a registration in the national register of a country. Sections B and C of Article *Gquinquies* provide the reasons for which marks may be "denied registration" or may be "invalidated" (Section B) or may be "refused" (Section C). In the Draft Treaty's terminology, these acts are called refusals or cancellations (Articles 12 and 13). It is to be noted that any Contracting State could, in connection with international applications filed under the TRT, apply Article *Gquinquies* in the same way as it applies that Article in connection with national applications.

Paragraph (1)(ii): See Article 4 (Right To File International Applications and To Own International Registrations). This ground of refusal is expressly mentioned because national laws naturally do not deal with the question who is entitled to file international applications.

Paragraph (1)(iii): This provision is placed between brackets since it will only apply if Article 5(4)—which deals with the so-called self-designation—is retained.

Paragraph (2), generally: This paragraph specifies the procedural requirements which any refusal, to be effective under the Treaty, must satisfy. Roughly stated, it means that the refusal can generally be based only on such grounds as are notified—via the International Bureau—within a certain time limit, to the owner of the international registration. The notification is made via the International Bureau because it might be awkward, or even impossible from a legal viewpoint, for a national Office to send official communications to persons in foreign States. Naturally, this difficulty could be eliminated if the owner of the international registration were obliged to have a representative or at least an address for service in each of the designated States. However, this would always be costly for him and often completely unnecessary, especially where there is no dispute between him and the national Office. But, of course, if there is a refusal or notice of possible refusal, and the owner wants to defend his case, he will have

to conform, from then on, to the national procedure, because he can only react direct, that is, not through the International Bureau. Consequently, he will have to use the remedies available under the national law in accordance with that law. This will necessitate a knowledge of the national law, the use of the official language of the national Office, and the practical if not the legal necessity of using the services of a local representative (attorney, agent, or other). See Article 18(7).

Where the address of the owner of the international registration is in the State which notifies the refusal or notice of possible refusal, the national Office could, if it so desired, send a copy of the notification to the owner. Such a copy may give the owner a few more days to react if he so desires.

Paragraph (2)(a)(i): See Rule 19.1 (Notifying the International Bureau; Grounds). For the definition of the date of publication, see Article 2(x).

For the case where the notification is made but the time limit is missed, see Rule 19.5 (Related Notifications).

Paragraph (2)(a)(ii): See Rule 19.1 (Notifying the International Bureau; Grounds).

Paragraph (2)(a)(iii): See Rule 19.1 (Notifying the International Bureau; Grounds). For the definition of "final," see Article 2(viii).

Where the final decision is notified within the 15 months time limit, item (ii) rather than item (iii) is applicable as to the grounds of refusal.

Paragraph (2)(b): The rule expressed in subparagraphs (a)(ii) and (iii) is that the grounds specified in the final decision of refusal must include at least one of the grounds specified in the non-final refusal or in the notice of possible refusal, otherwise the notice could become a meaningless formality which would not give the applicant the required warning. However, the question arises whether it is practical to apply that rule to final decisions in court proceedings since courts may not wish to have their freedom of decision limited by any earlier administrative finding. This subparagraph would give them that freedom. Naturally, in almost all cases, the same result could be obtained without this subparagraph, by pronouncing the negative decision in the form of a cancellation rather than in the form of a refusal. The subparagraph is placed between brackets because views differed in the May 1972 Committee of Experts on the question whether it should be included in the Treaty.

Paragraph (3)(a): See Rule 19.2 (Notifying the Owner of the International Registration; Publication).

Paragraph (3)(b): "Reasonable time limits" should be understood as meaning that the owner of the international registration will, if he is diligent, have sufficient time for preparing and presenting his reaction to the notification.

Paragraph (4)(a): See Rule 19.3 (Notification and Recording of Final Decisions of Refusal; Cancellation of the Designation, and Publication of the Cancellation).

Paragraph (4)(b): See Rule 19.4 (Notification Where Final Decision Results in Acceptance of the Effect Provided for in Article 11(2)).

Paragraph (4)(c): See the two Rules referred to in the preceding two paragraphs.

#### ARTICLE 13

##### Cancellation of the Effect Acquired Under Article 11(2)

(1)(a) Subject to Article 18, the effect acquired under Article 11(2) may, in respect of any designated State, be cancelled by the competent authorities of that State:

(i) on the same grounds, to the same extent and subject to the same procedure as those in respect of which registrations of marks in the national register of marks may be cancelled under the national law of the said State, provided that such grounds and such procedure are not incompatible with this Treaty and the Regulations or the most recent provisions of the Paris Convention for the Protection of Industrial Property by which that State is bound, and provided that Article *Gquinquies* of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property shall apply also to marks registered under this Treaty, the international registration taking the place, for the purposes of that Article, of registration in the country of origin.

(ii) on the ground that the owner of the international registration is not entitled to own international registrations or that the applicant was not entitled to file international applications,

[(iii) on the ground that the designation of the said State was excluded under Article 5(4) or 6(4)].

(b) The competent authorities of the said State shall give, with reasonable advance notice, an opportunity to the owner of the international registration to defend his rights in any cancellation proceeding and such owner shall have the same remedies against any decision of cancellation as have owners of marks registered in the national register of marks of the State in question.

(2) If the decision of cancellation is final, the national Office of the designated State shall notify the International Bureau accordingly, and that Bureau shall record that decision, cancel the designation of the said State or, in a case where the cancellation relates to some only of the goods and/or services listed, cancel—in respect of that State—those goods and/or services to which the said decision relates, and publish such cancellation.

#### COMMENTS ON ARTICLE 13

Paragraph (1)(a)(i): Since the international registration is a constructive national registration (see comments on Article 11(2)), it is logical that, once acquired, it should be capable of being taken away ("cancelled") for the same reasons as a "real" national registration. That is the principle enunciated in this provision. See also the comments on Article 12(1)(i).

Paragraph (1)(a)(ii): See Article 4 (Right To File International Applications and To Own International Registrations).

Paragraph (1)(a)(iii): This provision is placed between brackets since it will only apply if Article 5(4)—which deals with the so-called self-designation—is retained.

Paragraph (1)(b): This provision can be regarded as specifying for a special purpose—namely, for decisions of cancellation—the national treatment rule of the Paris Convention. It goes without saying that this provision does not apply in those cases in which, according to the national law, the omission of certain acts by such owner entails, *ipso facto*, cancellation of registrations.

Paragraph (2): This provision deals with the question how to inform all those concerned and the public at large of the fact that the designation of a State has failed because of a final decision of cancellation pronounced by the authorities of that State. See Rule 20.1 (Notification and Recording of Final Decisions of Cancellation; Cancellation of the Designation, and Publication of the Cancellation). As to the definition of "final," see Article 2(viii).

#### ARTICLE 14

##### Change in the Ownership of the International Registration

(1)(a) [Total or Partial Change; Request; Recording] Where the ownership of any international registration changes so that the new owner has become the owner in respect of all or fewer than all of the designated States and in respect of all or some only of the goods and/or services, the change in ownership shall, on request, subject to paragraph (4), be recorded by the International Bureau.

(b) [Details of the Request] The request shall contain, as provided in the Regulations:

- an indication to the effect that the recording by the International Bureau of a change in ownership is requested,
- the international registration number of the international registration,
- indications concerning the name, residence, nationality and address of the new owner,
- the identification of those of the designated States in respect of which the new owner has acquired ownership and the identification, in respect of each of those States, of those of the goods and/or services for which the new owner has acquired ownership.

(c) [Signature] The request shall be signed by the person who, pursuant to the change in ownership, ceases to own the international registration in respect of all or fewer than all of the designated States and in respect of all or some only of the goods and/or services ("earlier owner") or, where the earlier owner is unable to sign, by the new owner, provided that if it is signed by the new owner the request shall also contain an appropriate attestation, as provided in the Regulations, by the national Office of the Contracting State of which the earlier owner was, at the time of the change of ownership, a national or, if at that time the earlier owner was not a national of a Contracting State, by the national Office of the Contracting State of which, at the said time, the earlier owner was a resident.

(d) [Fee; Publication; Notifications] The request shall be subject to the payment of a fee to the International Bureau, and the recording shall be published by that Bureau and notified by it to the earlier owner and the new owner and to the interested designated Offices, as provided in the Regulations.

(2) [Declining of Request] In any of the following cases, the International Bureau shall decline the request and shall notify accordingly the person who has signed it:

- where the request does not contain the indication referred to in paragraph (1)(b)(i),
- where the request does not contain the number referred to in paragraph (1)(b)(ii),
- where the request contains no indications concerning the residence or nationality of the new owner, or only such indications as do not permit the conclusion that he is entitled to own international registrations,
- where the request contains no indications concerning the identity and address of the person who has signed it or only such indications as do not permit him to be identified and reached by mail,
- where the request does not identify any designated State in respect of which the new owner has acquired ownership,
- where the request does not identify, as provided in the Regulations, any goods and/or services in respect of each of the designated States for which the new owner has acquired ownership,
- where the request is not signed and, if it is signed by the new owner, where it does not contain the attestation, as provided in the Regulations, referred to in paragraph (1)(c),
- where the prescribed fee has not been received.

(3) [Effect] Subject to paragraph (2), any recording effected under paragraph (1) shall have the same effect as if it had been effected in the national register of marks, or any other related register, of each of the designated States to which the request relates.

(4)(a) [Denial of Effect: Grounds] Any designated State may, as far as it is concerned, deny the effect provided for in paragraph (3) on grounds which, according to its national law, do not allow of changes in ownership or on the ground that the new owner is not entitled to own international registrations.

(b) [Same: Evidence] The national law of any Contracting State may provide that the effect referred to in paragraph (3) may, as far as such State is concerned, be denied if, within three months from the date of the publication referred to in paragraph (1)(d), evidence is not adduced before its national Office which satisfies the conditions of the national law as regards changes in ownership.

(c) [Same: Notification by Designated State; Recording, Notification, Publication] Where the competent authorities of any designated State deny the effect provided for in paragraph (3), the national Office of that State



shall promptly notify the International Bureau accordingly, and that Bureau shall record the denial in the International Register of Marks and effect the corresponding notifications and publication. The details of the procedure are provided in the Regulations.

(5) [Switchover to National Register Where an Owner Cannot Own International Registrations] Where there is a change in ownership other than by contract between the earlier owner and the new owner, and where the new owner is a person who is not entitled to file international applications but is entitled under the national law of any designated State to file applications for the registration of marks in the national register of marks of that State, the new owner may file an application for the registration, in the said national register, of the mark which is registered, and in respect of all or some of the goods and/or services which are listed, in the International Register of Marks in respect of that State. If, within two years from the change in ownership and prior to six months after the expiration of the initial term of the international registration or the then running term of renewal, as the case may be, the new owner files such an application, that application shall be treated in the said State as if it had been filed at the time when the designation of that State took effect.

#### COMMENTS ON ARTICLE 14

Paragraph (1)(a): The change in the ownership may have various causes. It may be caused by reason of a contract (typically, assignment) or by operation of law (for example, inheritance). The Treaty does not regulate, and the International Bureau will not examine, the question whether a change has really occurred, in particular whether the contract transferring the property is valid and the transferee capable of owning property. These questions are left to the national law of each Contracting State.

Paragraph (1)(b): See Rule 21.1 (Request for Recording of Change in Ownership).

Paragraph (1)(c): The attestation is provided for in Rule 21.1(e).

Paragraph (1)(d): As to the fee, see Rule 21.1(f).

As to publication, see Rule 21.2 (Publication Where the Change in Ownership is Total) and Rule 21.3 (Publication Where the Change in Ownership is Partial).

As to the notifications, see Rule 21.4 (Notification of Recording of Changes).

Paragraph (2): See Rule 21.5 (Notification of Declining of the Recording).

Paragraph (3): Paragraph (2) deals with the declining of the request.

Paragraph (4)(a): Paragraph (3) deals with the effect of the recording.

Paragraph (4)(b): Paragraph (3) deals with the effect of the recording. The publication referred to in paragraph (1)(d) is the publication of the recording.

Paragraph (4)(c): Paragraph (3) deals with the effect of the recording. As to the procedure, see Rule 21.6 (Denial).

Paragraph (5): It appears to be only logical that where the new owner is neither residing in nor a national of a Contracting State he should not be allowed to benefit from the Treaty. However, where the new owner acquired ownership by means other than by contract—for example, by inheritance—that is, by means over which he generally has no control, and where, under the national law of the designated State, he may own registrations, it would seem equitable to allow him to switch over to the national register. This is what the present provision is intended for.

#### ARTICLE 15

##### Limitation of the List of Goods and/or Services

(1) On the request of the owner of the international registration, the International Bureau shall record, in respect of any designated State, any limitation of the list of goods and/or services which conforms with the concept of limitation as defined in the Regulations.

(2) The request for recording shall be subject to the payment of a fee to the International Bureau, and the re-

corded shall be published by that Bureau and notified to all the interested designated States, as provided in the Regulations.

(3) The International Bureau shall decline the recording of any change in the list of goods and/or services which does not conform with the said concept of limitation, and shall notify the owner of the international registration accordingly, as provided in the Regulations.

(4) Where the national Office or other competent authority of any designated State finds that the limitation of the list of goods and/or services recorded in respect of that State is not admissible under the national law, the national Office of that State shall, as provided in the Regulations, notify the International Bureau accordingly, and that Bureau shall, as provided in the Regulations, make the appropriate annotation in the International Register of Marks, and restate the situation in that Register and in relation to that State as if the request for recording had not been filed. The International Bureau shall, as provided in the Regulations, effect the corresponding notifications and publication.

#### COMMENTS ON ARTICLE 15

Paragraph (1): As to the request, see Rule 22.1 (Request for Recording of Limitation of List).

It is important that only such changes be recordable as are true limitations. If additions or such other changes were permitted as could be regarded as extending the list of goods and/or services, the designated Offices would have to be given a new opportunity to refuse the "national registration effect" since what was acceptable in respect of a certain list might well be unacceptable under a list of a broader scope. Re-opening the refusal procedure would be too complicated. If the owner wants to cover additional goods and/or services, he will have to apply for a new registration of the mark for those additional goods and/or services.

Deciding whether a limitation is a true limitation is not always easy. If the limitation takes the form of substituting one term for another, that is why Rule 22.2 (Concept of Limitation) does not allow substitutions (and, obviously— even less so—additions) but only deletions and such qualifications of existing terms as are easy to recognize and can lead to nothing but a true limitation. A "term" may, of course, consist of several words (e.g., tropical fruits).

It is to be noted that no designated State is bound by any finding by the International Bureau that a requested limitation does not conform with the concept of limitation as defined in the Regulations. The competent authorities of such State have the right to disagree with the International Bureau and, consequently, may admit limitations which that Bureau has considered inadmissible or may decide not to admit limitations which it has considered admissible (see paragraph (4)).

Furthermore, where the national Office or other competent authority of any designated State has accepted a change in the list of the goods and/or services which does not conform with the provisions of Rule 22.2(a) and (b), the International Bureau will record such change. Naturally, such recording will relate to the said State only. See Rules 22.1(a)(v) and 22.2(c).

Limitation of the list of goods and/or services is also possible in combination with the request for recording later designation (see Article 6(2)(b), second sentence, and Rule 11.4). In this case, there is no need for a separate request and no fees for the limitation will be due.

Paragraph (2): As to the fee, see Rule 22.1(c).

As to procedure, see Rule 22.3 (Recording, Publication, and Notification, of Limitation of the List).

Paragraph (3): See Rule 22.4 (Declining the Recording of Limitation of the List).

Paragraph (4): See Rule 22.5 (Non-Admission by Designated State). See also the last paragraph of the comments on paragraph (1).

#### ARTICLE 16

##### Term and Renewal of the International Registration

(1) The initial term of any international registration shall be ten years from the international registration date.

(2)(a) Any international registration may be renewed

in respect of any designated State by its owner for terms of ten years.

(b) Renewal shall prolong the effects provided for in Article 11 in each designated State for the term of the renewal.

(c) Each term of renewal shall start on the day following the day on which the initial term of the international registration or the term of the last renewal expires.

(3)(a) Renewal shall be the subject of a demand presented to the International Bureau as provided in the Regulations, and shall be subject to the payment of fees, as provided in the Regulations. The demand shall not be presented and the fees shall not be paid earlier than six months before, or later than six months after, the starting date of the term of renewal. If the demand is presented or the fees are received after the starting date of the term of renewal, renewal shall be subject to the payment of an additional fee ("renewal surcharge"), as provided in the Regulations, which shall be paid before the expiration of six months after the starting date of the term of renewal.

(b) The International Bureau shall record and publish the renewal and shall notify the owner of the international registration and each designated Office accordingly, as provided in the Regulations.

#### COMMENTS ON ARTICLE 16

Paragraph (1): As to "international registration date," see Article 7(1), (2)(c), (3)(c), (3)(d) and (4)(b).

It goes without saying that any later designation becomes part of the international registration and thus renewal in respect of later designated States will be due at the same time as in respect of States designated in the international application itself. Consequently, for example, where the later designation took place four years after the international registration date, it will be effective only for the six remaining years of the initial term.

Paragraph (2)(a): This provision implies that the demand for renewal may relate to all or to one or some only of the designated States.

Paragraph (2)(b): This provision means that the "national application effect" and the "national registration effect" will continue. Compliance with the requirements of the national law of any designated State concerning renewals is neither required nor, indeed, possible.

Paragraph (2)(c): As to the computation of terms, see Rule 27.2 (Periods Expressed in Years, Months, or Days).

Paragraph (3)(a): The International Bureau will remind the owner of the international registration that the time for renewal is approaching (see Rule 23.1: Reminder by the International Bureau).

As to the form and contents of the demand, see Rule 23.2 (Demand for Renewal).

As to the fees, see Rule 23.3 (International Renewal Fees and Individual State Renewal Fees) and Rule 23.4 (Standard State Renewal Fees). The "renewal surcharge" is referred to in Rule 23.3(a)(1).

The International Bureau will, where appropriate, invite the owner of the international registration to correct the demand or to pay the (missing part of the) fees. See Rule 23.5 (Imperfect Demands).

Where the demand is presented or the fees are paid too early or too late or where the demand is imperfect or the fees not paid or not completely paid, the demand is declined and certain fees are reimbursed. See Rule 23.7 (Declining the Demand) and Rule 23.8 (Reimbursement of Certain Fees).

Paragraph (3)(b): As to the recording of the renewal and its notification to the owner of the international registration and each designated Office, see Rule 23.6 (Recording, Publication, and Notification). "Designated Office" is defined in Article 2(xv).

#### ARTICLE 17

##### Fees

(1) The International Bureau shall be entitled to fees in connection with the filing of each international application, request for the recording of later designations, de-

mand for renewal, and such other operations and services as are subject, according to this Treaty or the Regulations, to the payment of fees.

(2) Each Contracting State shall be entitled to fees in connection with each designation and each renewal concerning it.

(3) The Regulations fix the amounts of the fees and provide for the total or partial reimbursement of certain fees in certain circumstances, and other details concerning fees payable under this Treaty and the Regulations.

#### COMMENTS ON ARTICLE 17

Paragraph (1): As to the fees to which the International Bureau is entitled in connection with the filing of the international application, see Rule 9.1 (International Application Fee . . .), in particular paragraphs (a)(1) and (b) of that Rule; in connection with the request for the recording of later designations, see Rule 13.1 (International Later Designation Fee . . .), in particular paragraphs (a)(1) and (b) of that Rule; in connection with the demand for renewal, see Rule 23.3 (International Renewal Fee . . .), in particular paragraphs (a)(1) and (b) of that Rule; in connection with other operations and services, see Rule 9.3 (Fees Payable in Special Cases). See also the Table of Fees.

Paragraph (2): In connection with each designation concerning it, each State is entitled to either an individual State designation fee or to a standard State designation fee. See Rule 9.1 (. . . Individual State Designation Fees), in particular paragraphs (a)(1), (c) and (d) of that Rule; Rule 9.2 (Standard State Designation Fees); Rule 13.1 (. . . Individual State Later Designation Fees), in particular paragraphs (a)(1) and (c) of that Rule; Rule 13.2 (Standard State Later Designation Fees); and, in connection with the standard fees, also the Table of Fees.

In connection with each renewal concerning it, each State is entitled to either an individual State renewal fee or to a standard State renewal fee. See Rule 23.3 (. . . Individual State Renewal Fees), in particular paragraphs (a)(1)(c) and (d) of that Rule; Rule 23.4 (Standard State Renewal Fees); and, as to the latter, also the Table of Fees.

Each Contracting State may choose to benefit from the standard fees instead of the individual fees. The main difference between the two kinds of State fees is that whereas the amount of the individual State fees is governed by the amount of the national fees—decided by each State for itself—the amount of the standard fees is fixed by the States members of the Assembly which apply the standard fee system (see Article 33(2)(c), second sentence). The individual State designation fee due to any State cannot exceed 75% of the national fee of the same State: the difference being considered a rough equivalent of the savings each national Office makes in view of the fact that the international registration reaching it has already undergone some checking that would have to be done, in the case of national applications, by that Office itself, and in view of the fact that the collection of the fees is much simpler—and, consequently, its administration more economical—than in the case of national fees. The individual State renewal fee due to any State cannot exceed the national renewal fee. No reduction is proposed in this case since the amount of renewal fees is generally not fixed in such a way as to compensate the national Office for the work it performs but rather on the basis, or also on the basis, of the consideration that the fees should deter renewals of marks not really needed by the owner.

The choice that each Contracting State will make between the two fee systems may partly depend on the question which of the two will provide the higher fees: States having relatively high national fees will usually earn more under the individual fee system, whereas States having relatively low national fees will usually earn more under the standard fee system, particularly if they carry out examination on the national level to any extent. Another consideration that may play a part in the Contracting State's choice is the fact that under the individual fee system the amount depends entirely on the wish of the interested State, whereas under the standard fee system the amounts are fixed by a vote, possibly not entirely to the liking of States that have not voted for it.

Paragraph (3): See Rules 28 (Payment of Fees), 30 (Fees Belonging to the Designated Offices), 31 (Choice of the Standard State Fee System), 32 (Absence of State Fees), 33 (Fees



Belonging to the International Bureau), and 37 (Fees in the Case of Regional Marks).

The amounts of all major fees are shown in the Table of Fees annexed to the Regulations; the amounts of minor fees will be given in the Administrative Instructions; the amounts of the individual State fees will be published once a year in the Gazette.

*Partial reimbursement* is provided for in Rules 14.3 (Notification, and Reimbursement of Certain Fees, Under Article 7(5)), 15.1 (Application of Rule 14), and 23.8 (Reimbursement of Certain Fees): where the International Bureau declines the international application or the request for recording of a later designation, or the demand for renewal, the fees belonging to the designated States would be reimbursed since, because of the fact that the international application, the request or the demand has been declined, they would not be designated States. The fees belonging to the International Bureau would not be reimbursed since that Bureau would have performed the task of checking and conducting correspondence with the applicant or owner, a task that is frequently more costly than in a routine case because the cases involved would be those where the application, request or demand had defects.

#### ARTICLE 18

##### Certain National Requirements

(1) [Fees] No national Office of any designated State shall, unless acting as an independent review authority, require the payment of any fee in connection with the obtaining or renewing of international registrations and recordings in the said State.

(2) [Number of Classes and of Goods and/or Services] No designated State may refuse or cancel the effects provided for in Article 11 merely on the grounds that its national law allows the registration of marks only in respect of a limited number of classes or a limited number of goods and/or services.

(3)(a) [Actual Use] The national law of any Contracting State may impose the same conditions as are applicable to marks whose registration is applied for or which are registered in the national register of marks in that State in respect of any requirement that the owner of an international registration use the mark in that State or in any other place, provided that such State shall not refuse under Article 12, cancel under Article 13, or otherwise fail to accord the effects of the international registration as defined in Article 11, on the ground that the mark has not been used at any time prior to the expiration of three years counted from the international registration date or the recording date of the later designation, as the case may be. However, the national law of any Contracting State may provide that any action for infringement based upon an international registration may be started only after the owner of such international registration has commenced the continuing use of the mark in the said State and that any remedy resulting from such action shall relate only to the period after such use has commenced.

(b) [Actual Use: Continued] Where, at the expiration of the three-year time limit referred to in subparagraph (a), the final decision referred to in Article 11(2) (ii) has not been made, the said time limit shall be extended until the expiration of one year counted from the date on which the effect provided for in Article 11(2) does, in fact, come into existence, provided that in no case shall any Contracting State be required to extend the said three-year time limit by more than two years.

(c) [Actual Use: Continued] Where prior to the international registration date or the recording date of the later designation, as the case may be, the mark has been registered, in the name of the person who is the owner of the international registration, in the national register of marks of any designated State, or has been the subject on the part of the said person of an application for registration

in that register, the proviso of subparagraph (a) and subparagraph (b) shall not apply to the extent that the said registration or application relates to the same goods and/or services as are listed in respect of such State in the international registration. However, where the application for registration in the national register was filed less than three years before the international registration date or the recording date of the later designation, as the case may be, the proviso of subparagraph (a) shall apply, but only during the period between such date and the expiration of the third year counted from the date on which the said application was filed. Where the three-year time limit is extended under subparagraph (b), the preceding sentence shall be applied accordingly. The present subparagraph shall also apply where the earlier registration is one effected in the international register under the Madrid Agreement or the present Treaty.

(d) [Declaration of Actual Use] Where one of the conditions of the national law of the designated State referred to in subparagraph (a) consists of a requirement, general in the sense that it is applicable to all marks registered in the national register of marks of that State, that a declaration stating that the mark is or is still in use in that State must be filed with its national Office at certain points in time or in connection with each renewal or other specific event ("routine declaration"), such declaration may, in the form prescribed by the national law of that State or in the form prescribed in the Regulations, be filed with the International Bureau and shall have the same effect as if it had been filed with the national Office of that State on the date on which it was received by the International Bureau. Such declaration shall be promptly forwarded by the International Bureau to the said national Office. The said effect shall not be denied on the ground that the declaration was not accompanied by any required supporting evidence, or that the evidence accompanying it was insufficient, without the said national Office's giving the owner of the international registration an opportunity to adduce or complete before it any required evidence within not less than three months after having notified the said owner or his duly appointed representative that evidence or additional evidence is required. The present subparagraph shall not apply in inter partes and other proceedings in which the requirement is not a general one in the sense indicated above ["ad hoc requirement"].

(e) [Declaration of Actual Use: Continued] No requirement referred to in subparagraph (d) shall be applicable prior to the expiration of the time limit under the proviso of subparagraph (a), subject, where applicable, to subparagraph (b), or subparagraph (c).

(4) [Intent To Use] (a) Any Contracting State may apply its national law requiring that applicants file a declaration with its national Office to the effect that they intend to use the mark, provided that such requirement shall be considered to have been complied with if a declaration in the form specified in the Regulations to the effect that the applicant or owner of an international registration intends to use the mark in that State is contained in the international application or request for the recording of the later designation, as the case may be.

(b) The International Bureau shall, as provided in the Regulations, notify the national Office of any designated State in respect of which a declaration under subparagraph (a) was filed with that Bureau of such declaration.

(5) [Provisions Common to Paragraphs (3) and (4)] Whenever paragraphs (3) and (4) refer to use of the mark by the applicant or the owner of the international registration, use by a person whose use, under the applicable national law, inures to the benefit of the applicant or owner shall be sufficient for invoking the benefits provided for in the said paragraphs.

\*\* [(6) [Certification and Collective Marks] Any Contracting State may apply its national law requiring that where the mark is a certification mark or a collective mark the owner thereof must adduce before its national Office certain supporting documents and other evidence, including in particular the bylaws of the association or other entity owning such mark and the rules concerning the control exercised over the use of such mark.]

(7) [Representation] No designated State shall require that the applicant or the owner of the international registration be represented by any natural person or legal entity located in that State or that, for the purposes of serving notices on such applicant or owner, an address in that State be indicated, except where, in respect of the mark which is the subject of the international application or the international registration, the applicant or owner is involved in a proceeding before the national authorities of the said State and, where applicable, after the refusal or notice of possible refusal has been notified by the designated Office to the International Bureau as provided in Article 12(2)(i).

(8) [Service of Certain Notifications] (a) The national law of any Contracting State may provide that proceedings before a national authority, including a court, in that State may, in respect of any international registration for which the said State is designated, validly be commenced against the owner of the international registration, by means of the service of a notification addressed to him at the International Bureau.

(b) The International Bureau shall promptly forward the notification to the owner of the international registration by registered airmail accompanied by a postal receipt form (*avis de réception, Rückschein*). If the said receipt form showing receipt by the said owner is not received by the International Bureau within one month from the date of its having mailed the notification, the International Bureau shall promptly publish the notification.

(c) Any national law referred to in subparagraph (a) shall provide for a reasonable time limit for the owner of the international registration to respond to the notification and defend his rights in the proceedings.

(d) Subparagraphs (a) to (c) shall not apply to notifications referred to in Article 12(2)(i).

#### COMMENTS ON ARTICLE 18

Paragraph (1): International registration and renewal being in lieu of national registration and renewal, the fees paid under the Treaty and belonging to the designated Offices should compensate them for not collecting national fees.

The fees paid under the Treaty exempt the applicant or owner of the international registration from paying any national fee which otherwise would be due to any national Office for "the obtaining or renewing . . . the effects of such [international] registrations and recordings [under the Treaty] in the said [i.e., the designated] State." The reference to "obtaining" is intended to cover all fees leading to registration, that is—depending on the national laws—filing fees, search and examination fees, registration fees, grant fees, publication fees, class fees, fees payable in an opposition proceeding by the applicant, and any other fees, but, of course, not fees payable by the opposer in any opposition proceeding and not fees payable by the petitioner in any cancellation proceeding (since these are not fees payable by the owner of the international registration). The reference to "renewing" is intended to cover all fees connected with the prolongation of the registration, that is—depending on the national laws—renewal fees, recording fees, publication fees, and any other fees. In both cases, only fees concerning national Offices are meant, and not fees payable by any party in any proceeding before a court or other independent review authority. An appeals board may be considered an "independent review authority" as long as its decisions are not subject to any instruction.

Paragraph (2): Some national laws provide that for each different class a separate registration is required, or that each registration may relate to only a given number of goods and/or services (for example, ten). Such provisions could not be held against an international registration. Since the amount

of the fees payable under the Treaty may depend, among other things, on the number of classes to which the goods and/or services belong, the fee aspects of the said national laws could be taken care of partly if not always wholly.

Paragraph (3)(a): The national laws of some States provide that a mark must be used before an application concerning it may be filed, or before the registration concerning it may be granted. Some national laws provide that the registration must be cancelled if the mark is not used within a specified period of time. Some national laws provide for the cancellation of marks which have been abandoned and establish a presumption of abandonment when the mark is not used for a specified period and its non-use is not excusable.

Under the Treaty these provisions would also apply to marks which are the subject of international registration to the same extent as they are applicable to the marks registered nationally in that State, but with an important qualification: non-use at any time prior to the expiration of three years could not be a ground for refusing the effects, for cancelling them or for otherwise impairing them. An example of the last-mentioned effect is that an international registration which, in a designated State, has the effect provided for in Article 11(2) may be relied upon even if the mark is not used during the said three-year period in order to prevent and/or to cancel, as the case may be, the registration of another mark which was filed later with the national Office of that State. Another example of the said effect is that an international registration which, in a designated State, has the effect provided for in Article 11(1)—but not yet the effect provided for in Article 11(2)—may be relied upon, even if the mark is not used during the said three-year period, at least in order to delay, until the expiration of that period, any decision on the registration of another mark which was filed later with the national Office of that State. The three-year period would count from the international registration date or the recording date of the later designation, as the case may be, that is, from the date which, for the purposes of the interested State, is the "filing date." In certain circumstances—as described in subparagraph (b)—the period may have to be extended but never beyond five years from the said date (see paragraph (3)(b)).

As stated in the second sentence of subparagraph (a), even though the effects provided for in Article 11 existing in a State cannot be refused, cancelled or otherwise impaired on the ground of non-use during the three-year period, the national law of any Contracting State could provide that any action for infringement may not be started until the owner has commenced use of the mark in that State and any remedy resulting from such action could relate only to the period after the said owner has started use. For example: the owner starts to use the mark as from the second year after the international registration; during the third year after such event, he sues for damages a person who has started to use a similar mark just after the international registration date of his mark and is still using it; the national law may provide that the plaintiff will recover damages only as from the second year.

It goes without saying that provisions of any national law excusing non-use even beyond the three-year period—for example, because the owner of the mark for a pharmaceutical product cannot use it before the authorization of the health authorities is granted—would remain applicable by virtue of the national treatment provisions of the Paris Convention. Such justified non-use, where it is of relevance, would have to be proved according to the national law of each designated State direct before the competent national authorities of such State, without the intermediary of the International Bureau.

Of course, nothing in the Treaty could prevent the national law of any Contracting State from requiring at any time, from the owner of an international registration, evidence of use in any proceeding where such evidence is relevant or necessary under such national law to overcome a ground other than non-use for refusing under Article 12, or cancelling under Article 13, the effects of the international registration as defined in Article 11. For example, if registration is refused or cancelled on the ground that the mark is descriptive (or, in the British law, not distinctive) and that ground, in the given case, can be overcome only where the applicant or owner shows that the mark has acquired a secondary meaning (or, as in the British law, that it has been adapted to distinguish or is capable of distinguishing) by reason of use of the mark, evidence of use could be required, but only to overcome the said ground, which is a ground other than non-use.



Paragraph (3)(b): The effect provided for in Article 11(2) is the national registration effect.

The question arises whether this provision should not be completed so that it start with the following words: "Where, one year before the expiration . . ." Such addition would provide the one-year extension even where the final decision is made during the last year of the three-year period.

Paragraph (3)(c): This provision relates to the situation where a mark has been the subject of a national application or registration and is later the subject of an international registration-cum-designation. The three-year moratorium would apply only if the national registration took place within the three years preceding the international registration or later designation and only for the period between such registration or designation and the end of a three-year period counted from the national filing date. The maximum required extension of the three-year period is two years.

Paragraph (3)(d): Some national laws require not only that a mark be used but also that the owner of the mark file with the national Office at a certain point in time or from time to time (as fixed in that law) a declaration ("routine declaration") that the mark is (still) used. The Treaty leaves any such requirement intact, subject to two exceptions. One is that such a requirement cannot, obviously, be applied during the three-year moratorium provided for in paragraph (a) (see subparagraph (d)). The other is that any routine declaration could be filed with the International Bureau rather than the national Office (see the subparagraph under consideration). The question when such routine declarations are due will depend on the national law but the national Office will provide and the International Bureau will publish the necessary information (see Rule 24.1: Information or Requirements Concerning Routine Declarations of Actual Use). As to the form of the declaration, the applicant or owner may choose between two. One is the form prescribed by the national law of the State which the declaration concerns ("national forms"). The other is an "international form" in the language of the international application. (See Rules 24.2: National Forms, and 24.3: International Form.) Both kinds of forms would be put at the disposal of the owner of the international registration, free of charge. In any case, the declaration would be transmitted by the International Bureau to the designated Office. A further advantage provided for is that, where evidence is required and does not accompany the declaration (it may accompany it but does not have to do so) or is insufficient, the national Office will give three months for filing or completing such evidence.

It is to be noted that the said facilities apply only to "routine declarations" and not to any declaration which is needed on an ad hoc basis. For example, when non-use is alleged in a cancellation proceeding dealing with a specific mark, in order to overcome such allegation it may well be necessary to make a statement of use. Another example is the declaration of use provided for in the US law as one of the conditions for obtaining incontestability of the owner's right to use the mark: no owner is required to seek such incontestability but, if he wishes to do so, he will, among other things, have to file a declaration alleging continued use for a period of five years subsequent to registration.

Paragraph (3)(e): This provision means that neither routine nor ad hoc declarations could be required during the three-year (or, in some cases, less than three-year or up to five-year) moratorium.

Paragraph (4)(a): Some national laws provide that at the time a person files an application for the registration of a mark he must have a *bona fide* intent to use the mark in the country and that a declaration to that effect must be filed with the national Office. The requirement for a declaration to be filed with the national Office would be inapplicable or, rather, it would be replaced by a declaration to the same effect filed with the International Bureau. Rules 6.3 (Declaration of Intent To Use the Mark) and 11.2 (Declaration of Intent To Use the Mark) provide for the details where the declaration is made in connection with the international application or a later designation, as the case may be, and contain a suggested wording for the declaration which would be recognized by all Contracting States. The wording does not include the expression "*bona fide*" since, at least in civil law countries, it goes without saying that a solemn declaration producing legal effects is not a declaration if it is not made in good faith. The substantive requirement of the national law that the intent to use must exist would be left unaffected by the Treaty. Consequently, where the applicant or owner does not, in fact,

intend to use the mark, the registration effect may be taken away by any designated State requiring intent to use. It may be taken away notwithstanding the existence of the—false—declaration, and may be taken away at any time, even before the three-year period referred to in paragraph (3)(a) expires.

Paragraph (4)(b): See Item (III) of Rule 18.1 (Form of Notifications).

Paragraph (5): This provision means that, in any routine declaration of actual use (paragraph (3)(c)) and in any declaration of intent to use (paragraph (4)(a)), the alleged use may be either direct (that is, by the owner of the international registration or by the applicant, respectively) or indirect (that is, by a person whose use inures to the benefit of such owner or applicant).

Paragraph (6): See the comments on the bracketed words of Article 2(v).

Paragraph (7): Since the international application is filed with the International Bureau (see Article 5(2)) and since any notice of possible refusal or refusal under Article 12 is notified to the International Bureau (see Article 12(2)(a)(1)), there is no need for direct contact between the applicant or owner of the international registration and the designated Office. However, once the notice of possible refusal or the refusal has been notified to the said owner and the latter contests it, any further contact between the owner and the national authorities (administrative or judicial) will be direct—since the Treaty does not provide for such contacts through the International Bureau—and for such direct contact the designated Office may wish to require that the owner be represented by a local agent or have an address for service in the State concerned.

Paragraph (8)(a): This provision will allow any Contracting State to provide for a special procedure for serving notifications concerning certain proceedings on the owner of the international registration. The proceeding must be one which is before a national authority and the notification must be one which commences the proceeding. The authority may be a court or any other authority. The notification may not be one referred to in Article 12(2)(a)(1) (see subparagraph (d)) since a special procedure is already provided in Article 12 for that notification. Naturally, if the owner has an address for service or a representative in the State, it would make little sense to use the special procedure authorized by this provision. It is to be noted that no Contracting State is obliged to provide for the said special procedure in its national law; Contracting States which consider that their general rules for serving notifications abroad are sufficient will probably make no use of this provision. Finally, it should be noted that the provision relates only to notifications which commence a proceeding because, once the owner is involved in the proceeding, he may, under paragraph (7), be required to have an address for service or a representative in the State in question.

Paragraph (8)(b): Publication will be in the Gazette (see Article 2(ix)).

Paragraph (8)(c): This provision is intended to give an opportunity to the diligent owner to defend his rights.

Paragraph (8)(d): See the comments on subparagraph (a), above.

## ARTICLE 19

### Recordings Effected by National Offices

(1) The national Office of any Contracting State which effects any recording in its own register of marks or in any other related register in respect of matters that may be recorded in the International Register of Marks with regard to any mark which is registered in the International Register of Marks and for which that State is a designated State shall, at the time of effecting such recording and as provided in the Regulations, notify the International Bureau of the said recording unless the recording has been effected pursuant to a notification by the International Bureau to that national Office.

(2) The International Bureau shall, as provided in the Regulations, make the appropriate annotation in the International Register of Marks and publish a notice concerning such annotation.

(3) Until the said annotation and publication are effected, any recording referred to in paragraph (1) shall

not be effective in respect of any third party unless such third party was actually aware of the subject matter of the said recording.

## COMMENTS ON ARTICLE 19

Paragraph (1): The Treaty does not require any Contracting State to enter in its own (national) register of marks (or any other related register) marks which, by virtue of the Treaty, have a national registration effect in that State. (Such effect exists by virtue of the Treaty, in particular, under Article 11(2), whether such marks are entered in the national register or not.) But the Treaty does not prohibit the entering of such marks in the national register. If any country chooses to make such entries, that is, to "repeat" the international registration in its national register, it may be that certain changes affecting the mark only in that State will be entered in the national register without the owner's asking for their recording by the International Bureau. For example, ownership of the mark or the list of goods and/or services may change in that State. If such changes are entered in the national register without the owner's asking for them to be recorded in the International Register of Marks, the latter would not reflect them. Such a situation is undesirable since the International Register of Marks would then become incomplete and third parties could not entirely rely on it. It is to avoid this situation that the provision is proposed: any change "directly" entered in the national register would have to be immediately communicated to the International Bureau by the national Office, provided such change concerns matters which may be recorded in the International Bureau. These matters are: change of ownership, change in address, change of representative, change in the list of goods and/or services. Any change in the mark itself is, of course, unrecordable. Any entry in the national register concerning a matter—for example, a license—which may not be recorded in the International Register of Marks would not only not have to be communicated to the International Bureau but, if communicated, would not be the subject of any annotation in the International Register of Marks.

See Rule 34.1 (Notification of Certain Recordings Effected by National Offices).

Paragraph (2): See Rule 34.2 (Annotation and Publication).

In certain cases, the change could only with great difficulty be recorded in all its details in the International Bureau, primarily because of language problems (for example, where the change is in the list of goods and/or services). In such cases, probably only the fact that a change has been entered in the national register and an indication of the nature of the change will be all that is practicable for the purposes of international annotation and publication.

Paragraph (3): Should the national Office fail to proceed as it should under paragraph (1), it can be assumed that any party that may suffer prejudice because of the consequences provided for in paragraph (3) will remind the national Office of its obligation.

A typical case of actual awareness on the part of a third party is the case where such party has had correspondence about the subject matter recorded only in the national register of marks.

## ARTICLE 20

### Preservation of Rights Acquired Through National Registration

(1) If, at the international registration date or the recording date of the later designation, as the case may be, the owner of the international registration of a mark owns, in any designated State, a registration of the same mark in the national register of marks ("national registration"), his rights under this Treaty shall be deemed to include all rights, particularly any priority right, existing under the national registration, and, subject to paragraph (4), shall be deemed to continue to include them even where the national registration subsequently expires. The foregoing provision shall apply to the extent that the goods and/or services referred to in respect of the said State in the international registration are the same as the goods and/or services referred to in the said national registration.

(2) The applicant or the owner of the international registration of a mark may, as provided in the Regulations, make a declaration alleging that he owns national registrations of the same mark in certain designated States and identifying such registrations. The declaration may be included in the international application or the request for the recording of later designations or it may be filed separately. It shall, as provided in the Regulations, be accompanied by a certified copy of each national registration referred to in the declaration. The International Bureau shall record and publish the declaration and shall notify the interested designated Offices accordingly, as provided in the Regulations. Those Offices shall refer to the declaration in their respective national registers of marks in connection with the said national registrations.

(3)(a) Where a declaration under paragraph (2) has been notified to the designated Office and the conditions referred to in paragraph (1) are complied with, and to the extent that they are complied with, the effects provided for in Article 11 may not, subject to subparagraph (b), be refused under Article 12.

(b) Where, in any designated State, there is more than one national register of marks and the national registration referred to in paragraph (1) exists in a national register which affords less than the highest degree of protection, subparagraph (a) shall apply only if the declaration under paragraph (2) relates to a registration in the same national register.

(4) Where the national registration referred to in paragraph (1) expires, the rights under this Treaty shall be deemed to continue to include the rights which existed under the said national registration only where a declaration referred to in paragraph (2) has been filed not later than within one year from the expiration of the said national registration.

## COMMENTS ON ARTICLE 20

Paragraph (1): This paragraph deals mainly with the situation in which the owner of a mark switches over from protection by virtue of national registration to protection by virtue of international registration-cum-designation under the Treaty. It is essential that he suffer no prejudice because of such switchover, and that is what this provision and paragraph (3) accomplish. The reason for which the owner of a mark may desire such a switchover is that under the Treaty the surveillance of his mark becomes much simpler, and generally also much cheaper, if for no other reason than that renewals valid in a number of States can be made at regular (ten-year) intervals, in one place (the International Bureau), according to a centrally (in the Gazette) published fee schedule, by payment in one currency (Swiss) by a single transfer, subject to the simplest single formality (filling in one form), and without the need of any intermediary.

The paragraph provides that the effect of the switchover is that the rights under the national registration are deemed to be included and continue to be deemed to be included in the international registration. The continued inclusion of the rights under the national registration is unconditional as long as that registration exists, and for a further year after it has ceased to exist. Thereafter, it is conditional, the condition being that the declaration referred to in paragraph (2) has been filed (see paragraph (4)). This declaration is necessary because, without it, persons consulting the International Register of Marks would not be informed about the continued inclusion of rights acquired under the national registration and those consulting the national register could assume that, since the national registration had expired, all the rights which had been acquired under it would also have expired.

Paragraph (2): As to the declaration, see Rule 6.4 (Declarations Under Articles 20(2) and 21(2)), dealing with declarations included in international registration, and Rule 11.3 (Declarations Under Articles 20(2) and 21(2)), dealing with declarations included in requests for the recording of later designations. See also Rule 25 (Declarations Concerning Earlier National and Madrid Registrations).

As to recording the declaration, see Rule 3.1 (Keeping of the Register).



As to publishing the declaration, see paragraph (a)(ix) of Rule 17.1 (Contents of Publication of International Registrations) and paragraph (a)(vii) of Rule 17.2 (Contents of Publication of Recordings of Later Designations), as well as Rule 25.4 (Publication; Notification [of Declarations]).

As to notifying the declaration, see Rule 18.1 (Form of Notifications [of International Registrations and Recordings of Later Designations]), by virtue of which everything that is published is also separately notified to each interested designated State. See also Rule 25.4 (Publication; Notification [of Declarations]).

The last sentence of this paragraph provides that the declaration will be referred to in the national register in connection with the national mark on the basis of which the switch-over took place. This is important because it means that anybody consulting the national register will be alerted to the fact that mere failure to renew the national registration does not necessarily mean that the protection has ceased.

*Paragraph (3)(a):* The words "to the extent that they [the conditions referred to in paragraph (1)] are complied with" are intended to emphasize that the provision applies only to the extent to which the goods and/or services listed in the national registration are the same as those which are listed in the international registration. See also the comments on Article 12(1).

*Paragraph (3)(b):* This subparagraph deals with the situation contemplated in Article 11(3) (see the comments thereon) and means that, for example, if a person owns a mark registered in the Supplemental Register of the U.S. Patent Office and later switches over to an international registration-cum-designation of the United States of America, such designation will not be subject to the possibility of refusal only if it is connected with the indication of the Supplemental Register (see Rule 6.5: Option Under Article 11(3)).

*Paragraph (4):* The declaration must be accompanied by a certified copy of the national registration (paragraph (2), third sentence) in order to allow easy verification of the identity of the mark, and of the goods and/or services, covered by that registration and the international registration. See also the comments on paragraph (1).

#### ARTICLE 21

##### *Preservation of Rights Acquired Through International Registration Under the Madrid Agreement*

(1) If, at the international registration date or the recording date of the later designation, as the case may be, the owner of the international registration of a mark effected under this Treaty owns, in respect of any designated State, an international registration of the same mark effected under the Madrid Agreement ("Madrid registration"), his rights under this Treaty shall be deemed to include in respect of that State all rights, particularly any priority right, existing under that Madrid registration and, subject to paragraph (4), shall be deemed to continue to include them even where the Madrid registration subsequently expires. The foregoing provision shall apply to the extent that the goods and/or services referred to in respect of the said State in the international registration under this Treaty are the same as the goods and/or services referred to in respect of the said State in the Madrid registration.

(2) The applicant seeking the international registration of a mark under this Treaty, or the owner of the international registration of a mark under this Treaty, may, as provided in the Regulations, make a declaration alleging that he owns a Madrid registration of the same mark in respect of certain designated States and identifying such registration. The declaration may be included in the international application or the request for the recording of later designations or it may be filed separately. The International Bureau shall record and publish the declaration and shall refer to it in the corresponding Madrid registration, as provided in the Regulations.

(3) Where a declaration under paragraph (2) has been notified to the designated Office and the conditions referred to in paragraph (1) are complied with, and to the extent

that they are complied with, the effects provided for in Article 11 may not be refused under Article 12, unless protection under the Madrid Agreement has been refused or as long as refusal under that Agreement is still possible.

(4) Where the Madrid registration referred to in paragraph (1) expires, the rights under this Treaty shall be deemed to continue to include the rights which existed under the Madrid Agreement only where a declaration referred to in paragraph (2) has been filed not later than within one year from the expiration of the said Madrid registration.

#### COMMENTS ON ARTICLE 21

*Paragraphs (1) to (4):* This Article has virtually the same content as Article 20, except that it deals with the preservation of rights acquired not through national registration but through international registration under the Madrid Agreement.

Consequently, the comments made in connection with Article 20 apply also to this Article, *mutatis mutandis*.

The switch-over is facilitated in certain circumstances through exemption from certain fees (see Rule 9.4: Exemption from Certain Fees).

#### ARTICLE 22

##### *Preservation of the Right To Use the Madrid Agreement*

Where any natural person or legal entity has the right to seek international registration under the Madrid Agreement or to renew his or its international registration under that Agreement, such right shall not be affected by this Treaty in any Contracting State party also to the Madrid Agreement.

#### COMMENTS ON ARTICLE 22

*Sole paragraph:* The proposed Treaty will not replace the Madrid Agreement, not even among States which will be party to both Instruments. Where any applicant or owner of a mark is a national or a resident of a State party to both Instruments, he will have the freedom to choose and may use, for the purposes of protection in other States that are also party to both Instruments, either of the two Instruments. The freedom to choose the Madrid Agreement is spelled out in this Article. The freedom to choose the present Treaty—which will be the more recent one—goes without saying.

#### ARTICLE 23

##### *National Registrations Based on International Registrations*

(1) The owner of the international registration of a mark having the effect provided for in Article 11(2) in any Contracting State may, at any time and with reference to such international registration, apply for the registration of the same mark in the national register of marks of that State, and such national registration shall, provided the requirements of the national law are complied with, be granted in that State, and the rights of the said owner under such national registration shall be deemed to include all rights, particularly any priority right, existing under the said international registration in the said State, even where the international registration subsequently expires in respect of that State. The foregoing provision shall apply to the extent that the goods and/or services listed in the said application are the same as the goods and/or services referred to in the said international registration in respect of the said State.

(2) Until the expiration of the effect referred to in paragraph (1), the provisions of Article 19(1) and (2) shall apply also in connection with any national registration effected under that paragraph.

#### COMMENTS ON ARTICLE 23

*Paragraph (1):* This provision permits the owner of the international registration to switch over from protection by

virtue of the Treaty to protection by virtue of national registration in any designated State and guarantees that such switch-over will be without any diminishing of the rights which the owner had in respect of that State under the international registration.

*Paragraph (2):* Article 19(1) and (2) provide, in essence, that, where the mark is registered in both registers, recordings in the national register of marks must be indicated in the International Register of Marks. As to the reasons for this requirement, see the comments on Article 19.

#### ARTICLE 24

##### *Regional Marks*

Where any resident or national of a Contracting State is entitled, under a regional treaty, to file applications for the registration of regional marks and to own registrations thereof, the national law of any Contracting State party also to that regional treaty may provide that its designation under this Treaty shall have the same effect as if that designation included an indication of the wish to obtain the same effects as if the mark had been applied for and registered as a regional mark.

#### COMMENTS ON ARTICLE 24

*Sole paragraph:* There are no States at the present time in which the owner of the mark would be able to choose between protection by virtue of a registration in a national register or by virtue of a registration in a regional register. However, it is quite possible that, in the future, such States will exist. The Article in question contemplates the existence of those States and allows them, subject to one condition, to "close" the effect of national registration to marks for which the TRT is used. Such a State must, however, "open" the regional registration effect to such marks. The condition is that the regional treaty providing for regional registration must be a treaty which allows the use of that treaty by any owner of a mark who is entitled to use the TRT.

In connection with regional marks, the question should be examined whether it is necessary that the Treaty contain a provision to the effect that, "where a treaty concerning a regional mark provides that any applicant for such mark cannot limit his application to certain of the States party to that regional treaty and where the applicant or owner of an international registration designates one or more Contracting States party also to the said regional treaty, indicating at the same time the wish to obtain a regional mark, but does not designate all the States party to the said regional treaty, such designation shall be treated as designation of all the States party to that regional treaty," or whether such effect follows automatically from the provisions of the regional treaty and the organization of its register and the TRT permits of such automatic effect.

Furthermore, the question should be studied whether certain provisions concerning fees should not expressly differentiate between regional and national fees.

#### ARTICLE 25

##### *Representation Before the International Bureau*

(1) Applicants and owners of international registrations may, as provided in the Regulations, be represented before the International Bureau by any natural person or legal entity empowered by them to that effect (hereinafter referred to as "the duly appointed representative").

(2) Any invitation, notification or other communication addressed by the International Bureau to the duly appointed representative shall have the same effect as if it had been addressed to the applicant or the owner of the international registration. Any application, request, demand, declaration or other document whose signature by the applicant or the owner of the international registration is required in proceedings before the International Bureau, except the document appointing the representative or revoking his appointment, may be signed by his duly appointed representative, and any communication from the duly appointed representative to the Interna-

tional Bureau shall have the same effect as if it had been effected by the applicant or the owner of the international registration.

(3)(a) Where there are several applicants and they have not appointed a common representative as provided in the Regulations, the applicant first named in the international application shall be considered the duly appointed representative of all the applicants.

(b) Where there are several owners of an international registration and they have not appointed a common representative as provided in the Regulations, the natural person or legal entity first named among the said owners in the International Register of Marks shall be considered the duly appointed representative of all the owners of the international registration.

#### COMMENTS ON ARTICLE 25

*Paragraph (1):* See Rules 2.1 (Number of Duly Appointed Representatives), 2.2 (Form of Appointment), 2.3 (Revocation, Lapse, or Renunciation of Appointment).

This provision means that any person may represent an applicant or owner of an international registration before the International Bureau. The representative may be not only a trademark agent or attorney but also one of the employees of the applicant or owner, or any other person, including a legal entity, and no requirements as to professional qualifications may be prescribed. Of course, if and when any act has to be accomplished before a national Office or other national authority, the national law applicable to that Office will govern and, consequently, in proceedings before national authorities it will frequently be necessary that the representative be a qualified trademark attorney or agent residing in the country in which that national Office or other authority is located.

*Paragraph (2):* According to the first sentence, where, for example, the Treaty provides that the International Bureau has to (i) invite the applicant to correct certain defects (including the payment of missing fees) (Article 7(2) and (3)), (ii) notify the applicant if it declines the international application (Rule 14.3) or if it receives from a designated State a notice of refusal or possible refusal (Article 12(3)(a)), or (iii) notify the owner of the international registration if it declines a request for changing the list of goods and/or services (Article 15(3)), the said Bureau will send the invitation or notification to the duly appointed representative (rather than the applicant or the owner of the international registration) and thus will have complied with the requirements of the Treaty.

According to the second sentence, the duly appointed representative, instead of the applicant or the owner of the international registration, may, for example, sign the international application, any request for recording later designations or a change in ownership or a change in the list of goods and/or services, any demand for renewal, any declaration of intent to use, or any declaration of actual use, and any communication of withdrawal or renunciation referred to in Rule 29.

*Paragraph (3)(a):* See Rule 2.1(a), which provides that, if there are several applicants or owners of the international registration, they may appoint only one representative.

*Paragraph (3)(b):* See the comments on paragraph (3)(a).

#### ARTICLE 26

##### *Effect of Priority Claim Contained in the International Application or in the Request for the Recording of Later Designations*

The conditions for and the effect of any priority claimed in the international application or in the request for the recording of later designations shall be as provided for in respect of marks in Article 4 of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property.

#### COMMENTS ON ARTICLE 26

*Sole Paragraph:* The international application or any request for later designation may contain a declaration claiming the priority of one or more earlier applications filed in or for any country party to the Paris Convention (see Articles



5(1)(b) and 6(2)(b)). Rule 6.2 (Claiming of Priority) regulates the details for making the declaration of priority effective in respect of all of the States designated in the international application. Rule 11.1 (Claiming of Priority) provides for the same in respect of any later designated State.

#### ARTICLE 27

##### International Application as Possible Basis of Priority Claim

(1) Any international application which is regular shall be equivalent to a regular national filing within the meaning of Article 4 of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property and shall be recognized as the basis of a priority claim as provided for in that Act.

(2) For the purposes of paragraph (1), an international application shall be regarded as regular if it is adequate to establish the date on which it was filed with the International Bureau \* [or, where it was filed through the intermediary of a national Office, with that Office].

##### COMMENTS ON ARTICLE 27

*Paragraph (1):* This Article makes the international application the possible basis of a priority claim. Since, under the Treaty, international applications may be filed without or before the existence of any national filing (except in the case contemplated in Article 4(6)), international applications will frequently be "first" applications, and it will be useful to invoke their priority in States which cannot be designated (because they are not party to the Treaty) or which, for one reason or another, are not designated although they could be designated.

The Stockholm Act of the Paris Convention provides that "any filing that is equivalent to a regular national filing . . . under . . . multilateral treaties concluded between countries of the Union shall be recognized as giving rise to the right of priority" (Article 4A(2)).

The paragraph under consideration provides that a regular international filing comes within the scope of the quoted provision of the Paris Convention.

*Paragraph (2):* This paragraph specifies the conditions which an international application must satisfy to constitute a "regular" filing and defines the date of filing.

#### ARTICLE 28

##### Delay in Meeting Time Limits

(1) Subject to paragraph (3), any Contracting State shall, as far as that State is concerned, excuse, for reasons admitted under its national law, any delay in meeting any time limit fixed in this Treaty or the Regulations.

(2) Subject to paragraph (3), any Contracting State may, as far as that State is concerned, excuse, for reasons other than those admitted under its national law, any delay in meeting any time limit fixed in this Treaty or the Regulations.

(3) Paragraphs (1) and (2) shall not apply to any delay in meeting any time limit provided for in \* [Article 7(1), Article 8(1) and] Article 12(2)(a)(i).

(4) The International Bureau shall not excuse delays by applicants, owners of international registrations or national Offices in meeting any time limit fixed in this Treaty and the Regulations.

##### COMMENTS ON ARTICLE 28

*Paragraph (1):* A typical reason for which national laws excuse delays in meeting time limits is *force majeure*. Thus, for example, if, according to the national law of a Contracting State, a postal strike is considered *force majeure* and, because of that strike, the missing signature on a request for the recording of the later designation of that State is furnished after the expiration of the time limit applicable under Article 8(2), the national Office of that State will, on the request of the owner of the international registration, have to request the International Bureau to proceed with the recording of the designation (see Article 9(1)(i) and (2)(i)).

*Paragraph (2):* If, for example, the delay is not due to *force majeure* but—to modify the example given above—is caused by the late arrival in the mail of the signature, for no apparent reason, the designated State may, if it so wishes, proceed as outlined in the above example.

*Paragraph (3):* The time limit provided for in Article 12(2)(a)(i) is the fifteen-month time limit for notifying refusals or notices of possible refusals to the International Bureau. Excusing delays in meeting that time limit would mean that the Contracting State would be excusing its own delay. This would seem to be going too far, particularly since it would create uncertainty both for the owner of the mark and for third parties over an indefinite period of time.

*Paragraph (4):* This provision is needed even for cases where the delay is caused by *force majeure* since the International Bureau has no rules for defining the concept of *force majeure* and has no machinery for taking evidence and passing judgment on the question whether a given circumstance amounts to *force majeure*.

#### ARTICLE 29

##### Correction of Errors of the International Bureau

(1) Subject to the provisions of Article 9, where, in the opinion of the applicant or owner of the international registration, the International Bureau has, in applying the provisions of this Treaty and the Regulations, made an error which may affect the interests of such applicant or owner in respect of any designated State, the said applicant or owner may, within the time limit fixed in the Regulations, file with the national Office of such State a petition for the purpose of requesting the International Bureau to correct the error in respect of the said State.

(2) If the national Office or any other competent authority of the said State finds that the International Bureau has in fact made the error which is the subject of the petition, the said national Office shall request the International Bureau to correct that error in respect of that State, and the International Bureau shall proceed as requested.

(3) The applicant or the owner of the international registration who files a petition under paragraph (1) shall, at the time of filing the petition, transmit a copy of that petition to the International Bureau. If the petition relates to a mark which is already registered in the International Register of Marks, the International Bureau shall, as provided in the Regulations, record and publish the fact that it has received a copy of such petition; otherwise it shall keep the said copy in its files.

(4) Where the correction requires a corresponding modification of the International Register of Marks, the International Bureau shall modify that Register accordingly. Furthermore, where the correction affects any information which has been the subject of a publication by the International Bureau, that Bureau shall publish the correction.

##### COMMENTS ON ARTICLE 29

*Paragraph (1):* Whereas Article 9 provides for measures enabling the effects to be avoided of any error by the International Bureau which resulted in the declining of the international application or the request for the recording of later designations, this Article provides for measures enabling the effects to be avoided of any error by the International Bureau which does not result in the said declining but which otherwise may adversely affect the interests of the applicant or the owner of the international registration. Such error may be, for example, the refusal by the International Bureau to record the renewal, or the change in ownership, or the limitation of the list of goods and/or services, because it has—erroneously—found that the fees paid were insufficient.

It goes without saying that, as in the case of erroneous declining (see the third paragraph of the comments on Article 7, "Generally"), so also in the case of any other error, the applicant or the owner of the international registration may call the attention of the International Bureau to the fact that, in his opinion, it is about to make an error or has made an

error, and the International Bureau may decide not to make the decision or come back on it. The question should be studied whether any error reflected in a publication should be so correctable only within a certain time limit, for example 6 months, from the date of publication.

As to the time limit for filing the petition, see Rule 38.1 (Time Limit Under Article 29). See also Rule 38.3. (Information Available to National Offices) and Rule 38.4. (Information Furnished by the National Office).

*Paragraph (2):* This provision means that all consequences of the error will be eliminated as far as the designated State in question is concerned.

*Paragraph (3):* See Rule 38.2 (Recording and Publication Under Article 29(3)).

*Paragraph (4):* If the correction does not relate to any matter which has been the subject of publication, the error and its correction will be shown only by the file of the international registration.

#### CHAPTER II: ADMINISTRATIVE PROVISIONS

##### ARTICLE 30

###### Assembly

(1) (a) The Assembly shall consist of the Contracting States.

(b) The Government of each Contracting State shall be represented by one delegate, who may be assisted by alternate delegates, advisors, and experts.

(2) (a) The Assembly shall:

- (i) deal with all matters concerning the maintenance and development of the Union and the implementation of this Treaty;
- (ii) exercise such rights and perform such tasks as are specially conferred upon it or assigned to it under this Treaty;
- (iii) give directions to the Director General concerning the preparation for revision conferences;
- (iv) review and approve the reports and activities of the Director General concerning the Union, and give him all necessary instructions concerning matters within the competence of the Union;
- (v) determine the program and adopt the budget of the Union, and approve its final accounts;
- (vi) adopt the financial regulations of the Union;
- (vii) establish such committees and working groups as it deems appropriate to facilitate the work of the Union and of its organs;
- (viii) determine which States other than Contracting States and which intergovernmental and international non-governmental organizations shall be admitted to its meetings as observers;
- (ix) decide upon the establishment of any agency of the International Bureau in any place outside Geneva (Switzerland) for the purposes of receiving documents and payments under this Treaty and the Regulations with the same effect as if they had been received by the International Bureau in Geneva;
- (x) take any other appropriate action designed to further the objectives of the Union and perform such other functions as are appropriate under this Treaty.

(b) With respect to matters which are of interest also to other Unions administered by the Organization, the Assembly shall make its decisions after having heard the advice of the Coordination Committee of the Organization.

(3) A delegate may represent, and vote in the name of, one State only.

(4) Each Contracting State shall have one vote.

(5) (a) One-half of the Contracting States shall constitute a quorum.

(b) In the absence of the quorum, the Assembly may make decisions but, with the exception of decisions concerning its own procedure, all such decisions shall take

effect only if the quorum and the required majority are attained through voting by correspondence as provided in the Regulations.

(6) (a) Subject to the provisions of Article 32(5)(f), Article 33(2)(b) and (c), and Article 36(2)(b), the decisions of the Assembly shall require a majority of the votes cast.

(b) Abstentions shall not be considered as votes.

(7) (a) The Assembly shall meet once in every calendar year in ordinary session upon convocation by the Director General, preferably during the same period and at the same place as the Coordination Committee of the Organization.

(b) The assembly shall meet in extraordinary session upon convocation by the Director General, either on the Director General's own initiative or at the request of one-fourth of the Contracting States.

(8) The Assembly shall adopt its own rules of procedure.

##### COMMENTS ON ARTICLE 30

*Paragraph (1)(a):* "The States party to this Treaty" (Article 1(1)) are the Contracting States. "Assembly" is defined in Article 2(xix).

*Paragraph (1)(b):* See Rule 39.1 (Expenses Borne by Governments), according to which the expenses of each delegation are borne by the Government which the delegation represents.

*Paragraph (2)(a):* This paragraph enumerates some of the main tasks of the Assembly. The Assembly is the principal organ of the Union, in which all Contracting States are represented (paragraph (1)(a)) and have equal rights (paragraph (4)). The Draft provides for only one other organ and that is the secretariat, called the "International Bureau," headed by the Director General (see Article 31). The International Bureau is the secretariat of the World Intellectual Property Organization (WIPO), with headquarters in Geneva, Switzerland (see Article 2(xx)). WIPO administers several intellectual property Unions, including the Paris Union, the Madrid Union, and, once it comes into effect, the Union created by the Patent Cooperation Treaty (PCT).

As to the reasons for not proposing the creation of an Executive Committee see the comments on paragraph (7)(a). "Union" is defined in Article 2(xviii).

*Paragraph (2)(b):* The Coordination Committee of WIPO is composed of the members of the Executive Committee of the Paris Union and the members of the Executive Committee of the International (Berne) Union for the Protection of Literary and Artistic Works. "Organization" is defined in Article 2(xx).

*Paragraph (3):* In other words, no person can represent two or more member States.

*Paragraph (4):* This provision ensures equality among the member States.

*Paragraph (5)(a):* This provision is qualified in subparagraph (b), which provides that decisions can be made also in the absence of a quorum: decisions of a procedural nature made in the absence of a quorum are unconditionally valid, whereas all other decisions made in the absence of a quorum and of the required majority obtain effect after what amounts to a continuation—by correspondence—of the voting.

*Paragraph (5)(b):* See the comments made in connection with the preceding subparagraph. See also Rule 40.1 (Voting by Correspondence).

*Paragraph (6)(a):* Article 32(5)(f) deals with the majority required for decisions concerning the working capital fund. Article 33(2)(b) and Article 33(2)(c) deal with the majorities required for amending the Regulations, a matter within the power of the Assembly. The majorities are two-thirds for some provisions and three-fourths for others.

Article 36(2)(b) deals with the majorities required for amending certain provisions of the Treaty (all provisions—except one—fixing time limits and some administrative provisions), a matter within the power of the Assembly. The required majority is three-fourths for the said provisions, and unanimity for changing the length of the fifteen-month time limit fixed for notifying refusals and notices of possible refusal, as well as of the one-month time limit within which indirectly filed international applications and requests for the recording of later designations must reach the International Bureau.



Paragraph (6)(b): Abstentions, whether explicit or tacit, of delegations represented in the Assembly are, of course, counted in the quorum.

Paragraph (7)(a): Traditionally, the place and the period are Geneva and the end of September/beginning of October.

In some other treaties which are administered by WIPO and which constitute a Union, the Union has not only an Assembly but also an Executive Committee (generally consisting of one quarter of the States members of the Assembly) and that Committee meets once a year and the Assembly once every three years. For the purposes of the present Treaty, the constitution of a body (e.g., an Executive Committee) consisting of some only of the members of the Union is not proposed and it is proposed that the Assembly meet every year. The main reasons for not proposing the establishment of an Executive Committee and for proposing the institution of annual sessions of the Assembly are that the Regulations, including the fees under those Regulations, would probably have to be under constant review, that relatively large sums of money would go to the member States through the Union each year, and that those are all matters of equal interest to all member States.

Paragraph (7)(b): The request will be addressed to the Director General, who must then convene the extraordinary session.

Paragraph (8): There are in existence what are called the General Rules of Procedure of WIPO, which the organs of the various Unions usually take as a basis for their own rules of procedure. The latter may, of course, differ from the former in any and every respect which the Assembly sees fit.

#### ARTICLE 31

##### International Bureau

##### (1) The International Bureau shall:

- (i) perform the administrative tasks concerning the Union; in particular, it shall perform such tasks as are specially assigned to it under this Treaty or by the Assembly;
- (ii) provide the secretariat of revision conferences, of the Assembly, of the committees and working groups established by the Assembly, and of any other meeting convened by the Director General and dealing with matters of concern to the Union.

(2) The Director General shall be the chief executive of the Union and shall represent the Union.

(3) The Director General shall convene any committee and working group established by the Assembly and all other meetings dealing with matters of concern to the Union.

(4)(a) The Director General and any staff member designated by him shall participate, without the right to vote, in all meetings of the Assembly, the committees and working groups established by the Assembly, and any other meeting convened by the Director General and dealing with matters of concern to the Union.

(b) The Director General, or a staff member designated by him, shall be ex officio secretary of the Assembly, and of the committees, working groups and other meetings referred to in subparagraph (a).

(5)(a) The Director General shall, in accordance with the directions of the Assembly, make the preparations for revision conferences.

(b) The Director General may consult with intergovernmental and international non-governmental organizations concerning the said preparations.

(c) The Director General and persons designated by him shall take part, without the right to vote, in the discussions at revision conferences.

(d) The Director General, or a staff member designated by him, shall be ex officio secretary of any revision conference.

(6) The Regulations shall specify the services that national Offices shall render in order to assist the International Bureau in carrying out its tasks under this Treaty.

#### COMMENTS ON ARTICLE 31

Paragraph (1)(i): Among the tasks specially assigned, the most important are the receiving of the international applications, the keeping of the International Register of Marks, the publication of the Gazette, and the notification of national Offices and owners of international registrations.

Paragraph (1)(ii): As to revision conferences, see Article 35.

Paragraph (2): A similar provision is included in the "Charters" of all the Unions administered by WIPO.

Paragraph (3): The rules of procedure will contain provisions as to agendas and the length of the period which must be left between the sending of the preparatory documents and the meeting. In one case (Article 36(1)(b)), this period is fixed by the Treaty itself.

Paragraph (4)(a): "Participate" should be understood as meaning that he has the right to be present and the right to speak.

Paragraph (4)(b): The usual tasks of the Secretary are to assist the Chairman and prepare a draft report on the meeting.

Paragraph (5)(a): As to revision conferences, see Article 35. "Preparations" mainly consist in making proposals, receiving and distributing any proposals made by member States, convening preparatory meetings and preparing proposals for such meetings.

Paragraph (5)(b): This is a customary provision for all Unions administered by WIPO.

Paragraph (5)(c): "Take part" should be understood as meaning that they have the right to be present and the right to speak.

Paragraph (5)(d): See the comments made on paragraph (4)(b).

Paragraph (6): Such sources include, for example, furnishing their statistics. Naturally, the services in question would be of the same kind for each national Office.

#### ARTICLE 32

##### Finances

##### (1)(a) The Union shall have a budget.

(b) The budget of the Union shall include the income and expenses proper to the Union, its contribution to the budget of expenses common to the Unions, and any sum made available to the budget of the Conference of the Organization.

(c) Expenses not attributable exclusively to the Union but also to one or more other Unions administered by the Organization shall be considered as expenses common to the Unions. The share of the Union in such common expenses shall be in proportion to the interest the Union has in them.

(2) The budget of the Union shall be established with due regard to the requirements of coordination with the budgets of the other Unions administered by the Organization.

(3) The budget of the Union shall be financed from the following sources:

- (i) fees and other charges due for services rendered by the International Bureau in relation to the Union;
- (ii) sale of, or royalties on, the publications of the International Bureau concerning the Union;
- (iii) gifts, bequests, and subventions;
- (iv) rents, interests, and other miscellaneous income.

(4)(a) The amounts of fees and charges due to the International Bureau and the prices of its publications shall be so fixed that they should, under normal circumstances, be sufficient to cover the expenses of the International Bureau connected with the administration of this Treaty.

(b) If the budget is not adopted before the beginning of a new financial period, it shall be at the same level as the budget of the previous year, as provided in the financial regulations. If the income exceeds the expenses, the difference shall be credited to a reserve fund.

(5)(a) The Union shall have a working capital fund which shall be constituted by a single payment made by each Contracting State. If the fund becomes insufficient, the Assembly shall arrange to increase it. If part of the fund is no longer needed, it shall be reimbursed.

(b) The amount of the initial payment of each Contracting State to the said fund or of its participation shall be proportionate to the number of international applications which, among the total number of such applications, it is estimated that its residents will file. The participations of all Contracting States in the fund may be revised from time to time by the Assembly to make them correspond to the number of international applications actually filed by the residents of the various countries since the date of the initial payments or the last such revision.

(c) The proportion and the terms of payment shall be fixed by the Assembly on the proposal of the Director General and after it has heard the advice of the Coordination Committee of the Organization.

(d) If loans from the reserve fund permit the constitution of a working capital fund that is sufficient, the Assembly may suspend the application of the provisions of subparagraphs (a), (b), and (c).

(e) Any reimbursement under subparagraph (a) shall be proportionate to the amounts paid by each Contracting State, taking into account the dates at which they were paid.

(f) Any decision under subparagraphs (a) to (d) shall require two-thirds of the votes cast.

(6)(a) In the headquarters agreement concluded with the State on the territory of which the Organization has its headquarters, it shall be provided that, whenever the working capital fund is insufficient, such State shall grant advances. The amount of those advances and the conditions on which they are granted shall be the subject of separate agreements, in each case, between such State and the Organization. As long as it remains under the obligation to grant advances, such State shall have an ex officio seat in the Assembly if it is not a Contracting State.

(b) The State referred to in subparagraph (a) and the Organization shall each have the right to denounce the obligation to grant advances, by written notification. Denunciation shall take effect three years after the end of the year in which it has been notified.

(7) The auditing of the accounts shall be effected by one or more of the Contracting States or by external auditors, as provided in the financial regulations. They shall be designated, with their agreement, by the Assembly.

#### COMMENTS ON ARTICLE 32

Paragraph (1)(a): This provision and most of the others in this Article are identical or almost identical with the "Finances" provisions in the "Charters" of the other Unions administered by WIPO.

Paragraph (1)(b): The main sources of income will be fees and the sale of publications. The main expenses will be for staff salaries and printing. The "sum made available to the budget of the Conference of the Organization" would mainly serve purposes of technical assistance to member States. Similar provisions exist in the "Charters" of the Paris and Berne Unions. Of course, it is for the Assembly to decide whether to make any contribution for the said purpose and, if so, how much.

Paragraph (1)(c): Typical common expenses are those connected with the buildings used by the International Bureau and the staff salaries of such "common services" as the Director General's Office, External Relations, Finances, and Personnel.

Paragraph (2): Such coordination is mainly necessary in connection with the "common expenses."

Paragraph (3): Fees and receipts from the sale of publications will represent the greatest part of the income.

Paragraph (4)(a): In other words, the Union should be self-supporting. Consequently, there is no provision for any regular contribution by member States. In other words, any State which becomes party to the Treaty assumes no financial obligations, except, perhaps, that of contributing to a working capital fund. The constitution of such a fund may not, in certain circumstances, take place at all (see paragraph (5)(d)), but, if it does, its amount will be decided by the Assembly (see paragraph (5)(c)). Any contribution will be rather in the nature of a loan since it must be reimbursed if no longer needed (see paragraph (5)(a), last sentence).

The existing Madrid Agreement provides for the yearly distribution, among the member States, of any "profit" of the International Bureau, that is, of any difference between income and expenditure when the former is larger than the latter. The main source of income being fees, such profit means that the fees are set at a higher level than is necessary to make the international registration service self-supporting. The intention of this provision, and, more generally, of the proposed system, is not to make a profit but to fix the fees at the lowest possible safe level to make the service self-supporting. Consequently, there should be no or only an insignificant profit. That is why the present Draft does not provide for distribution of profits, but, if there are any, they will be paid into a reserve fund.

Paragraph (4)(b): The financial regulations will be adopted by the Assembly.

Paragraph (5)(a)(b)(c)(d)(e) and (f): See the comments made in connection with paragraph (4)(a).

Paragraph (6): The State in question is Switzerland. The provision is similar to parallel provisions in the "Charters" of the other Unions administered by WIPO. The Swiss Government has not yet been consulted on this draft provision.

Paragraph (7): The financial regulations will be established by the Assembly.

#### ARTICLE 33

##### Regulations

(1) The Regulations adopted at the same time as this Treaty are annexed to this Treaty.

(2)(a) The Assembly may amend the Regulations. Amendments may consist also of new provisions added to the Regulations concerning:

- (i) matters in respect of which this Treaty expressly refers to the Regulations or expressly provided that they are or shall be prescribed,
- (ii) any administrative requirements, matters or procedures,
- (iii) any details useful in the implementation of this Treaty.

(b) Subject to subparagraph (c), the amendment of the Regulations shall require two-thirds of the votes cast.

(c) The amendment of any provision of the Regulations affecting the amount of the fees referred to in Article 17(2), as well as the distribution among the national Offices and the transfer to them of such fees, shall require three-fourths of the votes cast. Where the amendment relates to fees referred to in Article 17(2) but those fees are fees to which only some of the Contracting States are entitled, only the Contracting States entitled thereto shall, for the purposes of the quorum, be considered Contracting States, and only they shall have the right to vote.

(3) In the case of conflict between the provisions of this Treaty and those of the Regulations, the former shall prevail.

#### COMMENTS ON ARTICLE 33

Paragraph (1): This provision means that the Regulations will be adopted in and by the diplomatic conference which will adopt the Treaty and that the text of the Regulations will be part of the document opened for signature at the end of that conference.

Paragraph (2)(a): This is probably the most important right of the Assembly.



Paragraph (2)(b): Amendment of subparagraph (c) requires three-fourths of the votes cast.

Paragraph (2)(c): Article 17(2) deals with the fees to which the Contracting States are entitled. It is the only provision which has an effect on the size of the income that each Contracting State will derive from the Treaty. The fees whose amount is fixed in the Regulations and to which only some of the Contracting States are entitled are the standard State fees (see Rules 9.2, 13.2 and 23.4, as well as the Table of Fees). The provision means, in particular, that, when any proposal to change the amounts of the standard State fees is voted upon, only those Contracting States will have the right to vote which have opted for the standard State fee system, whereas those which apply the individual State fee system will not have the right to vote.

Paragraph (3): The hierarchy of the two instruments (Treaty, Regulations) follows that of the two organs (Diplomatic Conference, Assembly) which adopt them.

#### ARTICLE 34 Search Service

(1) The International Bureau shall maintain a Service whose task shall be to search for anticipations among marks registered under this Treaty, and, to the extent authorized by the Assembly, other marks as well.

(2) Searches shall be made on request and shall be subject to the payment of fees fixed under the Regulations. The Service shall be at the disposal of any Government, national Office, other legal entity, or natural person.

(3) The amounts of the fees referred to in paragraph (2) shall be so fixed that they should be sufficient to cover the expenses of the International Bureau connected with the Service.

#### COMMENTS ON ARTICLE 34

Paragraph (1): Such a Search Service for marks registered under the Madrid Agreement exists today and has been in existence for decades. "Anticipations" means identical and similar marks. "Other marks" means marks registered under the Madrid Agreement and marks registered in the national register of marks of any given State. Inclusion in the Service of other marks, however, requires a decision by the Assembly.

Paragraph (2): Search reports have, of course, no legal effect whatsoever.

Paragraph (3): The fees must make the Service self-supporting since no sources of revenue other than the fees are provided for.

### CHAPTER III: REVISION AND AMENDMENT

#### ARTICLE 35

##### Revision of the Treaty

(1) This Treaty may be revised from time to time by a special conference of the Contracting States.

(2) The convocation of any revision conference shall be decided by the Assembly.

(3) The provisions referred to in Article 36(1)(a) may be amended either by a revision conference or according to the provisions of Article 36.

(4) Any amendment concerning any obligation on the part of the International Bureau which a revision conference has unanimously adopted and which has come into effect shall, if the amendment is in conflict with any earlier provision concerning any obligation on the part of the International Bureau, prevail even where the earlier provision is still in force.]

#### COMMENTS ON ARTICLE 35

Paragraph (1): "Special conference" means a diplomatic conference, that is, a conference among Governments represented by delegations having full powers to vote and sign.

Paragraph (2): "Revision conference" means the same as "special conference," the term used in paragraph (1).

Paragraph (3): The provisions referred to in Article 36(1)(a) are certain administrative provisions and the length of the time limits fixed in the Treaty.

Paragraph (4): This provision is presented between square brackets because the Committee of Experts of May 1972 took no position on the question whether the provision, suggested by one of the governmental experts, should be included. It is intended to exempt the International Bureau from conflicting obligations. For example, if an amendment to the Treaty were to abolish the obligation of the International Bureau to notify certain matters to the designated States, such obligation would cease even in respect of States which are not bound by the amendment.

#### ARTICLE 36

##### Amendment of Certain Provisions of the Treaty

(1)(a) Proposals for the amendment of the length of any time limit fixed in Chapter I of this Treaty, or for any amendment to Articles 30(5) and (7), 31, 32 and 34, may be initiated by any Contracting State or by the Director General.

(b) Such proposals shall be communicated by the Director General to the Contracting States at least six months in advance of their consideration by the Assembly.

(2)(a) Amendments to the provisions referred to in paragraph (1) shall be adopted by the Assembly.

(b) Adoption shall require three-fourths of the votes cast, provided that adoption of any amendment of the length of the time limit fixed in \* [Article 7(1), Article 8(1) and] Article 12(2)(a)(i) shall require that no Contracting State vote against the proposed amendment.

(3)(a) Any amendment to the provisions referred to in paragraph (1) shall enter into force one month after written notifications of acceptance, effected in accordance with their respective constitutional processes, have been received by the Director General from three-fourths of the Contracting States members of the Assembly at the time the Assembly adopted the amendment.

(b) Any amendment to the said Articles thus accepted shall bind all the Contracting States which were Contracting States at the time the amendment was adopted by the Assembly, provided that any amendment increasing the financial obligations of the said Contracting States shall bind only those which have notified their acceptance of such amendment.

(c) Any amendment which has been accepted and which has entered into force in accordance with the provisions of subparagraph (a) shall bind all States which become Contracting States after the date on which the amendment was adopted by the Assembly.

#### COMMENTS ON ARTICLE 36

Paragraph (1)(a): The time limits whose length is fixed in Chapter I of the Treaty are:

(i) The time limit (one month) within which certain defects concerning the international application or the request for the recording of later designations may be corrected without "later-dating" (Articles 7(3)(c) and 8(2)(a)),

(ii) the time limit (three months) within which certain defects concerning the international application or the request for the recording of later designations may, subject to "later-dating," be corrected (Article 7(2)(c), (3)(d), and Article 8(2)(a)),

(iii) the time limit (three months) within which the list of goods and/or services may, in cases other than those covered by Article 15, be limited (Articles 7(4)(a) and 8(2)(a)),

(iv) the time limit (two months) within which a petition or application for the avoiding of the effects of declining may be filed (Article 9(1)),

(v) the time limit (15 months) within which refusals or notices of possible refusal must be notified by national Offices to the International Bureau (Article 12(2)(a)),

(vi) the time limit referred to in Article 14(3)(d),

(vii) the time limits (six months before and six months after the starting date of the renewal) within which the demand for renewal must be filed (Article 16(3)(a)),

(viii) the time limit (three years and, in certain cases, up to five years or, in other cases, less than three years) of the moratorium for certain purposes on actual use (Article 18(3)(a), (b) and (c)),

(ix) the time limit (three months) for adducing certain evidence of actual use in certain cases (Article 18(3)(d)),

(x) the time limit (one month) for publication of certain notifications presumed not to have been actually received by the owner of the international registration (Article 18(5)(b)),

(xi) the time limit (one year) provided for the filing, in certain cases, of declarations under Articles 20(2) and 21(2) (Articles 20(4) and 21(4)),

(xii) the time limit (one month) within which indirectly filed international applications and requests for the recording of later designations must reach the International Bureau (Articles 7(1) and 8(1)).

Article 30(5) and Article 30(7) are the provisions on the quorum in the Assembly and the provisions on the times when ordinary and extraordinary sessions of the Assembly meet. Whereas the Stockholm Acts of the Paris Convention (Article 17) and of the Madrid Agreement (Article 13) provide that a qualified majority of the Assembly may amend any provision of that Convention or that Agreement concerning the Assembly, the PCT (Article 61(1)(a)) allows the same procedure only in the case of those provisions concerning the Assembly which deal with the quorum, voting on matters relating to Chapter II (inapplicable here), and the Executive Committee (inapplicable here). The proposed Draft follows the PCT by allowing the said procedure not in the case of all, but only in the case of some, of the provisions concerning the Assembly, namely, as already stated, in the case of the quorum (as in the PCT) and the frequency of the meetings of the Assembly (a matter not relevant in the PCT, which provides for an Executive Committee). The proposed Draft does not follow the Stockholm Act of the Paris Convention because, there, the role of the Assembly is quite different (it has no regulation-making power); and it does not follow the Stockholm Act of the Madrid Agreement because the expected membership of the proposed Treaty will probably be more like that of the PCT than that of the present Madrid Agreement.

Article 31 deals with the International Bureau. The Stockholm Acts of the Paris Convention (Article 17) and the Madrid Agreement (Article 13), as well as the PCT (Article 61(1)(a)), follow exactly the same pattern.

Article 32 deals with the finances of the Union. The Stockholm Acts of the Paris Convention (Article 17) and the Madrid Agreement (Article 13), as well as the PCT (Article 61(1)(a)), follow exactly the same pattern.

Article 34 deals with the Search Service. "Initiated" means "made."

The reason for providing for a procedure easier than revision—that is, the procedure of amendment by an Assembly decision—is that it may well be that changing circumstances or experience will show that some of the time limits are too long or too short or that the said administrative provisions could be usefully improved upon. It should be possible for such amendments—which would be dictated by practical needs and would not affect anything basic—to enter into effect without delay. This, too, is feasible only under the proposed amendment procedure since entry into force of revisions usually requires several years.

Paragraph (1)(b): This provision is intended to give sufficient time for reflection to the Governments of the Contracting States.

Paragraph (2)(a): As to the required majority, see the following subparagraph.

Paragraph (2)(b): Since the time limits fixed in the bracketed parts of Articles 7(1) and 8(1) and in Article 12(2)(a) (i) are time limits which national Offices have to respect, it appears to be wise to place them under a unanimity rule.

Paragraph (3)(a): As to States which become Contracting States later, see subparagraph (c).

Paragraph (3)(b): In other words, no Contracting State will be bound by an amendment increasing its financial obligations unless it agrees to be so bound. The only financial obligation provided in the Draft is the obligation to contribute to a working capital fund (see Article 32(5)).

Paragraph (3)(c): As to becoming a Contracting State, see Article 37.

### CHAPTER IV: FINAL PROVISIONS

#### ARTICLE 37

##### Becoming Party to the Treaty

(1) Any State member of the International Union for the Protection of Industrial Property may become party to this Treaty by:

- signature followed by the deposit of an instrument of ratification, or
- deposit of an instrument of accession.

(2) Instruments of ratification or accession shall be deposited with the Director General.

(3)(a) Any instrument of ratification or accession may be accompanied by a declaration to the effect that it shall be considered to have been deposited only when another State, or either one of two other States, or both of two other States, specified by name, shall have deposited instruments of ratification or accession. The instrument of ratification or accession of any State having made such a declaration shall be considered to have been deposited

(i) on the day on which the specified State, or one of the two specified States, or the second specified State, as the case may be, deposits its instrument of ratification or accession,

(ii) where the instrument of ratification or accession of any specified State itself is accompanied by a declaration concerning other States, on the day on which the instrument of ratification or accession of the said specified State is to be considered to have been deposited.

(b) Any declaration made under subparagraph (a) may be withdrawn at any time or, if it was made in respect to two States, may be limited to one of them. The instrument of ratification or accession of any State withdrawing its declaration shall be considered to have been deposited on the day on which the withdrawal is notified to the Director General, whereas the instrument of ratification or accession of any State limiting its declaration shall be considered to have been deposited on the day on which the remaining State deposits its instrument of ratification or accession. If the instrument of ratification or accession of the remaining State has already been deposited, the instrument of ratification or accession of the State limiting its declaration shall be considered to have been deposited on the day on which the limitation is notified to the Director General.

(4)(a) The provisions of Article 24 of the Stockholm (1967) Act of the Paris Convention for the Protection of Industrial Property shall apply to this Treaty.

(b) Subparagraph (a) shall in no way be understood as implying the recognition or tacit acceptance by a Contracting State of the factual situation concerning a territory to which this Treaty is made applicable by another Contracting State by virtue of the said subparagraph.

#### COMMENTS ON ARTICLE 37

Paragraph (1): The legal effect of ratification and accession is the same. The difference is merely a terminological one, "ratification" referring to acceptance by a signatory State, and "accession" referring to acceptance by a State which has not signed the Treaty.

Paragraph (2): Such instruments are usually signed by the Head of State.

Paragraph (3)(a): This provision enables any State to say, in effect, that it will become party only if State X, or State X or State Y, or States X and Y, also become party. The provision is not without precedent. Protocol No. 3 of the Universal Copyright Convention, concluded in 1952, is such a precedent.

Paragraph (3)(b): This provision enables any State having said, in effect, that it will become party only if State X also becomes party to change its mind, which it might well wish to do if, in the meantime, the membership of State X has ceased to be indispensable in the eyes of the State having made the declaration.



*Paragraph (4)(a):* Article 24 of the Stockholm Act of the Paris Convention is worded as follows:

"(1) Any country may declare in its instrument of ratification or accession, or may inform the Director General by written notification any time thereafter, that this Convention shall be applicable to all or part of those territories, designated in the declaration or notification, for the external relations of which it is responsible.

"(2) Any country which has made such a declaration or given such a notification may, at any time, notify the Director General that this Convention shall cease to be applicable to all or part of such territories.

"(3)(a) Any declaration made under paragraph (1) shall take effect on the same date as the ratification or accession in the instrument of which it was included, and any notification given under such paragraph shall take effect three months after its notification by the Director General.

"(b) Any notification given under paragraph (2) shall take effect twelve months after its receipt by the Director General."

*Paragraph (4)(b):* This subparagraph is almost identical with Article 62(4) of the Patent Cooperation Treaty, and the preceding subparagraph with Article 62(3).

#### ARTICLE 38

##### *Entry Into Force of the Treaty*

(1) This Treaty shall enter into force six months after five States have deposited their instruments of ratification or accession.

(2) Any State which is not among those referred to in paragraph (1) shall become bound by this Treaty three months after the date on which it has deposited its instrument of ratification or accession.

#### COMMENTS ON ARTICLE 38

*Paragraph (1):* It has been said in the past that any new Treaty on the international registration of marks should come into effect only if certain States not members of the Madrid Union accept it. It is believed that this desire is largely met by Article 37(3)(a). Declarations under that Article and the naming of the same State or States can hold up the entry into force of the Treaty until the said State or States accept it, even if the number of other States runs to dozens.

In other words, the paragraph under consideration, although it speaks of five States, does not necessarily mean that when five States have deposited their instruments the Treaty will come into force. The number actually required depends on the influence of the declarations made under Article 37(3)(a): it may be anything between five and any other, possibly much higher number.

*Paragraph (2):* The time limit of three months is the usual one.

#### ARTICLE 39

##### *Reservations to the Treaty*

No reservations to this Treaty are permitted.

#### COMMENTS ON ARTICLE 39

*Sole paragraph:* It is now accepted practice of the law of treaties that, when a Treaty does not provide for any possibility of making reservations, it must expressly state the fact in order to avoid any misunderstanding.

#### ARTICLE 40

##### *Denunciation of the Treaty*

(1) Any Contracting State may denounce this Treaty by notification addressed to the Director General.

(2) Denunciation shall take effect one year after the day on which the Director General has received the notification.

(3) The right of denouncing this Treaty provided for in paragraph (1) shall not be exercised by any Contracting State before the expiration of five years from the date on which it becomes bound by this Treaty.

(4)(a) The effects of this Treaty on any mark enjoying the benefits of this Treaty on the day preceding the day on which the denunciation by any Contracting State takes effect shall continue in that State until the expiration of the initial or renewal term which was running on that date.

(b) The same shall apply in Contracting States other than the denouncing State in respect of marks whose international registration is owned by a resident or national of the denouncing State.

#### COMMENTS ON ARTICLE 40

*Paragraph (1):* This provision is subject to one exception stated in paragraph (3).

*Paragraph (2):* This provision is subject to certain qualifications stated in paragraph (4).

*Paragraph (3):* This provision is intended to give a certain degree of stability to the membership of the Union.

*Paragraph (4)(a):* This provision is intended to allow a certain period of time for owners of international registrations to look for means of protection other than under the Treaty in the denouncing State.

*Paragraph (4)(b):* This provision is intended to allow a certain period of time for owners of international registrations who are residents or nationals of the denouncing State to look for means of protection other than under the Treaty in any Contracting State other than the denouncing State.

#### ARTICLE 41

##### *Signature and Languages of the Treaty*

(1) This Treaty shall be signed in a single original in the English and French languages, both texts being equally authentic.

(2) Official texts shall be established by the Director General, after consultation with the interested Governments, in the German, Italian, Japanese, Portuguese, Russian and Spanish languages, and such other languages as the Assembly may designate.

(3) This Treaty shall remain open for signature at Vienna until December 31, 1973.

#### COMMENTS ON ARTICLE 41

*Paragraph (1):* This provision follows the trend of treaties recently concluded under the aegis of the Paris Convention.

*Paragraph (2):* The comment made in respect of the preceding paragraph applies also to this paragraph.

*Paragraph (3):* This provision assumes that the Vienna Diplomatic Conference, now scheduled for May 7 to June 2, 1973, will take place as scheduled and will adopt the Treaty.

#### ARTICLE 42

##### *Depositary Functions*

(1) The original of this Treaty, when no longer open for signature, shall be deposited with the Director General.

(2) The Director General shall transmit two copies, certified by him, of this Treaty to the Governments of the States party to the Paris Convention and, on request, to the Government of any other State.

(3) The Director General shall register this Treaty with the Secretariat of the United Nations.

(4) The Director General shall transmit two copies, certified by him, of any amendment to this Treaty to the Governments of the Contracting States and, on request, to the Government of any other State.

#### COMMENTS ON ARTICLE 42

*Paragraph (1):* This provision follows the contemporary trend of treaties recently concluded under the aegis of the Paris Convention.

*Paragraph (2):* The comment made in respect of the preceding paragraph applies also to this paragraph.

*Paragraph (3):* Article 102 of the Charter of the United Nations provides for the mandatory registration of treaties with the Secretariat of the United Nations.

*Paragraph (4):* The comment made in respect of paragraph (1) applies also to this paragraph.

#### ARTICLE 43

##### *Notifications*

The Director General shall notify the Governments of the States party to the Paris Convention of:

- (i) signatures under Article 41;
- (ii) deposits of instruments of ratification or accession under Article 37(2) and of any declaration accom-

panying them under Article 37(3)(a) and any withdrawal or limitation of such declarations made under Article 37(3)(b);

(iii) the date of entry into force of this Treaty under Article 38(1) and any amendment under Article 36(3)(a);

(iv) denunciations received under Article 40.

IN WITNESS WHEREOF, the undersigned, being duly authorized thereto, have signed this Treaty.

DONE at Vienna, on June . . . , 1973.

### DRAFT REGULATIONS UNDER THE TRADEMARK REGISTRATION TREATY (prepared by the International Bureau)

TRT/DC/2

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\* Provisions exclusively concerning "indirect filing" are placed between brackets preceded by one asterisk.

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#### RULE 1

##### Abbreviated Expressions

##### 1.1 "Treaty"

In these Regulations, the word "Treaty" means the Trademark Registration Treaty.

##### 1.2 "Chapter" and "Article"

In these Regulations, the words "Chapter" and "Article" refer to the specified Chapter or Article of the Treaty.

##### [1.3 Associations]

References to legal entities in these Regulations shall be construed as references also to associations referred to in Article 4(5).]

#### RULES CONCERNING CHAPTER I

#### RULE 2

##### Duly Appointed Representatives

##### 2.1 Number of Duly Appointed Representatives

(a) The applicant and the owner of the international registration may appoint only one representative.

(b) Where several natural persons or legal entities have been indicated as representatives by the applicant or applicants, or by the owner or owners of the international registration, the natural person or legal entity first mentioned in the document in which they are indicated shall be regarded as the only duly appointed representative.

(c) Members of a partnership or firm composed of attorneys or patent or trademark agents shall be regarded as one representative.

[(d) Any member of a partnership or firm composed of attorneys or patent or trademark agents may appoint as his agent any other member of the same partnership or firm.]

[(e) Any representative may appoint as his agent any of his employees.]

##### 2.2 Form of Appointment

(a) A representative shall be regarded as a "duly appointed representative" if his appointment complies with the prescriptions of paragraphs (b), (d) and (e).

(b) The appointment of any representative shall require:

- (i) that his name appear as that of a representative in the international application, in the request or in any other document addressed to the International Bureau, and that such document bear the signature of the applicant or the owner of the international registration, or
- (ii) that a separate power of attorney (i.e., a document appointing the representative), signed by the applicant

or the owner of the international registration, be filed with the International Bureau.

(c) The signature shall not require any legalization or authentication.

(d) Where there are several applicants or owners of the international registration, the document containing or constituting the appointment shall be signed by all of them.

(e) Any document containing or constituting the appointment of a representative shall indicate his name and his address. Where the representative is a natural person, his name shall be indicated by his family name and given name(s), the family name being indicated before the given name(s). Where the representative is a legal entity or a partnership or firm of attorneys or patent or trademark agents, "name" shall mean the complete name of the legal entity or partnership or firm. The address of the representative shall be indicated in the same manner as that provided for in respect of the applicant in Rule 5.2(c).

(f) Where the appointment does not comply with the requirements referred to in paragraphs (b), (d) and (e), it shall be regarded as nonexistent.

##### 2.3 Revocation, Lapse, or Renunciation of Appointment

(a) The appointment of any representative may be revoked at any time by the natural person who or legal entity which has appointed that representative. The revocation shall be effective even if only one of the natural persons who or legal entities which have appointed the representative revokes the appointment.

(b) Revocation shall require a written document signed by the natural person or the legal entity referred to in the preceding paragraph. The signature shall not require any legalization or authentication.

(c) The appointment of a representative as provided in Rule 2.2 shall be regarded as the revocation of any earlier appointment of any other representative. The appointment shall preferably indicate the name of the other earlier appointed representative.

(d) Any representative may renounce his appointment through a notification signed by him and addressed to the International Bureau.

#### RULE 3

##### The International Register of Marks

##### 3.1 Keeping of the Register

(a) The International Register of Marks shall contain, in respect of each mark registered therein:

- (i) all the indications that the applicant, the owner of the international registration or a national Office must or may furnish under the Treaty or these Regulations and has, in fact, furnished, and, where relevant, the date on which such indications were received by the International Bureau,
- (ii) the amount of all fees received and the date or dates on which they were received by the International Bureau,
- (iii) the dates and numbers of all international registrations and recordings,
- (iv) any other indication whose recording is provided for by the Treaty or these Regulations.

(b) The Administrative Instructions shall regulate the establishment of the International Register of Marks, and, subject to the Treaty and these Regulations, shall specify the form in which it shall be kept and the procedure which the International Bureau shall follow for inscribing entries and recordings therein and for preserving it from loss or other damage.



## RULE 4

*Applicants; Owners of International Registrations*4.1 *Several Applicants; Several Owners of the International Registration*

(a) If there are several applicants, the right to file an international application shall be recognized only if all of them are residents or nationals of Contracting States.

(b) If there are several owners of an international registration, the right to own such a registration shall be recognized only if all of them are residents or nationals of Contracting States.

4.2 *The Same Applicants for All Designated States*

(a) The applicant or applicants shall be the same for the purposes of all the designated States.

(b) Where the international application, as filed, does not indicate the same applicant or applicants for the purpose of all the designated States, that application shall be treated as if only the State first mentioned therein, and any other State for the purposes of which the same applicant or applicants are indicated as for the said first-mentioned State, had been designated.

## RULE 5

*Mandatory Contents of the International Application*5.1 *Indication that the International Application is Filed Under the Treaty*

The indication referred to in Article 5(1)(a)(i) shall be worded as follows: "The undersigned requests that the mark herein reproduced be registered in the International Register of Marks established under the Trade-mark Registration Treaty."

5.2 *Indications Concerning the Applicant*

(a) The applicant's identity shall be indicated by his name. If the applicant is a natural person, his name shall be indicated by his family name and given name(s), the family name being indicated before the given name(s). If the applicant is a legal entity, its name shall be indicated by the full, official designation of the said entity.

(b) The applicant's residence and nationality shall be indicated by the name(s) of the State(s) of which he is a resident and of which he is a national.

(c) The applicant's address shall be indicated in such a way as to satisfy the customary requirements for prompt postal delivery at the indicated address and shall, in any case, consist of all the relevant administrative units up to, and including, the house number, if any. Where the national law of the designated State does not require the indication of the house number, failure to indicate such number shall have no effect in that State. Any telegraphic and teletype address and telephone number that the applicant may have should preferably be indicated. For each applicant, only one address shall be indicated; if several addresses are indicated, only the one first mentioned in the international application shall be considered. Any subsequent change in address shall be recorded on request, free of charge, by the International Bureau.

5.3 *Reproduction of the Mark; Colors, Transliteration and Translation*

(a) Where the mark contains only letters of the Latin alphabet, Arabic or Roman numerals, and punctuation signs usual in connection with the Latin alphabet, and the applicant does not wish to claim any special graphic feature, the mark may be reproduced, for example by typing the letters, numerals and signs, on the sheet itself on which the international application appears. The use of small letters and capital letters shall be permitted, and shall be followed in the publications of the International Bureau.

(b) In cases other than that referred to above, the mark shall be reproduced on a sheet of paper of A4 size (29.7 cm. x 21 cm.), separate from the sheet on which the text of the international application appears, and shall be attached to the latter sheet. The reproduction of the mark itself on the separate sheet shall not occupy a space larger than 10 centimeters horizontally and 10 centimeters vertically. It shall be of a quality admitting of direct reproduction by photography and printing processes.

(c) Where color is claimed, the international application shall contain a statement to that effect and shall be accompanied by

(i) either a reproduction of the mark in color in one copy satisfying the requirements set forth in paragraph (b) and a "color reproduction fee" whose amount is indicated in the Table of Fees,

(ii) or a reproduction of the mark in color in 50 copies and a reproduction of the mark in black and white in one copy containing a description of the colors in words and signs as specified in the Administrative Instructions, all copies satisfying the requirements set forth in paragraph (b).

(d) Any reproduction of a three-dimensional object whose shape constitutes or is part of the mark shall be accompanied by an indication to the effect that the mark is a three-dimensional mark. The reproduction may be accompanied by an indication to the effect that the mark is a sound mark.

(e) Marks which cannot, or whose picture cannot, be reproduced by the usual printing processes shall not be the subject of international applications.

(f) Where the mark consists of or contains matter in script other than Latin script or numbers expressed in forms other than Arabic or Roman, the international application shall also contain a transliteration of such matter in Latin script and Arabic numerals; the transliteration shall follow the English pronunciation if the international application is in English, and the French pronunciation if it is in French. If the International Bureau finds that such transliteration is missing and it is equipped to effect the said transliteration itself, it shall proceed accordingly.

(g) If the mark consists of or contains words which are part of the vocabulary of a language in general use in the country of residence or nationality of the applicant, and where such language is other than English or French, the international application shall contain a translation of such words in the language in which the international application is written. If the International Bureau finds that such translation is missing and it is equipped to effect the translation itself, it shall proceed accordingly.]

5.4 *List of Goods and/or Services*

(a) Each of the groups of terms pertaining to the same class of the International Classification shall be preceded by an indication of the number of the class, and the various groups shall follow in the numerical order of the corresponding classes.

(b) If, in the list of goods and/or services contained in the international application as filed, the terms are not or not properly grouped as provided in Article 5(1)(a)(iv), the International Bureau shall, after having notified the applicant of its intention to do so and allowing him a reasonable time to react to the notification, classify each term as required and constitute the required groups. If any of the terms does not permit classification in one class only of the International Classification, it shall be classified in each of the applicable classes. If the International Bureau finds that the term is incomprehensible, [it shall notify the applicant of its finding and shall allow him a reasonable time to react to the notification. Unless the applicant requests that the incomprehensible term be deleted from the list of goods and/or services,] it shall be left in the class or classes in which it was indicated in the

## RULE 6

*Optional Contents of the International Application*6.1 *Naming of a Representative*

The international application may indicate a representative.

6.2 *Claiming of Priority*

(a) The declaration referred to in Article 5(1)(b) shall consist of a statement to the effect that the priority of an earlier application is claimed and shall indicate:

(i) where the earlier application is an application filed for the registration of a mark in the register of marks of a country, the country in which it was filed; where the earlier application is an international application filed under the Treaty, a State designated therein; where the earlier application is an application for a regional mark, the authority with which it was filed and a State for which it was filed;

(ii) the date on which the earlier application was filed;

(iii) the number allotted to the earlier application.

(b) If the declaration does not indicate the country, State or States, and the date, referred to in paragraph (a)(i) and (ii), the International Bureau shall treat the declaration as if it had not been made.

(c) If the application number referred to in paragraph (a)(iii) is not indicated in the declaration but is furnished by the applicant or the owner of the international registration to the International Bureau prior to the expiration of the 10th month from the filing date of the said application, it shall be considered to have been included in the declaration, and the number so furnished shall be published by the International Bureau.

(d) If the declaration referred to in Article 5(1)(b) claims the priority of more than one earlier application, the provisions of paragraphs (a) to (c) shall apply to each of them and the declaration shall specify which of the earlier applications relate to which of the goods and/or services listed in the international application.

6.3 *Declaration of Intent To Use the Mark*

(a) Any declaration made under Article 18(4) shall consist of the following statement: "The undersigned applicant declares that (he) (it) intends to use the mark which is the subject of this international application himself (itself) and/or by and through persons authorized by him (it) in commerce with and/or on the territory of . . . [either insert "each of the States designated in this application" or indicate those of the States designated in respect of which the declaration is made] on and/or in connection with the goods and/or services listed in this application."

(b) It shall depend on the national law of each designated State whether any declaration to the same effect as but worded differently from the statement in paragraph (a) shall produce the effect provided for in Article 18(4) in that State.

6.4 *Declaration Under Articles 20(2) and 21(2)*

(a) Any declaration under Article 20(2), where included in the international application, shall:

(i) specify the designated State or States in respect of which it is made,

(ii) contain the allegation that the applicant owns a national registration or national registrations of the same mark in the said State or States,

(iii) indicate, in respect of each such national registration, its number.

(b) Any declaration under Article 21(2), where included in the international application, shall:

(i) specify the designated State or States in respect of which it is made,

international application; if in respect of any incomprehensible term no class was indicated in the international application, it shall be classified in all classes of goods and services of the International Classification.

(c) The list of goods and/or services shall be the same for the purposes of all States designated in the international application as filed or as limited under Article 7(4). Where the international application, as filed or as limited under Article 7(4), indicates different goods and/or services in respect of different designated States, that application shall be treated as if only the State first mentioned therein, and any other States for the purposes of which the same list of goods and/or services is indicated as for the said first-mentioned State, had been designated.

5.5 *Identification of States*

(a) Identification of any State shall consist in writing its name in the international application in a manner sufficiently clear for the purposes of identification.

(b) Any identification of designated States which are not Contracting States shall be treated as if such identification had not taken place.

5.6 *Choice Between National and Regional Marks*

(a) The possibility of any choice referred to in Article 5(1)(a)(vi) shall be notified by the interested Contracting State to the International Bureau, and that Bureau shall publish a corresponding announcement.

(b) The choice referred to in Article 5(1)(a)(vi) shall be indicated by the words "national mark desired" or "regional mark desired," respectively, or by other words to that effect, appearing next to the name of the designated State to which the choice applies.

\*\*[5.7 *Certification and Collective Marks*

The indication referred to in Article 5(1)(a)(vii) shall consist of the words "certification mark desired" or "collective mark desired," respectively, appearing next to the name of the designated State to which the indication applies.]

\* [5.8 *Applications Filed Through the Intermediary of a National Office*

(a) The indication referred to in Article 5(3)(b) shall be worded as follows: "The . . . [indicate name of the national Office] certifies that the present international application was filed with it on . . . [indicate the date]."

(b) The national Office of any Contracting State whose national law provides that international applications of residents of that State may be filed through the intermediary of the national Office of the said State shall, at least once a week, send to the International Bureau a note containing the following indications concerning each of the international applications filed with it since the sending of the last such note:

(i) the name of the applicant,

(ii) if the mark consists of one or more words, that word or words; if the mark consists of elements other than a word or words, a brief indication of what it consists of (for example, "figurative mark"),

(iii) the date on which the international application was filed with that Office,

(iv) the date on which the international application was mailed to the International Bureau.

(c) The notes referred to in paragraph (b) shall be numbered consecutively. Where since the sending of the last note no international applications have been received by the national Office, the note shall state that fact.

(d) If the International Bureau does not receive any of the international applications listed in any note within 15 days from the date on which it received such note, it shall inform the national Office accordingly.]



- (ii) contain the allegation that the applicant owns a Madrid registration of the same mark in respect of the said State or States,
- (iii) indicate the relevant registration number under the Madrid Agreement.

#### 6.5 Option Under Article 11(3)

The indication referred to in Article 11(3) shall be effected by identifying the appropriate national register (for example, "Supplemental Register" or "Part B Register").

#### 6.6 Trade or Business of the Applicant

The applicant may indicate in the international application the trade or business in which he is engaged.

### RULE 7

#### Languages

##### 7.1 Language of the International Application

The international application shall be in the English or in the French language.

##### 7.2 Language of the Request for Recording of Later Designations

The request for the recording of any later designation shall be in the same language as that in which the international application was filed.

##### 7.3 Language of Registrations, Recordings, Annotations, Notifications, Correspondence

(a) Registrations, recordings and annotations by the International Bureau shall be in the same language as that in which the international application was filed.

(b) Notifications by the International Bureau and any correspondence between the International Bureau and the applicant or the owner of the international registration, or his duly appointed representative, shall be in the same language as that in which the international application was filed.

(c) Notifications by the national Offices to the International Bureau and letters or other written communications from the national Offices to the International Bureau, shall be in the English or in the French language, it being understood that copies of papers filed by a third party in the case of an opposition proceeding attached to any notice of possible refusal shall be in the original language of such papers.

(d) Letters from the International Bureau to any national Office shall be in English or French according to the wish of the national Office; any matter in such letters quoted from the International Register shall be in the language in which such matter appears in that Register.

(e) Where the International Bureau is under the obligation to forward to the applicant any of the communications referred to in paragraph (c), it shall forward them in the language in which it received them.

### RULE 8

#### Form of the International Application

##### 8.1 Printed Forms

(a) The international application shall be made on a printed form furnished free of charge, on request, by the International Bureau to prospective applicants, attorneys, patent or trademark agents, and the national Offices.

(b) The form shall be filled in preferably by typewriter and shall be easily legible.

##### 8.2 Copies; Signature

(a) Subject to Rule 5.3(c)(ii), the international application, including the reproduction of the mark and any attachments, shall be filed in one copy.

(b) The international application shall be signed by the applicant.

(c) Where the applicant is a legal entity, the name of the legal entity shall be indicated in the place reserved for signatures and shall be accompanied by the signature or signatures of the natural person (persons) who is (are), according to the national law of the country under whose law the legal entity was established, entitled to sign for such legal entity.

##### 8.3 No Additional Matter

(a) The international application shall not contain any matter and shall not be accompanied by any document other than those prescribed or permitted by the Treaty or these Regulations.

(b) If the international application contains matter other than that prescribed or permitted, the International Bureau shall delete it ex officio; and if the international application is accompanied by any document other than those prescribed or permitted, the International Bureau shall treat such document as if it had not been transmitted to it.

### RULE 9

#### Fees Payable With the Filing of the International Application

##### 9.1 International Application Fee and Individual State Designation Fees

(a) The fees payable with the international application shall be:

- (i) an "international application fee," and, where applicable, the color reproduction fee referred to in Rule 5(3)(c)(i), and
- (ii) an "individual State designation fee" for every designated State.

(b) The amount of the international application fee is indicated in the Table of Fees.

(c) The amounts of the individual State designation fees concerning the various Contracting States shall be published by the International Bureau each year in the month of August. The amounts so published shall be applicable as the individual State designation fees from January 1 to December 31 of the year following the year in which they are published.

(d) Each Contracting State shall, subject to the following provisions, be free to determine the amount of the individual State designation fee applicable to it:

(i) Each Contracting State shall communicate the amount in Swiss francs of the individual State designation fee to the International Bureau each year before the end of the month of June. If the said communication is not made within the said time limit, the amount last communicated shall remain applicable.

(ii) The amount of the individual State designation fee may vary only according to the number of classes to which the goods and/or services listed in the international application belong according to the International Classification. \*\* [It may vary also according to whether the mark is or is not a certification mark or collective mark.]

(iii) The amount of the individual State designation fee shall not exceed 75% of the total amount of any filing, class, examination, registration or publication fees which would be payable if the application were an application for registration in the national register of marks.

##### 9.2 Standard State Designation Fees

Any Contracting State may require that, in each case where it is designated, a "standard State designation fee," whose amount is indicated in the Table of Fees, shall be

payable instead of the individual State designation fee referred to in Rule 9.1(ii).

##### 9.3 Fees Payable in Special Cases

(a) If the International Bureau finds that the requirement of transliteration or translation contained in Rule 5.3(f) and (g) has not been complied with, or that the requirement of proper grouping of the goods and/or services contained in Rule 5.4(b) has not been complied with, it may charge the applicant a "transliteration fee," a "translation fee," or a "classification fee," as the case may be.

(b) If the indication of the applicant's trade or business exceeds twenty words, the International Bureau may charge the applicant a fee.

(c) The amounts of the fees referred to in paragraphs (a) and (b) are indicated in the Table of Fees.]

##### 9.4 Exemption from Certain Fees

Where the owner of the international registration of a mark registered under the Madrid Agreement for certain goods and/or services applies for the international registration of the same mark for the same goods and/or services under the Treaty at least five years before the expiration of the then current term of protection under the Madrid Agreement and files a declaration under Article 21(2), he shall be exempt from the individual or standard State designation fee, as the case may be, in respect of any Contracting State in which his mark is then protected by virtue of the Madrid Agreement.

### RULE 10

#### Mandatory Contents of the Request for Recording of Later Designations

##### 10.1. Indication that the Request is for Recording of Later Designations

The indication referred to in Article 6(2)(a)(i) shall be worded as follows: "The undersigned applicant/owner of the international registration requests the recording in the International Register of Marks of the following later designations made under the Trademark Registration Treaty."

##### 10.2 Indications Concerning the Applicant or the Owner of the International Registration

The provisions of Rule 5.2 shall also apply, *mutatis mutandis*, in the case of Article 6(2)(a)(ii)

##### 10.3 Identification of the International Application or International Registration

(a) The international application shall be identified by a copy of the same and \* [, where it was filed direct with the International Bureau,] the date on which it was filed with or mailed to the International Bureau \* [or, where it was filed through the intermediary of a national Office, the name of that Office and the date on which it was received by or mailed to the said Office].

(b) The international registration shall be identified by its international registration number and date.

##### 10.4 Identification of the Later Designated States

The provisions of Rule 5.5 shall also apply, *mutatis mutandis*, in the case of Article 6(2)(a)(iv).

##### 10.5 Indication of the Choice Between National and Regional Marks

The choice referred to in Article 6(2)(a)(v) shall be indicated by the words "national mark desired" or "regional mark desired," respectively, or by other words to that effect, appearing next to the name of the designated State to which the choice applies.

##### \*\* [10.6 Certification and Collective Marks

The indication referred to in Article 6(2)(a)(vi) shall consist of the words "certification mark desired" or "collective mark desired," respectively, appearing next to the name of the designated State to which the indication applies.]

##### \* [10.7 Requests Filed Through the Intermediary of a National Office

(a) The indication referred to in Article 6(3)(b) shall be worded as follows: "The . . . [indicate the name of the national Office] certifies that the present request was filed with it on . . . [indicate the date]."

(b) The national Office of any Contracting State whose national law provides that requests for the recording of later designations by residents of that State may be filed through the intermediary of the national Office of the said State shall, at least once a week, send to the International Bureau a note containing the following indications concerning each of the requests filed with it since the sending of the last such note:

- (i) the name of the applicant or the owner of the international application,
- (ii) the international registration number and date to which the request refers or, where such number and date are not available, the indication referred to in Rule 5.8(b)(ii), together with, where the international application was filed through the intermediary of the national Office, the date on which it was so received by such Office and the date on which it was mailed to the International Bureau or, where the international application was filed direct with the International Bureau, the date on which it was so filed or the date on which it was mailed to the International Bureau,
- (iii) the date on which the request was filed with that Office,
- (iv) the date on which the request was mailed to the International Bureau.

(c) The notes referred to in paragraph (b) shall be numbered consecutively. Where since the sending of the last note no requests have been filed with the national Office, the note shall state that fact.

(d) If the International Bureau does not receive any of the requests listed in any note within 15 days from the date on which it received such note, it shall inform the national Office accordingly.]

### RULE 11

#### Optional Contents of the Request for Recording of Later Designations

##### 11.1 Claiming of Priority

Rule 6.2 shall apply also to the declaration referred to in Article 6(2)(b).

##### 11.2 Declaration of Intent To Use the Mark

(a) Any declaration made under Article 18(4) shall consist of the following statement: "The undersigned applicant/owner of the international registration declares that he (it) intends to use the mark which is the subject of the international application/international registration to which this request relates himself (itself) and/or through persons authorized by him (it) in commerce with and/or on the territory of . . . [either insert "each of the States designated in this request" or indicate those of the States designated in respect of which the declaration is made] on and/or in connection with the goods and/or services listed in this request."

(b) It shall depend on the national law of each designated State whether any declaration to the same effect as



but worded differently from the statement in paragraph (a) shall produce the effect provided for in Article 18(4) in that State.

#### 11.3 Declarations Under Articles 20(2) and 21(2)

The provisions of Rule 6.4 shall apply, *mutatis mutandis*, to any declaration under Articles 20(2) or 21(2), where such declaration is included in the request for the recording of later designations.

#### 11.4 List of Goods and/or Services

The concept of limitation referred to in Article 6(2)(b), second sentence, is defined in Rule 22.2.

#### 11.5 Option Under Article 11(3)

The indication referred to in Article 11(3) shall be effected by identifying the appropriate national register (for example, "Supplemental Register" or "Part B Register").

### RULE 12

#### Form of the Request for Recording of Later Designations

##### 12.1 Printed Forms

(a) The request referred to in Article 6(2)(c) shall be made on a printed form furnished free of charge, on request, by the International Bureau to applicants, owners of international registrations, attorneys, patent or trademark agents, and the national Offices.

(b) The form shall be filled in preferably by typewriter and shall be easily legible.

##### 12.2 Copies; Signature

(a) The request referred to in Article 6(2)(c) and any attachments thereto shall be filed in one copy.

(b) The request shall be signed by the applicant or the owner of the international registration.

(c) Rule 8.2(c) shall also apply to owners of international registrations.

##### 12.3 No Additional Matter

Rule 8.3 shall also apply to requests for recording later designations.

### RULE 13

#### Fees Payable With the Request for Recording of Later Designations

##### 13.1 International Later Designation Fee and Individual State Later Designation Fees

(a) The fees payable with the request for the recording of the later designation of any Contracting State shall be the following:

- (i) an "international later designation fee," and
- (ii) an "individual State later designation fee" for every later designated State.

(b) The amount of the international later designation fee is indicated in the Table of Fees.

(c) The amount of the individual State later designation fee shall be the same as that of the individual State designation fee referred to in Rule 9:1.

##### 13.2 Standard State Later Designation Fees

Any Contracting State may require that, in each case where it is the subject of a later designation, a "standard State later designation fee," whose amount shall be the same as that of the standard State designation fee referred to in Rule 9.2, shall be payable instead of the individual State later designation fee referred to in Rule 13.1(ii).

##### 13.3 Exemption from Certain Fees

The provisions of Rule 9.4 shall also apply, *mutatis mutandis*, in connection with the individual or standard State later designation fee, as the case may be.

### RULE 14

#### Defects in the International Application

##### 14.1 Invitations Under Article 7

Any invitation under Article 7(2)(a), (3)(a) or (4)(a) shall be sent by registered mail.

##### 14.2 Minimum Amount Under Article 7

The minimum amount referred to in Article 7(2)(a)(ix) and (3)(a)(i) shall be an amount equivalent to the amount of the international application fee referred to in Rule 9.1(a)(i).

##### 14.3 Notification, and Reimbursement of Certain Fees, Under Article 7(5)

Where the International Bureau declines the international application, it shall notify the applicant by registered letter stating the grounds for declining and shall reimburse to him all fees received from him except an amount equivalent to the international application fee referred to in Rule 9.1(a)(i).

##### \* [14.4 Notification of the National Office]

Where the international application is treated as provided for in Article 7(6), the International Bureau shall inform accordingly the national Office through the intermediary of which the application was filed.]

### RULE 15

#### Defects in the Request for Recording of Later Designations

##### 15.1 Application of Rule 14

The provisions of Rule 14 shall apply, *mutatis mutandis*, in respect of Article 8, provided that the amount referred to in Rules 14.2 and 14.3 shall be an amount equivalent to the amount of the international later designation fee referred to in Rule 13.1(a)(i).

### RULE 16

#### Procedure Where Avoiding the Effects of Declining is Sought

##### 16.1 Recording and Publication Under Article 9(3)

(a) The fact of having received a copy of a petition under Article 9(1)(i) shall, where the petition relates to a mark which is already registered in the International Register of Marks, be recorded by recording the subject of the petition, the name of the national Office to which it appears to be addressed, and the date on which said copy was received.

(b) The information to be published under Article 9(3) shall indicate the international registration number of the mark, the name of the State to whose national Office the petition appears to have been addressed, and the date on which the copy of the petition was received by the International Bureau.

##### 16.2 Information Available to National Offices

On request of the applicant or owner of the international registration, or of the interested national Office, the International Bureau shall send to that Office a copy of the file of the declined international application or declined request for recording later designations, together

with a memorandum setting out the grounds for and the various steps leading to the declining of the said application or request.

##### 16.3 Information Furnished by the National Office

Any request by a national Office referred to in Article 9(2)(i) shall indicate the grounds on which it is based.

### RULE 17

#### Publication of International Registrations and Recordings of Later Designations

##### 17.1 Contents of Publication of International Registrations

(a) The publication of any international registration shall contain:

- (i) the name and address of the owner of the international registration, together with any indication of his trade or business and, if he bases his right to file international applications on his residence in, or his nationality of, a State other than that in which he has his address, the name of the State of his residence or nationality, as the case may be,
- (ii) the reproduction of the mark, together with any indication under Rule 5.3(d) and any transliteration and translation; where color is claimed, the reproduction shall be in color if Rule 5.3(c)(i) applies, and it shall be in black and white and shall be accompanied by a description of the colors in words and signs if Rule 5.3(c)(ii) applies,
- (iii) the list of goods and/or services,
- (iv) the names of the designated States and, where applicable, after the name of each such State, an indication concerning the choice referred to in Rule 5.6 \*\*[and/or the indication referred to in Rule 5.7],
- (v) the international registration date,
- (vi) the international registration number,
- (vii) where the priority of one or more earlier applications is claimed, the date of filing and the number (if available) of such applications, the name of the country or countries in which or for which they were filed, and, where applicable, an indication that the application was filed under this Treaty or, where it was for a regional mark, an indication of the authority with which it was filed,
- (viii) any indication under Article 11(3),
- (ix) any declaration under Articles 20(2) and 21(2).

(b) The international registration number shall be a single serial number, followed by an oblique stroke and a zero.

##### 17.2 Contents of Publication of Recordings of Later Designations

(a) The publication of any recording of a later designation shall contain:

- (i) the name of the owner of the international registration,
- (ii) the international later designation number,
- (iii) the date of the recording of the later designations,
- (iv) the names of the later designated States and, where applicable, after the name of each such State, and indication concerning the choice referred to in Rule 10.5 \*\*[and/or the indication referred to in Rule 10.6],
- (v) if, for the purposes of any later designated State, the list of goods and/or services is more limited than the list of goods and/or services which was published with the international registration, the more limited list,
- (vi) where the priority of one or more earlier applications is claimed, the date of filing and the number (if available) of such applications, the name of the country or countries in which or for which they were filed, and, where applicable, an indication that the application was

filed under this Treaty or, where it was for a regional mark, an indication of the authority with which it was filed,

(vii) any indication under Article 11(3),

(viii) any declaration under Articles 20(2) and 21(2).

(b) The international later designation number shall consist of the international registration number of the international registration to which the later designation refers, followed by an oblique stroke and a number indicating the ordinal number of the request for later designations in question among all the requests for later designations referring to the same international registration.

(c) Where the recording of any later designation was effected sufficiently prior to the date of publication of the international registration to be practical to do so, the said publication shall, itself, contain the elements indicated in paragraph (a)(i) and (iv) to (viii), and the number of the said publication shall consist of the number referred to in Rule 17.1(b) and the number or numbers referred to in paragraph (b).

### RULE 18

#### Notification of International Registrations and Recordings of Later Designations

##### 18.1 Form of Notifications

The notification referred to in Article 10(2) shall be effected separately for each national Office and shall consist of:

- (i) a list of the international registration numbers and the international later designation numbers of the international registrations and recordings of later designations in which the State of the said Office has been designated,
- (ii) separate reprints made of the publication by the International Bureau of each international registration referred to in the said list,
- (iii) a copy of the international application or the request for the recording of later designations if it contains a declaration of intent to use made under Article 18(4).

##### 18.2 Frequency of Notifications

The notification shall be effected on the same day as that on which the issue of the Gazette is published which contains the matter from which the reprints referred to in Rule 18.1 are made.

### RULE 19

#### Refusals; Notices of Possible Refusal

##### 19.1 Notifying the International Bureau; Grounds

(a) Any notification under Article 12(2)(a) shall be sent in one copy, preferably on a form furnished free of charge by the International Bureau to the national Office of each Contracting State. The notification shall, in any case, contain:

- (i) the international registration number of the international registration, or the international later designation number of the later designation, as the case may be, to which the refusal or the notice of possible refusal relates,
- (ii) the mark that is the subject of the international registration if it is a word mark and an appropriate indication if it is a figurative mark or if the word mark contains figurative elements,
- (iii) an indication as to whether the notification is that of a refusal or of a notice of possible refusal,
- (iv) if it relates to some only of the goods and/or services listed, identification of those to which it relates,



(v) the grounds referred to in Article 12(2)(a)(ii) and (iii), together with a reproduction of any mark cited in the notification and not reproduced therein and a copy of the list of goods and/or services (in the original language) pertaining to such mark, and, when the notice of possible refusal specifies the grounds by reference to the opposition of a third party, a copy of any document filed by the opposing party in which the said grounds are specified,

(vi) an indication as to whether any remedy is available, and if so with which authority it has to be sought and within what time limit.

(b) The form referred to in paragraph (a) shall be prepared separately for each Contracting State, in collaboration with its national Office. It shall list the more common of the grounds for refusal with a reference to the pertinent provisions of the national law so that, wherever possible, such grounds may be specified by marking the applicable items of the list. The form shall contain a space reserved for specifying any other grounds and for other possible indications.

#### 19.2 Notifying the Owner of the International Registration; Publication

(a) The notification referred to in Article 12(3)(a) shall indicate the date on which any notification made under Article 12(2)(a) was received by the International Bureau and shall include a copy thereof. Subject to Rule 19.5, the International Bureau shall effect any notification referred to in Article 12(3)(a) promptly after the receipt of the notification referred to in Article 12(2)(a).

(b) The publication of the notification referred to in Article 12(3)(a) shall be effected promptly and shall contain:

- (i) the international registration number of the international registration, or the international later designation number of the later designation, as the case may be, to which the refusal or the notice of possible refusal relates, and the name of the owner of the international registration,
- (ii) the name of the State whose national Office transmitted the notification,
- (iii) a statement to the effect that a notification under Article 12(2)(a) was received.

#### 19.3 Notification and Recording of Final Decisions of Refusal; Cancellation of the Designation, and Publication of the Cancellation

(a) The notification by the national Office under Article 12(4)(a) shall be effected promptly after the date on which the decision of refusal becomes final. The notification shall contain:

- (i) an indication that it relates to a final decision of refusal,
- (ii) the indications referred to in Rule 19.1(a)(i) and (ii),
- (iii) where the decision is that of a court, a copy of the final decision; where the decision is not that of a court, the grounds given in the final decision, preferably in the same manner as that indicated in Rule 19.1(b);
- (iv) if the notification relates to some only of the goods and/or services listed, identification of those to which it relates;
- (v) the name of the authority which pronounced the decision, the number, if any, and the date of such decision, and
- (vi) the date on which the decision became final.

(b) The notification by the International Bureau under Article 12(4)(a) shall be effected as soon as possible and shall include a copy of the notification referred to in

paragraph (a), as well as the name of the State whose authorities have pronounced the final decision and an indication of the date of receipt of such notification by the International Bureau.

(c) The details of the recording referred to in Article 12(4)(a) shall be provided in the Administrative Instructions.

(d) The publication referred to in Article 12(4)(a) shall be effected promptly and shall consist of the indications contained in the notification referred to in paragraph (a)(i), (ii) and (iv) to (vi), as well as the name of the State whose authorities have pronounced the final decision of refusal and the name of the owner of the international registration.

#### 19.4 Notification Where Final Decision Results in Acceptance of the Effect Provided for in Article 11(2)

(a) The notification under Article 12(4)(b) shall be effected promptly after the final disposal of the case and shall consist of a statement to the effect that the notice of possible refusal or the refusal is withdrawn, the indications referred to in Rule 19.1(a)(i) and (ii), the number, if any, and the date of the decision, and the date on which the decision became final.

(b) The publication referred to in Article 12(4)(b) shall be effected promptly and shall consist of the elements referred to in paragraph (a), as well as the name of the owner of the international registration and the name of the State whose authorities have pronounced the final decision.

#### 19.5 Belated Notifications

If any notification referred to in Article 12(2)(a) is received by the International Bureau after the expiration of the time limit fixed in that provision, the International Bureau shall inform accordingly the national Office which effected the notification and shall treat such notification as if it had not been effected. It shall send a copy of the notification to the owner of the international registration.

### RULE 20

#### Final Decisions of Cancellation

#### 20.1 Notification and Recording of Final Decisions of Cancellation; Cancellation of the Designation, and Publication of the Cancellation

(a) The notification referred to in Article 13(2) shall be effected promptly after the date on which the decision of cancellation becomes final and shall contain:

- (i) the international registration number of the international registration, or the international later designation number of the later designation, as the case may be, to which the final decision of cancellation relates,
- (ii) the mark that is the subject of the international registration if it is a word mark and an appropriate indication if it is a figurative mark or if the word mark contains figurative elements,
- (iii) if the final decision relates to some only of the goods and/or services listed, identification of those to which it relates,
- (iv) the name of the authority which pronounced the final decision,
- (v) the number, if any, and the date of such decision,
- (vi) the date on which the decision became final.

(b) The details of the recording referred to in Article 13(2) shall be provided in the Administrative Instructions.

(c) The publication referred to in Article 13(2) shall be effected promptly and shall consist of the indications contained in the notification referred to in paragraph (a),

as well as the name of the State whose authorities have pronounced the final decision of cancellation and the name of the owner of the international registration.

### RULE 21

#### Changes in Ownership

#### 21.1 Request for Recording of Change in Ownership

(a) The indication referred to in Article 14(1)(b)(i) shall preferably be worded as follows: "The undersigned requests that the following change in ownership concerning the international registration identified herein be recorded."

(b) Rule 5.2 shall apply, *mutatis mutandis*, to the indications concerning the new owner referred to in Article 14(1)(b)(iii).

(c) The designated States referred to in Article 14(1)(b)(iv) shall be identified by their names in a manner sufficiently clear for the purpose, provided that, where the request relates to all the States designated in the existing international registration, they may be identified by a statement to that effect.

(d) The goods and/or services referred to in Article 14(1)(b)(iv) shall be identified as follows:

- (i) where the request relates to all of the designated States and all of the goods and/or services listed in respect of each of those States, by a statement to that effect,
- (ii) where the request relates to all of the designated States, and the list of goods and/or services, while being the same for each, is, in respect of some or all of the designated States, more limited than in the international registration, by a new list and by a statement to the effect that it applies to all of the designated States,
- (iii) where the request relates to one, some or all of the designated States in respect of that State or those States for which the list of goods and/or services is the same as in the existing international registration, by a statement to that effect, and, in respect of that State or those States for which the list of goods and/or services is more limited than the list of goods and/or services in the existing international registration, by a new list.

(e) The attestation referred to in Article 14(1)(c) shall be worded as follows: "According to evidence produced before this Office, . . . [insert the name of the new owner] appears to be successor in title of . . . [insert the name of the earlier owner] to the extent described in the present request, and the conditions referred to in Article 14(1)(c) of the Trademark Registration Treaty appear to be fulfilled." The attestation shall be dated and shall bear the stamp or seal of the national Office and the signature of an official thereof.

(f) The amount of the fee referred to in Article 14(1)(d) is indicated in the Table of Fees.

#### 21.2 Publication Where the Change in Ownership is Total

(a) Where the change in ownership concerns all of the designated States and all of the goods and/or services, the publication referred to in Article 14(1)(d) shall contain:

- (i) an indication that the change in ownership concerns all the designated States and all the goods and/or services,
- (ii) the name and address of the new owner together with any indication of his trade or business and, if he bases his right to own international registrations on his residence in, or his nationality of, a State other than that in which he has his address, the name of the State of his residence or nationality, as the case may be,

- (iii) the name of the earlier owner,
- (iv) the date on which the International Bureau received the request,
- (v) a reference to all the prior publications concerning the international registration except those which have been superseded by later publications in respect of that registration.

(b) The publication shall be effected under the number of the international registration and, where applicable, the numbers of later designations to which it refers, followed by an oblique stroke and a number (1, 2, 3 . . .).

#### 21.3 Publication Where the Change in Ownership is Partial

(a) Where the change in ownership concerns fewer than all of the designated States and/or some only of the goods and/or services, the publication referred to in Article 14(1)(d) shall contain two parts, one concerning the new owner, the other the earlier owner.

(b) The part concerning the new owner shall contain:

- (i) an indication that the publication is effected pursuant to a request for the recording of a change in ownership,
- (ii) the date on which the International Bureau received the request,
- (iii) the number under which the part concerning the earlier owner is published,
- (iv) the name and address of the new owner together with any indication of his trade or business and, if he bases his right to own international registrations on his residence in, or his nationality of, a State other than that in which he has his address, the name of the State of his residence or nationality, as the case may be,
- (v) all the indications which, prior to the date referred to in (ii), above, were published in respect of the international registration and which have not been superseded by later publications in respect of that registration, except those indications which solely concern designated States and goods and/or services in respect of which ownership is retained by the earlier owner.

(c) The part concerning the earlier owner shall contain:

- (i) an indication that the publication concerns an existing international registration and contains those elements of that registration which, after the recording of the change in ownership concerning that registration, continue to concern the earlier owner,
- (ii) the number under which the part concerning the new owner is published,
- (iii) the date on which the International Bureau received the request,
- (iv) all the indications which, prior to the date referred to in (iii), above, were published in respect of the international registration and have not been superseded by later publications in respect of that registration, except those indications which, because of the change in ownership, no longer concern the earlier owner.

(d) Each part shall have a number which shall consist of the international registration number and, where applicable, the international later designation numbers, followed by an oblique stroke, the words "Republication With Changes," and,

- (i) in respect of the part concerning the earlier owner, a letter (A, B, C, D . . .),
- (ii) in respect of the part concerning the new owner, a number (1, 2, 3, 4 . . .).

#### 21.4 Notification of Recording of Changes

(a) The notification referred to in Article 14(1)(d) shall be effected by sending separate reprints of the publication referred to in Rules 21.2 and 21.3.



(b) As far as notifications to designated Offices are concerned, Rules 18.1(i) and 18.2 shall apply, *mutatis mutandis*.

#### 21.5 Notification of Declining of the Recording

The notification referred to in Article 14(2) shall be effected by registered letter. The letter shall state the grounds for declining.

#### 21.6 Denial

(a) The notification referred to in Article 14(4)(c) shall:

- (i) refer to the fact of the denial,
- (ii) identify the authority that pronounced the denial and the date on which it was pronounced,
- (iii) indicate the relevant numbers referred to in Rule 21.2(b) and 21.3(d),
- (iv) contain a brief indication of the grounds for the denial.

(b) The recording and the publication referred to in Article 14(4)(c) shall contain:

- (i) the elements referred to in paragraph (a),
- (ii) the date on which the International Bureau received the notification referred to in paragraph (a),
- (iii) the identification of the publication of the recording effected under Article 14(1)(d).

(c) The notification referred to in Article 14(4)(c) shall be sent to the earlier and the new owners and to the national Office which has notified the denial.

### RULE 22

#### Recording of Limitations of the List of Goods and/or Services

##### 22.1 Request for Recording of Limitation of the List

(a) The request for recording referred to in Article 15(1) shall indicate its purpose and contain:

- (i) the name of the owner of the international registration,
- (ii) the international registration number,
- (iii) the desired limitation of the list of goods and/or services,
- (iv) if the request relates to some only of the designated States, identification of those States to which it relate,
- (v) if the request relates to one only of the designated States and conforms with a decision of the national Office or other competent authority of such State concerning the international registration, a certified copy of such decision and, if the decision is in a language other than English or French, a certified translation of such decision.

(b) The request shall be signed by the owner of the international registration.

(c) The amount of the fee referred to in Article 15(2) is indicated in the Table of Fees.

##### 22.2 Concept of Limitation

(a) Subject to paragraph (c), any request under Article 15 shall be regarded as conforming with the concept of limitation if it is presented in either of the following forms:

- (i) it asks for the deletion of one or more terms in the list of goods and/or services,
- (ii) it asks for the insertion of one or more words, linked to the existing term by words (such as "except") which, from the point of view of syntax, make it clear that the inserted word or words are meant to be excluded from

the existing term (for example, *milk products* (existing term) *except* (linking word) *condensed milk* (inserted words)),

(iii) it asks for the insertion of one or more words linked to the existing term by words (such as "provided that") which, from the point of view of syntax, make it clear that the inserted words are covered by the existing term (for example, *pineapples* (inserted word) *provided that they are* (linking words) *canned fruits* (existing term)).

(b) Unless the limitation is presented in one of the forms described in paragraph (a), it shall not, subject to paragraph (c), be regarded as conforming with the concept of limitation, however clear it may be that, in the ordinary sense of the word, there is a limitation (for example, replacing the term "milk product" by "cheese").

(c) For the purposes of Rule 22.1(a)(v), any change in the list of goods and/or services decided upon by the national Office or other competent authority concerned shall be deemed to conform with the concept of limitation.

##### 22.3 Recording, Publication, and Notification, of Limitation of the List

(a) If the request complies with the prescribed requirements, the International Bureau shall record the indications referred to in Rule 22.1(a) and the date on which the request was received. If the request does not comply with the prescribed requirements, the International Bureau shall decline the recording of the limitation and shall notify the owner of the international registration accordingly.

(b) The publication and the notification referred to in Article 15(2) shall contain the indications referred to in Rule 22.1(a), the mark that is the subject of the international registration if it is a word mark and an appropriate indication if it is a figurative mark or if the word mark contains figurative elements, and the date of the recording.

##### 22.4 Declining the Recording of Limitation of the List

The notification referred to in Article 15(3) shall include the reasons for declining the recording of the limitation of the list of goods and/or services.

##### 22.5 Non-Admission by Designated State

(a) The notification by the national Office referred to in Article 15(4) shall:

- (i) refer to the fact of non-admissibility,
- (ii) identify the authority that pronounced the decision and the date on which it was pronounced,
- (iii) indicate the relevant international registration number and date,
- (iv) indicate the name of the owner of the international registration,
- (v) contain a brief indication of the ground(s) for the non-admissibility.

(b) The annotation and the publication referred to in Article 15(4) shall contain:

- (i) the elements referred to in paragraph (a),
- (ii) the date on which the International Bureau received the notification referred to in paragraph (a),
- (iii) the identification of the publication of the recording effected under Article 15(1),
- (iv) an indication of the fact of restitution, together with the identification of the publication which contained the now restituted elements of the international registration.

(c) The notifications by the International Bureau referred to in Article 15(4) shall be sent to the owner of the international registration and to the national Office which has notified the non-admissibility.

### RULE 23

#### Renewal

##### 23.1 Reminder by the International Bureau

The International Bureau shall send a letter to the owner of the international registration before the expiration of the term, initial or renewal (as the case may be), which is in effect, reminding him that such term is about to expire. Further details concerning the contents of the reminder shall be provided in the Administrative Instructions. The reminder shall be sent at least 6 months before the expiration date. Failure to send or receive the reminder, or the fact of sending or receiving it outside the said period, or any error in the reminder, shall not affect the expiration date.

##### 23.2 Demand for Renewal

(a) The demand for renewal referred to in Article 16(3)(a) shall preferably be made on a printed form furnished free of charge by the International Bureau together with the reminder referred to in Rule 23.1. The demand shall, in any case, indicate its purpose and contain:

- (i) the name of the owner of the international registration, his residence and nationality, and his address,
- (ii) the international registration number,
- (iii) if the demand relates to fewer than all of the designated States for the purposes of which the person presenting the demand is the owner of the international registration, the identification of that State or those States to which the demand relates.

(b) The demand shall be signed by the owner of the international registration. Where there are several owners, the signature of one of them shall suffice.

(c) The demand for renewal shall not be combined with any other request; in particular, it shall not contain a request for recording a later designation, a request for recording a change in ownership, or a request for recording a limitation in the list of goods and/or services. Rule 8.3 shall also apply to demands for renewal.

##### 23.3 International Renewal Fee and Individual State Renewal Fees

(a) The fees payable under Article 16(3)(a) shall be the following:

- (i) an "international renewal fee," and, where applicable, the "renewal surcharge" referred to in Article 16(3)(a),
- (ii) an "individual State renewal fee" for every designated State to which the demand relates.

(b) The amount of the international renewal fee and the amount of the renewal surcharge are indicated in the Table of Fees.

(c) The amounts of the individual State renewal fees concerning the various Contracting States shall be published by the International Bureau each year in the month of August. The amounts so published shall be applicable as the individual State renewal fees from January 1 to December 31 of the year following the year in which they are published.

(d) Each Contracting State shall be free to determine the amount of the individual State renewal fee applicable to it, subject to the provisions of Rule 9.1(d)(i) and (ii) and provided that the amount of the said fee shall not exceed the amount of the renewal fee which would be payable if the demand were for the renewal in the national register of marks of the said State for a comparable period of time.

##### 23.4 Standard State Renewal Fees

Any designated State may require that, whenever a request for renewal relates to it, a "standard State renewal

fee," whose amount is indicated in the Table of Fees, shall be payable instead of the individual State renewal fee referred to in Rule 23.3(a)(ii).

##### 23.5 Imperfect Demands

(a) Where, within the time limits fixed in Article 16(3)(a), the International Bureau receives:

- (i) a demand which does not conform with Rule 23.2, or
- (ii) a demand but no payment or insufficient payment to cover the renewal fees and any surcharge that is due, or
- (iii) money which appears to be intended to cover fees connected with renewal but no demand,

the International Bureau shall, whenever practicable, promptly invite the owner of the international registration to present a correct demand, to pay or complete the renewal fees and any surcharge that is due, or to present a demand, as the case may be.

(b) Failure to send or receive the invitation referred to in paragraph (a), or any delay in dispatching or receiving such invitation, or any error in the invitation, shall not prolong the time limits fixed in Article 16(3)(a).

##### 23.6 Recording, Publication, and Notification

(a) Where the demand is presented and the fees are paid as prescribed, the International Bureau shall record the renewal, shall, subject to paragraph (b), publish the indications referred to in Rule 23.2(a) together with an indication of the date on which the renewal shall expire, and shall notify the owner of the international registration and each designated Office of the said indications and the said date.

(b) Where the address, residence or nationality of the owner of the international registration is the same as in the last publication concerning the international registration, the indication of the address, residence or nationality of the owner shall not be included in the publication and the notification.

##### 23.7 Declining the Demand

Where the time limits fixed in Article 16(3)(a) are not respected or where the demand does not conform with the requirements of Rule 23.2 or the fees (including, where applicable, any surcharge) are not paid as prescribed, the International Bureau shall decline the demand and shall notify the owner of the international registration by registered letter stating the reasons for declining the demand.

##### 23.8 Reimbursement of Certain Fees

Where, under Rule 23.7, the International Bureau declines the demand, it shall reimburse to the owner of the international registration all fees received from him except an amount equivalent to the international renewal fee referred to in Rule 23.3(a)(i).

### RULE 24

#### Declarations of Actual Use

##### 24.1 Information on Requirements Concerning Routine Declarations of Actual Use

The national Office of any Contracting State whose national law requires the filing of routine declarations referred to in the first sentence of Article 18(3)(d) shall inform the International Bureau of such requirement and of any changes therein. Such information shall, in particular, indicate the time limits within which such declarations must be filed according to the national law and state whether the attachment of specimens or facsimiles to routine declarations of actual use is required by the national law. The information shall be promptly published.



24.2 *National Forms*

The national Office of any Contracting State referred to in Rule 24.1 shall supply free of charge to the International Bureau in reasonable quantities declaration forms, in the form prescribed by the national law of that State, for the purposes of making declarations referred to in Article 18(3)(d). The International Bureau shall furnish such forms free of charge to interested persons.

24.3 *International Form*

(a) Where the declaration referred to in Article 18(3)(d) is not made on a national form according to Rule 24.2, it shall be made on a form ("international form") consisting of the following statement and shall be signed by the owner of the international registration:

"The undersigned owner of the international registration declares that he (it) is the owner of the international registration which was effected under No. . . . , as shown by recordings in the International Register of Marks, in respect of . . . ① on . . . ②; that the mark which is the subject of the international registration herein identified is now in use by and through . . . ③ in commerce with and/or on the territory of the said State on or in connection with the following goods and/or services listed in respect of such State: . . . ④; that such use commenced on . . . ⑤; and that the mode or manner in which the mark is used is:

- ☐ on labels or tags affixed to and/or containers for the goods, as evidenced by the attached specimen(s) or facsimile(s) ⑥;
- ☐ on displays which are associated with the goods, as evidenced by the attached specimen(s) or facsimile(s) ⑥;
- ☐ in the case of services, in advertising of such services, as evidenced by the attached specimen(s) or facsimile(s) ⑥;
- ☐ other [recite sufficient facts in addition to, or in lieu of, checking one or more of the above boxes as to sales or advertising, or both, to show that the mark is in current use]."

[① Insert name of State; ② Insert international registration date or, if applicable, recording date of the later designation of such State; ③ Insert "the undersigned owner" and/or, if applicable, the name and address of the person and/or persons using the mark under the authority of the owner in the State; ④ Insert "all" or indicate the particular goods and/or services on or in connection with which the mark is used; ⑤ Insert the date of commencement of the continuing use of the mark, including, where different dates are applicable to different goods and/or services, the particular goods and/or service to which each such date relates; ⑥ The inclusion of specimens or facsimiles may be dispensed with where the declaration is made in respect of a State whose national law does not require that specimens or facsimiles be attached to routine declarations of actual use.

(b) The International Bureau shall furnish such forms free of charge to interested persons.

(c) The declaration shall be filed in the same language as the international application to which it relates.

(d) The inclusion of specimens or facsimiles may be dispensed with where the declaration is made in respect of a State whose national law does not require that specimens or facsimiles be attached to routine declarations of actual use.

(e) The specimens referred to in paragraph (a) shall, in the case of a mark for goods, be duplicates of the actually used labels, tags, or containers, or of the displays

associated therewith, or portions thereof, when made of suitable material and capable of being arranged flat and of a size not larger than the declaration. When, owing to the mode of applying or affixing the mark to the goods or to the manner of its use on the goods, such specimens cannot be furnished, suitable photographs or other acceptable reproductions, not larger than the declaration, which clearly and legibly show the mark and all matter used in connection therewith, shall be furnished. In the case of marks for services, specimens or facsimiles, as specified above, of the mark as used in the sale or advertising of the services shall be furnished unless impossible because of the nature of the mark or the manner in which it is used, in which event some other acceptable reproductions shall be furnished.

(f) It shall depend on the national law of each Contracting State whether any declaration to the same effect as but worded differently from the statement set out in paragraph (a) shall produce the same effect.

## RULE 25

*Declarations Concerning Earlier National or Madrid Registrations*25.1 *Separately Filed Declarations*

(a) Any separately filed declaration under Article 20(2) shall:

- (i) specify the designated State or States in respect of which it is made,
- (ii) contain the allegation that the owner of the international registration owned a national registration or national registrations in the said State or States on the international registration date or the international later designation date, as the case may be,
- (iii) indicate, in respect of each such national registration, its number,
- (iv) indicate the international registration number of the international registration to which it relates.

(b) Any separately filed declaration under Article 21(2) shall:

- (i) specify the designated State or States in respect of which it is made,
- (ii) contain the allegation that the owner of the international registration owned a registration under the Madrid Agreement in respect of the said State or States on the international registration date or the international later designation date, as the case may be,
- (iii) indicate the number of the relevant Madrid registration,
- (iv) indicate the international registration number of the international registration to which it relates.

25.2 *Certification of National Registrations*

The certification of the copy of any national registration referred to in Article 20(2) shall be in the English or French language, shall be signed by a person authorized by the national Office to effect certifications and shall indicate the date to which the certification refers. That date shall be the international registration date or the international later designation date, as the case may be, or, where the certification is made before international registration or recording of the later designation is effected, the date on which the certification is effected. In the latter case, the national Office effecting the certification shall, on the request of the International Bureau presented once the said registration or recording is effected by it, indicate to that Bureau any change which might have occurred in respect of the national registration between the date to which the certification referred and the international registration date or the recording date of the later designation, as the case may be.

25.3 *Defects*

(a) The International Bureau shall promptly notify the applicant or the owner of the international registration of any defect in the declaration made under Article 20(2) or Article 21(2), including the absence of the certified copy referred to in Article 20(2) and any defect in the certification thereof as provided in Rule 25.2.

(b) As long as any defect referred to in paragraph (a) is not corrected, the International Bureau shall not record, publish or notify the said declaration.

25.4 *Publication; Notification*

(a) Unless effected by virtue of Rule 17.1(a)(ix) or Rule 17.2(a)(vii), the publication of any declaration under Article 20(2) or Article 21(2) shall indicate:

- (i) the fact that the publication relates to a declaration made under Article 20(2) or 21(2), as the case may be,
- (ii) the State or States in respect of which the declaration was made and the numbers of the relevant national or Madrid registrations,
- (iii) the international registration number of the international registration to which the declaration relates,
- (iv) the name of the owner of the international registration.

(b) Unless effected by virtue of Rule 18.1, the notification of any declaration under Article 20(2) or 21(2) shall consist of an indication that the declaration made under Article 20(2) or 21(2), as the case may be, was recorded by the International Bureau and shall be accompanied by a copy of the declaration.

## RULE 26

*Transmittal of Documents to the International Bureau*26.1 *Place and Mode of Transmittal*

International applications, requests, demands, notifications and any other documents intended for filing, notification or other communication to the International Bureau shall be deposited with the competent service of that Bureau during the office hours fixed in the Administrative Instructions, or mailed to that Bureau.

26.2 *Date of Receipt of Documents*

Any document received by the International Bureau through deposit or mail shall be considered to have been received on the day on which it is actually received by such Bureau, provided that, when it is actually received after office hours, or on a day when the Bureau is closed for business, it shall be considered to have been received on the next subsequent day on which the Bureau is open for business.

## RULE 27

*Calendar; Computation of Time Limits*27.1 *Calendar*

The International Bureau, national Offices, applicants and owners of international registrations shall, for the purposes of the Treaty and these Regulations, express any date in terms of the Christian era and the Gregorian calendar.

27.2 *Periods Expressed in Years, Months, or Days*

(a) When a period is expressed as one year or a certain number of years, computation shall start on the day following the day on which the relevant event occurred, and the period shall expire in the relevant subsequent year in the month having the same name and on the day having the same number as the month and the day on

which the said event occurred, provided that if the relevant subsequent month has no day with the same number the period shall expire on the last day of that month.

(b) When a period is expressed as one month or a certain number of months, computation shall start on the day following the day on which the relevant event occurred, and the period shall expire in the relevant subsequent month on the day which has the same number as the day on which the said event occurred, provided that if the relevant subsequent month has no day with the same number the period shall expire on the last day of that month.

(c) When a period is expressed as a certain number of days, computation shall start on the day following the day on which the relevant event occurred, and the period shall expire on the day on which the last day of the count has been reached.

27.3 *Local Dates*

(a) The date which is taken into consideration as the starting date of the computation of any period shall be the date which prevails in the locality at the time when the relevant event occurred.

(b) The date on which any period expires shall be the date which prevails in the locality in which the required document is filed or the required fee is paid.

27.4 *Expiration on a Non-Working Day*

If the expiration of any period during which any document or fee must reach the International Bureau or any of its agencies falls on a day on which such Bureau or agency is not open for business, or on which ordinary mail is not delivered in Geneva or the locality in which the agency is situated, the period shall expire on the next subsequent day on which neither of the said two circumstances exists.

## RULE 28

*Payment of Fees*28.1 *Payment to the International Bureau*

All fees payable under the Treaty and these Regulations shall be payable to the International Bureau.

28.2 *Applicable Fee Schedule*

The fees payable shall:

- (i) where they concern an international application or a request for the recording of a later designation, be the fees in force on the date the international application or the request for the recording of the later designation is received by the International Bureau \* [or, where the application or request has been filed through the intermediary of a national Office under Article 5(3), on the date on which it was received by that Office],
- (ii) where they concern a demand for renewal, be the fees in force on the date which precedes by six months the starting date of the term of renewal.

28.3 *Currency*

(a) Subject to paragraph (b), all fees payable under the Treaty and these Regulations shall be payable in Swiss currency.

(b) Where the International Bureau has agencies, the Administrative Instructions may, under specified conditions, allow exceptions to the provisions of paragraph (a).

28.4 *Deposit Accounts*

(a) Any natural person or legal entity may open a deposit account with the International Bureau or any of its agencies.

(b) The details concerning deposit accounts shall be provided in the Administrative Instructions.



28.5 *Indication of the Mode of Payment*

(a) Unless the payment is made in cash to the cashier of the International Bureau, the international application, and any request, demand, or other document, filed with the International Bureau in connection with any international registration, subject to the payment of any fee, shall indicate:

- (i) the name and address, as provided in Rule 5.2(a), of the natural person or legal entity making the payment.
- (ii) the mode of payment, which may be by an authorization to debit the amount of the fee to the deposit account of such person or entity, or by transfer to a bank account or to the postal cheque account of the International Bureau, or by cheque. The Administrative Instructions shall provide the details, in particular those governing the kind of cheques that shall be accepted in payment.

(b) Where the payment is made pursuant to an authorization to debit the amount of the fee to a deposit account, the authorization shall specify the transaction to which it relates, unless there is a general authorization to debit to a specified deposit account any fee concerning a certain applicant, owner of an international registration, or duly appointed representative.

(c) Where the payment is made by transfer to a bank account or to the postal cheque account of the International Bureau, or by a cheque not attached to the international application, request, demand, or other document, the notification of the transfer or the cheque (or paper accompanying it) shall identify the transaction to which it relates, in the manner to be provided for in the Administrative Instructions.

28.6 *Effective Date of Payment*

Any payment shall be considered to have been received by the International Bureau on the date indicated herein below:

- (i) if the payment is made in cash to the cashier of the International Bureau, on the date on which such payment is made,
- (ii) if the payment is made by debiting a deposit account with the International Bureau pursuant to a general authorization to debit, on the date on which the international application, the request for renewal or other document entailing the obligation to pay fees is received by the International Bureau, or, in the case of a specific authorization to debit, on the date on which the specific authorization is received by the International Bureau,
- (iii) if the payment is made by transfer to a bank account or to the postal cheque account of the International Bureau, on the date on which such account is credited,
- (iv) if the payment is made by cheque, on the date on which the cheque is received by the International Bureau, provided that it is honored upon presentation to the bank on which the cheque is drawn.

## RULE 29

*Withdrawals and Renunciations*29.1 *Withdrawal of the International Application or Request for Recording of Later Designation*

(a) Any withdrawal of an international application shall be treated as such by the International Bureau if the communication of withdrawal reaches it before registration is effected and preparations for publication have been completed.

(b) Any withdrawal of a request for the recording of later designation shall be treated as such by the International Bureau if the communication of withdrawal reaches

it before recording is effected and preparations for publication have been completed.

29.2 *Renunciation of the International Registration or of Certain Designations*

(a) The owner of the international registration may, at any time, renounce the international registration or the recording of the designation of any designated State.

(b) Renunciation of the recording of all designated States shall be treated as renunciation of the international registration.

29.3 *Procedure*

(a) Withdrawals and renunciations referred to in Rules 29.1 and 29.2 shall be effected in a written communication addressed to the International Bureau and signed by the applicant or the owner of the international registration, as the case may be.

(b) The International Bureau shall acknowledge receipt of the communication referred to in paragraph (a). In the case of any withdrawals, the International Bureau shall reimburse to the applicant or the owner of the international registration any State designation fee and any State later designation fee which it has received from him in connection with any State affected by the withdrawal.

(c) The International Bureau shall record and publish renunciations, and shall notify interested designated Offices thereof. The details shall be provided in the Administrative Instructions.

## RULE 30

*Fees Belonging to the Designated Offices*30.1 *Individual State Fees Belonging to the Designated Offices*

(a) Any individual State designation fee, any individual State later designation fee and any individual State renewal fee shall belong to the designated Office of the State in respect of which it was paid.

(b) The International Bureau shall in every calendar year transfer to any interested designated Office the fees referred to in paragraph (a) that are collected in respect of international registrations, recordings of requests for later designations, and recordings of renewals, effected in the preceding calendar year.

(c) Further details shall be provided in the Administrative Instructions.

30.2 *Standard State Fees Belonging to the Designated Offices*

(a) Any standard State designation fee, any standard State later designation fee and any standard State renewal fee collected by the International Bureau shall belong to the Offices of the designated States which have availed themselves of the possibilities provided for in Rule 9.2, 13.2 and 23.4.

(b) The total amount of the standard State fees referred to in paragraph (a) that are collected by the International Bureau in respect of international registrations, recordings of requests for later designation, and recordings of renewals, effected in any given calendar year, shall be distributed among and transferred to the Offices of the designated States referred to in paragraph (a) in the course of the next subsequent calendar year in proportion to the number of cases in which they have been designated, provided that the number resulting for each Office has first been multiplied:

- (i) by 2, if the national law provides only for examination of "absolute grounds of nullity,"
- (ii) by 3, if the national law provides for examination as to whether there is conflict with another mark ("relative grounds of nullity") and if such examination is

carried out only where there is third-party opposition, (iii) by 4, if the national law provides for examination of relative grounds of nullity ex officio and without third-party opposition,

(iv) by 5, if the national law provides for examination of relative grounds of nullity ex officio followed by the possibility of third-party opposition.

(c) Further details shall be provided in the Administrative Instructions.

## RULE 31

*Choice of the Standard State Fee System*31.1 *Choice and Abandonment of the Standard State Fee System*

(a) Any Contracting State wishing to avail itself of the possibilities provided for in Rules 9.2, 13.2 and 23.4 may do so by notifying the Director General accordingly. If the notification accompanies the said State's instrument of ratification of or accession to the Treaty, it shall become effective when that State becomes bound by the Treaty; if it is made at a later date and reaches the Director General before the end of the month of June of any year, it shall become effective from the end of that year, and, if it reaches the Director General after the month of June of any year, it shall become effective from the end of the next subsequent calendar year; it shall remain effective until, pursuant to a communication under Rules 9.1(d)(i) and 23.3(d), the said State starts to benefit from the individual State fee system, unless paragraph (b) applies.

(b) Any Contracting State availing itself of the possibilities provided for in paragraph (a) may abandon the same by notifying the Director General accordingly. If the notification reaches the Director General before the end of the month of June of any year, it shall become effective from the end of that year, and, if it reaches the Director General after the month of June of any year, it shall become effective from the end of the next subsequent calendar year.

(c) Any notification indicating the desire of a Contracting State to avail itself of the standard State fee system shall be treated as a notification relating to all three of the possibilities referred to in Rules 9.2, 13.2 and 23.4, and any notification indicating the desire to abandon such system shall be treated as a notification relating to the abandonment of all three of those possibilities.

## RULE 32

*Absence of State Fees*32.1 *Lack of Communication of Individual State Fees*

Failure, on the part of any Contracting State not having availed itself of the possibilities referred to in Rule 31.1(a) or having abandoned such possibilities, to communicate to the International Bureau the amount of any individual State fee applicable to it shall be regarded as renunciation of the right to such fee.

## RULE 33

*Fees Belonging to the International Bureau*33.1 *Fees Belonging to the International Bureau*

All fees and charges collected under the Treaty, these Regulations and the Administrative Instructions, except those referred to in Rule 30, shall belong to the International Bureau.

## RULE 34

*Recordings Effected by National Offices*34.1 *Notification of Certain Recordings Effected by National Offices*

The notification provided for in Article 19(1) shall be made on a form furnished by the International Bureau and the details of which are provided in the Administrative Instructions.

34.2 *Annotation and Publication*

The Administrative Instructions shall provide for the extent to which annotations of any changes notified under Article 19(2) shall be made in the International Register of Marks and shall be published by the International Bureau, provided that such annotation and such publication shall at least indicate the international registration number of the mark, the State which it concerns, the date on which it was received, and its subject matter.

## RULE 35

*The Gazette*35.1 *Contents and Title of the Gazette*

(a) All matters which, according to the Treaty or these Regulations, the International Bureau is obliged to publish shall be published in a periodical entitled "International Marks Gazette/Gazette internationale de marques" (hereinafter referred to as "the Gazette").

(b) The Administrative Instructions may provide for the inclusion of other matters in the Gazette.

35.2 *Frequency of Issue of the Gazette*

The Gazette shall be issued once a week.

35.3 *Languages of the Gazette*

(a) The Gazette shall be issued in a bilingual (English and French) edition.

(b) The Administrative Instructions shall identify those portions which require translation (for example, the lists of goods and/or services) and those portions which do not require translation (for example, the names of the designated States).

(c) Matters which can be easily understood even if not translated (for example, the names of the designated States), or which are indicated by signs or abbreviations (for example, "Ren." for "Renewal/Renouvellement") to which the keys shall be published in each issue, need not be translated. The details shall be provided in the Administrative Instructions.

(d) Matters not falling within the scope of paragraph (c) (for example, the lists of goods and/or services) shall always be published in both languages. The publication shall indicate which is the original language. Translations shall be prepared by the International Bureau. In case of any divergence between the original and the translation, all legal effects shall be governed by the original.

35.4 *Sale of the Gazette*

The subscription and other sale prices of the Gazette shall be fixed in the Administrative Instructions.

35.5 *Copies of the Gazette for National Offices*

(a) Before July 1 of each year each national Office shall notify the International Bureau of the number of copies of the Gazette which it wishes to receive in the next subsequent year.

(b) The International Bureau shall make the requested number of copies available to the national Office:

- (i) free of charge, up to the same number as the number of units corresponding to the class chosen under the Paris Convention by the Contracting State of which the said Office is the national Office,



(ii) at half of the ordinary subscription or sale price for copies in excess of the said number.

(c) Copies given free of charge or sold under paragraph (b) shall be for the internal use of the national Office which has requested them.

### 35.6 Further Details

Further details concerning the Gazette may be provided for in the Administrative Instructions.

## RULE 36

### Copies and Other Information Available to the Public

#### 36.1 Copies and Information Concerning International Applications and Registrations

(a) Any person may obtain from the International Bureau, against payment of a fee whose amount shall be fixed in the Administrative Instructions, certified or uncertified copies or extracts of the international registration or any document in the file of any international application or registration.

(b) On request and against payment of a fee whose amount shall be fixed in the Administrative Instructions, any person may obtain from the International Bureau oral or written information on any fact appearing in any document in the file of any international application or registration.

#### 36.2 Authentication of Documents Issued by the International Bureau

No authority of any Contracting State shall ask for the authentication by any person or authority of certificates issued and of copies or other documents certified by the International Bureau, provided such certificates, certified copies or other certified documents bear the seal of the International Bureau and the signature of the Director General or a person acting under his authority.

## RULE 37

### Fees in the Case of Regional Marks

#### 37.1 Reference to Other Rules

Rules 9, 13, 23.3, 23.4, 30 and 31 shall apply, *mutatis mutandis*, in respect of regional marks, provided that any communication under Rules 9.1(d)(i) and 23.3(d) and any notification under Rule 31 shall be made by the inter-governmental authority entrusted with the task of registering regional marks.

## RULE 38

### Procedure Where Correction of Errors of the International Bureau is Sought

#### 38.1 Time Limit Under Article 29

The time limit referred to in Article 29(1) shall be:

- (i) where the alleged error may be discovered on the basis of a notification sent by the International Bureau to the applicant or owner of the international registration, 2 months from the date of such notification,
- (ii) where item (i) does not apply and the alleged error may be discovered on the basis of a publication of the International Bureau, 2 months from the date of such publication,
- (iii) where neither item (i) nor item (ii) applies, 2 months from the date on which the error has been discovered by the applicant or the owner of the international registration.

#### 38.2 Recording and Publication Under Article 29(3)

(a) The fact of having received a copy of a petition under Article 29(3) shall, where the petition relates to a

mark which is already registered in the International Register of Marks, be recorded by recording the subject of the petition, the name of the national Office to which it appears to be addressed, and the date on which the said copy was received.

(b) The information to be published under Article 29(3) shall indicate the international registration number of the mark, the name of the State to whose national Office the petition appears to have been addressed, and the date on which the copy of the petition was received by the International Bureau.

#### 38.3 Information Available to National Offices

On the request of the applicant or owner of the international registration, or of the national Office with which a petition under Article 29(1) has been filed, the International Bureau shall send to that Office a copy of the relevant file, together with a memorandum setting out the opinion of the International Bureau concerning the alleged error.

#### 38.4 Information Furnished by the National Office

Any request by a national Office referred to in Article 29(2) shall indicate the grounds on which it is based.

## RULES CONCERNING CHAPTER II

### RULE 39

#### Expenses of Delegations

#### 39.1 Expenses Borne by Governments

The expenses of each delegation participating in any session of the Assembly and in any committee, working group or other meeting dealing with matters of concern to the Union shall be borne by the Government which has appointed it.

### RULE 40

#### Absence of Quorum in the Assembly

#### 40.1 Voting by Correspondence

(a) In the case provided for in Article 30(5)(b), the International Bureau shall communicate any decision of the Assembly (other than decisions relating to the Assembly's own procedure) to the Contracting States which were not represented when the decision was made and shall invite them to express in writing their vote or abstention within a period of 3 months from the date of the communication.

(b) If, at the expiration of the said period, the number of Contracting States having thus expressed their vote or abstention attains the number of Contracting States which was lacking for attaining the quorum when the decision was made, that decision shall take effect provided that at the same time the required majority still obtains.

### RULE 41

#### Administrative Instructions

#### 41.1 Establishment of Administrative Instructions; Matters Governed by Them

The Director General shall establish Administrative Instructions. They shall deal with matters in respect of which these Regulations expressly refer to such Instructions and with details in respect of the application of these Regulations.

#### 41.2 Control by the Assembly

The Assembly may invite the Director General to modify any provision of the Administrative Instructions, and the Director General shall proceed accordingly.

#### 41.3 Publication and Effective Date

(a) The Administrative Instructions and any modification thereof shall be published in the Gazette.

(b) Each publication shall specify the date on which the published provisions become effective. The date need not be the same for all the provisions provided that no provision may be declared effective prior to the expiration of a period of 14 days after the publication date of that issue of the Gazette in which it has been published.

#### 41.4 Conflict with the Treaty and the Regulations

In the case of conflict between any provision of the Administrative Instructions and any provision of the Treaty or of these Regulations, the later shall prevail.

## ANNEX TO THE REGULATIONS

### TABLE OF FEES

The fees marked by an asterisk apply to the following States . . . [here will be named all the States which have chosen the standard fee system (see Rules 9.2, 13.2 and 23.4)]. Where, either because of the choice exercised by the applicant or owner of the international registration under Article 5(1)(a)(vi) or 6(2)(a)(v), or because only a regional mark is available, the designation of one State party to a regional treaty has the effect of a wish to obtain the effect provided for in Article 11(2) available to regional marks, the fees marked by an asterisk shall be payable once even if the regional registration effect is available in more than one State party to the regional treaty.

#### Kind of Fee

#### Amount in Swiss Francs

#### 1. Application

##### 1.1 International Application Fee

(Rule 9.1(a)(i)): irrespective of the number of designated States and of the number of classes ----- 400

1.2 \* Standard State Designation Fee (Rule 9.2): for each designated State to which the Standard Fee System applies ----- 1 30  
1.3 Color Reproduction Fee (Rule 5.3(c)(i)) --- 100  
1.4 Transliteration Fee (Rule 9.3(a)) ----- 20  
1.5 Translation Fee (Rule 9.3(a)) ----- 20  
1.6 Classification Fee (Rule 9.3(a)) ----- 50  
1.7 Indication of Trade or Business Fee (where the indication exceeds 20 words; (Rule 9.3(b)) ----- 50]

#### 2. Later Designation

2.1 International Later Designation Fee (Rule 13.1(a)(i)): irrespective of the number of designated States and of the number of classes ----- 100  
2.2 \* Standard Later Designation Fee (Rule 13.2): for each designated State to which the Standard Fee System applies ----- 1 30

#### 3. Changes in Ownership

3.1 Request for Recording Change in Ownership Fee (Rule 21.1(c)) ----- 100

#### 4. Limitation of List of Goods and/or Services

4.1 Request for Recording of Limitation of the List of Goods and/or Services Fee (Rule 22.1(c)) ----- 100

#### 5. Renewal

5.1 International Renewal Fee (Rule 23.3(a)(i)): irrespective of the number of designated States and of the number of classes ----- 400  
5.2 Renewal Surcharge (Rule 23.3(a)(i)): irrespective of the number of designated States and of the number of classes ----- 200  
5.3 \* Standard State Renewal Fee (Rule 23.4): for each designated State in which the Standard Fee System applies ----- 1 30  
\* Multiplied by the number of classes.



## PATENT OFFICE NOTICES

### Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office either on the basis of 4 years or more service in the Examining Corps or under Rule 341(e) of the "Rules of Practice of the United States Patent Office in Patent Cases." Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before October 31, 1972.

Carter, David M., 1900 S. Eads St., #327, Arlington, Va. 22202.

Galthier, Richard A., 9060 Pallsade Ave., North Bergen, N.J. 07047.

Hoffman, Gary M., 5436 Calstock Court, Burke, Va. 22015.

Matteson, Frederick L., 5918 Chillum Gate Road, Chillum, Md. 20782.

Wong, David W., 68 N. Hills Terrace, Don Mills, Ontario, Canada.

LUTRELLE F. PARKER,  
Chairman, Committee on Enrollment.

August 18, 1972.



## Certificates of Correction for the Week of Sept. 19, 1972

P.P. 3,131	3,626,848	3,646,424	3,656,890
D. 223,411	3,627,636	3,646,762	3,656,912
3,152,544	3,627,760	3,646,846	3,657,113
3,266,093	3,627,777	3,647,433	3,657,170
3,384,874	3,630,568	3,647,878	3,657,201
3,451,944	3,631,047	3,648,485	3,657,373
3,457,089	3,631,709	3,648,554	3,657,571
3,492,253	3,632,483	3,648,770	3,657,583
3,530,340	3,632,536	3,648,894	3,657,980
3,543,908	3,632,688	3,649,440	3,657,997
3,553,254	3,634,742	3,649,523	3,658,056
3,559,815	3,635,555	3,649,766	3,658,384
3,563,755	3,635,815	3,649,873	3,658,435
3,566,428	3,635,986	3,650,375	3,658,644
3,569,608	3,636,040	3,651,160	3,658,727
3,581,139	3,637,558	3,651,168	3,659,261
3,591,630	3,637,875	3,651,427	3,660,131
3,592,162	3,638,519	3,651,462	3,660,138
3,593,379	3,638,724	3,651,960	3,660,351
3,595,356	3,638,732	3,652,380	3,660,457
3,596,832	3,638,781	3,652,544	3,660,529
3,602,783	3,639,383	3,652,737	3,660,648
3,604,746	3,640,825	3,652,929	3,661,045
3,605,519	3,641,019	3,652,971	3,661,149
3,607,555	3,642,617	3,653,253	3,661,270
3,607,725	3,642,687	3,653,708	3,661,498
3,607,959	3,642,764	3,654,198	3,661,580
3,609,507	3,642,879	3,654,273	3,661,641
3,613,048	3,642,949	3,654,277	3,661,650
3,613,599	3,643,004	3,654,306	3,661,718
3,613,910	3,643,063	3,654,398	3,661,802
3,617,275	3,643,327	3,655,255	3,661,819
3,617,278	3,643,436	3,655,317	3,662,142
3,617,506	3,643,863	3,655,349	3,662,202
3,620,453	3,644,085	3,655,669	3,662,366
3,622,573	3,644,139	3,655,720	3,662,960
3,622,626	3,644,316	3,655,730	3,663,109
3,622,848	3,644,338	3,655,873	3,663,247
3,622,927	3,644,569	3,655,920	3,665,129
3,623,002	3,644,574	3,655,968	3,666,360
3,624,634	3,645,332	3,656,282	3,670,346
3,626,198	3,645,809	3,656,844	3,670,368
3,626,483	3,645,891	3,656,880	

## Disclaimers

3,284,680.—*Finis E. Gentry*, and *Bernard R. Tuft*, Skaneateles, N.Y. SEMICONDUCTOR SWITCH. Patent Dated Nov. 8, 1966. Disclaimer filed Aug. 15, 1972, by the assignee, *General Electric Company*.

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

3,353,724.—*Mack S. Johnston*, Rolling Hills, Calif. BEER TAPPING DEVICE. Patent dated Nov. 21, 1967. Disclaimer filed Apr. 13, 1972, by the assignee, *Draft Systems, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Jan. 25, 1983.

3,435,997.—*Mack S. Johnston*, Kallispell, Mont. BEER TAPPING DEVICE. Patent dated Apr. 1, 1969. Disclaimer filed April 13, 1972, by the assignee, *Draft Systems, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Jan. 25, 1983.

3,452,125.—*Peter T. Schurman*, Snyder, and *Raymond C. Confer*, Gasport, N.Y. METHOD OF AND APPARATUS FOR BLOW MOLDING THERMOPLASTIC MATERIAL. Patent dated June 24, 1969. Disclaimer filed June 14, 1972, by the assignee, *W. K. Grace & Co.*

Hereby disclaims the portion of the term of the patent subsequent to May 9, 1984.

3,497,114.—*Mack S. Johnston*, Rolling Hills, Calif. BEER TAPPING DEVICE. Patent dated Feb. 24, 1970. Disclaimer filed Apr. 13, 1972, by the assignee, *Draft Systems, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Jan. 25, 1983.

3,612,413.—*James H. Perry*, Worcester, Mass. ANGLE GRINDING PULP GRINDER. Patent dated Oct. 12, 1971. Disclaimer filed May 24, 1972, by the assignee, *Norton Company*.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,614,381.—*Samuel J. Popcil*, Chicago, Ill. HAIR SETTING DEVICE. Patent dated Oct. 19, 1971. Disclaimer filed Aug. 6, 1972, by the assignee, *Popcil Brothers, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Feb. 3, 1987.

3,625,880.—*Glen P. Hammer*, Baton Rouge, and *Ralph B. Mason*, Denham Springs, La. CATALYSTS FOR THE SELECTIVE CONVERSION OF STRAIGHT-CHAIN HYDROCARBONS. Patent dated Dec. 7, 1971. Disclaimer filed June 11, 1971, by the inventors; the assignee, *Esso Research and Engineering Company*, assenting.

Hereby disclaims the portion of the term of the patent subsequent to Apr. 20, 1988.

3,627,725.—*Jack C. Gilles*, Shaker Heights, Ohio. BIS (3,5-DIALKYL-4-HYDROXYBENZYL) MALONIC ESTERS FOR STABILIZING POLYMERS. Patent dated Dec. 14, 1971. Disclaimer filed Feb. 3, 1972, by the assignee, *The B. F. Goodrich Company*.

Hereby enters this disclaimer to claims 1 through 8 of said patent.

3,629,284.—*Hisao Yamamoto*, Nishinomiyashi, and *Masaru Nakao*, Osaka, Japan. PROCESS FOR THE PREPARATION OF 3-INDOLYL ALIPHATIC ACID DERIVATIVES. Patent dated Dec. 21, 1971. Disclaimer filed Jan. 25, 1971, by the assignee, *Sumitomo Chemical Company, Ltd.*

Hereby disclaims the portion of the term of the patent subsequent to Feb. 16, 1988.

## Dedications

3,542,621.—*Clinton W. Calhoun, Jr.*, Henrico County, and *Frank B. Hart, Jr.*, Richmond, Va., and *Lloyd C. Eberhard, Jr.*, Louisville, Ky. METHOD AND APPARATUS FOR CONTINUOUSLY LAMINATING A SHEET OF MATERIAL TO EACH SIDE OF ANOTHER SHEET OF MATERIAL. Patent dated Nov. 24, 1970. Dedication filed May 26, 1972, by the assignee, *Reynolds Metals Company*.

Hereby dedicates to the Public the entire above-identified patent.

3,568,626.—*Hamilton Southworth, Jr.*, New York, N.Y. IDENTIFYING MEANS FOR BURIED UTILITIES. Patent dated Mar. 9, 1971. Dedication filed July 7, 1972, by the assignee, *Bell Telephone Laboratories, Incorporated*.

Hereby dedicates to the Public the remaining term of said patent.

## Disclaimer and Dedication

3,660,466.—*Jack Bernstein*, and *Kathryn Alice Losce*, New Brunswick, N.J. 2,4,6-TRIODOBENZOIC ACID DERIVATIVES. Patent dated May 2, 1972. Disclaimer and dedication filed June 29, 1972, by the inventors; the assignee, *E. R. Squibb & Sons, Inc.*, assenting.

Hereby disclaims and dedicates to the Public claims 1, 3 and 5 of said patent.

## Patent Numbers For Which No Patents Exist

## Issue of September 19, 1972

3,691,566	3,691,927	3,692,284	3,692,802
3,691,571	3,691,951	3,692,289	3,692,804
3,691,589	3,691,958	3,692,297	3,692,806
3,691,598	3,691,973	3,692,308	3,692,807
3,691,602	3,691,975	3,692,313	3,692,808
3,691,603	3,691,979	3,692,333	3,692,817
3,691,615	3,691,989	3,692,339	3,692,855
3,691,637	3,692,000	3,692,344	3,692,856
3,691,638	3,692,008	3,692,352	3,692,857
3,691,653	3,692,019	3,692,360	3,692,866
3,691,657	3,692,021	3,692,400	3,692,868
3,691,678	3,692,033	3,692,411	3,692,869
3,691,682	3,692,061	3,692,424	3,692,873
3,691,693	3,692,067	3,692,452	3,692,886
3,691,706	3,692,076	3,692,455	3,692,891
3,691,719	3,692,079	3,692,482	3,692,903
3,691,722	3,692,101	3,692,484	3,692,905
3,691,734	3,692,102	3,692,489	3,692,930
3,691,738	3,692,112	3,692,528	3,692,937
3,691,739	3,692,115	3,692,547	3,692,955
3,691,745	3,692,131	3,692,563	3,692,957
3,691,746	3,692,133	3,692,627	3,692,960
3,691,763	3,692,136	3,692,656	3,692,963
3,691,777	3,692,154	3,692,657	3,692,978
3,691,778	3,692,158	3,692,664	3,692,984
3,691,780	3,692,159	3,692,672	3,693,010
3,691,789	3,692,162	3,692,703	3,693,014
3,691,798	3,692,164	3,692,709	3,693,039
3,691,800	3,692,166	3,692,716	3,693,041
3,691,802	3,692,172	3,692,739	3,693,049
3,691,803	3,692,177	3,692,751	3,693,051
3,691,814	3,692,187	3,692,755	3,693,065
3,691,827	3,692,193	3,692,758	3,693,141
3,691,836	3,692,196	3,692,761	3,693,157
3,691,837	3,692,209	3,692,762	3,693,164
3,691,849	3,692,229	3,692,764	3,693,175
3,691,851	3,692,234	3,692,765	3,693,186
3,691,856	3,692,248	3,692,782	3,693,187
3,691,912	3,692,261	3,692,785	
3,691,919	3,692,279	3,692,786	



# PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner  
WILLIAM FELDMAN, Deputy Assistant Commissioner

## CONDITION OF PATENT APPLICATIONS AS OF AUGUST 22, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director.....	7-09-71
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director.....	6-01-71
Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director.....	8-02-71
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director....	7-02-71
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant).....	4-02-71
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director.....	12-29-71
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director.....	6-08-71
Ordinance; Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director.....	9-14-71
Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant)....	5-17-71
Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director.....	9-27-71
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGNS, GROUP 290—R. L. CAMPBELL, Director.....	2-23-71
Industrial Arts; Household, Personal and Fine Arts.	
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director.....	7-23-71
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director.....	6-09-71
Manufacturing Processes; Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Tools; Cutlery; Jacks. Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director.....	8-03-71
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Trolley; Printing; Typewriters; Stationery; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director.....	8-23-71
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director.....	7-01-71
Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	

Expiration of patents: The patents within the range of numbers indicated below expire during September 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 819, 83rd Congress, approved August 23, 1954 (68 Stat. 784), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,716,748 to 2,719,293, inclusive  
Plant Patents..... Numbers 1,417 to 1,422, inclusive

# REISSUES

SEPTEMBER 19, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,477

## BREAKERLESS IGNITION SYSTEM WITH AUTOMATIC SPARK ADVANCE USING TRIGGERING COIL

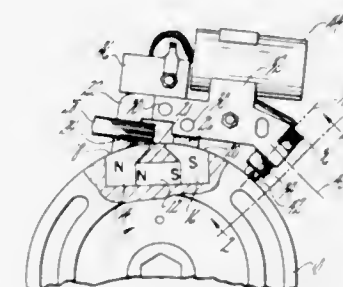
Michael J. Piteo, Enfield, Conn., assignor to R. E. Phelon Company, Inc., East Longmeadow, Mass.

Original No. 3,447,521, dated June 3, 1969, Ser. No. 648,023, June 22, 1967. Application for reissue Nov. 27, 1970, Ser. No. 93,518

Int. Cl. F02p 1/08

U.S. Cl. 123—148 E

9 Claims



An ignition system for use with an engine having a spark gap ignition device includes a first triggering coil having its axis arranged generally tangentially to the circular path of a magnet assembly fixed to a rotor rotated in synchronism with the operation of the engine. A ramp voltage is induced in the first coil and triggers an associated switching device to cause a spark when the induced voltage reaches a given triggering voltage, the steepness of the ramp being dependent on the rotor speed so that at different speeds the triggering voltage is reached at different rotor positions. A second triggering coil connected in parallel with the first coil and having its axis arranged generally radially of the circular magnet path produces a triggering voltage for causing a spark at a definite rotor position during low speed operation. The magnet assembly is also used in conjunction with another coil forming part of a condenser discharge system for generating the electrical power used to produce the spark.

27,478

## COMMUNICATION SYSTEM HAVING A MULTIPLE ACCESS MAN-MADE SATELLITE

Gerard Pierre Battail, Paris, and Pierre Claude Brossard, Montigny-le Bretonneux, France, assignors to Communications Satellite Corporation

Original No. 3,470,477, dated Sept. 30, 1969, Ser. No. 658,565, Aug. 4, 1967. Application for reissue Feb. 11, 1971, Ser. No. 114,453

Claims priority, application France, Aug. 5, 1966, 72,249

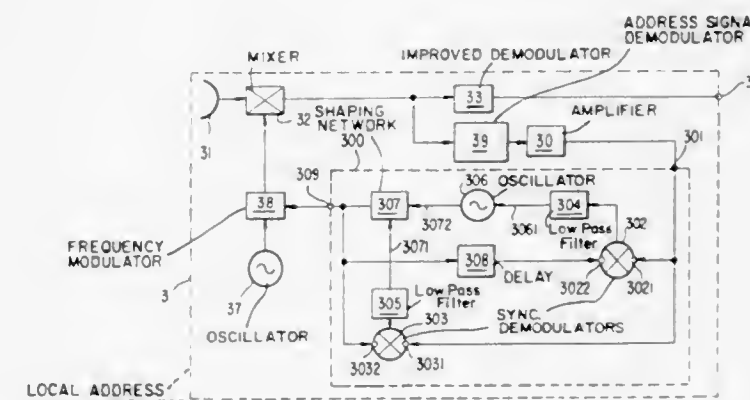
Int. Cl. H04b 1/06

U.S. Cl. 325—304

6 Claims

A communications receiver which receives F.M. communications from a plurality of transmitters but detects

information only from that transmitter which modulates the carrier with an address frequency assigned to the receiver. A frequency deviation feedback loop connected between the output and input of the receiver mixer generates a local carrier frequency which differs from the received carriers by the center frequency of an improved demodulation and which is modulated by the address signal assigned to the receiver. A phase lock loop and an amplitude lock loop in the feedback path operate to control the phase and amplitude of the locally generated address signal so that the mixing of the F.M. modulated locally generated carrier and the received signals results in an intermediate frequency output which is frequency



modulated by the desired information only. All of the received carriers which have been modulated by different address signals will come out of the mixer as intermediate frequencies modulated by a combination of signals. Only the desired information signal then is capable of passing through the improved demodulator.

27,479

## IMPACT TOOL

Murray L. Jayne, Kenosha, Wis.

Original No. 3,565,183, dated Feb. 23, 1971, Ser. No. 783,611, Dec. 13, 1968. Application for reissue Feb. 25, 1971, Ser. No. 119,064

Int. Cl. B25d 9/04

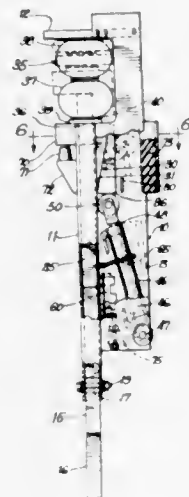
U.S. Cl. 173—13

14 Claims

An impact tool for loosening and breaking homogeneous material such as compacted or frozen earth, black top and concrete. The tool is adapted to be mounted on the boom of a backhoe or the like, and it is powered by the hydraulic system of the apparatus on which it is mounted or by a separate system. A tool element, such as a hardened point, is integral with or mounted on an anvil arranged for limited longitudinal movement in a housing. A hammer coacting with the anvil is energized by a spring, preferably a pneumatic spring. A hydraulic cylinder moves the hammer against the spring, and when the spring is compressed in desired amount, the piston rod of the cylinder is cammed away from the hammer, thereby permitting the spring to drive the hammer, thereby



permitting the spring to drive the hammer with great force against the anvil. The tool is arranged so that operation thereof occurs only when the tool element or point is positioned against the work and the movable anvil has an inward relation with its housing, thereby providing a "dead man" control feature. In basic form the tool has a single hammer and a single cylinder.



Modifications of the basic tool contemplate a double cylinder, single hammer device which increases the frequency of operation by a factor of two, and a double cylinder, double hammer device which in effect is the combination of two single hammer, single cylinder devices in a single tool.

27,480

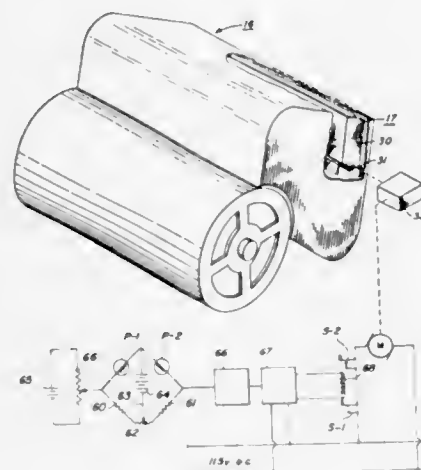
# **AUTOMATIC DEVELOPMENT CONTROLLER**

Roman C. Kamola, North Rose, N.Y., assignor to Xerox Corporation, Rochester, N.Y.  
Original No. 3,376,854, dated Apr. 9, 1968, Ser. No. 554,522, June 1, 1966. Application for reissue July 3, 1969, Ser. No. 846,986

Int. Cl. G03g 15/08

U.S. Cl. 118—7

3 Claims



A toner concentration control system for a recording apparatus in which a sensor comprising two parallel spaced NESA glass plates through which developer material flows serves to generate signals to automatically control toner dispensing. The lower plate has a pattern which is held at a potential to attract toner. A light source and photocell on either side of the plate senses the toner deposit per unit of time in accordance with toner concentration. Another photocell is arranged as a leg of a bridge circuit which includes the first photocell such that

when the latter senses a toner situation away from the desired density effect, an unbalance of the bridge occurs causing toner dispensing.

27,481

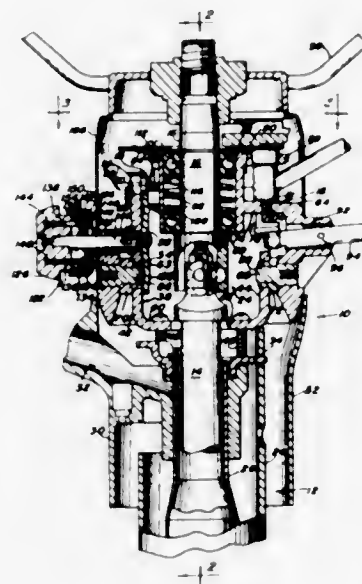
# **ADJUSTABLE STEERING MECHANISM EMPLOYING MEMORY UNIT**

Thomas S. Reed, Glen Ellyn, and Edward S. Stanuch, Jr., Crestwood, Ill., assignors to Borg-Warner Corporation  
Original No. 3,365,976, dated Jan. 30, 1968, Ser. No. 509,772, Nov. 26, 1965. Application for Reissue Nov. 2, 1970, Ser. No. 86,392

Int. Cl. B62d 1/18

U.S. Cl. 74—493

16 Claims



A vehicle steering column angularly adjustable to a number of pre-selectable positions including a locking device for retaining the column in the selected position and a memory device by which an operator can select a preferred position and whereby the memory device will enable the operator to return the steering column to the preferred position even though the column has been moved to other positions.

27,482

# **HYDRAULIC BOWL RELEASE FOR CONE CRUSHERS**

Loren G. Symons, North Hollywood, Calif., assignor to Rex Chainbelt Inc., Milwaukee, Wis.  
Original No. 3,162,387, dated Dec. 22, 1964, Ser. No. 151,708, Nov. 13, 1961, which is a division of Ser. No. 690,458, Oct. 16, 1957, now Patent No. 3,019,994, dated Feb. 6, 1962. Application for reissue Mar. 3, 1971, Ser. No. 120,783

Int. Cl. B02c 7/14

U.S. Cl. 241—290

17 Claims

1. In a gyratory crusher, a circumferential main frame with an outwardly extending flange adjacent its upper edge, a bowl supporting ring tiltably mounted on said flange and movable upwardly therefrom, a bowl mounted on the bowl supporting ring, yielding means for normally holding the bowl supporting ring downwardly against said flange and substantially fixed in relation to the main frame while permitting overload release, including a plurality of bowl holding and release springs, their upper ends abutting the lower side of said main frame flange, movable abutments for the lower ends of the springs, and spring bolts passing through apertures in said main frame flange, and connecting said abutments and bowl supporting ring with said springs under compression there-

27,483

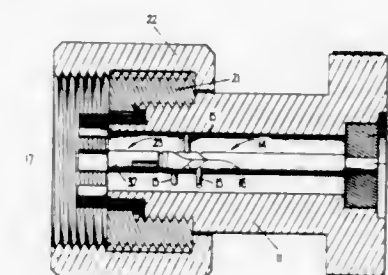
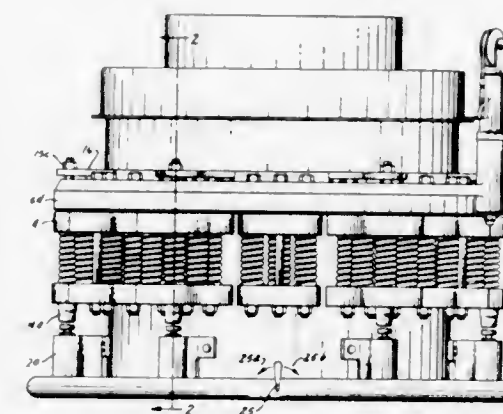
# **PRECISION MINIATURE SEXLESS COAXIAL CONNECTOR**

Harmon W. Banning, Winchester, Mass., assignor to Andrew Alford, Winchester, Mass.  
Original No. 3,533,046, dated Oct. 6, 1970, Ser. No. 783,941, Dec. 16, 1968. Application for reissue May 26, 1971, Ser. No. 147,066

Int. Cl. H01r 17/04, 25/00

U.S. Cl. 339—48

6 Claims



to the thrust members so that when the jacks are energized, they apply an upthrust to the thrust members which will be communicated to the bowl supporting ring, thereby raising the bowl to allow the free escape of lodged material.

A miniature sexless coaxial connector is characterized by an inner conductor sliding spring mechanism to establish coupling between like connectors while introducing negligible mismatch.



# PATENTS

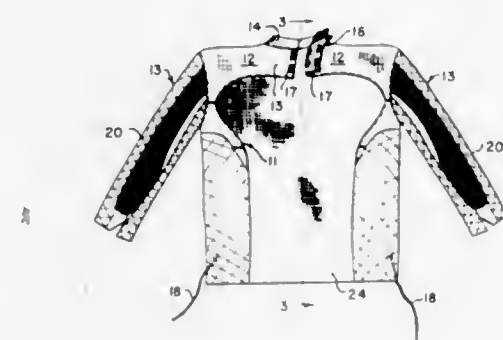
## GRANTED SEPTEMBER 19, 1972

### GENERAL AND MECHANICAL

**3,691,564**  
**PROTECTIVE GARMENT**  
 David A. La Marre, Woodstock, Conn.; George H. Schauweker, Southbridge, Mass., and Herbert F. Stickney, North Woodstock, Conn., assignors to American Optical Corporation, Southbridge, Mass.  
 Filed Nov. 4, 1970, Ser. No. 86,680  
 Int. Cl. A41d 13/00

U.S. Cl. 2—2

10 Claims

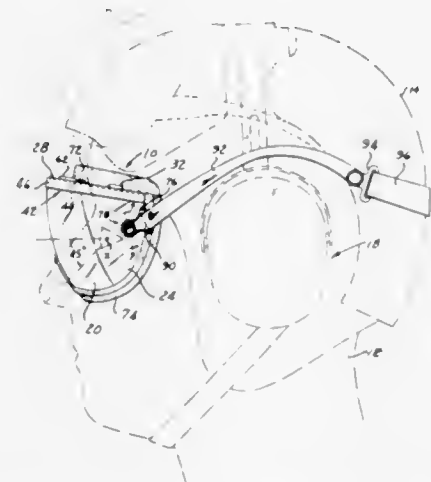


A welder's jacket including a light colored main body portion having a flexible, detachable, highly reflective facing over substantially the entire front portion and forward exposed arm portions, and having a moisture absorptive thermally insulating body contacting portion.

**3,691,565**  
**FLIGHT DECK GOGGLE**  
 Edward A. Galonek, Southbridge, Mass., assignor to Omnitech Inc., Southbridge, Mass.  
 Filed Nov. 25, 1970, Ser. No. 92,680  
 Int. Cl. A61f 9/02

U.S. Cl. 2—14 H

12 Claims



An improved flight deck goggle which accommodates vision-correcting spectacles or eyeglasses and which may be used with a helmet provided with sound-attenuating earcups is made up of a spherical pantoscopic lens section which is molded from clear impact-resistant synthetic resin with rearward extensions at the sides thereof, thus providing an upper lens section edge which is detachably received in a frame which abuts the wearer's forehead to space the upper edge of the lens section from the forehead to tilt the section downwardly to permit the lower edge, having a nose bridge

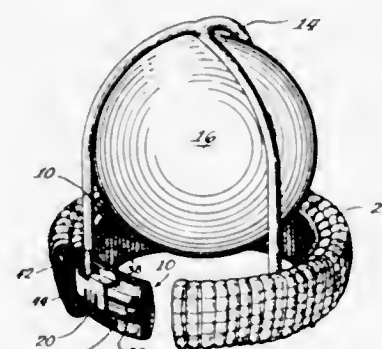
recess therein, to rest on the wearer's cheekbones with the side extensions disposed at the temples of the wearer to receive a strap or the like for holding the goggle on the head.

**3,691,566**  
 Patent Not Issued For This Number

**3,691,567**  
**PROSTHETIC HEART VALVE HAVING A PAIR OF SUPPORT RINGS OF DISSIMILAR MATERIAL**  
 Harry W. Cromie, Pittsburgh, Pa., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.  
 Filed May 7, 1971, Ser. No. 147,275  
 Int. Cl. A61f 1/22

U.S. Cl. 3—1

9 Claims



A prosthetic heart valve having an inner support ring of rigid non-thrombogenic material and a malleable metallic outer support ring positioned about the periphery of the inner ring and bent into the immovable clamping relationship therewith. A portion of a tubular fabric member is retained between the two clamped rings, and the remainder of the fabric member is folded into a plurality of layers about the periphery of the outer ring to form a suturing site. Typically, the outer ring carries an outwardly extending flange on one side, which is overlaid by a single thickness of the tubular fabric, to hold the multiple layer suturing site away from the orifice of the inner ring.

**3,691,568**  
**VENTILATOR FOR WATER CLOSETS**  
 William L. Martz, 15875 Woodacre Road, Los Gatos, Calif.  
 Continuation-in-part of Ser. No. 882,815, Dec. 8, 1969, Pat. No. 3,626,554. This application Aug. 24, 1970, Ser. No. 66,346  
 Int. Cl. E03d 9/04, 9/05

U.S. Cl. 4—213

3 Claims

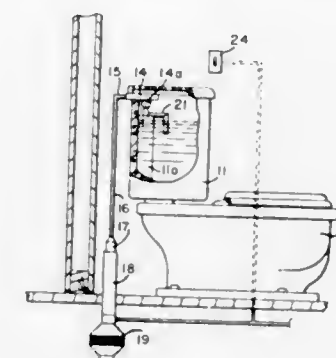
A ventilator attachment for bathrooms and the like which is adapted for use with the ventilator disclosed in application Ser. No. 882,815 so that the ventilator disclosed in said application may be employed with water tanks in which, for example, the overflow channel or pipe is integral with a wall of the tank. This attachment employs a tube having one end fitting into the inlet of the ventilator hood and the other end fitting into the overflow pipe of the tank. An elbow pipe having one end attached to the tube and having the other end positioned below the water line of the tank is provided to drain any excess water into the overflow pipe. Another embodiment of this

SEPTEMBER 19, 1972

GENERAL AND MECHANICAL

811

device employs a T-type coupling for connecting the ventilator pipe to the water pipe leading to the toilet bowl in flush-



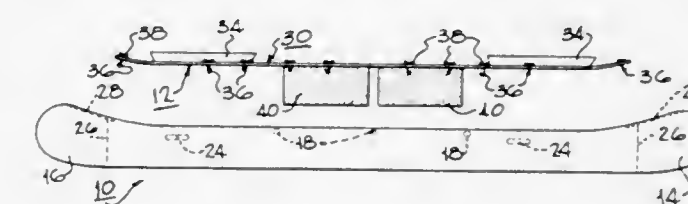
comfort. The patient-contacting pad is treated with fungicidal and bactericidal material withstanding a limited number of cleansing cycles readily carried out near bedside for immediate return of the pad to the same patient. The pad may be used in combination with a moisture collecting pad without interfering with the ventilating function of the former.

**3,691,571**  
 Patent Not Issued For This Number

**3,691,572**  
**CANOE CONSTRUCTION**  
 Peter A. Yannes, Jr., 430 Manor Road, Beverly, N.J.  
 Filed Oct. 15, 1970, Ser. No. 80,969  
 Int. Cl. B63c 9/02; B63b 7/02

U.S. Cl. 9—3

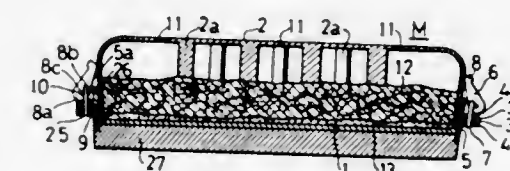
9 Claims



**3,691,569**  
**CUSHION**  
 Takeo Ikada, 248, Sannotani, Hanmoku, Naka-ku, Yokohama-shi, Kanagawa-ken, Japan  
 Filed Dec. 22, 1969, Ser. No. 887,057  
 Claims priority, application Japan, Dec. 28, 1968, 43/96025  
 Int. Cl. A47c 23/00

U.S. Cl. 5—345

9 Claims

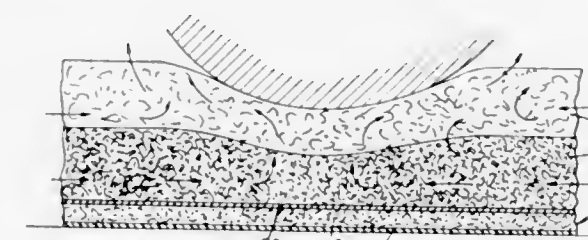


A cushion having a body comprising a layer composition formed of a mixture of rigid elastic fibrous materials and an elastomeric foam, said mixture being such that said rigid elastic fibrous material in part surround part of said foam, while part of said foam surrounds part of the fibers, thus said fibers and said foam occupying a defined space in mutually complementary relationship, said foam including a foam layer formed in integral connection with and extending outside the foam part surrounded by said rigid elastic fibrous materials.

**3,691,570**  
**BED PAD AND METHOD OF USE TO SUPPORT AN INVALID**  
 Erwin B. Gaines, 12613 Crewe St., North Hollywood, Calif., and Hyman S. Baigel, 6258 Shirley Ave., Reseda, Calif.  
 Filed Feb. 9, 1970, Ser. No. 9,622  
 Int. Cl. A47c 27/12

U.S. Cl. 5—347

3 Claims

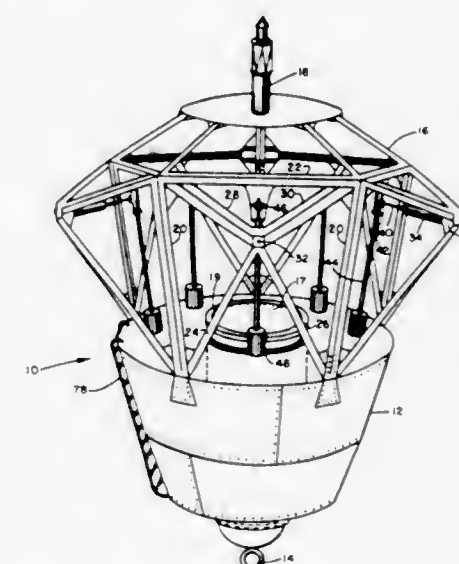


An inexpensive throw-away, soft, resilient, ventilated sanitary pad formed of polyester fibers bonded together for use beneath a patient having impaired circulation and a method of utilizing the same alone or in combination with a moisture collecting pad to protect bed clothing and to aid the patient's

**3,691,573**  
**SELF-POWERED SIGNAL BUOY**  
 Gaetano J. Laudato, Jr., 2 Lamartine Place, Jamaica Plain, Mass.  
 Filed July 20, 1970, Ser. No. 56,348  
 Int. Cl. B63b 51/00

U.S. Cl. 9—8.3 E

6 Claims



A signal buoy is provided with one or more pendulums operating an air compression system in which the pendulums swing with the motion of the buoy. Compressed air is stored in a charging tank until it reaches a preset pressure at which point it is released to drive an air turbine which in turn



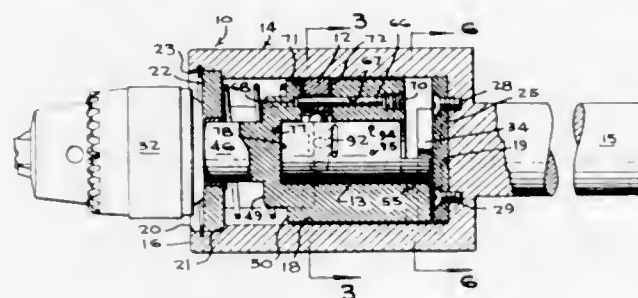
operates an electrical generator and through a voltage regulator charges batteries on the buoy. The battery, in turn, operates a signal lamp or other accessory equipment.

3,691,574

## TOOL HOLDING DEVICE

James F. Lee, Route 4 Box 119, Darlington, S.C.  
Filed May 3, 1971, Ser. No. 139,445  
Int. Cl. B23g 1/02, 1/46, 3/00, 5/08  
U.S. Cl. 10—89 H

26 Claims



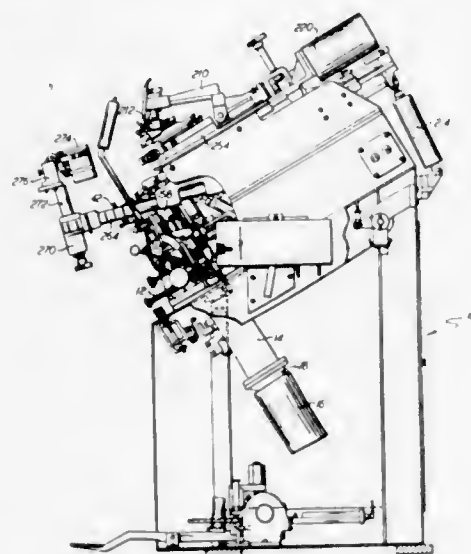
A device mountable on a thread cutting machine such as a turret lathe or automatic screw machine, generally including a tool holder support member rigidly mountable on the machine, a tool holder member mounted on the tool holder support member for rotatable and axial movement relative thereto, and means disposed on the tool holder member for mounting thereon a thread forming tool such as a tap or die cutting tool. The device is provided with means for accommodating either a right hand or left hand thread forming tool without having to reset the device each time it is desired to change the type of thread being cut.

3,691,575

## TOE WIPING WITH INSOLE UNSECURED TO LAST BOTTOM

Walter Vornberger, Tewksbury, Mass., assignor to Jacob S. Kamborian, West Newton, Mass.  
Filed Feb. 12, 1971, Ser. No. 114,931  
Int. Cl. A43d 21/00  
U.S. Cl. 12—145

12 Claims



The wiping of the toe portion of the margin of an upper, mounted on a last, against the corresponding portion of an insole located on the last bottom, wherein the insole is unsecured to the last bottom. An insole is first placed on insole rests and then the last bottom is placed on the insole with the toe portions of the insole and last bottom bearing against abutments to retain them in registration. A suction cup, engaged with the heel portion of the insole, constrains the insole against movement on the insole rests during the placement of the last bottom on the insole. A pulling over mechanism pulls

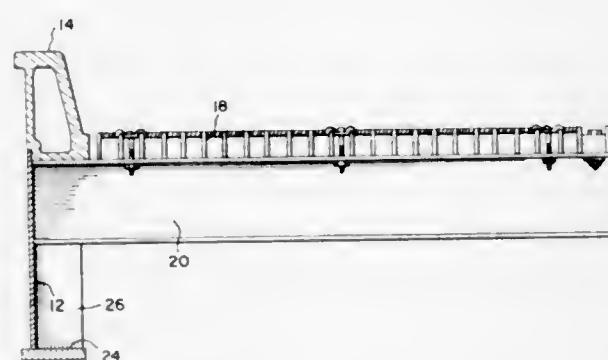
the upper about the last in a heel to toe direction to cause the heel portion of the upper margin, that is extending downwardly of the last, to form a cup about the heel portion of the last bottom which retains the heel portion of the insole in registration with the heel portion of the last bottom. The toe portion of the upper margin is wiped against and attached to the insole while the registrations are maintained.

3,691,576

## SPAN STRUCTURE

Ray P. Miles, 8575 W. Melody Lane, Macedonia, Ohio, and  
Andrew F. Szucs, 4479 W. 226 St., Cleveland, Ohio  
Continuation-in-part of Ser. No. 763,175, Sept. 27, 1968, Pat. No. 3,548,433. This application Dec. 18, 1970, Ser. No. 99,368  
Int. Cl. F01d 15/12  
U.S. Cl. 14—72

6 Claims



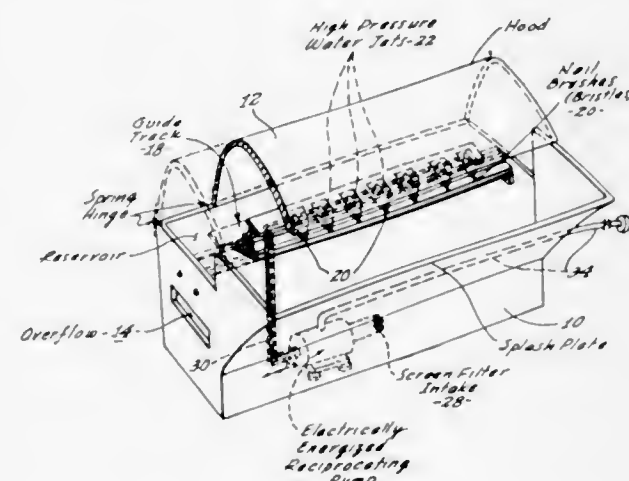
The invention relates to a novel span structure as for ramps and bridges having a series of crossbeam members secured to an assembly of side elements which comprise an upper hollow longitudinal member capable of withstanding compression forces, a lower longitudinal runner element capable of withstanding tension forces, a vertical side element between the hollow member and the lower element, and a vertical stiffener element between the crossbeam and the lower element. The structure has uniform longitudinal flex and the side elements provide a column effect.

3,691,577

## WATER PRESSURE FINGERNAIL CLEANING UNIT

William W. Bliss, 1756 N. Fuller, Los Angeles, Calif.  
Filed April 1, 1971, Ser. No. 130,318  
Int. Cl. A47k 7/04  
U.S. Cl. 15—21 R

4 Claims



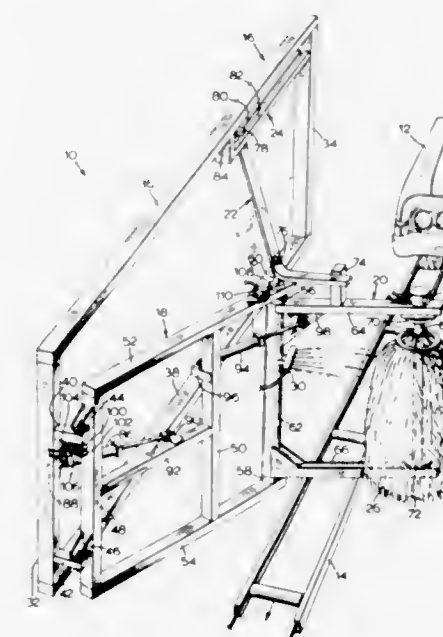
An improved water pressure fingernail cleaning unit is provided which includes a housing, and a reciprocally actuated nail brush mounted in the housing and through which high pressure water jets are directed at high pressure under the nails of the user.

3,691,578

## CAR WASHING APPARATUS

Ivan Barber, 559 Evans Ave., Toronto 14, Ontario, Canada  
Filed July 15, 1971, Ser. No. 163,024  
Int. Cl. B60s 3/06  
U.S. Cl. 15—21 D

7 Claims



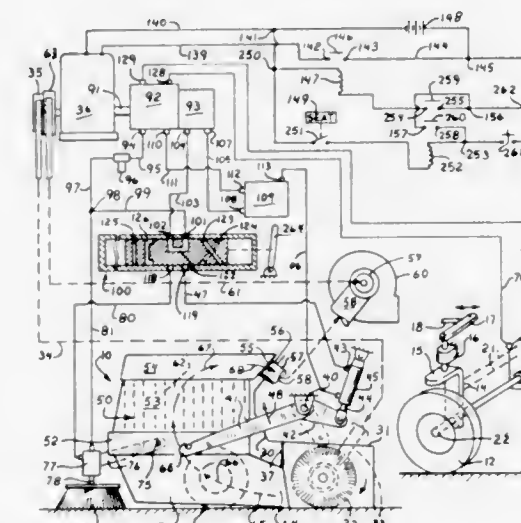
The present invention provides a device for washing a part of the front, one side and a part of the rear of the car. A brush is coupled to a system of three arms interconnected and controlled to automatically draw the brush across the front of the car when the car pushes the brush forwardly. The brush is controlled to reverse direction after washing the front number plate and to move relatively freely around car projections at the junction of the front and side of the car.

3,691,579

## SURFACE MAINTENANCE MACHINE DRIVE

Joseph G. Kasper, Minneapolis, Minn., assignor to Tennant Company, Minneapolis, Minn.  
Filed Oct. 30, 1970, Ser. No. 85,468  
Int. Cl. E01h 1/04  
U.S. Cl. 15—83

13 Claims



A mobile sweeping machine having separate hydraulic motors for driving the curb brush and the propulsion wheel; a bat-

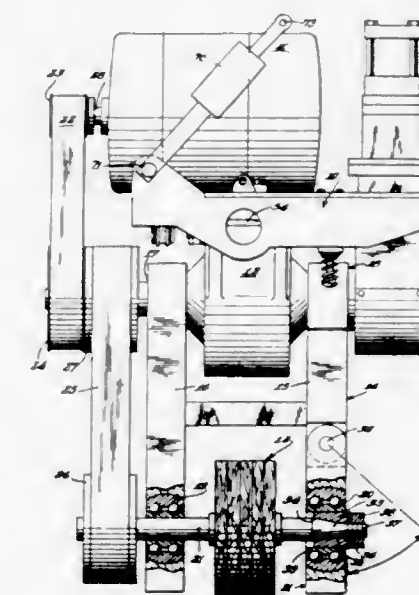
tery powered, constant speed electric motor that through mechanical drive connections drives the main sweeping brush, the suction blower and tandem pump; and a control valve for selectively applying fluid under pressure from the fixed displacement tandem pump section to the curb brush, the cylinder for elevating the debris and filter receptacle, and to either of the curb brush and cylinder. The variable displacement pump section of the tandem pump supplies fluid under pressure to the propulsion wheel hydraulic motor. A filter is located in the return line ahead of the variable volume pump section.

3,691,580

## BUFFING HEAD

Glenn J. Eggert, Cedarburg, Wis., assignor to Houdaille Industries Inc., Buffalo, N.Y.  
Filed Nov. 5, 1970, Ser. No. 87,049  
Int. Cl. B24b 29/00  
U.S. Cl. 15—97

15 Claims

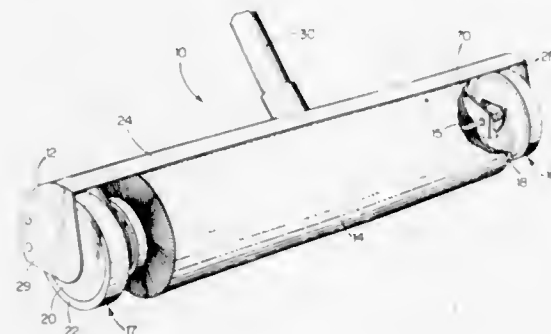


A buffing apparatus having a buffing wheel driven by an electric loader and positioned by a hydraulic motor means which moves the buffing wheel into and out of engagement with the article being buffed. The buffing wheel is supported by a pair of arms extending below the hydraulic motor means, and one of the arms has a pivotal end portion which may be rotated away from one end of the buffing wheel shaft to allow the buffing wheel to be readily removed.

The hydraulic motor means is also provided with a volt-angle transducer to generate a signal which is in proportion to the orientation of the frame which supports the buffing wheel. The information obtained from the volt-angle transducer may be then used in a control circuit to automatically control the position of the buffing wheel. The buffing wheel is also provided with a means for being locked in an up position. In this regard, the shaft of the hydraulic motor means is provided with a gear, and a gear rack is pivotally mounted on the frame of the hydraulic motor means. The gear rack engages the gear when the hydraulic motor means is rotated to a desired angular position. Should a loss of power temporarily occur, the buffing wheel will then not drop into the article being buffed. The entire apparatus including the electric motor and the hydraulic rotary motor and the buffing wheel is supported in a U-shaped bracket which in turn is mounted on a horizontal track by means of a series of rollers mounted externally of the U-shaped bracket. The entire apparatus is supported by a pivotal connection within the U of the bracket.

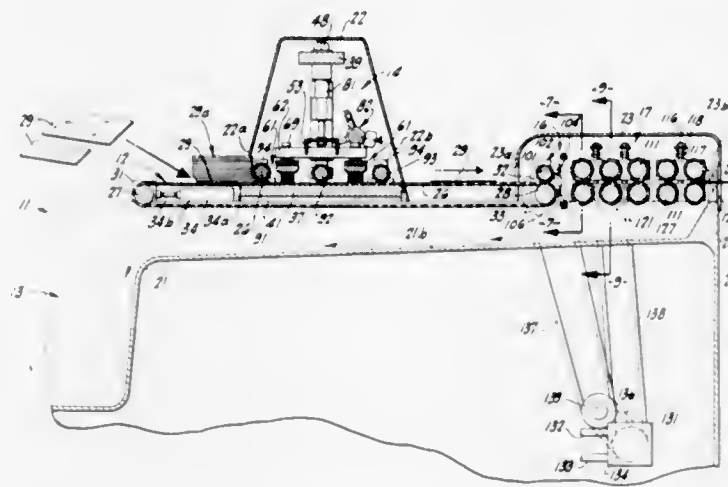


**3,691,581**  
**FRICTION-DRIVEN ROTARY CLEANING APPARATUS WITH COAXIAL TRANSMISSION**  
 John H. Coult, One Leland Road, Natick, Mass.  
 Filed April 19, 1971, Ser. No. 135,142  
 Int. Cl. A47I 11/22  
 U.S. Cl. 15-49 C 10 Claims



This disclosure depicts floor and ground cleaning apparatus having a cylindrical brush which is friction driven from a pair of wheels through novel transmission means coaxial with the brush and the wheels.

**3,691,582**  
**MACHINE FOR CLEANING PRINTED CIRCUIT BOARD**  
 Sterling Call, Millbrae, Calif., assignor to Circuit Equipment Corporation, San Bruno, Calif.  
 Filed July 30, 1970, Ser. No. 59,635  
 Int. Cl. A46b 13/02  
 U.S. Cl. 15-77 11 Claims

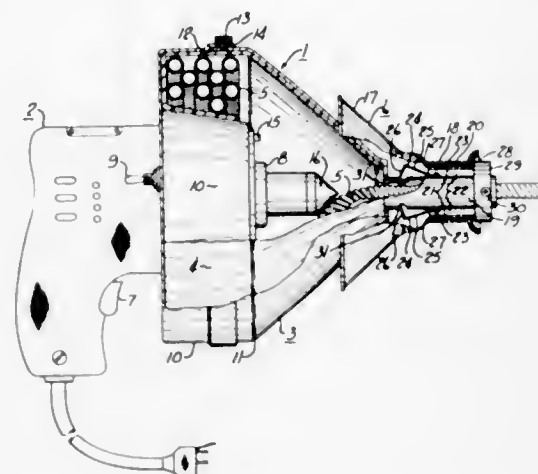


Cleaning machine having a conveyor belt for transporting printed circuit beneath scrubbing brushes moving reciprocally along an orbital path. A fluid actuated ram urges the brushes against the boards with a pressure which remains constant regardless of variations in board thickness and brush wear. A sink is provided at one end of the belt, and rinsing and drying stations are provided at the other.

**3,691,583**  
**SEWER AUGERING MACHINE**  
 Lee H. Silverman; Arthur A. Silverman, and Edward T. Gaworski, all of Pittsburgh, Pa., assignors to General Wire Spring Company, Pittsburgh, Pa.  
 Filed Jan. 6, 1971, Ser. No. 104,242  
 Int. Cl. B08b 9/02  
 U.S. Cl. 15-104.3 SN 10 Claims

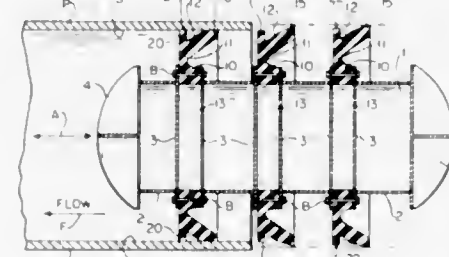
A plumber snake apparatus for cleaning pipes with a plumber snake wherein a changeable snake cartridge with a snake coiled therein is removeably housed in a cartridge housing.

ing. A handgrip is provided at the forward end of the housing for gripping the tool as the snake within the pipe being cleaned



is rotated with the housing. Upon rearward axial displacement of the handgrip a chuck is automatically actuated to grip the snake and prevent further axial feed.

**3,691,584**  
**DISC SUPPORTED CUP**  
 Don B. Landers, Arlington, Tex., assignor to Oil States Rubber Co.  
 Filed Feb. 16, 1971, Ser. No. 115,590  
 Int. Cl. B08b 9/06  
 U.S. Cl. 15-104.06 R 8 Claims

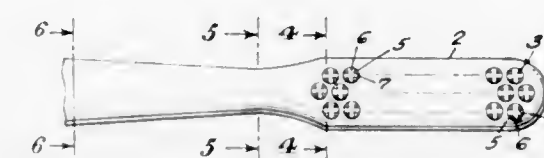


An elastomeric cup structure of the type wherein several cups are mounted on a supporting body or mandrel to form a pig to be passed through a pipeline, usually entrained in fluid flowing therethrough, either for the purpose of batch separation or for cleaning the pipeline. Each cup has a sealing lip supported by an annular flex portion attached to a cup base, and the cup further including a disc portion attached to the base adjacent to the flex portion and standing radially outwardly to contact the pipeline's inner surface and maintain the pig centered therein to relieve the sealing lips of this centering function. Several modifications of the cup structure include additional annular series of gussets for assisting the disc portion to remain substantially radially oriented.

**3,691,585**  
**SINGLE-USE TOOTHBRUSH**  
 Charles Flom, P.O. Box 2297, Baltimore, Md.  
 Filed Dec. 28, 1970, Ser. No. 101,540  
 Int. Cl. A46b 1/00  
 U.S. Cl. 15-104.94 2 Claims

A single-use toothbrush of molded plastic material, composed of a plurality of cylindrical clusters of bristles integrally molded with the body of the toothbrush and coated with a thin layer of dentifrice composition which is sprayed onto the bristles in an amount adequate for a single brushing only. Each cluster is composed of four bristles of approximately triangular section and is formed by bristles projecting from a cylindrical base of small depth which is bisected by a pair of rectangular

larly displaced diametral slots which define the inner surfaces of the bristles while the lateral surfaces of the latter are coincident with the periphery of the base. The size of the clusters and their spacing from each other impart an optimum degree of flexibility to the bristles.

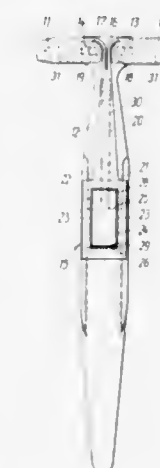


**3,691,586**  
**TWO-SIDED HANDLE BRUSH**  
 Kurt R. Krusche, Nansenring 22, Frankfurt/Main, Germany  
 Filed March 1, 1971, Ser. No. 119,505  
 Claims priority, application Germany, Feb. 27, 1970, G 70 07 182.8  
 Int. Cl. A46b 3/10  
 U.S. Cl. 15-106 10 Claims



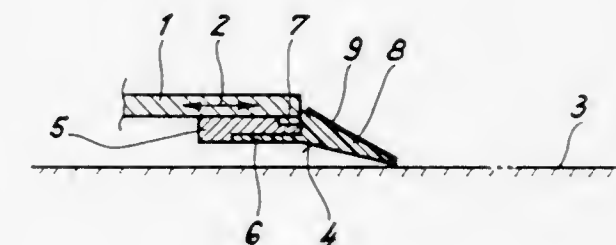
Two-sided handle brush having a frame in which there are mounted in opposed relationship two brushing bodies each including a base plate on which a bendable brushing means is mounted. The brushing means may, for example, have the bristles thereof disposed at an acute angle with respect to the general plane of the base plate of the brushing means, whereby the brushing means serves as an efficient cleaning device.

**3,691,587**  
**TOOTHBRUSH**  
 Herbert Makowsky, Wielandstr. 25, 28 Bremen, Germany  
 Filed Jan. 22, 1971, Ser. No. 108,942  
 Claims priority, application Germany, Jan. 23, 1970, P 20 02 984.9  
 Int. Cl. A46b 15/00, 9/10  
 U.S. Cl. 15-167 R 7 Claims



A toothbrush in which a pair of bristle carriers are pivotally mounted to one handle adjacent each other and are rotatable between a position in which they are aligned and perpendicular to one handle and a position in which they are parallel to each other and to the handle. Movement is imparted through a latchable slide on one handle which is connected to the carriers by tapered, deformable arms integrally molded with one carrier and slides in a single injection operation.

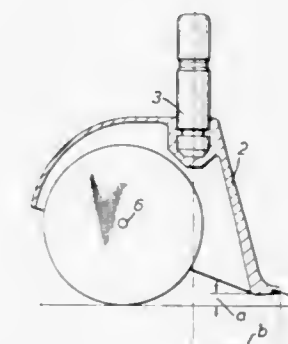
**3,691,588**  
**STRIPPER DEVICE**  
 Arnold Hennig, Erlenstrasse 10, Ismaning 8045, and Kurt Hennig, Georgenstrasse 16, 8000 Munich 71, both of Germany  
 Filed Jan. 28, 1971, Ser. No. 110,715  
 Claims priority, application Germany, Feb. 3, 1970, P 20 04 741.0  
 Int. Cl. F16c 17/00  
 U.S. Cl. 15-256.5 10 Claims



A stripper device for attachment to a movable part of a machine tool comprises a strip of resilient material secured to the movable machine part and terminating in a deflectable, exposed lip which is operable to wipe the surface of a fixed part of the machine tool. The lip is protected against damage by hot chips or the like by a layer of metal secured to the strip, the metal layer being sufficiently thin and flexible as to permit deflection of the lip in accordance with variations of the surface over which it moves.

**3,691,589**  
 Patent Not Issued For This Number

**3,691,590**  
**CASTORS FOR CHAIRS AND OTHER ARTICLES OF FURNITURE**  
 Fritz Drabert, Minden/Westphalia, Germany, assignor to Drabert Sohne, Minden/Westphalia, Germany  
 Filed Nov. 17, 1970, Ser. No. 90,275  
 Claims priority, application Germany, June 18, 1970, P 20 29 902.9  
 Int. Cl. B60b 33/00  
 U.S. Cl. 16-18 1 Claim



A castor for a chair comprises a wheel rotatably mounted in a housing which is pivotal about a substantially vertical axis spaced from the axis of the wheel. The housing includes an abutment surface arranged on the other side of the vertical axis to the axis of the wheel and extending below the axis of the wheel. When the chair is tilted, the abutment surface contacts the floor to prevent the chair from overturning.



3,691,591

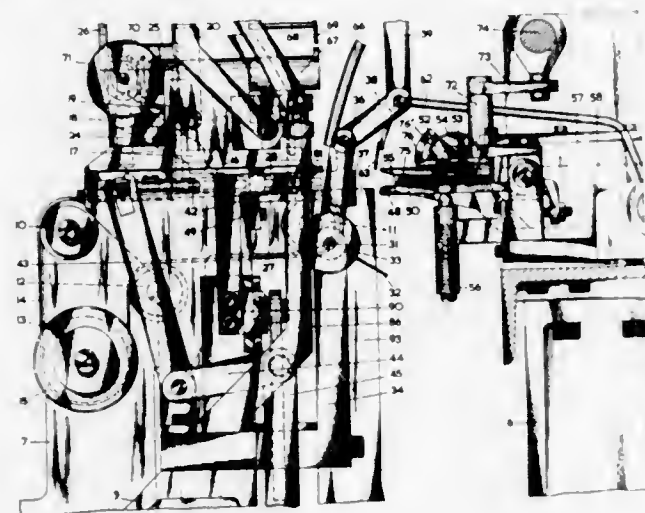
## APPARATUS FOR SHELLING SHRIMPS

Hendrikus Gerhardus Muller, 1169 Gronaustraat, Hengelo, Netherlands  
 Division of Ser. No. 807,349, March 14, 1969, Pat. No. 3,600,744. This application April 13, 1971, Ser. No. 133,594  
 Claims priority, application Netherlands, March 14, 1968, 6803635

Int. Cl. A22c 29/00

U.S. Cl. 17-73

26 Claims



Cooked shrimps which are accordingly curved are shelled by accurately orienting them and transferring them to a shelling station where the body portion of the shell is gripped and the tail is straightened out and the shrimp is beheaded. The body and tail portions of the shell are then separated and the shrimp is pushed part way out of the gripped body portion of the shell. The tail portion of the shell is then stripped off and the shrimp is then pushed all the way out of the body portion of the shell.

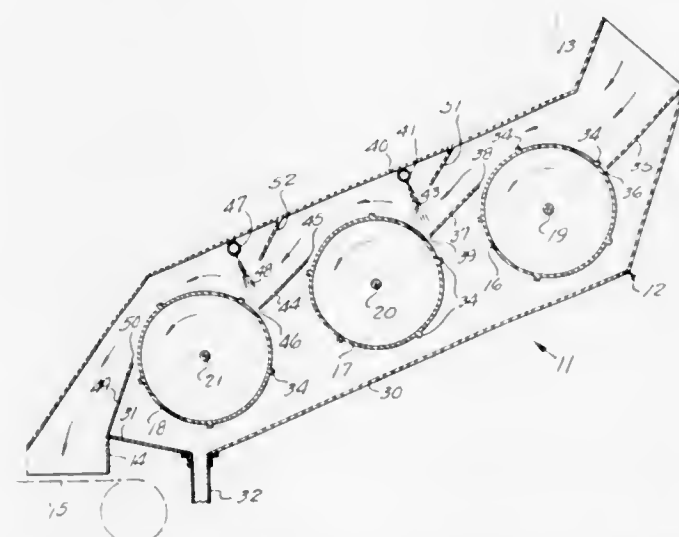
3,691,592

## SHRIMP DEHEADER

Hubert Ward, 1412 Choctaw Ave., Metairie, La.  
 Filed May 7, 1971, Ser. No. 141,295  
 Int. Cl. A22c 29/00

U.S. Cl. 17-71

10 Claims



A shrimp deheader consisting of an inclined housing having a top shrimp inlet chute and a bottom deheaded shrimp outlet chute, with a series of coupled driven cylindrical drums journaled therebetween, the drums having spaced bars on their peripheral surfaces. Stationary inclined baffles are located between the drums, and water jet nozzles are mounted above and directed toward the gaps between the lower edges of the baffles and the drums adjacent thereto, the jets from the nozzles aiding the heads of shrimp moving toward the drums to become loosened and detached.

3,691,593

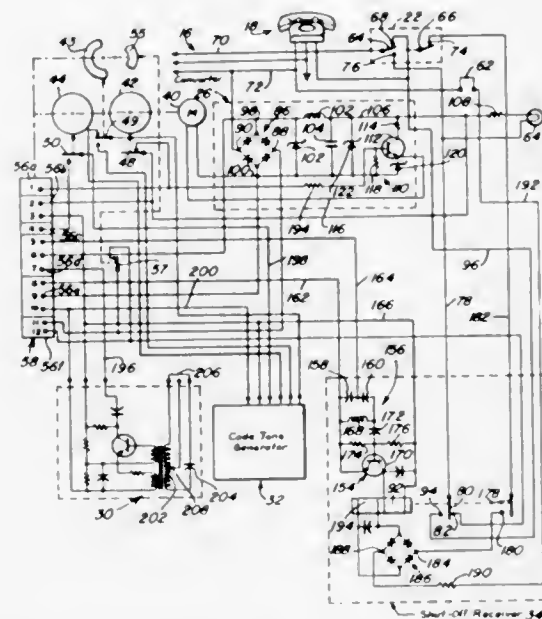
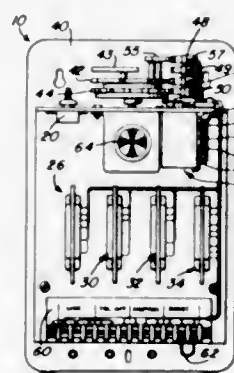
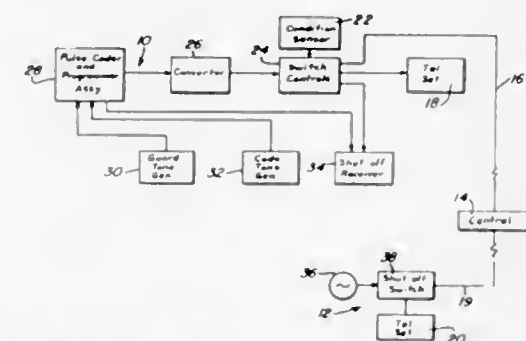
## DATA DIALING TRANSMITTER

Roger C. Glidden, Wenham, Mass., assignor to The Glidden Electric Corporation  
 Continuation-in-part of Ser. No. 851,878, Aug. 21, 1969, Pat. No. 3,594,508. This application July 16, 1971, Ser. No. 163,246

Int. Cl. H04m 11/08

U.S. Cl. 179-2 DP

11 Claims



A transmitter having a pulse coder and programmer assembly controls withdrawal of energy from the telephone lines at a reporting station to intermittently unload the lines for pulse dialing purposes and to operate a pair of oscillators during each operational cycle. The output of one of the oscillators is intermittently interrupted during the message period in accordance with a pulse code pattern. Recycling of the transmitter is selectively terminated by a return signal originating from the receiving station dialed by the transmitter.

3,691,594

## MEAT BALL FORMING MACHINE

Harold L. Klein, 4240 Marland Drive, Columbus, Ohio  
 Filed June 12, 1970, Ser. No. 45,858  
 Int. Cl. A22c 7/00

U.S. Cl. 17-32

7 Claims

A meat ball forming machine comprising a rotatable transfer plate which supports a plurality of open-ended

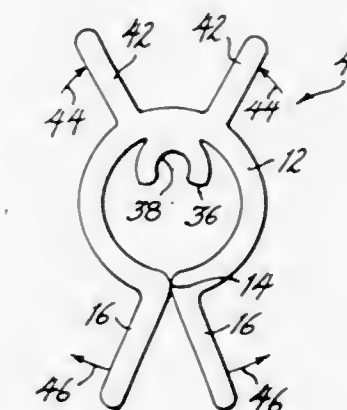
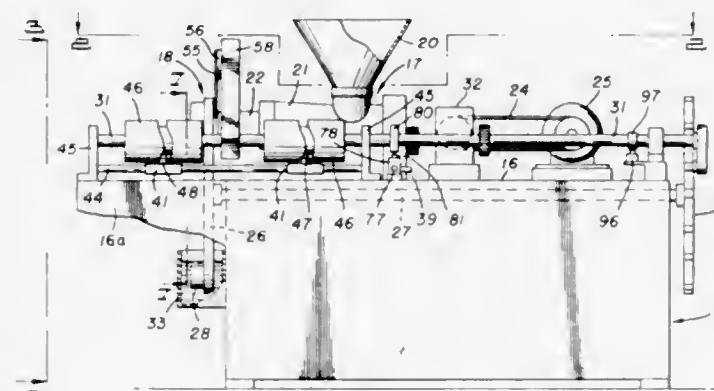
3,691,596

## FABRIC CLIP

Judson T. Ulansey, R.D. 3, Doylestown, Pa.  
 Filed Jan. 13, 1971, Ser. No. 106,068  
 Int. Cl. A44b 13/00; D06f 55/00

U.S. Cl. 24-84 R

3 Claims



tube, a pair of forming cups is provided at the forming station for moving into the tube and engaging and forming the charge, and means is provided at the discharge station for moving the cups out of the transfer tube and separating the forming cups to release the formed meat ball.

3,691,595

## LASHING FITTING

Hans Ulrich Backteman, Bromma, and Richard John Taylor, Johanneshov, both of Sweden, assignors to AB Backtemans Patent

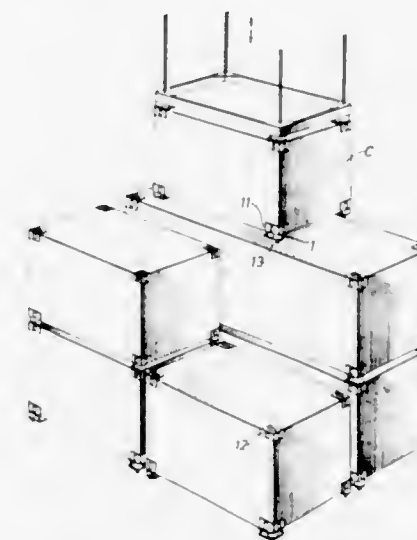
Filed March 4, 1971, Ser. No. 120,839

Claims priority, application Sweden, March 6, 1970, 3051/70; Feb. 9, 1971, 1608/71

Int. Cl. B61d 45/00; B65j 1/22

U.S. Cl. 24-81 E

14 Claims



Lashing fittings are characterized in that the rotation of the twistlock is automatically activated by vertical compression caused by the weight of a container coming into contact with the housing of the lashing fitting attached to a container or a loading platform, said twistlock being rotated by means of a force which is released exclusively by the said act of the weight of a container reacting against the housing of the lashing fitting thereby transmitting to the twistlock a revolving movement towards a locking position within said corner casting. An indicator is provided for indicating the tripping of the lashing fitting for connecting the containers in question to the lashing fitting and thereby to one another, and, on the other hand, angular displacement in opposite directions of the arrow tip-like heads of the twistlocks of one lashing fitting in relation to each other and, further, a sub-division of the revolving movement of the lock members over an angular range of 180° into two unequal steps during turning of the twistlocks to respectively the locked and the released positions.

A fabric clip that is particularly adapted to hang and display garments on a hanger. The fabric clip comprises a looped resilient member having an opening formed in the loop. A pair of flared legs converge at the opening, and aid in the insertion of the fabric into the loop. The loop can then be hung from a hanger by a hook formed at the top thereof. In this way, a pair of hooks can be secured on a hanger and a garment can be suspended from the looped portion of the clip.

3,691,597

## TWO-PART SNAP-ON FASTENING DEVICE

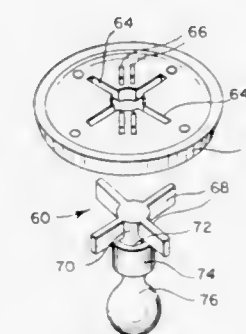
Edward J. Kahn, Baltimore, Md., assignor to Togs, Inc., Cockeysville, Md.

Continuation of Ser. No. 819,144, April 25, 1969, abandoned, which is a continuation-in-part of Ser. No. 781,296, Oct. 16, 1968, abandoned. This application July 27, 1971, Ser. No. 166,616

Int. Cl. A44b 1/38

U.S. Cl. 24-108

7 Claims



The invention disclosed is for a two-part snap-on fastening device which includes a button member having a stud projecting therefrom, and a foundation member securable to a garment. The projecting stud mates with the foundation member in a semi-permanent fashion so that disengagement does not result during normal wearing conditions. In a preferred embodiment, the button portion is made of relatively hard material having a stud integral therewith, the free end of which is bulbous and adapted to be inserted into the somewhat resilient foundation member and form a semi-permanent connection therewith.

3,691,598

Patent Not Issued For This Number



3,691,599

## SLIDE FASTENER

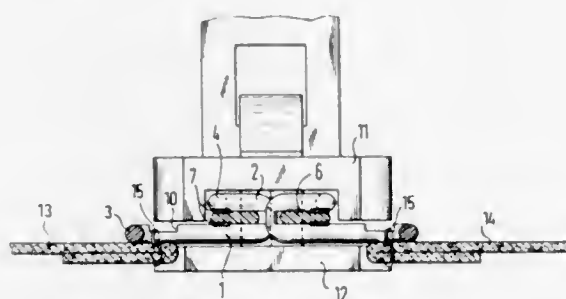
Dieter Maisenbacher, Stuttgart-Birkach, Germany, assignor to Dr. Karl F. Nagele Feinmaschinenbau, Stuttgart-Hohenheim, Germany

Filed Dec. 21, 1970, Ser. No. 100,284

Int. Cl. A44b 19/10, 19/26

U.S. Cl. 24—205.13 C

10 Claims



A slide fastener whose rows of interlocking plastic elements are of the folded-manner type, in which one set of leg portions is longer than the other set, and in which the precise spacing of the elements in each row is maintained by a strip of plastic extending along the row between the short and long legs of each element and fastened to the joining portions of the filament constituting the row which connects the short legs.

3,691,600

## METHOD OF FINISHING OF GREIGE WOVEN FABRICS

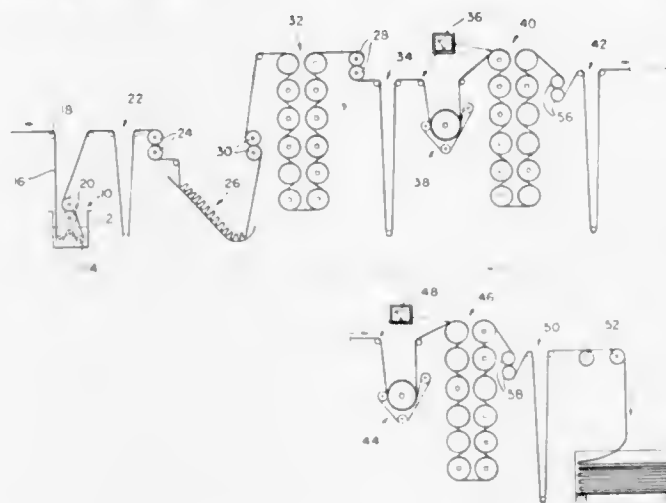
Herman J. Joy, Latham, N.Y., assignor to Cluett, Peabody & Co., Inc., Troy, N.Y.

Filed Dec. 10, 1970, Ser. No. 96,833

Int. Cl. D06c 21/00

U.S. Cl. 26—18.6

2 Claims



This invention pertains to an improved method and apparatus for finishing greige goods in a single processing range. The invention is applicable particularly to the finishing of high-shrinkage fabrics such as denim. The apparatus of the invention includes the following combination of devices for sequentially processing the fabric: a padder for impregnating the fabric with a desired liquid finishing preparation; a scray for collecting and storing temporarily the fabric when it is discharged from the padder; a free-rolling heated can assembly for partially drying the fabric received from the scray, and having control rollers at its input and output sides for controlling the tension of the fabric as it is advanced through the can assembly; a first compressive-preshrinkage unit for preshrinking the fabric an amount equal to about one half of its total potential-shrinkage characteristic; a driven second heated can assembly for further drying the fabric; a second compressive preshrinkage unit for shrinking the fabric a final amount to comply with predetermined standards, such as, established Sanforized label standards and a driven third can assembly for fully drying the fabric for discharge to a storage facility.

3,691,601

## METHOD OF MAKING HOSE CLAMPS

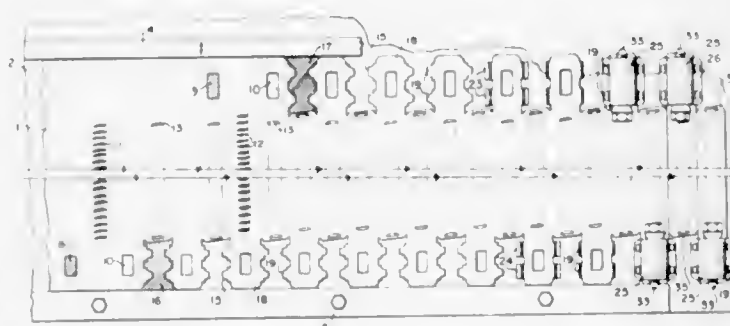
Robert J. Hough, Sarver, Pa., assignor to Oherg Manufacturing Company, Inc., Freeport, Pa.

Filed March 26, 1971, Ser. No. 128,311

Int. Cl. B23p 13/00

U.S. Cl. 29—150

5 Claims



A metal strip having a width equal to the length of each hose clamp that is to be cut from it is fed forward intermittently. While the strip is stationary parallel slots are punched in it in parallel rows extending transversely of it, with the ends of the rows spaced from the edges of the strip. Strip material between each edge of the strip and the adjacent ends of alternate rows of the slots is stamped out to leave a row of heads along each edge of the strip staggered relative to those along the opposite edge. The heads are provided with lugs extending in opposite directions lengthwise of the strip. The lugs are then bent up and an open-bottom screw housing is placed on each head. The screw housings have wide flanges provided with openings receiving the lugs, which are then bent down against the flanges to lock the housings on the heads. After this last operation the strip is fed ahead and severed transversely midway between the leading row of slots and the next succeeding row to form a hose clamp band with a screw housing secured to one end.

3,691,602

Patent Not Issued For This Number

3,691,603

Patent Not Issued For This Number

3,691,604

## FERRULE SETTING APPARATUS

Leonard P. Spontelli, Seven Hills, Ohio, assignor to Crawford Fitting Company, Solon, Ohio

Filed April 15, 1971, Ser. No. 134,153

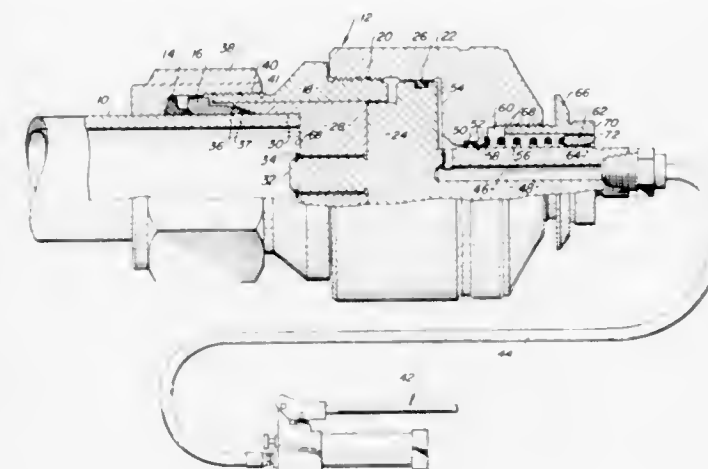
Int. Cl. B23p 19/00, 19/04; B23q 17/00

U.S. Cl. 29—200 B

18 Claims

Apparatus for swaging a ferrule onto the outer peripheral surface of a cylindrical member such as a tube or rod. The apparatus shown in the drawings includes a piston mounted for reciprocation within a body. The piston is drivingly connected to an anvil-like member which includes a recess in one end for receiving the end of the tube or rod. Carried within the recess is a camming mouth adapted to swage a ferrule inwardly onto the surface of the tube or rod. The body includes means for connection thereto of means for limiting axial movement of

the ferrule received over the end of the tube or rod. Additionally, pressure means are connected in fluid communica-



tion with the interior of the body for driving the piston toward the ferrule and means are provided for measuring the axial movement of the piston relative to the body.

3,691,605

## APPARATUS FOR MOUNTING HANDLES TO POTS AND THE LIKE

Gunter Witte, Attendorn, Germany, assignor to Gebr. Dingerkus, Attendorn, Germany

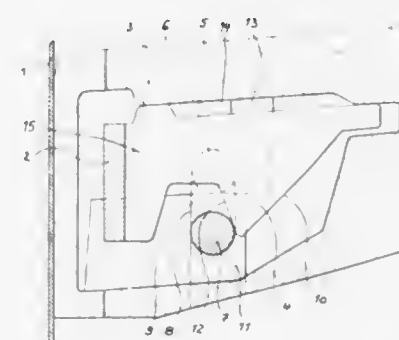
Filed April 23, 1971, Ser. No. 136,906

Claims priority, application Germany, April 23, 1970, P 20 19 571.5

Int. Cl. B23p 19/00, 19/04

U.S. Cl. 29—200 J

7 Claims



Apparatus for mounting insulated handles to pots and the like has a supporting portion having a part adapted to be mounted on a wall portion of a pot and the like and a section extending from the pot and defining protrusions. A handle is provided for completely covering the supporting portion and for defining a recess forming shoulders extending perpendicular to the direction of the extension of the section of the supporting portion. These shoulders face away from the part of the supporting portion adapted to be mounted on a wall portion of a pot and the like and is arranged to face towards the protrusions defined on the supporting portion. A substantially elongated spring element is unreleasably arranged in the recess defined in the handle by having its end portion bent about the protrusions and contacting the shoulders. In this manner, the spring element is retained and attaches the handle to the supporting portion.

3,691,606

## APPARATUS FOR ASSEMBLING COILS ONTO STATORS OF ELECTRIC MACHINES AND THE LIKE

Willie Muskulus, An der Pfaffenmauer 17, 6 Bergen-Enkheim, Germany

Filed April 15, 1971, Ser. No. 134,321

Claims priority, application Germany, April 24, 1970, P 20 19 925.1

Int. Cl. H02k 15/06

U.S. Cl. 29—205 D

8 Claims



For assembling wound coils into stator grooves, an apparatus for transporting transfer tools between different stations including a winding station whereat the transfer tools receive wound coils and drawing-in stations whereat the coils on the transfer tools are drawn into the stator grooves. A plurality of transport carriages, each having a transport tool thereon, are moved along a rail in a closed path to the various stations. The size and shape of the path can be varied. Each transport carriage can stop or move along the path independently of the other transport carriages.

3,691,607

## HIGH TEMPERATURE BRAZING ALLOY SYSTEM

Ralph J. Bondley, Scotia, N.Y., assignor to General Electric Company

Filed Jan. 18, 1971, Ser. No. 107,011

Int. Cl. B32b 15/02; C22c 27/00

U.S. Cl. 29—194

4 Claims

A high temperature, low vapor pressure, brazing alloy system is disclosed which is useful for assembling components of electron tubes. The brazing alloy is particularly useful in the assembly of refractory elements such as cathodes and heaters because degradation of emission caused by the metals comprising the brazing alloy is minimal.

3,691,608

## APPARATUS FOR INSERTING STICKS IN ARTICLES

Thomas F. Lowrance, 3636 Samuell Blvd., Dallas, Tex.

Filed April 22, 1971, Ser. No. 136,504

Int. Cl. B23q 7/10; B23p 19/04

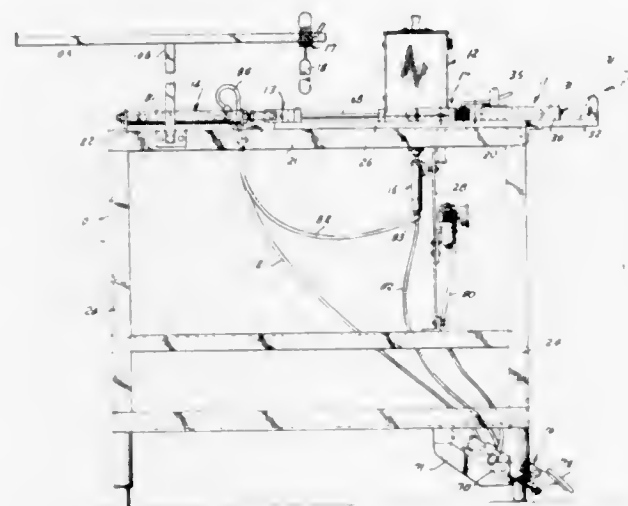
U.S. Cl. 29—211 D

9 Claims

A machine for automatically inserting round holder sticks into food articles such as wieners, includes a food holder for a row of wieners during the inserting operation, a hopper for supplying and aligning sticks to be inserted into the wieners, and a reciprocable carriage including plungers for feeding the sticks from the hopper into the wieners. The hopper includes



agitators for assuring the feed of the sticks to the hopper feed chambers. A portable stick holder, for use with the machine, secured at one end to the device and at its opposite end to a handle. A cylinder having an axial bore of larger diameter



selectively clamps an array of sticks which have been inserted in respective wieners to handle these articles for subsequent processing.

3,691,609

## TUBE PLUGGING TOOL

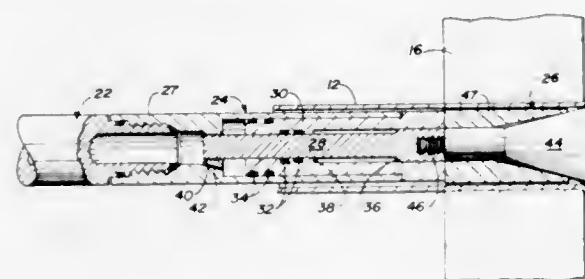
Charles O. Ice, Jr., Long Beach, Calif.; Lanny G. Ice, and Walter S. Frazer, both of Monahans, Tex., assignors to Hydro-Vel Services, Inc., Monahans, Tex.

Filed March 25, 1970, Ser. No. 22,613

Int. Cl. B23p 19/02

U.S. Cl. 29—252

14 Claims



A lance for positioning a plug comprised of a deformable sleeve disposed around a tapered cone at the remote end of a small diameter tube of a heat exchanger or the like is disclosed. A hydraulic actuator forces the sleeve around the tapered member to expand the sleeve into sealing engagement with the tube. In one general embodiment, a small hydraulic actuator is located at the end of the lance adjacent the plug and hydraulic fluid is supplied through the lance. In another general embodiment, the hydraulic actuator is disposed outside the tube, and the sleeve is forced around the tapered member by a tubular sleeve disposed around the lance. In each embodiment, the lance is disconnectable from the plug after the plug has been set. Several specific embodiments are also disclosed.

3,691,610

## DIE PULLER

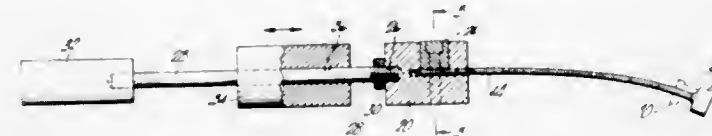
Hollis J. Harding, 507 N. Locust St. Onarga, Ill.  
Filed Nov. 18, 1970, Ser. No. 90,744

Int. Cl. B23p 19/04

U.S. Cl. 29—255

2 Claims

An elongated flexible member is permanently secured at one end to an enlarged head and is secured at its opposite end to a clamping device. A rigid elongated member is detachably



than the rigid member is disposed between the handle and the device with the rigid member extending through the bore.

3,691,611

## DEVICE FOR REMOVING AN OUTER SLEEVE FROM A ROTATABLE TUBE

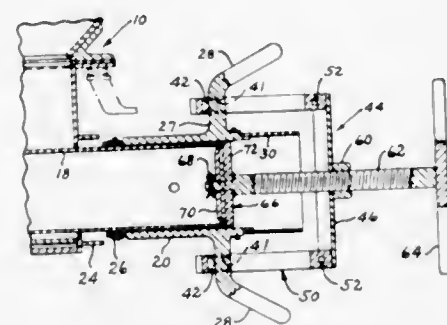
Richard H. Dugge, and John L. Carney, Jr., both of St. Louis County, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Sept. 15, 1970, Ser. No. 72,310

Int. Cl. B23p 19/04

U.S. Cl. 29—261

2 Claims



A device for removing an outer sleeve from the end of a rotatable pneumatic tube in order to permit a removal of the pneumatic tube from a hopper outlet. The outer sleeve extends outwardly beyond the adjacent end of the tube and has a pair of outwardly extending handles for rotation of the tube. The device or tool for removing the sleeve has a pair of pivotally mounted opposed arms, each arm including a pair of spaced side members and a lower connecting cross member extending between and secured to the side members, each arm adapted to fit over and receive between the side members an outwardly extending handle on the sleeve. A screw mounted for rotation on the tool has a circular plate which fits within the sleeve and abuts the end of the rotatable tube whereby upon rotation of the screw in one direction the arms pull the sleeve outwardly from the pneumatic tube.

3,691,612

## CYLINDER-LINER PULLING TOOLS

Arnold B. Layne, Aurora, Colo., assignor to B. K. Sweeney Manufacturing Co., Denver, Colo.

Filed Dec. 23, 1970, Ser. No. 101,008

Int. Cl. B23p 19/04

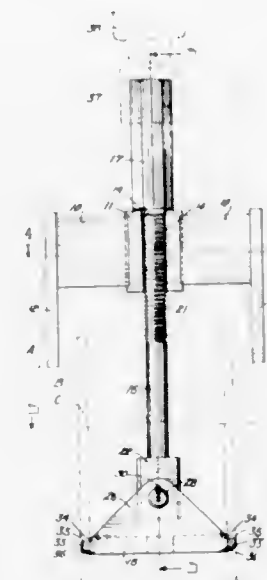
U.S. Cl. 29—266

10 Claims

A pull rod, having a tiltable foot member at its lower extremity and an actuating nut as its upper extremity, and provided with a detachable support assembly. The pull rod is inserted in a cylinder liner and the foot member is turned and

placed in contact with the lower extremity of a cylinder liner. The support member is placed on an engine block to support

circumferential groove in the end of the thicker tube when placed in end-to-end relationship. A ring shaped to conform with the collar is placed inside it. A sleeve is slid over the two tubes, this sleeve having an inwardly extending flange which



the actuating nut over the cylinder liner and the actuating nut is power rotated to draw the foot member and the cylinder liner upwardly from the block.

3,691,613

## MACHINE TOOL WITH PIVOTABLE TOOL CARRIAGE

Georg Walk, Rheydt, Germany, assignor to A Monforts, Monchengladbach, Germany

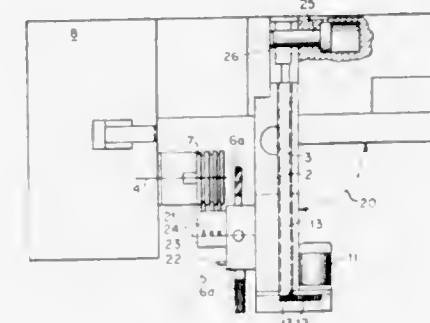
Filed Jan. 28, 1970, Ser. No. 6,507

Claims priority, application Germany, Jan. 30, 1969, P 19 04 457.6

Int. Cl. B23b 3/16

U.S. Cl. 29—27 C

2 Claims



Machine tool includes a machine frame, a rotary spindle mounted on the frame, workpiece-clamping chuck means carried by the spindle, elongated guide means pivotally mounted on the frame, and a single tool carriage guidingly displaceable along the length of the guide means and adjustable with the aid of the pivotable guide means into positions wherein tools carried by the carriage can selectively machine a workpiece clamped in the chuck means in directions longitudinal to the axis of the rotary spindle and transverse and inclined thereto.

3,691,614

## METHOD OF PRODUCING A SEALING-TIGHT JOINT BETWEEN TWO TUBES ON DIFFERENT MATERIALS

Jean Andre Bernard, Barga, and Adamo Renato Faraoni, Ranco, both of Italy, assignors to European Atomic Energy Community (Euratom), Luxembourg

Filed Jan. 19, 1970, Ser. No. 4,147

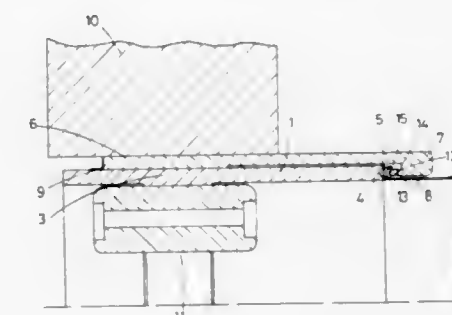
Claims priority, application Belgium, Jan. 24, 1969, P 1211

Int. Cl. B23k 31/02

U.S. Cl. 29—470.5

4 Claims

A method of producing a sealing tight joint between two tubes one of which has a greater wall thickness than the other. The thinner tube has a collar formed on it which will engage a



engages the ring and holds it and the collar against the end of the thicker tube. After welding the collar in place, the thicker tube is worked so as to expand it axially so that the grooved end tightly engages the collar.

3,691,615

Patent Not Issued For This Number

3,691,616

## METHOD OF MAKING ROLLER TIPS FOR FISHING RODS

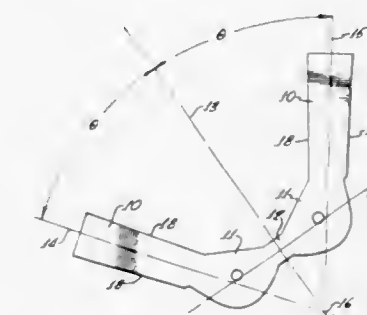
Otto Immenroth, La Habra, and Robert C. Eschbach, Newport Beach, both of Calif., assignors to Axelson Fishing Tackle Mfg. Co., Newport Beach, Calif.

Division of Ser. No. 44,085, June 8, 1970. This application  
Sept. 28, 1971, Ser. No. 184,443

Int. Cl. A01k 87/04

U.S. Cl. 29—434

9 Claims



The roller tip comprises a single piece of sheet metal formed and bent into parallel frame sides which are flanged to prevent wear on the line. Each frame side is integral with a semitubular sleeve side portion, and such side portions are connected to each other at upper and lower seams in order to form a sleeve adapted to receive the tip of a fishing rod. A roller is rotatably mounted between the frame sides, by means of axle means extending perpendicularly to such sides. The frame sides are integral with opposite ends of a bridge disposed above the roller and preventing the line from leaving the roller tip, such bridge being so constructed that the portion thereof lying in a medial plane between said frame sides is generally parallel to a tangent to the roller, such tangent intersecting an extended axis of the sleeve on the opposite side of the axle means from such sleeve. In accordance with the method of the invention, a single piece of sheet metal is formed into two elongated legs, two frame sides and a bridge, and each leg is caused to lie at an acute angle to a medial line. The legs are formed into semitubular sleeve sides, the frame sides are flanged and pierced, and the bridge is so bent that the frame sides are parallel to each other and the sleeve sides are caused to meet at their edges for securing together as by soldering.



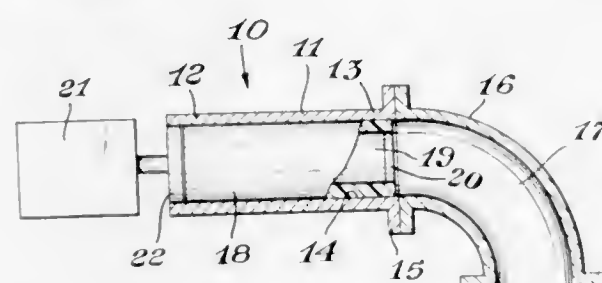
### 3,691,617 METHOD OF LINING PIPE FITTINGS AND LIKE ARTICLES

Edward L. Burnett, assignor to The Dow Chemical Company, Midland, Mich.

Filed June 29, 1970, Ser. No. 50,858  
Int. Cl. B23p 17/00

U.S. Cl. 29—423

7 Claims



A plastic tube is filled with a material having a low compressive strength. The plastic tube is then forced into a cavity which is to be lined, such as a pipe fitting. The low strength filler material prevents collapse and deformation of the tube as it conforms to the cavity being lined.

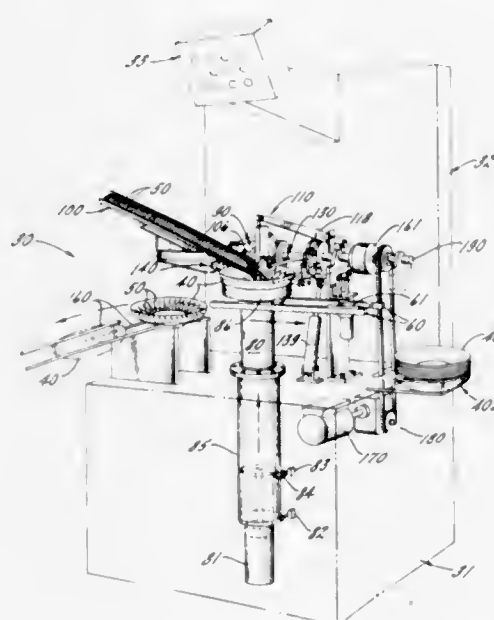
### 3,691,618 AUTOMATIC INSERT ASSEMBLY MACHINE AND METHOD EMPLOYING DEFORMATION AND LINEAR TRANSFER OF WORKPIECES

Raymond C. Achterberg, and Charles L. Bunker, both of Janesville, Wis., assignors to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Jan. 19, 1971, Ser. No. 107,806  
Int. Cl. B23p 19/00, 15/02; B23q 7/10

U.S. Cl. 29—430

17 Claims



An assembly machine and method are provided for automatically inserting and fixing blade-like foil inserts in a torque converter turbine drum or similar article. The assembly mechanism includes automatic apparatus for accomplishing the requisite assembly motions, including moving a turbine drum which is placed upon a translatable rack to a preliminary position, moving the drum from the rack to a work position upon a supporting mandrel, stripping a foil insert from a feeding magazine, forcing the stripped insert along U-shaped guides to temporarily and resiliently cup or temporarily spring the end of the insert for insertion into the drum, inserting a first foil ear into the drum, thereby locating the foil in a preliminary position, hammering the foil into its final assembled position in the drum, angularly indexing the drum or housing to a successive position so as to receive the next blade-like foil insert, counting the number of angular indexing

steps imparted to the drum, and moving the drum with its assembled blade-like foil inserts back to the rack and then out of the assembly mechanism when the requisite number of foils have been inserted.

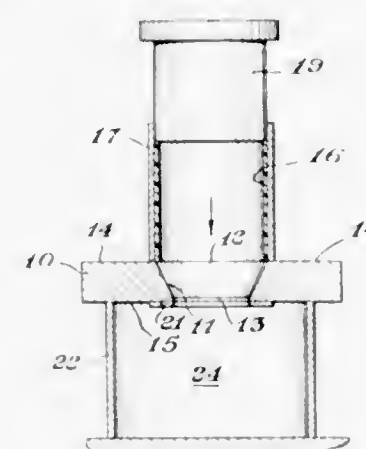
### 3,691,619 METHOD FOR LINING TAPERED CAVITIES

Eugene V. Stack, and Edward L. Burnett, both of Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 28, 1970, Ser. No. 58,935  
Int. Cl. B23p 11/02

U.S. Cl. 29—451

8 Claims



Tapered cavities are lined with a plastic liner such as a reducer filler flange by forcing a deformable plastic tube into the cavity to reduce the diameter of at least the portion of the tube which passes through the cavity and flanges are formed on the plastic tube.

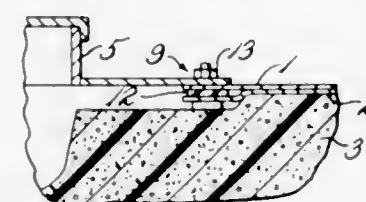
### 3,691,620 PROCESS OF PROVIDING A FUEL TANK IN A VEHICLE

George B. Harr, 1240 S. Marengo Ave., Pasadena, Calif. Continuation of Ser. No. 601,818, Nov. 28, 1966, abandoned, which is a continuation-in-part of Ser. No. 563,774, July 19, 1966, abandoned, which is a continuation-in-part of Ser. No. 480,634, Aug. 18, 1965, abandoned, which is a continuation-in-part of Ser. No. 413,790, Nov. 25, 1964, abandoned. This application May 22, 1969, Ser. No. 840,580

Int. Cl. B23p 11/02

U.S. Cl. 29—451

2 Claims



The interior of a fuel cell is filled with reticulated foam which is inserted into the fuel cell by being stuffed through an opening in the wall thereof. The foam may be enclosed by an integument placed in the cell before the foam, or the foam may be stuffed through the opening enclosed in the integument.

### 3,691,621 METHOD OF ASSEMBLYING A FLEXIBLE TUBE WITHIN A HANDLE

Edward C. Weston, 13918 Doty Ave., Hawthorne, Calif.

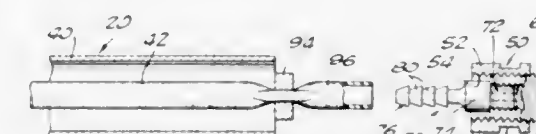
Filed Feb. 25, 1971, Ser. No. 118,896  
Int. Cl. B21d 39/00; B23p 19/04

U.S. Cl. 29—455

4 Claims

An extension handle adapted for use with paint rollers and the like in the form of a rigid metal tube having a flexible tube

assembled therein for combined rigidity and lightness. A while applying a slight pressure thereto. Consequently, some method is provided for assembling the tube which is plastic in the rigid tube by way of stretching an end part of the flexible



tube out of the rigid tube, clamping it, securing a rigid fitting to the end of the flexible tube, allowing the tube to retract to draw the fitting into the rigid tube, and then securing the fitting to the end of the rigid tube.

### 3,691,622 METHOD OF AND APPARATUS FOR FRICTION WELDING

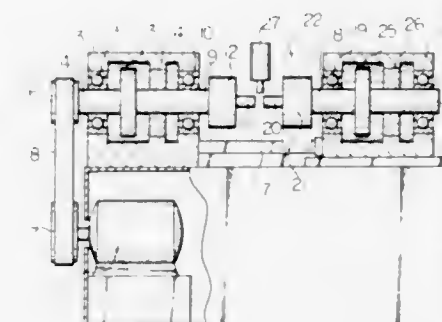
Nobuo Takagi, and Takashi Takiguchi, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya-shi, Aichi-ken, Japan

Filed Feb. 17, 1970, Ser. No. 12,073

Claims priority, application Japan, Feb. 20, 1969, 44/12813  
Int. Cl. B23k 27/00

U.S. Cl. 29—470.3

4 Claims



An improved method and apparatus for use in rotary bi-axle type friction welding, utilizing braking and clutching systems applied to both the drive side and driven side spindles. The stopping process of the driven system is controlled by the braking and clutching systems connected to the driven side spindle, and those systems are activated alternately to effectively dissipate the resultant heat energy caused by the stopping process.

### 3,691,623 PROCESS FOR INCREASING THE WHISKER AND FIBER CONTENT IN A MATRIX

Karl P. Staudhammer, and Vernon H. Reineking, both of Gardena, Calif., assignors to TRW Inc., Redondo Beach, Calif.

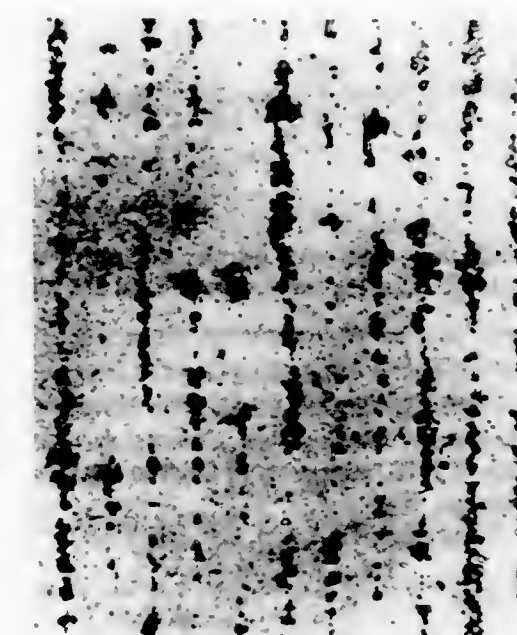
Filed Oct. 9, 1970, Ser. No. 79,560

Int. Cl. B23k 31/02

U.S. Cl. 29—472.3

7 Claims

A process for increasing the whisker content in a matrix comprises the steps of aligning and depositing reinforcing whiskers on a metal substrate, stacking layers of these substrates into a preform assembly, diffusion bonding this assembly to consolidate the preforms into a composite foil and heating the composite 50° to 100° F. above its melting point,



posite. This results in a thinner composite foil having a higher whisker concentration and consequent higher ultimate tensile strength.

### 3,691,624 METHOD OF EXPANDING A LINER

John C. Kinley, 5815 Royalton St., Houston, Tex.

Filed Jan. 16, 1970, Ser. No. 3,369

Int. Cl. B21d 39/00; B23p 11/02

U.S. Cl. 29—523

5 Claims



A device and method for expanding a tubing liner having a preformed reverse bend by pulling the metal of the liner outwardly to expand the reverse bend and bring the liner into a substantially cylindrical shape inside of a well tubing or other pipe.

### 3,691,625 METHOD OF MAKING BALL BAT METAL BODY SYSTEM

George F. Swenck, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed March 19, 1971, Ser. No. 126,206

Int. Cl. B23p 13/04

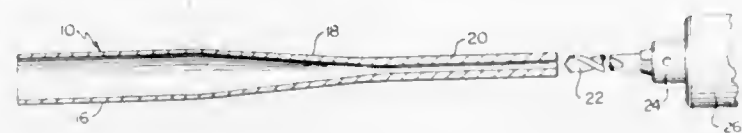
U.S. Cl. 29—557

5 Claims

The hollow metal body for a ball bat is made by swaging one



end of a cylindrical metal extrusion to form the handle portion of reduced diameter, and the swaged end is then drilled out to



reduce the wall thickness and thereby put more of the metal weight at the large diameter end, where balls are hit.

3,691,626

## TOOL CHANGE MECHANISM

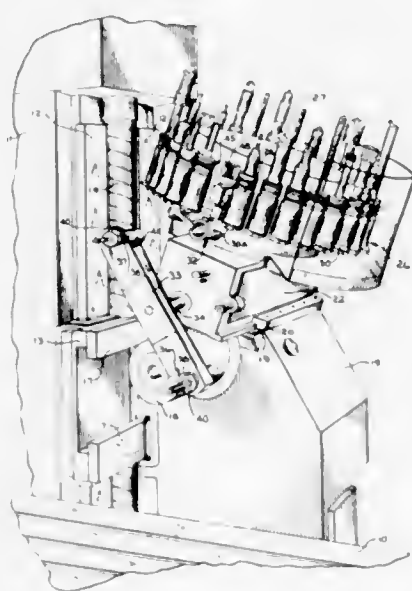
Daniel J. Mousseau, Racine, and Charles A. Larsen, Union Grove, both of Wis., assignors to Gorton Machine Corporation, Racine, Wis.

Filed Sept. 10, 1970, Ser. No. 71,079

Int. Cl. B23q 3/157

U.S. Cl. 29—568

6 Claims



An automatic tool changer assembly for a machine tool including a slide on which is mounted a tool storage magazine and a tool change arm. The slide is mounted on a spindle head which rotatably supports a tool spindle. The spindle head is movable on an axis of the machine tool. The slide is movable on the spindle head to place the tool change arm and tool magazine into an exact position with respect to the tool spindle, allowing a tool interchange to take place at any position along said axis of the machine tool.

3,691,627

## METHOD OF FABRICATING BURIED METALLIC FILM DEVICES

William E. Engeler, Scotia, N.Y., assignor to General Electric Company

Continuation-in-part of Ser. No. 675,225, Oct. 13, 1967, abandoned. This application Feb. 3, 1970, Ser. No. 8,311

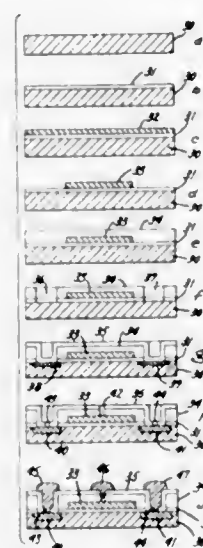
Int. Cl. B01j 17/00; H01g 13/00

U.S. Cl. 29—571

2 Claims

Electrical conductors and field plates utilized in monolithic integrated circuit components are buried in insulating media by forming a high temperature resistant insulating film on the semiconductor substrate, depositing a metallic film thereover which is non-reactive with the insulator at temperatures of the order of 700° C or higher, and covering the conductive film with another high temperature resistant, non-reactive insulating film. After all fabrication steps for the integrated circuit device are completed, (which steps may optimally include diffusion into the semiconductor subsequent to deposition and encapsulation of the metallic film) contact to the metallic

layer is made by etching a hole through the last deposited insulating film at one point with an etchant which is non-reactive with the metallic film, and metallizing the device in that region, making contact with the buried conductor. Such buried



conductors may be utilized as conductors in printed circuit and monolithic semiconductor devices, capacitor plates, non-contacting cross-overs, and as gate electrodes in field-effect transistors, for example.

3,691,628

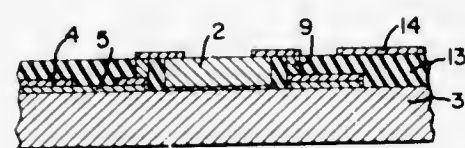
## METHOD OF FABRICATING COMPOSITE INTEGRATED CIRCUITS

Chang Soo Kim, North Syracuse, and Gerald G. Palmer, Liverpool, both of N.Y., assignors to General Electric Company, Division of Ser. No. 687,278, Dec. 1, 1967, abandoned. This application Oct. 31, 1969, Ser. No. 872,989

Int. Cl. B01j 17/00; H01l 1/16

U.S. Cl. 29—577

2 Claims



Method of fabricating integrated circuits in which individual semiconductor chips, exhibiting diverse electrical and compositional characteristics may in combination with thin or thick film passive components be applied to a single supporting dielectric substrate, wherein there are provided readily formed coplanar connections to the chips and an ease of registration of the chips with respect to one another and to conductive patterns carried by the substrate. The chips are bonded to the dielectric substrate by means of a strongly adhesive, chemically inert, high quality dielectric material, said chips being applied with the metalized surface thereof flush with that of the dielectric material so that a continuous supporting structure is formed for said coplanar connections. In one specific embodiment the conductive patterns are deposited both on the substrate surface and on the dielectric layer surface, the patterns being connected by extending portions thereof through the dielectric layer.

3,691,629

## METHOD FOR PRODUCING SEMICONDUCTOR RECTIFIER ARRANGEMENTS

Winfried Schierz, Roth b. Nurnberg, Germany, assignor to Semikron Gesellschaft fur Gleichrichterbau und Elektronik m.b.H., Nurnberg, Germany

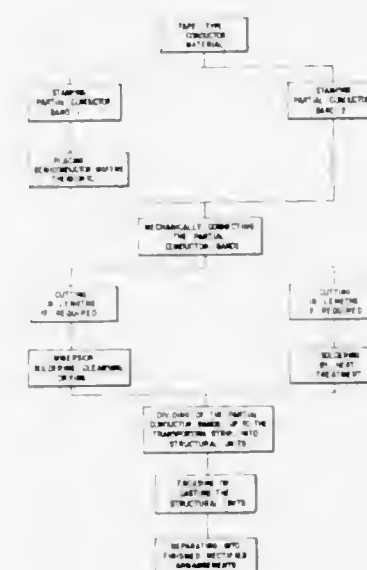
Filed Dec. 23, 1970, Ser. No. 101,088

Claims priority, application Germany, Dec. 23, 1969, P 19 64 481.6

Int. Cl. B01j 17/00; H01l 1/16

U.S. Cl. 29—577

10 Claims



An improved method of simultaneously making a plurality of semiconductor rectifier circuit arrangements of the type wherein semiconductor rectifier wafers are selectively inserted at the points of overlap of two planar conductor bands which then contact the opposite surfaces of the wafers. According to the method of the invention a pair of planar partial conductor bands are formed from a strip of planar conductive material so that each band contains a periodically repeating pattern of conductors which are formed so that associated patterns on the two bands will form the desired circuit arrangement when placed on top of one another. Each of the bands is formed so that its conductors extend from a common edge zone which may be utilized as a transport strip with the conductors of a first of the bands being provided with planar sections which can hold and support a semiconductor wafer. The wafers are then placed at the desired locations on the provided sections of the first partial conductor band, the other partial conductor band is then placed thereover with the proper orientation so that each wafer is between an overlapping pair of conductors and contacted on both of its surfaces, and then the two partial conductor bands are mechanically fastened together by means of their edge zones. The resulting structure is then subjected to the further processing steps of permanently bonding the wafers to the contacting conductors, cutting or separating the conductor pattern, if required, into the desired circuit arrangements and encapsulating of the individual rectifier devices. Finally, the conductors are severed from the common edge zone.

3,691,630

## METHOD FOR SUPPORTING A SLOW WAVE CIRCUIT VIA AN ARRAY OF DIELECTRIC POSTS

James E. Burgess, 205 Silvia Court, Los Altos, Calif.; Louis R. Falck, 3932 Lonesome Pine Road, Redwood City, Calif.; Robert L. Graham, 438 Matthews Court, Milpitas, Calif., and Allan W. Scott, 1272 Windimer, Los Altos, Calif.

Filed Dec. 10, 1969, Ser. No. 883,733

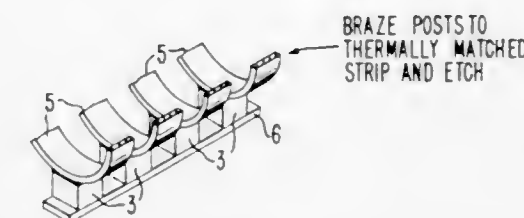
Int. Cl. H01p 11/00

U.S. Cl. 29—600

6 Claims

A slow wave circuit is supported within a surrounding metallic barrel portion of a traveling wave tube via the inter-

mediary of an array of dielectric posts each of which is brazed at one end to the slow wave circuit and at the other end to the barrel. During fabrication of the tube, the post structures are



first bonded to a metallic strip which in turn is bonded to the inside of the barrel. The strip preferably has a coefficient of thermal expansion equal to that of the dielectric posts.

3,691,631

## METHOD OF MAKING A VOLTAGE ACTUATABLE SWITCH

Siri R. Bhola, St. Louis, Mo., assignor to Conduction Corporation, St. Charles, Mo.

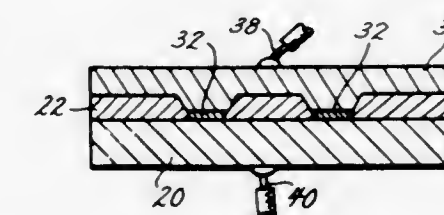
Division of Ser. No. 794,283, Jan. 27, 1969, Pat. No.

3,546,540. This application Jan. 29, 1970, Ser. No. 12,535

Int. Cl. H01h 11/00

U.S. Cl. 29—622

7 Claims



A voltage actuated switch comprises a conductor, an essentially defect-free layer of insulating material which has a portion thereof that overlies and engages at least a part of a surface of that conductor and that has a predetermined thickness and resistivity to enable it to have a relatively high breakdown voltage, a tiny area of that layer of insulating material which has a thickness and resistivity that enable it to have a predetermined lower breakdown voltage, and an electrode which overlies and engages said tiny area of said layer of insulating material. The tiny area of the layer of insulating material will normally insulate the electrode from the conductor; but it will respond to a voltage, which is higher than the predetermined breakdown voltage of that tiny area but which is lower than said relatively high breakdown voltage, and which is applied across that electrode and that conductor, to break down and permit an irreversible, low-resistance connection to form between that electrode and that conductor.

3,691,632

## METHOD OF MAKING MULTI LAYER CIRCUIT BOARDS

John Henry William Smith, Coventry, England, assignor to Micropont Development Ltd., Birmingham, England

Filed June 10, 1970, Ser. No. 45,073

Claims priority, application Great Britain, June 13, 1969, 30,014/69

Int. Cl. B41m 3/08

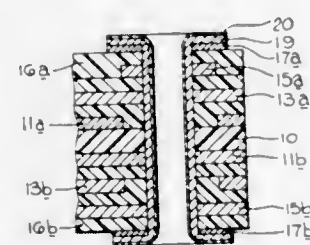
U.S. Cl. 29—625

9 Claims

A multi-layer circuit board assembly including a plurality of stacked conductor patterns electrically interconnected with one another within the assembly is formed by a method in which metal conductor patterns are formed sequentially and initially without electrical interconnection. Each successive conductor pattern is covered with a continuous layer of an insulating material so that the next conductor pattern which is formed on such insulating layer is totally insulated from the preceding conductor pattern. The insulating material is



chosen to be of such a nature that it will not smear on a drill subsequently passed through the assembly, and the assembly is drilled through to form bores at selected positions which intersect the conductor patterns selectively where they require to



be electrically interconnected. Such electrical interconnection is then established by depositing metal within the bores. Preferably the step of depositing metal in the bores forms an integral part of the process of forming the outermost conductor patterns.

#### ERRATA

For Classes 29—25 thru 29—95 see:  
Patents Nos. 3,691,653 thru 3,691,657

3,691,633

#### DEVICE FOR CONTINUOUS FILTERING OF CHEESE CURD, IN PARTICULAR CURDLED MILK

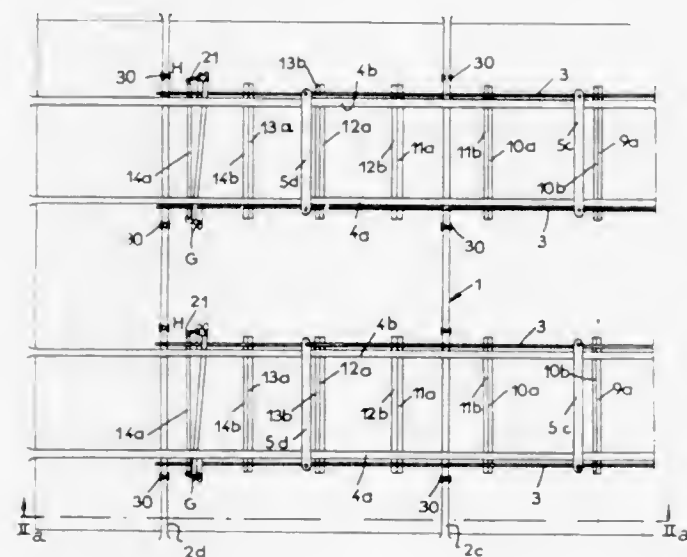
Jacques Marie Albert Charles Berge, Chateau d'Arety, 65-Prechac, France

Filed Nov. 4, 1970, Ser. No. 86,707

Claims priority, application France, Nov. 6, 1969, 6938274  
Int. Cl. A01J 25/12

U.S. Cl. 31—46

13 Claims



The device of the invention comprises a frame, a roll track, filtering elements adapted to move on said roll track, presses each of which is composed of a pair of vertical press elements movable with said filtering elements from the upstream end of said roll track to its downstream end, said roll track being divided into several sections, means of relative displacement of the elements of each press nearer to one another in some of said sections to press the filtering elements contained between said press elements, and means for feeding and dispensing cheese curd in said filtering elements.

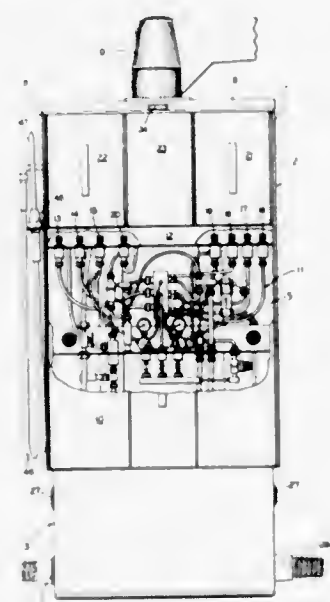
3,691,634  
DENTAL UNIT CONSTRUCTION  
Dean H. Buchtel; Kenneth R. Lappin, and John A. Maurer, all of Canton, Ohio, assignors to Dental Unit Construction, Canton, Ohio

Filed June 16, 1971, Ser. No. 153,659

Int. Cl. A61c 19/02

U.S. Cl. 32—22

11 Claims



A dental unit which may be located adjacent a dental chair, including a compact, floor mounted cabinet with a dental tray assembly pivotally mounted thereon by a conventional adjustable tray arm. The tray assembly includes a hollow support platform and a removable tray portion. A plurality of usual dental handpieces and a syringe are supported upon the support platform, electrical, air and water connections therefore being mounted therein, and normally concealed by the removable tray portion. A control box therefor is mounted on the support platform. Water and air control and electrical control panels are hingedly mounted in the cabinet, adapted to be closed and concealed when not in use, a pilot light is mounted on the cabinet and front and side doors mounted thereon providing access to the instrument supply and regulation equipment located therein.

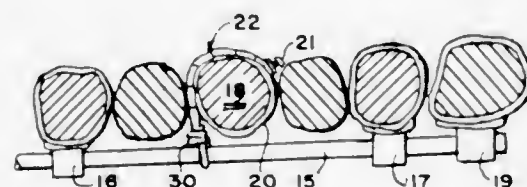
3,691,635  
ORTHODONTIC SYSTEM FOR TURNING A TOOTH  
Melvin Wallshein, 8645 Bay Parkway, Borough of Brooklyn, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,557

Int. Cl. A61c 5/08

U.S. Cl. 32—14 A

10 Claims



The system shown uses a band tightly fitted onto the tooth to be moved by a part turn about its longitudinal axis. There is an arch wire across the buccal face of the tooth, rigidly fixed. An elongated member of filament material, intermediate its ends, is of resilient tension spring structure. One end of said member is held fast to the band and is at least a part turn thereon wound in the direction the tooth is to be turned. With the spring in tensed condition, the other end of this member is held fast to the arch wire. As the spring contracts, the tooth will be turned in like manner as a top is started to spin upon withdrawal of its cord. The spring may be true helical, flat-tensioned helical or planar zig-zag.

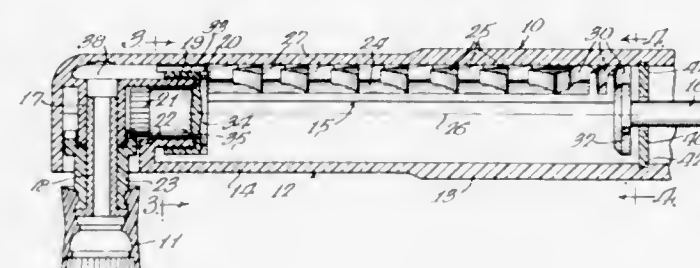
3,691,636  
DENTAL PROPHYLACTIC DEVICE  
Fritz Deuschle, St. Louis, Mo., assignor to Sherwood Medical Industries, Inc.

Filed April 5, 1971, Ser. No. 130,961

Int. Cl. A61c 3/06

U.S. Cl. 32—58

7 Claims



A dental prophylactic device, commonly known as a prophylactic angle dental handpiece, for use by a dentist in cleaning a patient's teeth. The prophylactic angle herein comprises a disposable prophylactic dental handpiece containing a supply of abrasive paste and suitable means for delivering the paste progressively to a polishing cup projecting at right angles from the generally cylindrical body of the prophylactic angle.

3,691,637

Patent Not Issued For This Number

3,691,638

Patent Not Issued For This Number

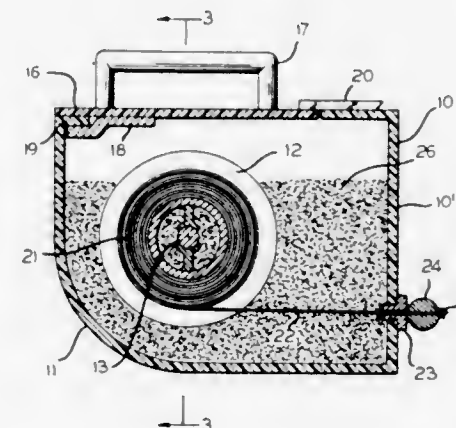
3,691,639  
CASING FOR REEL MOUNTED CORD  
Mangin E. Roeseler, 12465 James St., and David D. Richards, 1325 S. 124th St., both of Brookfield, Wis.

Filed May 27, 1969, Ser. No. 828,150

Int. Cl. B44d 3/38

U.S. Cl. 33—87

3 Claims



A casing containing a reel mounting cord for holding a marking cord. The container is designed to hold powdered chalk to keep the cord covered therewith.

3,691,640  
DISC BRAKE ROTOR THICKNESS WEAR AND SCORE DEPTH GAUGE AND METHOD OF USING SAME  
Frederick R. McFarland, and Walter L. Diffenderfer, both of Lancaster, Pa., assignors to K-D Manufacturing Company, Lancaster, Pa.

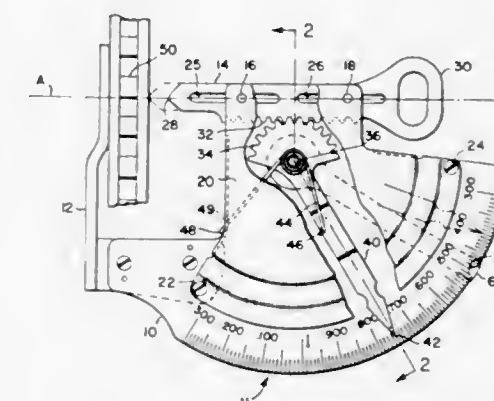
Continuation of Ser. No. 830,029, June 3, 1969, abandoned.

This application March 22, 1971, Ser. No. 101,154

Int. Cl. G01b 5/00

U.S. Cl. 33—147 F

4 Claims



A gauge is provided with a plate for positioning the gauge against one surface of a part to be measured, and a biased pointer for engaging the opposite surface of the part. Means are provided for permitting the pointer to be moved perpendicularly with respect to the plate. One edge of the pointer is a gear which meshes with a gear to drive an indicator which amplifies the gauge reading on an arcuate scale. A second indicator can be moved independently to a plurality of fixed positions on the scale.

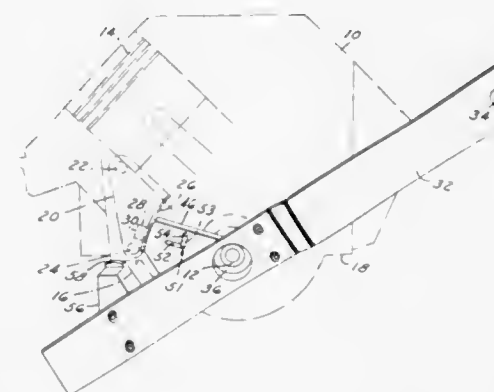
3,691,641  
TOOL FOR ESTABLISHING IGNITION TIMING OF A RECIPROCATING INTERNAL COMBUSTION ENGINE  
John M. Bell, Dearborn, and Robert A. Mooney, Orchard Lake, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed March 15, 1971, Ser. No. 124,082

Int. Cl. G01b 3/30

U.S. Cl. 33—181 AT

5 Claims



An elongated bar that engages the engine crankshaft for rotation therewith has a pad for contacting a pan rail of the engine block when the number one piston of the engine is at its top dead center position. A pin slidable in the bar then is extended to position a timing plate on the engine block. Tightening the timing plate in this position establishes accurately the location of the plate relative to the number one piston.



3,691,642

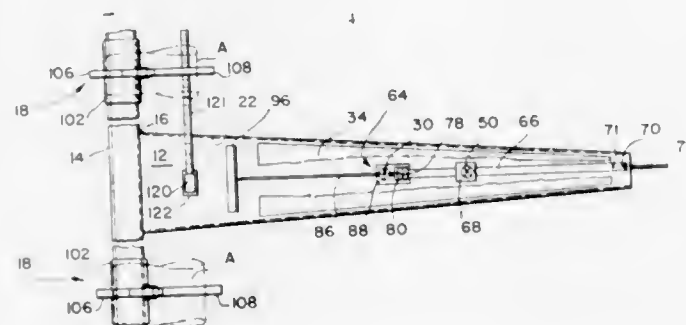
## TRAILER AXLE ALIGNMENT GAUGE

William C. Nolte, Annapolis, and Burtis M. Tyler, Fishing Creek, both of Md., assignors to Fishing Creek Industries, Inc.

Filed July 6, 1970, Ser. No. 52,405  
Int. Cl. G01b 3/14

U.S. Cl. 33—193

13 Claims



A trailer axle alignment gauge has hook supports for hanging on a trailer axle, and a gauge detachably supported thereby including a bar for positioning across the trailer between the wheels and a base secured to the bar to be positioned along the trailer bed axis and carrying a lever system having vertical pivots and including an indicator and a connector for connection to the king pin: a measuring device is provided on the base to position it relative to the trailer bed axis.

3,691,643

## GYROMAGNETIC COMPASS SYSTEM

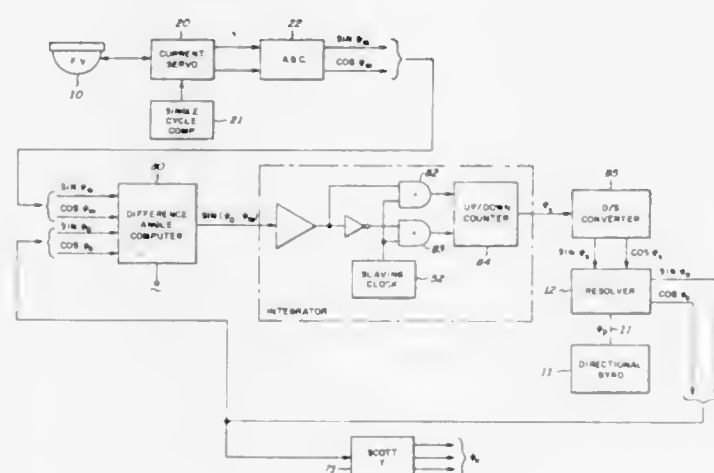
Donald H. Baker, David R. Brickner, and Kenzel P. Manning, all of Phoenix, Ariz., assignors to Sperry Rand Corporation

Filed Dec. 18, 1969, Ser. No. 886,164

Int. Cl. G01c 17/02

U.S. Cl. 33—222

8 Claims



A gyromagnetic compass system for navigable craft which utilizes solid state electronic circuits to provide a heading output including only the desired long term components of magnetic heading and short term components of inertial heading; a differential device having one part fixed relative to the gyro and another part positioned by the gyro is provided whereby the output of the differential normally includes both short and long term components of inertial heading; the differential output is compared with the magnetic heading components and the resulting difference output signal is integrated and applied to the fixed part of the differential device, whereby the output of the differential device includes only the long term components of magnetic heading and the short term components of inertial heading. The improvement herein disclosed greatly increases the reliability and maintainability of such a system by eliminating all electromechanical devices and by

processing all the involved data in wholly solid state electronic computation circuits. One embodiment employs a digital computer for performing the computation function.

3,691,644

## METHOD AND ARRANGEMENT FOR THE CONTINUOUS THERMAL TREATMENT OF GRANULAR MATERIAL WITH A GAS

Hans Schnitzer, Winterthur, Switzerland, assignor to Gebrueder Buehler AG Uzwill, St. Gallen, Switzerland

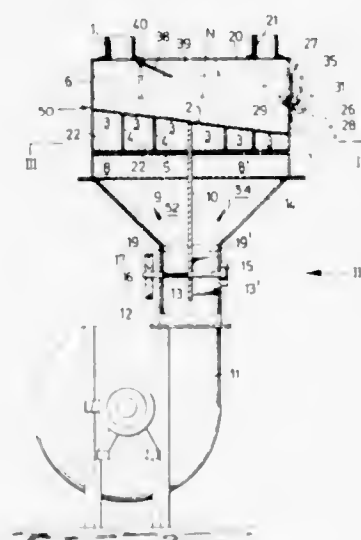
Filed Jan. 12, 1971, Ser. No. 105,922

Claims priority, application Switzerland, Jan. 14, 1970, 468/70

Int. Cl. F26b 39/08

U.S. Cl. 34—10

19 Claims



A device for the continuous thermal treatment of a granular material by means of a gas comprises a container having an inlet for the granular material which opens into a chamber arranged above a stationary gas-permeable material support which may be in the form of an inclined perforated wall. The container includes walls around the support, one of which at least includes a material outlet, for example, which is arranged at the lower end of the support. A gas is directed upwardly against the support at a plurality of separated areas in a flow stream which is regulated to maintain the material in a homogeneous loose fluid bed above the support. Means are provided at the outlet for effecting an infinitely vertically adjustable overflow. A throttling device is arranged in the flow paths of the fluid at a location before the support in order to selectively vary the velocity of gas flowing through the support and along the feed travel of the fluid bed of granular material. In accordance with the method of the invention, the granular material is directed into the chamber above the stationary support and the overflow to the outlet is set at a predetermined level. Thereafter, a treatment gas is directed through at least two distinct paths alternately upwardly through separate divided portions of this support. The gas flow is controlled so that there is an alternate flow first to one side and then to another side of the fluid bed and thence outwardly through the outlet along with the granular material which moves over the bed level.

3,691,645

## SPIN DRIERS

Barry Herbert Nethersell, Deganwy, Wales, assignor to British Domestic Appliances Limited, Peterborough, England

Filed March 18, 1971, Ser. No. 125,708

Claims priority, application Great Britain, March 20, 1970, 13,486/70

Int. Cl. F26b 17/24

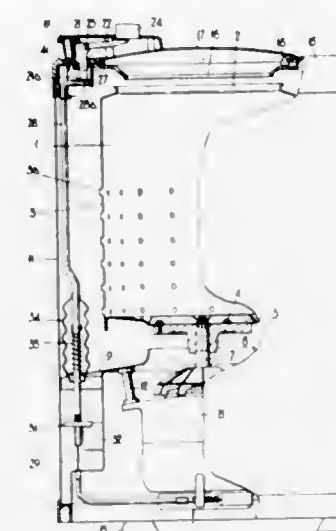
U.S. Cl. 34—58

10 Claims

A spin drier having a mechanical interlock for locking the lid in a closed condition and enabling drive means to rotate

the drum. When the interlock is released, the drum is brought to a halt, while the lid is unlocked after a delay sufficient for the drum to come to rest, the delay being determined by

The wig is supported peripherally and centrally with the intermediate portions freely suspended in air over a base for



3,691,646

## HAIR DRYER

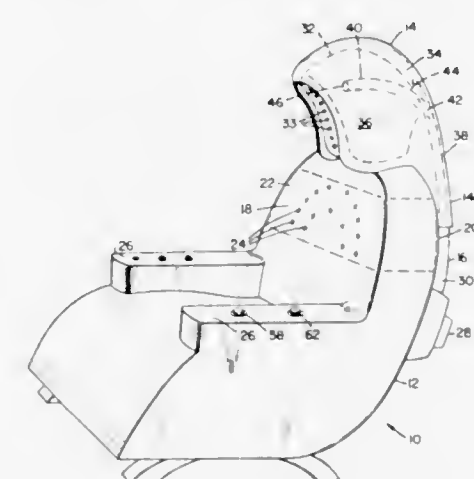
Hector Michael Ruffolo, 13369 McCulloch, Saratoga, Calif.

Filed Jan. 22, 1971, Ser. No. 108,830

Int. Cl. F26b 19/00

U.S. Cl. 34—90

14 Claims



A chair-type hair dryer wherein the flow of drying air is conducted through a system of obliquely directed passageways in a liner shell mounted within a drying helmet. The passageways are oriented to direct the drying air through the user's hair in a direction following the contour of the head toward the rear portion of the head and away from the face. Means are provided for selectively diverting a controllable portion of the drying air through a plurality of apertures in the back of the chair and against the user's back and shoulders providing a soothing and relaxing effect.

3,691,647

## WIG DRYER

Marshall D. Snyder, and Betty A. Snyder, both of 2802 Dodge Ave., Fort Wayne, Ind.

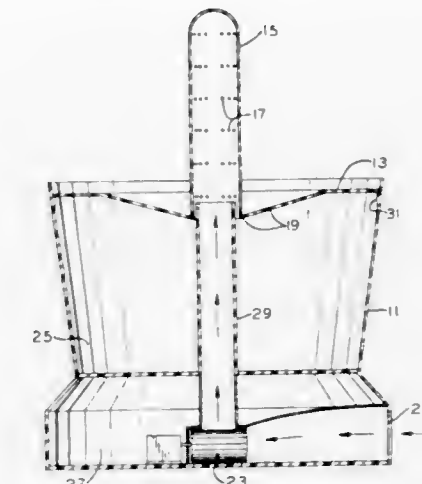
Filed July 1, 1970, Ser. No. 51,647

Int. Cl. F26b 9/00

U.S. Cl. 34—104

4 Claims

The present invention relates to a method and apparatus for decreasing the drying time required for a wig after washing.



catching liquid which drips from the wig. Air may also be forced through the wig from the inside outwardly to further decrease drying time.

3,691,648

## APPARATUS FOR DAMPENING GARBAGE IN A GARBAGE LOADING TRUCK

Johann Kraus, Kissing, Germany, assignor to Keller & Knapich GmbH, Augsburg, Germany

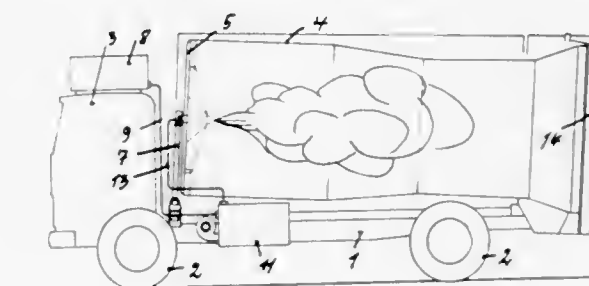
Filed Feb. 2, 1971, Ser. No. 111,893

Claims priority, application Germany, Feb. 9, 1970, P 20 05 793.6

Int. Cl. F26b 19/00

U.S. Cl. 34—227

2 Claims



A means for dampening and disintegrating garbage including means introducing the garbage by means of a conveyor, such as a screw into a container, under pressure from one end of the container, and passing steam into and through the garbage from a pipe entering the other end of the container. The steam may be superheated and supplied under pressure from a steam generator located on a garbage truck carrying the container and a water supply tank.

3,691,649

## DRUM-TYPE WASHING MACHINE WITH A DRYING DEVICE

Ernst Pigors, Niederwarsbach, near Morsbach, Germany, assignor to Heinrich Schaumann & Co. GmbH, Morsbach/Seig, Germany

Filed Feb. 24, 1970, Ser. No. 13,355

Claims priority, application Germany, Sept. 19, 1969, P 19 47 627.8

Int. Cl. D06f 29/00

U.S. Cl. 34—243

5 Claims

hot air drying washables. The apparatus utilizes a centrifugal blower in conjunction with electrically resistive heating ele-



ments in order to effectuate the desired air fluid movement and heat rise of the air. Also incorporated in the drying apparatus is a closure valve that permits complete isolation between the washing fluid and dryer duct work.



3,691,650

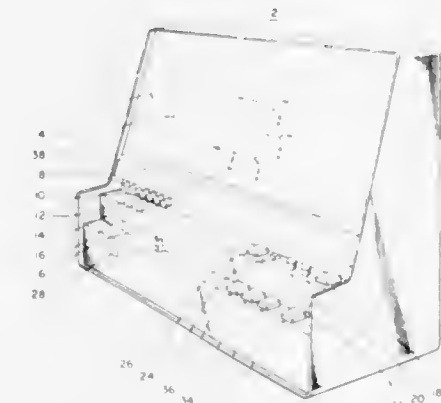
## AUDIO/VISUAL TEACHING DEVICE

Floyd L. Arnold, Marlboro, and James R. Patmore, Neptune, both of N.J., assignors to Electronic Associates, Inc., Long Branch, N.J.

Filed Dec. 11, 1970, Ser. No. 97,082  
Int. Cl. G09b 5/06

U.S. Cl. 35—8 A

7 Claims



A portable self-contained drying apparatus for detachable securement to the front of a drum-type washing machine for

The specification discloses an audio/visual teaching device capable of operation in either a programming mode or in a playback mode. In the programming mode, an operator may produce a magnetic tape having desired voice information and position information which can later be used on other of the devices so that the voice and the position will be reproduced.

3,691,651

## SCHOLASTIC AVERAGING DEVICES

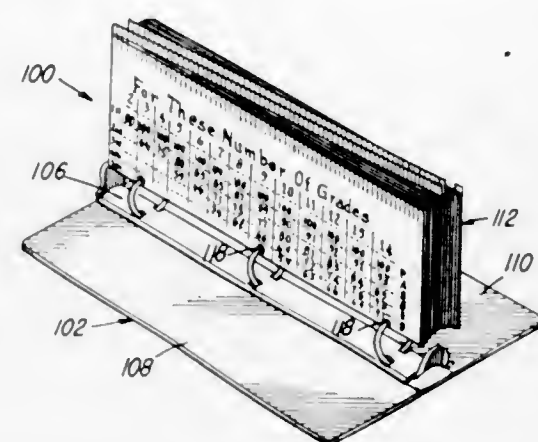
Willie Paul Lemmons, 700 W. Graham, Shelby, N.C.

Continuation-in-part of Ser. No. 754,121, Aug. 1, 1968, abandoned. This application Sept. 10, 1970, Ser. No. 70,947  
Int. Cl. G09b 19/00

U.S. Cl. 35—48 R

5 Claims

Grade averaging systems based upon a linear graph principle where a plurality of values are progressively accumulated in relation to the differences between the integer 100 (representing a perfect score) and value of various grades (less than 100) being averaged, more particularly using either



precomputed averaging chart to afford an immediate average of a plurality of grades to the nearest whole number.

3,691,652

## PROGRAMMED SYSTEM FOR EVOKING EMOTIONAL RESPONSES

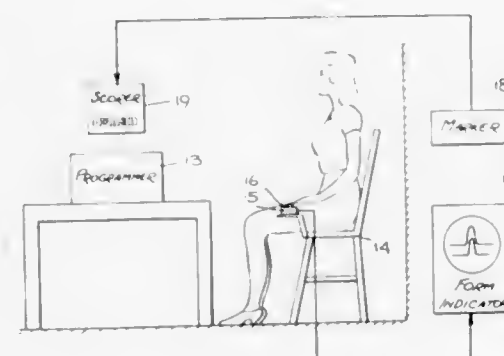
Manfred E. Clynes, Lawrence Lane, Palisades, N.Y.

Filed June 1, 1971, Ser. No. 148,428

Int. Cl. G09b 19/00;

U.S. Cl. 35—22 R

7 Claims



In order to enhance the ability of a subject to freely express emotion and to overcome inhibitive and repressive tendencies, a system is provided adapted to generate generalized emotional states by way of repeated random signal initiation and expressive touch. By going through a sequence of generalized emotion states (sentic states) in a programmed manner, the subject completes a sentic cycle. It has been found that such sentic cycles serve to relieve certain psychosomatic disorder symptoms.

3,691,653

Patent Not Issued For This Number

3,691,654

## METAL FOIL LEAD MANUFACTURE

Harvey V. Siegel, Mayfield Heights, Ohio, assignor to General Electric Company

Filed May 29, 1969, Ser. No. 828,863

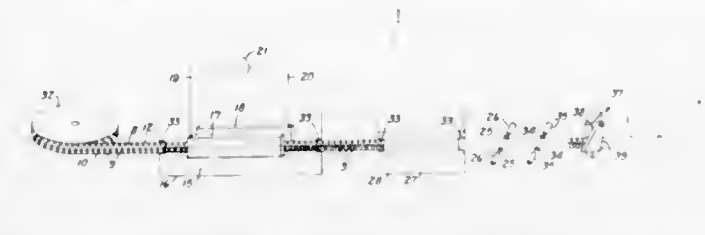
Int. Cl. H01j 9/16

U.S. Cl. 29—25.18

10 Claims

A metal foil lead for sealing into vitreous material is comprised of a short length of metal foil ribbon having an etched tongue end portion with a feathered edge completely therearound and an unetched contact end portion. The foil leads may be made by forming a metal foil ribbon with slots in

one side edge thereof at spaced points therealong, electrolytically etching the slotted side only of the ribbon to feather the exposed edges thereof, and then transversely severing the ribbon at each of the slots therein to separate it into individual foil leads.



3,691,655

## MACHINE TOOL WITH TOOL CHANGE DEVICE

Mikishi Kurimoto, Nagoya; Yoshiki Ochiai, Okazaki; Keniti Munekata, Kariya, and Kenji Nomura, Ogawa, all of Japan, assignors to Toyota Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

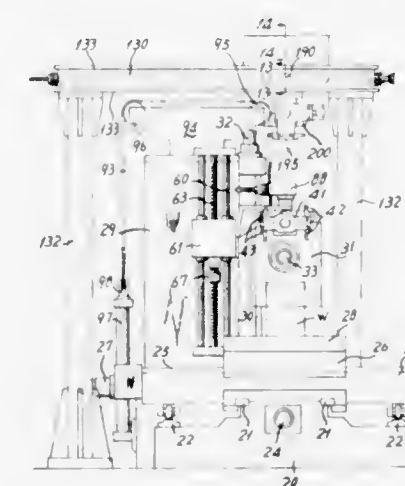
Filed Jan. 15, 1971, Ser. No. 106,717

Claims priority, application Japan, Jan. 15, 1970, 45/3995

Int. Cl. B23q 3/157

U.S. Cl. 29—568

8 Claims



A machine tool is provided with an automatic tool change device for permitting the same to perform a variety of machining operations on a workpiece. The tool change device comprises a tool storage magazine installed on the floor for removably storing diverse tools and a carriage mounted on an upstanding column of the machine and carrying a tool holding device thereon. The carriage follows the movement of a spindle head receiving a spindle therein so that a tool change operation can be effected between the tool holding device and the spindle by a main transfer arm immediately following a machine operation. Means are also provided for rendering the following movement of the carriage inoperative so that a tool change operation by a sub-transfer arm may be performed between the tool holding device and the tool storage magazine during the machining operation.

3,691,656

## METHOD OF MAKING A JOINT

Mitsuaka Mochizuki, 3-11 Minamimachi 2-chome, Suma-ku, Kobe; Minoru Tanaka, 638-27, Aza Shimizu, Okuradani, Akashi, and Tadataka Koyama, 11-30 Nogami 3-chome, Takarazuka, all of Japan

Division of Ser. No. 697,554, Dec. 16, 1967, Pat. No.

3,574,931. This application June 1, 1970, Ser. No. 54,072

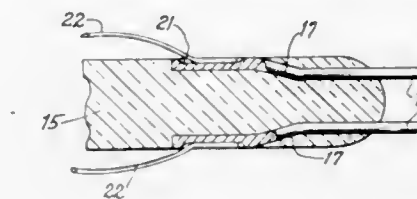
Claims priority, application Japan, March 30, 1966, 41/20572; July 25, 1966, 41/48016; July 29, 1966, 41/50279; Aug. 9, 1967, 42/46762

Int. Cl. H01r 43/00

U.S. Cl. 29—628

2 Claims

Resistance type temperature measuring device characterized by improved securement of the terminal leads to the



certain steps in the winding of a coiled resistance element on a dielectric support. Novel procedures utilized in the fabrication of the device are also disclosed.

3,691,657

Patent Not Issued For This Number

3,691,658

## ARTICLE OF FOOTWEAR

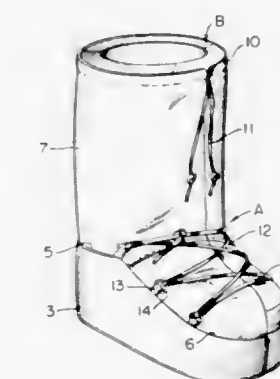
Nicholas Di Perno, 1131 Godin Ave., Verdun; Paul Stiefenhofer, 343 Grosvenor Ave., Westmount, and Thomas Barbeau, 5859 Coolbrook Ave., Montreal, Quebec, all of Canada

Filed March 29, 1971, Ser. No. 128,703

Int. Cl. A43b 1/10

U.S. Cl. 36—4

9 Claims



An article of footwear is described in the form of a calf-length boot for cold weather wear. The boot assembly comprises an inner boot and an outer shell, the inner boot being formed in a boot shape from a relatively thick layer of soft, pliable foam plastic material and having sufficient dimensional rigidity to maintain an erect boot shape. The outer shell has a sole portion and an upper portion, the sole portion being of a traction material with a wear resistant surface and being peripherally joined to an upper portion of thin, pliable sheet material. The inner boot fits snugly within the outer shell to form an erect boot assembly.

3,691,659

## NON-SLIP SAFETY SOLE CLAMPONS

Kazunari Nakajima, 8-21, 3-chome, Kema-cho, Miyakojima-ku, Asaka-shi, Osaka-fu, Japan

Filed Feb. 1, 1971, Ser. No. 111,435

Int. Cl. A43b 3/10

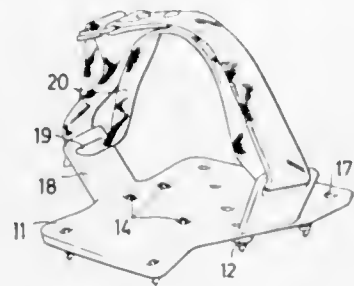
U.S. Cl. 36—7.6

1 Claim

Non-slip safety sole clamps comprising a sole or base board that is detachably fixable to the underside of each boot, a number of generally hemispherical bulges being integrally formed in a predetermined arrangement on the underside of



said base board, screw holes being formed through said bulges, screws being screwed therethrough from the upper



die punched, cotton-rayon pad material is treated on both of its sides with a flexible, acrylic latex composition that dries tacky and is superimposed over a web of conventional aluminumized cotton cover material. A unitary set is achieved by a drying operation including a pair of heated drums and a plurality of infrared heating elements whereby the dried latex composition between the webs of padding and cover material adheres the two webs together to form a unitary web and the latex composition on the exposed side of the web of padding material is dried tacky. The unitary set is then formed by a die cutting operation with subsequent edge binding.

surface of the base board so that the ends of said screws may protrude through the bulges to constitute claws or spikes.

3,691,660

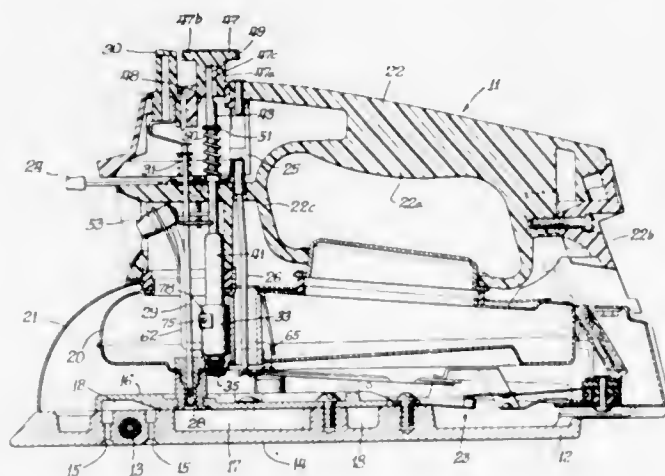
## ELECTRIC PRESSING IRON

Jerry P. Gronwick, Park Ridge; Douglas F. Illian, Oak Park, and Donald J. Westphal, South Elgin, all of Ill., assignors to Sunbeam Corporation, 02, Chicago, Ill.

Filed May 10, 1971, Ser. No. 141,792  
Int. Cl. D06f 75/06

U.S. Cl. 38—77.83

12 Claims



A pressing iron having means for producing a water spray or a pressurized discharge of steam from the soleplate. The means for operating the spray and steam including a single manually actuable control which is rotatable to predetermined positions to select the spray or the steam discharge and is movable axially to produce the selected spray or steam discharge.

3,691,661

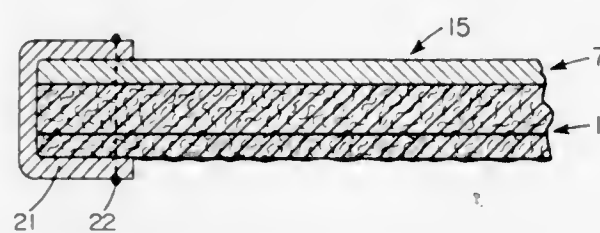
## UNITARY IRONING TABLE PAD AND COVER SET AND METHOD OF MANUFACTURE

George J. Steinbronn, Philadelphia, Pa., assignor to Proctor-Silex Corporation, Phila., Pa.

Filed Jan. 8, 1971, Ser. No. 105,048  
Int. Cl. D06f 81/14

U.S. Cl. 38—140

9 Claims

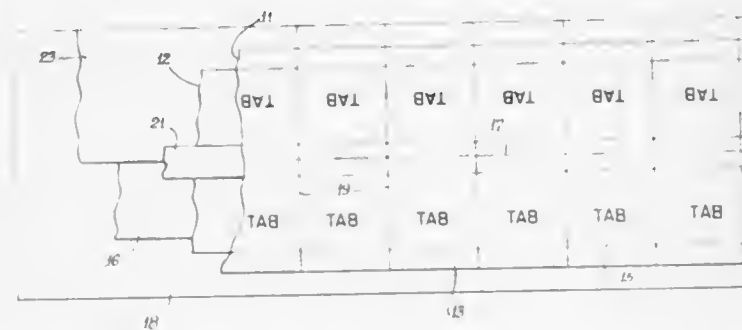


A unitary pad and cover set for an ironing table and its method of manufacture wherein a web of conventional, nee-

3,691,662  
LAMINATED INDEX TAB CONSTRUCTION  
Walter F. Cunningham, Des Plaines, Ill., assignor to Superior Tabbies Incorporated, Elk Grove Village, Ill.  
Filed March 29, 1971, Ser. No. 128,886  
Int. Cl. G09f 3/16

U.S. Cl. 40—23 A

6 Claims



Laminated index tab with top laminate of transparent film having pressure-sensitive adhesive on lower surface, an intermediate legend laminate with pressure-sensitive adhesive on its lower surface and narrower than top laminate, whereby adhesive-coated skirt portions are provided for attachment of tab to opposed surfaces of a receiving sheet, and a lower opaque filler extending from center laterally short of edge of tab to define one skirt portion, with its inner edge facilitating folding of tab during mounting, all mounted on carrier strip. Tab edge color coding provided by color ink on legend laminate or strip of color film between latter and top laminate, and optional strip of partial release paper in plane of filler extending from inner edge of latter past skirt portion at that edge of tab to facilitate removal of tab from carrier and attachment of other skirt portion to a sheet requiring additional processing with tab unfolded.

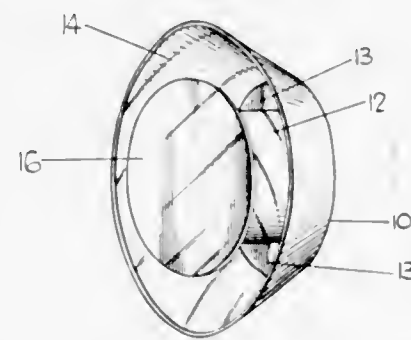
3,691,663

## REFLECTING ADVERTISING SIGN

John Arthur Caven, Kirby Muxloe, and Robert Winton Caven, Ringwood, both of England, assignors to John A. Caven and Marjorie A. Caven, Kirby Muxloe, Leicester, England  
Filed Dec. 3, 1968, Ser. No. 780,660  
Int. Cl. G09f 1/00

U.S. Cl. 40—125

4 Claims



A reflecting advertising sign comprises a column having an outer surface with mirror-image advertising matter thereon,

an inclined reflective surface around the column to reflect the said matter, and a disc for advertising matter on the end of the column, the said disc extending beyond the said outer surface.

3,691,664

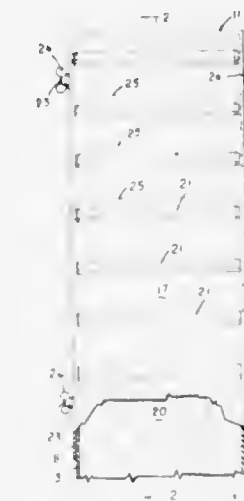
## ADJUSTABLE CARD HOLDER

Alexander Stoian, 111 Raglan Ave. Apt. 1606, Toronto, Ontario, Canada

Filed April 26, 1971, Ser. No. 137,125  
Int. Cl. G09f 1/10

U.S. Cl. 40—124.4

3 Claims



A card holder for holding and displaying cards is provided with adjusting means for handling different lengths of cards. The card holder comprises a rectangular box having a plurality of compartments and a cover slidably mounted on said box. The cover is provided with a plurality of slots which communicate with the said compartments and the cards are positioned in the compartments and the cards are projecting out of the said slots. In the preferred embodiment a plurality of partitioning members inclined to the vertical back wall of the box define the compartments. Guide members are provided on the cover and slidably engage the partitioning members. Reciprocating movement of the cover adjusts the length of the compartments between predetermined limits to accommodate different lengths of cards. Fastening means are provided for releasably fixing the cover in the adjusted position required.

3,691,665

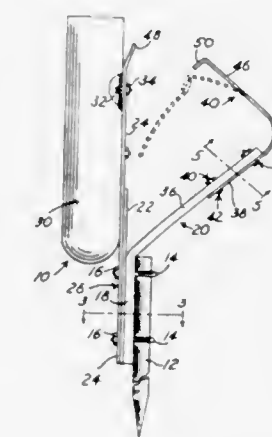
## FISHING POLE MOUNT

Burton M. Niles, Reedsport, Oreg., assignor to Tackle and Gear, Inc., Reedsport, Oreg.

Filed April 1, 1971, Ser. No. 130,176  
Int. Cl. A01k 97/00

U.S. Cl. 43—15

7 Claims



A sturdy, inexpensive, fishing pole mount of extreme simplicity and dependability is provided which includes a support-

ing post adapted to be driven into the ground or otherwise fixed in a more or less upright position, a spring carried pole holder mounted on the post, and a spring trigger adapted when the carrier spring and the trigger spring are both put under strain and inter-engaged, to detain the holder in a cocked condition, the construction and arrangement being such that when the carrier spring is further stressed by a pull on the fishing line, the trigger is released and is carried by its spring away from the holding position. The carrier spring then springs free, causing a strike of mechanically limited magnitude to be effected through the holder.

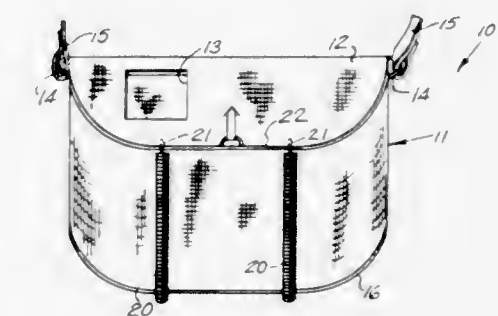
3,691,666

## FISHING CREEL

Harold O. Herdweg, 5985 Lemon St., E. Petersburg, Pa.  
Filed May 14, 1970, Ser. No. 37,145  
Int. Cl. A01k 97/00

U.S. Cl. 43—54.5 R

3 Claims



A device for carrying fish comprising a wicker basket or the like having an upper cover of the same material as the sides, the bottom portion being hinged so as to quickly dump the fish therefrom. The bottom wall includes a plurality of openings for drainage of water and has a pair of spaced apart slotted openings for engaging one end of springs, the other end of springs engaging the upper edge of the basket portion of the device in order to keep the bottom wall closed.

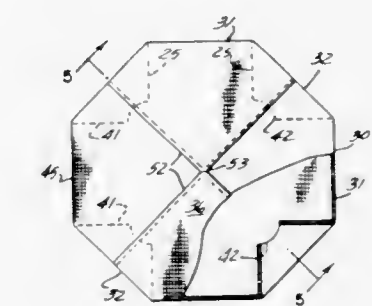
3,691,667

## FOLDABLE MINNOW TRAP

Francis D. Illinger, 527 E. Mich. St., Orlando, Fla.  
Filed Oct. 30, 1970, Ser. No. 85,454  
Int. Cl. A01k 69/06; A01m 23/08

U.S. Cl. 43—65

2 Claims



A collapsible minnow trap featuring compactness in storage and simplicity in manufacture is made from a flexible sheet of resilient material that is precut, folded and heat sealed along its edge portions to provide a two layer flat, preferably rectangular, structure with apertured corners. The structure is manipulatable by the fisherman into a self-sustaining creased operational minnow trap structure in which the chamber of the trap is wholly defined by the flexible sheet and in which the corners are tucked inwardly to provide inlets to the chamber.

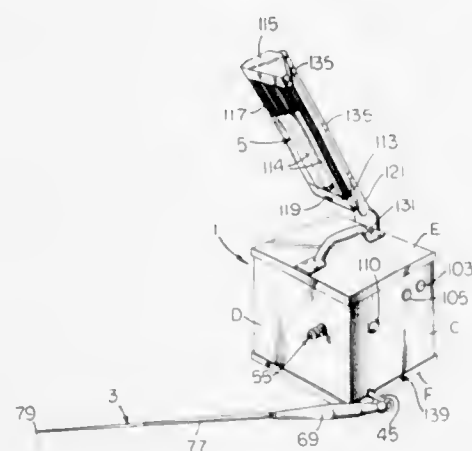


3,691,668

**AUTOMATIC ELECTRIC JIG-FISHING DEVICE**  
 Richard W. Strelg, 2524 Priscilla Lane, Fort Wayne, Ind.  
 Filed April 30, 1971, Ser. No. 138,926  
 Int. Cl. A01k 97/12

U.S. Cl. 43—19.2

23 Claims



A fishing lure jigging apparatus having a case, a shaft rotatably mounted in the case and a relatively short, stiff fishing rod mounted, by means of a quickly separably coupling, on the shaft so as to extend radially therefrom. A relatively powerful solenoid is mounted on the case with its armature plunger extending transversely of and adjacent to said shaft. A lever connecting said armature so as to oscillate the shaft as the armature reciprocates, this arrangement being such that energization of the solenoid moves the armature and shaft so as to raise the tip of the pole. A spring acts to eject the armature from the coil and to move the outer end of the armature into contact with an adjustable stop which thus determines the effective length of the solenoid stroke as well as the lowermost position of the rod tip. A rechargeable lead-acid storage battery is mounted in the case and supplies power to the solenoid through an electronic pulsing circuit which is adjustable to vary the pulsing rate throughout a relatively wide range. Signal means are connected with said circuit to produce a signal for each pulse, said signals being intermittent so long as the solenoid continues to cycle but become continuous when such cycling is interrupted as by a strike or by fouling of the lure. Electrical connector sockets are mounted on the case and are connected to the battery to supply charging current thereto. These sockets also accept the plugs of a fluorescent lamp circuit. Mounting means are provided on the case for removably receiving interfitting means on the base of the staff of the lamp which is thereby positioned so as to illuminate the fishing area. Means are also provided for holding the case in place on the seat of a boat or other suitable support. By varying both the length of travel of the pole tip and the time between the power strokes thereof, a large number of different cycle patterns are available to permit the selection of the pattern which produces the most effective action of the particular lure which is being used.

3,691,669

**TOY FLIGHT SIMULATOR AND DISPLAY STAND**  
 Henry J. Folsom, Redondo Beach; Daniel R. Lucas, Jr., Orange; William A. Staats, Torrance, and James I. Tucker, Jr., Manhattan Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 20, 1971, Ser. No. 108,113

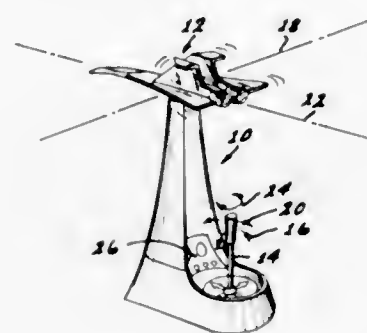
Int. Cl. A63h 33/00

U.S. Cl. 46—1 H

11 Claims

A simulator-display stand, including a control stick and linkage to simulate flight movement with a toy airplane. The

linkage includes five elements, two of which includes integral living hinges for transmitting motion of the control stick to



parallel motion of the airplane in an easily manipulated, inexpensive and exciting fashion.

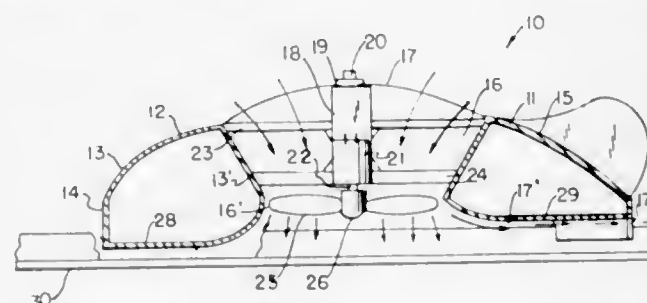
3,691,670

**TOY VEHICLE AND TRACK**  
 Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.  
 Continuation-in-part of Ser. No. 11,562, Feb. 16, 1970, Pat. No. 3,611,622. This application Oct. 12, 1971, Ser. No. 188,311

Int. Cl. A63h 30/06

U.S. Cl. 46—1 J

10 Claims



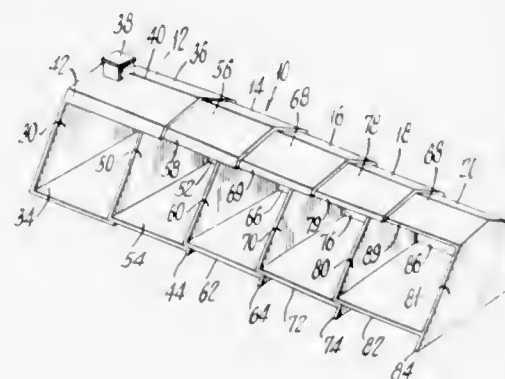
A toy vehicle and track therefore are provided in which the vehicle is suspended on a layer of air disposed between the track and vehicle. In one form the vehicle contains own power supply and fan for generating flow of air therethrough and propelling same downwardly and readwardly to both float the vehicle on the track and propel it therealong. In another form, air is pressurized remote from the vehicle and fed to the vehicle through a duct which may comprise the track itself or a flexible line extending to the vehicle.

3,691,671

**EXPANDABLE DOLL HOUSE**  
 Frederick H. Kroll, 72 Wood Hollow Lane, New Rochelle, N.Y.  
 Filed Jan. 11, 1971, Ser. No. 105,230  
 Int. Cl. A63h 33/00

U.S. Cl. 46—12

4 Claims



A multi-room expandable and contractible doll house includes a plurality of slideably telescoping room-defining sections movable between contracted nesting and extended end-

to-end positions. Each section includes a roof formed of upwardly converging top panels, a floor panel, a rear panel and an inner end panel, corresponding longitudinal panels of adjacent sections being slideably engageable. At least one longitudinal slot is formed in each rear wall and a headed pin is fixed proximate the inner edge of each rear wall and engages the slot in an adjacent wall to limit the outward movement of the sections to slightly overlapping end-to-end positions. The outer edge of each section is provided with a depending flange which terminate at a common level.

3,691,672

**BUILDING STRUCTURES AND METHOD**  
 William G. Pendill, 124 E. 16th St., Hinsdale, Ill.  
 Continuation of Ser. No. 806,623, March 12, 1967, abandoned. This application July 30, 1971, Ser. No. 167,843  
 Int. Cl. A63h 33/00

U.S. Cl. 46—16

5 Claims



Building units for use with sand and other pulverulent material are provided which comprise shaped complementary edifices that are hollow and have top and bottom openings with a connecting passageway so that these edifices can be assembled on a beach or other surface and filled through the top opening with sand or other pulverulent material and can be disassembled simply by lifting them so that the sand or other pulverulent material flows out from the bottom openings.

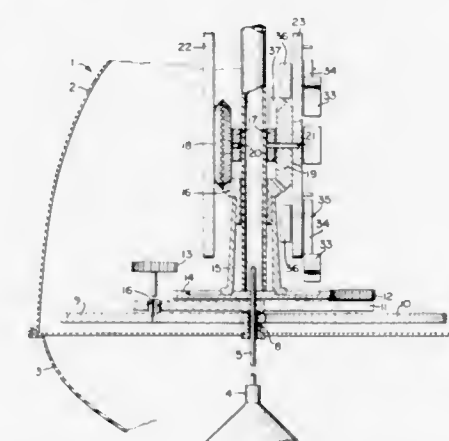
3,691,673

**TOY TOPS**  
 Peter Balleis, Zirndorf, near Nurnberg, Germany  
 Filed March 3, 1970, Ser. No. 16,076  
 Claims priority, application Germany, March 12, 1969, P 19 12 512.3

Int. Cl. A63h 1/06

U.S. Cl. 46—68

4 Claims



A toy top having a top body in which is mounted a carrier member for rotation about the top body axis by means of a transmission gear operatively coupled to the top body, the top body being rotatable by a spin-imparting rod. A first bevel

gear carried by the carrier member meshes with at least one second bevel gear rotatable about an axis extending radially of the top body axis. Various figures or figure carriers for example a perpetual motion machine according to Wilars, may be coupled for rotation with the second bevel gear.

3,691,674

**AERIAL TWISTER TOY AND CATAPULT THEREFOR**  
 James E. Thompson, 452 Bartlett, 202, San Francisco, Calif.

Filed Oct. 21, 1970, Ser. No. 82,680

Int. Cl. A63h 27/00, 27/14

U.S. Cl. 46—74 R

14 Claims



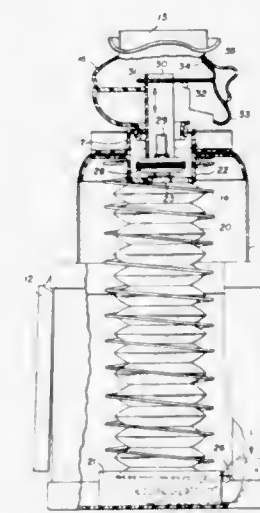
A toy which is adapted to be used as a projectile to be catapulted vertically into the air. This toy is provided with a body that is elongated and shaped so that when it reaches the peak of its climb it assumes a horizontal position and starts to rotate around its long axis. This rotation continues during descent and slows the speed of descent making it possible to catch the toy by hand.

3,691,675

**JACK-IN-THE-BOX SOUNDER**  
 James A. Rodgers, Hamburg, N.Y., assignor to The Quaker Oats Company  
 Filed March 1, 1971, Ser. No. 119,653  
 Int. Cl. A63h 13/16

U.S. Cl. 46—118

8 Claims



A jack-in-the-box is equipped with a bellows extending between the pop-up figure and the box so that the bellows is compressed when the figure is pushed into the box and ex-



panded when the figure pops up. An air-operated sounder is arranged in a passageway from inside the bellows to outside the bellows for making a sound when air moves through the passageway. The passageway includes an expandible sleeve arranged for moving a feature of the pop-up figure, and a lever at the bottom of the bellows can be manually operated for compressing the bellows to operate the sounder.

3,691,676

## ANIMATED TWO-DIMENSIONAL FIGURE

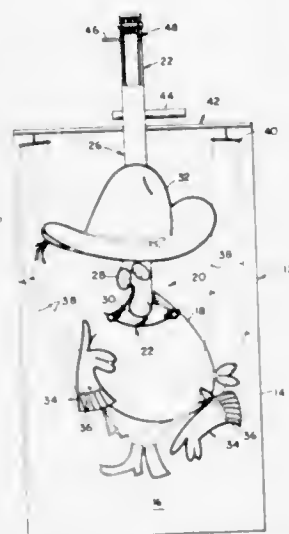
Stephen Mellow, 6430 Sunset Blvd., Los Angeles, Calif.

Filed Dec. 30, 1970, Ser. No. 102,744

Int. Cl. A63h 7/00

U.S. Cl. 46-126

27 Claims



An animated two-dimensional character defined by a fixed outline applied to a flat board and a plurality of movable character features positioned on top of the outline and movable with respect to it. Some of the features are mounted to a first bar that is loosely secured to the board and centered in an original position with respect to the outline while others of the features are mounted to a second member such as an independently movable second bar placed on top of the first bar and also centered with respect to the outline. The bars are substantially universally movable in the vicinity of the outline, the features thereon define portions of the character such as facial features, hands or pieces of clothing and some of the features can be further movable with respect to the mounting bars of the stationary operations of such features, say the closing or opening of the character's mouth or eyelids and, simultaneously therewith or independently thereof, for repositioning of the features with respect to the outline to change the overall appearance of the character and thereby cause animation of individual character features as well as of the overall character figure.

3,691,677

## OVERHEAD SIGN MOUNTING

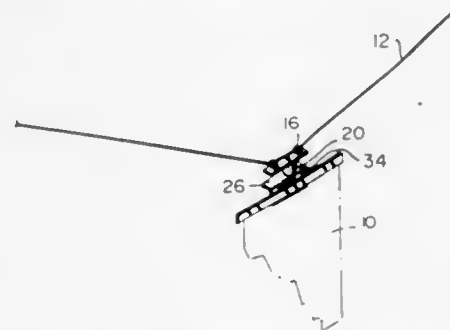
Walklett Blaising, P. O. Box 111, Crestline, Ohio

Filed May 26, 1971, Ser. No. 146,924

Int. Cl. G09f 7/22

U.S. Cl. 40-128

4 Claims



Apparatus adapted to be secured to a pole or cable for sup-

porting a vertical sign in any desired angular position about its vertical axis and for detachably locking same in said position.

3,691,678

## Patent Not Issued For This Number

3,691,679

## GROWING DOLL FINGERNAILS

Daniel D. Kersten, 984 Chestnut, Escondido, Calif.

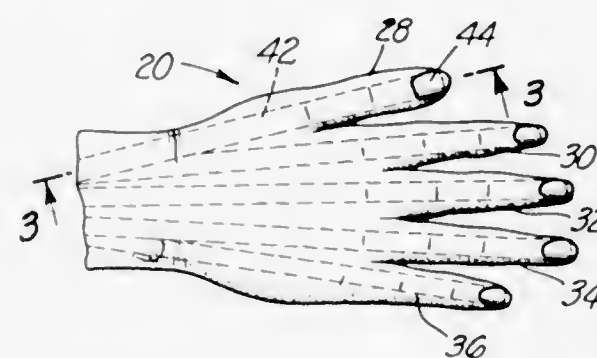
Substitute for Ser. No. 545,096, April 25, 1966, abandoned.

This application Dec. 14, 1970, Ser. No. 98,001

Int. Cl. A63h 3/36

U.S. Cl. 46-163

4 Claims



This invention is directed to a toy doll structure which has simulated fingernails. The fingernails appear at the end of the doll's fingers in a fashion very similar to real, growing human fingernails. When desired, the fingernail can be pulled out a length and cut off to simulate the growth of the fingernail. Furthermore, if a new polish area is desired, the fingernail material can be pulled out in an entire fingernail length, cut off and repainted with fingernail polish.

3,691,680

## ILLUMINATED FIGURE TOY

Marvin I. Glass; Allison W. Katzman, both of Chicago, and

Burton C. Meyer, Downers Grove, all of Ill., assignors to

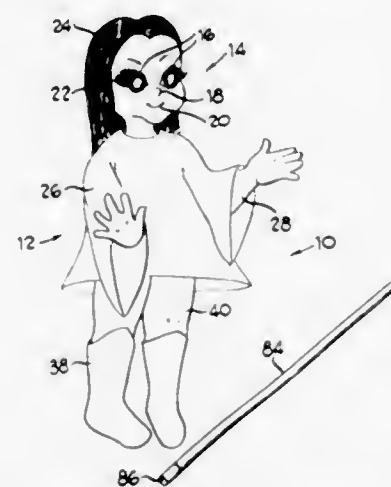
Marvin Glass &amp; Associates, a partnership

Filed Dec. 30, 1971, Ser. No. 214,081

Int. Cl. A63h 3/26

U.S. Cl. 46-228

7 Claims



An illuminated toy figure having simulated human features with a battery powered light unit in the interior thereof. The light unit includes a movable contact element and a fixed contact element and a movable member for holding the movable contact element away from the fixed element when the figure is in a reclining position but permitting the circuit to close with the two contact elements in engagement when the figure is in an upright position. The movable contact element has a magnetically attracted portion and the figure is provided with a

magnetic element, which when placed near the movable contact, draws it out of engagement with the fixed contact to open the electrical circuit, even when a figure is in an upright position.

3,691,681

## REMOTELY OPERATED EARTH MOVING TOY

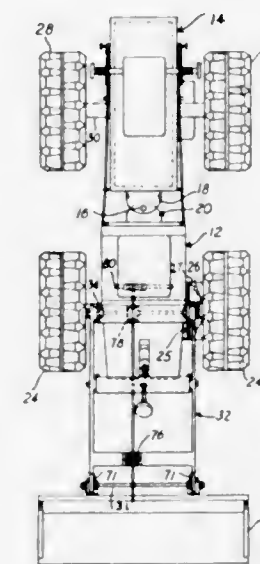
Robert A. Gagnon, Star Route 2, Box 944, Trail, Oreg.

Filed Oct. 14, 1971, Ser. No. 189,145

Int. Cl. A63h 33/26

U.S. Cl. 46-244 A

10 Claims



A mechanical toy is provided, electrically operated by remote control, for scooping up sand or other finely divided material, transporting it to a desired destination, and there depositing it. The toy includes several reversible motors, all driven from a common source of power, all controlled through associated switches which form parts of a single control unit, and all concerned with the steering and driving of a vehicle, and/or the scooping up, the transportation of, and the depositing at a desired destination, of sand or like material through the informed manipulation of the switches.

3,691,682

## Patent Not Issued For This Number

3,691,683

## METHOD FOR THE CHEMICAL TREATMENT OF LIVING TREES AND INJECTION CARTRIDGE FOR THE PERFORMANCE OF THE AFORESAID METHOD

Harry Klaus Sterzik, Am Enterbusch 25, Hannover, Munden, Germany

Filed May 14, 1970, Ser. No. 37,161

Claims priority, application Germany, May 16, 1969, P 19 25 454.7

Int. Cl. A01g 7/06

U.S. Cl. 47-57.5

1 Claim



A method for the chemical treatment of living trees is disclosed wherein a chemical agent is injected into the tree in that a cartridge which is at least partially filled with the chemi-

cal treating agent is knocked into the tree trunk. The cartridge is ruptured at its end penetrating into the tree by virtue of the impact and there is generated within the cartridge an overpressure which injects the chemical treating agent into the trunk of the tree.

There is also disclosed an injection cartridge for carrying out the aforesaid method which comprises a sleeve member which at least partially contains or is filled with the chemical treating agent, and wherein the end of the sleeve member destined to be knocked into the tree trunk supports a closure member which is destructible under the impact force.

3,691,684

## WINDOW POWER ACTUATING DEVICE

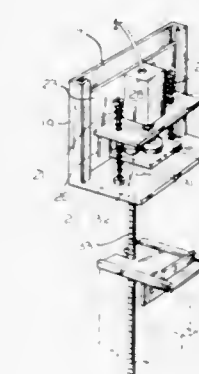
Roger L. Boneck, W-140, N-5550 Lilly Road, Menomonee Falls, Wis.

Filed Oct. 19, 1970, Ser. No. 81,929

Int. Cl. E05f 15/20

U.S. Cl. 49-21

3 Claims



This invention provides a power actuation device for raising and lowering a window in a building. A safety switch prevents the window from shutting tightly if an object obstructs or limits window travel. Also a moisture sensor shuts the window if it rains.

3,691,685

## PARKING BARRIER HARDWARE

Alex Danin, 1080 Mamaroneck Ave., White Plains, N.Y.

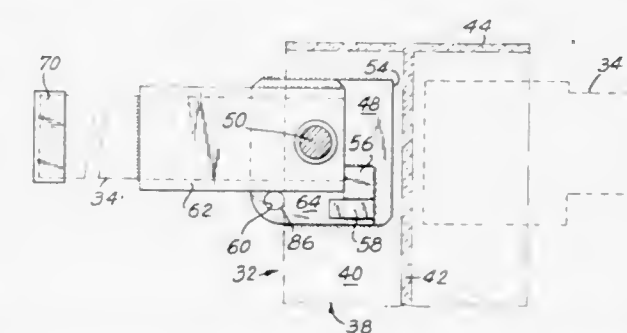
Continuation-in-part of Ser. No. 6,762, Jan. 29, 1970, Pat. No.

3,616,574. This application April 16, 1971, Ser. No. 134,628

Int. Cl. E01f 13/00

U.S. Cl. 49-35

7 Claims



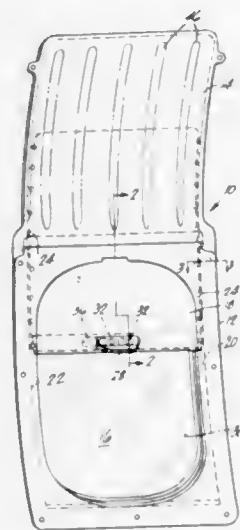
Components adapted to be used in a parking barrier. A pair of prefabricated units are provided to be used at the parking lot when a parking barrier is set up. One of the prefabricated units includes a mounting bracket which is adapted to be fixed to a standard and a shaft which is fixed to and extends from the bracket. The other of the pair of prefabricated units includes an arm carrier which is adapted to be connected with an elongated barrier arm and a bearing for mounting the arm carrier swingably on the shaft. Thus, these prefabricated units can be assembled at a parking lot with a standard fixed to and extending upwardly from the ground and with an elongated barrier arm to complete the parking barrier.



### 3,691,686 WINDOW SHADE ASSEMBLY

Dennis J. Donegan, Lakewood, Calif., assignor to McDonnell Douglas Corporation  
Filed March 30, 1971, Ser. No. 129,382  
Int. Cl. E06b 3/44  
U.S. Cl. 49—56

6 Claims

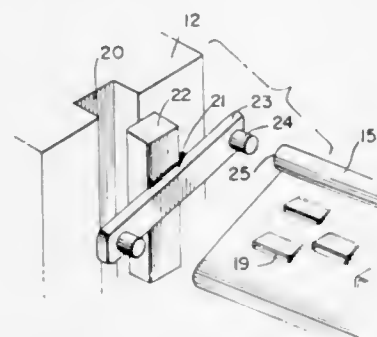


A window shade assembly including a curved shade frame and shroud in which a resilient shade having a curvature differing from that of the frame is installed. The shade has frictional means along the edges thereof to engage the frame and to enable restricted sliding motion therebetween. The shade also includes a handle and hidden locking means therefor to discourage handle theft.

### 3,691,687 SHUTTER CONSTRUCTION

Hercules Economou, 812 N.W. 8th Ave., Fort Lauderdale, Fla.  
Filed Aug. 6, 1971, Ser. No. 169,682  
Int. Cl. E05f 17/00; E06b 7/082, 7/084  
U.S. Cl. 49—74

9 Claims



A shutter construction comprising a plurality of slats within a rigid frame. The slats are placed within the frame by means of a plurality of adapters which fit into a groove in the side pieces of the frame. Projections on the adapters project into the rolled edges of the slats thus permitting the slats to be slid down the grooves in the frame. The adapter may consist of two sections so that the slats may be pivoted with respect to the frame.

### 3,691,688 DOOR ASSEMBLY FOR AN ENCLOSURE HAVING A TIGHT SHIELDING FOR HIGH FREQUENCY EMISSIONS

Hans-Peter Kaiserswerth, Regensburg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany  
Filed March 3, 1971, Ser. No. 120,469  
Claims priority, application Germany, March 5, 1970, P 20 10 516.2

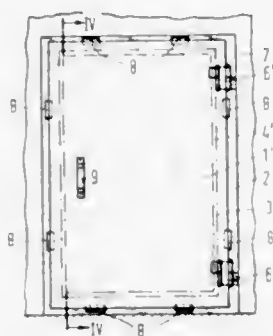
Int. Cl. E05d 65/06

U.S. Cl. 49—394

11 Claims

A door assembly having a casing member surrounding a door opening, a door mounted on the casing member for clos-

ing the opening with electrical sealing means disposed therebetween. The improvement is the provision of magnetic means for clamping the door and casing against the electrical sealing means to insure a minimum transitional resistance therebetween. In one embodiment of the invention, the magnets are electromagnets which require deenergizing to enable opening of the door. Another embodiment of the invention,

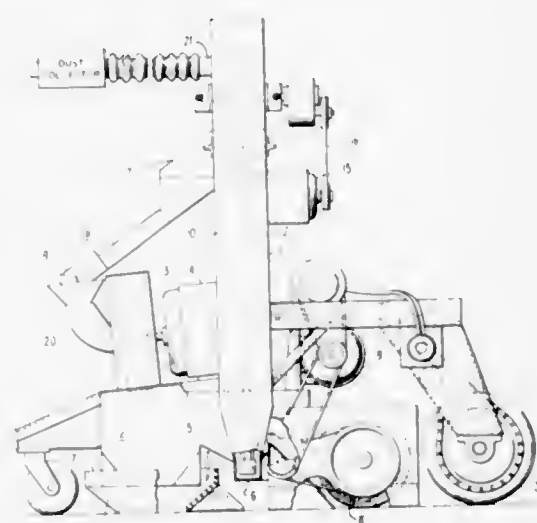


the magnets are permanent magnets with associated pole pieces which are shifted relative thereto to reduce the magnitude of the magnetic force to enable opening of the door. The third embodiment of the invention, is a provision of two groups of magnets with their poles aligned with or without pole pieces interposed therebetween with the groups of magnets being moved relative to each other to enable reducing the magnetic force to enable opening of the door.

### 3,691,689 ABRASIVE SURFACE CLEANING APPARATUS

James R. Goff, Mishawaka, Ind., assignor to Robert T. Nelson, Oklahoma City, Okla.  
Filed Feb. 4, 1971, Ser. No. 112,543  
Int. Cl. B24c 3/00  
U.S. Cl. 51—9

6 Claims



A novel, mobile, continuously operable abrasive surface cleaning apparatus utilizing a rotating brush for abrasive recovery is disclosed. Also, a novel continuous belt elevator or conveyor for recirculating the recovered abrasive is disclosed.

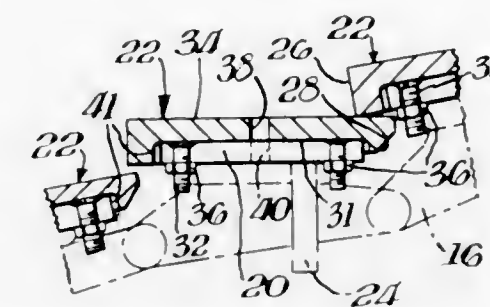
### 3,691,690 ABRASIVE BLAST CLEANING ARRANGEMENT

Willard J. Harper, Hagerstown, Md., assignor to The Carborundum Company, Niagara Falls, N.Y.  
Filed Oct. 16, 1970, Ser. No. 81,328  
Int. Cl. B24c 9/00; B24b 31/10  
U.S. Cl. 51—13

6 Claims

An abrasive blast cleaning arrangement includes a slat conveyor wherein each individual slat has a removable channel

shaped cap thereon. The cap and slat are secured together by

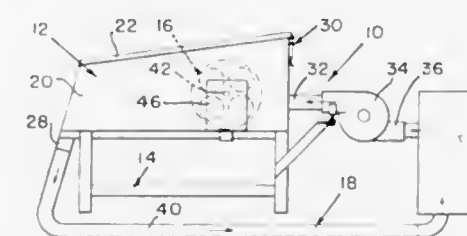


studs welded to the inner face of the cap so as not to protrude through its wear face.

### 3,691,691 ABRASIVE BLASTING APPARATUS

Phillip W. Smith, Route 2, Box 264, Gibsonville, N.C.  
Filed March 16, 1971, Ser. No. 124,810  
Int. Cl. B24c 3/20  
U.S. Cl. 51—15

7 Claims

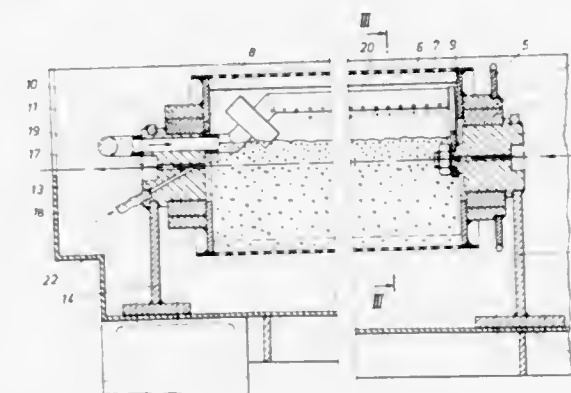


Apparatus for blasting with an abrasive meter components including a driven carrier rotatably mounted within a housing adjacent a nozzle. The carrier includes a plurality of supporting arrangements, one for each meter component, for resiliently clamping the components such that the meter faces are protected from the abrasive blast.

### 3,691,692 APPARATUS FOR CONTINUOUSLY CLEANING THE SURFACE OF ELONGATED STOCK

Harald Strohmeier, Kapfenberg, Austria, assignor to Gebr. Bohler & Co. A.G., Kapfenberg, Austria  
Filed Feb. 8, 1971, Ser. No. 113,251  
Claims priority, application Austria, Feb. 13, 1970, A 1300/70  
Int. Cl. B24b 31/02  
U.S. Cl. 51—20

5 Claims



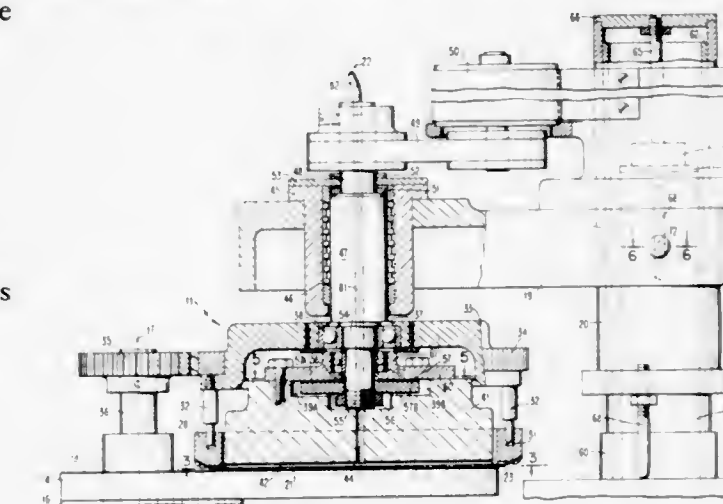
A body of particulate scouring material is provided in a chamber and is agitated in the chamber. Elongated stock to be cleaned is pulled through the scouring agent in the chamber while the scouring agent is agitated to abrade particles from the stock. A liquid is continuously applied to the scouring agent to entrain the abraded particles in the liquid. The liquid with the abraded particles entrained thereby is withdrawn from said chamber.

### 3,691,693 Patent Not Issued For This Number

### 3,691,694 WAFER POLISHING MACHINE

Frederick E. Goetz, Wappingers Falls, and James R. Hause, La Grangeville, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.  
Filed Nov. 2, 1970, Ser. No. 85,999  
Int. Cl. B24b 7/00, 9/00, 29/00  
U.S. Cl. 51—80

14 Claims

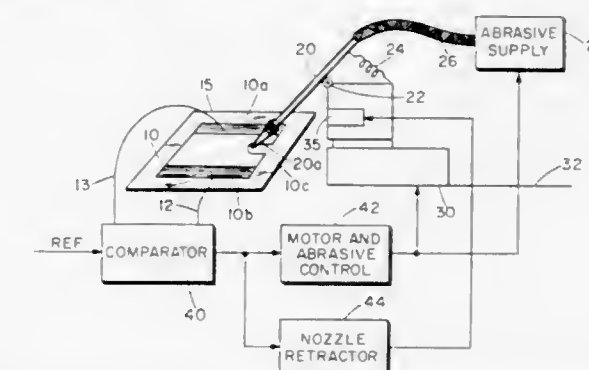


This patent relates to apparatus for removing and polishing opposite surfaces of a semiconductor wafer. The apparatus comprises a rotatable platen having an abrasive upper surface upon which a mask having suitable apertures therein for receiving wafers is positioned. A hoop is connected to the mask for imparting rotation thereof separately from the rotation of the platen. Overlying the mask and wafers is a second lapping means having an abrasive surface thereon for applying a uniform pressure upon the opposite surface of the wafer. Separate drive means cooperate with the second lapping means for separately driving the lapping means so that upon rotation of the platen, hoop and mask, and second lapping means the opposite planar surfaces of the wafer is brought into coplanarity while being polished. During the operation of the apparatus the surface of the wafers is continuously wetted with an excess quantity of a displacement plating solution containing, for example, a cupric or silver nitrate and a fluoride anion, the solution being maintained preferably at a pH of less than 7.

### 3,691,695 RAPID ACTING ABRASIVE TRIMMER FOR MICRO-ELECTRONIC DEVICES

Norman Green, 119 Deep Dale Drive, Timonium, Md., and William C. Vergara, 910 Dunellen Drive, Towson, Md.  
Filed Jan. 20, 1971, Ser. No. 107,975  
Int. Cl. B24c 3/06, 3/32  
U.S. Cl. 51—8

10 Claims



An abrasive trimmer for micro-electronic devices includes a nozzle for directing abrasive at a micro-electronic device to be



trimmed. The nozzle is pivot mounted and spring biased into a first, normally operative position. A circuit which senses the electrical characteristics of the micro-electronic device being trimmed generates a signal when predetermined characteristics are sensed. This signal activates a solenoid winding which pivots the nozzle against its spring bias into a second retracted position.

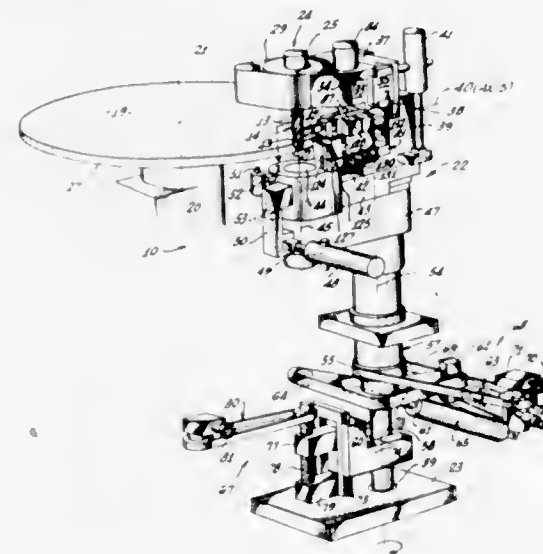
3,691,696

**APPARATUS FOR MACHINING CUTTER TEETH**  
Ralph D. Adams, Escondido, and Efrain D. Lopez, Pasadena, both of Calif., assignors to Omark-Winslow Aerospace Tool Co., Portland, Oreg.

Filed Jan. 4, 1971, Ser. No. 103,626  
Int. Cl. B24b 3/00, 5/00, 47/02

U.S. Cl. 51—95 TG

24 Claims



A machine for grinding the surfaces of helical teeth on a cutter, and having means for positioning a cutter alongside a grinding wheel and moving the cutter axially relative to the wheel while turning the cutter at a rate directly related to the spiral of the tooth about the cutter, thereby to present the full length of the tooth to the grinding wheel in a smooth, continuous motion. A movable tooth rest is pressed against one side of the tooth to be deflected laterally in response to the force developed between the tooth and the tooth rest, and deflection of the tooth rest operates a control valve for variably rotating the cutter. The motor is driven by a flow of fluid regulated by the control valve, and leakage that could create a pressure drop across the motor is made by an adjustable compensating valve. Fine adjustments are provided for correlating the deflection of the tooth rest with the resulting rates of cutter rotation.

3,691,697

**PRESSURE CONTROL FOR LAPPING DEVICE**  
David L. Bender, West Henrietta, N.Y., assignor to Hamco Machine & Electronics Corp., Rochester, N.Y.

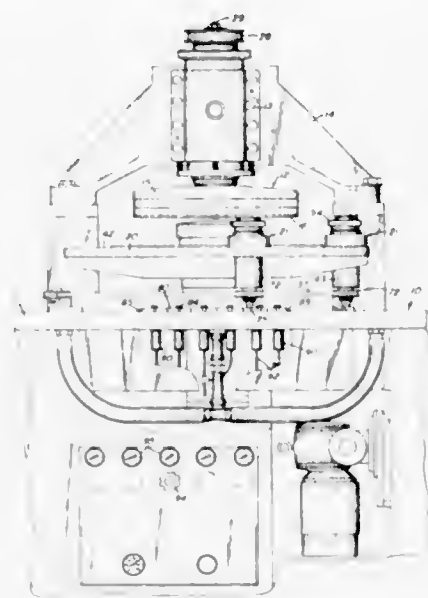
Filed Sept. 21, 1970, Ser. No. 73,978  
Int. Cl. B24b 7/04

U.S. Cl. 51—134

3 Claims

A plurality of pivotally mounted members are arranged in a plane parallel to and spaced from a lapping surface and relative to the path of movement of an element so as to move the element axially and to provide a pressure pattern comprising a number of incrementally increasing and/or decreasing pressures with which the element can be maintained in engagement with the lapping surface. Each of the pivotal members is responsive to the force exerted thereagainst by a gas- or liquid-actuated plunger. With a group of such members arranged relative to the path of travel of the element, the pressure with which the element is maintained against the lapping surface can be varied to increase uniformly from one end to the other, to decrease uniformly from one end to the other, or

to provide a number of variable pressures throughout the path of travel during the lapping operation. In other words, a pressure pattern can be devised for any one or a combination of material, lapping speed, element hardness, etc.



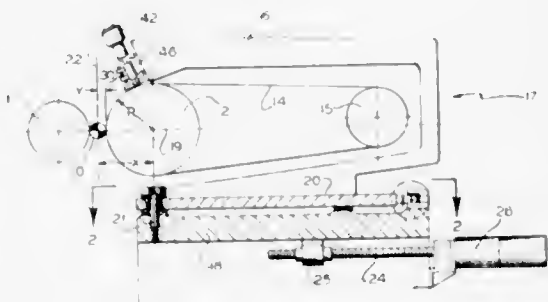
3,691,698  
**ABRASIVE ELEMENT DIMENSION SENSING MECHANISM**

Robert L. Schaller, Syracuse, N.Y., assignor to Sundstrand-Engelberg, Inc., Liverpool, N.Y.

Filed Nov. 23, 1970, Ser. No. 91,636  
Int. Cl. B24b 49/00

U.S. Cl. 51—165.88

11 Claims



A transducer feedback mechanism for sensing the precise position of a rotating abrasive element and moving it towards or away from a workpiece to compensate for a change in radius due to wear or expansion. The sensing device includes a carbide pad in engagement with the grinding surface of the abrasive element, in radial alignment with the center thereof, and any movement of the pad causes a sensing transducer to signal a servo-amplifier or computer which controls the position of the element relative to the workpiece. Since the sensing pad is itself subject to wear, means are also provided to periodically re-zero the sensing transducer to compensate for such wear.

3,691,699

**GRINDING MACHINE**

Herbert R. Uhtenwoldt, Worcester, Mass., assignor to The Heald Machine Company, Worcester, Mass.

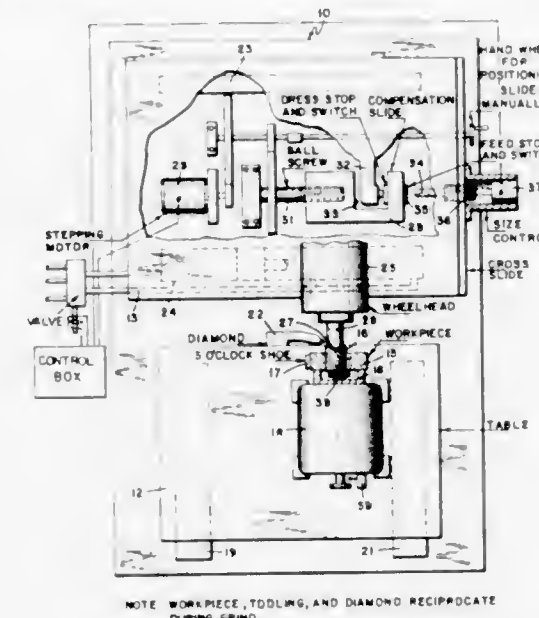
Filed July 9, 1970, Ser. No. 53,491  
Int. Cl. B24b 49/16

U.S. Cl. 51—165.92

6 Claims

This invention relates to a grinding machine having means

for assuring that the spindle deflection is the same during the lower jaw (29) and a second sloping surface (39) on the base member (16) which is secured to a machine tool carriage (11). This arrangement provides a substantially identical



3,691,700

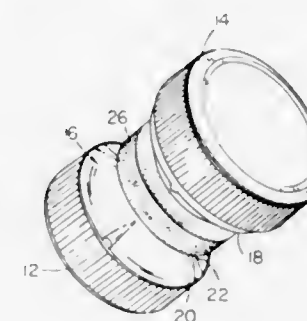
**KNIFE SHARPENER**

Robert M. Hayes, 24 Webster Ave., Somerville, Mass.  
Filed Feb. 11, 1971, Ser. No. 114,578

Int. Cl. B24b 3/54

U.S. Cl. 51—210

5 Claims



Knife sharpener comprising a pair of rolling supports providing knife blade guide surfaces of generally frusto-conical form spaced along an axis, an abrasive mounted between the supports and having blade sharpening surfaces respectively facing and making acute angles with the guide surfaces, and risers extending between the guide surfaces and the sharpening surfaces, the risers making angles with the sharpening surfaces larger than the acute angles, at least one of the guide surfaces departing from the frusto-conical form at protuberances spaced angularly from each other with respect to the axis, the protuberances merging into the frusto-conical form.

3,691,701

**WORK REST FOR A MACHINE TOOL**

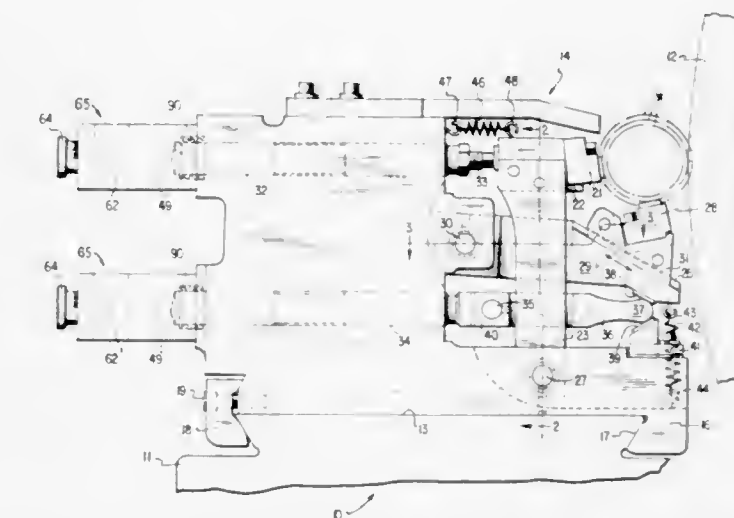
Wilbur R. Clark, Waynesboro, Pa., and Freeman W. Mann, Hagerstown, Md., assignors to Litton Industries, Inc., Beverly Hills, Calif.

Filed Dec. 16, 1970, Ser. No. 98,803  
Int. Cl. B24b 41/06

U.S. Cl. 51—238 S

9 Claims

A work rest (14) for a machine tool, such as a grinding machine (10), includes pivotally mounted upper and lower work supporting arms or jaws (22 and 29) to provide a rigid support for a workpiece (W). The jaws (22 and 29) are movable about their pivot points in order to provide a range of movement for a desired diameter range of the workpiece (W). The position of the lower jaw (29) is advanced by a wedge or spreader (36) which acts between a sloping surface (38) on



3,691,702

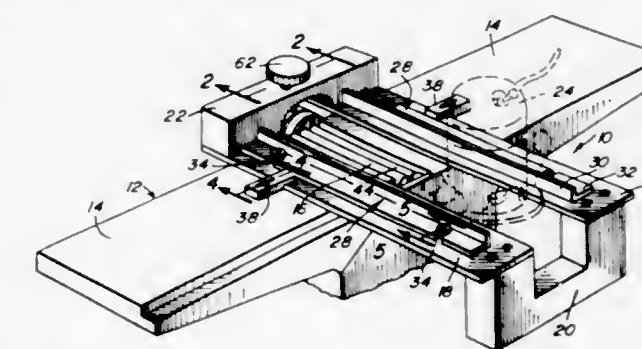
**JIG FOR SHARPENING JOINTER BLADES AND THE LIKE**

Howard J. Smith, 1212 N. Delaware Ave., and Byron F. Smith, 901 Pecon Drive, both of Roswell, N. Mex.

Filed Nov. 17, 1970, Ser. No. 90,326  
Int. Cl. B24b 3/38

U.S. Cl. 51—249

6 Claims



A jig mountable directly on a woodworking machine and incorporating guide means for reception and guiding of a blade grinding tool. The device includes an indexing collar permanently affixed to the cutterhead shaft and selectively locked into rotatably adjusted positions for a sequential alignment of the blades with the jig guided tool.

ERRATUM

For Class 51—206 see:  
Patent No. 3,691,707

3,691,703

**ANCHOR DEVICE FOR TRAILERS**

Ray A. Barnes, 1057 Patricia, Cape Girardeau, Mo., assignor to Barnes Anchor Incorporated, Jackson, Mo.

Filed Oct. 23, 1970, Ser. No. 83,309  
Int. Cl. E04b 7/00

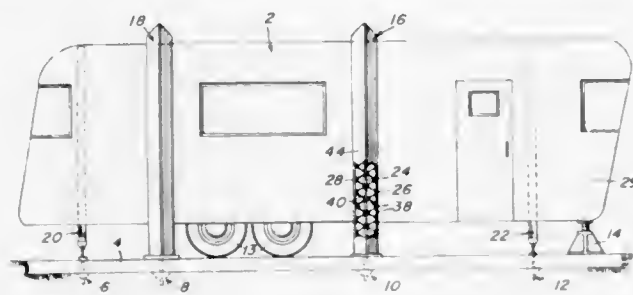
U.S. Cl. 52—23

5 Claims

An anchor device for securing trailers such as mobile homes, travel trailers, and the like or for securing other such vehicles to ground is disclosed. The anchor device consists of a multiple bar vertical support on each side of the trailer, abutting corresponding walls. The vertical support bars pass



over the roof of the trailer and are adjustably secured there, while the lower ends of the support bars are connected to suitable ground anchors. The multiple bar arrangement is generally triangular in cross-section so as to provide lateral



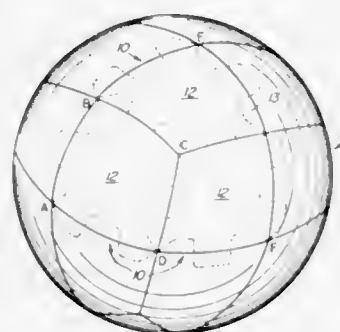
strength and support. In another embodiment of the anchor device, a reinforced belt is secured inside the exterior walls of the trailer during its manufacture, with buckle means being provided for securing the belt at its ends to appropriate ground anchors.

### 3,691,704 HOLLOW SPHERE AND STRUCTURAL ELEMENTS FOR CONSTRUCTING SAME

Phillip J. Novak, 3123 Lehman Ave., Salt Lake City, Utah  
Filed May 19, 1970, Ser. No. 38,744  
Int. Cl. E04b 1/32

U.S. Cl. 52—80

4 Claims



A plurality of structural elements, having dish bodies presenting convex outer and concave inner surfaces and corresponding in shape to that of a geometrical subsection of an even fractional portion of a spherical shell, are closely associated and preferably interfitted by means of broad and flat tongues and corresponding recesses, that are spaced below such convex outer surfaces and preferably lie substantially wholly between the convex and concave surfaces, to form a hollow sphere. Both the tongues and recesses have mating nubs for interlocking the individual elements together when interfitted to form a sphere. The structural elements can either be positively secured to each other or left free for easy disassembly. The convex outer surfaces of various of these structural elements may be colored or otherwise treated differently to provide a patterned exterior surface for the sphere, and the mated contiguous edges of such structural elements may be joined, adhesively or otherwise.

### 3,691,705 SELF-ERECTING COLLAPSIBLE AND FOLDABLE TUBULAR BEAM

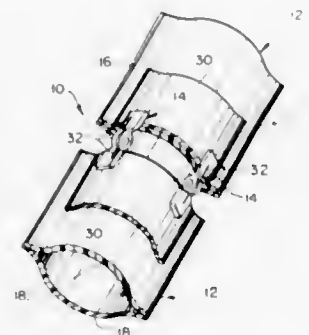
George R. Luckey, Playa Del Rey, Calif., assignor to TRW Inc., Redondo Beach, Calif.  
Filed May 24, 1971, Ser. No. 146,187  
Int. Cl. F04h 12/18

U.S. Cl. 52—108

3 Claims

A self-erecting collapsible and foldable articulated tubular beam having a pair of thin-walled resiliently flexible tubes joined end to end by spring loaded hinges in a manner such that the beam may be flattened and then folded to locate the

flattened tubes in side by side relation, and the beam, when released, springs back to its normal expanded configuration

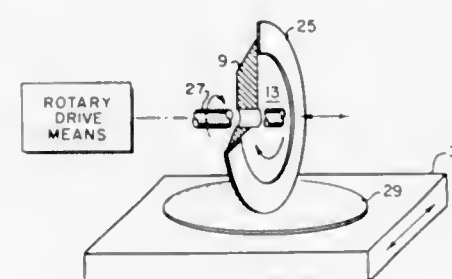


under the action of elastic strain energy and hinge spring energy stored in the flattened and folded beam.

### 3,691,706 Patent Not Issued For This Number

3,691,707  
SEMICONDUCTOR MATERIAL CUTTING APPARATUS  
AND METHOD OF MAKING THE SAME  
Henry R. Von Arx, Palo Alto, and Karl J. Zueger, San Rafael, both of Calif., assignors to Sola Basic Industries  
Filed Nov. 12, 1969, Ser. No. 876,000  
Int. Cl. B24d 5/00, 11/10, 17/00  
U.S. Cl. 51—206

4 Claims



Improved rotary cutting apparatus and method of making the same incorporates a thin deposited layer of diamond particles in nickel disposed about the periphery of a rotatably body. The deposited layer is exposed beyond the periphery of the body during the fabrication process to provide high-speed cutting apparatus for use on semiconductor materials.

### 3,691,708 WATERTIGHT SEAL CONNECTION FOR PREFABRICATED BUILDING PANEL SEAMS

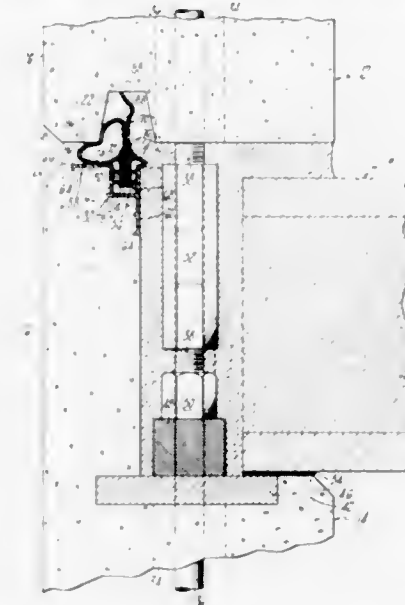
Sepp Firnkas, Boston, Mass., assignor to Omniform Incorporated, Hartford, Conn.  
Filed April 15, 1970, Ser. No. 28,692  
Int. Cl. E04c 3/26; E04b 1/66

U.S. Cl. 52—228

4 Claims

A fluidtight seal connection for a pair of precast concrete structural panels having opposed recesses on their confronting surfaces includes an elongated locking channel disposed within one of the confronting recesses and a pliable one-piece sealing strip supportably retained within the locking channel for cooperative sealing action with the confronting recess. The elongated sealing strip includes a triangular central body portion traversing the opening of the channel, a flexible and deformable tubular fluid barrier integral with the central body

portion for deformably sealing the joint between the panels and an anchoring member depending from the central body



portion of the strip and extending into the channel for lockable retention of the strip therein.

### 3,691,709 MODULAR PARTITION SYSTEM

Jan Nathan Ostborg, Michigan City, Ind., assignor to Steelcase Inc., Grand Rapids, Mich.  
Filed April 17, 1970, Ser. No. 29,619  
Int. Cl. E04b 2/78, 2/82

U.S. Cl. 52—239

6 Claims



A panel having a hook extending outwardly from the top thereof and a foot extending inwardly along its bottom. The hook is fitted over the top of a supporting post and is automatically centered thereon, which in turn centers the panel. The supporting post includes a slot near its bottom into which the base of a clip located at the bottom of the panel is fitted. The top edge of the panel includes a longitudinal slot which accommodates the downwardly depending tongue of a decorative top extrusion. This slot is also adapted to accommodate hangers for hanging cabinets or supporting other similar structures.

### 3,691,710 BUILDING PANELS

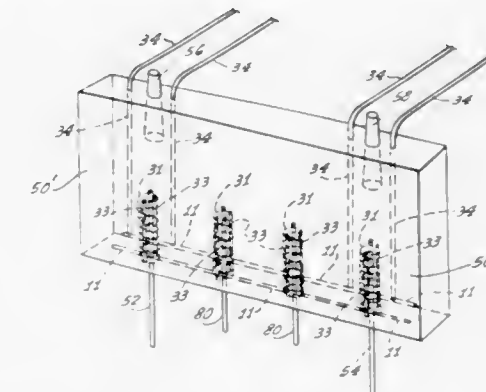
A. Carlton Gilbert, 1450 S. 24th St., Phoenix, Ariz., and John K. Parsons, 1528 E. Missouri, Phoenix, Ariz.  
Continuation-in-part of Ser. No. 748,243, July 29, 1968, abandoned. This application Dec. 22, 1969, Ser. No. 887,248  
Int. Cl. E04b 5/32, 1/41

U.S. Cl. 52—251

6 Claims

An improved building panel is provided composed, for example, of pre-cast concrete, and which includes a plurality of

internal reinforcing rods, including several protruding from its edges, and one or more metallic sleeves protruding from its upper edge. Each of the sleeves has a truncated conical shape



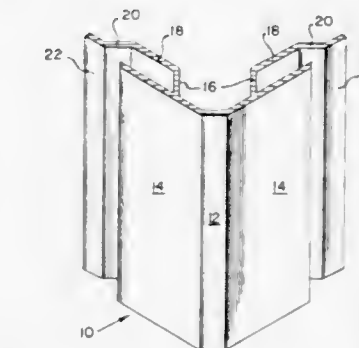
and is filled with a grouting compound to receive a corresponding reinforcing rod protruding down from the lower edge of an upper like panel so as to provide a firm joint between the panels.

### 3,691,711 EXTERNAL CORNER MEMBER

William E. Lowery, Orinda, Calif., assignor to Control Building Systems, Inc.  
Filed April 30, 1971, Ser. No. 139,056  
Int. Cl. E04b 2/60

U.S. Cl. 52—282

5 Claims



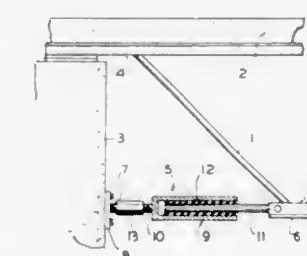
An external corner member of the type suitable for use in attaching to perpendicularly spaced prefabricated wall panels is provided with a central run at the opposite ends of which extend, in the order recited and each at a 45° to an adjacent run to which it connects, a long run, an inner run, a connecting run, a short run, and an abutment run. Fastening means join portions of the wall panels to the external corner member.

### 3,691,712 DAMPING SYSTEM

George W. Bowling, Olivette; Peter J. Conlisk, Creve Coeur, both of Mo., and Kenneth H. Lenzen, Lawrence, Kans., assignors to Monsanto Company, St. Louis, Mo.  
Filed May 13, 1969, Ser. No. 824,131  
Int. Cl. E04b 1/98

U.S. Cl. 52—393

19 Claims



A method of damping vibrations in building structures by linking an end of a beam to a fixed support by viscoelastic



links or damping elements spaced away from the neutral plane of the beam and comprising linking structural members with a viscoelastic damping material sandwiched between and bonded to the structural members, and the damping elements which can be employed as viscoelastic links in such a method.

3,691,713

## PANEL MOUNTING APPARATUS

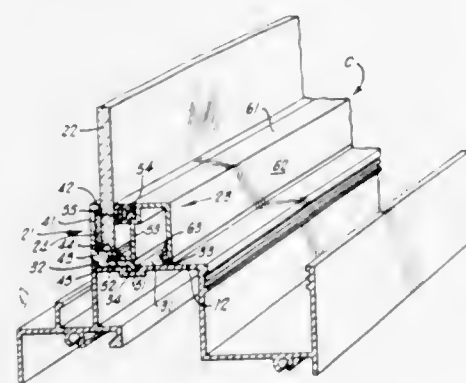
Thomas J. Dulaney, 4901 N. Cooper, Oklahoma City, Okla.

Filed July 2, 1970, Ser. No. 52,011

Int. Cl. E04b 1/62; E06b 1/04

U.S. Cl. 52—397

10 Claims



Apparatus for mounting panels, such as windowpanes and the like for either inner or outer glazing. One form of the apparatus may comprise a base rail having formed therein a relatively wide dovetail groove together with a second dovetail groove in approximately the center of the first such groove. An outer rail seats slidably on the base rail and has a projection which engages a portion of the inner dovetail groove and an additional projection which engages one element of the outer dovetail groove whereby the outer rail is secured thereto. A glazing rail is secured to the other portion of the first dovetail groove formed in the base rail and is likewise secured in a recess carried by the outer rail. A space is left between the glazing rail and outer rail in which panels, such as window glass and the like, may be inserted. The securing portions of the glazing rail and the outer rail are fashioned so that they may be reversed in their relationship to the base rail should conditions warrant.

3,691,714

## METHOD FOR CONSTRUCTING A BUILDING WALL

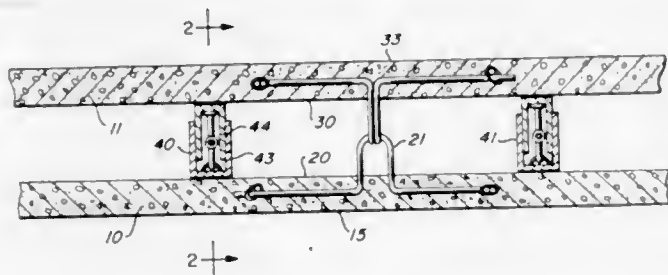
Benjamin D. Stepp, 315 W. 11th St., Casa Grande, Ariz.

Filed June 22, 1970, Ser. No. 48,318

Int. Cl. E04b 2/40

U.S. Cl. 52—743

3 Claims



A method for constructing a building wall utilizing a pair of spaced-apart reinforced concrete slabs connected by a hook and eye arrangement urged apart by dividers which also form temporary forms to permit concrete to be poured therebetween, thereby providing spaced columns between the slabs.

3,691,715

## VALVE BAG APPLICATOR MACHINE

Robert G. Kelly, Central Valley, N.Y.; Louis L. Legg, Wood-

cliff Lake, N.J., and Walter Ruf, Spring Valley, N.Y., as-

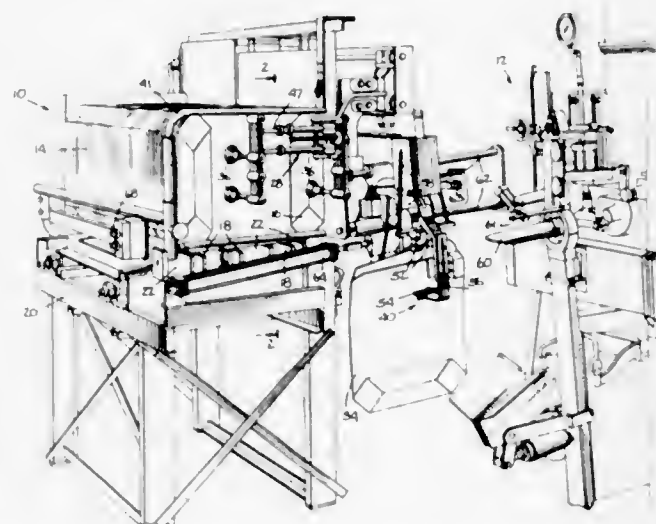
signors to St. Regis Paper Company, New York, N.Y.

Filed Sept. 28, 1970, Ser. No. 75,811

Int. Cl. B65b 43/30, 57/04

U.S. Cl. 53—3

15 Claims



This invention relates to a bag filling machine which strips bags one at a time from a magazine feeder, opens the bag valve and places the bag on the filling tube of a valve bag packaging unit. Proper placement of the bag on the filling tube automatically starts the filling phase, and after the bag is filled it is discharged from the packaging unit. The valve bag applicator then places another bag on the filling tube and the cycle is repeated.

3,691,716

## PRODUCT BAGGING APPARATUS

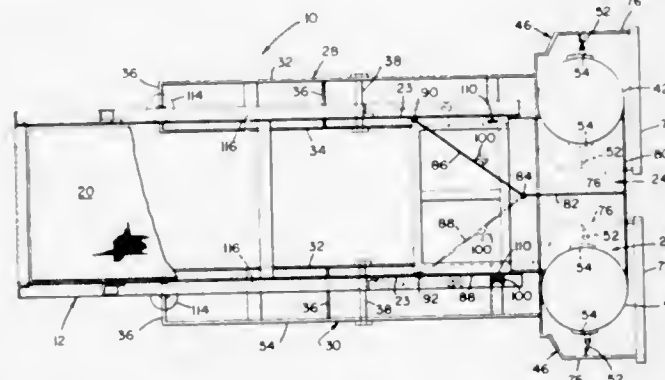
Daniel A. Fogg, Fremont, Mich., assignor to Gerber Products Company, Fremont, Mich.

Filed March 4, 1971, Ser. No. 121,088

Int. Cl. B65b 57/14, 1/32

U.S. Cl. 53—59 W

8 Claims



Apparatus and a method for filling a bag with a product, such as vegetables or the like. The product is moved into the bag when its upper end is held open. The movement of the product to the bag will be stopped automatically after the weight of the bag reaches a predetermined value. A pivotally mounted platform supports the bag as it is being filled.

3,691,717

## METHOD AND APPARATUS FOR FILLING CARTONS

Michael S. Pirro, Crystal Lake, Ill., assignor to Swift & Company, Chicago, Ill.

Filed Dec. 1, 1970, Ser. No. 94,011

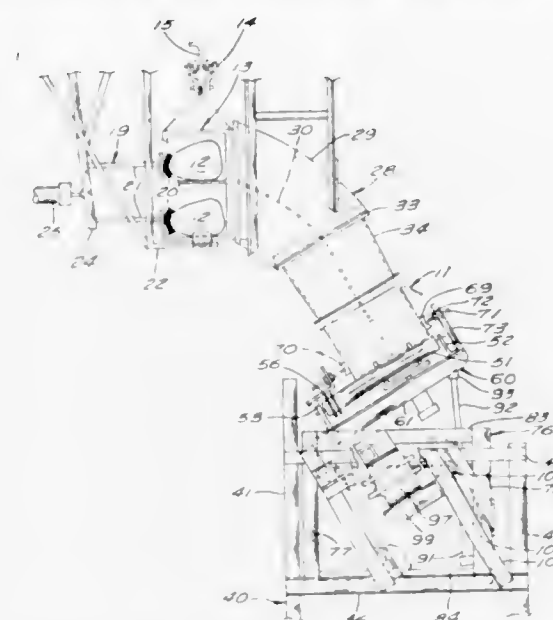
Int. Cl. B65b 5/08

U.S. Cl. 53—35

13 Claims

Cartons are positioned in a tilted attitude to receive a group

of items which are slid simultaneously, as a group, along arcu-



ate courses into the carton. The filled carton is then moved to a horizontal attitude and removed.

3,691,718

## POUCH FORMING APPARATUS AND METHOD

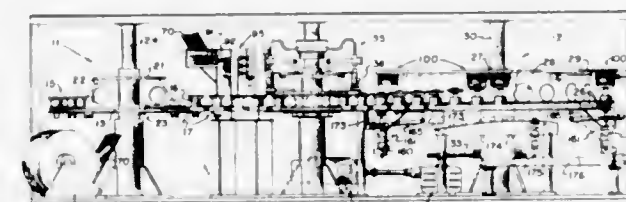
George M. Woodruff, Farmington, Conn.; Donald Schoonmaker, Boonton, N.J.; David Daniels, Jacksonville, Fla., and Burton J. Waxler, Lima, Ohio, assignors to General Foods Corporation, White Plains, N.Y.

Filed Sept. 28, 1970, Ser. No. 76,148

Int. Cl. B65b 1/102

U.S. Cl. 53—29

19 Claims



This apparatus operates to form from a blank of wrapping material a circular pouch for containing an annular article. The opposed plies of the wrapping material are bonded together by inner and outer sealed areas in the shape of concentric circles which define therebetween an annular pocket which completely confines the article. Coincident with the sealing of said material, the apparatus punctures the center area of the pouch and slices through said wrapping material in a continuous cut around the periphery of the outer seal to trim away the edge portions of said blank.

3,691,719

Patent Not Issued For This Number

3,691,720

## APPARATUS FOR FREQUENCY ADJUSTING AND ASSEMBLING MONOLITHIC CRYSTAL FILTERS

Albin R. Anderson, Lowell, and John D. Jennings, Andover, both of Mass., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 12, 1970, Ser. No. 80,094

Int. Cl. B65b 31/02

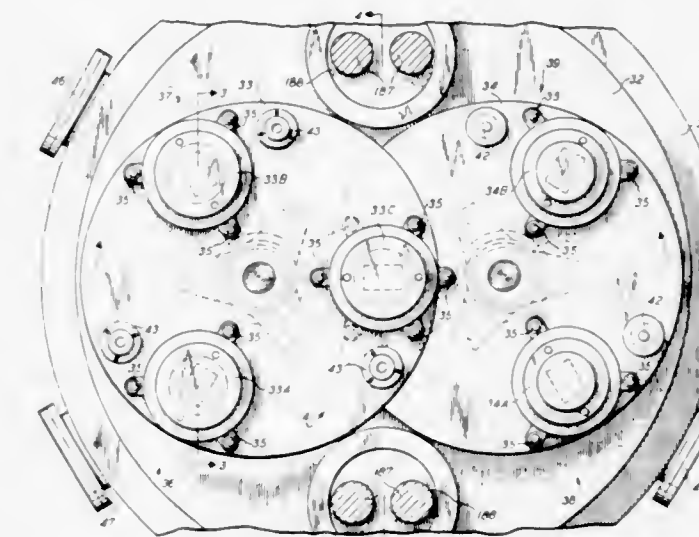
U.S. Cl. 53—91

15 Claims

Sealed piezoelectric crystal devices with desired frequency response characteristics are manufactured by treating and sealing each crystal in a vacuum environment within a com-

mon apparatus housing. Vapor deposition treatment is utilized, with treating material replenishing mechanisms being positioned within the vacuum environment in order to avoid disturbing the vacuum environment during replenishing operations. Sealing is performed by cold weld sealing a pair of covers about each treated crystal device. The arrangement is designed to minimize alternations in the crystal frequency response characteristics subsequent to the vapor deposition treatment.

The apparatus includes a pair of turntables which overlap



peripherally at a sealing station within the housing. A loading and unloading station, for introducing top covers and crystals into upper sealing dies and removing sealed crystal filter assemblies from the apparatus, and a vapor deposition crystal treating station are arrayed about one turntable. Manual and automatic loading stations for loading bottom covers into lower sealing dies are arrayed about the other turntable. Also included in the apparatus are various loading and unloading mechanisms and associated air-lock arrangements at the different stations.

3,691,721

## FOLDING MECHANISM FOR MULTIPLE SECTION STACKED NEWSPAPERS

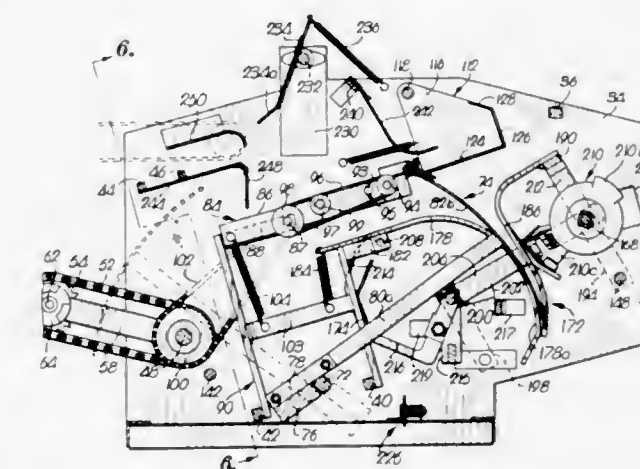
Warren W. Hannon, and Charles N. Hannon, both of Olathe, Kans., assignors to Warren W. Hannon, Olathe, Kans.

Filed April 30, 1971, Ser. No. 138,948

Int. Cl. B65b 63/04

U.S. Cl. 53—120

20 Claims



Mechanism for folding a number of stacked newspaper sections in half and operable to wrap a protective sheet about the stacked sections during folding thereof if desired. The newspaper sections, along with the optional protective sheet thereunder, are delivered to a pivotally mounted support as a tucker blade is moved along a return path below the leading edges of the newspaper sections. A deflector bends the forward end of the protective sheet back over the newspaper sec-



tions. The tucker blade is then shifted along its folding path and initially picks up the trailing end of the protective sheet and folds it back over the newspaper section. Support structure for the tucker blade engages the trailing edges of the newspaper sections and moves the latter forwardly into a position with the leading edges thereof aligned and supported by a swingable carrier. The tucker blade moves downwardly between the support and the carrier as the latter swing relatively away from each other to fold the newspaper sections in half therebetween while holding the overlapped ends of the protective sheet and as the carrier swings out of the way as necessary to accommodate the folded sections. Spaced crusher assemblies receive the folded newspaper sections and firmly hold the latter in transversely curved disposition while string is tied around the bundle.

3,691,722

Patent Not Issued For This Number

### 3,691,723 SAMPLE CARTRIDGE FILLING AND CLOSING APPARATUS

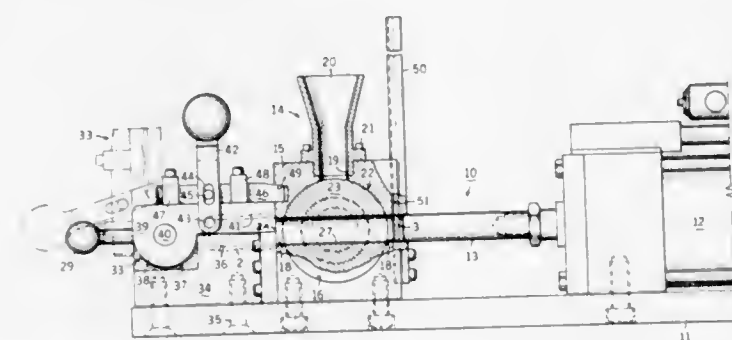
Charles K. Kummer, St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Filed Nov. 20, 1970, Ser. No. 91,290

Int. Cl. B65b 1/04

U.S. Cl. 53—271

3 Claims



A sample cartridge is provided with interior lip and is adapted to receive a predetermined quantity of sample material and closure means therein. The lip being effective to grippingly engage the closure means so as to establish a fluid pressure seal therewith and prevent expansion or elastic return of the sample material contained in the cartridge. Additionally, a machine is disclosed for metering the sample material and closure means to the cartridge so as to obtain uniform density or packing of the material in the cartridge. A rotatable valve is provided for receiving the sample material and thereafter is movable to a position in alignment with a packing ram which moves the sample material and closure means to a position effecting the packing of the material in the cartridge and securing the closure means in grippingly engagement with the lip of the cartridge.

3,691,724

### CONTINUOUS MOTION PACKAGING MACHINE FOR CARTONS WITH SEALING TAPES

Robert F. Lense, and Richard C. Zimmer, both of Rockford, Ill., assignors to Riegel Paper Corporation, New York, N.Y.

Filed Sept. 22, 1970, Ser. No. 74,292

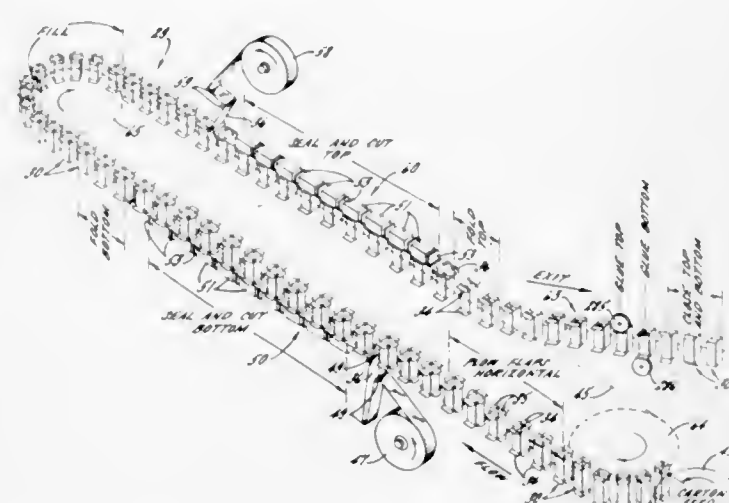
Int. Cl. B65b 1/00

U.S. Cl. 53—284

14 Claims

A machine for filling upright cartons of generally rectangular cross-section with product after first applying sealing tapes to the lower ends of the cartons and before applying sealing tapes to the upper ends of the cartons. The machine incorporates several new and improved mechanisms for operating

on the cartons and is particularly characterized by the novel mounting of certain ones of the mechanisms to enable the



machine to be changed over comparatively quickly and easily from running cartons of one size to running cartons of a different size.

3,691,725

### PNEUMATIC MACHINE FOR THE LEAK-TIGHT CLOSURE OF FLASKS

Jean Cassimatis, Chemin des Plantiers, 04 Manosque, and Robert Vie, 49 ter, avenue St. Jerome, 13 Aix en Provence, both of France

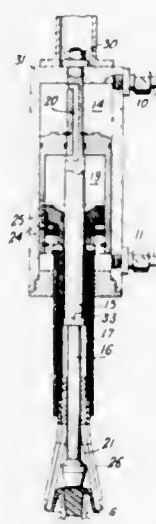
Filed April 19, 1971, Ser. No. 135,020

Claims priority, application France, April 24, 1970, 7015148

Int. Cl. B65b 7/28; B67b 1/04, 3/14

U.S. Cl. 53—328

2 Claims



A skirted stopper is inserted into the neck of a flask within a shielded enclosure and the skirt is folded-back outside the neck to form a leak-tight seal by means of a machine comprising a flask receptacle surmounted by a hollow casing which contains a number of pistons in interfitting relation. Admission of compressed air into the casing by remote control means results in displacement of a main piston, a central plunger and a hammer rod which inserts the stopper; a separator piston provided with flexible extension strips projecting from the casing and surrounding the hammer rod is then displaced downwards to initiate reversal of the skirt; a releasing piston having flexible extension strips which surround the strips of the separator piston is then displaced downwards to complete reversal of the skirt which is applied against the neck, whereupon the pistons are returned upwards automatically and simultaneously by remote control of the compressed-air supply.

3,691,726

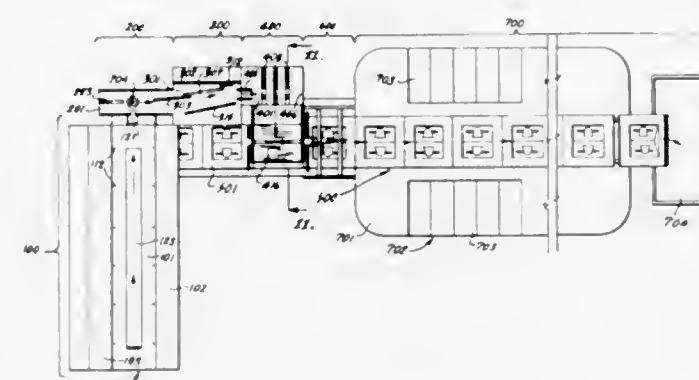
### METHOD AND APPARATUS FOR OPENING ENVELOPES Frederick N. Stephens, Paola; Glenford Rowlett, Prairie Village, both of Kans., and James D. Beard, Independence, Mo., assignors to Stephens Industries, Inc., Kansas City, Mo.

Filed Nov. 5, 1970, Ser. No. 88,039

Int. Cl. B67b 7/16

U.S. Cl. 326

12 Claims



To continuously open envelopes of a preselected size, the process of jogging the contents to the bottom of the envelope, cutting off the top edge, slitting both side edges, and then holding the faces of the envelope open to expose the contents thereof for manual removal. Apparatus employing the principles of the process include a feeder station onto which envelopes are initially placed for jogging the contents and for advancing the envelopes toward a pick-up station. The latter station individually grips, with a vacuum arm, an envelope on the feeder station and delivers it to a top edge cutting station where cutting wheels remove a portion of the envelope along the top edge. Next to the cutting station is a drop chute station that delivers the envelope to a V-shaped tray of a conveyor which then moves the envelope to an end slitting station where both side edges of the envelope are split open by cam operated blades, after which the faces of the envelope are held open in the tray by vacuum members. The conveyor then moves the tray into a sorting area where operators remove the contents for sorting.

3,691,727

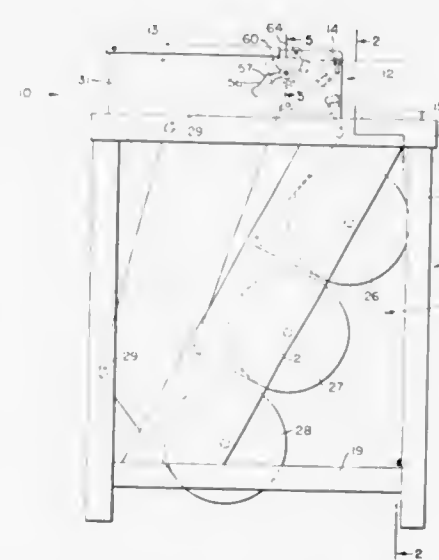
### MULTIPLE SHEET DISPENSING APPARATUS Fritz Doerscheln, Rochester, N.Y., assignor to Heat Sealing Equipment Manufacturing Company, Cleveland, Ohio

Filed Feb. 14, 1966, Ser. No. 527,265

Int. Cl. B65b 67/00

U.S. Cl. 53—390

17 Claims



Several rolls of different width plastic sheet are mounted on a frame and each sheet is led to a dispenser holder that in-

cludes a sheet-support bar, a check means for holding each sheet to its respective bar, and a pair of plates supporting the bars and check means for pivotal motion transversely of the sheets. The pivotal dispenser allows any desired sheet to be moved into position adjacent a guide roll for dispensing and wrapping. The device also includes a wrapping table, a hot wire cutter, a hot plate sealer, and a tag holder on each bar for receiving and holding the tag end of a cut-off sheet.

3,691,728

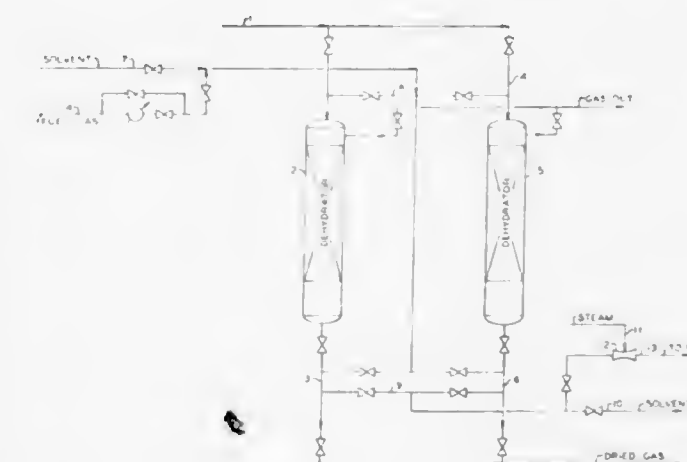
### REGENERATION PROCESS FOR SOLID DESICCANTS Lucien H. Vautrain, and Russell W. Lortz, both of Sweeney, Tex., assignors to Phillips Petroleum Company

Filed Oct. 29, 1969, Ser. No. 872,198

Int. Cl. B01d 53/02

U.S. Cl. 55—33

10 Claims



A solid desiccant, used to dehydrate a gas, e.g., an ethylene-containing gas resulting from the pyrolytic conversion of a saturated hydrocarbon such as ethane or propane, is washed of deposited or polymeric material by passing a solvent, for example, an aromatic solvent such as benzene, toluene, or xylene, into the same, draining the solvent from the desiccant and reducing the pressure on the desiccant to cause evaporation of solvent which is removed whereupon the desiccant is heated to regenerate the same. In a modification a gas, e.g., a fuel gas, is passed through the bed, wet with solvent, to agitate the solvent in the bed to aid in the removal of the deposit or polymer therefrom. The desiccant can be an alumina or molecular sieve or other known desiccant which can be used to dehydrate any known vapor or gas which tends to form deposits or polymers which can be removed with a solvent following a dehydrating cycle.

3,691,729

### PROCESS AND APPARATUS FOR THE RECOVERY OF AMMONIA AND CARBON DIOXIDE FROM THE TAIL GAS OF A UREA SYNTHESIS

Michael A. De Rooy; Johan D. Logemann, and Henricus A. A. Koenders, all of Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed May 26, 1971, Ser. No. 147,055

Claims priority, application Netherlands, May 30, 1970, 7007873

Int. Cl. B01d 53/00

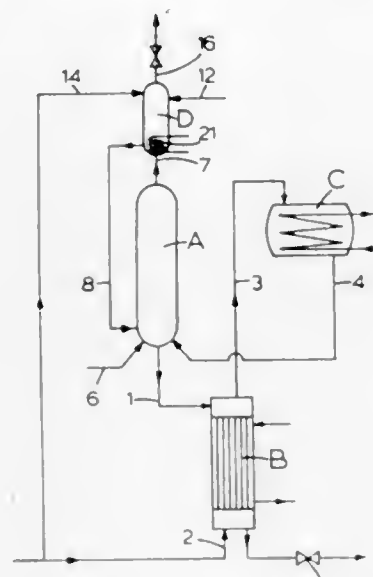
U.S. Cl. 55—70

12 Claims

A process and apparatus for the recovery of ammonia and carbon dioxide from urea synthesis tail gas is disclosed, wherein the tail gas is intensively contacted with an aqueous media in at least one absorption zone, as is known to the art, and thereafter the gas mixture leaving such absorption zone is immediately mixed with a gas which is inert to the constituents of the tail gas. The apparatus involves a gas bubble washer and an intensive gas-liquid contactor, with means for supplying



inert gas overlying such contactor. By the use of the present invention the possibility of forming an explosive mixture of the



gases leaving the absorption zone is eliminated, or at least minimized.

3,691,730

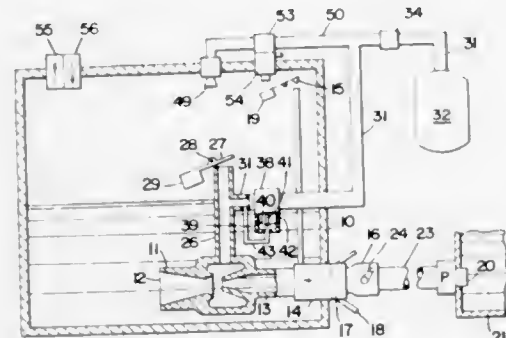
**FUEL TANK INERTING SYSTEM**

William G. Hickey, Corona Del Mar, and Richard L. Kenyon, Costa Mesa, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed May 18, 1971, Ser. No. 144,589

Int. Cl. B01d 19/00

U.S. Cl. 55-166



A fuel tank inerting system in which the tank ullage contains a non-combustible gaseous mixture of fuel vapor, oxygen and an inert gas, such mixture from the ullage being circulated through incoming liquid fuel when the tank is being filled for scrubbing dissolved oxygen from the fuel and diluting the same as it rises to the tank ullage, and there being a means for introducing a fresh supply of inert gas from a separate source for continuing the scrubbing and diluting of oxygen from the incoming fuel only when the oxygen content of the tank ullage nears a predetermined yet non-combustible percentage, whereby a minimum amount of fresh inert gas is utilized for maintaining the ullage gases incombustible during filling of the tank and during subsequent ascending flight of the aircraft.

3,691,731

**SMOKE CLEANING DEVICE**

Bernabe V. Garcia, P.O. Box 459, Pollock Pines, Calif.

Filed July 13, 1970, Ser. No. 54,326

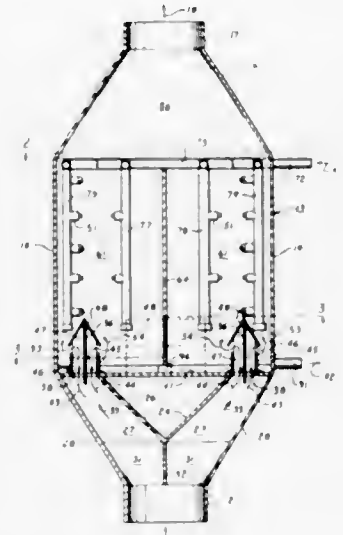
Int. Cl. B01d 47/00

U.S. Cl. 55-223

3 Claims

Incoming smoke, filled with pollutants, is introduced into an inlet stack on the bottom of a vertically elongated housing. As the smoke ascends, it is first divided into four paths defined by separate passageways each leading upwardly through riser conduits mounted on a horizontal floor forming a common basin for four separate scrubbing chambers. In rising through

each conduit the smoke is further divided by a central partition in the riser and is forced to undergo a double change in direction in emerging from beneath a peaked roof sheltering the riser from the intense water fog and spray in each scrubbing chamber. As the smoke rises through the scrubbing



chambers toward the common exhaust stack at the top of the housing, the dense water fog from spray nozzles separate the pollutants from the smoke and carries the pollutants downwardly into the water bath located in the basin. From the basin the pollutant-laden water is carried away by drain pipes and the scrubbed smoke is emitted through the exhaust stack.

3,691,732

**BAFFLE CONSTRUCTION FOR FLARE SEAL DRUMS**

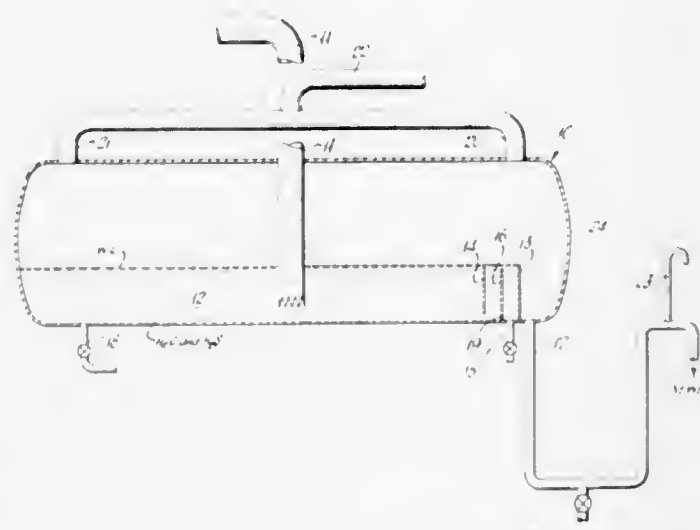
John F. Richards, Baton Rouge, La., and Walter L. Terrell, Jr., Baton Rouge, La., assignors to Esso Research and Engineering Company

Filed June 18, 1970, Ser. No. 47,527

Int. Cl. B01d 47/02

U.S. Cl. 55-227

6 Claims



A baffle construction and arrangement for a flare seal drum to prevent makeup or seal water supplied to the drum from continuously flushing water saturated with undesirable dissolved materials, such as hydrogen sulfide ( $H_2S$ ), to the sewer while preventing hydrocarbon buildup within the flare seal drum.

3,691,733

**AIR TREATMENT APPARATUS**

William F. Stockford, P.O. Box 1351, Salisbury, N.C.

Filed July 9, 1970, Ser. No. 53,405

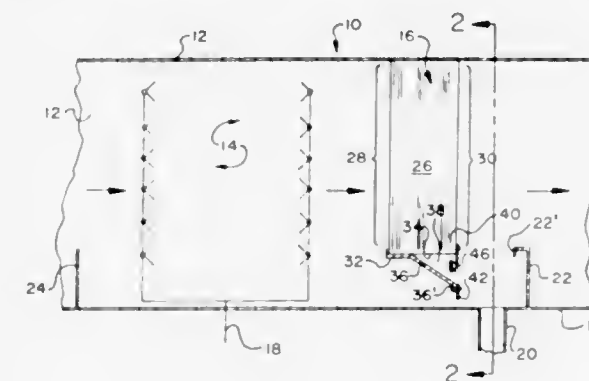
Int. Cl. B01d 47/00

U.S. Cl. 55-257

10 Claims

An elongate hollow casing of the type including a spray-type air washer unit and a water-removing eliminator unit, wherein

the eliminator unit includes a plurality of spaced louvres extending vertically across the longitudinal axis of the housing for separating water from the air passing therethrough and discharging the water downwardly from the lower ends of the louvres. A base plate is attached to the lower edge of the front portion of the eliminator unit forming a secondary air outlet in the bottom rear portion thereof, the base plate including a downwardly and rearwardly inclined portion extending to a



point beneath the surface of the water in the bottom of the casing. The secondary air outlet imparts a downward vector on the air passing through the eliminator unit tending to assist the discharge of water deposited thereon, and a baffle means extends downwardly from the lower rear edge of the eliminator unit and includes a trough along the lower edge thereof for collecting water discharged from the louvres and preventing reentrainment thereof in the air passing through said secondary air outlet.

3,691,734

Patent Not Issued For This Number

3,691,735

**MINI-MICRON PARTICLE SEPARATION SYSTEM**

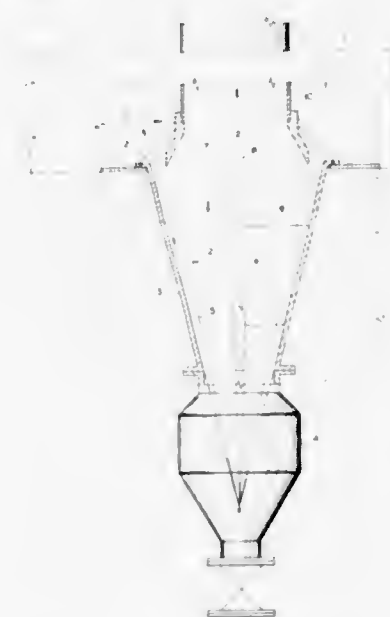
Vincent L. Knierim, 1420 Linville St., Kingsport, Tenn.

Filed Oct. 23, 1970, Ser. No. 83,590

Int. Cl. B01d 45/06

U.S. Cl. 55-391

1 Claim



A highly effective very small particle separation system comprising a single or multiple unit arrangements of elements for controlling the flow and relative velocities of a contaminated gas stream adjacent to a clean gas stream effecting a high degree of efficiency of separation of very small sized particulate matter from the contaminated gas stream.

3,691,736

**POCKET FILTER FOR AIR AND GAS PURIFICATION**

Gerhard Max Neumann, Berlin, Germany, assignor to Delbag-Luftfilter Gesellschaft mit beschränkter Haftung, 03, Berlin, Germany

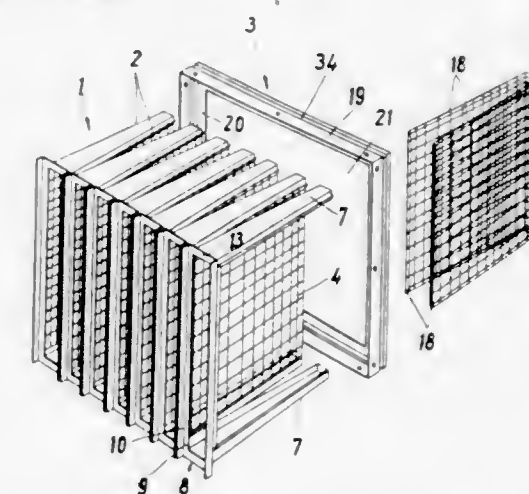
Filed Feb. 2, 1970, Ser. No. 12,941

Claims priority, application Germany, Feb. 26, 1969, G 69 08 374

Int. Cl. B01d 25/22

U.S. Cl. 55-484

13 Claims



A pocket filter of V-shaped cross-section has, to define the pocket opening, two end plates and two side members, each of the side members having outwardly bent outer edges as a connecting piece for assembly with adjacent pocket filters; V-shaped clamps fit within the pockets to hold a strip of filter material in place.

3,691,737

**TECHNIQUE FOR RECOVERING SEA MOSS AND THE LIKE**

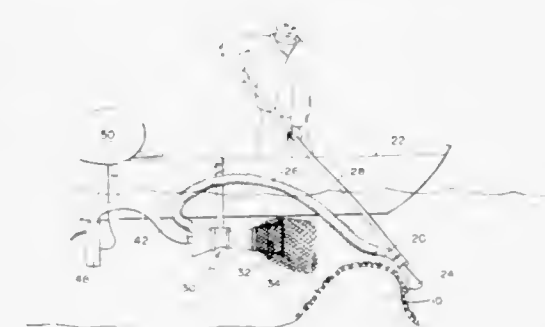
William S. Hodgson, 52 Fort Hill St., Hingham, Mass.

Filed Sept. 30, 1970, Ser. No. 76,688

Int. Cl. A01d 45/08

U.S. Cl. 56-9

23 Claims



A method and apparatus for harvesting marine vegetation such as sea moss which tends to grow on and about submerged rocks and the like. The device employed in practicing the invention includes a flexible hose having a specially constructed harvester head attached to one end. Water is pumped through the hose at a substantial velocity to develop a substantial suction at the submerged harvesting head. When the harvesting head is moved adjacent a sea moss plant, the plant is ingested into the head. The drag on the ingested plant which is developed by the water flow is insufficient to break the bushy part of the plant from the stem but does impart a firm, steady pull on the plant. The harvester head includes a specially formed inlet opening having a reversely bent flow path which is defined by a pair of spaced, parallel edges. The edges in the harvester head engage the stem of the ingested plant to cause the stem to wrap about the edges in a general S-shaped configuration. The wrapping of the stem about the edges in combination with the firm steady drag on the ingested bushy portion of the plant firmly grips the stem. Thus, when the head is



pulled, the stem breaks at its weakest point. The separated portion of the plant then flows through the hose to a collecting net or other appropriate collecting device.

3,691,738

Patent Not Issued For This Number

3,691,739

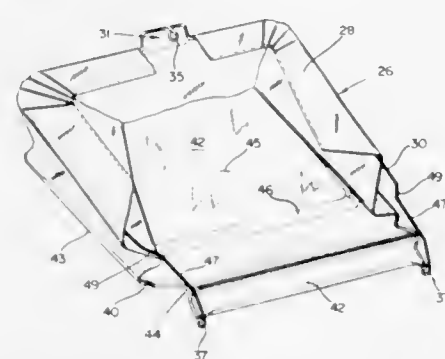
Patent Not Issued For This Number

3,691,740

**GRASS CATCHER FOR REEL TYPE MOWER**  
Edwin J. Weber, Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.  
Filed Sept. 17, 1970, Ser. No. 73,000  
Int. Cl. A01d 53/06

U.S. Cl. 56—198

8 Claims



A grass catcher means for a reel type lawn mower having a frame detachably secured at the upper end directly to the mower handle and the lower end supported upon the bolt means that also secure the rear wheels to the mower housing.

3,691,741

**MACHINE FOR LOADING, STACKING AND UNLOADING CROPS**

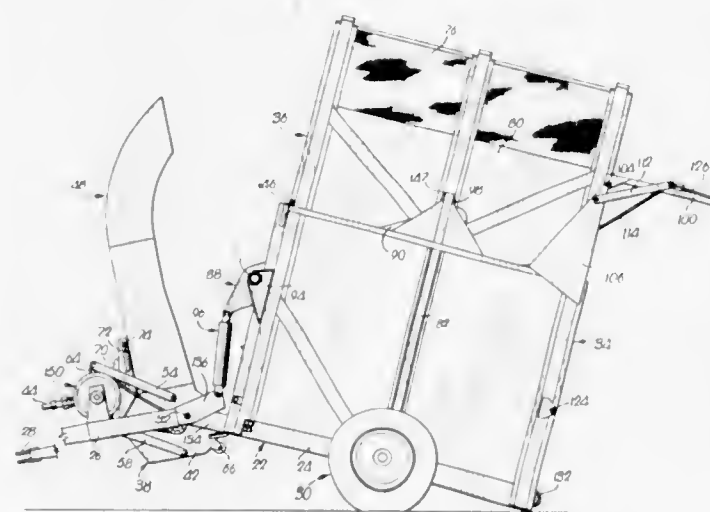
Allen A. White, Peabody; Harold Keith Garrison, Newton, and Dean P. Brooks, Hesston, all of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed May 3, 1971, Ser. No. 139,391

Int. Cl. A01d 89/00

U.S. Cl. 56—344

10 Claims



A harvesting vehicle picks up the crop from the field, feeds it into a container, presses the crop into a compact stack and unloads the stack at a desired point of discharge. The press is reciprocated vertically with the container through use of a U-shaped lift swingable on the container and having arms that

are operably coupled with the press. A normally locked endgate is controlled by the press such as to unlock the endgate and raise it to an open position for unloading in response to raising of the press. The container is tiltable for unloading purposes through use of an actuator common to the press such as to effect tilting after the endgate is opened and after the press is raised.

3,691,742

**HAY HARVESTING MACHINE**

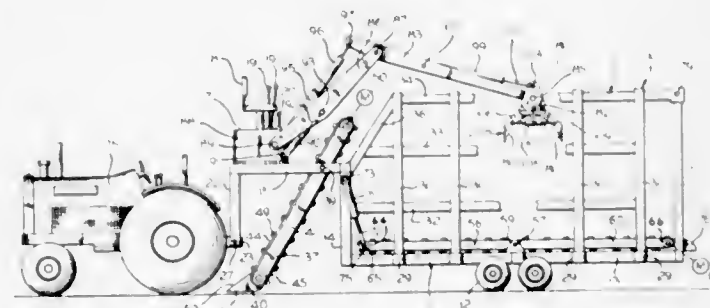
Don Brewster, 401 S. Main St., Sheridan, Wyo.

Filed June 16, 1971, Ser. No. 153,627

Int. Cl. A01d 87/02

U.S. Cl. 56—346

5 Claims



Hay harvester in the form of a trailer having a box-like body and a conveyor forming the bottom of the body and tiltable to unload a compacted stack of hay, or to pick up a stack of hay for transportation. An inclined elevating conveyor is mounted at the front end of the body to pick up hay from the ground and discharge the hay into the body over the front wall of the body, as the trailer is drawn along the ground, straddling a wind-row of hay. A power hay fork is mounted on an operator's platform at the front of the trailer on pivoted boom arms and lift arms, and is operated by fluid pressure to pick up the hay as discharged into the body and distribute the hay along the body in cooperation with the unloading conveyor and to compact the distributed hay into a stack.

3,691,743

**SCRAPING BLADE ATTACHMENT FOR A RAKE**

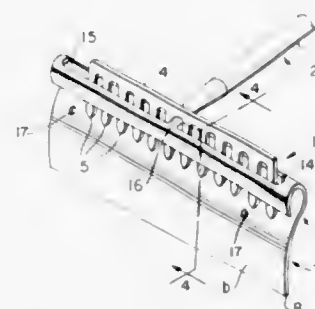
Espey T. Browning, 5700 Nicholson St., Riverdale, Md.

Filed March 5, 1971, Ser. No. 121,341

Int. Cl. A01d 7/10

U.S. Cl. 56—400.05

1 Claim



A scraping blade attachment for use on any conventional hand rake, regardless of the spacing of tines thereon, wherein said scraper blade has a head or top portion with slot or openings therein, said openings being such as to receive the tines of different rakes therethrough and each of said rakes having a different number and spacing of tines thereon to hold the scraper blade attachment to the rake in a secure manner.

3,691,744

**YARN PIECING DEVICE**

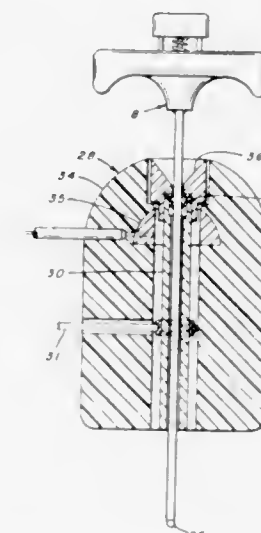
Joseph W. Dubois, North Smithfield, R.I., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Nov. 20, 1970, Ser. No. 91,344

Int. Cl. D01h 15/00, 17/00

U.S. Cl. 57—34 R

4 Claims



An apparatus for inserting a yarn tail into operating position within the spinning head of a device for performing open end yarn spinning which comprises a first elongated hollow member of a length greater than the length of the spinning head so that it can be extended completely therethrough, a second elongated member at least as long as the first member, the second member being located within the first member and being reciprocable with respect thereto, operator means attached to said first and second members at one end thereof to effect longitudinal movement of the second member with respect to the first member, and means on the end of said second elongated member opposite the operator means cooperable with said first elongated member to hold the yarn tail therebetween when inserting yarn into a spinning head.

3,691,745

Patent Not Issued For This Number

3,691,746

Patent Not Issued For This Number

3,691,747

**MANUFACTURE OF SPINDLES FOR RING-SPINNING AND TWISTING FRAMES**

Eduardo Salles Vilanova, Guímera 67, Manresa (Barcelona), Spain

Filed Dec. 22, 1970, Ser. No. 100,567

Claims priority, application Spain, Dec. 22, 1969, 374810

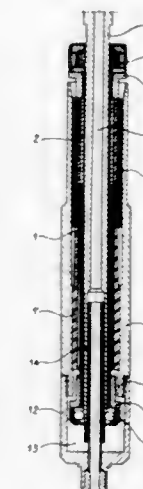
Int. Cl. D01h 7/12

U.S. Cl. 57—135

6 Claims

A spindle assembly for yarn spinning apparatus provides a resilient rotative idle connection between a spindle shaft and spindle box of the spindle assembly whereby self centering of the axis of rotation of the spindle shaft can occur without transmission of undue vibration to the spindle box during operation. A resilient plastic tube is connected to the spindle box and to a rigid tube which is, in turn, affixed to a pair of bearings mounting the spindle shaft at its ends. First shock absorber means are provided between the resilient tube and the

spindle box and in an alternative embodiment of the invention second shock absorber means are provided between the spin-



dle box and the rigid tube at a point longitudinally spaced from said first shock absorber means.

3,691,748

**TEXTURED POLYETHYLENE TEREPHTHALATE YARNS**

Michel Buzano, Villeurbanne (Rhône), France, assignor to Societe Rhodiaceta, Paris, France

Division of Ser. No. 799,795, Feb. 17, 1969. This application

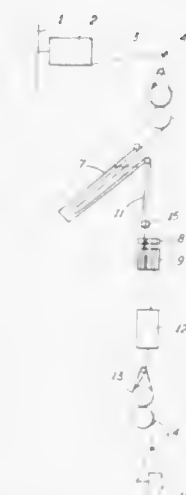
Sept. 23, 1970, Ser. No. 74,913

Claims priority, application France, Feb. 19, 1968, 140,386

Int. Cl. D02g 3/00

U.S. Cl. 57—140 J

2 Claims



Textile articles comprise yarns of a synthetic thermoplastic material, especially polyethylene terephthalate, in which the individual filaments comprise alternating zones of increasing and decreasing thickness, the thinner zones having the higher crystallinity index and vice versa; the filaments have a non-spiral three-dimensional crimp, and both they, and the yarn comprising them, have a high apparent volume. The yarn is made by only partially stretching the initial yarn in contact with a crack promoting agent such as an aqueous alcohol, and subsequently giving the yarn, before or after it is made up, a heat treatment while it is in a relaxed state.

3,691,749

**MULTILOBAL MULTIFILAMENT YARN**

Jerry Bruce McKay, Kinston, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 18, 1970, Ser. No. 99,447

Int. Cl. D02g 3/34

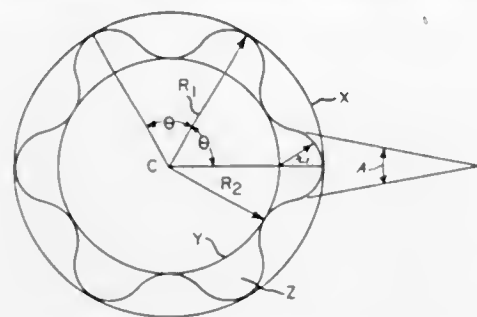
U.S. Cl. 57—140 J

3 Claims

Multifilament PACM polyamide yarn, of multilobal filaments having specified cross-sectional characteristics, is false-twist textured into yarn which provides fabrics having im-



proved visual aesthetics. Freedom from objectionable glitter is exemplified for yarns of hexalobal filaments composed of



PACM-12 polyamide derived from bis(4-aminocyclohexyl)-methane and dodecanedioic acid.

### 3,691,750 TEXTURED CORE YARNS

Graham Thomas Waters, Plot 191, Highfield Close, Caerloon in Monmouthshire, South Wales, United Kingdom assignor to Imperial Chemical Industries Limited, London, England.

Continuation-in-part of Ser. No. 805,598, March 10, 1969, Pat. No. 3,557,873. This application March 18, 1971, Ser. No. 125,683

Int. Cl. D02g 3/38, 3/04, 3/28

U.S. Cl. 57-144

11 Claims



False twist textured yarns are described which are composed of a plurality of continuous filaments forming a false twist textured core portion and a plurality of wrapper false twist textured continuous filaments, said wrapper filaments being of a higher bulk than the core filaments, said filaments periodically wrapping around the core filaments and forming reversing helices at intervals along the yarn.

### 3,691,751

#### INTERLOCKED TYPE WIRE STRAND

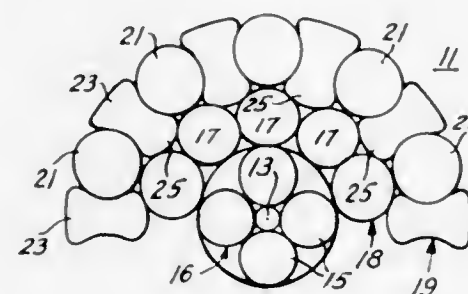
Carl Duane Hiller, Williamsport, and Harold W. Karge, Montoursville, both of Pa., assignors to Bethlehem Steel Corporation

Filed April 23, 1971, Ser. No. 136,687

Int. Cl. D07b 1/06, 1/08

U.S. Cl. 57-145

12 Claims



A lock type wire strand for aerial tramways and the like has the bottom portions of the interlocked outer wires prolated, or bulged. The prolated portions of the interlocked wires extend into the interstices between wires in the next adjacent layer of wires under the interlocked layer of wires and contacts adjacent wires in said next adjacent layer to provide additional resistance against compression forces and relieve secondary bending strains in the interlocked wires of the strand.

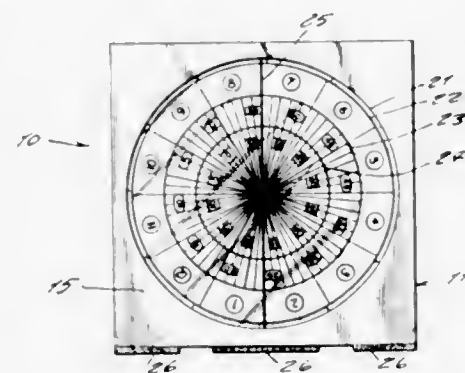
### 3,691,752 ALARM CLOCK

Lawrence E. Whittier, 201 W. High St., Somersworth, N.H.  
Filed Sept. 9, 1970, Ser. No. 70,635

Int. Cl. G04b 23/00

U.S. Cl. 58-16

1 Claim



A novel alarm clock incorporating a standard clock motor and gearing unit, the alarm clock utilizing four dials in substitution of the conventional four hands, each of the four dials being made of plexiglas, each of the dials being of a different size and of circular shape which are concentrically positioned so that indicia on all four dials can be read at the same time, the largest dial representing an alarm control, a next largest dial representing the time in hours, the next smaller dial representing the time in minutes, and the smallest dial representing time in seconds.

### 3,691,753

#### ELECTRIC OR ELECTRONIC TIMEPIECE

Masahiro Kurita, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

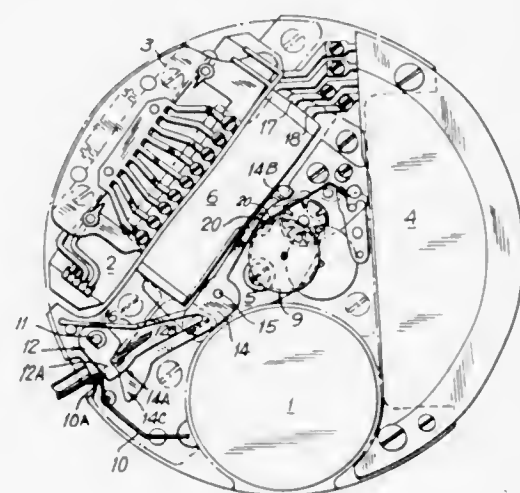
Filed Sept. 8, 1970, Ser. No. 70,141

Claims priority, application Japan, Sept. 25, 1969, 44/90974

Int. Cl. G04c 3/00; G04b 27/00

U.S. Cl. 58-23 R

6 Claims



An electric or electronic timepiece having a step motor energized by an electric signal and a second wheel moving intermittently and driven by said rotor. A member is mounted on the rotor, or on an intermediate wheel coupling said rotor and second wheel, for positioning said second wheel at predetermined positions when said electric signal is cut off.

### 3,691,754

#### VIBRATORY DRIVE SYSTEMS

Max Hetzel, Bienne, Switzerland, assignor to Omega Louis Brandt & Frere S.A., Berne, Switzerland

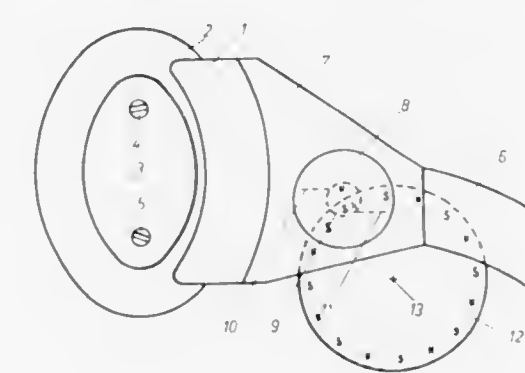
Filed Nov. 12, 1970, Ser. No. 88,715

Claims priority, application Switzerland, Nov. 13, 1969, 16873/69

Int. Cl. G04c 3/02; F16h 27/02; H02k 33/00

U.S. Cl. 58-23 D

15 Claims



A mechanism for transforming a vibratory movement into a rotating movement, particularly for use in timepieces, wherein stepping pawls connected to a vibrating member act onto a ratchet wheel loosely mounted on the vibrating member for relative oscillation in the plane of vibration, the ratchet wheel being advanced by relative displacement between said vibrating member and stepping pawls respectively and said ratchet wheel due to the inertia of the latter. The rotating movement of the oscillating ratchet wheel is transmitted to a gear train by a magnetic coupling or transmission.

### 3,691,755

#### CLOCK WITH DIGITAL DISPLAY

Pierre Girard, Bienne, Switzerland, assignor to Manufacture des Montres Rolex S.A., Canton of Bern, Switzerland

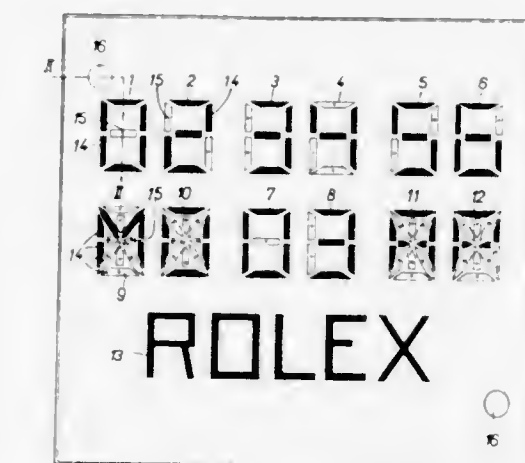
Filed Oct. 16, 1970, Ser. No. 81,288

Claims priority, application Switzerland, Oct. 21, 1969, 15727/69

Int. Cl. G04c 3/00; G04b 37/00, 19/30

U.S. Cl. 58-50 R

5 Claims



A digital display timepiece having a panel of display elements which change their optical properties when electrically excited, an electronic circuit, the outputs of which are connected to the display elements, and a time base controlling the logic circuit, such that excitation of various sub-assemblies of said display elements controlled by the logic circuit displays the desired time, where the logic circuit and the display panel are so connected as to constitute a monolithic unit having a minimum number of input connections linking the output of the time base to the logic circuit.

### 3,691,756

#### DATE AND DAY CORRECTING DEVICE

Tsunayoshi Ono, Chino-shi, Nagano, Japan, assignor to Kabushiki Kaisha Surva Seikosha, Tokyo, Japan

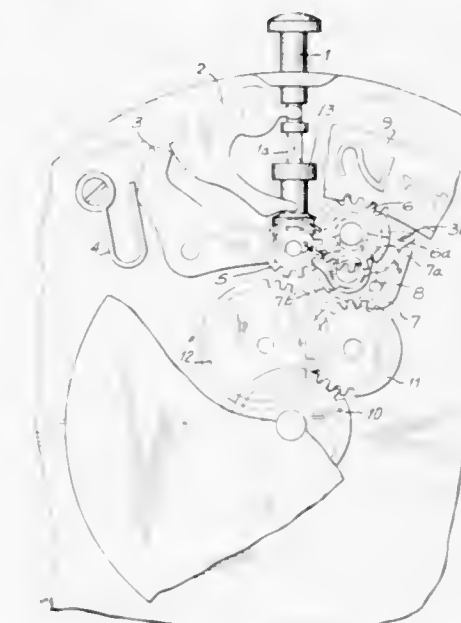
Filed Dec. 4, 1970, Ser. No. 95,168

Claims priority, application Japan, Dec. 8, 1969, 44/97781

Int. Cl. G04b 19/24

U.S. Cl. 58-58

1 Claim



A calendar timepiece having a date and/or day correcting device operated from outside the watch by displacing an operating member for effecting day and date correction at a first position of said operating member through a calendar correcting member, and for positioning said calendar correcting member at a neutral position when said operating member is at a second position.

### 3,691,757

#### HAND HELD TIMER-LAP COUNTER TOY

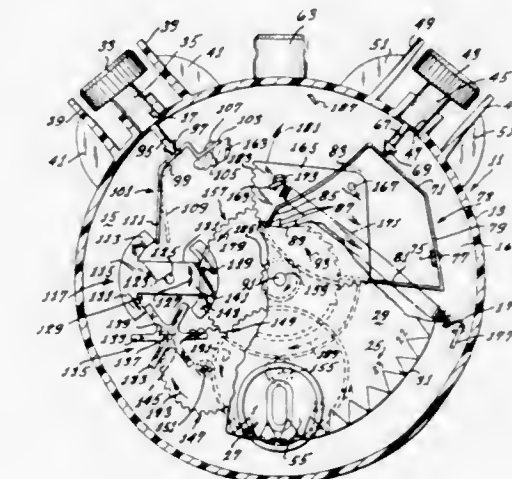
Dennis H. Merino, Harbor City, and Floyd E. Schlau, Palos Verdes Estates, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 31, 1972, Ser. No. 221,986

Int. Cl. G04f 7/04

U.S. Cl. 58-76

9 Claims



A unitary, integrally arranged toy allowing simultaneous but independent interval timing and event counting through manipulation of appropriate buttons by fingers of one hand, the device including a button actuated elapsed time mechanism with a sweep seconds hand moving over a time indicating dial only as long as the button is depressed, and including a button actuated event counting mechanism with an event indicating wheel or disc visible through a window in the time indicating dial whereby a successively increasing numeral is seen with each separate button depression.



3,691,758

**WRISTWATCH COMPRISING A MONOCOQUE CASE**  
 Jean-Claude Schneider, La Chaux-de-Fonds, Switzerland, assignor to Fabrique d'Horlogerie Chs. Tissot et fils S.A., Le Locle (Canton of Neuchâtel), Switzerland

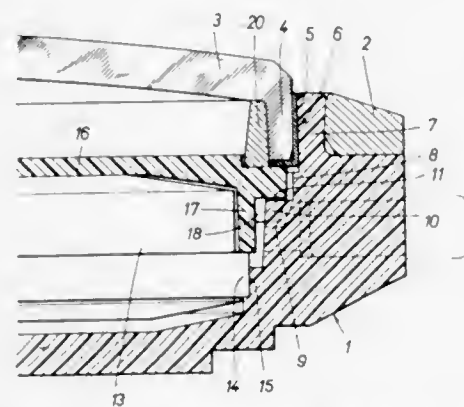
Filed Oct. 8, 1971, Ser. No. 187,615

Claims priority, application Switzerland, Oct. 15, 1970, 15296/70

Int. Cl. G04b 37/00, 19/06

U.S. Cl. 58—88 M

6 Claims



A timepiece, especially a wristwatch, having a one-piece (monocoque) case and a novel means for accurately centering the dial relative to the central axis of the case. The centering means comprises three separately located abutment means on the dial and on the case, two of which are diametrically opposed to each other while the third is on a radius perpendicular to the diameter of the first two.

3,691,759

**AUTOMATIC CONTROL SYSTEM FOR A TURBOJET ENGINE EMPLOYED IN A STATIONARY ENVIRONMENT**

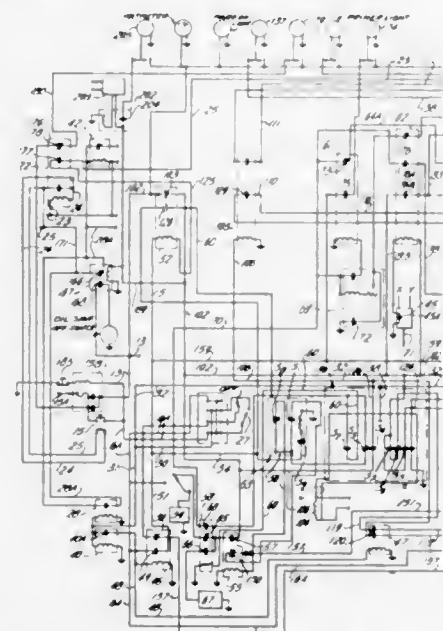
Arthur M. Scheerer, Wayne, N.J., assignor to Curtiss-Wright Corporation

Filed Jan. 14, 1971, Ser. No. 106,496

Int. Cl. F02g 3/00; F02c 7/26, 9/04

U.S. Cl. 60—39.09

6 Claims



A control system for a turbojet engine which provides a single on-off switch to initiate start-up and shutdown phases of operation of the engine. The control system has a plurality of sensing elements and time delay electrical switches and valves interconnected to automatically control operation of auxiliary components of the engine, such as pumps, motors and fans, and the engine in proper sequence as well as monitor their operations during start-up, sustained and shutdown phases of operation of the engine. The system also has various failsafe circuits which include sensing elements which are set or adjusted to automatically effect shutdown of the engine upon

malfunction during any of the phases of operation of the engine.

3,691,760

**METHOD AND MEANS FOR IMPROVING THE OPERATION OF A STEAM GAS PLANT INCLUDING A GAS TURBINE AND A STEAM TURBINE WITH A STEAM GENERATOR AT THE DOWNSTREAM END**

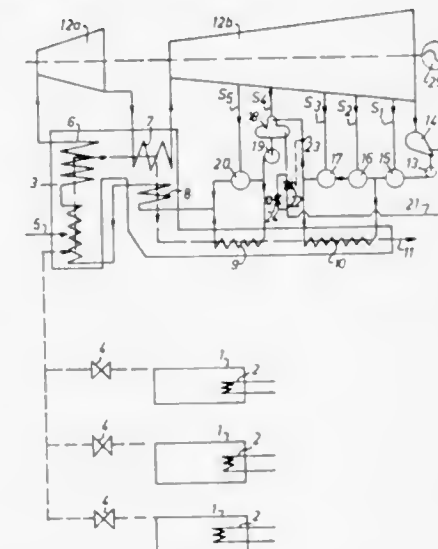
Jean Vidal, Ville d'Avray; Jean Parisot, Paris, and Jacques Lemoine, Paris, all of France, assignors to Stein Industrie, Paris, France

Filed May 13, 1970, Ser. No. 36,815

Int. Cl. F02c 7/02; F01k 13/00

U.S. Cl. 60—39.18 B

3 Claims



In a steam gas plant comprising a steam generator fed by the exhaust gases of a gas turbine and feeding a steam turbine, the condensed steam at the output of the steam turbine is returned to the input of the steam generator through water heaters and a deaerator. To ensure constancy of the temperature of the water in the deaerator, which should be lower than the saturation temperature of the steam heating said the deaerator even under reduced load conditions, a fraction of the water reaching or about to reach said the deaerator is returned to the condenser. A gate controlled by the temperature at the input of the deaerator is adapted to ensure constancy of the temperature of the water into the deaerator.

3,691,761

**APPARATUS FOR REGULATION OF AIRFLOW TO FLAME TUBES FOR GAS TURBINE ENGINES**

Squire Ronald Jackson, 250 Manchester Road; Kenneth Greenwood, 585 Brumshaw Road, both of Burnley; Alban Heaton, 16 Dawnham Ave., Gt. Harwood near Blackburn, and Alwin Harrison, 7 Standen Hall Drive Lanehead, Burnley, all of England

Division of Ser. No. 783,009, Dec. 11, 1968, Pat. No.

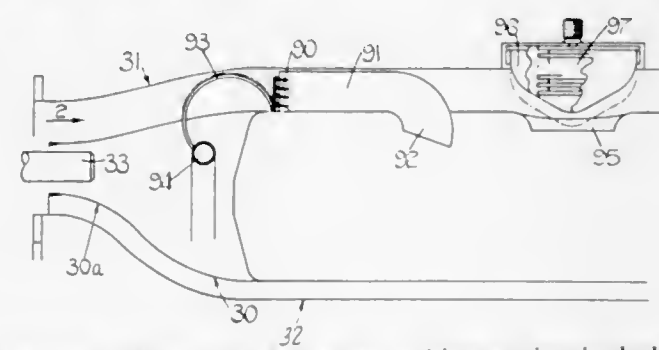
3,577,878. This application Oct. 29, 1970, Ser. No. 85,181

Claims priority, application Great Britain, Nov. 10, 1967, 51,293/67

Int. Cl. F02c 9/14

U.S. Cl. 60—39.23

6 Claims



An annular flame tube for a gas turbine engine includes a primary combustion air inlet, a plurality of secondary com-

bustion air inlets and variable air flow restricting means associated with at least some of the inlets, the restricting means being expandable in response to temperature or pressure to vary the ratio of primary combustion air to secondary combustion air.

3,691,762

**CARBURETED REACTOR COMBUSTION SYSTEM FOR GAS TURBINE ENGINE**

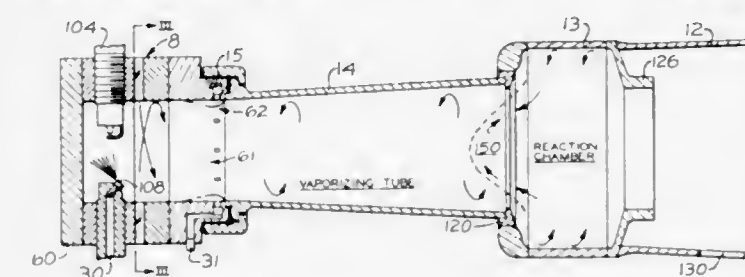
John G. Ryberg, and Ernest W. Landen, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 4, 1970, Ser. No. 95,050

Int. Cl. F02c 7/10

U.S. Cl. 60—39.51 R

10 Claims



A carbureted reactor combustion system for use in a gas turbine power plant. Said combustion system has an tangential air swirler means and a vaporizing tube wherein liquid fuel is entrained by swirling air and vaporized by heat from recirculating combustion gases and highly compressed intake air. The vaporizing tube is located separately from and upstream of the reaction chamber to afford protection from the destructive heat encountered therein. The system provides a homogeneous and stoichiometric mixture of air and fuel which burns completely and produces a substantially pollutant-free exhaust. The entrained liquid fuel is supplied to said vaporizing tube at sump pressure or some other very low pressure and is not injected. Ingress of said fuel to said vaporizing tube is controlled solely by and in proportion to the swirling air flow. A controlled and constant air-fuel ratio is obtained without recourse to a separate control system for the fuel supply. The gas turbine power plant is capable of selective operation on a simple cycle or a mixed, simple and regenerative cycle.

3,691,763

Patent Not Issued For This Number

3,691,764

**FUEL SUPPLY SYSTEMS**

Peter G. Ware, Rugby, England, assignor to The Dunlop Company Ltd., London, England

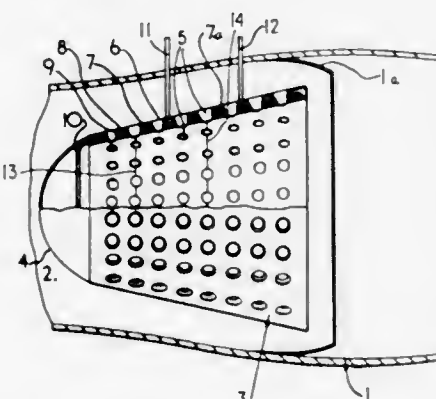
Filed July 8, 1970, Ser. No. 53,212

Claims priority, application Great Britain, July 11, 1969, 34941/69

Int. Cl. F02c 3/24

U.S. Cl. 60—39.74 R

7 Claims



A fuel supply nozzle for a gas turbine engine comprising a porous element pierced by a number of passages through

which air may pass into the combustion chamber, drawing in fuel which is fed into the porous element.

3,691,765

**FUEL INJECTOR FOR A GAS TURBINE ENGINE**

Denis Richard Carlisle, Risley, England, assignor to Rolls Royce Limited, Derby, England

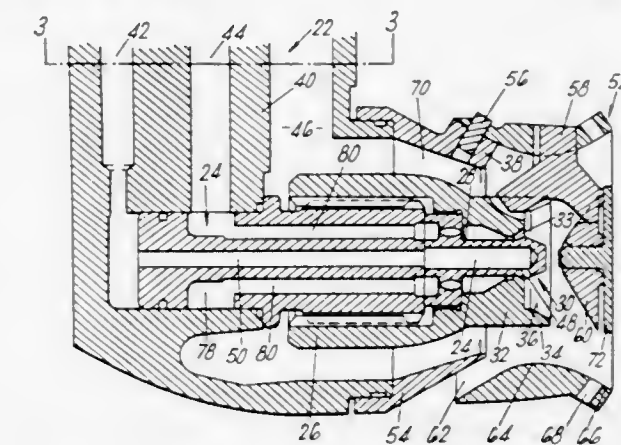
Filed Dec. 7, 1970, Ser. No. 95,704

Claims priority, application Great Britain, Dec. 12, 1969, 59,965/69

Int. Cl. F02g 1/00

U.S. Cl. 60—39.74 R

8 Claims



A fuel injector for a gas turbine engine is arranged to be capable of supplying both liquid and gaseous fuels. The fuel injector has a central member which has a plurality of liquid fuel ducts having respective nozzles, a cowl surrounds the central passage and defines therewith an annular gaseous fuel passage, a baffle is mounted on the cowl downstream of the liquid fuel nozzles and deflecting face is provided inside the cowl. The fuel emitted from the nozzles is arranged to pass between the cowl and the baffle and the fuel emitted from the central one of the nozzles is arranged to impinge upon the deflecting face. A flow of high pressure air is arranged to flow through a passage defined by the shroud and the cowl and flow into the passage defined by the cowl and the central member.

3,691,766

**COMBUSTION CHAMBERS**

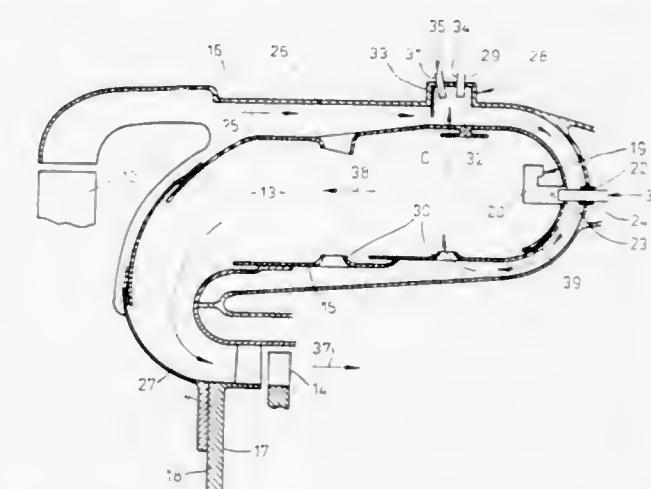
Keith Harold Champion, Rickmansworth, England, assignor to Rolls-Royce Limited, Derby, England

Filed Dec. 16, 1970, Ser. No. 98,837

Int. Cl. F02c 7/26

U.S. Cl. 60—39.82 P

2 Claims



The invention pertains to combustion apparatus for a gas turbine engine comprising a combustion chamber lying within a casing defining therewith a passage for the supply of air to the combustion chamber, an igniter situated in a recess formed in the wall of the casing, and a baffle situated in the passage adjacent and upstream of the igniter so that air flowing through the passage to the combustion chamber is induced by the baffle to form a stabilized vortex around the igniter.



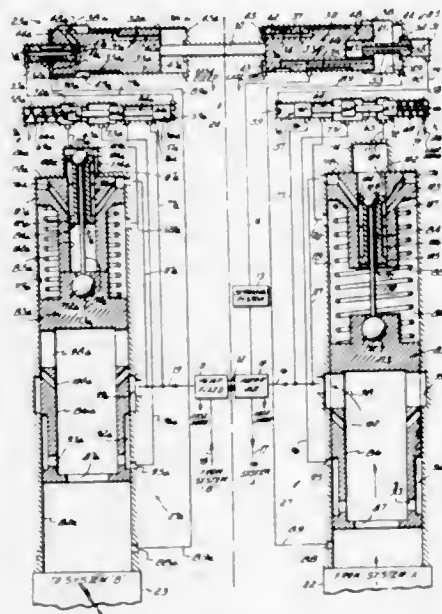
3,691,767

**REVERSIBLE FLUID POWER TRANSFER APPARATUS**  
James L. Coakley, Camarillo, Calif., assignor to Abex Corporation, New York, N.Y.

Filed Nov. 19, 1970, Ser. No. 91,114  
Int. Cl. F15b 15/18

U.S. Cl. 60—53 R

11 Claims



In a reversible fluid power transfer package, sensing means detect which of two mechanically interconnected fluid pressure translating devices is required to operate as a pump and which is required to operate as the motor. In response to a signal from the sensing means, dual-functioning check valve-flow limiter components associated with each device are ported according to the required mode of function of the respective device, so that whichever device is to operate as the motor is automatically provided with a flow limiter valve, and whichever device is to operate as the pump is automatically coupled to a check valve on its outlet side. The check valve may incorporate variable bypass features.

3,691,768

**METHOD OF AND SYSTEM FOR CHANGING THE TRANSMISSION RATIO OF A HYDRODYNAMIC VEHICLE TRANSMISSION**

Bernhard Gruschka, and Berthold Herrmann, both of Heiden Heim-Schnaitheim, Germany, assignors to Voith Getriebe KG, Heidenheim/Brenz, Germany

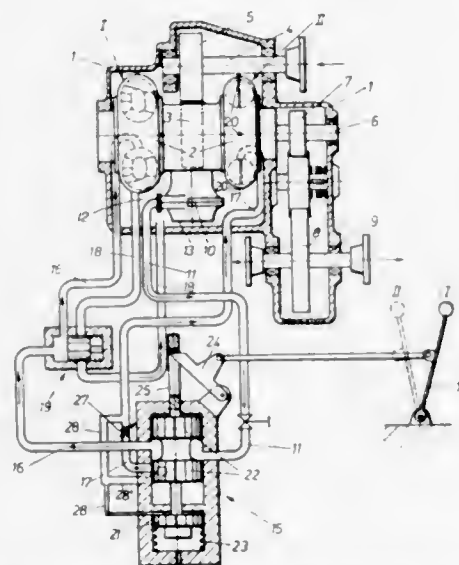
Filed Dec. 29, 1970, Ser. No. 102,343

Claims priority, application Germany, Dec. 31, 1969, P 19 65 685.0

Int. Cl. F16d 33/00

U.S. Cl. 60—54

5 Claims



A method of providing switching from torque converter engagement to fluid coupling engagement in a hydrodynamic

vehicle transmission having a plurality of working circuits, whereby at least during changing from torque converter engagement to fluid coupling engagement, the pressurized working circuit is maintained in a pressurized condition while the unpressurized working circuit is filled with pressure medium with controlled speed. Said pressurized condition is maintained until an appropriate pressurization of said latter work circuit has been attained, at which moment the first-named working circuit is depressurized.

3,691,769

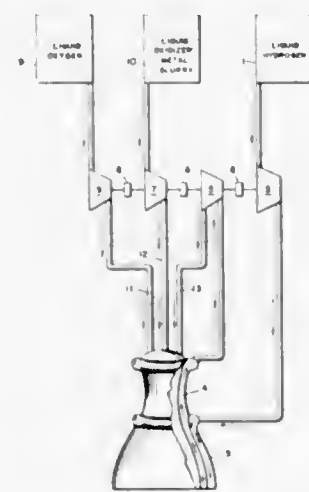
**MULTI-COMPONENT PROPELLANT JET PROPULSION**  
Joseph R. Keilbach, 186 Griswold St., Glastonbury, Conn., and Vito J. Sarli, 903 Avery St., Wapping, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 16, 1964, Ser. No. 338,259

Int. Cl. C06d 5/08, 5/10

U.S. Cl. 60—217

17 Claims



In the method of supplying a multi-component propellant including metal, oxidizer and hydrogen to the combustion chamber of a multi-component propellant rocket motor, the improvement which comprises stably suspending finely divided hollow particles of the metal in a liquid oxidizer to form a suspension of hollow particles of the metal in the liquid oxidizer, the hollow particles of said metal having a specific gravity approximately equal to the specific gravity of the liquid oxidizer; such that such suspension is stable and capable of withstanding the gravitational fields and acceleration forces to which the rocket engine system is subjected.

3,691,770

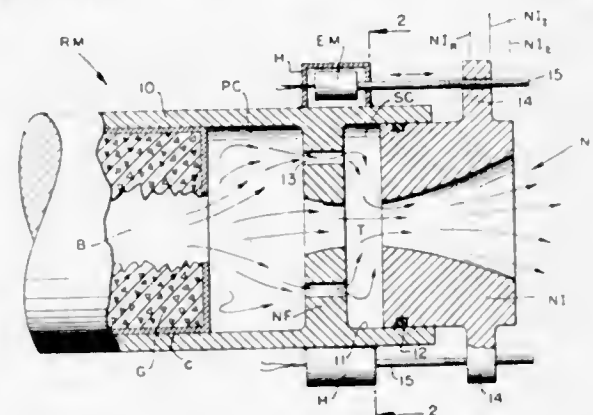
**THRUST CONTROL MEANS FOR A SOLID PROPELLANT ROCKET MOTOR**

Robert H. Nunn, Davis, Calif., assignor to The United States of America as represented by the Secretary of the Navy  
Continuation-in-part of Ser. No. 385,104, July 23, 1964, abandoned. This application Dec. 2, 1966, Ser. No. 599,347

Int. Cl. F02k 9/04

U.S. Cl. 60—254

5 Claims

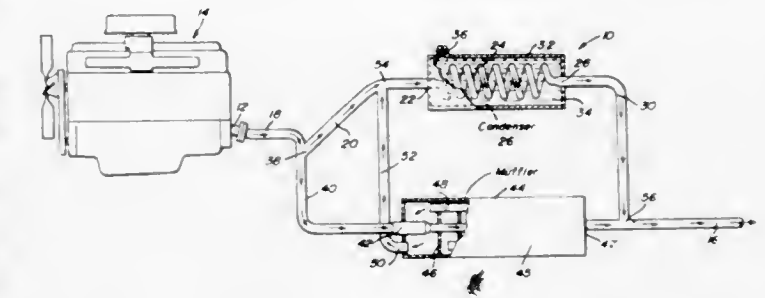


1. In a variable thrust rocket motor of the type having a combustion chamber and a solid propellant grain with burning

characteristics which produce an increase in burning rate of the grain with increase in combustion chamber pressure and a corresponding increase in thrust, and an igniter for initiating combustion of the grain, the improvements, in combination, comprising:

- A. An exhaust nozzle having:
  - a. a convergent sub-sonic portion communicating with said combustion chamber through which a main stream of combustion chamber gases flow,
  - b. an axially aligned supersonic divergent exhaust portion, and
  - c. an effective throat portion disposed axially between the convergent and divergent portions, the outer wall of which is formed by an envelope of inwardly moving combustion chamber by-pass gases at substantially combustion chamber pressure adapted to mix with the main stream, the cross-sectional area of said envelope being variable, dependent upon the quantity of by-pass gases delivered thereto, and
- B. means for controlling the quantity of by-pass gases delivered to said envelope and main stream,
- C. the construction and arrangement being such that when the quantity of by-pass gases is increased relative to the quantity in the main stream, the envelope is constricted, reducing the effective throat area and increasing chamber pressure and thrust, and when the quantity of by-pass gases is decreased relative to the quantity in the main stream, the envelope is enlarged, increasing the effective throat area and decreasing chamber pressure and thrust.

muffler to be also treated by passage through the condenser. A substantial amount of hydrocarbon material condenses in the



condenser so that purified exhaust gas is delivered from the outlet port of the condenser to the tailpipe.

## ERRATUM

For Class 60—39.5 see:  
Patent No. 3,691,793

3,691,773

**WATER BARRIER FLOTATION CURTAIN**  
Jon R. Ruhlman, Cleveland Heights, Ohio, assignor to Preformed Line Products Company, Cleveland, Ohio  
Filed June 22, 1970, Ser. No. 48,323  
Int. Cl. E02b 15/04, 3/06

U.S. Cl. 61—1

27 Claims



3,691,771

**GAS TURBINE ENGINE THRUST DEFLECTORS**

Rowan Herbert Colley, Derby, England, assignor to Rolls Royce Limited, Derby, England

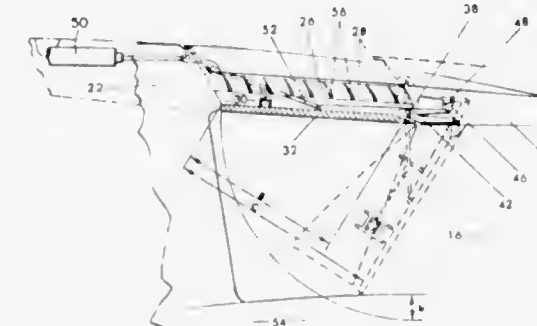
Filed April 1, 1971, Ser. No. 130,417

Claims priority, application Great Britain, April 2, 1970, 15,761/70

Int. Cl. F02k 3/02

U.S. Cl. 60—226 A

3 Claims



The blocker flaps in the fan duct of a gas turbine ducted fan engine are mounted for simultaneous pivoting across the fan duct and movement bodily downstream thereof so as to attain the required throat area for the subsequently reversed flow of fan air through the reverser aperture in the fan cowl.

3,691,772

**EXHAUST GAS CLEANSING SYSTEM**

Sidney E. Cross, 416 E. Mabel, Tucson, Ariz.

Filed Oct. 29, 1970, Ser. No. 85,167

Int. Cl. F01n 3/02

U.S. Cl. 60—320

4 Claims

The exhaust manifold of an internal combustion engine is connected to a header pipe that branches to parallel connected inlet ports of a liquid cooled condenser and a muffler. The outlet ports of the condenser and muffler are connected in parallel to a tailpipe. A conduit section communicates between the interior of the muffler and the inlet port of the condenser thereby enabling some of the gas acted upon by the

A water barrier flotation curtain for use in a body of water comprising a barrier having a sandwich-like construction, which is substantially vertical having an upper edge and a lower edge, a flotation means positioned within the barrier and adapted to float beneath the surface of the water, and an anchor attached to the lower edge of the barrier wherein the lower edge of the barrier substantially follows the contour of the floor of the body of water.

3,691,774

**TRANSPORTABLE BREAKWATER**

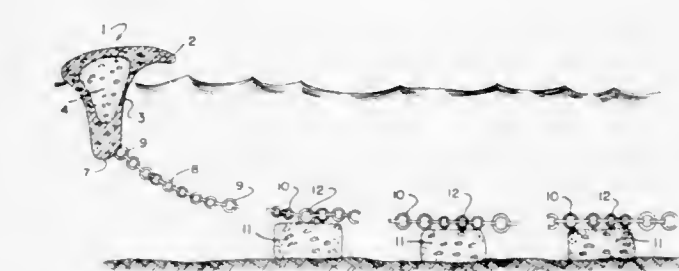
Carl G. Hard, 14 Springlane, Framingham, Mass.

Filed April 1, 1970, Ser. No. 24,748

Int. Cl. E02b 3/06

U.S. Cl. 61—5

4 Claims



The invention relates to a transportable breakwater comprising a plurality of floating units, each unit having a horizontal fin-like protrusion which rotates to a vertical position for intercepting waves when the unit is tipped leeward by wave action. Mooring blocks placed in tandem and the connecting chains permit the floating units to yield gradually to oncoming waves.



3,691,775

## MINERAL MINING INSTALLATIONS

Bernhard Holtrup, Cappenbergerstrasse 28, 4712 Werne, and Johannes Laabs, Königslandwehr 46, 4619 Oberaden, both of Germany

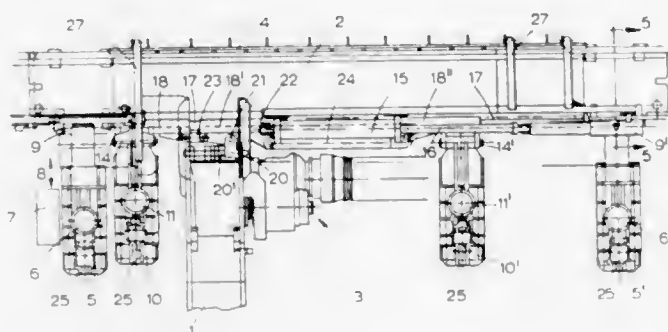
Filed June 11, 1970, Ser. No. 45,471

Claims priority, application Germany, Aug. 13, 1969, P 19 41 094.7

Int. Cl. E21d 23/00

U.S. Cl. 61—45 D

13 Claims



A mineral mining installation which has a mineral face conveyor arranged to transfer mineral onto a roadway conveyor supported on a trough and movable relative thereto. Roof support props are disposed on the side of the roadway conveyor adjacent the mineral face conveyor.

The props are operably divided into a first set of props connected for movement with the trough and a second set of props connected for movement with the mineral face conveyor and slidably guided on a beam provided on the trough.

A shifting ram connected between the trough and the second set of props is used to relatively move the trough and the mineral face conveyor.

3,691,776

## EXPANSIVE BASE PILE CONSTRUCTION

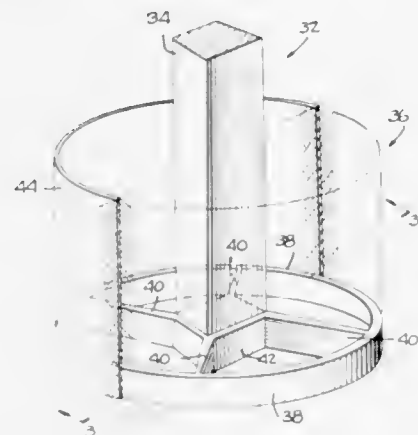
Judd R. Hull, Pleasanton, Calif., assignor to Raymond International, Inc., New York, N.Y.

Filed Dec. 19, 1969, Ser. No. 886,550

Int. Cl. E02d 5/54, 5/72

U.S. Cl. 61—53

16 Claims



Pile installation with expansive base wherein the soil in a desired bearing strata in the vicinity of the pile tip is displaced by the tip into a region confined by a rim or skirt so that the soil forms a solid plug between and frictionally locked to the pile and rim or skirt.

3,691,777

Patent Not Issued For This Number

3,691,778

Patent Not Issued For This Number

3,691,779

## HYDROGEN PURIFICATION

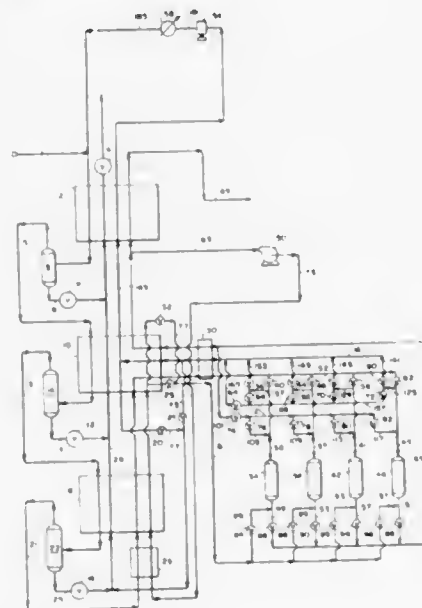
Joseph Meisler, Teaneck, N.J.; Gregory C. Banikotes, Seaford, and Edward Harold Van Baush, Pearl River, both of N.Y., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,424

Int. Cl. F25j 1/02, 3/06

U.S. Cl. 62—23

16 Claims



A high purity, 97 to 99.9 percent hydrogen product is obtained by using a separation process consisting of a low temperature refrigeration system operating below 120°R, and an adsorption system operating on an adiabatic pressure-swing principle within the temperature range of 200° to 140°R. The hydrogen-rich feed gas with methane, nitrogen, carbon monoxide and traces of argon, oxygen, carbon dioxide, and low boiling hydrocarbons passes as a pressurized gaseous stream through a series of cooling and condensation stages having successively lower temperatures. Hydrogen containing vapor and condensate are separated between cooling stages. The hydrogen-enriched vapor stream leaving the exchanger cooling system is passed to an adsorption system for further upgrading. A portion of the upgraded product from the adsorption system is pressure reduced in an expander system, passed through at least one of the refrigeration stages to provide the net refrigeration needed in the cooling unit, and is thereafter used to purge and regenerate the adsorption system.

3,691,780

Patent Not Issued For This Number

3,691,781

## METHOD AND APPARATUS FOR FORMING MODEL ICE SHEETS

Roderick Y. Edwards, Jr., Annandale, Va., and David L. Benze, Jessup, Md., assignors to Arctec, Incorporated, Bowie, Md.

Filed July 30, 1971, Ser. No. 167,783

Int. Cl. F25c 1/04; G01m 10/00

U.S. Cl. 62—66

36 Claims

A process is described for rapidly forming upon the surface of a saline solution, a sheet of ice, the rheological properties of which permit the use of the sheet in conjunction with properly

3,691,783

## REFRIGERANT EVAPORATOR TEMPERATURE CONTROL

Robert H. Proctor, Dearborn, Mich., assignor to American Standard Inc., New York, N.Y.

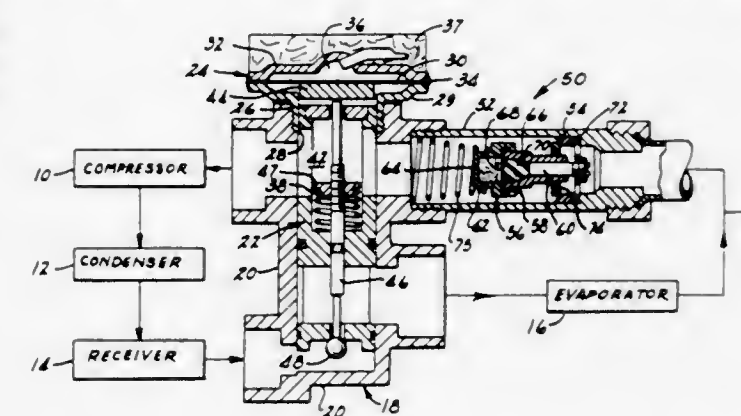
Continuation of Ser. No. 795,828, Feb. 3, 1969, abandoned.

This application Sept. 25, 1970, Ser. No. 75,713

Int. Cl. F25b 41/00

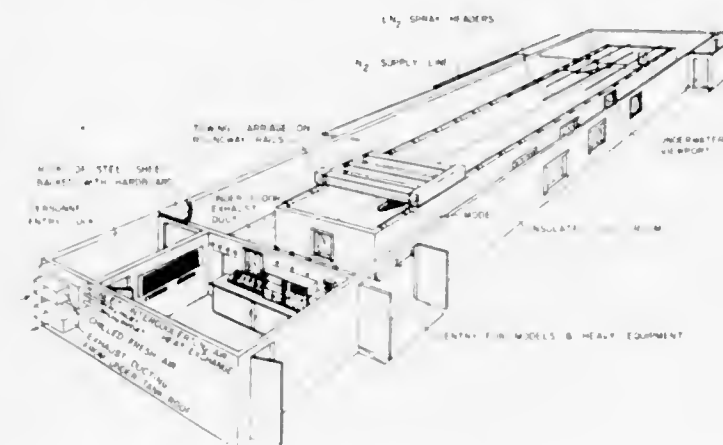
U.S. Cl. 62—212

10 Claims



scaled models of structures such as offshore oil drilling platforms, ships and other vehicles to predict reliably the full scale behavior of such vehicles or structures during interactions between the structures and natural ice cover.

An inert cryogenic fluid is sprayed through finely atomizing nozzles into the region above a pool of saline water, the surface layers of which are maintained at the fluid's freezing temperature. The vaporization of the liquid refrigerant is accompanied by the absorption of heat from the surface of the pool. This process is sufficiently violent to cause a relatively homogeneous turbulent flow of expanding cold gas over the pool surface such that the rate of heat transfer to the water surface is significantly enhanced over that which would



prevail in free convection heat transfer. The growth of the ice sheet is extremely rapid (e.g.  $3 \times 10^{-4}$  cm./sec.). Consequently, the growth of the individual ice crystals is inhibited in the horizontal direction, and the inclusion of salt is accelerated. The resultant sheet of ice is comprised of extremely small crystals. The structural properties of the ice sheet (elastic modulus and tensile strength) depend upon ambient temperature and salinity of the ice layer (FIG. 1). By controlling growth rate, pool salinity and temperature which is maintained subsequent to freezing, the structural properties of the ice sheet may be varied at will. This sheet of fine crystal ice with variable properties provides an excellent model of full scale ice sheets.

3,691,782

## REFRIGERATOR THERMOSTAT AND ARRANGEMENT THEREOF

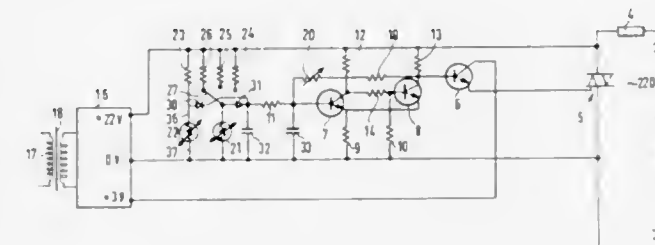
Walter U. Holzer, Droste-Hulshoff-Weg 19, D-7758 Meer-sburg, Germany

Continuation-in-part of Ser. No. 679,356, Oct. 31, 1967, abandoned. This application June 30, 1970, Ser. No. 51,195

Int. Cl. G05d 23/24; H03k 19/30

U.S. Cl. 62—209

7 Claims



A temperature control device for use in a frozen-foods compartment of a refrigerator, or the like comprises a pair of temperature-sensitive elements one of which is adapted to be inserted into the material to be frozen. The two elements are connected in a logic circuit which in turn controls a switching device to thereby control the operation of the refrigeration unit to establish and then maintain a desired temperature in the compartment.

## CRYOGENIC REFRIGERATING APPARATUS

Kenneth Edmund Nicholds, and Geoffrey Brian Longbottom, both of Redditch, England, assignors to The Hymatic Engineering Company Limited, Redditch, England

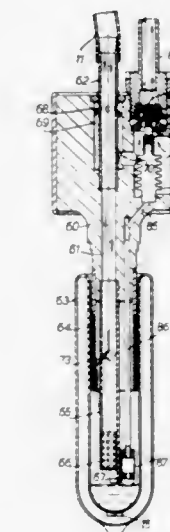
Filed Feb. 3, 1970, Ser. No. 8,181

Claims priority, application Great Britain, 5,783/69

Int. Cl. F25b 19/00

U.S. Cl. 62—218

5 Claims



In a cryogenic refrigerating apparatus comprising a supply of refrigerating liquid in a Dewar flask, connected through a long flexible supply pipe to an evaporator for cooling a load, an injector being provided to deliver into the supply pipe a mixture of the liquid with gas from the ullage space in the top of the container. The evaporator is provided with a valve for automatically reducing the flow of refrigerant to it in response to the level of liquid in it.



3,691,785

## SMALL CENTRIFUGAL HEAT PUMP

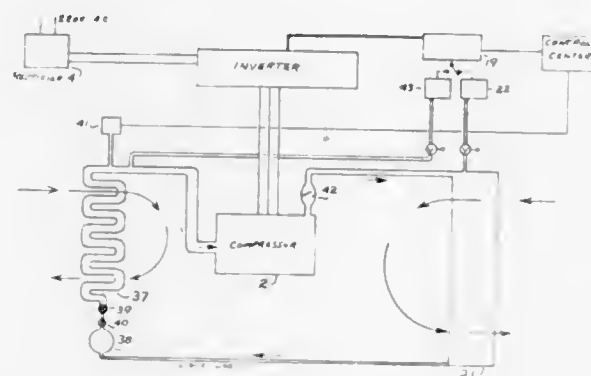
John D. Ruff, 206 Birch St., and Phillip R. Wheeler, 209 Pine St., both of Alexandria, Va.

Filed May 15, 1970, Ser. No. 37,779

Int. Cl. F25b 1/00

U.S. Cl. 62-230

2 Claims



A variable capacity mechanical refrigeration system for heat pump or cooling operation, with a variable speed centrifugal compressor motor drive that uses an electronic frequency conversion apparatus which is sensitive to and controlled by, discharge or suction pressure and which includes means of preventing overloading during start up of the compressors.

3,691,786

## AIR CONDITION APPARATUS WITH REFRIGERANT SUPER COOLER

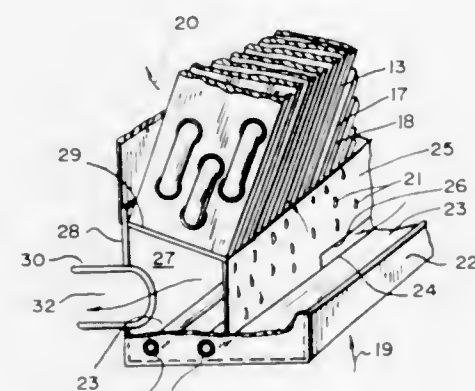
Richard M. Anderson, Nashville; Hushel L. Parrish, Jr., Culleoka, and Kenneth L. Spade, Nashville, all of Tenn., assignors to Heil-Quaker Corporation

Filed March 31, 1971, Ser. No. 129,762

Int. Cl. F25b 47/00

U.S. Cl. 62-279

10 Claims



An air conditioning apparatus having an evaporator for conditioning air flowed in heat exchange relationship therewith. The evaporator is cooled by refrigerant fluid delivered thereto through an expansion means from a supply duct leading from a condenser of the refrigeration system. The refrigerant in the supply duct is supercooled by means of heat exchange relationship thereof, with condensate resulting from the condensation of the moisture in the air being conditioned by the evaporator being collected in a suitable receiver. The heat exchange relationship of the refrigerant to the condensate is such that the condensate is heated to vaporization for improved heat withdrawal from the refrigerant.

3,691,787

## BEVERAGE FOUNTAIN

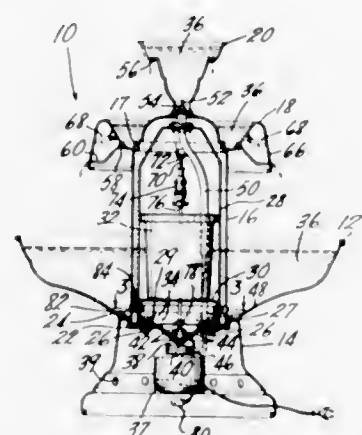
Alfred W. Kaufmann, 1122 Ocean Ave, Brooklyn, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,708

Int. Cl. B67d 5/62

U.S. Cl. 62-400

8 Claims



Disclosed herein is an improved beverage fountain including a hollow pedestal, a bowl supported on the pedestal and an elevated receptacle supported above the bowl for discharging a beverage into the bowl. A motor-pump combination is mounted within the hollow pedestal, and the pump is connected to receive liquid from the bowl for pumping it into the elevated receptacle. A vertically disposed sleeve extends upwardly from the bowl for supporting the receptacle at its upper end, and the sleeve has a plurality of openings in its lower portion for allowing the flow of liquid from the bowl into the sleeve. A coolant cartridge or jar is mounted within the sleeve for cooling the liquid therewithin, whereby the resultant beverage fountain recycles the cooled beverage from the bowl to the elevated receptacle in a sanitary manner, wherein the beverage comes in contact only with the internal portions of the pump, the coolant cartridge, and the beverage receiving bowl and elevated receptacle.

3,691,788

## STAY-RITE FLEX JOINT

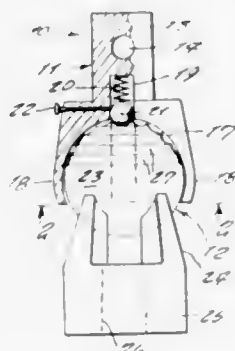
Ralph Mazziotti, 362 Park Ave., Midland Park, N.J.

Filed Sept. 10, 1970, Ser. No. 71,142

Int. Cl. F16d 3/10

U.S. Cl. 64-7

1 Claim



A novel universal joint which can be positioned at any angle without loss of efficiency by becoming limp at the far end of an extension secured thereto, the device including a spherical ball having a series of annular grooves therearound, the ball being integral with a pronged bushing attachable to one end of a lever, and a pronged claw being fitted around the spherical ball, the claw supporting a spring loaded detent ball urged against an annular groove of the spherical ball.

3,691,789

Patent Not Issued For This Number

3,691,790

## COUPLINGS

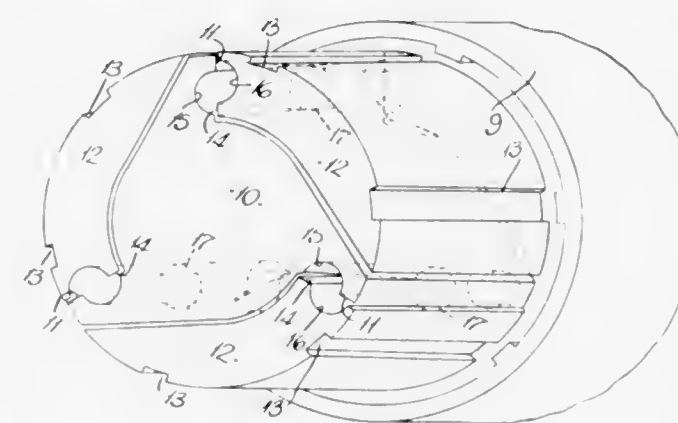
Harry Simister, Olton, Solihull, Warwickshire, England, assignor to Joseph Lucas (Industries) Ltd., Birmingham, England

Filed May 18, 1971, Ser. No. 144,614

Int. Cl. F16d 3/06

U.S. Cl. 64-23

1 Claim



A coupling for transmitting rotary motion between two parts while permitting relative axial movement between the parts wherein one of the parts is tubular. The tubular part contains segmental portions providing a plurality of angularly spaced surfaces which lie substantially in planes which are radially disposed with respect to its axis. The other part is coaxially mounted within the tubular part and has a plurality of angularly spaced surfaces which are opposed and complementary to the surfaces on the segmental portions. Moreover, there is formed in each pair of opposed and complementary surfaces a pair of substantially semi-circular and longitudinally extending grooves which are oppositely inclined at substantially equal angles to the axis of the tubular part and a single ball is accommodated at the point of intersection of each pair of grooves; the ball having a diameter substantially equal to the diameter of the grooves.

3,691,791

## SLIP-CLUTCH

Tetsuji Yoshii, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

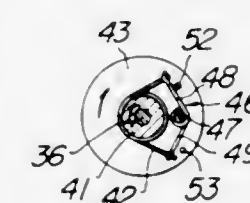
Filed Sept. 8, 1970, Ser. No. 70,036

Claims priority, application Japan, Sept. 10, 1969, 44/73089; Jan. 27, 1970, 45/7928

Int. Cl. F16d 7/02

U.S. Cl. 64-30 E

2 Claims



A slip-clutch for use with a tape winding-up mechanism of a tape recording and reproducing apparatus. A cylindrical drum is provided on a pulley for receiving input force of the clutch and a length of rope is wound around the drum in frictional torque transmitting sliding engagement therewith. The rope has opposite ends connected to a disc rigidly secured to an output shaft of the clutch whereby substantially constant torque is transmitted from the drum to the disc regardless of variation in coefficient of friction between the driving and driven members.

3,691,792

## TORSIONALLY RESILIENT DRIVE MECHANISM

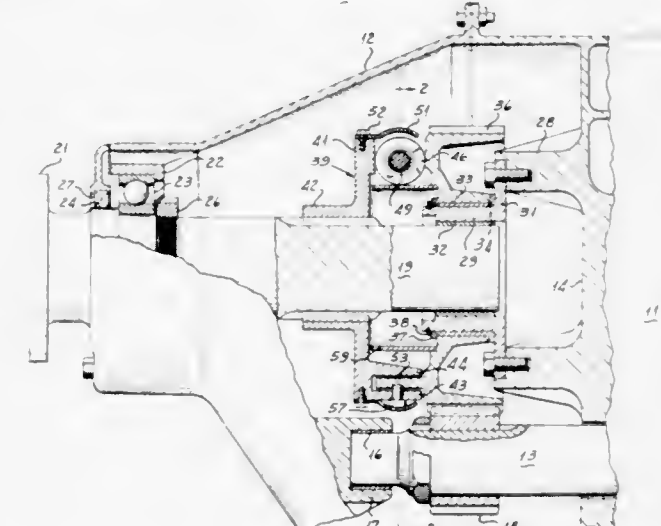
Howard R. Corwin, North Caldwell; Walter L. Hermes, Cedar Grove, and Charles Jones, Hillsdale, all of N.J., assignors to Curtiss-Wright Corporation

Filed May 18, 1971, Ser. No. 144,544

Int. Cl. F16d 3/04

U.S. Cl. 64-31

8 Claims



A drive mechanism between the output shaft of an engine and a parallel drive shaft, comprising a vibrationally tuned torsional system with reducing gearing resiliently coupled to the driven shaft to reduce shock load on the gear teeth and smooth out any sinusoidal component in power output from the engine, and to absorb acceleration and gyroscopic forces from the driven shaft and separation forces on the gears.

3,691,793

## PLANT FOR RECOVERING ENERGY FROM EXHAUST GASES FROM A BACK-PRESSURE BLAST FURNACE

Paul Marie Georges Laval, Liege, Belgium, assignor to Cockerill-Ougree-Providence et Esperance-Longdoz en Abrege "Cockerill", Seraing Lez Liege, Belgium

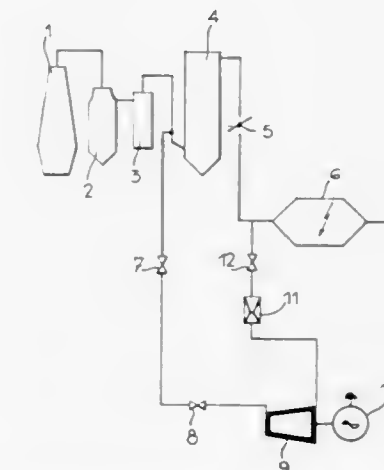
Filed Dec. 14, 1970, Ser. No. 97,498

Claims priority, application Belgium, Dec. 19, 1969, 42,577

Int. Cl. F02c 7/02

U.S. Cl. 60-39.5

1 Claim



In a plant for recovering the energy of exhaust gases of a back-pressure blast-furnace there is provided a main conduit with a dust collector leaving a minimum of dust of about 4 g/m<sup>3</sup> in said gases which are lead in a part of 85 to 90 percent by volume directly to an expansion turbine by a by-pass conduit on which is mounted a cleaner and leaving said main conduit after said dust collector and running again into said main conduit after a washer-dust precipitator and a control valve on said main conduit leading to the utilization place of said gases.



3,691,794

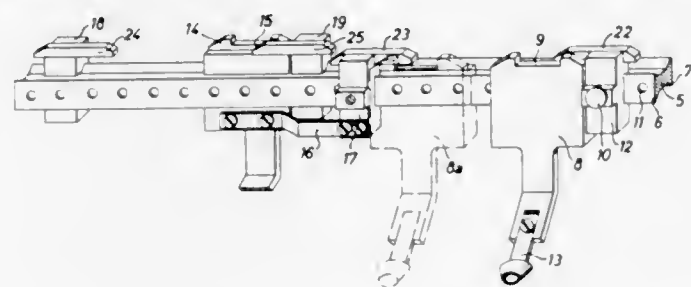
## FLAT BED KNITTING MACHINES

Keith Jeffcoat, Nuneaton, England, assignor to Courtaulds Limited, London, England  
 Filed Dec. 10, 1970, Ser. No. 96,729  
 Claims priority, application Great Britain, Dec. 23, 1969, 62,518/69

Int. Cl. D04b 15/52

U.S. Cl. 66—126 R

6 Claims



A flat bed knitting machine with independently operable needles and having a slide mounted for to and fro movement along a rail extending longitudinally of the machine by means arranged to move with the cam box of the machine, the slide being arranged to shift a movable stop block along a further rail of the machine on which at least one yarn carrier is mounted for movement therealong. The machine is particularly suitable when it is desired during one knitting sequence to knit at one time two portions of fabric at spaced locations on the beds and at another time to knit a single portion of fabric using a yarn carrier which supplies yarn for the knitting of one of the said two portions of fabric.

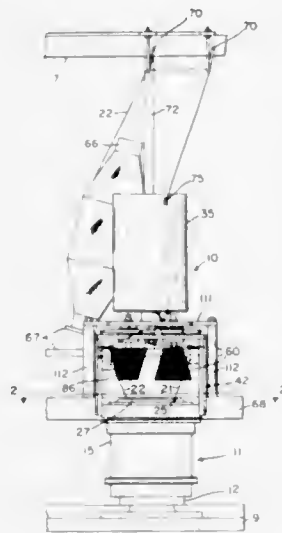
3,691,795

## YARN FEEDING MEANS FOR CIRCULAR KNITTING MACHINES

Vincent A. Iannucci, Lincoln Park, and Ronald S. Schartel, Whitfield, both of Pa., assignors to North American Rockwell Corporation, Pittsburgh, Pa.  
 Filed Oct. 14, 1970, Ser. No. 80,543  
 Int. Cl. D04b 15/48

U.S. Cl. 66—132 R

1 Claim



Means for feeding yarn to each of a plurality of rotatable knitting stations of a circular knitting machine, the yarn feeding means including a common member rotatable with the knitting stations, means on the common member for positively feeding the yarn associated with each knitting station from a supply source to the needles of the machine to be formed into courses of a knitted fabric, and means on the common member for guiding each yarn along a feeding path from its supply source to the positive feeding means associated therewith and from the positive feeding means to the needles without interference with the feeding path of another of the yarns.

3,691,796

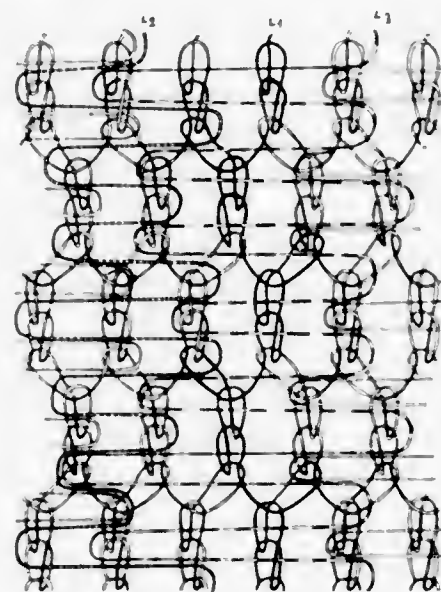
## KNITTED CREPE FABRIC AND METHOD OF MANUFACTURE

Karl Mayer, Bruhlstrasse 25, 6053 Obertshausen near Offenbach, Germany  
 Filed April 10, 1970, Ser. No. 27,404  
 Claims priority, application Germany, April 10, 1969, P 19 18 243.5

Int. Cl. D04b 23/08

U.S. Cl. 66—193

7 Claims



Shrinkable weft yarns are knitted into a base warp knit fabric, with adjacent weft yarns being looped about the stitches of the wales of the base fabric at staggered points in a walewise direction.

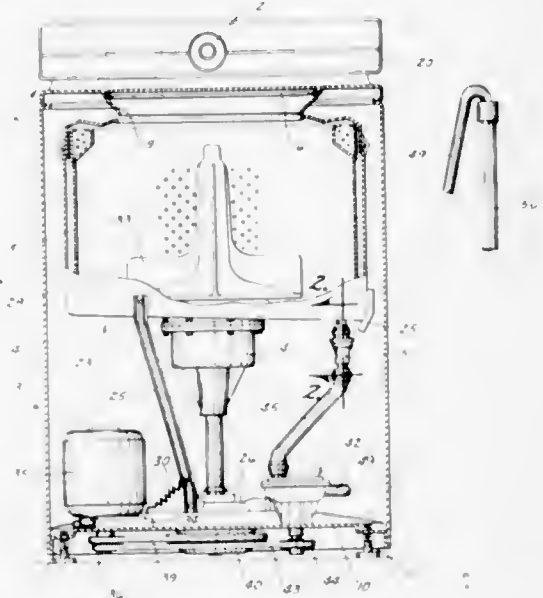
3,691,797

## LIQUID CONTROL SYSTEM FOR WASHING MACHINE

Thomas R. Smith, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa  
 Filed July 6, 1971, Ser. No. 159,825  
 Int. Cl. D06f 39/08

U.S. Cl. 68—23.4

8 Claims



A liquid control system for a washing machine having a bidirectional motor operable for effecting washing and extraction operations includes a one-way check valve in the drain conduit. The liquid control system includes a pump driven by the motor and operable for pumping toward and from a tub during the washing and extractions, respectively, with the check valve being self actuating for permitting flow from the tube during the extraction operation and preventing backflow to the tub at the conclusion of the extraction operation and

during the washing operation to effectively obviate mixing of the washing liquid with residual liquid from the previous cycle.

3,691,798

Patent Not Issued For This Number

3,691,799

## LATCH ASSEMBLY

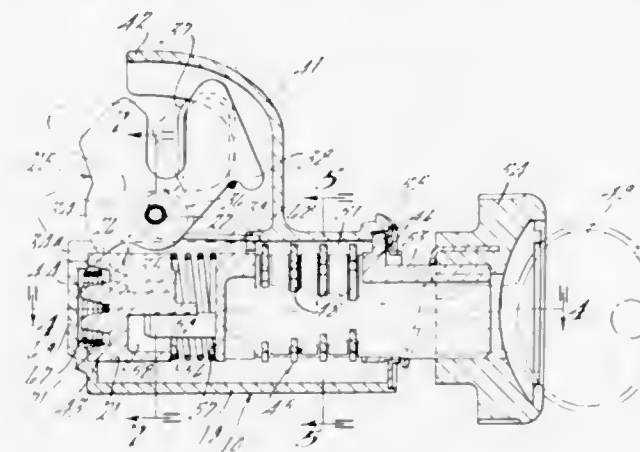
Donald R. Hoffmann, Wayne, and Charles E. White, Allen Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed April 13, 1971, Ser. No. 133,644

Int. Cl. E05b 65/06, 65/44

U.S. Cl. 70—84

10 Claims



A compartment door latch mechanism comprising a housing with a cylindrical bore and a keeper engageable latch bolt externally, pivotally, mounted on the housing for swinging movement between latched and unlatched positions. A pawl and a key cylinder device are separately rotatably mounted within the housing bore. The latch bolt has a cam portion in communication with the rotary pawl through a slot in the housing. The rotary pawl also has a slot in its cylindrical surface which slot is adapted to be brought into alignment with the housing slot by appropriate rotation of the pawl by the key cylinder device. When the two slots are aligned, the latch bolt cam portion moves into the pawl slot and the latch bolt achieves unlatched position. The cam portion otherwise abuts the cylindrical surface of the pawl and the latch bolt is in latched position.

The key cylinder device has a lost motion connection with the rotary pawl. The pawl is non-responsive to rotation of the key cylinder device from a first or locked position of the latter to a second or non-locked position but then becomes responsive upon rotation beyond the second position permitting alignment of the slots and unlatching movement of the latch bolt, thereby unlatching the door latch mechanism. Upon subsequent relatching of the latch mechanism, a spring drives only the rotary pawl to a position in which its slot is out of alignment with the housing slot and the latch bolt then again becomes blocked against swinging movement.

3,691,800

Patent Not Issued For This Number

3,691,801

## GAGE CONTROL SYSTEM FOR HOT ROLLING MILLS

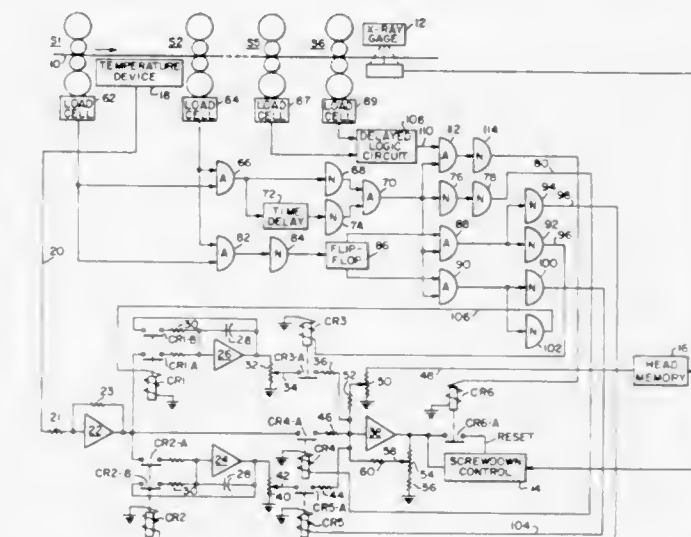
Robert B. Gillstrom, Malvern, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.  
 Continuation of Ser. No. 715,051, March 21, 1968, abandoned. This application April 30, 1970, Ser. No. 31,842  
 Int. Cl. B21b 37/10

U.S. Cl. 72—9

8 Claims

Described is a workpiece gage control system for a hot rolling mill, intended for use as an adjunct to existing gage

control systems, which measures the temperature of incoming end of the workpieces and compares this with the temperature of the incoming end of the previous workpiece and the gage of the forward end of the previous workpiece. Assuming that a



screwdown correction is required, this comparison results in a control signal which adjusts the screwdown setting of the mill to maintain output gage substantially constant regardless of temperature variations.

3,691,802

Patent Not Issued For This Number

3,691,803

Patent Not Issued For This Number

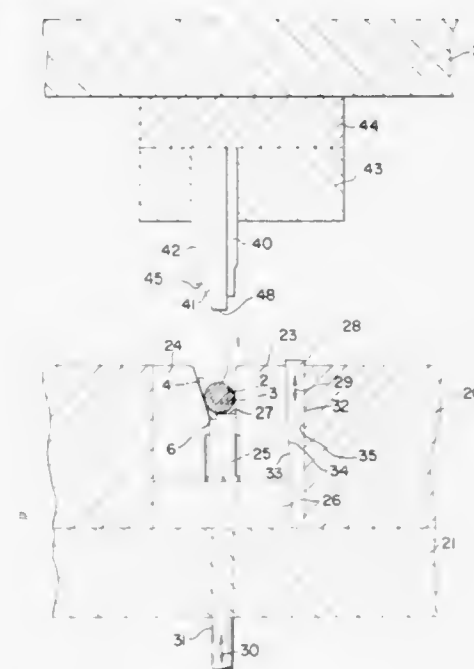
3,691,804

## COLD EXTRUDED ARTICLE AND METHOD OF MAKING THE SAME

Norbert T. Clendenin, Metamora, and Tillman L. Corum, Maumee, both of Ohio, assignors to Metal Forming and Coining Corp., Maumee, Ohio  
 Filed Jan. 26, 1971, Ser. No. 109,848  
 Int. Cl. B21c 3/18; B21d 22/00

U.S. Cl. 72—42

3 Claims



A unitary cold extruded component of disc brakes for motor vehicles having directional properties imparted by dif-



ferent directional elongations of various portions thereof, said component having a generally U shaped cross-section with diverging sides of specific thickness and shape, a downwardly extending lower lip, all with accurately aligned and dimensioned planar surface portions is formed from an accurately dimensioned round rod portions of low carbon steel having metal grains therein elongated only in axial directions, by suitably coating the rod with drawing lubricant and subjecting the rod to deforming pressure applied transversely to its axis between male and female die members which make initial metal deforming contact along lines in the cylindrical surface of the rod the deformation being at a rate corresponding to the speed of travel of the ram of a mechanical punch or coining press moving at 30 to 80 strokes per minute. The directional cold elongations permit the component to be substituted for components before made only from expensive alloy steels by a machining process.

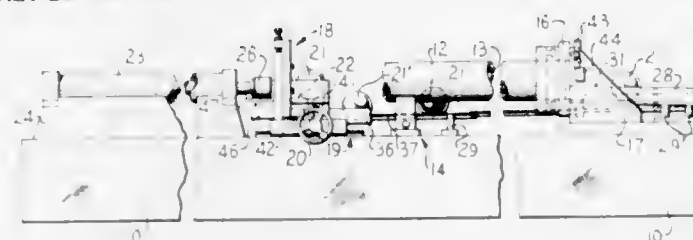
3,691,805

**BALL SIZING MACHINE WITH GRAVITY RETURN**  
Clifford L. Gresham, Monooka, and Lorin A. Robinson, Plainfield, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed July 10, 1970, Ser. No. 53,857  
Int. Cl. B21b; B21j 13/00

U.S. Cl. 72—75

6 Claims



A ball sizing machine including a mounting for a tubular workpiece, a ram for projecting a ball from a starting position through the tubular workpiece, a ramp for receiving the ball after it is projected through the workpiece and permitting gravity return of the ball towards its starting position with a mechanism for receiving the ball from the ramp and relocating it at its starting position. A preferred embodiment including switches for controlling the machine during a complete operating cycle once the ball is located at its starting position.

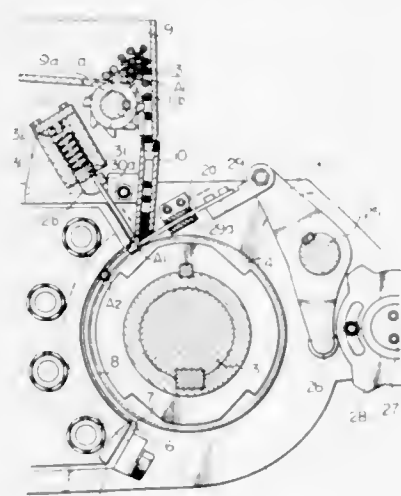
3,691,806

**THREAD ROLLING MACHINE FOR MANUFACTURING A PARTICULAR TYPE OF ROLLED THREAD**  
Yasuo Hanzawa, Tokyo, Japan, assignor to Okabe Company Limited, Tokyo, Japan

Filed Oct. 22, 1970, Ser. No. 82,938  
Claims priority, application Japan, Nov. 6, 1969, 44/105380  
Int. Cl. B21h 3/02; B23g 7/02; B21b 1/16

U.S. Cl. 72—92

3 Claims



Thread rolling machine for manufacturing a rolled thread characterized by a pair of external threads formed upon a

thread shaft at both end portions thereof and a pair of stopper grooves formed upon the thread shaft at adjacent inside positions of the respective external threads.

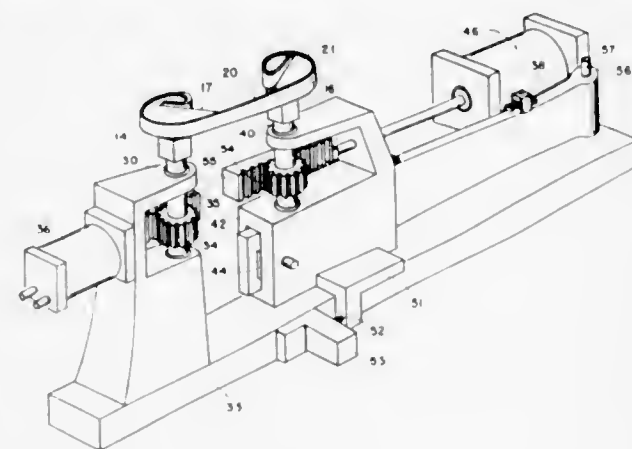
3,691,807  
**BENDING MACHINE**

Lane Jasper, 165 N. Catalina, Pasadena, Calif., and Joseph L. Brassner, 4538 Conchita Way, Tarzana, Calif.

Filed April 28, 1970, Ser. No. 32,661  
Int. Cl. B21c 47/00; B21d 11/14

U.S. Cl. 72—146

16 Claims



This disclosure involves a machine for the automatic manufacture of wrought metal scrolls in which two sequentially operated ending mandrels are programmed through varying angular rotation, directions of rotation, mandrel sizes and center-to-center distances to produce a wide variety of scroll sizes and shapes.

Disclosed is a novel slotted bending head which allows the workpiece to be drawn through one head while being wound on another head. The slotted bending form serves to guide the workpiece as a trap to hold the workpiece while initiating the second scroll formation.

Disclosed also is an improved bending head table assembly with a coaxial table raising system.

A pneumatic system including controls for automatically controlling and sequencing the operation to produce a complete double ended scroll without handling of the workpiece except loading and unloading.

3,691,808

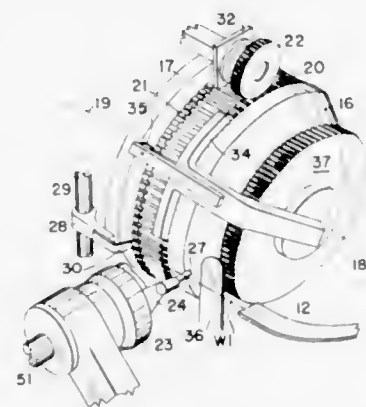
**WIRE FORMING MACHINE**

Rodney K. Calvert, Dunwoody, and Dale Keith Scott, Jonesboro, both of Ga., assignors to The Mead Corporation,

Filed May 15, 1970, Ser. No. 37,631  
Int. Cl. B21b 21/00; B21d 13/02

U.S. Cl. 72—190

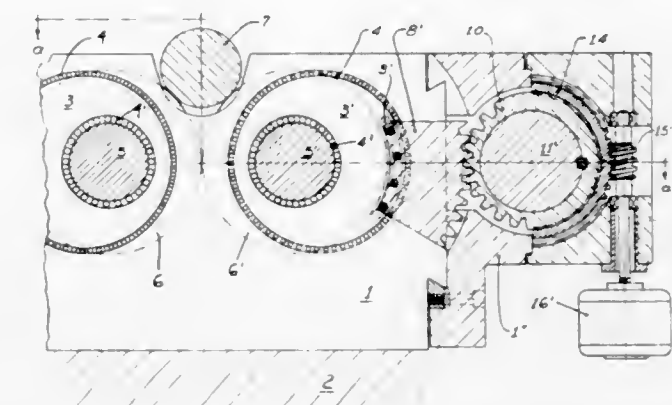
10 Claims



A wire forming machine and method imparts an undulatory configuration to a strand of wire and includes a pair of wheels

disposed alongside each other and rotatable about angularly disposed axes. Pins are disposed radially about the peripheries of both wheels. The angularly disposed wheel axes result in a variation in the spacing between the pins of one wheel and the adjacent pins on the other wheel so that wire looped about the pins is alternately tightened and loosened. Fixed wire removal and holding means are arranged so as to engage the wire at points of minimum and maximum lateral spacing respectively, an oscillatable releasing finger engages the wire following the looping thereof about one pin to release the wire from rotatable looping means, and a reciprocable plunger is arranged to engage another part of the wire to aid in securing the wire about a pin on one of the wheels.

means, whereby the eccentrics may be made large enough so as not to be self-locking, and whereby the pressure exerted by



3,691,809

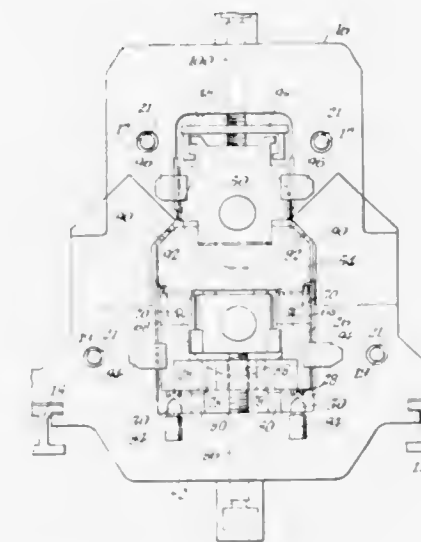
**MILL ROLL CHANGING ARRANGEMENT**

Joseph L. Hlafcsak, Pittsburgh, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.

Filed Feb. 3, 1971, Ser. No. 112,336  
Int. Cl. B21b 13/08, 31/00

U.S. Cl. 72—199

9 Claims



A quick-replaceable roll assembly for a rolling mill stand, said assembly comprising an inner carriage, rail engaging wheels rotatably mounted on said carriage, means for mounting a lower roll and a pair of bearing structures therefor on said carriage, said means comprising a number of balancing plungers reciprocally mounted on said carriage and engaging said bearing structures, and means for mounting an upper roll and bearing structures therefor on said assembly in faced engagement with said lower roll.

each eccentric, through the adjacent caster, upon the work roll, may be controlled and the roll profile adjusted to a desired configuration.

3,691,811

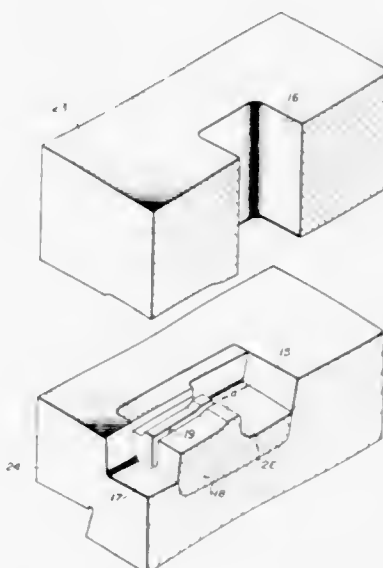
**EXTRUSION DIE**

George H. Heitman, Shrewsbury; Eric T. Strom, Holden, and Anthony G. Cerrone, Worcester, all of Mass., assignors to Wyman-Gordon Company, Worcester, Mass.

Filed Oct. 26, 1970, Ser. No. 83,867  
Int. Cl. B21c 27/00

U.S. Cl. 72—272

6 Claims



This invention has to do with an extrusion die in which a plunger enters a closed die in one direction and forces metal laterally through a forming element and an exit opening.

3,691,812

**STRETCHING MACHINE**

Albert Boesch, Dusseldorf, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Feb. 5, 1970, Ser. No. 8,992  
Claims priority, application Germany, Feb. 11, 1969, P 19 06 646.7

Int. Cl. B21d 5/04

9 Claims

U.S. Cl. 72—308

3,691,810  
**INDIVIDUAL ECCENTRIC CONTROL FOR MILL SCREWDOWN**

Tadeusz Sendzimir, c/o T. Sendzimir, Inc. P.O. Box 1350, Waterbury, Conn.

Filed May 25, 1971, Ser. No. 146,661  
Int. Cl. B21b 29/00, 31/26

U.S. Cl. 72—242

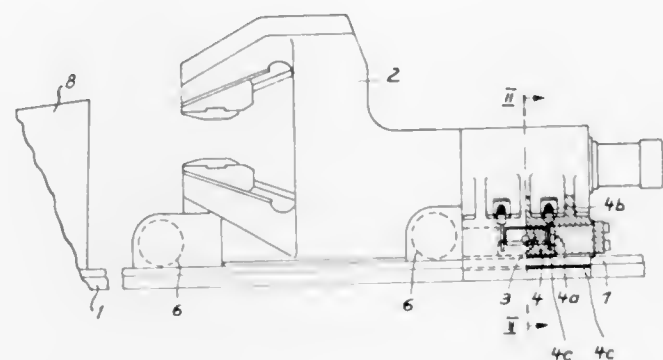
15 Claims

In a beam-backed rolling mill wherein the working rolls are backed by casters mounted on eccentric shafts for screwdown purposes, there is disclosed an arrangement wherein a plurality of eccentrics are mounted at spaced intervals on a shaft, each of said eccentrics being individually operable by outside

In a stretching machine for stretching sections, sheet and plate, particularly when made of metal, a clamping head is provided having at least two clamping means operable by pressure operated control means. The clamping head is slidably mounted on rails and is arranged to be clamped



thereto by engagement of the clamping means and the rails. Preferably, the clamping means are wedges arranged to en-



gage between a housing of the clamping head and the rails. The problem of the clamping head jamming on the rails during a stretching operation may be avoided.

3,691,813

## FLUID QUENCH APPARATUS

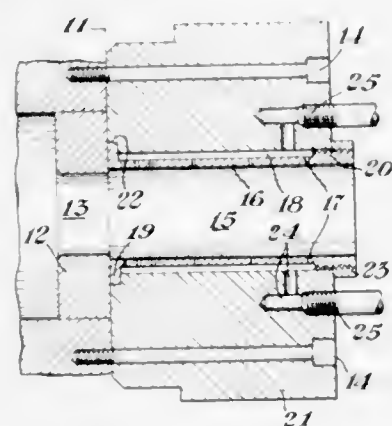
Russell E. Matthews, 4691 E. Letts Road, and George S. Foerster, 3901 Westbrier Terrace, both of Midland, Mich., Assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 19, 1970, Ser. No. 81,663

Int. Cl. B21d 22/00, 37/18

U.S. Cl. 72-342

9 Claims



A quench chamber apparatus capable of applying a fluid to a form upon exit from and in close proximity to a die aperture. The quench apparatus is comprised of an open-ended quench chamber at least partially longitudinally bounded by a sleeve with a plurality of holes extending therethrough in a generally radial direction to at least one peripherally disposed spaced apart fluid distributing channel. The distributing channel is further longitudinally bounded by a backer block.

3,691,814

Patent Not Issued For This Number

3,691,815

METHOD AND APPARATUS FOR BENDING TUBING  
Lawrence A. Deacon, 2829 Joseph Parkway, Brunswick, Ohio

Filed July 13, 1970, Ser. No. 54,100

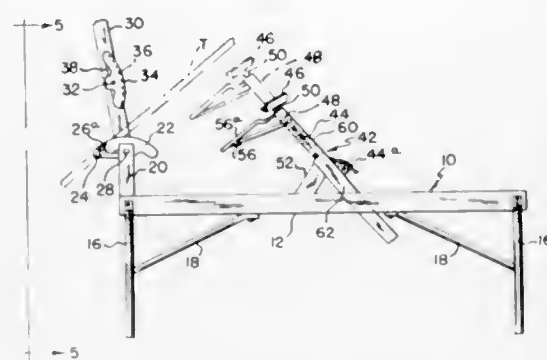
Int. Cl. B21j 13/08

U.S. Cl. 72-458

11 Claims

A compact portable tube bender for providing predetermined offsets in the tubing and comprising a support having a tube bender shoe mounted thereon for receiving the tubing

section, and having a pivotal lever with another bender shoe mounted thereon for applying pressure to the tubing for bend-



ing it into said predetermined offset configuration. An adjustable stop means is provided for indicating when the desired offset in the tubing has been accomplished.

3,691,816

## MOULDS

Per-Olof Strandell, Bockstigen 3, Taby, Sweden

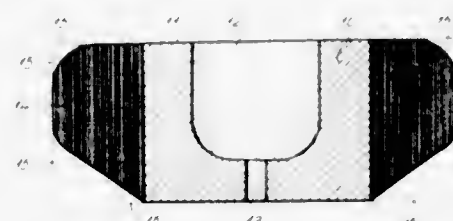
Filed June 19, 1970, Ser. No. 47,683

Claims priority, application Sweden, June 25, 1969, 9024/69

Int. Cl. B21c 3/00

U.S. Cl. 72-467

3 Claims



A reinforced mould, including a mould body having a mould cavity in at least one end surface thereof, the mould body has arranged along at least part of its axial length a pre-tensioned reinforcing means in the form of at least one winding of thin metallic strip material, wherein the width of the wound turns of reinforcing winding, as seen in axial section, decreases radially outwardly from the periphery of the mould body to provide a pre-tensioning force which varies along the mould body proportionally to the forces exerted therein when the mould is used.

3,691,817

## MOBILE FRAME AND BODY STRAIGHTENER

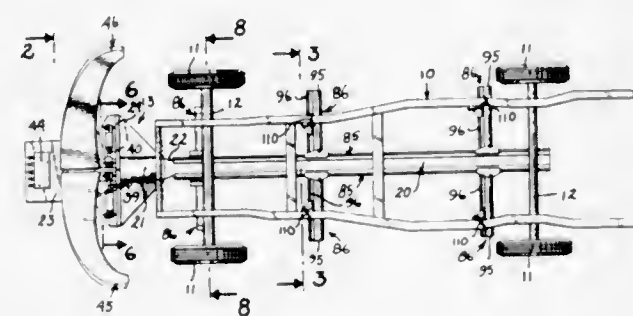
Robert P. Friend, and George R. Friend, both of 2489 Foxdale Drive, San Jose, Calif.

Filed March 6, 1970, Ser. No. 17,263

Int. Cl. B21d 11/14; B21j 13/12

U.S. Cl. 72-705

1 Claim



An elongated generally tubular body adapted for movement over a supporting surface and having a pair of generally arcu-

ately shaped arms affixed thereto in outwardly extending relationship for pivotal movement about an axis parallel with the longitudinal axis of the body and for pivotal movement about an axis transverse to the longitudinal axis. A plurality of adjustable support members are affixed to the body for engaging the frame to be straightened and maintain the mobile straightener immovable relative thereto. Hydraulic cylinders and chains are mounted within the body and arms so as to be connectable to a frame and the like and apply a straightening force thereto in substantially any desired direction.

3,691,818

## METHOD FOR DETERMINATION OF IMPURITIES IN HELIUM GAS

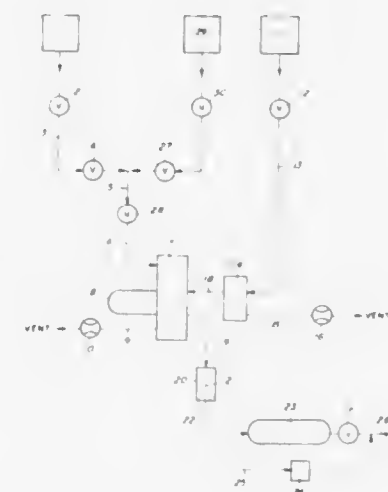
David E. Emerson, Amarillo, Tex., assignor to the United States of America as represented by the Secretary of the Interior

Filed March 27, 1970, Ser. No. 23,133

Int. Cl. G01n 7/04

U.S. Cl. 73-23

1 Claim



signal transmitted by the pig is synchronized therewith. Power is conserved by limiting the pig transmissions to a direct response to the interrogation signal.

3,691,820

## CRACK DETECTION METHOD AND SYSTEM THEREFOR

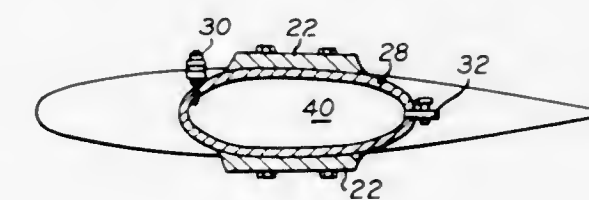
John Fiore, Oyster Bay, N.Y., assignor to Rex Chainbelt Inc.,

Filed May 20, 1970, Ser. No. 39,137

Int. Cl. G01m 3/20

U.S. Cl. 73-40.7

20 Claims



The helium content of a gaseous mixture is determined by comparing the partial pressure of the helium in an unknown sample directly with the pressure of highly purity helium under the same conditions. The volume percent of helium in the unknown is equal to  $(P_1/P_2) \times 100$ , where  $P_1$  is the partial pressure of helium in the sample and  $P_2$  is the total pressure of an equal volume of high-purity helium.

The partial pressure of the helium in the unknown sample is initially determined by adsorption of gases other than helium on activated charcoal and measurement of the resulting helium pressure. The total pressure of high-purity helium is then measured under the same conditions as the sample.

3,691,819

## LEAK DETECTOR AND METHOD

Robert J. Guest, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jan. 4, 1971, Ser. No. 103,421

Int. Cl. G01m 3/24

U.S. Cl. 73-40.5 A

18 Claims

A method and system for locating leaks in a pipeline under hydrostatic pressure by traversing the pipeline with a self-propelled pig having an acoustic leak detecting capability, stopping the pig in response to leak detection, and restarting the pig responsively to locating the pig and/or to the termination of the transient nose initially detected as a leak. A trans-

A method and system for detecting a crack in a wall of a closed hollow vessel, such as a helicopter blade, filled with a non-contaminated referee medium, such as a pure gas. Means, such as a chemical absorbent direct reading detector, are provided for detecting the presence of a contaminant, such as a gaseous impurity, in the non-contaminated referee medium, the contaminant being introduced into the referee medium upon the appearance of a crack. For composite vessels which are composed of at least two layers, or walls, held together by a bonding material, a crack in the inner wall is detected due to the presence of a gaseous contaminant, such as ammonia, out-gassed from the bonding material. For detection of a crack in a wall of a vessel having only a single layer, means are provided for dynamically introducing a pressure differential on opposite sides of the wall for introducing the contaminant into the referee medium upon the appearance of the crack.



### 3,691,821 LEAK DETECTORS

Peter Gordon Davey, Horton-cum-Studley, England, assignor to Cosmopolitan Assurance Company Limited, Nassau, Bahamas

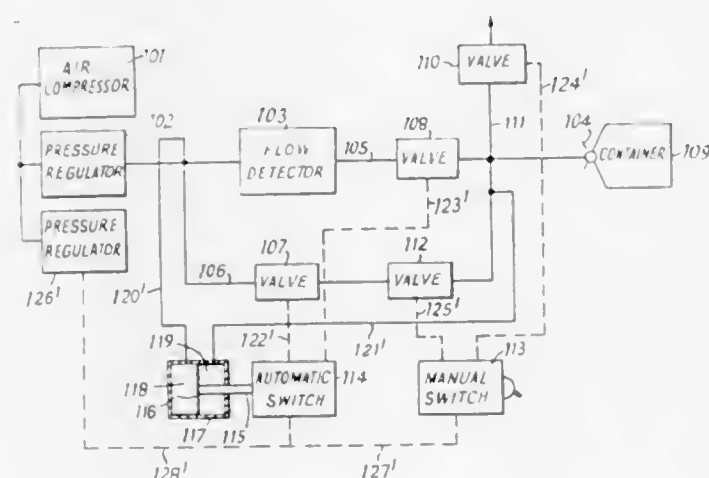
Filed April 1, 1970, Ser. No. 24,757

Claims priority, application Great Britain, April 3, 1969, 17644/69

Int. Cl. G01m 3/32

U.S. Cl. 73-49.2

15 Claims



The leak detector comprises a source of fluid pressure connected by a conduit with a valve to a reservoir having the same capacity and thermal-diffusion time as the container under test. The reservoir is connected to the container being tested through a flow detector. A conduit which can be selectively opened and closed by-passes the flow detector to enable the container to be brought to the test pressure quickly. When the container is at test pressure the valve between the source and the reservoir is closed to isolate the test apparatus from fluctuation of pressure in the source. Furthermore by making the reservoir of the same capacity and thermal diffusion time as the container being tested, the effects of adiabatic and isothermal changes in the reservoir and the container during testing are eliminated. The flow detector is a self-protecting flow detector. It has a by-pass conduit which is provided with a solenoid-operated valve. The solenoid is energized to open the valve by a bistable circuit when the output of the flow detector exceeds a predetermined value. The flow detector uses thermistors as flow-sensing elements. Each element comprises two thermistors forming parts of two potential dividers which are connected in series between supply terminals with the thermistors connected directly together and to a source of reference potential (such as earth). A resistor with a variable tap is connected across the two thermistors. The tap is connected to a differential amplifier and the position of the tap is so adjusted that the input current to the amplifier is independent of the pressure around the thermistors.

### 3,691,822 FLEXIBLE SUPPORT STRUCTURE FOR VIBRATION TESTING

Charles E. Deckard, Huntsville, Ala., assignor to Wyle Laboratories, El Segundo, Calif.

Filed Aug. 3, 1970, Ser. No. 60,674

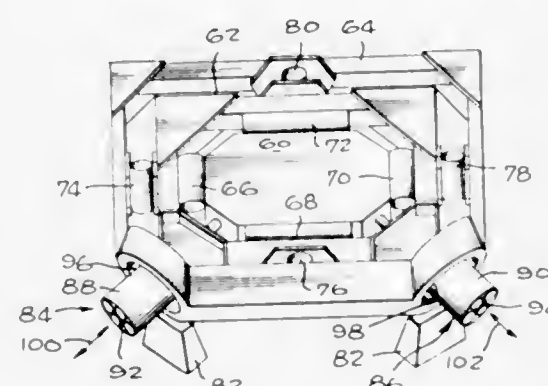
Int. Cl. G01m 7/00

U.S. Cl. 73-71.6

5 Claims

A vibration testing device for supporting items to enable them to be vibrated in three orthogonal directions and pivoted about a vertical axis while maintaining them level, or horizontal, comprising an item-supporting platform surrounded by an intermediate member which, in turn, is surrounded by an outer member. A first group of resilient thin walled cylinders support the platform on the intermediate member, all of these cylinders oriented with their axes horizontal and extending circumferentially about the platform. A second group of resilient thin-walled cylinders support the intermediate

member on the outer member, these cylinders all oriented with their axes vertical. Shaking forces are transmitted to the platform through a structure which includes an inner shaft attached to the platform, a cylindrical surrounding member



which can be driven, and a group of resilient thin-walled cylinders whose axes extend parallel to the shaft and which are attached at diametrically opposite sides to the shaft and surrounding member, respectively.

### 3,691,823 APPARATUS FOR MEASURING HARDNESS OF CIGARETTE ENDS

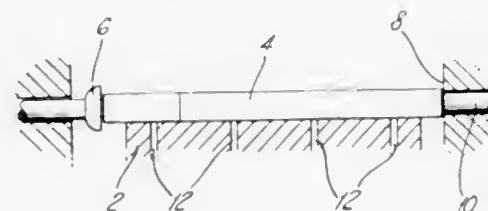
Gordon F. W. Powell, London, England, assignor to Molins Machine Company Limited, London, England

Filed May 18, 1970, Ser. No. 38,038

Int. Cl. G01n 3/42; A24c 5/343

U.S. Cl. 73-81

5 Claims



A cigarette ends testing device comprises a testing plunger which is pressed into an end of a cigarette through a bore in an end stop against which the cigarette is pressed to locate it, means such as suction means being arranged to hold the cigarette firmly in position when so located.

### 3,691,824 CARBURETOR EVALUATION SYSTEM

Vern C. Vanderbilt, Jr., Hagerstown; Clarence L. Zimmer, Richmond; William F. Van Ostrand, and Gerald B. Mattheis, both of Hagerstown, all of Ind., assignors to Dynamic Precision Controls Corporation, Hagerstown, Ind.

Filed June 5, 1970, Ser. No. 43,668  
Int. Cl. G01m 19/00

U.S. Cl. 73-118

14 Claims

This disclosure deals with a system for evaluating the performance of a carburetor of an internal combustion engine while the engine is operating. The system measures the mass flow rate and temperature of the air entering the carburetor, the mass flow rate and temperature of the fuel entering the

### 3,691,826 TORQUE INDICATING TOOL

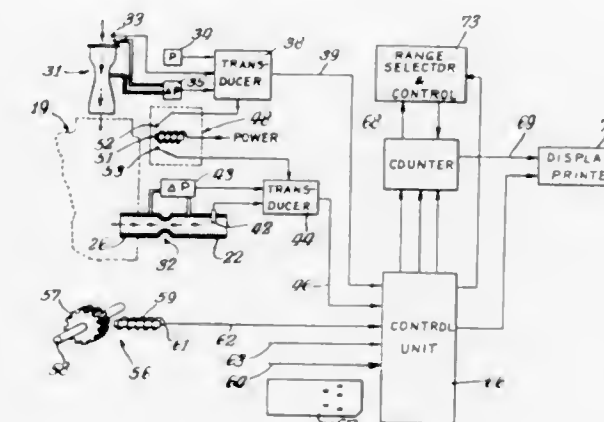
Bosko Grabovac, P.O. Box 1685, Altadena, Calif.

Filed Aug. 25, 1970, Ser. No. 66,838

Int. Cl. G01l 5/24

U.S. Cl. 73-139

9 Claims



thereof, are recorded under different engine operating conditions, in order that the recorded data may be later compared with the performance of a "standard" carburetor.

### 3,691,825 ROTARY TORQUE INDICATOR FOR WELL DRILLING APPARATUS

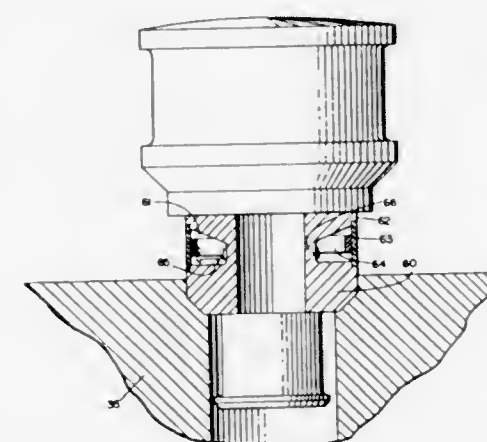
Norman D. Dyer, 3400 Illinois Ave., Dallas, Tex.

Division of Ser. No. 71,712, Sept. 14, 1970. This application Dec. 3, 1971, Ser. No. 204,637

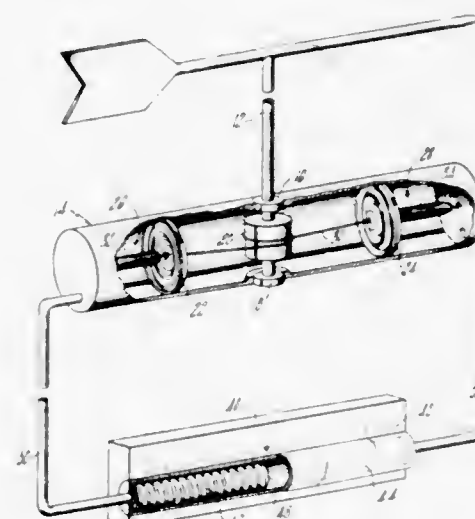
Int. Cl. G01l 3/10

U.S. Cl. 73-136 A

3 Claims



The device is used to indicate torque applied by the rotary table to the drill string during drilling of oil and gas wells. Intermediate adapter between the Kelly bushing and the rotary table in one embodiment has two parts. Lower part of adapter includes standard male square drive that fits into the square drive of the rotary table, and is thus rotated by the rotary table. Upper part of adapter includes female square drive arranged to receive male square drive on the Kelly. The Kelly transmits torque from adapter assembly to the drill pipe. Upper part is connected to lower part by either hydraulic cylinders or by linkage with strain gauge. The upper part rotates with lower part, but is movable relative thereto to indicate relative torque between upper and lower parts. RF transmitter connected to the hydraulic cylinder or strain gauge provides torque signal to remote RF receiver. Alternative embodiment has unitized adapter assembly. Still another alternative embodiment uses torque sensor and RF transmitter directly on Kelly drive bushing without utilization of intermediate bushing.



Apparatus for sensing and pneumatically indicating the direction of flow of a fluid relative to a pre-determined axis. The apparatus comprises a combination of a mechanical device which senses the direction of flow and produces a pressure unbalance commensurate therewith and a pneumatic in-

### 3,691,827 Patent Not Issued For This Number

### 3,691,828 FLOW DIRECTION INDICATOR

Donald J. Jordan, 113 Evergreen Lane, Glastonbury, Conn.

Filed Feb. 16, 1971, Ser. No. 115,578

Int. Cl. G01p 13/02

U.S. Cl. 73-188

4 Claims



indicator device including a bellows which moves in response to the pressure unbalance.

3,691,829

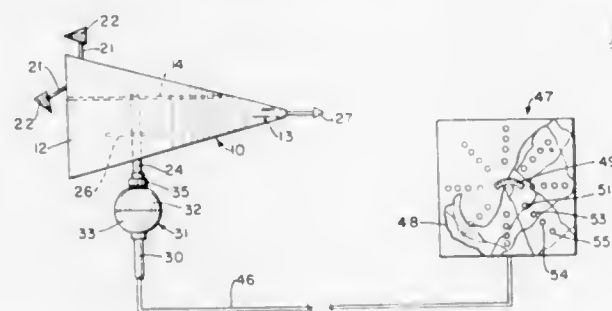
**WEATHER VANE ANOMOMETER**

Frederic F. Perry, 105 B Pleasant, Melrose, Mass.  
Filed June 12, 1970, Ser. No. 45,666

Int. Cl. G01w 1/04

U.S. Cl. 73—189

4 Claims



There is disclosed a weather vane anemometer having a self-contained source of electrical power and means associated therewith for indicating on a map wind and storm direction.

3,691,830

**CURRENT METER OR FLOW METER**

Miyaji Tomota; Yutaka Ishikawa; Hiroo Yamasaki, and Yoshio Kurita, all of Tokyo, Japan, assignors to Kabushiki Kaisha Yokogawa Denki Seisakusho (Yokogawa Electric Works, Ltd.), Tokyo, Japan

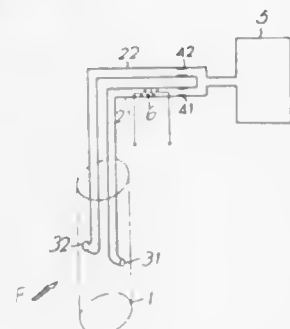
Filed July 7, 1970, Ser. No. 52,967

Claims priority, application Japan, July 18, 1969, 45/56885; Jan. 30, 1970, 45/8198; Jan. 30, 1970, 45/8197; Jan. 30, 1970, 45/8195

Int. Cl. G01f 1/00

U.S. Cl. 73—194 B

15 Claims



A flow meter in which a cylindrical device is immersed in the fluid stream and produces Karman vortices and in which tubes pass through the cylindrical device and supply a quantity of fluid which varies as a function of the pressure on the surface of the cylindrical device and wherein a velocity measuring means is mounted in one of the tubes to detect the flow through the tube.

3,691,831

**VARIABLE ORIFICE METER**

George C. Hughes, Anderson, Ind., assignor to Columbia Gas System Service Corporation, Wilmington, Del.

Filed July 23, 1970, Ser. No. 57,457

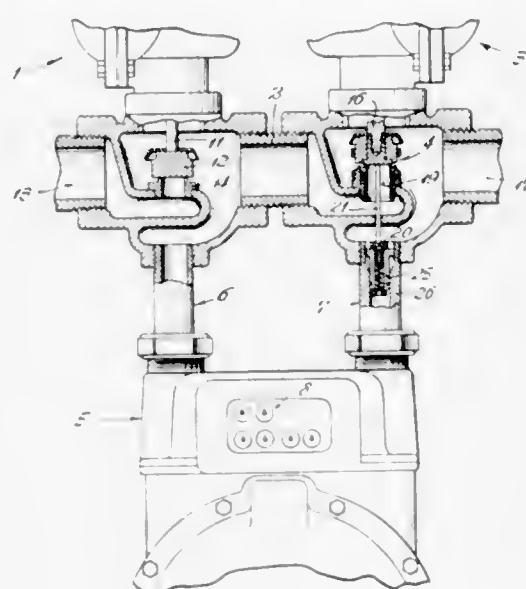
Int. Cl. G01f 5/00; F17d 1/04

U.S. Cl. 73—203

5 Claims

Variable orifice meter assembly for determining the total volume of gas flowing through the assembly by measuring only a portion thereof, comprising a positive displacement meter associated with a first stage input regulator and a second stage

output regulator. The regulators are directly connected for gas flow therebetween and are also connected to the meter for gas flow from the input regulator through the meter to the output regulator. The output regulator is provided with a valve assembly comprising a secondary valve connected to a main valve, the main valve controlling the direct flow of gas from



the input regulator to the output regulator and the secondary valve controlling the flow of gas through the meter. Both valves are mechanically activated for simultaneous unitary operation. The meter is activated by the portion of the total gas flowing therethrough but is calibrated so as to record the total flow of gas through the assembly.

3,691,832

**METHOD OF ANALYZING CIRCULATION OF ELECTROLYTE IN ELECTROREFINING CELLS**

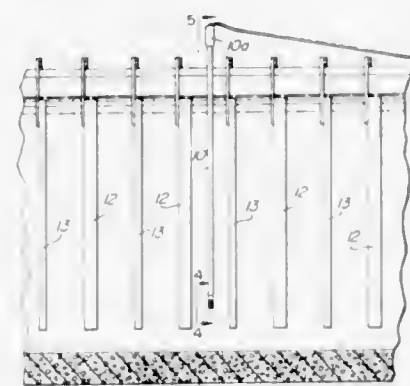
Richard G. Martin; William M. Tuddenham, and Joseph M. Lebrizz, all of Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Feb. 13, 1970, Ser. No. 11,104

Int. Cl. G01f 1/00; G01p 5/10

U.S. Cl. 73—204

1 Claim



Electrolyte flow patterns in an electrolytic cell utilizing anodes and cathodes of plate formation, particularly an electrolytic cell such as is utilized for producing pure cathode copper from fire-refined, impure, blister copper anodes, are determined electrically by taking flow-indicating measurements and temperature-indicating measurements simultaneously and in proximity to each other at selected locations within the cell. Sets of measurements taken at predetermined locations between and surrounding selected anode-cathode pairs are employed to produce corresponding rate-of-flow contour charts depicting relative rates of electrolyte flow at the respective predetermined locations within the respective selected areas. The apparatus employed includes a slender probe, that carries a heated flowrate-sensing thermistor and

an unheated temperature-compensating thermistor in closely spaced relationship at its tip, and Wheatstone bridge circuitry with read-out instrumentation.

3,691,833

**DEVICE FOR DETECTING VELOCITY OF GAS THERMOELECTRICALLY**

Kenji Fujikake; Norio Mutoh, and Yuji Yagi, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho

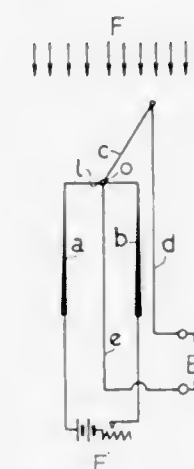
Filed Aug. 26, 1970, Ser. No. 67,030

Claims priority, application Japan, Feb. 28, 1969, 45/17556

Int. Cl. G01f 1/00

U.S. Cl. 73—204

19 Claims



The miniaturized device for detecting velocity of gas thermoelectrically has a heating wire supported by a pair of metal rods and extending thereacross and two thermocouples of chromel-alumel bimetallics which have one wire common to both such wire having one end conductively connected to the heating wire at a point near or equal to the center of the heating wire. Different but closely related connecting junctions are possible. This configuration permits accurate measurement of the speed of gas streams, without interference from e.m.f. signal distortions.

3,691,834

**VARIABLE AREA FLOW METER**

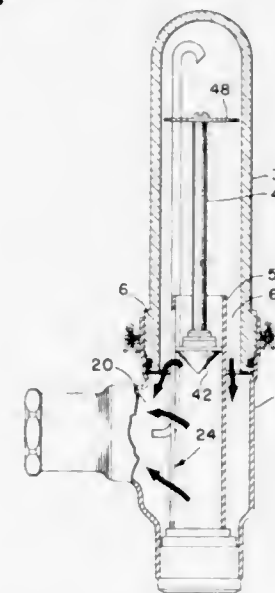
Robert J. De Fassel, Gates Mills, and Herbert W. Heisterkamp, University Heights, both of Ohio, assignors to Robert J. de Fassel, Gates Mills, Ohio

Filed Aug. 21, 1970, Ser. No. 65,903

Int. Cl. G01f 1/00

U.S. Cl. 73—208

13 Claims



A variable area flow meter having a large range of flow measurement. The meter includes a body portion having inlet and

outlet ends. An elongated upright core tube within the body portion receives the flow from the inlet end and is provided with at least one longitudinally extending slot by which the flow is transmitted to the outlet end. A float piston confined by the core tube rises in the tube to expose a greater area of the tube slot or slots as the flow increases, the piston being connected to a suitable indicator.

At a predetermined elevation, means may be provided for reducing the increments of movement which the float piston makes for each increment of increase in flow in the meter. This increases the effective range of the meter.

Means also are provided for varying the weight of the float piston to establish different ranges of flow measurement for fluids of different gravities.

3,691,835

**VARIABLE-AREA FLOWMETER WITH REMOVABLE METERING TUBE**

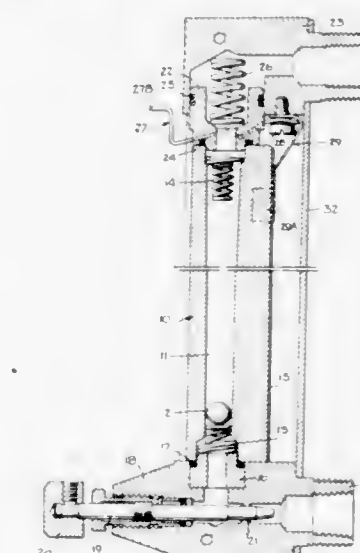
Harold W. Metzger, Willow Grove, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Jan. 20, 1971, Ser. No. 108,053

Int. Cl. G01f 1/00

U.S. Cl. 73—209

8 Claims



A flowmeter of the rotameter type in which a variable-area meter tube is supported between the fittings of inlet and outlet assemblies. In order to make possible removal of the tube for cleaning, repair or replacement purposes, the fitting on the outlet assembly is provided with a retractable adapter which normally engages the top end of the tube and which may be fitted out of engagement therewith to permit an ejector spring to push the tube out of the flowmeter frame.

3,691,836

Patent Not Issued For This Number

3,691,837

Patent Not Issued For This Number

3,691,838

**PULSE SYSTEM AND COMPONENTS THEREOF**

Paul Zoltan Kalotay, Monterey Park, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 29, 1971, Ser. No. 110,898

Int. Cl. G01f 1/04

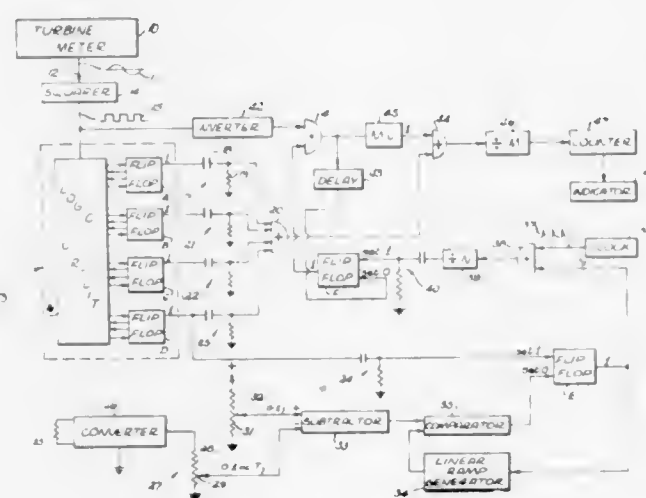
U.S. Cl. 73—231 M

17 Claims

A total mass flowmeter which employs a conventional flowmeter turbine to produce output pulses at a rate directly pro-



portional to the volume flow rate. A number of different, constant frequency clock pulses are then transmitted to a frequency divider periodically, the said number being directly proportional to density. The divider output pulses are then stored and

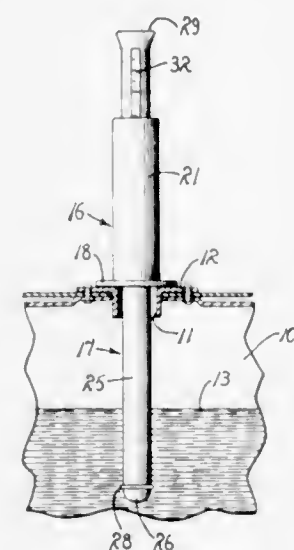


inserted half way between the leading edges of the turbine meter output pulses. A unique circuit deletes every tenth meter output pulse. A decade divider provides this output with a synchronizing gate for the clock pulses.

### 3,691,839 PORTABLE FLUID GAUGE

George D. Lasher, 858 Carmen, Fresno, Calif.  
Filed Sept. 10, 1970, Ser. No. 70,999  
Int. Cl. G01F 23/06; F16I 47/00  
U.S. Cl. 73-322

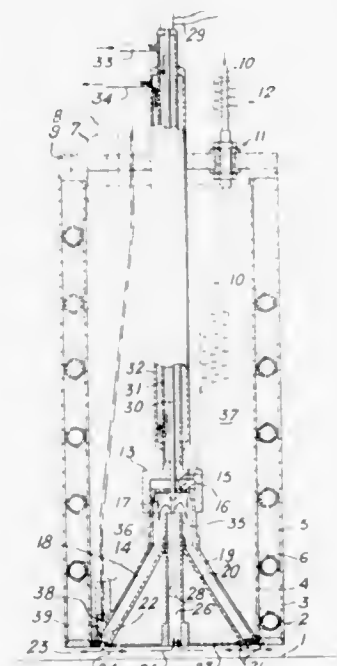
1 Claim



A portable gauge for measuring the fluid contents of a container having an opening circumscribed by a substantially horizontal wall portion, said gauge having a base adapted to rest on said wall portion, a transparent tubular float extended through the base for free elevational movement with respect thereto, and a scale extended longitudinally of the float adjacent to the base for visual comparison therewith, the scale being calibrated in terms of the volumetric contents of the container at various fluid levels therein.

3,691,840  
TEMPERATURE-MEASURING DEVICE  
Jacques Dufour, 30, rue Guersant, 75 Paris 17eme; Paul H. Perroud, c/o Laboratoire ASP, Ceng, Cedex 85, Grenoble; Jacques Petres, c/o Laboratoire ASP, Ceng, Cedex 85, Grenoble, and Jean Rebiere, c/o Laboratoire ASP, Ceng, Cedex 85, Grenoble, all of France  
Filed Jan. 19, 1971, Ser. No. 107,703  
Claims priority, application France, Jan. 22, 1970, 7002211; May 29, 1970, 7019830  
Int. Cl. G01k 1/16  
U.S. Cl. 73-349

6 Claims



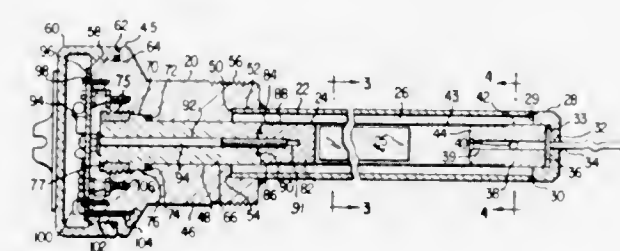
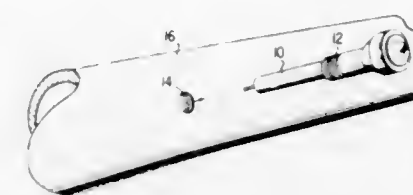
In a device for measuring the temperature of a wall, a gas is fed at a given pressure and flow rate into a collector having an annular end-plate provided with passageways, there being formed between the end-plate and the wall a narrow space in which a fraction of the gas injected through the passageways is heated in contact with the wall. A suction duct is located in the axis of the supply pipe for recirculating said gas fraction. The remainder of the injected gas is continuously driven outwards over the entire periphery of the annular end-plate and forms a gaseous guard ring. One or more thermocouples are placed in the suction duct for measuring the temperature of the gas in contact with the wall and one or more thermocouples are placed in the supply gas stream upstream of the annular end-plate, the function of said thermocouples being to permit direct and differential measurements.

3,691,841  
TEMPERATURE COMPENSATOR  
Paul Lorenzino, and Robert G. Love, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.  
Filed May 12, 1970, Ser. No. 36,629  
Int. Cl. G01k 7/34, 13/02  
U.S. Cl. 73-326 R

16 Claims

A constant plate area and spacing capacitance temperature probe for insertion into a fluid stream which is non-responsive

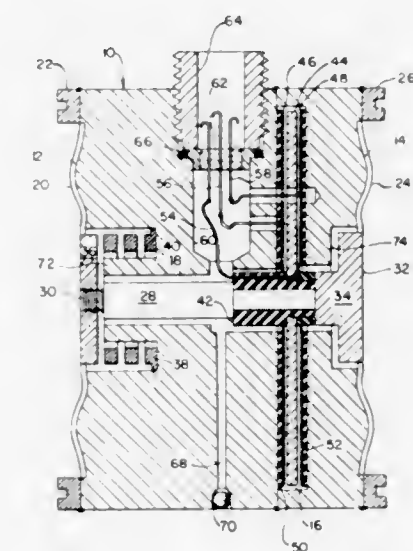
to changes in pressure or content of the fluid investigated. Means for accommodating temperature induced changes in



the dielectric fluid confined within the probe are provided internally of the interior of two concentric electrodes, the outermost of which serves to confine the dielectric fluid.

3,691,842  
DIFFERENTIAL PRESSURE TRANSDUCER  
Lloyd T. Akeley, Fullerton, Calif., assignor to Beckman Instruments, Inc.  
Filed Sept. 8, 1970, Ser. No. 70,184  
Int. Cl. G011 9/12  
U.S. Cl. 73-398 C

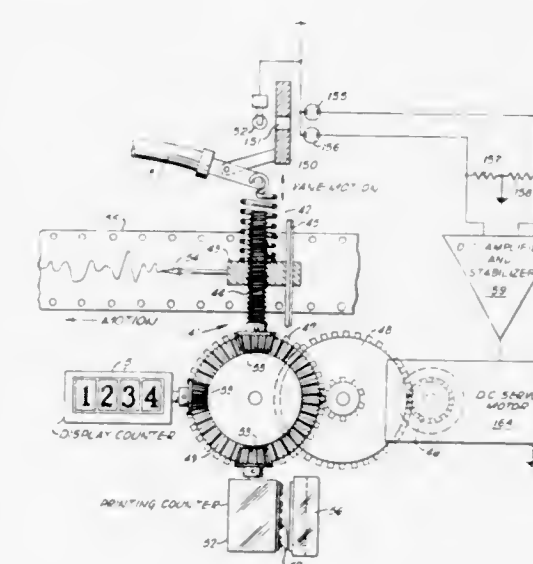
2 Claims



A differential pressure transducer is disclosed. The transducer includes a substantially rigid housing having two opposed end faces, an internal cavity parallel to the two end faces, and a passage passing through the cavity and connecting the two end faces. A first pressure responsive diaphragm is disposed adjacent one of the end faces and sealed thereto along its periphery. A second pressure responsive diaphragm is disposed adjacent the second end face and is sealed thereto along its periphery. A rod extends through the passage and engages at each end a respective diaphragm. A movable plate is positioned in the cavity and attached to the rod so as to move with the rod. Two fixed plates are rigidly mounted in the cavity, one on each side of and spaced from the movable plate. Means are provided for connecting the three plates into a capacitance measuring circuit so that when the rod moves in response to differing pressures being sensed by the two diaphragms, the movable plate moves toward one fixed plate and away from the other, whereby a difference in capacitance between one fixed plate and the movable plate and the other fixed plate and the movable plate occurs which is a measure of the pressure differential being sensed by the diaphragms.

3,691,843  
CONDITION RESPONSIVE APPARATUS  
Joseph E. Gorgens, Trumbull; William A. Heske, Fairfield, and Randall Goff, Weston, all of Conn., assignors to Dresser Industries, Inc., Dallas, Tex.  
Continuation of Ser. No. 859,246, Sept. 17, 1969, abandoned, which is a continuation of Ser. No. 732,472, April 12, 1968, abandoned, which is a continuation-in-part of Ser. No. 565,857, July 18, 1966, abandoned. This application Sept. 11, 1970, Ser. No. 71,420  
Int. Cl. G011 7/04  
U.S. Cl. 73-411

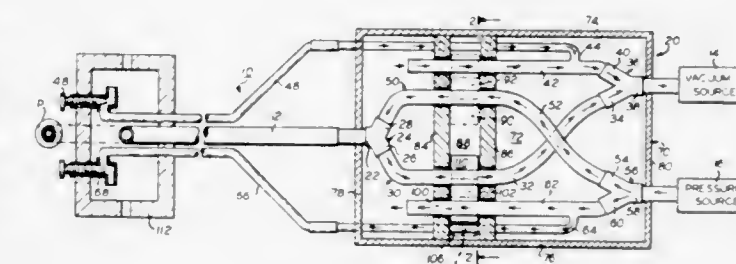
33 Claims



Apparatus responsive to sensed magnitude of a variable condition input to provide an output drive for operative connection to a recorder, counter, or the like. The apparatus includes a control operative in response to condition changes by discrete bidirectional movement from a force balance null position at which sensing means for emitting correlated bidirectional signals to the output drive are at a nonemitting signal level.

3,691,844  
FLOW CONTROL APPARATUS  
Alan D. Moore, 61-61 Woodhaven Blvd., Rego Park, N.Y.  
Filed June 4, 1971, Ser. No. 149,989  
Int. Cl. B011 3/02  
U.S. Cl. 73-425.6

5 Claims



An apparatus for controlling the flow of liquid into and out of a transfer vessel comprises a vacuum source and a pressure source, both connected by branched flexible tubing to the transfer vessel and the atmosphere, with a bleeder control valve provided to adjust vacuum or pressure in each respective connecting line, and a pair of clamping members to be opened or closed selectively, resulting in either the aspiration of liquid into, or the expulsion of liquid from, the transfer vessel at an adjustably controlled rate as desired.



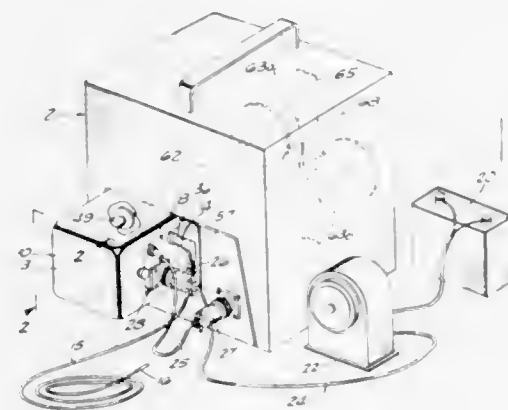
3,691,845

## DATA MONITORING SERVO

Duane A. Ladine, 9325 Vanalden, Northridge, Calif.  
Filed Dec. 18, 1970, Ser. No. 99,458  
Int. Cl. G01r 5/02, 5/12

U.S. Cl. 73—432 A

6 Claims



An electromechanical data monitoring device for transmitting the reading of a sensor to the rotary input shaft of a conventional recording instrument. The data monitoring device is adapted to be fully supported by its attachment on the input shaft of the instrument. To prevent the device from rotating with the input shaft, it is fastened to the side of the instrument. After the device has transmitted the reading by rotating the input shaft of the instrument in accordance therewith, the power is switched from the device to the power input of the instrument to enable the latter to make a permanent record of the reading.

3,691,846

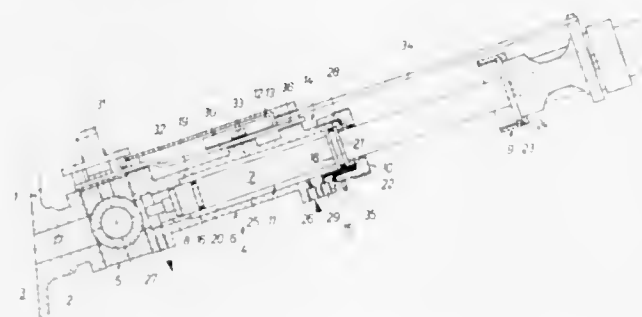
## MEASURING INSTRUMENT EQUIPPED WITH REMOVABLE MEASURED VALUE TRANSMITTER PROBE

Werner Ingold, Uitikon, Switzerland, assignor to Proton AG, Zug, Switzerland  
Filed Feb. 3, 1971, Ser. No. 112,149  
Claims priority, application Switzerland, Dec. 14, 1970, 18479/70

Int. Cl. G01d 21/00

U.S. Cl. 73—432 R

27 Claims



There is disclosed a measuring instrument or device equipped with a removable measured value transmitter probe, the instrument being arranged at a "receptacle", as such term is defined herein, and the probe in its operating position communicating via an opening with the interior of such receptacle. According to the invention the measuring device embodies a shut-off element which can be connected at the receptacle, and at the side of the shut-off element facing away from the receptacle there bears a guide mechanism for supporting and guiding a probe which can move from a probe inserted position where the front end of the probe is arranged in front of the shut-off element into a probe operating position wherein the probe extends through the shut-off element.

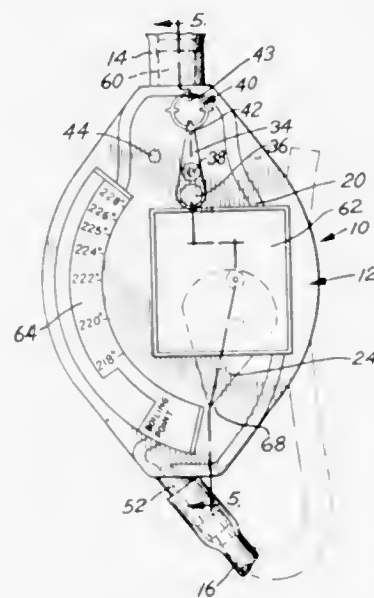
3,691,847

## HYDROMETER

Alan G. Wallskog, Prospect Heights, Ill., assignor to E. Edelmann & Co., Chicago, Ill.  
Filed May 8, 1970, Ser. No. 35,856  
Int. Cl. G01n 9/14

U.S. Cl. 73—441

5 Claims



A device for testing the specific gravity of a sample of liquid. The device has body means which define a float chamber having a pivotally mounted specific gravity float therein. Laterally enlarge flange means are provided along the upright edges of the body means to insulate the operator's hand from the heat of the liquid sample within the float chamber. The force of the liquid entering the chamber is directed against an internal baffle to still the liquid in the chamber.

3,691,848

## FLUID ROTARY SPEED SENSOR

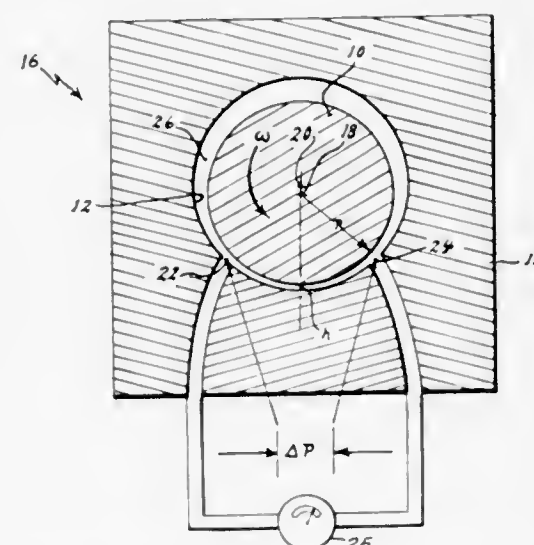
Werner H. Egli, Minneapolis, and Donald J. Erickson, New Brighton, both of Minn., assignors to The United States of America as represented by the Secretary of the United States Air Force

Filed July 10, 1970, Ser. No. 53,729

Int. Cl. G01p 3/28

U.S. Cl. 73—502

1 Claim



A fluid rotary speed sensor having a concave cylindrical surface placed in close proximity to a rotating shaft and with a slight eccentricity so that the clearance between the shaft and the concave cylindrical surface varies as a function of circumferential angle. Hydrodynamic pumping causes a differential

pressure between two suitably located taps in the concave surface. This differential pressure is proportional to the shaft speed. A pinion connected to the indicator shaft engages a rack about a further axis perpendicular to the first and second axes.

3,691,849

Patent Not Issued For This Number

3,691,850

## HIGH SENSITIVITY ACCELEROMETER

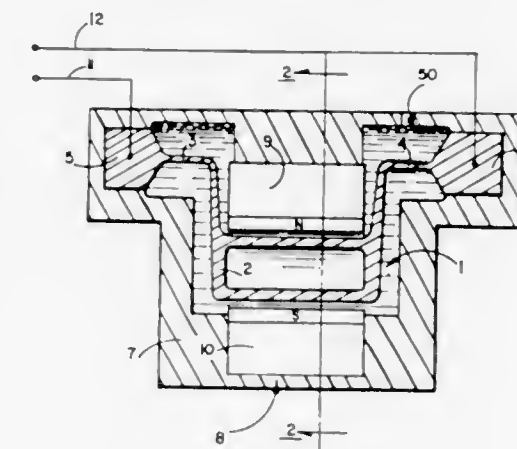
John M. Slater, Fullerton, and Doyle E. Wilcox, Hacienda Heights, both of Calif., assignors to North American Rockwell Corporation

Division of Ser. No. 664,496, Aug. 30, 1967, Pat. No. 3,564,928. This application Feb. 24, 1970, Ser. No. 15,971

Int. Cl. G01p 15/08

U.S. Cl. 73—516 R

7 Claims



An accelerometer for extraterrestrial craft which can be tested on earth by being isolated from gravity is constructed having a movable proof mass member which is either a hollow metalized conductor loop suspended by filaments, or a hollow sphere of ferromagnetic material. In either case, the net density of the proof mass member is such as to permit substantially complete flotation of the proof mass in water maintained at the temperature of maximum density. The proof mass is then immersed in the water so as to attenuate gravity to any desired degree. The instrument may then be tested in known ways in the laboratory, and the water removed before the accelerometer goes into service in the craft. The invention herein described was made in the course of or under a contract or subcontract thereunder, with the Air Force.

3,691,851

Patent Not Issued For This Number

3,691,852

## GYRO ARRANGEMENT

Bo Hans Gunnar Ljung, Canoga Park, Calif., assignor to A G A Aktiebolag, Lidingo, Sweden

Filed Nov. 7, 1969, Ser. No. 874,804

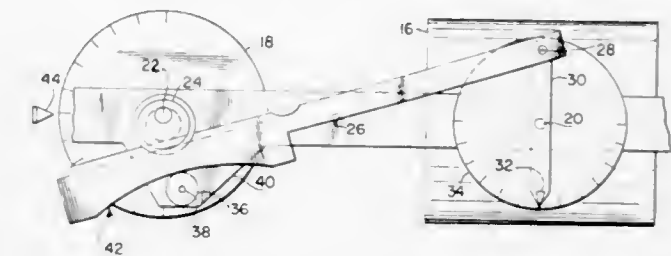
Claims priority, application Sweden, Nov. 7, 1968, 15060/68

Int. Cl. G01c 19/32

U.S. Cl. 74—5

4 Claims

A gyro arrangement includes a gyro housing mounted for rotation about a first axis and an indicator device mounted for rotation about a second, parallel axis, the gyro housing and the indicator device also being mounted for rotation in common



pivoted about the free end of an arm connected to the housing shaft to provide rotation of the indicator device responsive to rotation of the gyro housing.

3,691,853

## TORQUE GENERATOR

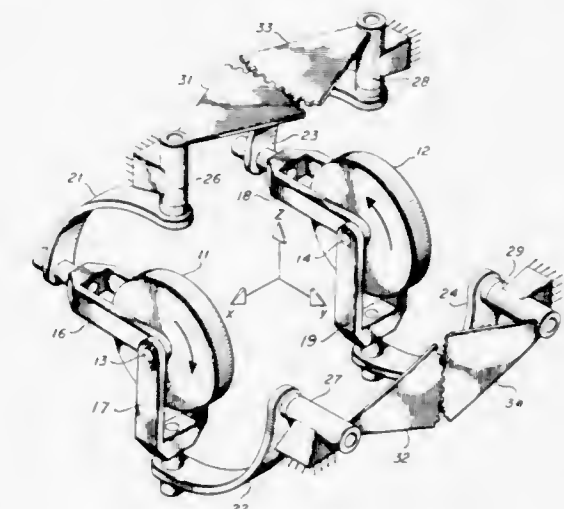
Loren E. Currison, La Habra, and Alden P. Perry, Cypress, both of Calif., assignors to North American Rockwell Corporation

Filed July 27, 1970, Ser. No. 58,374

Int. Cl. G01c 19/02

U.S. Cl. 74—5.34

5 Claims



The features and advantages of a single-degree of freedom-type of control-movement gyros have been retained within a system having only one pair of rotors by mounting them on a frame to normally rotate about parallel axes and counter to each other, each spin axis is mounted so that the axis can be rotated simultaneously within two mutually perpendicular planes to provide angular momentum to the frame on any axis that lies in a plane perpendicular to the normal position of the spin axes.

3,691,854

## STARTER DRIVE FOR COMBUSTION ENGINES

Otto Barthruft, Stuttgart, and Walter Rühle, Kornthal, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 31, 1970, Ser. No. 103,134

Claims priority, application Germany, Jan. 19, 1970, P 20 02 074.0

Int. Cl. F02n 15/00

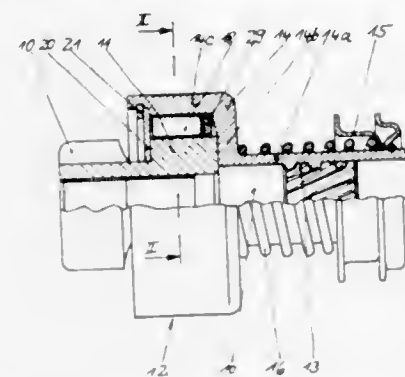
U.S. Cl. 74—6

8 Claims

A pinion is provided, and a drive-transmitting hollow shaft. An outer element is annular and concentric to the shaft, having a flange connected therewith. An inner annular element is surrounded by the outer element and connected with the pinion, and a plurality of curved cam tracks on the inner circumference of the outer element are angularly offset about and eccentric to the axis of the same, defining with the inner body confined spaces which converge in circumferential direction. An annular disc is stationarily received between



these elements and provided with axial projections each having a surface elongated in circumferential direction, and rolling bodies are accommodated in the confined spaces. Pres-



sure springs are also accommodated in the respective confined spaces abutting and guided by the surfaces and also abutting against the rolling bodies, urging the latter circumferentially in the direction of convergence of the spaces.

### 3,691,855 CONE CAM ASSEMBLY

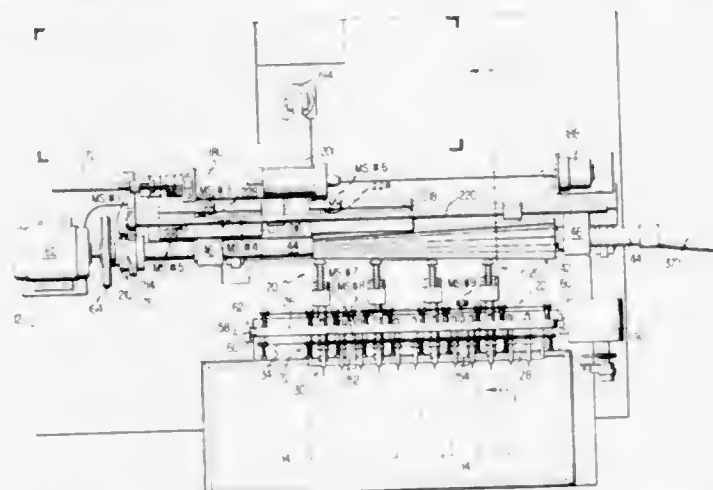
John A. Cupler, II, 10 Cupler Drive, LaVale, Cumberland, Md.

Division of Ser. No. 715,711, March 25, 1968. This application Sept. 4, 1969, Ser. No. 871,137

Int. Cl. F16h 25/08

U.S. Cl. 74—55

10 Claims



The disclosure introduces a new concept in machining; that of the non-captive tool. A non-captive tool is herein defined as one which may undergo bodily movement, transversely of its own axis, relative to both the tool bearing structure which supports the tool in working position and a tool support structure which supports the tool in a non-working position adjacent the bearing structure. The non-captive tool is unrestrained against the aforesaid bodily movement except during that time the tool is actually working and, while working, the restraint imposed is due to engagement with the tool driving means. Accordingly, removal of the tool driving means from engagement with the tool frees the same for bodily movement which movement may, advantageously, be integrated with the movement of the tool driving means out of engagement with the tool.

The disclosure is directed to methods and apparatus for automatically interchanging a plurality of non-captive rotary tools between working and non-working positions; for effecting tool interchange concomitantly with respective engagement and disengagement of working and non-working tools with a constantly driven input; for effecting infinitely variable infeed of the working tools; for automatically positioning a workpiece in accordance with pre-programmed operating cycles controlling a tool changer; for performing machining operations with a tool having a compound rotary input; and for transmitting a programmed cycle of operation from a master machining console to a plurality of slave machining centers.

The working and non-working tools in accordance with a first aspect of the invention relating to a tool changer are non-captively supported, in a horizontal position, on Vee bearings and a tool support rack, respectively. The tools are mounted on spindles which are adapted to be supported adjacent their outer ends on the support rack and at an intermediate portion thereof on the bearings. The bearings are of the Vee type and provide non-captive support for the tool spindles supported thereon to permit both rotary and reciprocating movement of the tools. Relative vertical movement between the rack and bearings results in an interchange of tools therebetween by virtue of the tools being lifted from either the bearings or the rack, depending on the direction of vertical movement.

At least one flexible driving member is constantly recirculated adjacent the bearings and is mounted for vertical movement with the tool support rack for movement into and out of driving engagement with the working tools simultaneously with the aforementioned tool interchanging operation.

A linearly reciprocable cam follower is mounted adjacent each tool bearing in coaxial alignment with that end of the tool spindle remote from the working end; whereby reciprocating and/or advancing movement of the followers will be transmitted through one end thereof to the working tools. An elongated cone cam is positioned to engage the other ends of the followers and reciprocate the same upon rotation of the cone. The cone is, additionally, mounted for axial translation to provide for controlled advance of the followers and tools engaged thereby. Simultaneous rotation and translation of the cone results in a constantly advancing reciprocating path of tool movement.

A work station is positioned adjacent each of the Vee bearings and includes a work clamping and indexing mechanism whose sequence of operation is integrated with, and controlled by, the operating cycles undergone by the tool changing mechanism.

A tool having a pair of telescoped spindles, each of which is adapted to receive a separate rotary input, is provided for use in certain special machining operations.

A second cone cam is mounted outside the confines of the tool changing mechanism for reciprocating one or a plurality of followers comprising the input to a closed hydraulic slave system whose output is adapted to actuate additional tools.

3,691,856

Patent Not Issued For This Number

### 3,691,857 GUIDE MEANS

John Cooper, West Bridgford, England, assignor to Matratex Engineers Limited, Isle of Man, England

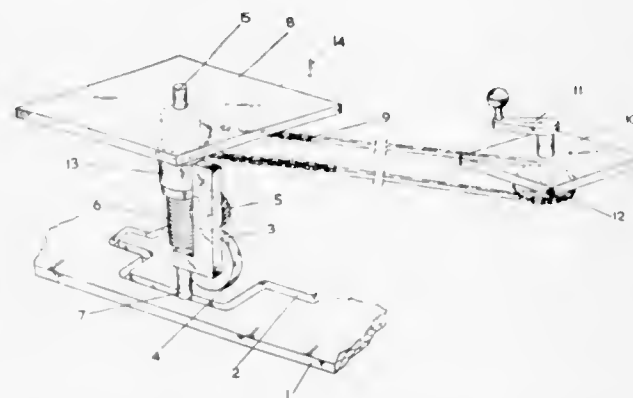
Filed July 14, 1970, Ser. No. 54,687

Claims priority, application Great Britain, July 18, 1969, 36,202/69

Int. Cl. F16h 27/02

U.S. Cl. 74—89

1 Claim



A guide means which provides patterning apparatus particularly for use with sewing machines comprising a board

with pattern markings thereon and a follower for said pattern and means for driving said follower relative to said pattern.

3,691,858

### ELECTROMOTIVE ADJUSTING DEVICE

Richard Wilke, Schwelmerstrasse 51, 583 Schwelm, Germany

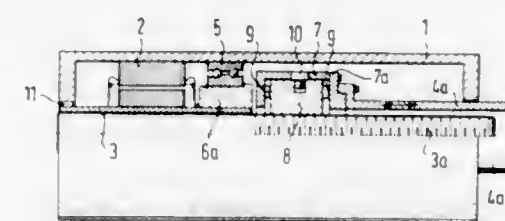
Filed Oct. 12, 1970, Ser. No. 79,812

Claims priority, application Germany, Oct. 10, 1969, P 19 51 181.6

Int. Cl. F16h 27/02

U.S. Cl. 74—89.15

8 Claims



An adjusting device, which comprises a reversible driving motor, including a spindle and a nut to constitute driving elements. An arrangement driven by said motor at least directly, whereby one of said driving elements performs a pushing and a pulling movement, respectively. A nut-housing receives the nut and connection elements, having poor friction and being non-resilient, transfer axial forces for the pushing and pulling movement, respectively, from the nut driven by either the motor or the spindle to the nut-housing. The nut-housing is rigidly connected with the driving motor and with a push-pull tube, respectively.

3,691,859

### INTERMITTENT DRIVE STRUCTURE

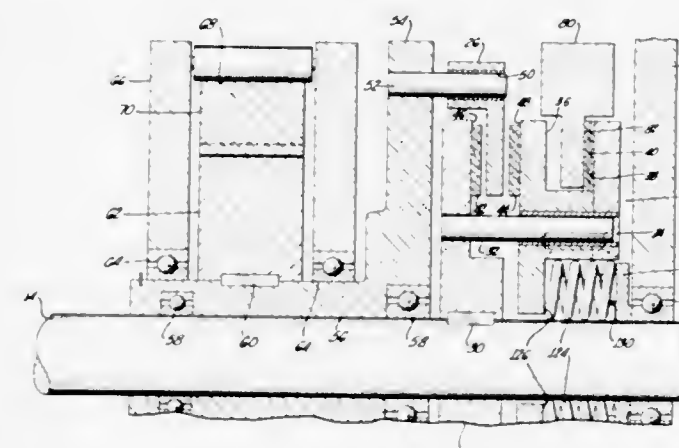
Charles L. Peters, Anaheim, Calif., assignor to Box Innards, Inc., Anaheim, Calif.

Filed Sept. 1, 1970, Ser. No. 68,617

Int. Cl. F16h 29/20; F16d 71/00, 67/02

U.S. Cl. 74—120

8 Claims



An intermittent drive structure for driving a driven shaft employing a clutch can be constructed utilizing a means for transmitting motion to the clutch so as to cause rotation of the driven shaft and a drive means for causing oscillation of the means for transmitting motion. Such a structure employs means for opening the clutch at one extreme of the oscillation caused by the drive means and for closing the structure at the other extreme of the drive means.

3,691,860

### SNOW BLOWER DRIVE

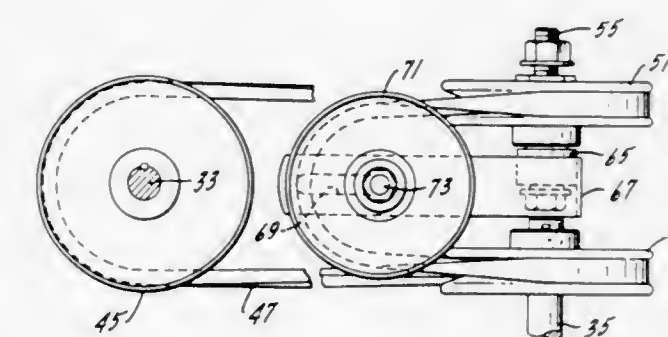
Walter W. Danuser, Claremore, Okla., assignor to Danuser Machine Works, Inc., Claremore, Okla.

Filed May 21, 1971, Ser. No. 145,687

Int. Cl. F16h 7/12, 7/10, 7/00

U.S. Cl. 74—242.1 R

5 Claims



A drive for a snow blower of the type which is detachably mounted on a tractor. The drive includes an input drive sheave which connects to the tractor and an output drive sheave which drives the snow blower auger. The shafts on which these sheaves are mounted extend at 90° relative to each other. The sheaves are connected by a drive belt of the vee type. An idler sheave and a tension sheave also engage the drive belt and the arrangement of these sheaves provides the 90° drive without the use of gears. The tension sheave is attached to a pivotally mounted arm which permits the tension sheave to move in an arc in drive belt tensioning and non-tensioning directions. Spring means are provided to bias the tension sheave in a belt tensioning direction and means are provided to permit adjustment of the sheave on its mounting arm.

3,691,861

### TRANSMISSION ARRANGEMENT WITH BASIC TRANSMISSION MECHANISM

Hans Sturmer, Stuttgart, Germany, assignor to Robert Bosch, GmbH, Stuttgart, Germany

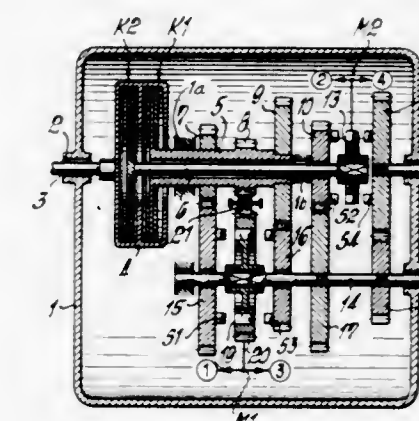
Filed March 4, 1968, Ser. No. 710,060

Claims priority, application Germany, March 3, 1967, B 91449

Int. Cl. F16h 3/08

U.S. Cl. 74—330

7 Claims



A basic multistage constant mesh transmission mechanism can be used in an automatic transmission by providing a first input unit with two input shafts and a main clutch for connecting the same selectively to a drive shaft, and in a manual transmission by using a second input unit with a single input shaft and a standard clutch so that the cost of the basic transmission mechanism can be reduced by mass production.

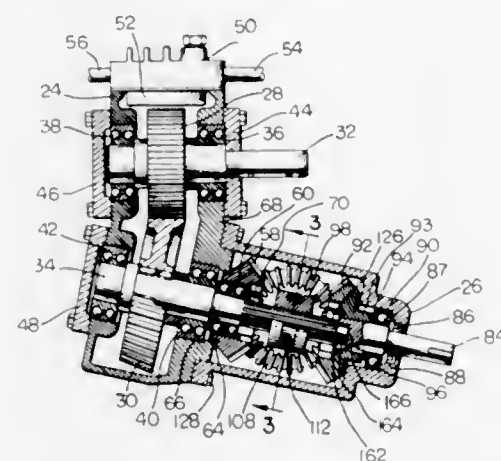


### 3,691,862 TRANSMISSION

Henry T. Halibrand, 6469 Nancy St., Los Angeles, Calif.  
Filed Nov. 15, 1968, Ser. No. 776,068  
Int. Cl. F16h 3/14

U.S. Cl. 74-479

8 Claims



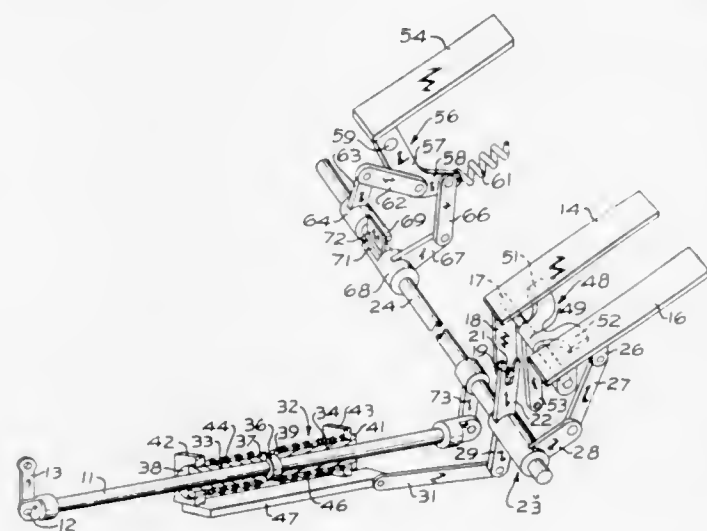
A transmission, such as the V-type marine transmissions, having a drive shaft at least partially supported by a driven shaft within a gear box having a freely rotatable drive gear, an idler gear and a driven gear operatively arranged with a coupler on the drive shaft to be normally stationary in a neutral position of the coupler co-rotative in another and counter-rotative in still another position of the coupler.

### 3,691,863

CONTROL FOR HYDROSTATIC TRANSMISSION  
Walter M. Shaffer, Chesterland, Ohio, assignor to Towmotor Corporation, Cleveland, Ohio  
Filed April 28, 1971, Ser. No. 138,100  
Int. Cl. G05g 9/00

U.S. Cl. 74-478

17 Claims



A control arrangement particularly for the hydrostatic transmission of a lift truck or the like to provide direction control, pump displacement control, throttle control, as well as special displacement control such as inching or creeping with high engine speeds as are required for lifting, etc. The arrangement includes a reciprocally movable pump displacement control rod coupled to a transmission control lever rotatable from a neutral position to forward and reverse pump displacement positions responsive to translation of the rod in opposite directions. Forward and reverse control linkage means are coupled to the rod by means of spring loaded sliders preloaded to a force above that required for the rod to move the transmission control lever through its full travel in both the forward and reverse directions in response to reciprocal rod movement effected by the control linkage means. A throttle control linkage is operably associated with the forward and reverse con-

trol linkage means to open the throttle in accordance with the extent of actuation of the latter control linkage means in either the forward or reverse direction. In addition, override control linkage means are coupled to the rod to override the loading force of the sliders and cause the rod to move the transmission control lever towards its neutral position irrespective of actuation of the forward and reverse control linkage means.

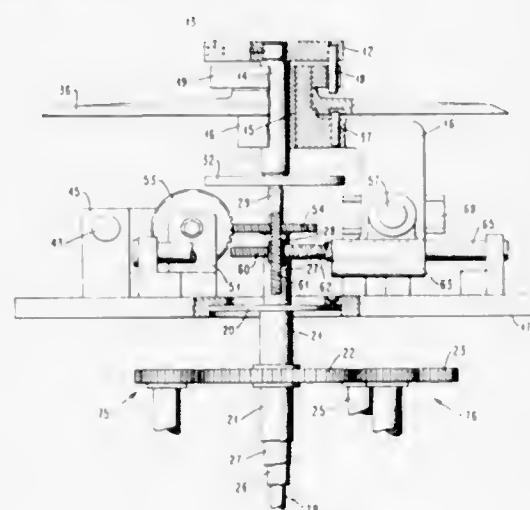
### 3,691,864

X-Y ROTATIONAL POSITIONING SYSTEM  
Thomas J. Cochran, La Grangeville; Herbert K. Hazel, and William G. Rance, Jr., both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 19, 1970, Ser. No. 90,929  
Int. Cl. G05g 15/06

U.S. Cl. 74-479

5 Claims



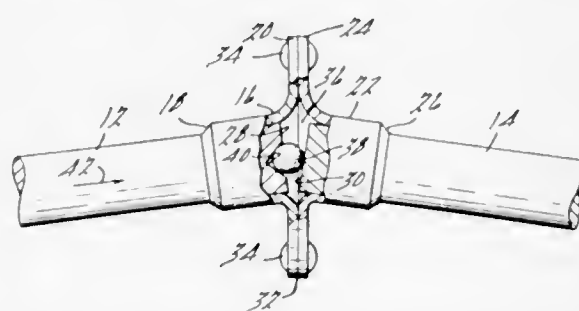
An improved system is provided for positioning a circuit board with respect to wire handling and bonding apparatus. The board is movable in an X-Y plane, can be raised or lowered along a Z dimension axis, and can be rotated about the Z dimension axis. Separate X, Y, Z, and rotational dimension electric motors are mounted on a stationary base. A differential mechanism couples an X positioning mechanism to respond to the difference between the X dimension motor position and the rotational dimension motor position. The differential mechanism prevents changes in the rotational position of the X positioning mechanism from affecting the X dimension position. A similar differential mechanism couples the Y positioning mechanism to the Y drive motor and to the rotational dimension drive motor.

### 3,691,865

DEFORMABLE STEERING COLUMN ASSEMBLY  
John C. McElwain, Rochester, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.  
Filed Dec. 28, 1970, Ser. No. 101,659  
Int. Cl. B62d 1/18

U.S. Cl. 74-492

10 Claims



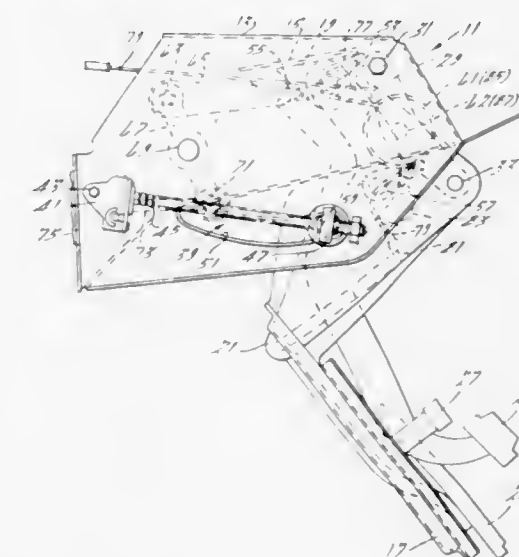
A motor vehicle steering column assembly having at least two distinct shaft elements interconnected by a flexible

### 3,691,868

ADJUSTABLE PEDAL  
Raymond P. Smith, 30785 Red Maple Lane, Southfield, Mich.  
Filed July 6, 1971, Ser. No. 159,865  
Int. Cl. G05g 1/14

U.S. Cl. 74-512

7 Claims



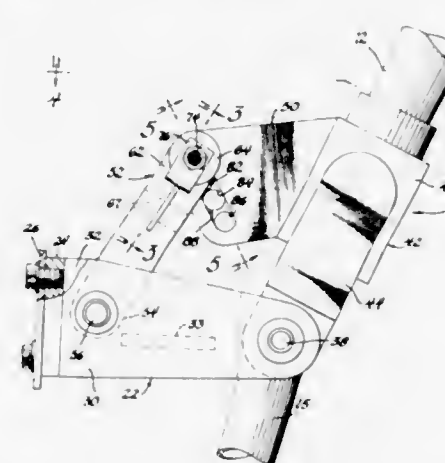
An adjustable pedal assembly for an automotive vehicle in which the fore and aft positions of the pedals may be varied without affecting the outputs of the individual pedal components. The assembly includes a pedal carrier bracket which is connected by links to a support structure. Each pedal is connected to its controlled device by a flexible tension bearing member. The flexible tension bearing member extends about a guide mounted on one of the links. The guide is located at an intermediate point on the link so that it compensates for the change in position of the pedal without affecting the output of the flexible member.

### 3,691,866

TILT STEERING WHEEL MECHANISM  
Benjamin L. Berkes, Sagamore Hills, Ohio, assignor to General Motors Corporation, Detroit, Mich.  
Filed July 2, 1971, Ser. No. 159,230  
Int. Cl. B62d 1/18

U.S. Cl. 74-493

3 Claims



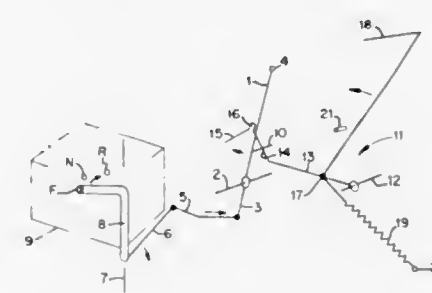
A tilt steering wheel mechanism having a column, the lower end of which is connected to an adjuster mechanism having a guide plate and a lock pin cooperating with the guide plate permitting the column to be pivoted to predetermined points about a horizontal axis for maintaining the wheel in an adjusted position.

### 3,691,867 CONTROL DEVICES

Norman Francis Bradshaw, Goldthorpe, near Rotherham, England, assignor to International Harvester Company, Chicago, Ill.  
Division of Ser. No. 760,904, Sept. 19, 1968, Pat. No. 3,523,588. This application Jan. 8, 1970, Ser. No. 7,318  
Int. Cl. G05g 5/08

U.S. Cl. 74-491

4 Claims



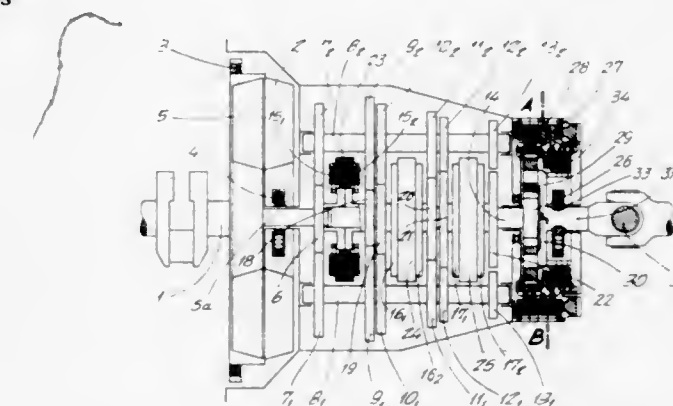
Safety lever for the power-shift transmission of a tractor, in which the safety lever can be moved to a transmission-unlocking position wherein the safety lever intervenes adjacent the tractor operator's seat to block the exit of the operator from the tractor, and in which the safety lever can be moved to a locking position wherein the safety lever no longer intervenes, but at the same time either retains the transmission locked in neutral position or forces the transmission to take a

### 3,691,869

VARIABLE SPEED HYDRAULIC TRANSMISSION  
Hermann Klaue, Case Postale 151, 1820 Montreux, Switzerland  
Filed June 25, 1970, Ser. No. 49,626  
Int. Cl. F16h 37/00; F16d 25/06

U.S. Cl. 74-740

9 Claims



A variable speed transmission connecting an input shaft to an output shaft and including at least one rotating clutch. The clutch is operated by hydraulic pressure fluid delivered to and removed from the outer circumferential periphery of the clutch. Preferably, a plurality of these clutches are arranged on a main shaft of the transmission, and one or more of these clutches may be double clutches, that is, two separate clutches connected to a common coupling member. A secondary shaft



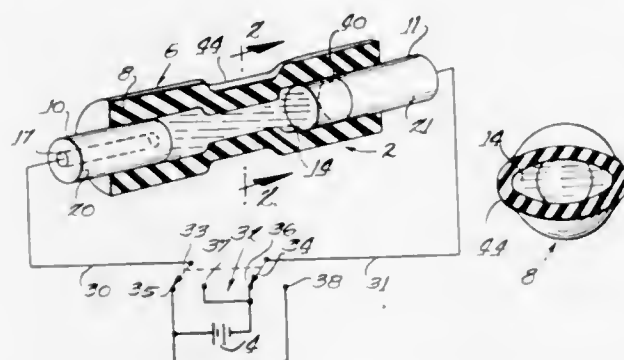
operatively engaged with the input shaft includes gears for operating selected ones of said clutches. A turbine blade may be provided between the input shaft and the clutches and a planetary gear brake may be provided between the clutches and the output shaft.

### 3,691,870 BALANCING DEVICE

Richard Wolf, 15446 Sherman Way, Van Nuys, Calif.  
Filed Dec. 1, 1970, Ser. No. 93,998  
Int. Cl. F16f 15/22

U.S. Cl. 74—573

4 Claims



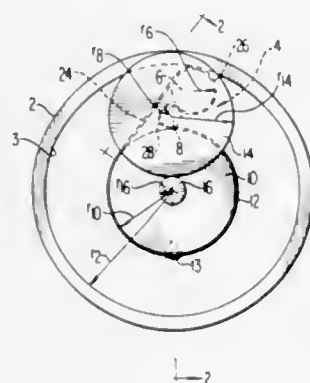
An electrical balancing apparatus for making minute adjustments in the center of gravity is disclosed. The apparatus includes a flexible container having electrodes mounted coaxially and connected to a unidirectional current source. The container is filled with an electrolyte so that an applied current causes electrodeposition from one electrode to the other depending on the direction of current flow. The container is constructed of a resilient material in a generally cylindrical shape but including a punched baffle portion adapted to accommodate the expansion and contraction of the electrolyte caused by temperature variations, as well as to prevent the creation of a void in the electrolyte or cracking of the cylinder.

In an alternative embodiment four electrodes are mounted in a generally oval resilient container which is deformable to a spherical configuration to accommodate expansion and contraction of the liquid electrolyte.

**3,691,871  
ROTARY MOTION TRANSMITTING APPARATUS**  
Dean E. Gladow, and Donald F. Wilkes, both of Albuquerque, N. Mex., assignors to Rolamite Incorporated, San Francisco, Calif.

Filed June 25, 1970, Ser. No. 49,623  
Int. Cl. F16h 13/00; G01b 3/22; F16h 25/16  
U.S. Cl. 74—798

19 Claims



Apparatus for transmitting rotary motion between two relatively movable members. The apparatus includes an elongated thin flexible element in the form of a band arranged in a pair of adjoining alternate loops with a roller confined within each of the loops. The rollers roll along a circular path as the band

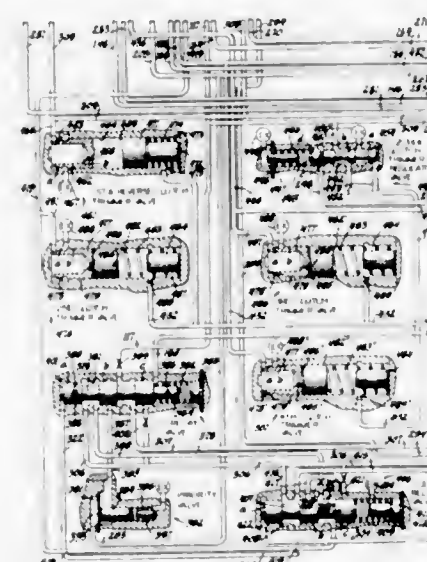
progressively passes around the rollers. The rollers and the band are supported on a cylindrical guide surface and the rate of motion of the components of the apparatus relative to each other permits a high degree of amplification or reduction between input and output elements. As an alternative usage, the apparatus readily lends itself to two inputs in a manner equivalent to a geared differential.

### 3,691,872 TRANSMISSION AND CONTROLS

Robert H. Schaefer, Westfield, Ind., and Joseph R. Fox, Waukesha, Wis., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 852,760, Aug. 25, 1969, abandoned. This application April 29, 1971, Ser. No. 138,655  
Int. Cl. B60k 21/06; F16h 5/48, 47/08  
U.S. Cl. 74—864

36 Claims

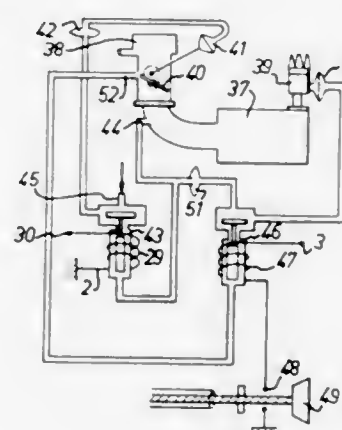


A transmission having a multiratio gear unit providing five forward speeds established by the engagement of a forward drive clutch and one additional individual speed engaging device for each forward speed and a reverse drive by the engagement of the second and fourth forward speed devices for reverse drive. A manual selector valve for selecting and holding in a first speed drive, selecting a range providing speed and torque demand controlled automatic shifting between four speeds, second to fifth and selecting further lower ranges each preventing normal automatic shifting to the highest speed in the next higher range but permitting shifts to all available higher speeds at higher than normal overrun speeds. For each speed an automatic shift valve controls a relay valve. The relay valves are hydraulically sequentially arranged so each lower speed relay valve when upshifted feeds through the downshifted next higher speed relay valve to feed the motor to engage the next speed ratio drive. The relay valves each have low and high inlet, supply and exhaust ports. In the downshift position the low inlet port is connected to the low supply port and the high supply port is connected to the high exhaust. In the upshift position the high inlet port is connected to the high supply port and the low supply port is connected to low exhaust. The second and higher relay valves have a low inlet port having a restricted feed and a one-way bypass return. Thus each speed drive motor is fed for each speed drive engagement through its restricted feed passage on both up and down shifts and each speed drive motor is exhausted for speed drive disengagement through one restricted exhaust passage on upshifts and another restricted exhaust passage on downshifts to provide individually controlled motor feed and thus engagement rates and individually controlled exhaust rates at one rate during upshift and another rate during downshifts.

**3,691,873  
FREQUENCY-RESPONSIVE CONTROL DEVICES,  
NOTABLY FOR REDUCING THE AIR POLLUTION  
CAUSED BY PETROL ENGINES**  
Claude Lombard, and Jean-Louis Perrin, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, 07, Billancourt/(Haute de Seine) and Automobiles Peugeot, Paris, France

Filed Sept. 21, 1970, Ser. No. 73,764  
Int. Cl. F02s 11/10; B60k 11/16  
U.S. Cl. 74—866

8 Claims

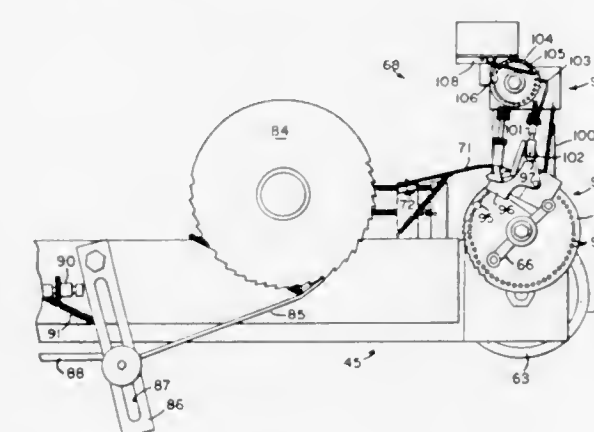


An air pollution reducing electronic frequency responsive control device for controlling the carburetor throttle, the gear changing mechanism, and the ignition vacuum advance of an internal combustion engine of a vehicle. The control device includes a vehicle speed responsive governor which provides an input to an electronic circuit which in turn controls one or a plurality of electromagnetic valves. One electromagnetic valve acts to prevent complete closing of the carburetor throttle when the vehicle is traveling above a predetermined speed, thus preventing an excessively rich fuel mixture if the operator remove his foot from the accelerator pedal.

**3,691,874  
AUTOMATIC FEED CONTROL FOR SAW GRINDER**  
Ivan Clay Miller, 1509 Helen Ave., Missoula, Mont.  
Filed Jan. 25, 1971, Ser. No. 109,327  
Int. Cl. B23d 63/12

U.S. Cl. 76—41

6 Claims



An automatic feed control is described for controlling the operation of a grinding machine having a diamond abrasive wheel for grinding carbide teeth of a circular saw. The automatic feed control automatically advances the diamond wheel after the saw blade has been rotated a selected number of revolutions until the carbide teeth have been ground to a desired depth. The feed is automatically terminated and the operation of the machine continued until the saw blade has rotated a selected number of revolutions to remove any high spots that may remain.

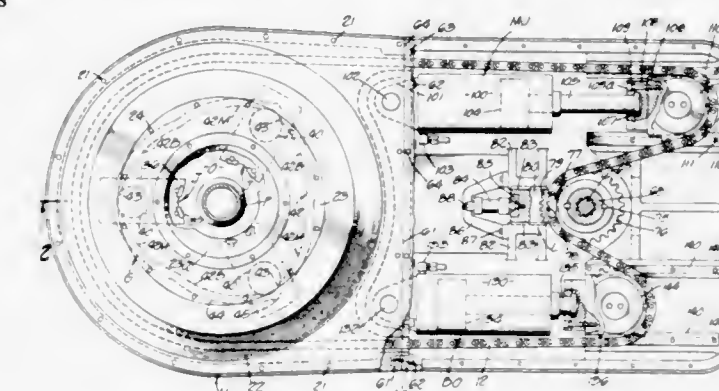
**3,691,875  
CHAIN DRIVEN SPINNING, MAKE UP AND BREAK OUT  
TONGS**

Bela Geczy, Glendale, and Carl Alfred Wilms, La Habra, both of Calif., assignors to Byron Jackson, Inc., Long Beach, Calif.

Filed April 16, 1971, Ser. No. 134,554  
Int. Cl. B25b 17/00, 21/00

U.S. Cl. 81—57.14

20 Claims



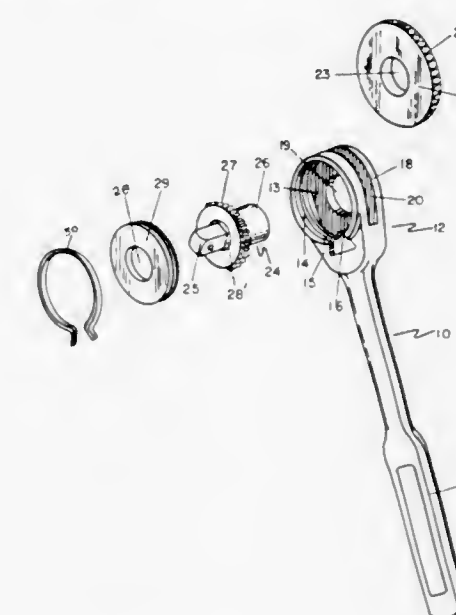
A tong for spinning, making up and breaking out pipe joints, in which a chain drives the rotatable pipe gripping means and the chain is driven by a rotary fluid motor for spinning a pipe, and the motor is locked to anchor the chain during final make up and initial break out of the pipe joint, the chain being actuated by pressure responsive actuator cylinders engaging runs of the chain between the pipe gripping means and the rotary motor to apply high make up and break out torque to the pipe gripping means.

**3,691,876  
RATCHET SPINNER WRENCH**  
Leon Cassidy, Jr., R.D. #2, Wykertown Road, Branchville, N.J.

Filed Feb. 8, 1971, Ser. No. 113,415  
Int. Cl. B25b 13/00

U.S. Cl. 81—58.1

2 Claims



An improved spinner for a ratchet wrench wherein the wrench includes an integral drive shaft, ratchet gear and a bearing that is disposed crosswise of the operating end of the handle and retained therein by a cover plate and a retaining snap ring. The operating end of the handle is provided with a lengthwise slit so as to form a yoke in which is disposed a spinner. The bearing portion of the drive mates with and is locked to the spinner as by a press fit or spline whereby when the spinner is rotated by hand the drive will turn as well as the



socket held thereon. Thus the bolt or nut to be threaded can be started by hand operation with a minimum of space being occupied in close working areas.

3,691,877

**LONG-HANDLED WRENCH**

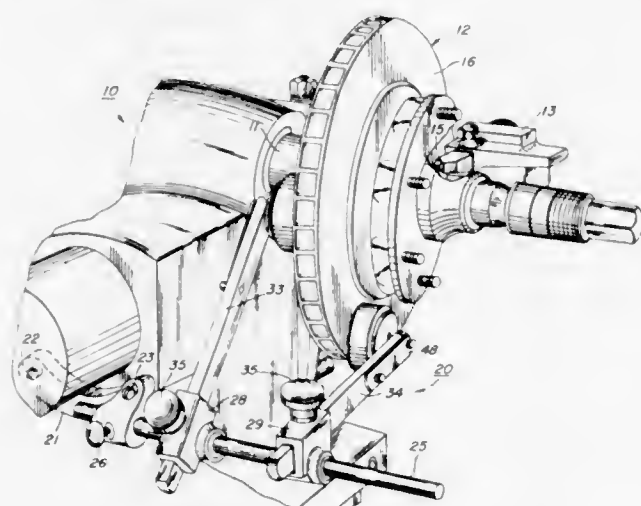
Joseph Warren Harris, Vernal, Utah, assignor to C. R. Industries, Vernal, Utah  
Filed Nov. 16, 1970, Ser. No. 89,757  
Int. Cl. B25b 13/00; B25g 1/00; B25b 13/10  
U.S. Cl. 81-177 A 2 Claims



A wrench having long operating handles, so necessary manipulation can be effected in restricted areas by a person unable to enter such areas. Relatively long handles have corresponding ends pivotally attached to opposite ends, respectively, of a rigid wrench structure provided with jaws at one end of an activating arm portion. Thus the wrench may be held in place by one of the handles and operated by the other. The handles may be provided with interlocking means adjacent to their free ends for enabling manipulation thereof with only one hand.

3,691,878

**METHOD FOR DAMPENING VIBRATIONS IN A ROTATING DISC AND APPARATUS THEREFOR**  
Wallace F. Mitchell, Arlington Heights, Ill., assignor to Amcco Tools, Inc., North Chicago, Ill.  
Filed Jan. 18, 1971, Ser. No. 107,173  
Int. Cl. B23b 1/00  
U.S. Cl. 82-1 C 10 Claims



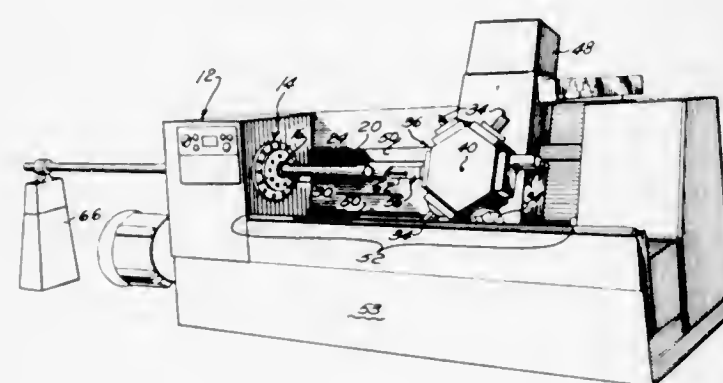
A vibration dampener for inhibiting vibrations in a rotating disc includes a pair of pressure pads adjustably mounted

against opposite faces of the disc at different angular positions relative to the location at which a cutting tool engages the disc.

3,691,879

**MACHINE TOOL**

Charles T. Blake, Shaker Heights, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio  
Filed June 11, 1970, Ser. No. 45,478  
Int. Cl. B23b 15/00  
U.S. Cl. 82-2.5 12 Claims



An improved machine tool for operating on bar stock includes a gripper which is moved away from a chuck to pull bar stock to a work station. When the gripper has been moved through a distance sufficient to pull a desired length of bar stock to the work station, a numerical control system is effective to interrupt movement of the gripper and bar stock. The numerical control system enables different lengths of bar stock to be fed to the work station on successive cycles of operation of the machine tool in response to stored numerical control data. In one embodiment of the machine tool, the gripper is advantageously mounted on a turret which supports tools and is operated by the numerical control system in accordance with a predetermined program to machine the length of bar stock fed to the work station.

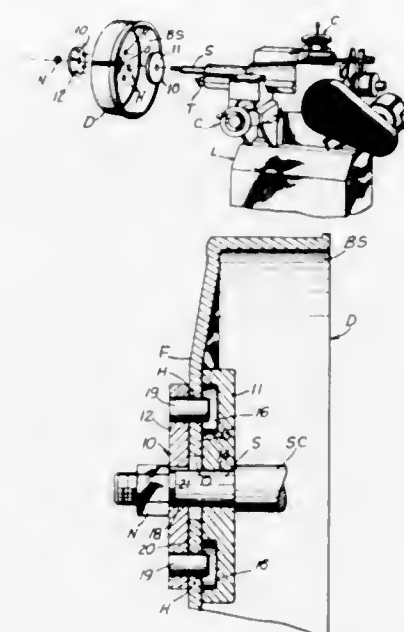
3,691,880

**APPARATUS FOR TURNING A BRAKING SURFACE**

James Ratteree, 4126 Flat Ridge Drive, Stone Mountain, Ga., and James A. Seaman, 4900 Northside Drive, N.W., Atlanta, Ga.  
Continuation-in-part of Ser. No. 40,120, May 25, 1970, abandoned. This application Oct. 21, 1970, Ser. No. 82,624  
Int. Cl. B23b 5/04  
U.S. Cl. 82-4 A 11 Claims

A method and apparatus for turning the braking surface of a vehicle lug supported braking member, such as a brake drum or disc brake, including the steps of supporting the braking member on a refinishing lathe so that its lug holes are concentric with respect to the rotational axis of the lathe, rotating the braking member, and engaging the braking surface of the member with the lathe cutting tool maintained at selected distances from the axis of rotation to redefine the braking surface concentric with respect to the circle defined by the lug holes in the braking member. The apparatus includes a backing plate adapted to be carried by a turning lathe and defining an annular groove in the working face thereof adapted to lie behind the lug holes of a braking member when placed thereon and a clamping plate also adapted to be carried by the lathe in juxtaposition with the backing plate, the

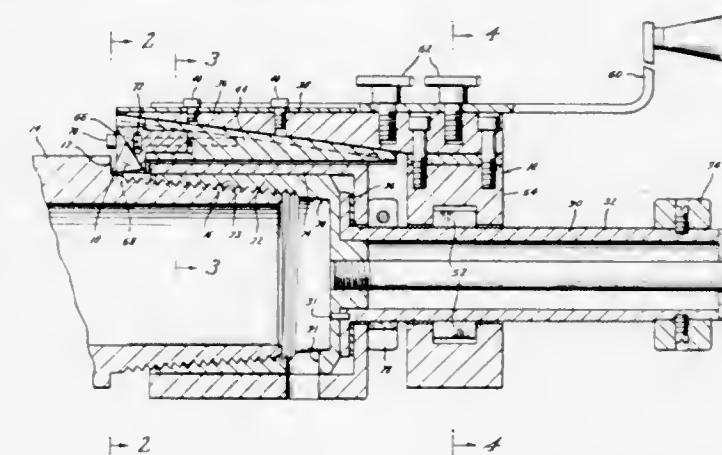
clamping plate including a plurality of support pins arranged to project through the lug holes of the braking member positioned



3,691,882

**THREADED PIPE JOINT FACING TOOL**

Dulas L. Massey, 1914 Ballantine, Houston, Tex.  
Filed March 18, 1971, Ser. No. 125,779  
Int. Cl. B23b 3/22, 5/04  
U.S. Cl. 82-4 C 10 Claims

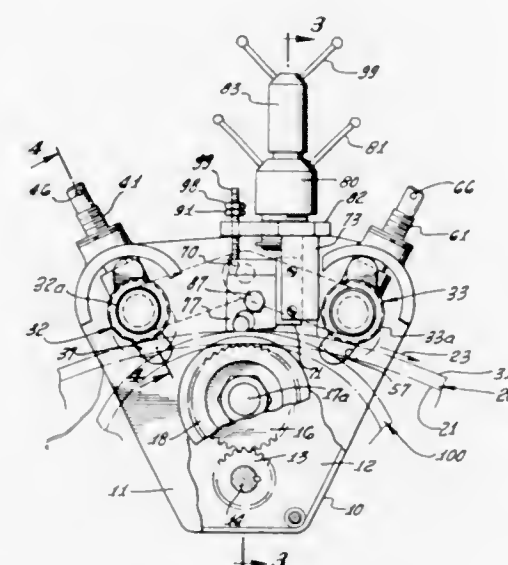


tioned between the clamping and backing plates to position the lug holes through the member concentrically about the rotational axis of the lathe.

3,691,881

**PIPE CUTTING APPARATUS**

George Bachmann, 945 Metro Drive, Monterey Park, Calif.  
Filed March 29, 1971, Ser. No. 128,953  
Int. Cl. B23b 3/22, 5/04, 3/04  
U.S. Cl. 82-4 C 13 Claims



Apparatus for cutting pipe having inner and outer surfaces, comprises:

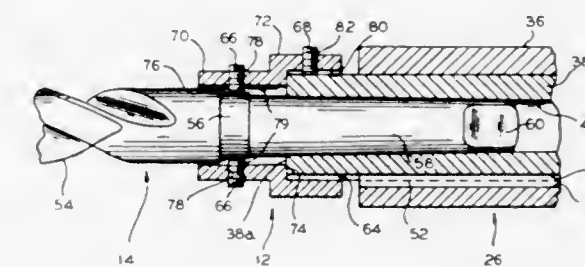
- drive means engageable with one of said inner and outer surfaces for rotating the apparatus about the pipe,
- thrust exerting means engageable with the other of said inner and outer surfaces for urging the drive means toward said pipe, said thrust exerting means including individually adjustable rollers engageable with said other surface,
- support structure for said drive means and thrust exerting means,
- a first cutting tool and a head therefor carried by said support structure for movement toward and away from said other surface of the pipe, and
- other means including a spring to yieldably urge the head toward said other surface of the pipe so that the cutting tool may have yieldable cutting engagement with the pipe as the apparatus rotates about the pipe.

A threaded pipe joint facing tool for refacing the shoulders of threaded pipe joints by providing a tool that moves a cutting tool radially around the tool joint axis and perpendicular to the tool joint axis at the same time for refacing a tool joint perpendicular to the joint axis. A support having internal threads for aligning the facing tool with the axis of a threaded joint and with a first tapered slide which when rotated about a lead screw mandrel moves longitudinally to move a second coacting tapered slide transversely to the tool joint axis carrying a cutting tool which moves radially around and perpendicular to the tool joint axis to reface the tool joint shoulder. The cutting means being adjustably supported from the second slide for longitudinal movement for selecting the amount of cut to be made. The cutting tool including a cutting edge for cutting a groove for use as an O ring groove and/or stress relief groove adjacent the tool joint shoulder. An adapter having threads on each end for supporting the facing tool for refacing the shoulders of the box end of the tool joint.

3,691,883

**LATHE TOOL HOLDER**

Maurice S. Ingram, P. O. Box 169, McHenry, Ill.  
Filed Sept. 22, 1970, Ser. No. 74,370  
Int. Cl. B23b 43/02, 31/04  
U.S. Cl. 82-34 R 2 Claims



A tool holder for a lathe having a spindle provided with a tool shank-receiving tapered bore at one end and an external keyway extending longitudinally from such end comprises tool support means adapted for securing a tool against rotation relative thereto, key means projecting from the support means and adapted to be received in the keyway for securing the support means against rotation relative to the spindle, and means on the support means cooperative with the key means for mounting the support means on the spindle end to support a tool coaxially with the spindle.

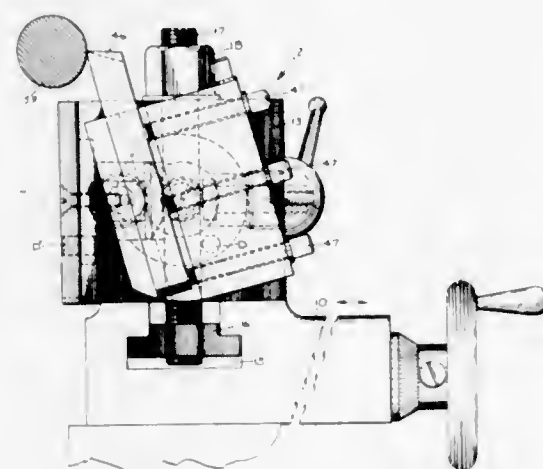


### 3,691,884 TOOL POST

George V. Lindgren, 139 Highland St., Townsend, Mass.  
Continuation-in-part of Ser. No. 576,325, Aug. 31, 1966,  
abandoned. This application Jan. 28, 1971, Ser. No. 110,660  
Int. Cl. B23b 29/10

U.S. Cl. 82—36 R

5 Claims



This invention has to do with a tool post and, more particularly, a tool and support combination to be used on a lathe or the like, which is so arranged that the line of force caused by the operation of the tool is nearly linear through the device and the force is thereafter directed to the unyielding base of the machine. The invention further provides means for adjusting the presentation of the tool to the workpiece while still allowing the device to be returned to its rigid state.

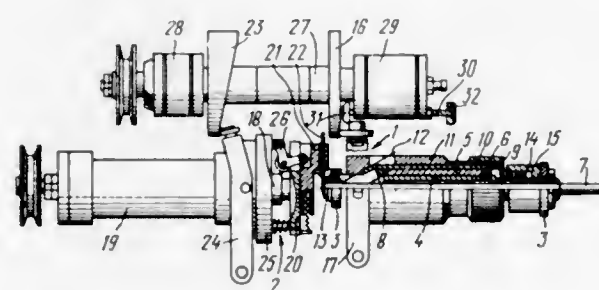
### 3,691,885 DEVICE FOR CUTTING ELASTIC BAR STOCK INTO SPECIFIED LENGTHS

Uriel Grigorievich Fridman; Gera Sergeevna Mor; Rolands Bernkhardovich Skadysh, and Ivan Emelyanovich Kuzmenko, all of, Riga, U.S.S.R., assignors to Spetsialnoe Konstruktorskoe bjuro Khimizalsui, narodnogo khozajstva Latruskoi SSR USSR

Filed Jan. 19, 1971, Ser. No. 107,710  
Int. Cl. B23b 3/04, 5/14

U.S. Cl. 82—75

3 Claims



A device for cutting elastic bar stock into specified lengths comprising a cutting mechanism whose cutting moves around the bar stock to be cut and reciprocates towards its center, and a feed mechanism. The feed mechanism comprises a guide mandrel with a hole for the bar stock and two grips for said stock, one of the grips being installed immovably relative to said guide mandrel while the other grip can move in the direction of feed. The grips are formed by cantilever-mounted spring plates whose free ends clamp the bar stock, said plates being directed at an acute angle to the bar stock which ensures self-locking of the stock in the direction opposite to its feed.

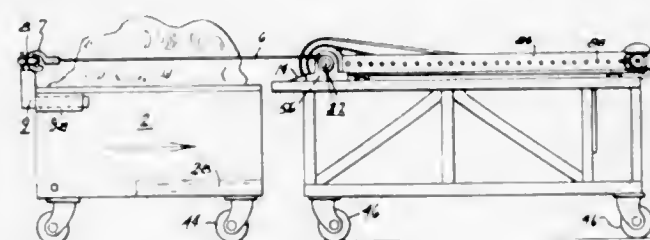
### 3,691,886 APPARATUS FOR CUTTING AN UNVULCANIZED VISCOELASTIC MASS

Robert M. Elsworth, 330 Albany-Shaker Road, Loudonville, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,422  
Int. Cl. B26d 3/00

U.S. Cl. 83—1

8 Claims



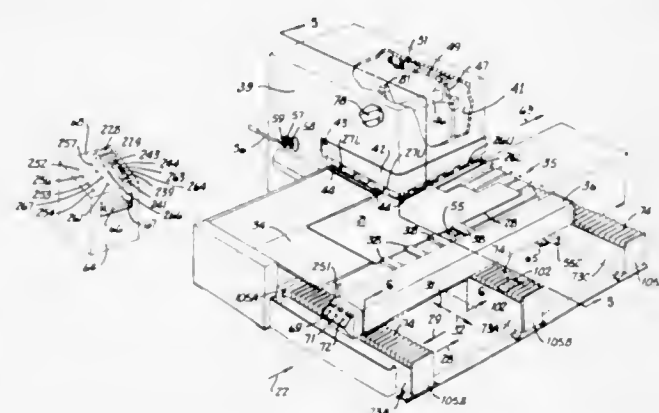
An unvulcanized viscoelastic mass is cut by a machine which applies tension at the line of cut. While applying tension at the line of cut, the machine also provides a means for maintaining the cut portions in spaced relationship and for continuously moving the mass into the cutting means. The apparatus is especially suitable for cutting silicone gum containing fillers, extenders, process aids and vulcanizing agents. The compounded gum is shipped to the ultimate consumer who vulcanizes the compounded gum to form silicone rubber. The rubber is used in high temperature automotive transmission gaskets, radiator hose, and fan belts.

### 3,691,887 AUTOMATIC SHEARING METHOD AND APPARATUS

Gerald V. Roch, New Augusta, Ind., assignor to Hurco Manufacturing Company, Inc., Indianapolis, Ind.  
Filed June 1, 1970, Ser. No. 42,047  
Int. Cl. B26d 5/12, 5/30

U.S. Cl. 83—277

38 Claims



Two pairs of shears disposed at right angles and operable simultaneously, shear a sheet along intersecting lines simultaneously, the sheet being held and located by a power-driven positioning carriage. Each blank is cut to finished size, and various operational modes are available.

### 3,691,888 APPARATUS FOR SETTING UP A RAPIDLY MOVING WEB FOR REMOVAL OF A SIDE PORTION THEREFROM

Kenneth F. Brandon, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 3, 1970, Ser. No. 69,202  
Int. Cl. B23d 25/02; B26d 5/20

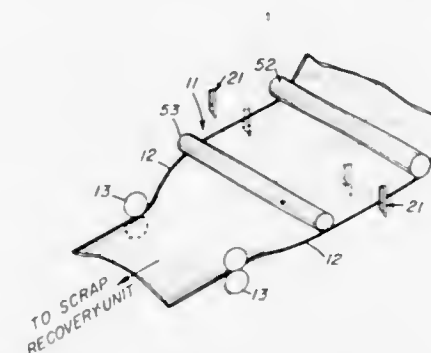
U.S. Cl. 83—302

11 Claims

In an apparatus for removing the side portions from a rapidly moving web such as by threading the web through a pair of rotary slitting knives that have their cutting edges spaced apart a distance corresponding to the width of the desired web, there is provided a pair of piercing knives located upstream of the slitting knives for setting-up the rapidly mov-

ing web for initial entry into the slitting knives. The piercing knives are supported on vertically reciprocable piston rods for plunging the piercing knives into the rapidly moving web at points inward of where the web is to be slit and on horizontally reciprocable piston rods for advancing the piercing knives

with respect to the cutting edge of the lower knife. A pair of hydraulic cylinder motors force the upper knife toward the lower knife with the point of intersection of the cutting edges being moved progressively along the length of the knives. A pair of links have proximal ends pivotally connected to the

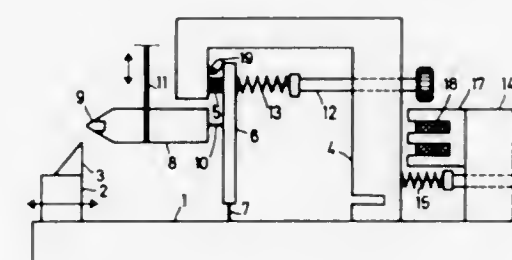


### 3,691,889 MICROTOME FEED MECHANISM

Bo Gosta Forsstrom, Skalby, Sweden, assignor to LKB-Produkter AB, Bromma, Sweden  
Filed April 26, 1971, Ser. No. 137,196  
Claims priority, application Sweden, May 8, 1970, 6344/70  
Int. Cl. G01n 1/06

U.S. Cl. 83—401

6 Claims



Microtome feed mechanism which provides the requisite relative motion of the specimen in relation to the sectioning tool at sectioning in a microtome. The feed mechanism comprises a body made of a rheological material arranged between that part of the microtome which is continuously fed and a component which is mainly fixed to the foundation block of the microtome, the mechanism further comprising a force generating means between the fed part and the component fixed to the foundation, from which force generating means the fed part is influenced by a substantially constant force in the feeding direction. Hence a substantially constant feeding rate is obtained due to the deformation of the body made of a rheological material. The mechanism can be arranged in such a way that the body is being compressed, extended, or sheared.

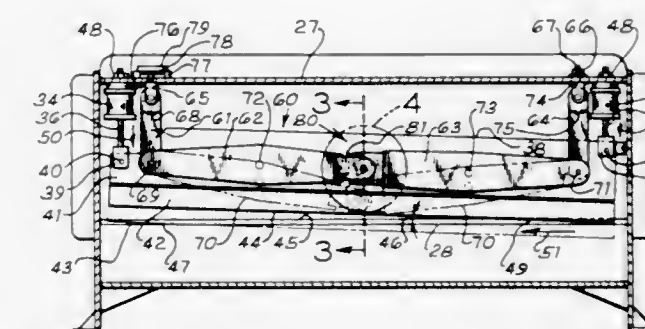
### 3,691,890 SHEARING MACHINE

Charles Kuchyt, Carmel, Ind., assignor to Hercules Manufacturing Company, Inc., Shelbyville, Ind.  
Filed April 30, 1971, Ser. No. 138,911  
Int. Cl. B26d 5/12

U.S. Cl. 83—624

8 Claims

A machine for shearing sheets of metal. The machine has an upper knife movable toward a fixed lower knife with the cutting edge of the upper knife being positioned at an angle



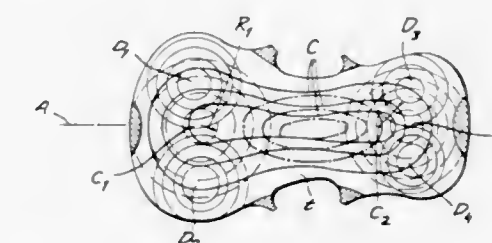
machine frame and have distal ends pivotally interconnected. Each link is pivotally connected to the upper knife so as to maintain a constant angle between the cutting edges during movement of the upper knife. Adjustment means are provided to preset the angle between the cutting edges.

### 3,691,891 MUSICAL INSTRUMENT WITH CORDS AND BOW

Ion Delu, Chitila Padure near 14, Romania, assignor to Complexul Pentru Prelucrarea Lemnului Reghin Romania, Bucuresti, Romania  
Filed Sept. 8, 1970, Ser. No. 70,130  
Int. Cl. G10d 1/02, 3/02

U.S. Cl. 84—275

3 Claims



A stringed instrument having the general configuration of a violin in which the front and rear resonance plates are formed along their interior with recesses of generally elliptical configuration centered on the longitudinal axis of the instrument while additional recesses are formed at vibration centers at quadrants of the body to permit the instrument to complement the usual violin and replace the viola or violincello in quartets and other instrumental ensembles consisting primarily of stringed instruments.

### 3,691,892 METHOD FOR ASSEMBLING TONE HOLE CLOSING MEANS OF WOOD-WIND MUSICAL INSTRUMENTS AND A CONSTRUCTION OF THE MEANS ASSEMBLED THEREBY

Hideo Matsuura, Hamakita; Ikuji Kurokawa, and Yoshihiko Murase, both of Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Aug. 27, 1970, Ser. No. 67,485  
Claims priority, application Japan, Sept. 1, 1969, 44/69215  
Int. Cl. G10d 7/00

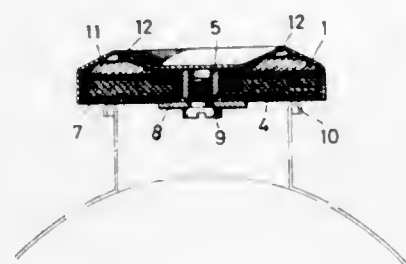
U.S. Cl. 84—380

3 Claims

An air-tight sealing of a pad closing a tone hole of a wind instrument is much facilitated by interposing a foamable thermosetting plastic resin preimpregnated sheet between the bottom wall of a cup and the pad, and heating the preimpregnated sheet thus interposed, so that the sheet is foamed and cured

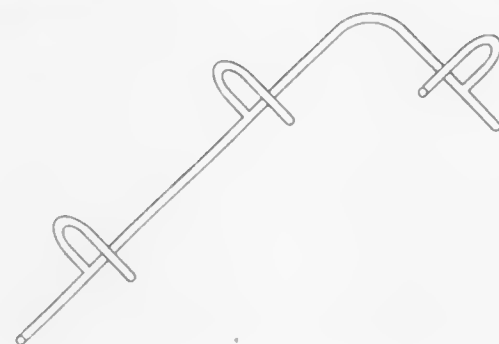


while the pad is maintained in a closed condition over the tone hole of the wind instrument, whereby the pad can be assem-



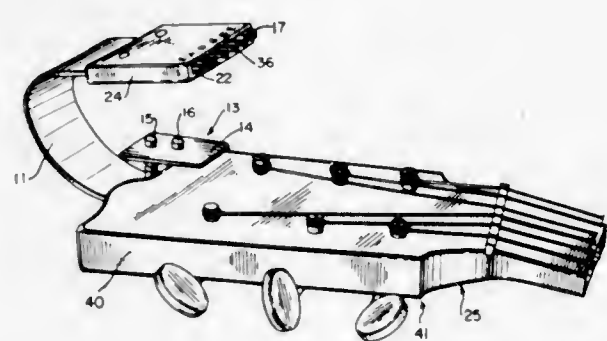
bled in the cup so as to close the tone hole with sufficient airtightness without requiring any repeated adjustments of the relative positions between the pad and the cup.

**3,691,893**  
**CLAMPS FOR WOODWIND MUSICAL INSTRUMENTS**  
Lester C. Dickson, Jr., P.O. Box 774, Jonesboro, Ga.  
Filed Nov. 23, 1970, Ser. No. 91,982  
Int. Cl. G10g 7/00  
U.S. Cl. 84-453



A clamp for maintaining the keys of a woodwind musical instrument in a closed position while the instrument is not being played comprising a first wire of a length sufficient to contact a plurality of the keys and a second wire so shaped as to firmly grip the body of the instrument thereby pressing the first wire against the keys and holding them in a closed position. The wires may be made of spring steel and covered with a plastic coating.

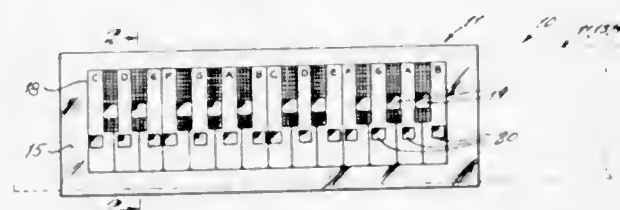
**3,691,894**  
**TUNING DEVICE**  
Joseph R. Schneider, and Bruce A. Schneider, both of Larchmont, N.Y., assignors to Laser Products & Development Corporation, Inc., Bronx, N.Y.  
Filed Oct. 14, 1970, Ser. No. 80,737  
Int. Cl. G10g 7/02  
U.S. Cl. 84-454



Tuning device for tuning a resonating instrument having operating elements which are capable of being tuned. The device comprises a support arm and a series of reeds connected to one end of the arm. A reed cover surrounds the

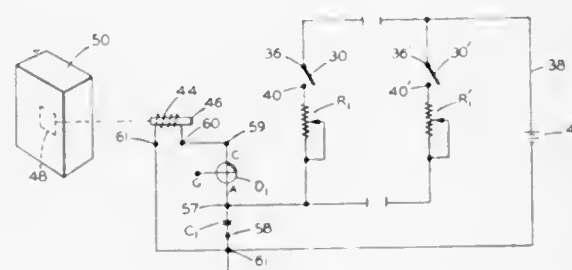
reeds and a clamping device is connected to the other end of the support arm enabling the device to be attached to the instrument.

**3,691,895**  
**PLAY-BY-CHORD SLIDE RULE**  
Charles A. Nessler, 5480 Youngridge Drive, Pittsburgh, Pa.  
Filed Dec. 1, 1970, Ser. No. 94,065  
Int. Cl. G09b 15/02  
U.S. Cl. 84-471



A chord slide rule for learning musical chords and how they relate to the scale, the device comprising at least one insert which is fitted into a slide having a keyboard imprinted thereon for alignment with triad chord indicia imprinted on the underlying inserts to show the different triad chords for each selected keynote. When more than one type of triad chord indicia is placed upon the same insert face, they are distinguished by color coding.

**3,691,896**  
**METRONOME**  
Ralph D. Alessio, Waterbury, Conn., assignor to Tele-Conn Enterprises, Inc., Wolcott, Conn.  
Filed Dec. 29, 1971, Ser. No. 213,278  
Int. Cl. G10b 15/00  
U.S. Cl. 84-484



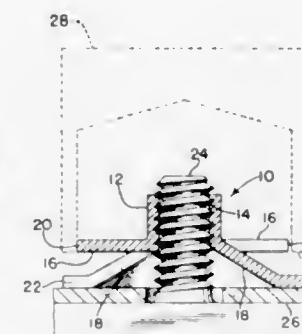
A metronome is disclosed which employs a plurality of potentiometers equal in number to the desired output frequencies. The potentiometers are individually adjusted and individually connected into a timing circuit through the action of a switch which operates in detent fashion.

**3,691,897**  
**TORQUE LIMITING NUT**  
Jerry Allen Mullaney, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.  
Filed March 31, 1971, Ser. No. 129,733  
Int. Cl. F16b 31/02, 39/26  
U.S. Cl. 85-62

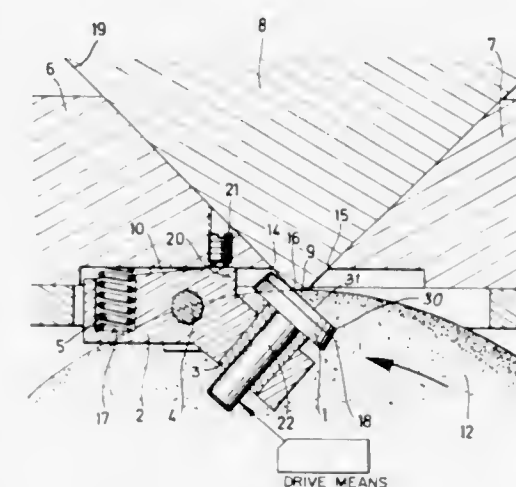
A rotary nut member including an aperture with internal threads and external wrenching surfaces adapted to accept

torque from an axially positioned driver. Spring legs extend from the body portion of the nut to engage the driver and

predetermined angular setting in order to allow engagement of the tool holder with the spindle, and translational locking



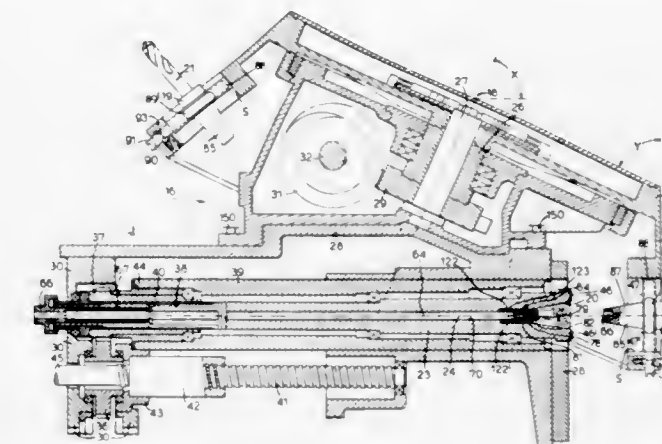
**3,691,898**  
**EDGE BURR REMOVAL APPARATUS**  
Kurt Held, 7201 Schura Uber, Tuttlingen, Germany  
Filed April 2, 1970, Ser. No. 29,345  
Claims priority, application Germany, April 3, 1969, P 19 17 212.4  
U.S. Cl. 90-11 R



During grinding of a chamfer on a continuously transported workpiece, an edge with a burr is formed. The burr moves with the workpiece into eccentric engagement with a cutter which is rotated and continuously severs the burr from the edge.

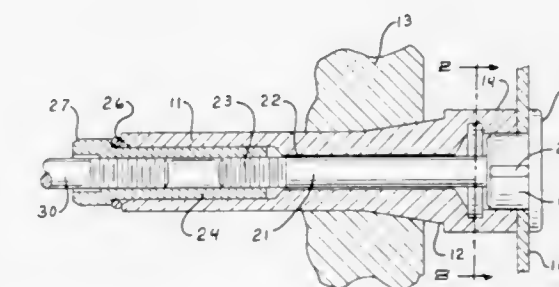
**3,691,899**  
**TOOL CHANGE DEVICE FOR A MACHINE TOOL**  
Bruno Antonietto, Pavone, and Elio Pagella, Ivrea, both of Italy, assignors to Inc. C. Olivetti & C. S.p.A., Ivrea (Turin), Italy  
Division of Ser. No. 748,534, July 29, 1968, Pat. No. 3,604,083. This application May 3, 1971, Ser. No. 139,793  
Claims priority, application Italy, July 29, 1967, 52600 A/67  
Int. Cl. B23c 5/26; B23b 39/20  
U.S. Cl. 90-11 A

A machine tool with a device for effecting rapid tool changes comprising a frame carrying a rotatable spindle capable of being coupled to a tool through the intermediary of a tool holder to which the tool is secured. A mechanism for lining up the spindle, from whatever position it is in, to a



devices inside the spindle operative to provide a coupling to the tool holder to operate the spindle after the tool has been connected thereto are provided.

**3,691,900**  
**CUTTER ARBOR**  
Ronald D. Novak, 1900 Traymore Road, and Paul S. Petersen, 2200 Windsor Lake Drive, both of Minnetonka, Minn., assignors to Toolmark Co., Minneapolis, Minn.  
Filed April 1, 1971, Ser. No. 130,319  
Int. Cl. B23c 9/00; B23q 3/14  
U.S. Cl. 90-11 A



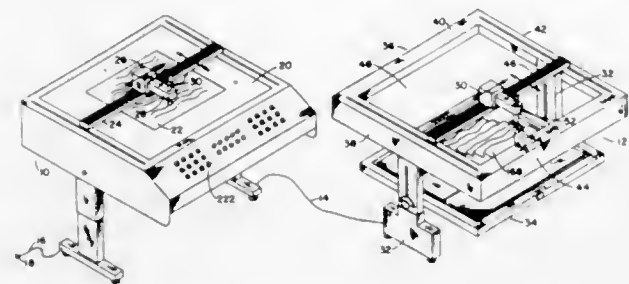
A cutter arbor assembly for mounting milling cutters in an arbor holder coupled to the machine drawbar to securely clamp the cutter without having substantial obstructions extending outwardly from the outer cutter face. The arbor assembly permits clamping cutters of different thicknesses and has means to insure that the machine drawbar will always release from the arbor holder before the cutter is loosened.

**3,691,901**  
**TABLE MECHANISM FOR USE IN TRANSFERRING DIMENSIONAL AND SHAPE INFORMATION BETWEEN TWO AND THREE DIMENSIONAL OBJECTS**  
James D. Shelton, Bothell, Wash., assignor to Ralph W. Krustsinger, Jr., 14, Lynnewood, Wash., a part interest  
Division of Ser. No. 875,706, Nov. 12, 1969, Pat. No. 3,593,615. This application Feb. 23, 1971, Ser. No. 117,964  
Int. Cl. B23c 1/16

A system of master-slave synchro-servo mechanism interconnects, for conjoint movement, a first stylus mounted for two dimensional movement across a paper or other flat surface, and a second stylus mounted for a corresponding two dimensional movement over a three dimensional object. The



second stylus is adjustable in the third dimension, and both styluses may be rotatable and interconnected by master-slave



synchro-servo mechanisms adapting them for conjoint rotation. The synchro-servo mechanisms are reversible so that each stylus can control the other.

3,691,902

### MONITORING SYSTEM FOR PNEUMATIC CYLINDER

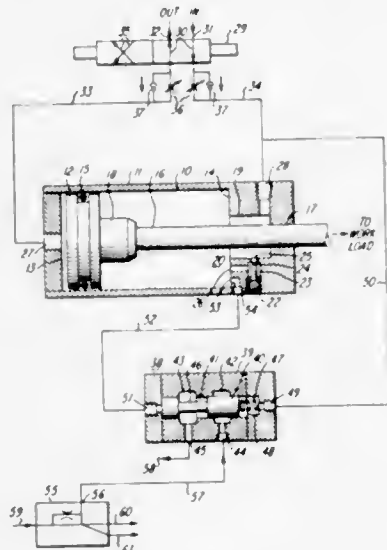
Joseph Lebzelter, Sparta, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed July 13, 1971, Ser. No. 162,069

Int. Cl. F01b 25/26; F15h 15/22

U.S. Cl. 91-1

11 Claims



A pneumatic cylinder for a power piston is provided with a cushion bore at one end and a cushion plug on the piston which is adapted to enter and cut off said cushion bore at the end of the piston stroke and provide a cushioning pressure area between the piston and said end of the cylinder. A pressure leakage path with a cushion adjusting screw therefor is provided between the cushioning area of the cylinder and the cushion bore. A spring-biased plunger-type control valve is connected at one end with the cushioning area of the cylinder and at the other end with the cushion bore, and responds to a pressure differential therebetween at the end of the piston stroke to provide a pulse output through the valve as a monitoring signal for the cylinder operation.

3,691,903

### HYDRAULIC POWER BRAKE BOOSTER

Ronald L. Shellhaue, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 76,473, Sept. 29, 1970. This application

Sept. 13, 1971, Ser. No. 179,684

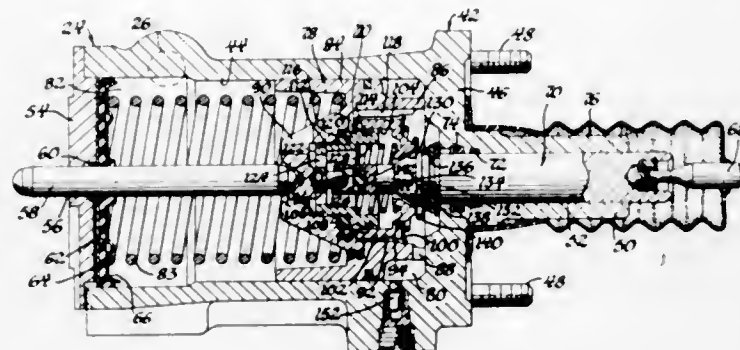
Int. Cl. F15b 13/16, 13/04

U.S. Cl. 91-49

1 Claim

A hydraulic power brake booster powered by power steering gear pump pressure and utilizing an open-center valve so that fluid flows through the booster without pressure reduction when the booster is not activated. The valve assembly includes a radially floating valve seat which provides for self-centering, permits a valve separation operation to pass viscous

cold hydraulic fluid or any elements which may tend to overly restrict the valve. It also includes a valve face design providing entrance and exit angles defining a venturi-type passage con-



ductive to laminar flow with consequent reduction in valve noise, and has a hydraulic reaction mechanism which includes an arrangement for supported line pressure.

3,691,904

### METHOD AND APPARATUS FOR CONTROLLING THE EXPANSION AND RETRACTION OF A TELESCOPIC CYLINDER ASSEMBLY

Arturo Pesci, 37, Via IV Novembre, Cento, Ferrara, Italy

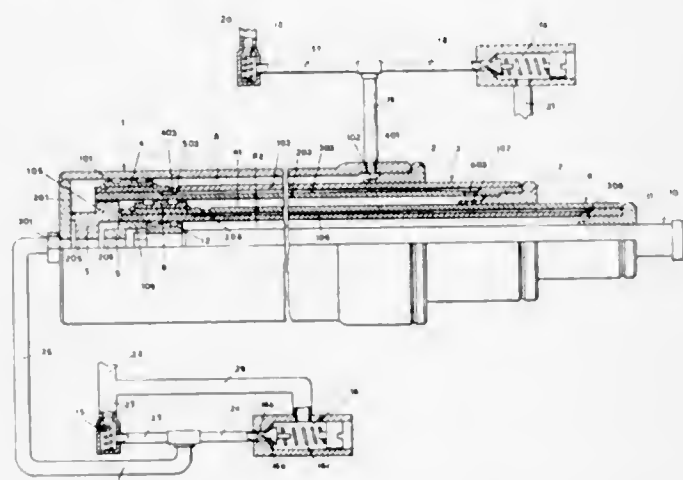
Filed Dec. 17, 1969, Ser. No. 885,680

Claims priority, application Italy, Dec. 28, 1968, 7558 A/68

Int. Cl. F01b 7/00; F15b 13/042

U.S. Cl. 91-169

6 Claims



In a double-acting telescopic hydraulic cylinder assembly, a counter-pressure in the discharge chambers is provided, opposing those into which fluid under pressure is supplied. Said counter-pressure is obtained by providing discharge valves which are gauged so as to permit discharge of the fluid to be expelled only when a predetermined pressure value of the fluid in the said discharge chambers is attained.

3,691,905

### FLUID MOTORS

Michael David Baxter, Rochester, England, assignor to Hobourn-Eaton Manufacturing Company Limited, Kent, England

Filed July 24, 1970, Ser. No. 58,130

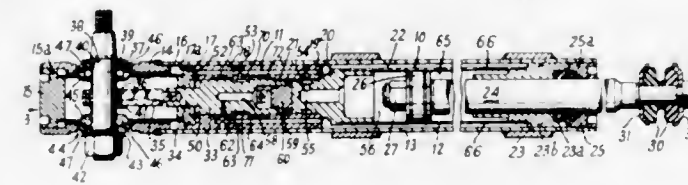
Int. Cl. F01b 15/00; F15b 9/10

U.S. Cl. 91-216 A

6 Claims

A fluid motor arrangement comprises a double-acting piston element which is slidably mounted in a cylinder element and the two axial sides of which have unequal effective areas, and a valve for controlling the admission of pressure fluid to the cylinder at opposite sides of the piston. The valve comprises a valve body member in which a spool valve member is slidably mounted. The valve body provides therein two chambers the pressures in which respectively act upon ax-

ially oppositely facing surfaces of the spool valve member, the ratio of the effective areas of said surfaces to each other being the same as that of the effective areas of the two sides of the piston. The (first) chamber having the larger of the two effective areas of the spool valve member is in permanently open communication with the cylinder at that side of the piston having the larger effective area, and the (second) chamber having



the smaller of the two effective areas of the spool valve member is in permanently open communication with the cylinder at that side of the piston having the smaller effective area. The construction and arrangement is such that when the valve is operated in either sense from an initial position to actuate a movement of the fluid motor, the resulting variation in the pressures applied in said first and second chambers of the valve tends to return the valve to its initial position.

3,691,906

### PNEUMATICALLY OPERATED ACTUATOR

Kenneth G. Kreuter, Goshen, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

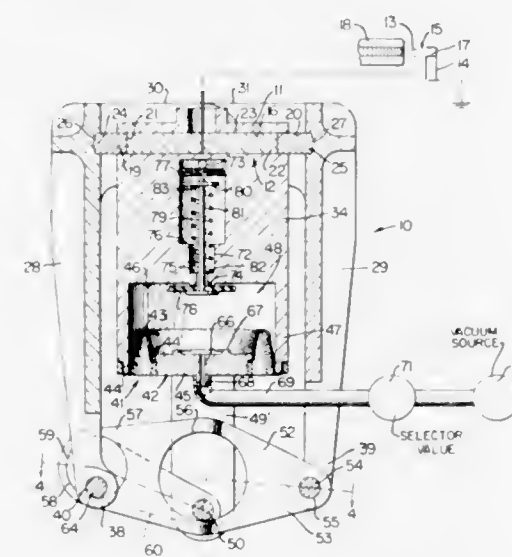
Division of Ser. No. 749,745, Aug. 2, 1968, Pat. No. 3,634,706.

This application May 4, 1970, Ser. No. 46,581

Int. Cl. F01b 21/04; F15b 13/042

U.S. Cl. 91-222

2 Claims



A pneumatically actuated operator for altering the stresses in a piezoelectric crystal means for spark igniting purposes and the like, the actuator having a movable wall that cooperates with a housing to define a chamber therebetween. The actuator has a first passage provided with a valve seat leading to the chamber and is adapted to be interconnected to a pneumatic source. The actuator has a second passage provided with a valve seat leading to the chamber and is adapted to be interconnected to the atmosphere. A single valve member is movably carried by the housing for opening the valve seat of the first passage and closing the valve seat of the second passage when the movable wall is in a predetermined deactuated stroke position thereof. The single valve member is adapted to close the valve seat of the first passage and open the valve seat of the second passage when the movable wall is in a predetermined actuated stroke position thereof whereby the movable wall is cycled between the predetermined positions thereof as long as the pneumatic source is interconnected to a chamber.

3,691,907

### RECIPROCATING FLUID OPERATED ACTUATOR

Hanns-Dieter Paschke, Olgaweg 6, Neckarsulm, Germany

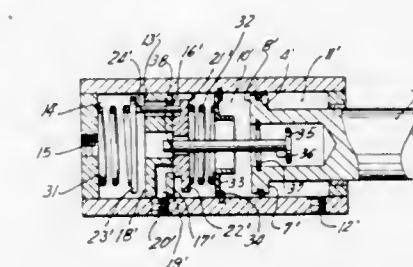
Filed April 6, 1970, Ser. No. 25,842

Claims priority, application Germany, April 8, 1969, P 19 17 792.5

Int. Cl. F01b 7/18; F01b 23/00

U.S. Cl. 91-321

6 Claims



A reciprocating fluid operated actuator comprising a cylinder containing a differential piston and means for admitting fluid under pressure to the opposite ends of the cylinder and a reversing valve in the closed end wall of the cylinder for selectively opening and closing an inlet and outlet port at that end. The reversing valve is arranged to be actuated automatically by the piston through a spring and a lost motion mechanism at the opposite ends of the piston stroke. On the remote side of this end wall is a further pressure chamber, to which pressure fluid is admitted, and the reversing valve includes a valve element in this chamber controlling the flow through an inlet passage from the chamber into the adjacent end of the main cylinder, and a second valve element within the main cylinder controlling the outlet. The pressure inlets and outlets are all connected to the main cylinder.

3,691,908

### COMBINED HYDRAULIC AND MECHANICAL DETENT DISENGAGING MEANS

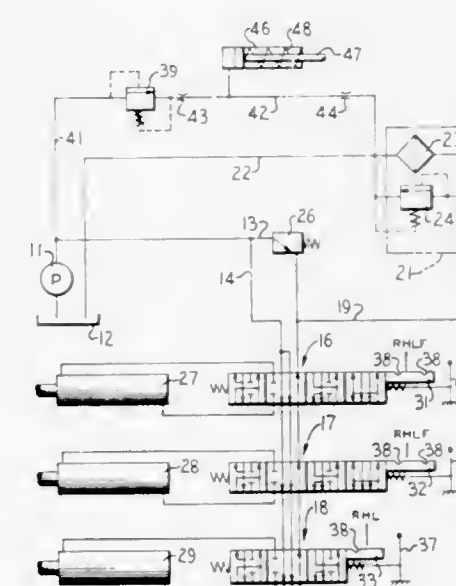
Larry G. Hackmann, and James L. Schmitt, both of Washington, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 14, 1971, Ser. No. 152,713

Int. Cl. F15b 11/16, 13/01

U.S. Cl. 91-412

9 Claims



Hydraulic kick-out circuitry and mechanism for automatically releasing work implement control valves from detented positions to neutral positions when the work implement actuating hydraulic cylinders controlled by the valves reach the ends of their strokes. The arrangement is such that in a multiple control valve system the valves are released in a sequential order with a low kick-out force which can be overridden by the operator when necessary.



3,691,909

**AXIALLY BALANCED ROTARY PISTON MACHINE**

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

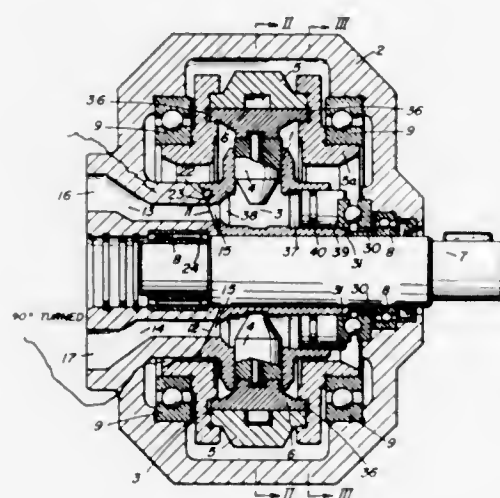
Division of Ser. No. 749,028, July 31, 1968. This application Jan. 13, 1970, Ser. No. 2,620

Claims priority, application Switzerland, July 10, 1964, 9137/64

Int. Cl. F01b 13/06

U.S. Cl. 91-487

5 Claims



Axially movable balancing pistons are provided in axial cylinders of the rotor of a radial piston machine, pressing against the inner ring of a ball bearing whose outer ring is fixed to the housing so that the rotor, the balancing pistons, and the inner ring rotate together. The axial cylinders are the end portions of axial balancing passages extending between the ends of the rotor, and having on the end remote from the balancing pistons, ports on a rotary control face of the rotor cooperating with the inlet and outlet ports on a stationary control face of the housing. The pressure of the balancing pistons is transmitted by the ball bearing, or other thrust bearing, to the housing so that the rotor is axially displaced toward the stationary control face, and the rotary control face is pressed with the desired force against the stationary control face.

3,691,910

**AXIAL PISTON MACHINE**

Eckehard Reichel, Gerlingen, and Gustav Zellbeck, Esslingen-Hegensberg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 4, 1971, Ser. No. 103,444

Claims priority, application Germany, Jan. 10, 1970, P 70 00 688.1

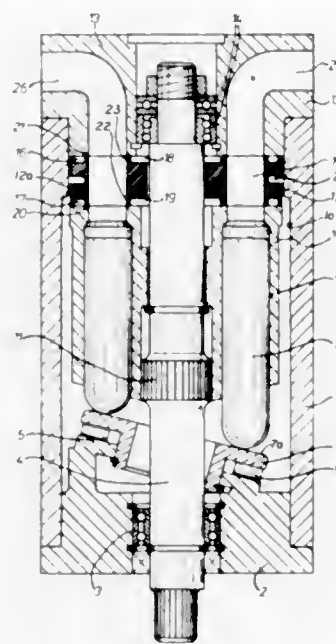
Int. Cl. F01b 13/04

U.S. Cl. 91-499

10 Claims

A housing defines an elongated interior chamber bounded by an inner circumferential wall surface and having a longitudinal axis. A cylinder block is mounted in the chamber for rotation and has two axial ends and a plurality of open-ended passages paralleling the axis. A tilt plate is arranged in the chamber adjacent one end of the block and has a surface inclined to the axis and facing this one end, with a plurality of pistons being respectively reciprocally received in the passages and each having a free end-portion which bears upon the inclined surface of the tilt plate to slide thereon during rotation of the cylinder block. A stationary valve plate is mounted in the chamber and slide in contact with the outer

end of the block and has a circumferential edge face facing the inner wall surface and a plurality of apertures adapted for re-



gistry with the bores of the cylinder block. At least one circumferential recess provided in the edge face extends inwardly towards but short of the aforementioned apertures.

3,691,911

**POWER DEVICE WITH SYNCHRONIZATION OF PLURAL ACTUATORS**

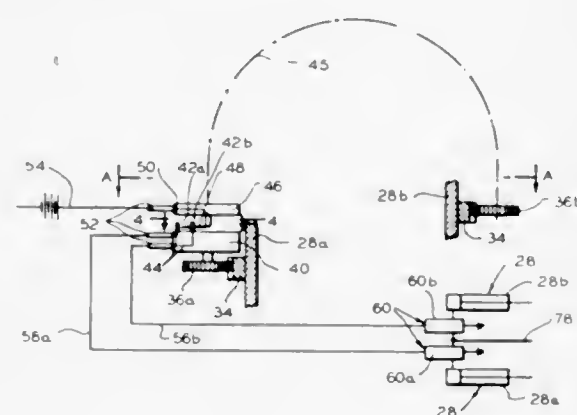
Peter J. Visser, Niles, Mich., assignor to Clark Equipment Company

Filed June 25, 1970, Ser. No. 49,608

Int. Cl. F15b 11/22

U.S. Cl. 91-412

13 Claims



A power device having a plurality of hydraulic actuators, and means for synchronizing the speed of movement thereof, including a sensing member driven by each actuator, one of the actuators being a master and the others slaves, the sensing members of the slave actuators being interfitted with the sensing member of the master actuator, and upon variation in speed of any of the slave actuators relative to the master actuator, the consequent interengagement of the sensing members controls an electric circuit and increases or decreases flow of fluid to the respective slave actuators according to relative slower or faster movement thereof.

3,691,912

Patent Not Issued For This Number

3,691,913

**CLOSURE APPARATUS**

Peter Florjancic, St. Martinstr. 12, 81 Garmisch-Partenkirchen, Germany

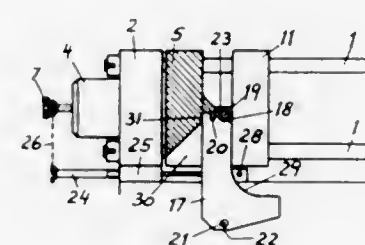
Filed June 5, 1970, Ser. No. 43,706

Claims priority, application Austria, June 10, 1969, A 5486/69

Int. Cl. F01b 1/00

U.S. Cl. 92-76

11 Claims



An apparatus reciprocating a working member for high pressure working at a working region such as the closure of a mold in injection molding devices and the like is described. A working member is mounted for reciprocation along a line of advancement relative to a high force producing source for high pressure working at a working region. A rigid brace is pivotally mounted alongside of the line of advancement for movement between two positions. In a first position of the rigid brace, corresponding to a closure of a mold, the rigid brace couples the force producing source to the working member for high pressure mold closure working with the rigid brace parallel to the line of advancement. In a second position of the rigid brace, corresponding to opening of the mold, the rigid brace is pivoted generally transversely to the line of advancement to enable the working member to be fully retracted. Several embodiments are shown including working member actuated rigid braces for rapid cycling of the apparatus and adjustability of mold height variations.

3,691,914

**RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE WITH A CYLINDER HOUSING AND CYLINDER HEAD CONSISTING OF A SINGLE BLOCK**

Josef Reisacher, Wendlingen, and Albrecht Schmid, Stuttgart, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

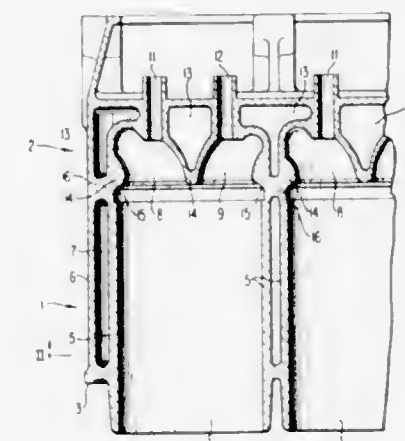
Filed July 21, 1970, Ser. No. 56,783

Claims priority, application Germany, July 26, 1969, P 19 38 134.1

Int. Cl. F01b 11/02

U.S. Cl. 92-169

9 Claims



A reciprocating piston internal combustion engine with a cylinder housing and cylinder head consisting of one block, in which the block extends over all cylinders of a cylinder row and the cylinder housing essentially consists of an inner wall and of an outer wall; the inner wall, together with a cylinder

head delimits the cylinder space and the inner and outer walls are connected with each other by a cross wall arranged approximately at the height of the cylinder head bottom and extending over the entire block.

3,691,915

**STACKING MACHINE WITH MECHANISM FOR DISPLACING STACKED WORKPIECES AT SPACED INTERVALS**

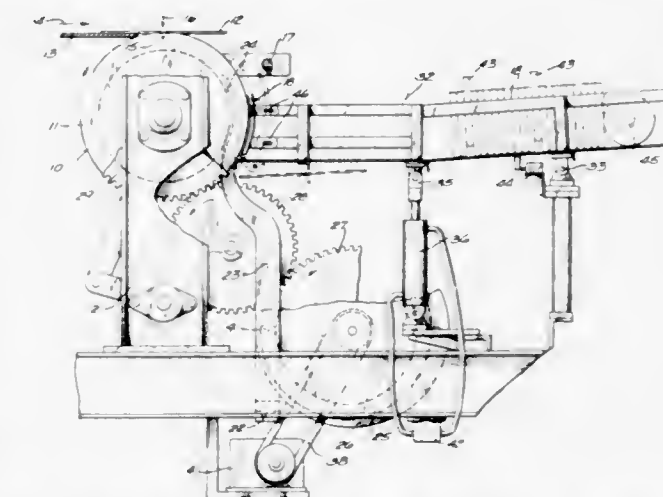
Gene F. Kiela, Kohler, and Edmund Radzins, Sheboygan Falls, both of Wis., assignors to Curt G. Joa, Inc., Sheboygan Falls, Wis.

Filed Aug. 27, 1970, Ser. No. 67,488

Int. Cl. B65h 33/00

U.S. Cl. 93-93 K

10 Claims



The machine feeds workpieces in alignment in a stack. The workpieces typically include a variety of flat, but somewhat thick assembly of multiple layers of sheet material such as folded pads such as diapers, folded table covers, folded bed sheets, etc. For convenience of description these workpieces will be hereinafter denominated as pads. For purposes of marking the boundaries of a predetermined number or group of pads in the stack, the stack is periodically displaced laterally of the path of pads fed to the stack. Accordingly, a pad undergoing feeding to the stack is misaligned with respect to the pads in the group previously fed to the stack. A counter responds to the feeder and actuates the stack displacing mechanism at periodic intervals when the desired number of pads in the group has been fed to the stack. The counter triggers a motor which is connected to a chute on which the pads are stacked to swing the chute about a pivot, thus to periodically displace the chute with respect to the path on which the pads are advanced by the feeder.

3,691,916

**PROPORTIONAL SCREED CONTROL FOR A FINISHER**

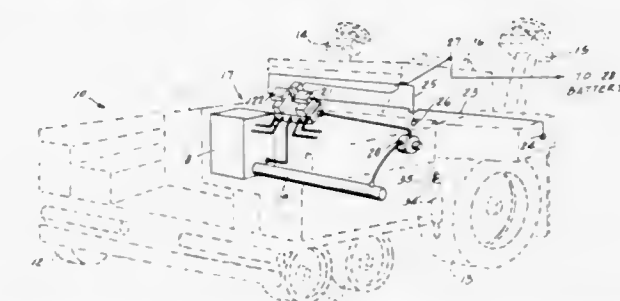
Earl D. Martenson, North Aurora, and Ray E. Ingham, Wheaton, both of Ill., assignors to Barber-Greene Company, North Aurora, Ill.

Filed Dec. 30, 1970, Ser. No. 102,647

Int. Cl. E01c 19/48

U.S. Cl. 94-46 AC

11 Claims

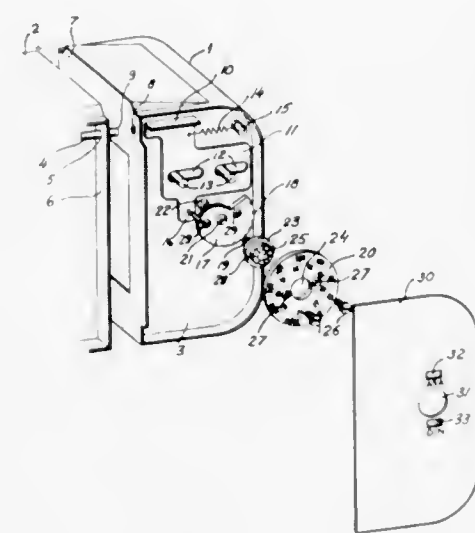


A finishing machine, or paver, employs a proportional control system for controlling the disposition of a floating screed



with respect to both grade and slope of the supporting surface. The apparatus for controlling grade includes a device for sensing grade with respect to a reference and an amplifier and switch unit for operating a grade control actuator in response to the sensed changes in grade. The slope control apparatus is generally the same as the grade control apparatus and further includes a variable remote set point unit for establishing a reference indicative of the desired slope.

pitch between its lowest and highest points, and a difference in height between said lowest and highest points sufficient to



3,691,917

# AUTOMATIC EXPOSURE CONTROL SYSTEM FOR A SINGLE LENS REFLEX CAMERA

Yasuo Uchida, and Yoshitaka Kuroyanagi, both of Tokyo, Japan, assignors to Kanishiroku Photo Industry Co., Ltd

Filed Dec. 4, 1970, Ser. No. 95,233

Claims priority, application Japan, Dec. 11, 1969, 44/99028

Int. Cl. G03b 7/08

U.S. Cl. 95—10 PO

9 Claims



3,691,919

Patent Not Issued For This Number

3,691,920

# FILM TRANSPORTING MECHANISM

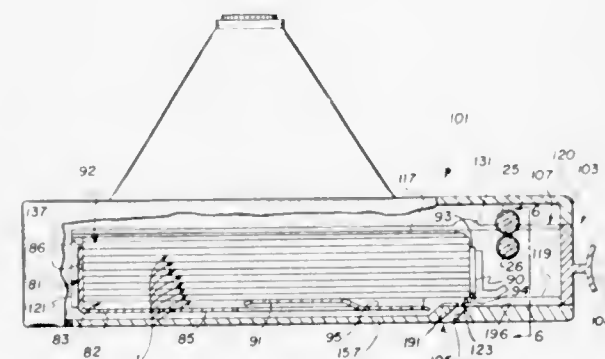
Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,464

Int. Cl. G03b 17/52

U.S. Cl. 95—13

9 Claims



3,691,918

# DEVICE IN A PHOTOGRAPHIC CAMERA FOR SETTING THE FILM SPEED VALUE AND TRANSFERRING IT TO THE EXPOSURE METER

Lave Tenne, Norbyvallda, Sweden, assignor to Fritz Victor Hasselblad, Goteborg, Sweden

Filed Aug. 2, 1971, Ser. No. 168,138

Claims priority, application Sweden, Nov. 16, 1970, 15466/70

Int. Cl. G03b 7/00

U.S. Cl. 95—10 C

8 Claims

A device for setting and transferring film speed value to an exposure meter in a camera, of the type employing a movable rod adapted to assume different axial positions corresponding to different film speed values, comprises a movable stop member located adjacent one end of the rod for defining the axial position of the rod. The position of the stop member is in turn controlled by a rotatable cam curve having a uniform

Photographic apparatus for exposing and handling self-processing film units and especially such units of the type including a preregistered, integral image-recording portion strippably supported on a rigid frame. The apparatus includes a slideable transporting mechanism for sequentially moving respective ones of the film units from an exposure position and between a pair of juxtaposed pressure applying members to initiate processing. Thereafter, the image-recording portion is stripped from the frame and the transporting mechanism moves that frame into a waste storage chamber behind the other film units, where it is stored for later disposal.

3,691,921

# MICROFILM MAGAZINE

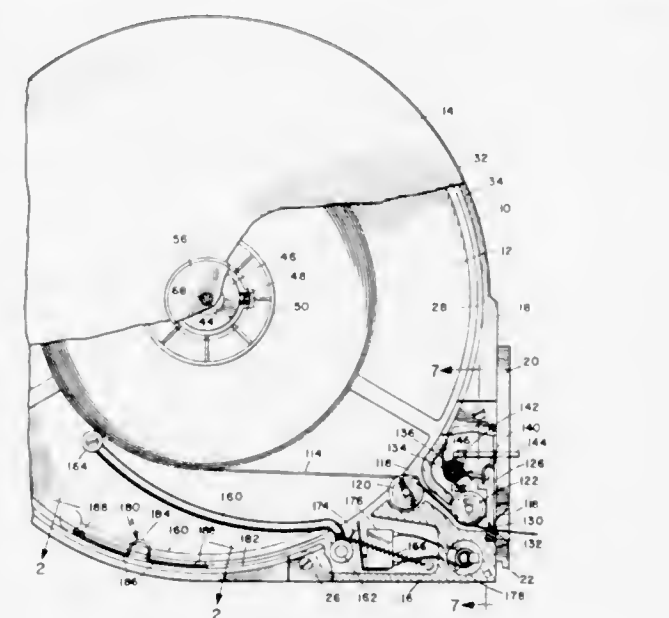
Willard D. Isbell, San Diego, Calif., assignor to Cubic Corporation, San Diego, Calif.

Filed June 11, 1970, Ser. No. 45,304

Int. Cl. G03b 17/26

U.S. Cl. 95—31

12 Claims



A microfilm magazine having a light tight cover with a single central fastening which has controlled pressure means, the fastening being secured to and stabilizing the film supporting shaft. The film passes through a short minimum contact path and leaves the magazine through an opening fitted with a normally closed light tight door, which opens automatically when the magazine is inserted in a camera. The door and the film footage follower arm are latched clear of the film for loading, the latches being automatically released when the cover is applied. A constant load clutch controls the film reel rotation and the drive means is biased to permit safe assembly into a camera when the drive gears are misaligned.

3,691,922

# A METHOD AND APPARATUS OF CONTRAST-DEPENDENT SHARP FOCUSING

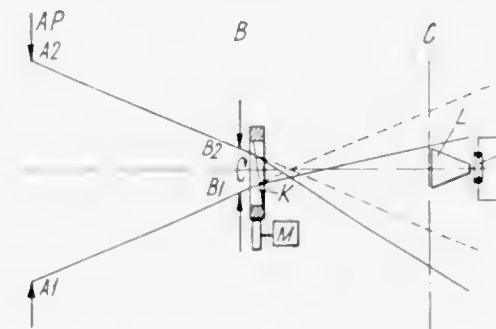
Gottfried Konig, and Peter Schornstadt, both of Dresden, Germany, assignors to VEB Pentacon Dresden Kamera-und Kinowerke, Dresden, Germany

Filed Jan. 4, 1971, Ser. No. 103,671

Int. Cl. G03b 3/00

U.S. Cl. 95—44 R

17 Claims



A method of performing contrast dependent sharp focussing of an optical system. Light is direct via an object lens through an image field diaphragm and rotatable optical wedge. A measurement area is defined which is scanned by the optical wedge in combination with a photoelectric receiver behind the measurement area. The photoelectric receiver provides a variable frequency output signal in dependence upon the brightness/darkness distribution within the

3,691,923

# EXPOSURE TIME CHANGEOVER DEVICE FOR CAMERAS OR SHUTTERS

Kiyoshi Kitai, Tokyo, Japan, assignor to Kabushiki Kaisha Hattori Tokiten, Tokyo, Japan

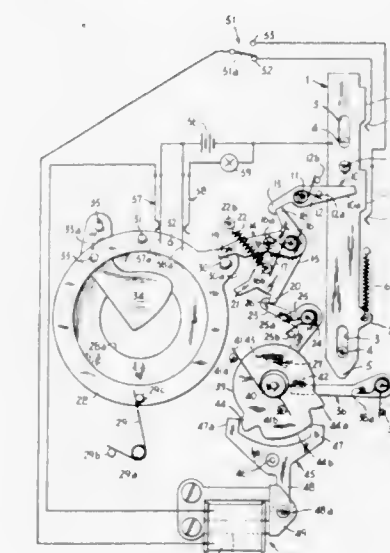
Filed Feb. 25, 1969, Ser. No. 802,101

Claims priority, application Japan, Feb. 28, 1968, 43/12427

Int. Cl. G03b 9/60

U.S. Cl. 95—53 EB

6 Claims



A camera is provided with apparatus including an electric circuit, a battery for supplying electrical energy to the electric circuit, a changeover switch, and shutter operating means for operating the shutter. The shutter operating means is provided with a series of switch contacts electrically connected to the changeover switch and cooperative therewith to select one at least two exposure termination times, one shorter than the other, prior to the initiation of the exposure. The exposure termination time is controlled by an electro-magnetically controlled escapement mechanism.

3,691,924

# EXPANSIBLE DRIVE RIVET

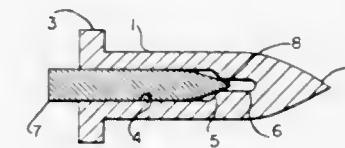
William H. Baker, 403 Loudonville Road, Albany, N.Y.

Filed May 18, 1970, Ser. No. 38,371

Int. Cl. F16b 15/04

U.S. Cl. 85—68

9 Claims



An expansible drive rivet is provided for blind riveting of at least two work pieces without the necessity of preforming rivet holes in the work. The rivet shank has a driving head at one end and a pointed tip at the other end adapted to penetrate the work when a driving force is applied thereto, and a blind central bore extending axially therein which is open at the head end and has a constricted portion of reduced diameter near its closed end. An expander pin engages the central bore and expands the shank to form a locking head on the inner side of the work when forced into the constricted portion.



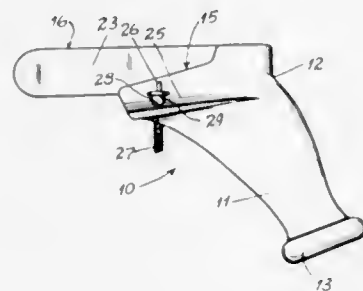
3,691,925

## CAMERA HAND GRIP

Jackson J. Shinkle, 1904 No. Geyer Rd., St. Louis, Mo.  
Continuation-in-part of Ser. No. 743,826, July 10, 1968, Pat.  
No. 3,602,123. This application June 15, 1970, Ser. No.  
46,276. The portion of the term of this patent subsequent to  
Aug. 31, 1988, has been disclaimed.  
Int. Cl. G03b 17/56

U.S. Cl. 95—86

3 Claims



A hand grip for a camera. The hand grip has an index finger guide for aiming of the camera in the direction the index finger is pointing and has a thumb operated shutter release oriented for actuation using muscles of the thumb that have minimal effect on the index finger.

3,691,926

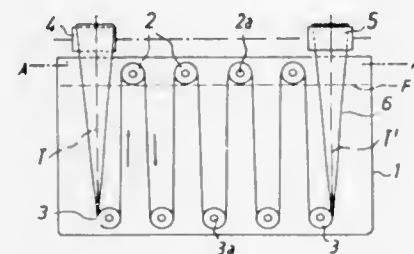
## APPARATUS FOR TREATING ROLL FILM OR THE LIKE IN LIQUID BATHS

Wolfgang Kwiatkowski, Unterhaching, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany  
Filed Sept. 8, 1970, Ser. No. 70,049  
Claims priority, application Germany, Sept. 10, 1969, P 19 45 688.9

Int. Cl. G03d 3/12

U.S. Cl. 95—94 R

4 Claims



Developing apparatus for exposed photographic roll film wherein the tank accommodates one or more skeleton frames each supporting a set of upper and lower guide rolls defining a meandering path along which the film is conveyed during transport through the developing solution. The first and last guide rolls are disposed below and are spaced from roller-shaped deflectors each of which twists the film through 90° and causes the film to change the direction of its travel. The deflectors render it possible to convey roll film through successive tanks which are placed side-by-side rather than end-to-end. The skeleton frames in a single tank may be placed side-by-side to define discrete meandering paths which are laterally adjacent to each other or end-to-end to define discrete meandering paths which are disposed end-to-end.

3,691,927

Patent Not Issued For This Number

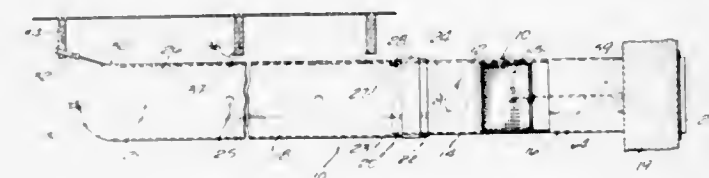
3,691,928

## BARN VENTILATOR

Vernon R. Berg, Sr., 1107 W. 8th St., and Vernon R. Berg, Jr.,  
413 W. Park St., both of Marshfield, Wis.  
Filed Jan. 21, 1971, Ser. No. 108,510  
Int. Cl. F24f 13/00

U.S. Cl. 98—33

9 Claims



Ventilating apparatus for a building includes a flexible duct with perforate side walls which is supported by a wire stringer which extends interiorly and longitudinally of the duct. One end of the stringer is connected to a fan housing located in the rigid duct at the inlet of the flexible duct, and the remote end of the stringer extends through an opening in the flexible duct adjacent the end of the duct for connection to the building frame. The stringer and the flexible tube are conveniently supported at intervals by hangers which have hooks respectively connected with the building and with the stringer. The rigid portion of the ventilation duct has an end extending through an opening in a building wall to provide an exterior air inlet port. The rigid duct also includes opposed side air entry ports for re-circulating inside air and a damper assembly for selectively closing outside air flow or admitting outside air for mixture with inside air.

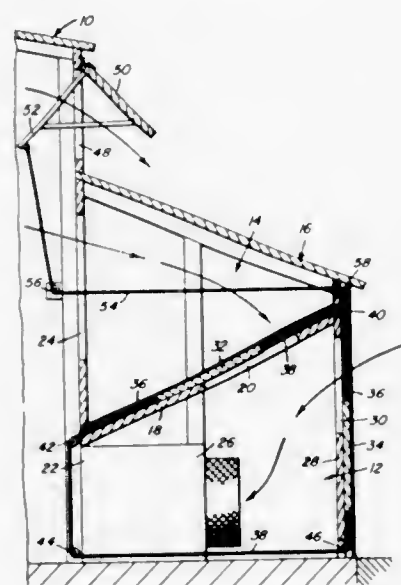
3,691,929

## AIR CONTROL SYSTEM

Fred W. Huling, Jr., Ontario, Oreg., assignor to Laminated Wood Products Co., Ontario, Oreg.  
Filed March 16, 1971, Ser. No. 124,870  
Int. Cl. F24f 13/00

U.S. Cl. 98—33

6 Claims



A system of controlling the movement of forced air and the mix of this air through the utilization of synchronized panels which selectively vary the amount of outside air and recirculating air introduce into a mixing chamber for forced discharge into the storage house. An exhaust opening with a controlling panel therefor can be incorporated in the system and synchronized with the intake air closure panel and the circulating air closure panel.

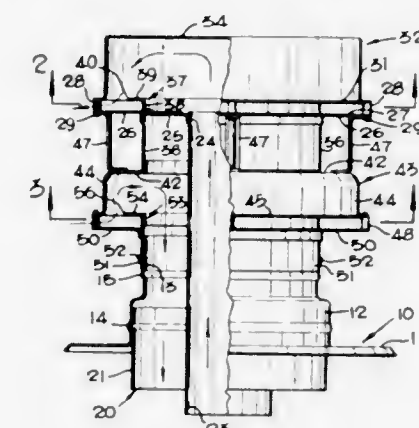
3,691,930

## WIND CONTROL FLUE AND AIR INTAKE ASSEMBLY

Gerald W. Steinman, St. Louis, Mo., assignor to Intertherm, Inc., St. Louis, Mo.  
Continuation-in-part of Ser. No. 84,749, Oct. 28, 1970,  
abandoned. This application Nov. 17, 1971, Ser. No. 199,415  
Int. Cl. F23f 17/04

U.S. Cl. 98—62

7 Claims



A wind control flue and air intake assembly of the concentric type, particularly useful for gas furnace installations subjected to high winds. Both the air intake and the flue have caps of the same diameter and control flanges spaced inward from the lower edges of the caps. Spacedly beneath each is a horizontal plate, which directs the wind flow horizontally beneath the annular openings so provided.

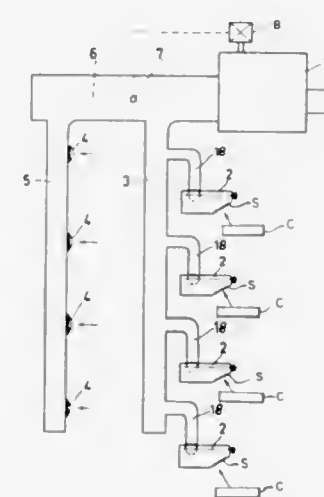
3,691,931

## DEVICE FOR FORCED EVACUATION OF AIR FROM KITCHENS

Sixten Ismael Persson, Stockholm, Sweden, assignor to Luft-konditionering AB, Trosa, Sweden  
Filed Jan. 19, 1971, Ser. No. 107,701  
Int. Cl. F23j 11/00

U.S. Cl. 98—115 K

8 Claims



A ventilating system for a building including a suction chamber communicating through ducts with a kitchen and another space, a speed controlled exhaust fan communicating with the suction chamber for evacuating air from the kitchen and the other space, and a damper in the kitchen rotatably disposed in a duct to control the air being evacuated from the kitchen. The ventilating system may be used in a building having a plurality of kitchens and other spaces by utilizing a common duct for the kitchens and a common duct for the other spaces.

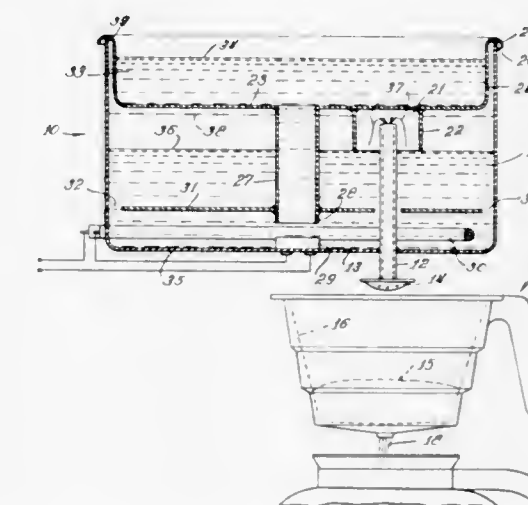
3,691,932

## APPARATUS FOR SUPPLYING HOT WATER FOR COFFEE BREWING PURPOSES

John C. Martin, Springfield, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.  
Filed July 6, 1971, Ser. No. 159,819  
Int. Cl. A23f 1/08

U.S. Cl. 99—281

6 Claims



A hot water tank has a hot water discharge pipe extending from a siphon chamber through the bottom and terminating in a discharge head. A cold water receiving basin is telescoped with the upper part of the tank, has a peripheral flange overlying the upper end of the tank, has the siphon chamber on its underside and a cold water discharge pipe opening near the bottom of the tank. A thermostatic control device, located in the path of the cold water from the cold water discharge pipe, controls the energization of an electric heating element located in the lower part of the tank. A metallic baffle overlies the electric heating element to retard the mixing of the incoming cold water with the hot water above the baffle, to act as a safety shield, and to facilitate the transfer of heat to the water in the upper part of the tank.

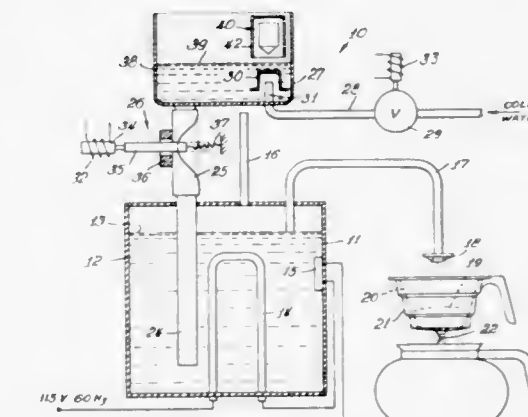
3,691,933

## AUTOMATIC COFFEE BREWER WITH LIQUID LEVEL SENSOR

John C. Martin, Springfield, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.  
Filed July 6, 1971, Ser. No. 159,767  
Int. Cl. A23f 1/08

U.S. Cl. 99—282

10 Claims



Cold water flows into a basin above a tank of hot water until a predetermined level is reached. A liquid level sensor then shuts off the flow of water into the basin and opens a valve to permit all of the water in the basin to flow into the tank from which the same quantity is siphoned out for brewing coffee.



3,691,934

**APPARATUS FOR MAKING COFFEE, TEA AND SIMILAR BEVERAGES**

Cornelis Jacob Horn; Mindert Kats, and Sigibertus Marcelinus Catherinus Van Uffelen, all of Europaweg 8, Groningen, Netherlands

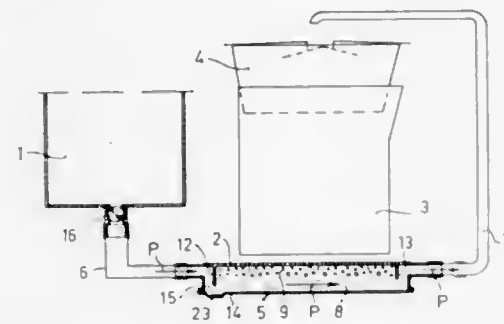
Filed March 3, 1971, Ser. No. 120,616

Claims priority, application Netherlands, March 25, 1970, 7004246

Int. Cl. A47j 31/00

U.S. Cl. 99—290

5 Claims



An apparatus for making coffee, etc. having a water container and a collecting vessel which are arranged side by side, and a basket for holding ground coffee and the like which is arranged over the collecting vessel. Water is conveyed to the basket through an outlet pipe connected to the container and through a heated water chamber. The invention provides a steam space in the water chamber with the result that the operation of the apparatus is improved, and the problem of fouling, for example, by scale deposition, is reduced.

3,691,935  
**BROILER**

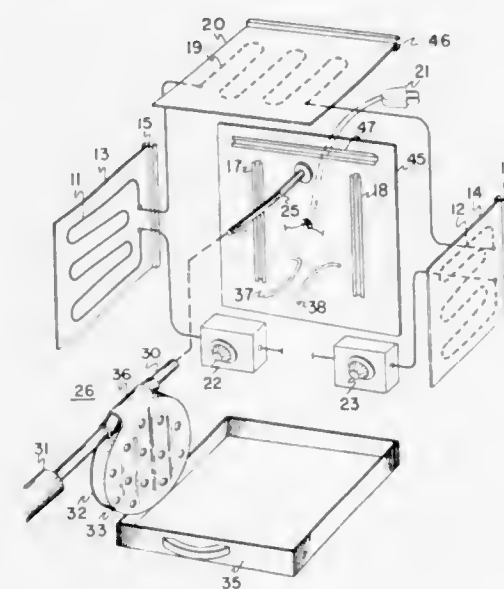
Frank F. Spetz, 108 Skyline Drive, Jensen Beach, Fla.

Continuation-in-part of Ser. No. 41,227, May 28, 1970, abandoned. This application Nov. 8, 1971, Ser. No. 196,651

Int. Cl. A47j 27/62

U.S. Cl. 99—327

13 Claims



A food broiler in the form of a home appliance and a commercial appliance employs a food grill-holder suspendable on a retaining means in a broiling chamber formed by three cooking elements for broiling food. The broiler includes a food broiling channel or chamber formed by the broiling elements, a food grill-holder and a means for suspending the grill-holder in the broiling chamber. Broiling or cooking is controlled by temperature or time of exposure or both. Switch means is provided for electrically coupling the heating elements selectively for varying the heat intensity in the cooking chamber, as desired.

3,691,936

**AUTOMATIC FIRE PROTECTION FOR DEEP FAT FRYER**

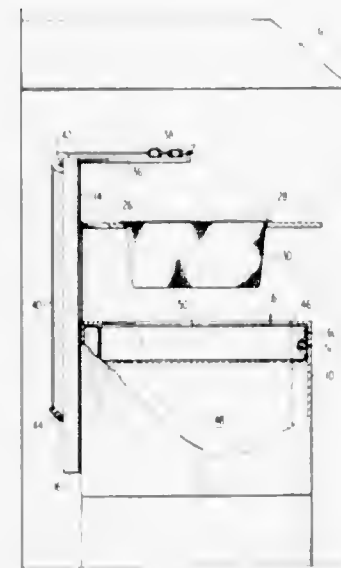
Carl Chiarelli, 20 Lake End Road, Merrick, N.Y.

Filed June 16, 1971, Ser. No. 153,513

Int. Cl. A62c 35/00

U.S. Cl. 99—337

10 Claims



A fire extinguishing means for deep fat frying machines having a vat containing cooking oil which includes an elongated member adapted to be secured to the rear wall of the machine, the elongated member further having associated therewith at one end thereof fusible links which when actuated trigger an arm that lifts the fry basket from the vat and simultaneously with the rise of the fry basket an extinguisher member rises from the liquid to cover the oil.

3,691,937

**COMBINED BROILER PAN AND BROIL RACK**

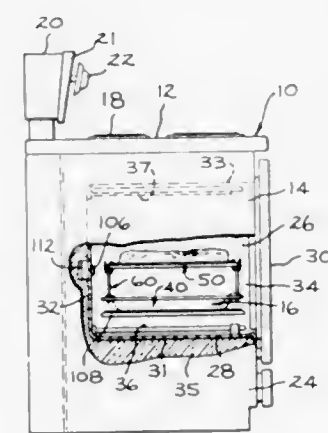
Flora L. Meek, and Christian A. Eff, both of Louisville, Ky., assignors to General Electric Company

Filed Feb. 4, 1971, Ser. No. 112,681

Int. Cl. A47j 37/06

U.S. Cl. 99—340

6 Claims



A combined broiler pan and broil rack assembly where the rack is of open wire construction that is supported in an elevated position above the pan so as to space the pan and hence the grease that accumulates therein during the broiling operation far enough away from the source of the radiant energy so as to retard the generation of smoke. A pair of inverted U-shaped stanchions serve as the support means for the rack. Stabilizing means are combined with the stanchions to rigidify the assembly. Preferably the stanchions may alternately serve as the support means of a rotisserie spit in place of the broil rack.

3,691,938

**COOKING APPARATUS**

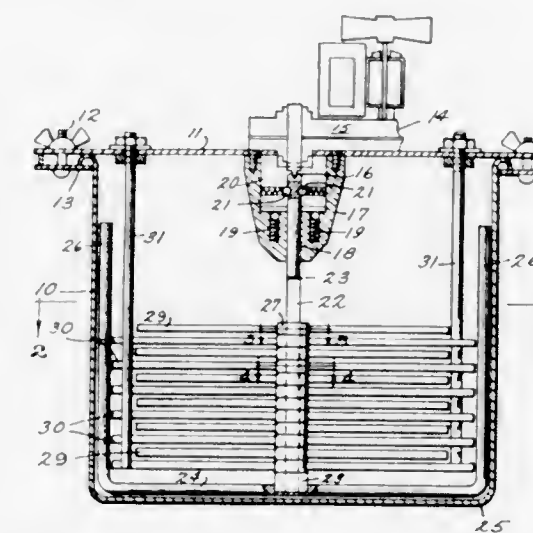
James B. Nichols, 45 Roland Park Drive, Huntington, W. Va.

Filed July 1, 1971, Ser. No. 158,780

Int. Cl. A47j 37/06

U.S. Cl. 99—348

4 Claims



A cooking appliance particularly for preparation of ground meat containing sauces comprises a vessel having a central rotatable shaft carrying a plurality of vertically spaced horizontal bars which rotate with the shaft and between vertically spaced horizontal stationary bars. A U-shaped member attached to the end of the shaft near the bottom of the vessel follows the contour of the vessel and forms a stirring device.

3,691,939

**METHOD AND APPARATUS FOR BINDING PACKAGES**

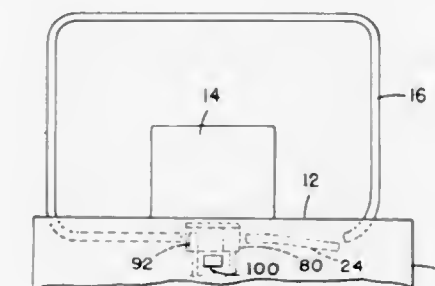
George F. Goodley, 703 Summer St., Media, Pa., assignor to TMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 42,932, June 3, 1970, abandoned. This application April 16, 1971, Ser. No. 134,610

Int. Cl. B65b 13/06

U.S. Cl. 100—2

6 Claims



A method of and machine for automatically binding packages involves the formation of a loose loop of binding material at the same time that a previously formed and tightened loop is being secured about a package. This speeds the binding operation over the prior art which required the two operations to be performed sequentially.

3,691,940

**CROSS-AXIS CONTROL FOR THREE OR FOUR ROLL CALENDERS**

Willard C. Hays, Columbus, and James D. Smith, Cleveland, both of Ohio, assignors to Industrial Nucleonics Corporation

Continuation of Ser. No. 751,013, May 15, 1968, abandoned, which is a continuation of Ser. No. 362,448, April 24, 1964, abandoned. This application June 29, 1971, Ser. No. 158,098

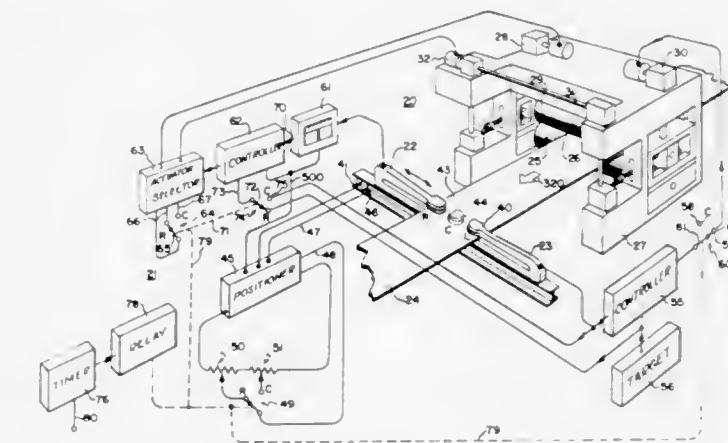
Int. Cl. B30b 11/22

U.S. Cl. 100—41

44 Claims

Control system for profile adjustment of a property on an elongated sheet material, such as a rubber, during the manu-

facturing thereof. The system can include two gauges disposed on the output side of the manufacturing apparatus, one gauge being movable between an edge and the center portion of the sheet and the other gauge being at the other sheet edge. The manufacturing apparatus has a first actuator for adjusting the property at one sheet end portion and a second actuator for adjusting the property at the other end portion. The first and second actuators together act to adjust the property across the entire width of the material including a central portion intermediate to the end portions. A third actuator adjusts the central portion property in relation to the end portions. The



gauges are coupled to a controller that periodically activates the first and second actuators together with the gauges at the end portions and the third actuator separately with the one gauge at the center portion. The first and second actuators are energized, upon actuation, to restore the end portions to their respective target values. The third actuator is energized, upon actuation, by the controller means only when the difference between the central portion property and the property of one of the end portions deviates from a predetermined amount. When there is such a deviation the third actuator initiates an adjustment that returns the central portion to match the edge value.

3,691,941

**COMPRESSING APPARATUS**

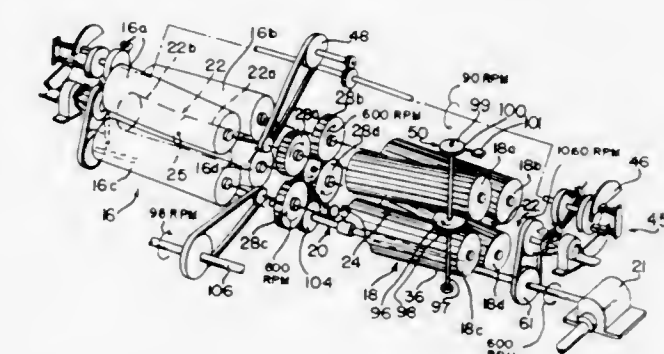
Joseph Molitorisz, Bellevue, Wash., assignor to Rotopak Systems Inc., Seattle, Wash.

Filed March 8, 1971, Ser. No. 121,700

Int. Cl. B30b 3/04

U.S. Cl. 100—89

20 Claims



A roller-forming compressing machine in which compressed cores of fibrous material are discharged axially in opposite directions from a pair of channels formed by two sets of circumferentially spaced skewed rollers driven from a center transmission. In each set a density controlling valve controls the discharge of the core and provides a torque to supplement the rolling torque. The rollers are provided with circumferentially spaced elongated rigid cleats. Cutting blades are mounted for axial movement with the core and intermittent rotation into the core for slicing it into cylindrical wafers. The wafers are cut to lengths determined by a metering device



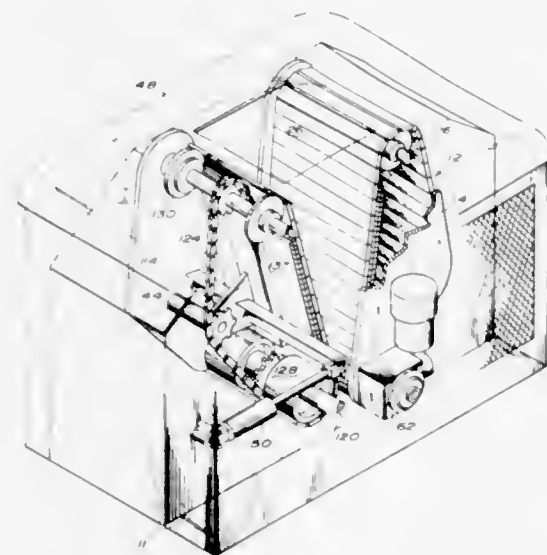
which actuates the cutting blades. Each of the rollers is mounted at one end by a ball type suspension for transferring torque regardless of the skewed or radial position of the roller and two of the rollers in each set provide the feed opening and are spring-mounted at their discharge end to vary the capacity of the feed opening.

### 3,691,942 CRUSHER

Allen Wagley, 10530 Goodnight Lane, Dallas, Tex.  
Filed June 3, 1971, Ser. No. 149,727  
Int. Cl. B30b 5/06

U.S. Cl. 100—151

17 Claims



Material, such as cans, is crushed between two moving belts, which are chains with plates attached thereto.

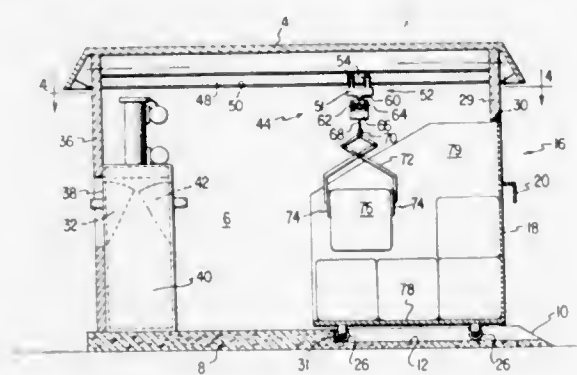
### 3,691,943

#### TRASH COMPACTION SHELTER INCORPORATING A REMOVABLE CONTAINER

John A. Boyd, 3314 Holloman Road, Falls Church, Va.  
Filed June 4, 1971, Ser. No. 150,060  
Int. Cl. B30b 15/30

U.S. Cl. 100—215

9 Claims



A shelter structure in the form of a building having outside walls and an access door. Trash or other material can be introduced into a trash compactor contained within the structure through either an outside wall chute door or by entering the structure through the access door and placing the trash or other material inside the compactor. The compactor functions to compress the materials into bales which are moved by a suitable transportation means into a container. The container has at least one side which forms an integral part of the outside wall of the structure and the container is adapted for easy removal by a front end loading rubbish disposal truck.

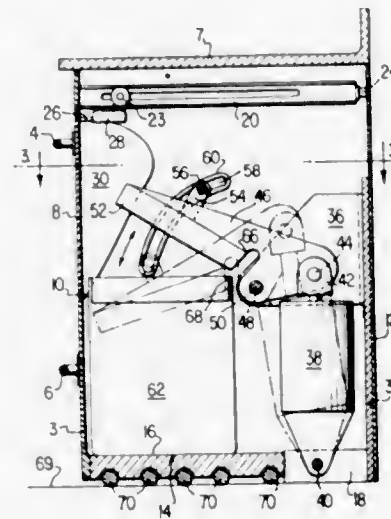
### 3,691,944

#### KITCHEN COMPACTOR

John A. Boyd, 3314 Holloman Road, Falls Church, Va.  
Filed May 27, 1971, Ser. No. 147,575  
Int. Cl. B30b 15/06

U.S. Cl. 100—229 A

8 Claims



A kitchen compactor for the crushing of trash and other disposable wastes is disclosed. The compactor employs a hydraulic cylinder and piston assembly which is controlled by a control means that causes water from the household water supply to flow into the hydraulic cylinder. The water pressure produces motion of the piston which activates a lever arm upon which a pressing platen is mounted. The movement of the lever arm causes the pressing platen to enter into or withdraw from a waste container. When the pressing platen enters the waste container, the waste contained therein is compressed into a small bale or package of considerably smaller volume for easier disposal.

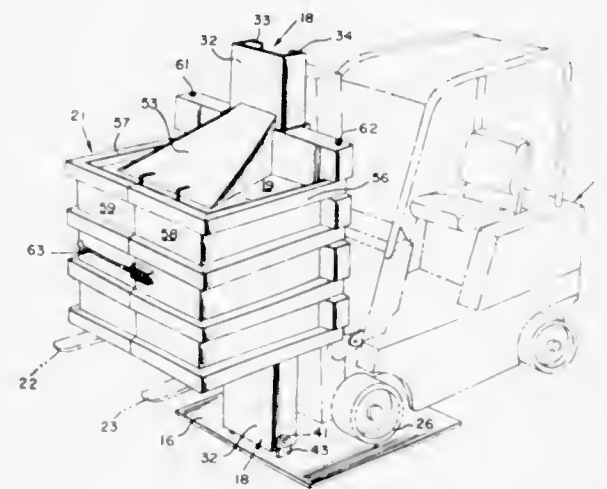
### 3,691,945

#### FORK LIFT REFUSE BIN AND BALER ACCESSORY

Jay R. Guhl, 540 Callan Avenue, San Leandro, Calif.  
Filed June 14, 1971, Ser. No. 152,710  
Int. Cl. B30b 15/06

U.S. Cl. 100—229 R

7 Claims



A fork lift operated refuse baler having a base upon which the forward wheels of a fork lift truck may be placed; the vertical guide secured to the base and supporting a compressor member at its upper end; and an open top refuse hopper or bin mounted for vertical reciprocation on the guide and dimensioned for receiving the compressor member into the open top of the bin, the hopper being engaged by the forks of the lift truck for elevation to the compressor member for compaction of refuse in the hopper.

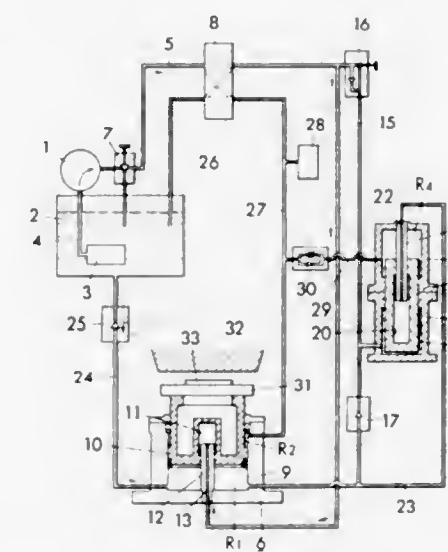
### 3,691,946

#### HIGH-SPEED AUTOMATIC HYDRAULIC PRESSING SYSTEM

Shigeo Ando, No. 5-272, Suehiro-cho, Chosi, Japan  
Filed May 28, 1971, Ser. No. 147,787  
Int. Cl. B30b 1/30

U.S. Cl. 100—269 B

1 Claim



A high-speed automatic hydraulic pressing system which can effectuate a high-speed and high-pressure operation of pressing materials with an automatic repetition, employing a low-powered low-pressure oil pump. Said system comprises a low-pressure oil pump, an oil circuit for supplying oil to a pressing mechanism and an oil pressure intensifying mechanism which can work in synchronous therewith to generate a high-pressure oil. The flow of oil is switched over by a timer at an oil pressure direction changing valve provided on the oil circuit to act on the pressing mechanism and the intensifying mechanism to simultaneously restore a pressing piston and an intensifying piston to the starting position. Then, a pressure switch is urged to switch the direction changing valve back to the starting neutral position to complete one cycle of operation. Thus the cycle being repeated automatically, the system according to the present invention can effectively and continuously press materials at high-speed.

### 3,691,947

#### HAMMER CONTROL FOR CHAIN PRINTER

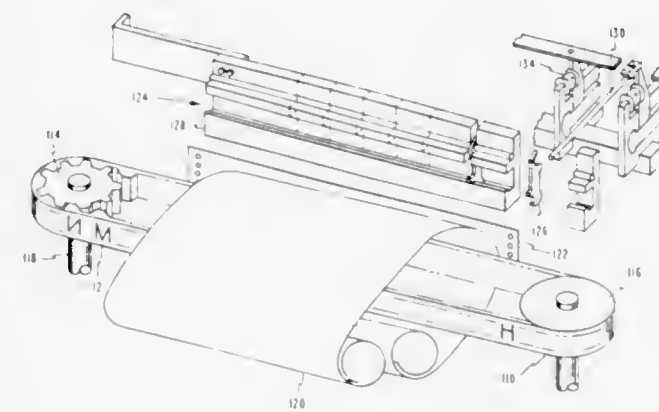
Neil C. Berglund, and Gerald H. Petricka, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 13, 1971, Ser. No. 143,056

Int. Cl. B41j 9/38; H02b 3/28; B41j 1/20

U.S. Cl. 101—93 C

8 Claims



Circuitry for controlling the hammers of a chain type printer which is effective for maintaining each hammer set for a period greater than the time of one print scan (the time

between alignments of successive print characters on the chain with the same print position) and less than the time of two print scans. The data to be printed by each hammer is obtained from a print buffer. After firing of a print hammer, within a time less than one print scan, a substitute piece of data is written in the location in the buffer from which the data printed by the hammer is derived, and the circuitry recognizes this substitute piece of data and does not reset the hammer at this time. Subsequently, the circuitry recognizes this substitute data and inserts still another piece of substitute data, this occurring one print scan subsequent to hammer firing. The circuitry recognizes the second substitute piece of data so that when the hammer is again addressed, a fraction of a print scan time later, the hammer is reset.

### 3,691,948

#### DISCONNECT ARRANGEMENT FOR MULTI-UNIT PRINTING PRESS

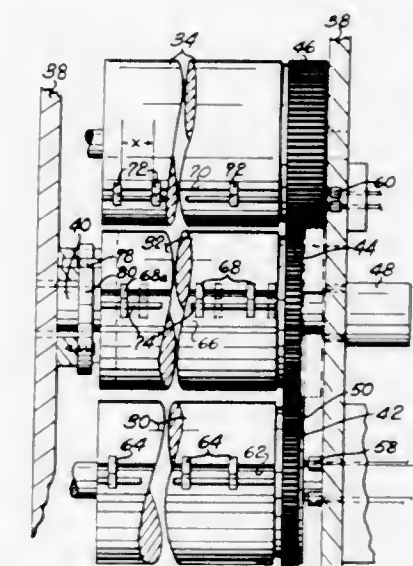
Donald L. Southam; William Weigl, both of Brecksville, and Thomas J. Kacmarcik, Parma Heights, all of Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed April 1, 1971, Ser. No. 130,082

Int. Cl. B41f 7/06

U.S. Cl. 101—183

8 Claims



A disconnect arrangement for a multi-unit sheet fed press in which one of the transfer cylinder gears is shifted axially out of mesh with the gear on an adjacent cylinder while remaining in mesh with the gear on another adjacent cylinder thereby interrupting the press drive train and permitting individual operation of the units. The cylinders associated with the gears which have been disengaged are so dimensioned and arranged that they may be individually rotated without the grippers on either cylinder interfering with the other cylinder.

### 3,691,949

#### PRESSURE CYLINDER FOR DIRECT PLATE PRINTING MACHINES

Gualtiero Giori, and Daniel Beaune, both of Lausanne, Switzerland, assignors to De La Rue Giori S.A., Lausanne, Switzerland

Filed Oct. 27, 1970, Ser. No. 84,446

Claims priority, application Switzerland, Oct. 27, 1969, 15973/69

Int. Cl. B41f 29/04

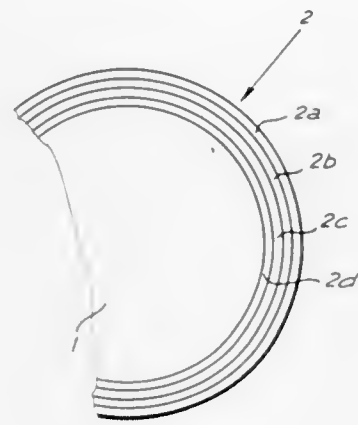
U.S. Cl. 101—216

8 Claims

A pressure cylinder for a direct plate printing machine comprises a steel cylinder having a peripheral coating of plastic



material. The coating has a total thickness of 0.4 mm to 1 mm and comprises an outer layer of polyurethane having a



thickness of about 2 mm and a hardness of Shore D 40° to D 60° and at least one inner layer of polyurethane having a hardness of Shore D 80° to D 90°.

3,691,950

# PLATE FEEDING IN DUPLICATING MACHINES

Albert George Ronald Gates, London, England, assignor to Gestetner Limited, London, England

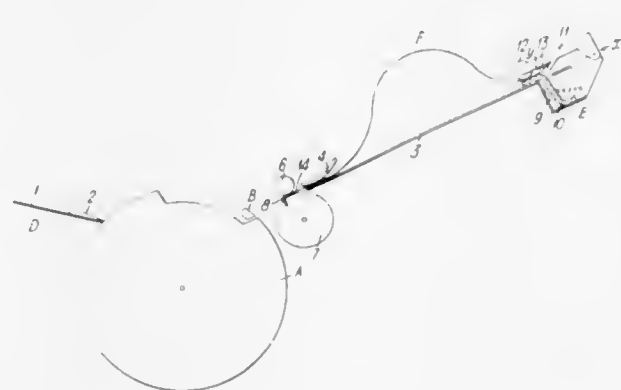
Filed March 17, 1970, Ser. No. 20,161

Claims priority, application Great Britain, March 24, 1969, 15,406/69

Int. Cl. B41f 1/30; B05c 11/124; B65b 11/02

U.S. Cl. 101—415.1

6 Claims



A method and device for loading an offset master on to the plate cylinder of a rotary duplicating machine.

Liquid adhesive is applied to the tail of the master prior to loading thereof, on the side which after loading contacts the master cylinder of the duplicating machine, so that the tail of the master is prevented from flapping and thereby becoming damaged.

The invention is suitable for use with any form of rotary duplicating machine having an automatic clamp for engaging the leading end of a master being loaded.

3,691,951

Patent Not Issued For This Number

## ERRATUM

For Class 101—247 see:  
Patent No. 3,691,956

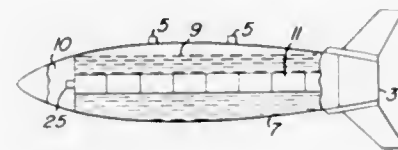
3,691,952  
**MULTILOBAR INJECTOR APPARATUS**  
William C. Dee, Towson, and David Sylvester, Phoenix, both of Md., assignors to The United States of America as represented by the Secretary of the Army

Filed Sept. 16, 1966, Ser. No. 580,567

Int. Cl. F42b 25/12

U.S. Cl. 102—6

8 Claims



The invention is directed to an apparatus for producing toxic products in a final munition and the dissemination of said products from said munition comprising separate compartments maintaining the initial non-toxic components in an unreacted state and at the proper command the wall of one of the said compartments is ruptured, thereby permitting an intermixture of said non-toxic components giving rise to the said toxic products in the assembled said munition.

3,691,953

# METHOD AND APPARATUS FOR CONTROLLING BUOYANCY

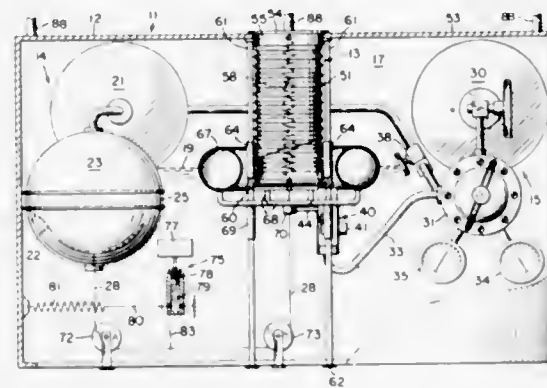
Neubar Kamalian, West Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 28, 1964, Ser. No. 371,141

Int. Cl. F42b 22/08

U.S. Cl. 102—14

9 Claims



1. A device for controlling the depth at which an object will float comprising:

- a flotation chamber having a central opening in its upper surface and an open bottom;
- a pressure source in said chamber;
- said pressure source including a diaphragm which is exposed to the fluid in which the device is floated;
- means defining a passage between the interior of said chamber and said central opening;
- guide means attached to said upper surface about said central opening;
- said guide means extending transversely through said chamber;
- the interior end of said passage defining means movably mounted on said guide means;
- a gas supply in said chamber and means associated therewith for dispensing said gas into said chamber to provide increased buoyancy when the fluid in said chamber reaches a predetermined level; and
- non-extensible means connecting the interior end of said passage defining means and said diaphragm;
- said passage defining means defining a decreased air space in said chamber and releasing air therefrom when said

device is at depths less than a predetermined depth; said passage defining means defining an increased air space in said chamber when said device is at depths greater than a predetermined depth; said dispensing means actuatable to release gas into the increased air space when the fluid in said chamber is above a predetermined level.

3,691,954

# EXPLOSIVE CARTRIDGE

Forrest L. Kern, Allentown, Pa., assignor to Commercial Solvents Corporation

Filed July 29, 1970, Ser. No. 59,318

Int. Cl. F42b 3/00

U.S. Cl. 102—24

1 Claim



An explosive cartridge comprising a container having therein a slurry of high explosive charge, a cast booster charge and a loop of detonating cord associated with the cast booster charge and extending outside the container, the cartridge being provided with means to maintain the cast booster charge in contact with the slurry explosive charge upon application of tension on the loop of detonating cord.

3,691,955

# STRESS RELIEVED GRAINS

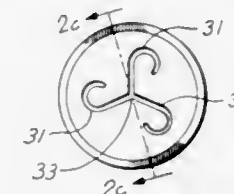
Frank W. Jordan, McGregor, and Leonard D. Webb, College Station, both of Tex., assignors to North American Rockwell Corporation

Filed Nov. 6, 1967, Ser. No. 682,726

Int. Cl. F42b 1/02

U.S. Cl. 102—99

2 Claims



An internally ported grain having an active solids loading of from 85 to 98 percent. The configuration of the port is determined so as to provide a desired internal burning surface and relief for stored strain energy.

3,691,956

# FLAT ADJUSTING AND THROW-OFF ARRANGEMENT FOR FORM ROLLER IN PRINTING PRESS

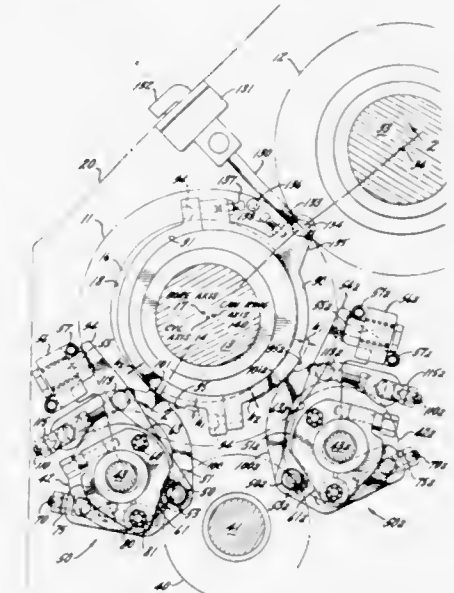
Cyril P. James, La Grange, and Bohdan Washchynsky, Westchester, both of Ill., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Nov. 20, 1970, Ser. No. 91,362

Int. Cl. B41f 13/28, 31/34

U.S. Cl. 101—247

11 Claims



A mechanism for achieving adjustment and throw-off of the cylinders and rollers of a printing press which includes eccentric collars for mounting the plate cylinder and which includes sockets with adjustable stops for mounting the form rollers, the sockets being inwardly biased. A cam ring which is generally concentric with the plate cylinder provides sloping stop surfaces, or cams, in the path of biased movement of the stops on the form roller sockets to position the sockets so that the form rollers have a desired width of flat with respect to the plate on the plate cylinder. An adjusting screw on the frame of the press, and which is coupled to the ring, serves to rock the ring through a limited angle thereby to cam the roller sockets outwardly or inwardly with respect to the plate cylinder to vary the width of flat while the press is in motion. In the preferred embodiment the cam ring axis is made slightly eccentric with respect to the axis of the plate cylinder so that when the eccentric collars which mount the plate cylinder are rotated to achieve throw-off between the plate cylinder and the impression cylinder, the relative rocking of the cam ring causes the stop surfaces thereon to move radially outward of the plate cylinder for simultaneous and automatic throw-off of the form rollers from the plate cylinder. Each form roller socket assembly has an arm, a bearing mount pivoted thereon, and an adjustable stop member. A first adjusting screw with an associated spring is interposed between the arm and the bearing mount for adjusting the roller with respect to the ink drum. A second adjusting screw, with a spring is interposed between the arm and the stop member for adjusting the roller with respect to the plate cylinder. Each adjusting screw has a deeply detented seating member for shifting the screw endwise against its spring for achieving independent throw-off without affecting the adjusted condition of the screw.

3,691,957

# MOBILE APPARATUS FOR LAYING AND REMOVING TRACK TIES ALONG A RIGHT OF WAY

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, A1010 Wien, Austria

Filed May 5, 1971, Ser. No. 140,421

Claims priority, application Austria, June 1, 1970, 4894

Int. Cl. E01b 29/06

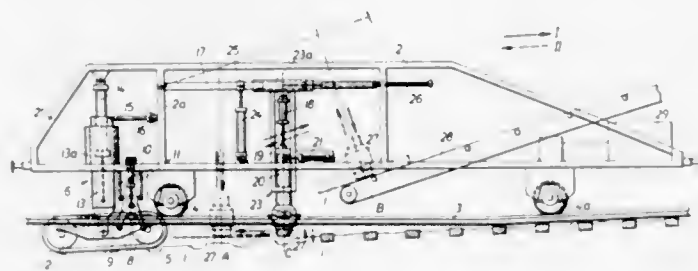
U.S. Cl. 104—9

8 Claims

A vertically adjustable tie gripping mechanism is mounted for movement through a path extending in the direction of the



right of way between end positions respectively adjacent a rail lifting means and one end of an elongated tie conveyor. A guide supports the mechanism so that it is located centrally between the track rails in one end position wherein the mechanism may be vertically adjusted and rotated to swing the ties between a first position transverse of the right of way



and a second position parallel thereto, an intermediate position where the ties are laid or removed, and another end position wherein the ties are deposited on, or received from, the one conveyor end. This one conveyor end is below the path of movement of the tie gripped by the mechanism between the intermediate and other end positions of the mechanism.

3,691,958

Patent Not Issued For This Number

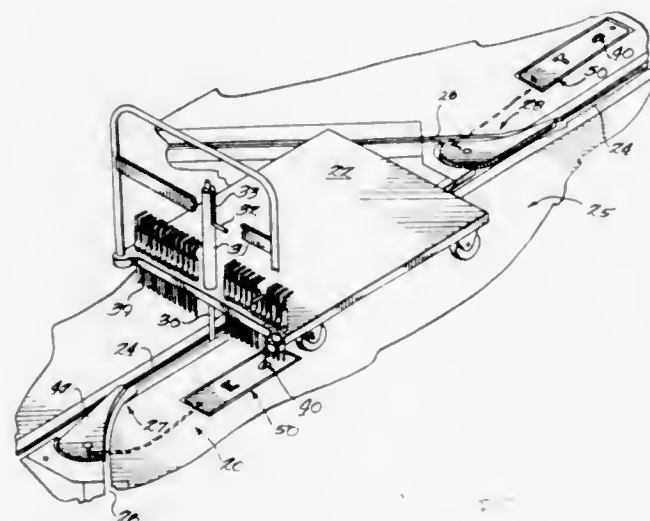
3,691,959

**TRUCK TOW CONVEYOR SWITCHING APPARATUS**  
Horace M. Swartz, Doylestown, Pa., assignor to FMC Corporation, San Jose, Calif.

Filed May 5, 1971, Ser. No. 140,397  
Int. Cl. B61j 3/04

U.S. Cl. 104—88

23 Claims

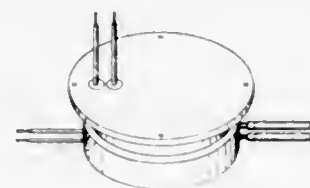


A mechanical switching apparatus for use in an automated truck tow conveyor system has a switch plate for diverting coded trucks from a main slot in a reference surface to a spur slot intersecting the main slot. A reader head, located upstream from the switch plate and in line with a given code probe on the truck, actuates a cable operatively connected to the switch plate to move the switch plate from a position in which the spur slot is closed to an open position. Improved latch means are provided on the reader head to prevent inadvertent triggering of the reader head and inadvertent opening of the switch plate. A full spur device prevents the switch plate from diverting more than a predetermined number of trucks into the spur slot.

**3,691,960**  
**CRYOGENIC MAGNET FORCE APPLICATION MEANS AND METHOD**

David L. Atherton, Toronto, Ontario, Canada, assignor to Ferranti-Packard Limited, Toronto, Ontario, Canada  
Filed March 30, 1970, Ser. No. 23,603

Int. Cl. B61b 13/08; H01f 7/00; H02k 41/00  
U.S. Cl. 104—148 SS 18 Claims



Magnetic force developed between a cryogenic magnet and a field is transferred to a load by a third field forming member which is spaced from but which magnet reacts with the cryogenic member and the third field forming member is joined to a load by a massive support.

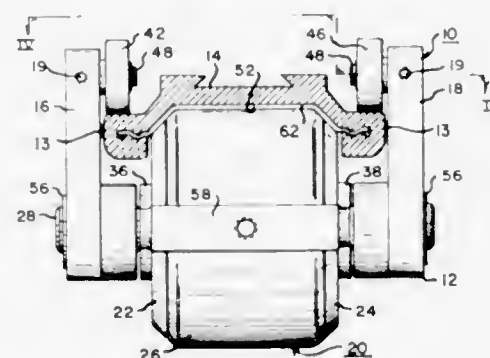
**3,691,961**  
**FLUID PRESSURE DEVICE**

Maurice I. Zeldman, and Edward G. Schechter, both of Pittsburgh, Pa., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed July 15, 1970, Ser. No. 55,130  
Int. Cl. B61b 13/12

U.S. Cl. 104—155

3 Claims



A fluid pressure device comprising a carriage and a track, the carriage adapted to ride on and be guided by the track, a fluid pressure-containing membrane and a sealing membrane, each fixedly attached to the track, the fluid pressure membrane enclosing a cavity in the track, pressurizing and exhausting means connected to the track at the cavity to alternately pressurize and exhaust the fluid medium, the carriage having at least two rollers journaled therein, the roller adapted to cooperate with the pressure-containing membrane so as to move along the track in response to the fluid pressure, the sealing membrane effecting a pressure seal between the pressure-containing membrane and the track.

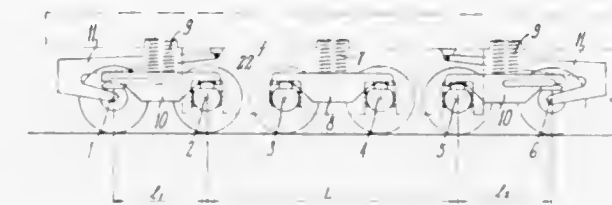
**3,691,962**  
**BOGIES OR CHASSIS FOR ROLLING STOCK WITH A PLURALITY OF AXLES**

Robert Mouneydiere, Le Perreux-sur-Marne, France, assignor to Creusot-Loire, Seine, France  
Filed May 17, 1971, Ser. No. 144,071

Int. Cl. B61f 5/38  
U.S. Cl. 105—182 R 1 Claim

A bogie for rolling stock includes a plurality of groups of axles, of which at least one is a steering axle group. A non-load bearing T-shaped draught bar is pivotally connected at one end to the bogie chassis, with each of the two arms of the T resting on one axlebox of the steering axle. Load supporting beams between the steering axle and the adjacent axle of the

steering axle group bear on the axleboxes of the steering axle in a manner permitting inclination of the beams with steering

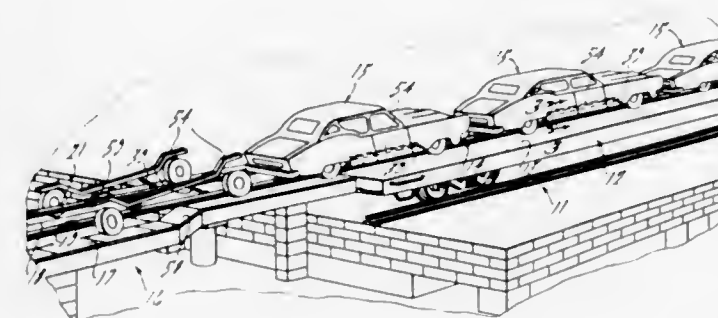


or on a canted track; with well-defined inclination of the axleboxes of the steering axle according to the draught bar being ensured by guide rods linking each axlebox to its beam.

**3,691,963**  
**METHOD AND APPARATUS FOR SHIPPING MOTOR VEHICLES**

Raymond M. Krokos, Detroit, and William K. MacCurdy, Plymouth, both of Mich., assignors to Evans Products Company

Filed May 14, 1970, Ser. No. 37,250  
Int. Cl. B60p 7/08; B61d 45/00  
U.S. Cl. 105—368 R 8 Claims



A method and apparatus for loading and tying down motor vehicles onto a transporting railway car. Chains are fastened to the frame of the motor vehicle and two rigid members that are guided in a track. As the vehicles are moved along a loading ramp toward the railway car, the distance between the ends of the chains, in a vertical direction, is increased to tensioning the chains and tie down the vehicles.

**3,691,964**  
**PALLET**

Louis P. Larson, Glendale; Edward F. Repking, St. Louis, both of Mo., and Gary L. Wagner, Covington, La., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Oct. 19, 1970, Ser. No. 81,803  
Int. Cl. B65d 19/18  
U.S. Cl. 108—51 9 Claims

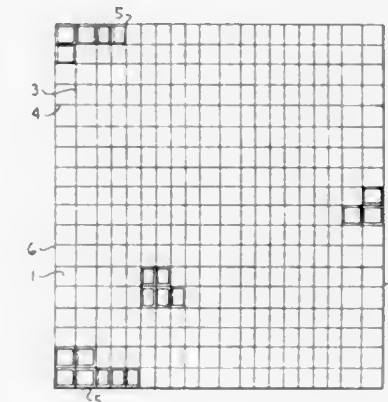


A pallet with single or double decks detachably fastened to pallet feet. The feet are anchored to an upper deck by twisting them into place. The upper deck is apertured on its under side to present tabs for anchoring the feet. The feet are hollow conical frustum bodies and may be stiffened by internally carried cores.

**3,691,965**  
**PALLET**

Harold S. Cloyd, Erie, Pa., assignor to Nosco Plastics Incorporated, Erie, Pa.

Filed Oct. 9, 1970, Ser. No. 79,549  
Int. Cl. B65d 19/18  
U.S. Cl. 108—58 2 Claims

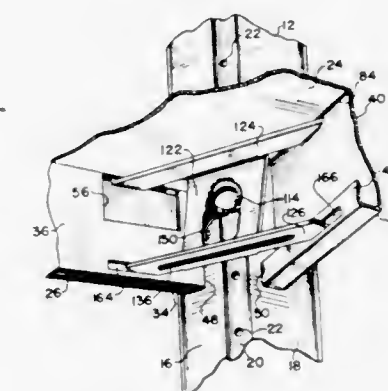


A pallet consisting essentially of a lattice and longitudinal and cross ribs edgewise to the load-carrying surfaces. The ribs extend the full depth of the pallet at nine regions spaced from each other and arranged in sets of three, aligned lengthwise, crosswise and diagonally of the pallet. The spaces between the sets provide fork lift openings on both the sides and ends of the pallet. The lower ends of the full depth ribs are tied together by integral lattice elements extending crosswise of the pallet.

**3,691,966**  
**CORNER ATTACHMENT FOR LIGHTWEIGHT STEEL SHELVEING**

Irwin J. Ferdinand, Glencoe; Irwin R. Kulbersh, Morton Grove, and Gerald D. Cassiere, Chicago, all of Ill., assignors to The Hirsh Company, Skokie, Ill.

Filed Jan. 25, 1971, Ser. No. 109,310  
Int. Cl. A47b 9/00  
U.S. Cl. 108—144 6 Claims



Lightweight, easily assembled and dis-assembled knockdown shelving is described wherein particular shaped clip members are provided that snap-fit into the side and end flanges at the cut-out corners of the shelves and present a notched opening adjacent the securement apertures of the shelving post that facilitate the insertion and reception therein of the securement means already located on a supporting post, such as a fastening screw or bolt. The clips not only provide a rigidifying support across the cut-out corners of the shelves, but also an initial weight supporting level positioning of the shelf followed by the tensioning for direct weight supporting abutment of the flange edges against the sides of the post.



3,691,967

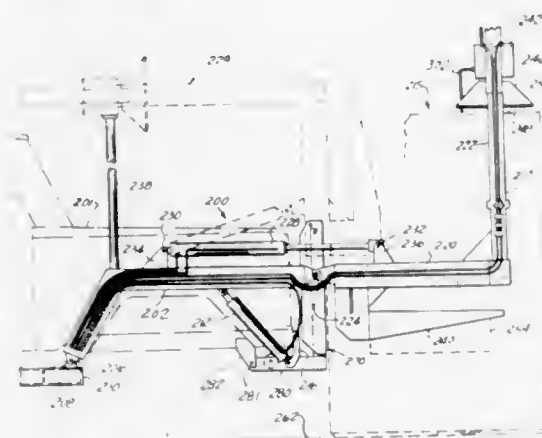
**MOBILE REFUSE COMPACTING APPARATUS**  
Donald Mettetal, Jr., 19301 Shiawassee, Detroit, Mich.

Filed June 25, 1970, Ser. No. 49,635

Int. Cl. B30b 15/00

U.S. Cl. 100—100

7 Claims



A mobile apparatus for compacting refuse disposed in a separate receptacle of the type having an opened top portion through which refuse is normally deposited. One example of the invention is in the form of a self-propelled vehicle having an upright ram positioning mechanism which includes a plurality of members pivotally connected in an end-to-end fashion; each member having a hydraulically actuated cylinder for selectively pivoting the members relative to one another. The top member of the ram positioning mechanism supports a piston actuated ram which is adapted to be positioned above the opened top portion of the receptacle at selected spaced positions. The ram is actuated in an up and down fashion to compact the refuse therebeneath at each spaced position.

A second example of the invention is in the form of a ram positioning mechanism adapted to be carried at the front end of a conventional vehicle, such as a truck. The ram positioning mechanism includes a hydraulically actuated piston which selectively moves a ram in an up and down fashion to compact the refuse contained within the receptacle. The ram is moved to spaced positions across the receptacle opening by positioning the ram carrying vehicle at selected distances from the front wall of the receptacle.

Each example of the present invention includes means for engaging the opposite sidewalls of the receptacle in such a manner that the downwardly directed force of the ram against the refuse carried within the receptacle is transmitted directly through the bottom of the receptacle to the ground on which the receptacle is supported.

3,691,968

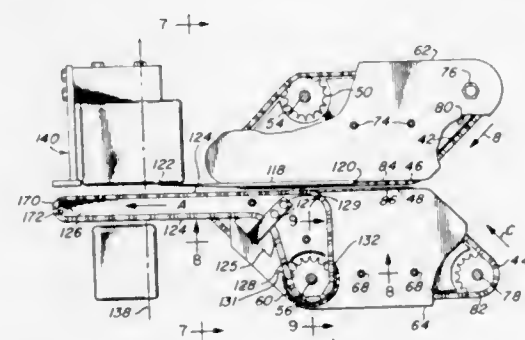
**SACK CLOSING AND SEWING MACHINE**  
Raymond D. Schnepf, Rt. 1, Box 42, Queen Creek, Ariz.

Filed July 20, 1970, Ser. No. 56,392

Int. Cl. D05b 13/02

U.S. Cl. 112—11

9 Claims



A sack closing and sewing machine having a conveyor for conveying sacks with contents therein, a sack closing means

above said conveyor, a sewing machine adapted to receive the upper ends of sacks and sew them closed adjacent to said closing means, a movable guide means extending from said closing means to a position beyond the normal sewing position of said sewing machine and rectilinear mounting means adapted to permit movement of said sewing machine from a normal sewing position to a relief position beyond said movable guide means and in a direction of movement of said conveyor.

3,691,969

**STITCH CONTROLLER**

Nereo Bianchi, Pavia, Italy, assignor to Necchi S.p.A.

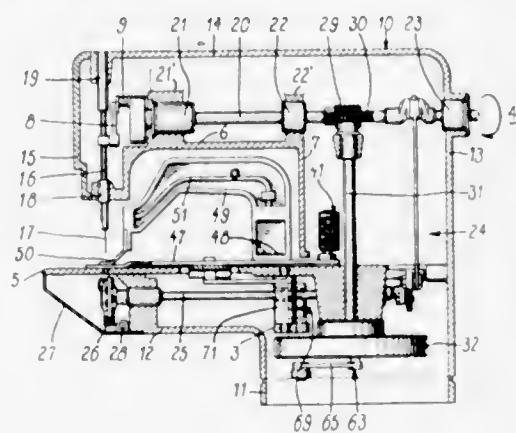
Filed April 6, 1970, Ser. No. 25,659

Claims priority, application Italy, Apr. 14, 1969, 32409-A/69

Int. Cl. D05b 3/04

U.S. Cl. 112—70

9 Claims



The present invention comprises externally accessible control means operatively connected to cam actuated kinematic linkages in sewing machines which impart precise longitudinal and transverse movements relative to the needle to material being stitched to permit separate variations to be made in the magnitude of the longitudinal or transverse movements without placing the sewing machine in an inoperable condition.

3,691,970

**DEVICE ON SEWING MACHINES FOR TRIMMING MATERIAL**

Herbert Wenz, Kaiserslautern, Germany, assignor to Firma G.M. Pfaff AG, Kaiserslautern Platz, Germany

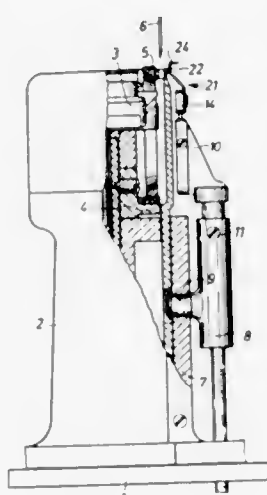
Filed Feb. 29, 1970, Ser. No. 59,107

Claims priority, application Germany, Aug. 6, 1969, G 69 31 124.6

Int. Cl. D05b 37/06

U.S. Cl. 112—127

2 Claims



Device on sewing machines for trimming edges of the material with a cutter that is mounted for swinging movement on a cutter support adapted to make evading movements and

3,691,973

Patent Not Issued For This Number

3,691,974

**PORTABLE BARGE**

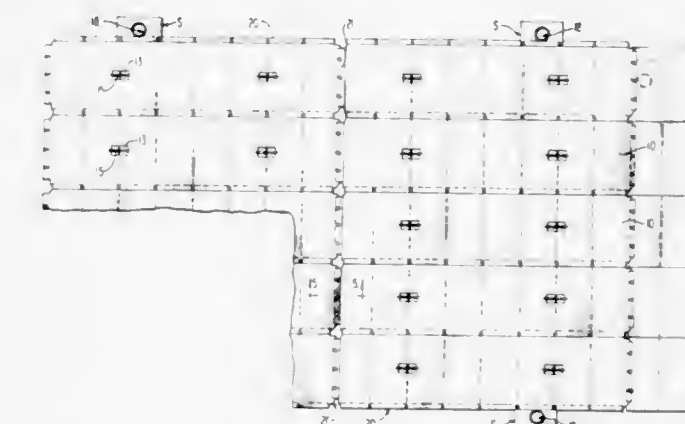
Donald S. Seiford, Sr., Inver Grove Heights, and Robert R. Seiford, St. Paul Park, both of Minn., assignors to Twin City Shipyard, Inc., St. Paul, Minn.

Filed March 3, 1970, Ser. No. 15,997

Int. Cl. B63b 35/00

U.S. Cl. 114—0.5 F

11 Claims



The invention relates to a sectional, portable barge construction which is transportable over land, each section of which is subsequently lowered into a body of water and assembled into a predetermined overall size and shape preparatory for use.

3,691,975

Patent Not Issued For This Number

3,691,976

**SAILING CRAFT**

Donald J. M. Wilson, Peace Boats, Inc., 54 Lewis Wharf, Boston, Mass.

Filed Nov. 16, 1970, Ser. No. 89,951

Int. Cl. B63b 35/00

U.S. Cl. 114—39

11 Claims



A multi-hull sailing craft has three hulls arranged in a generally triangular plan configuration in which two of the hulls are located aft of the third, forward hull in a generally Y-

which has an edge disposed in a vertical plane, as well as an angular protecting bridge disposed horizontally above the edge where the cutter support is displaceably mounted in a vertical guide means of a support member arranged on a cutter rocking lever and which is adjustable in height and is held in a central position by means of springs.

3,691,971

**MULTIPLE PLY MOIRE TEXTILE**

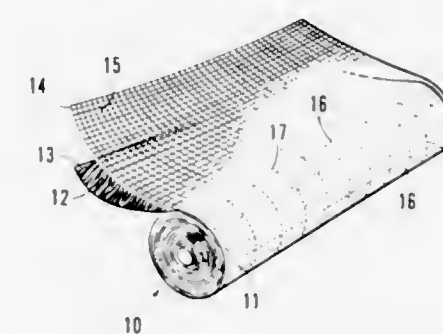
Robert W. Clarke, 90 Old Mill Road, Toronto 590, Ontario, Canada

Filed June 16, 1971, Ser. No. 153,524

Int. Cl. B32b 7/08

U.S. Cl. 112—440

3 Claims



The specification discloses a moire textile material for use in making garments in which an under sheet has a grid like pattern thereon and an over sheet is effectively translucent and has a grid like pattern characteristic, the sheets being fastened by basting which can be removed after the cutting and sewing of a garment therefrom, the garment being adapted by virtue of the material to generate motion suggestive moire patterns of an accentuated nature responsive to slight motion of the wearer of the garment.

3,691,972

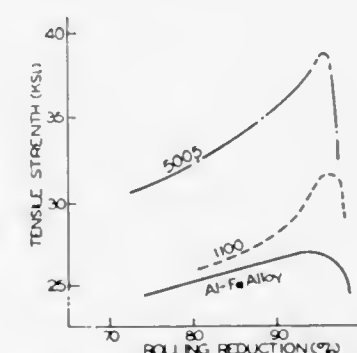
**ALUMINOUS METAL ARTICLES AND METHOD**  
Linton D. Bylund, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Division of Ser. No. 712,314, Jan. 16, 1968, Pat. No. 3,571,910, which is a division of Ser. No. 660,132, Aug. 11, 1967, Pat. No. 3,397,044, which is a continuation-in-part of Ser. No. 573,776, Aug. 8, 1966, abandoned, which is a continuation-in-part of Ser. No. 379,782, July 2, 1964, abandoned. This application July 9, 1970, Ser. No. 889,790

Int. Cl. B21d 51/00; B21b 15/00; B21c 37/02

U.S. Cl. 113—120 H

15 Claims



Aluminum foil and other wrought articles including drawn and ironed can bodies are produced from aluminum base alloys containing up to about 2.5 percent iron, having a low work hardening rate above 75 percent reduction and sufficient ductility at high cold work levels to permit cold working to the extent of at least 90 percent without the necessity of annealing or stress relieving.



shaped configuration. The hulls are connected by three spars, each of which radiates from a central connector towards its associated hull. The forward hull is pivotally connected to its spar so that it may act as a rudder and provide steering. A passenger deck spans the distance between the transversely spaced aft hulls and is connected to the hulls by stanchions which extend downwardly from the deck. The central connector also includes an upwardly opening mask socket which receives the lower end of the mast to support the mast without the use of stays or shrouds. The aft hulls preferably are asymmetrical in cross section but are symmetrical in a fore and aft direction. All of the spars of the sailing craft, including those associated with the mast and sail may be disassembled into components of smaller length approximately equal to that of the aft hulls to facilitate transporting of the sailing craft in a disassembled configuration. The features of the sailing craft may be employed in iceboats or similar sand and snow vehicles.

3,691,977

## MARINE SALVAGE VESSEL

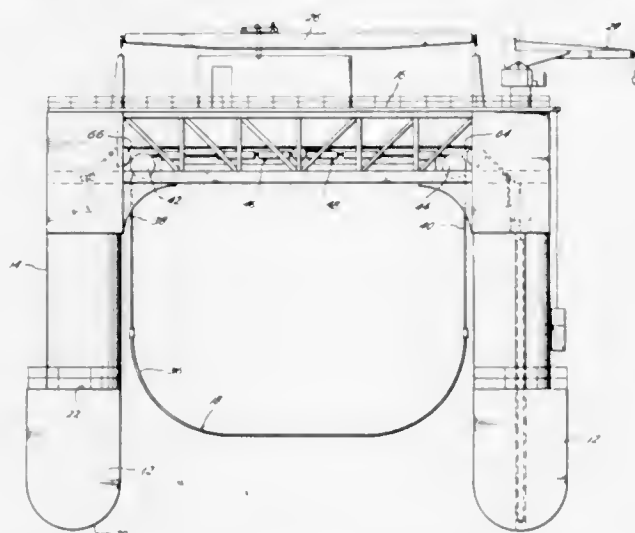
Weldon N. Eubanks, 1901 Nottingham, Pasadena, Tex., and  
Doyle D. Short, Rt. 1, Wimberly, Tex.

Filed Jan. 8, 1970, Ser. No. 1,515

Int. Cl. B63c 7/02; B63b 35/40

U.S. Cl. 114-51

2 Claims



A marine salvage vessel having two elongated parallel horizontal hulls having ballast compartments with the lower portion of the hulls being arcuate and the tops being flat and of sufficient displacement to support the vessel and payload while floating on the water with a plurality of vertically extending buoyant caissons connected to the top of each horizontal hull, and a horizontal superstructure connected between the tops of the vertical caissons. Improved lifting means including a plurality of lifting cables, the ends of the cable leading to opposite sides of the structure around pulleys carried by the superstructure inside of the horizontal hulls and adjacent the vertical caissons with a horizontally positioned hydraulic jack connected to each end of the cable. The jacks at opposing ends of the cable being supported from the superstructure between opposing vertical caissons and connected together whereby the center of gravity is a minimum and the required strength of the superstructure is a minimum.

3,691,978

## APPARATUS FOR THE AUTOMATIC NAVIGATION OF A SAILING VESSEL

Donald Spencer Bond, Princeton, N.J., assignor to RCA Corporation

Filed Dec. 18, 1969, Ser. No. 886,300

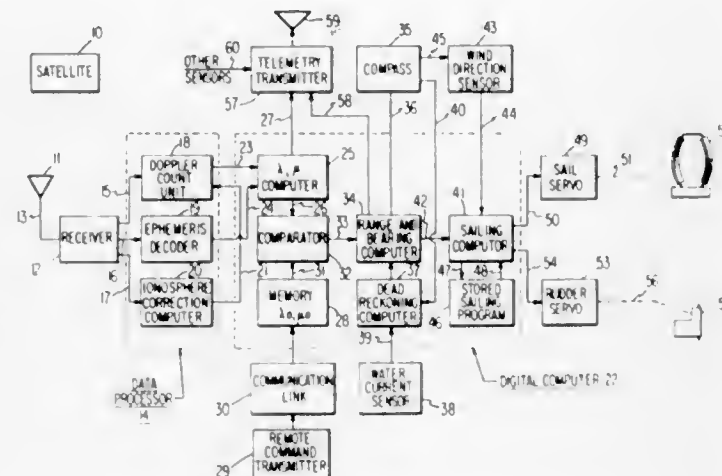
Int. Cl. B63h 25/00

U.S. Cl. 114-144

9 Claims

A navigation system for a sailing vessel which automatically sails the vessel from its present location to a destination location.

The system responds to the prevailing wind conditions and characteristics of the craft to either sail directly or tack to



the desired destination. Upon arrival at the destination location the system navigates the vessel to cause the vessel to keep a station in the immediate vicinity of the destination location.

3,691,979

Patent Not Issued For This Number

3,691,980

## MUSICAL POTTY CHAIR

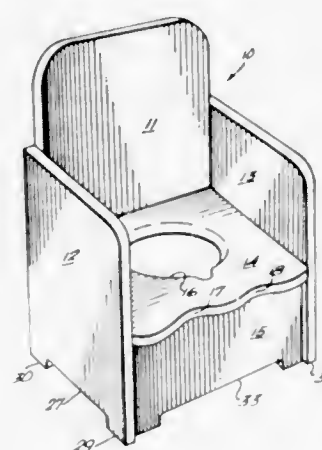
John F. Shastal, 2600 S.W. 53rd Avenue, West Hollywood, Fla.

Filed April 27, 1971, Ser. No. 137,815

Int. Cl. G08b 3/00

U.S. Cl. 116-67

9 Claims



A musical potty chair comprising a chair member having a central opening in its seat below which a potty receptacle is removably received and wherein a mechanical, electrically-energized music making device plays a tune upon a child first being seated or seating himself upon the chair and thereafter eliminating body waste into the potty receptacle, is described. The energizing circuit for the music device has a first normally open-circuited electrical switch mounted in a leg of the chair and adapted to be closed-circuited by the weight of the child sitting on the chair, and a second normally open-circuited electrical switch associated with the potty receptacle when in position below the seat opening and operative to be closed-circuited in response to the added weight of body waste deposited into the potty receptacle to complete the energizing circuit to the music making device and thereby play a reward-tune.

3,691,981

## HOSE RUPTURE INDICATOR

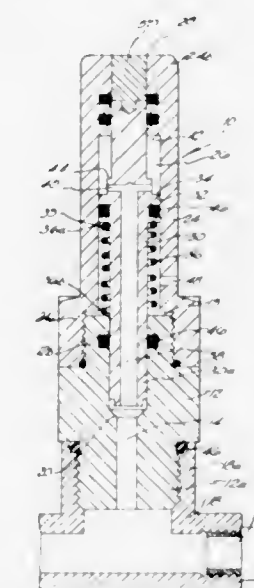
Prabhakar B. R. Rao, Cincinnati, Ohio, assignor to Fluidics, Inc., Cincinnati, Ohio

Filed Feb. 4, 1972, Ser. No. 223,434

Int. Cl. G011 19/12

U.S. Cl. 116-70

12 Claims



A hose rupture indicator adapted to be secured in communication with a fluid line containing hydraulic fluid under pressure. When pressure in the line drops below a predetermined level, an elongated indicator is extended out of the rupture indicator housing to provide an indicator which may be felt in the dark or in a restricted location to immediately apprise an operator which line of a plurality of fluid lines has in fact ruptured.

3,691,982

## RAILROAD CAR AIR BRAKE FAILURE INDICATOR

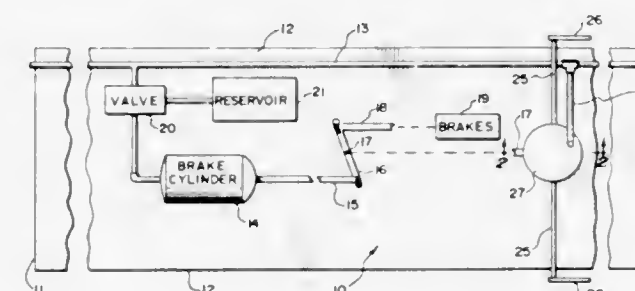
Vaughn T. Hawthorne, 5223 Deerfield Road, Mechanicsburg, Pa.

Filed April 21, 1971, Ser. No. 136,050

Int. Cl. G011 19/12

U.S. Cl. 116-70

7 Claims



A shaft extending transversely of a railroad car has flags on each end of it. If the brakes are working properly the shaft holds the flags in a first position, but if there is too little or too much travel of the brake cylinder actuating member upon the occurrence of a pressure reduction in the train line, the shaft rotates the flags to a position indicating such a malfunction.

3,691,983

## IDENTIFICATION SYSTEM FOR WATER POLLUTION DETECTION

Edward L. Greenwood, 3721 S. Queensgrove Circle, Virginia Beach, Va.

Filed Sept. 22, 1970, Ser. No. 74,255

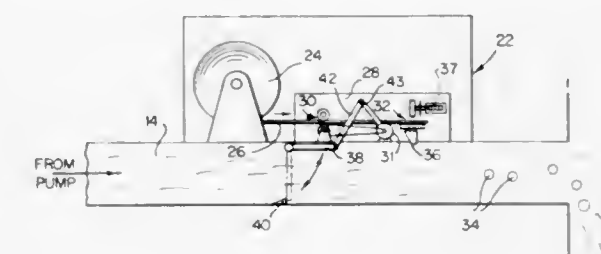
Int. Cl. G01d 21/00

U.S. Cl. 116-114 R

14 Claims

In a method of identifying sources of water pollution, buoyant indicator elements which identify the source of pol-

luting material are injected into the polluting material and discharged with the material into a body of water to enable the pollution to be traced to its source. In a preferred embodiment, the indicator elements comprise a plurality of buoyant



pellets having indicia which identify the source of discharged material. The pellets can be provided with absorptive cores for absorbing a portion of the discharged material to enable the type of polluting material to be determined by examination of the discharged pellets.

3,691,984

## PACE SETTER

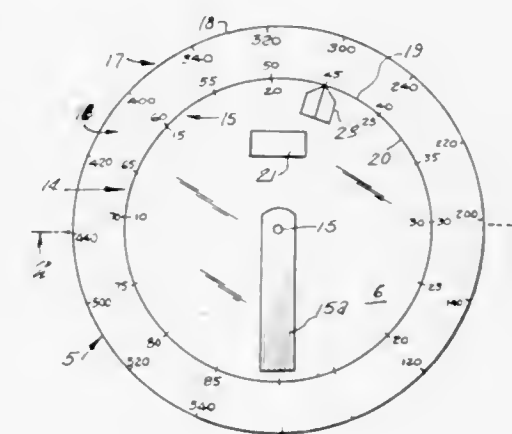
Clyde E. Hinkley, 107 South Main Street, Holley, N.Y., and  
William A. Lusk, Eagle Harbor Road, Albion, N.Y.

Filed Nov. 29, 1968, Ser. No. 779,749

Int. Cl. G01p 1/06

U.S. Cl. 116-116

2 Claims



A speedometer to pace a horse's speed in pulling a sulky over a pre-set distance, the instrument including a speedometer of known construction and operated by cable connection with a wheel of the sulky, a housing for the speedometer proper, a removable transparent cover for the housing, a dial visible through the said cover, a plurality of angular scales on the dial, a pointed mounted for oscillating movement along said scales and an index finger adjustable relatively to the scales; use of a stop watch and having to look for the quarter mile pole is avoided.

3,691,985

## SPRING BIASING MEANS FOR A SELF-ILLUMINATING PUSHBUTTON

Jon L. Otterlei, 1704 Merilane, Edina, Minn.

Filed Feb. 8, 1971, Ser. No. 113,501

Int. Cl. G09f 9/00

U.S. Cl. 116-124

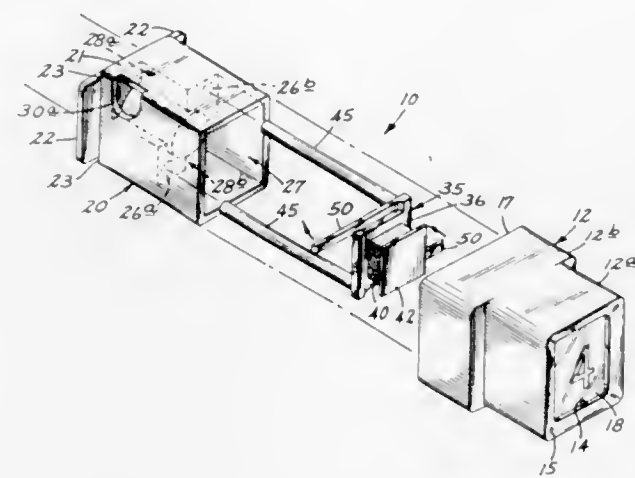
5 Claims

A self-illuminating pushbutton having a light reflective surface carried by a supporting platform slidably moveable within a casing toward and away from a character plate mounted adjacent an aperture at one end of the casing. An elongated



resilient element integrally molded at each of two diagonally opposed corners of the supporting platform engages the inner

about the roll axis of the instrument when the first and second members rotate at the same angular velocity and a second mo-



walls of the casing so as to bias the supporting platform and light reflective surface away from the character plate, thereby making the character normally appear non-luminous.

3,691,986

#### GAUGE AND LIGHT SIGNAL

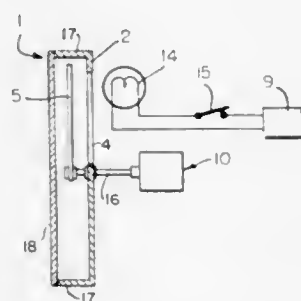
Elias Gancher, 477 Farmington Avenue, Waterbury, Conn.

Filed June 29, 1970, Ser. No. 50,658

Int. Cl. G09f 9/00

U.S. Cl. 116—129

4 Claims



A gauge is disclosed which provides both an analog indication of a variable quantity and a warning light signal when a danger point is indicated. The face of the gauge includes a slot through which a warning light shines when the danger point is indicated. The slot is located in the vicinity where a conventional pointer would indicate the danger point. Instead of having a conventional slender pointer attached to and rotating on a pinion shaft of a gauge movement, the gauge of the present invention has attached to the pinion shaft a screen in the form of a sector of a circle. The screen subtends an angle at least equal to the entire range of the variable. One edge of the screen is suitably marked as a narrow pointer.

3,691,987

#### INDICATOR MECHANISM FOR NAVIGATION INSTRUMENTS

Richard R. Strock, Phoenix, Ariz., assignor to Sperry Rand Corporation

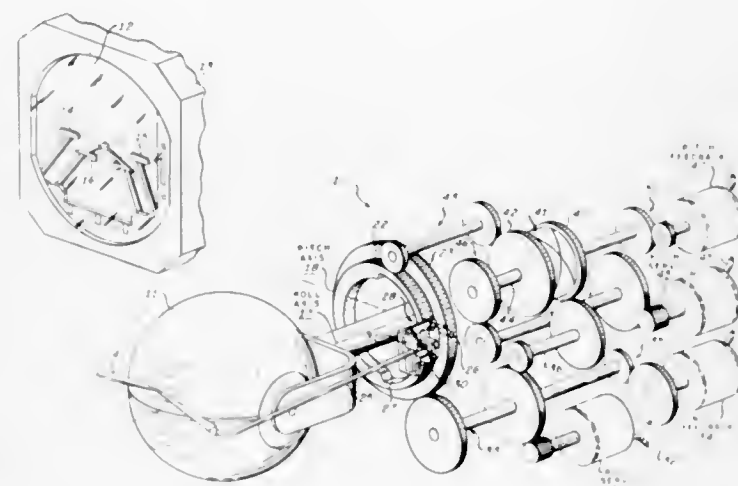
Filed Jan. 14, 1971, Ser. No. 106,466

Int. Cl. G01c 23/00

U.S. Cl. 116—129 R

18 Claims

An indicator mechanism for navigational instruments comprising first and second members mounted for rotation with respect to each other and with respect to the instrument housing. Drive means are included for rotating the first and second members at the same angular velocity with respect to each other relative to the housing in response to a roll signal and for rotating one of the members with respect to the other in response to a pitch signal. An indicator is coupled to the first and second members so that a first motion is imparted thereto



tion is imparted thereto about the pitch axis of the instrument when one of the members rotates with respect to the other.

3,691,988

#### APPARATUS FOR AUTOMATICALLY STAINING MICROSCOPE SLIDES

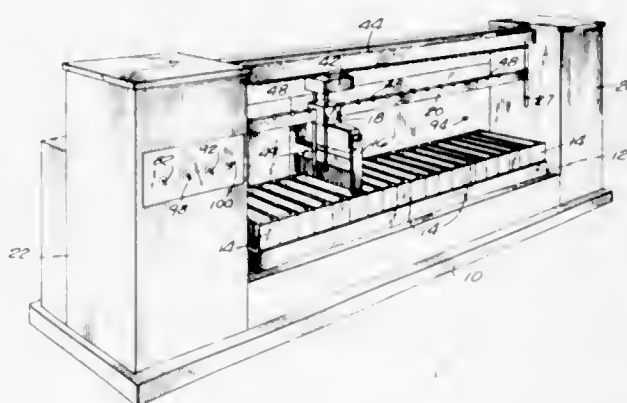
Benjamin Earl Clarke, Milwaukee, Wis., assignor to Thermolyne Corporation, Dubuque, Iowa

Filed April 5, 1971, Ser. No. 131,189

Int. Cl. B05c 3/04

U.S. Cl. 118—6

5 Claims



In this apparatus for automatically staining material on microscope slides, a straight longitudinally extending overhead track movably supports a guide block for a holder for the microscope slides. This track is vertically raised and lowered while remaining level. When the track is raised a controlled chain drive moves a carriage assembly along an electric guide rail to move the guide block along the overhead track stopping it in positions above selected solution containers mounted on a container support. The track is lowered to immerse the slides into the solution in the selected container. A timing belt and timing switch control the duration of time that the slides are immersed in the solution of the selected container. At the end of the treatment the guide block is stopped in an unloading position or may be left in the last container containing an Xylene solution. The solution in the containers is gently agitated by rocking the container support on a longitudinally extending axis.

3,691,989

Patent Not Issued For This Number

3,691,990

#### APPARATUS FOR APPLYING ADHESIVE TO THE EDGES OF A SLIT TUBE

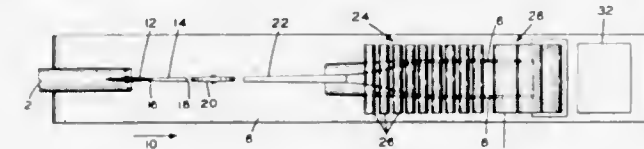
Howard R. McCabe, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed May 13, 1971, Ser. No. 143,140

Int. Cl. B05c 1/08, 11/12

U.S. Cl. 118—35

4 Claims



Foamed tubular insulation is provided with a slit down its longitudinal length so that it may be slid over a pipe. The apparatus herein opens up the tubing so that an adhesive coater may apply an adhesive to both edges of the slit in the tubing. A flattening structure opens up the tube so that the two surfaces to be coated are in the same horizontal plane, and a roll coating structure then applies adhesive to the edges in the same plane. The adhesive is permitted to dry and is then later solvent actuated when it is to be utilized to fasten the two edges together.

3,691,991

#### APPARATUS FOR SPRAY-COATING COMPONENTS

Manfred H. Luderer, Weiller Zum Stein, and Anton Ettenhofer, Winnenden, both of Germany, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

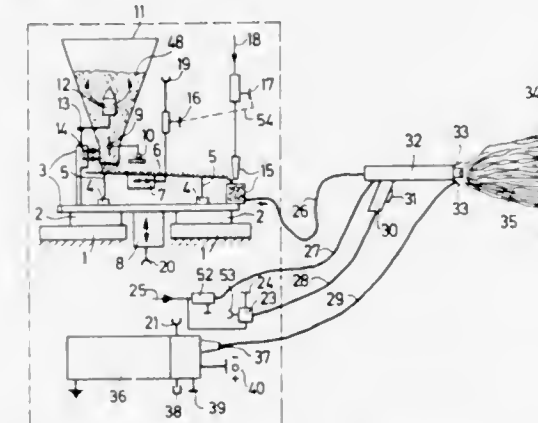
Division of Ser. No. 819,216, April 25, 1969, Pat. No. 3,637,135. This application Nov. 3, 1971, Ser. No. 195,270

Claims priority, application Germany, Apr. 26, 1968, P 17 71 263.9; Jan. 14, 1969, G 69 01 158.1; Mar. 27, 1969, P 19 15 651.1

Int. Cl. B05c 5/02

U.S. Cl. 118—629

19 Claims



An apparatus for spray-coating components or workpieces with a dry material, such as powder, or with a wet material, such as paint, includes a removable and replaceable supply container for the coating material. When the container is mounted in the apparatus, an agitator therein is connected to an air supply to agitate the material in the container. The material is supplied from the container to a feeding trough through a regulatable discharge opening, the trough being vibrated parallel to the direction of movement of the material therealong and the support for the container being vibrated vertically. The trough delivers the material to an injector connected to a source of compressed air with the mixture of compressed air and material being directed through a closed conduit or the like to a spray-gun having high voltage electrodes at its outlet or discharge end. A control panel is provided with controls for selecting the voltage and the polarity of the electrodes at the spray-gun outlet, and for regulating the vibration effect and the supply of air to the apparatus. The electrical operation is effected under the control of air pressure operated switches to which air is supplied responsive to operation of air supply control members.

3,691,992

#### APPARATUS FOR TRUING MORTAR COATING

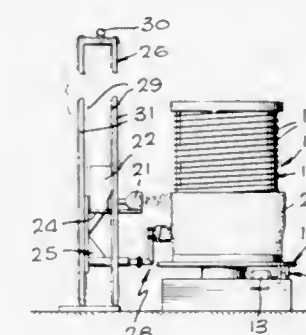
Paul K. Beemer, Laguna Beach, Calif., assignor to Ameron, Inc., Monterey Park, Calif.

Filed Dec. 26, 1968, Ser. No. 786,968

Int. Cl. B05c 11/02

U.S. Cl. 118—107

10 Claims



Apparatus for truing a cement mortar coating on a concrete pipe body or the like including means for supporting and rotating the body and a power-driven rotary brush mounted to be moved longitudinally of the body.

3,691,993

#### APPARATUS FOR TRANSFERRING DEVELOPED IMAGE

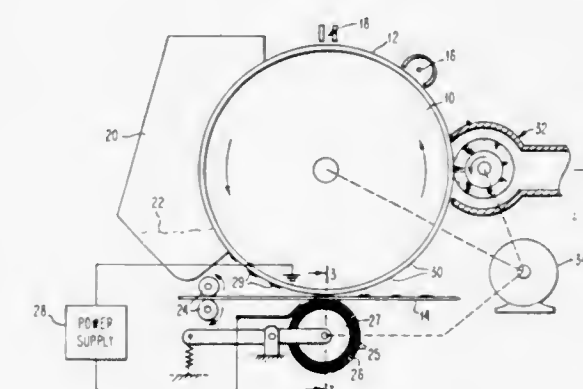
Konrad A. Krause, Mountain View, and Yaqub Moradzadeh, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 23, 1970, Ser. No. 92,038

Int. Cl. G03g 13/00

U.S. Cl. 118—637

8 Claims



An apparatus for transferring a developed electrostatic image from an image-bearing member to a medium such as copy paper in response to the evenly distributed field produced by a D.C. biased metallized fiber brush roller which contacts the copy paper to produce the transfer.

3,691,994

#### FLOATING FISH ENCLOSURE

Bill N. McPherson, Littleton, Mass., assignor to Aqua-Genetics Inc., Concord, Mass.

Filed May 6, 1971, Ser. No. 140,787

Int. Cl. A01k 61/00

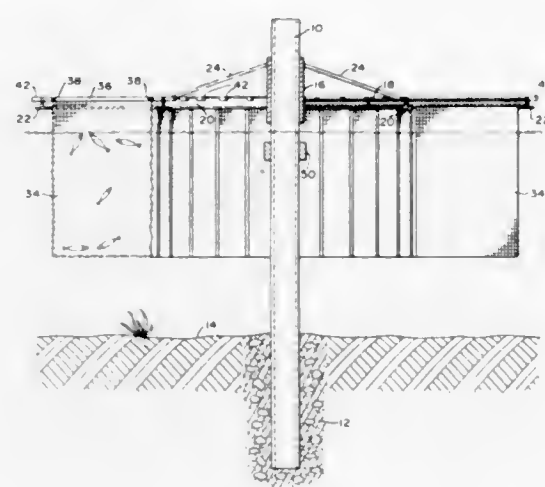
U.S. Cl. 119—3

4 Claims

A plurality of porous enclosures are provided to segregate groups of fish for testing and commercial purposes. The enclosure mesh is small enough to retain the fish, yet large enough to permit water flow. The enclosures are arranged circle fashion about a central shaft imbedded in the pond floor, and held in place between two concentric rings by a shaped support frame engaged at either end by the rings. A rotational sleeve sits about the shaft and is joined to the rings by spoke-



like members, and flotation elements are provided for the ring-sleeve structure. The assembly is regularly rotated around



the shaft, so that the fish within the different enclosures are kept segregated yet exposed to the same environment.

3,691,995

**SWIMMING POOL FOR HORSES**

Glen Melvon Little, P.O. Box 244, Burns, Oreg.  
Filed April 13, 1970, Ser. No. 27,644

Int. Cl. A01k 15/00

U.S. Cl. 119—29

4 Claims



A swimming pool for use in exercising and conditioning horses in the form of a recessed water-filled tank of circular configuration having a sloping ramp portion providing ingress and egress of said tank and an island in the center of said tank creating thereby an annular-shaped pool, and a pair of diametrically opposed counterbalanced pedestrian bridges linking the island with the pool perimeter, with the bridges normally maintained with their island ends elevated.

3,691,996

**POULTRY BROODER BURNER HOUSING**

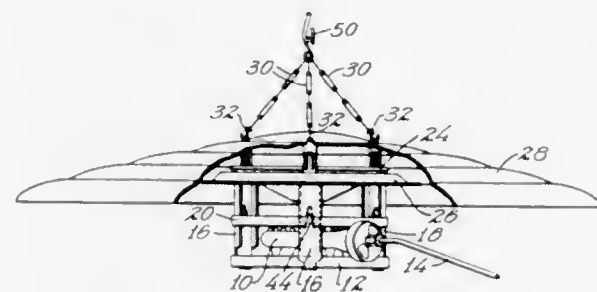
James P. Howell, West Saint Paul, Minn., assignor to Miller, Little Giant Co., Inc., Dakota, Minn.

Filed Nov. 20, 1970, Ser. No. 91,444

Int. Cl. A01k 31/18

U.S. Cl. 119—32

10 Claims



A burner housing for a poultry brooder in which a gas burner is suspended in an open framework beneath a ceramic heat deflector. The novelty lies in constructing the open framework with interlocking tabs and bends so that the entire burner housing may be assembled and disassembled without the use of nuts, bolts, or other cumbersome fasteners and with a minimum of tools.

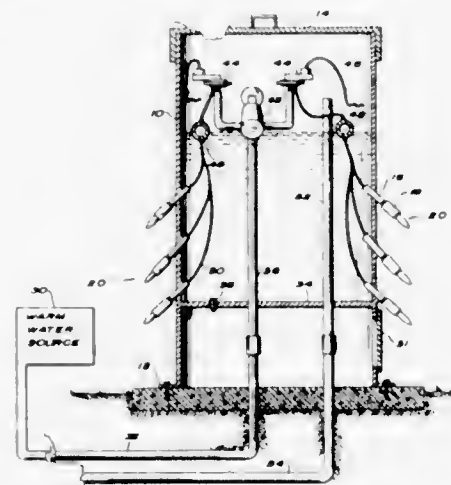
**3,691,997**  
**TEMPERATURE CONTROLLED WATER DISPENSING**  
**DEVICE FOR ANIMALS**

Clifford V. Hatch, P.O. Box 6654, Lubbock, Tex.  
Filed May 7, 1971, Ser. No. 141,235

Int. Cl. A01k 9/00

U.S. Cl. 119—71

11 Claims



Animals such as hogs are provided drinking water from drinking nipples which are connected into the side of a barrel-like container. To prevent the nipples from becoming frozen in cold weather, water is circulated directly into and out of the nipples, responsive to a temperature measuring element.

3,691,998

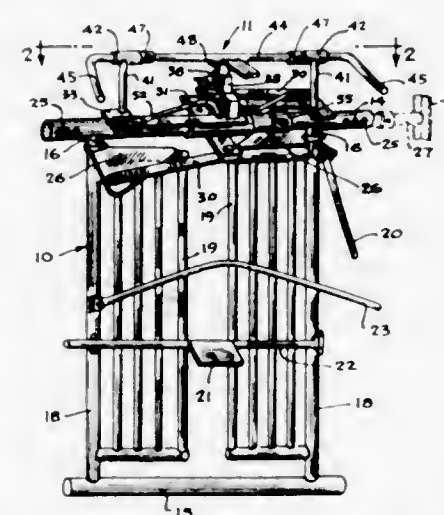
**LIVESTOCK HEADGATE**

Wilbert L. Lulstra, May City, Iowa  
Filed Nov. 5, 1970, Ser. No. 87,127

Int. Cl. A61d 03/00

U.S. Cl. 119—98

7 Claims



A livestock headgate having a stanchion with a pair of swinging gates, a synchronizing mechanism for closing the gates simultaneously, stop latches to hold the gates in a closed position and adjustable stop means for limiting the size of the opening between the gates.

3,691,999

**LIQUID COOLED HOUSING FOR ROTARY PISTON ENGINES**

Rolf Lechler, Neckarsulm, and Johannes Steinwart, Bad Friedrichshall, both of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Wurttemberg and Wankel G.m.b.H., Lindau/Bodensee, Germany

Filed May 28, 1970, Ser. No. 41,197

Claims priority, application Germany, May 31, 1969, P 19 27 859.2

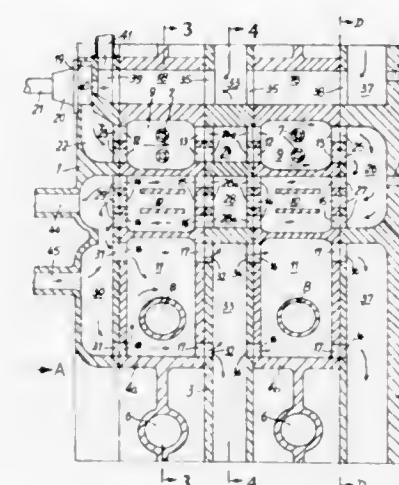
Int. Cl. F02b 53/00; F01p 3/00

U.S. Cl. 123—8.01

5 Claims

The invention relates to a liquid cooled housing for rotary piston engines, in particular internal combustion, consisting of

at least one annular shell and two end parts, the housing having an inlet and an outlet connection for the cooling liquid,



and the shell and end parts containing chambers in communication with each other and traversed by cooling liquid.

3,692,000

Patent Not Issued For This Number

3,692,001

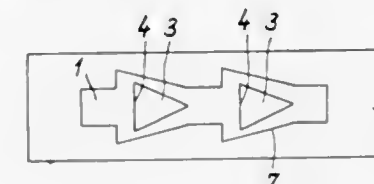
**CIRCULAR PISTON INTERNAL COMBUSTION ENGINE**  
Erwin Heij, Essen, Germany, assignor to Fried-Krupp Gesellschaft mit beschränkter Haftung, Essen, Germany  
Division of Ser. No. 812,524, March 4, 1969, Pat. No. 3,610,209. This application Feb. 16, 1971, Ser. No. 11,552

Claims priority, application Germany, March 6, 1968, P 16 01 821.6

Int. Cl. F02b 55/14

U.S. Cl. 123—8.09

11 Claims



A circular piston internal combustion machine with trough-shaped depressions in the circumferential direction of the piston, in which fuel flow deflecting means are provided in said trough-shaped depressions for deflecting the fuel flow in the axial direction of the piston which is rotatable relative to the housing.

3,692,002

**ROTARY INTERNAL COMBUSTION ENGINE**

Robert H. Williams, Rt. 2, Bandera, Tex.  
Filed Feb. 8, 1971, Ser. No. 113,189

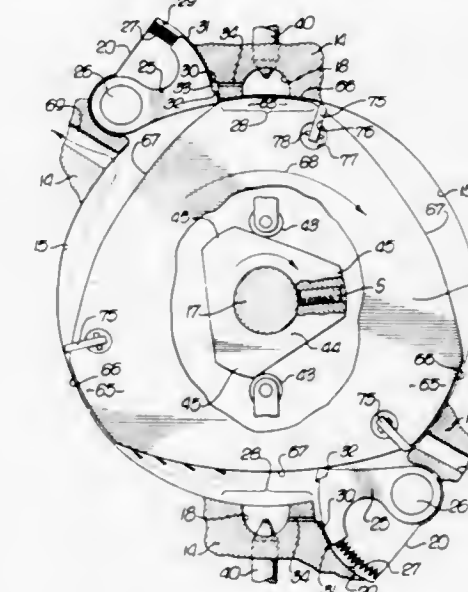
Int. Cl. F01c 19/02; F02b 53/10

U.S. Cl. 123—8.11

3 Claims

A rotary engine having a cycle which includes the phases of pre-compressed fuel injection, combustion-expansion and exhaust and including a stator in which a cylindrical cavity is formed concentric with a given axis, a shaft being mounted on axial bearings of said stator to support a rotor within said cavity having three circumferentially spaced head portions, higher radially than the intervening peripheral portions and closely rotatably slideably fitting said cavity. Two diametrically opposed combustion stations are provided at opposite points in said stator, each said station including a pocket in the face of said cavity in an area small enough to be practically sealed shut when one of said rotor head portions is traveling past said area. An abutment holding chamber is formed radially outwardly in said cavity just in advance of each combustion

pocket area, an abutment rocker being pivotally mounted in each chamber and biased into constant line sealing contact with said rotor. Spent gas exhaust ports are provided just behind these abutments. High compression fuel injection means is cam operated to inject a fuel charge into each pocket while



the latter is shut and ignite this just before it is uncovered. Each abutment is jointly biased against the rotor by spring and gaseous pressure. Fuel and air are separately injected into said combustion pockets in timed relation with the rotation of said rotor in accordance with conventional diesel fuel injection procedures.

3,692,003

**FUEL CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES**

Hisato Wakamatsu, Kariya, and Kunio Endo, Anjo, both of Japan, assignors to Nippondenso Kabushiki Kaisha, Aichi-ken, Japan

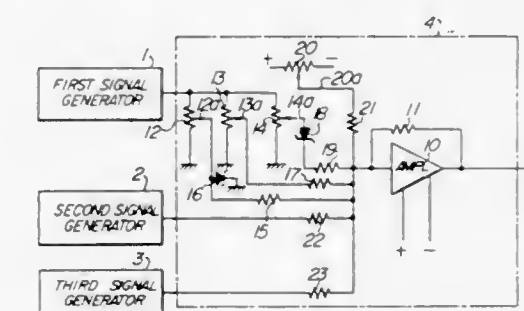
Filed July 14, 1970, Ser. No. 54,681

Claims priority, application Japan, Aug. 9, 1969, 44/63166

Int. Cl. F02m 51/06

U.S. Cl. 123—32 EA

5 Claims



A fuel control system for internal combustion engines comprising a first control signal generator to produce an output voltage corresponding to an operating parameter of the engine, and a signal processing circuit including a non-linear means for deriving from the output voltage of the first control signal generator a plurality of voltages having non-linear relation with the output voltage of the first control signal generator, which are adjustable to provide for a plurality of slopes corresponding to respective subdivided portions of the fuel demand characteristic of the engine, and an amplifier-adder to amplify and add together the derived voltages so as to produce a total output voltage conforming to the engine fuel demand characteristic over the entire range of the engine-operating parameter. The pulse width of the pulse signal to energize the fuel injection valves is varied in accordance with the total output voltage from the signal processing circuit. Thus, even if the fuel demand characteristic is non-linear, it may be closely followed over the entire range of the involved engine-operat-



ing parameter in controlling the amount of fuel supplied to the engine.

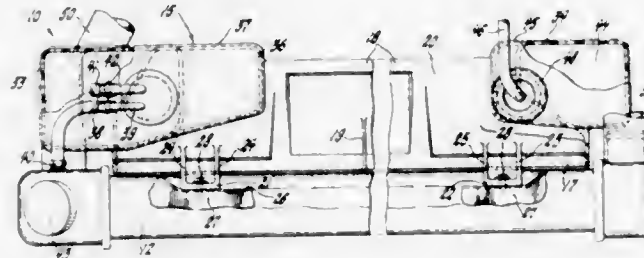
### 3,692,004 FAN SHROUD AND FLUID RECEPTACLE ARRANGEMENT

Duane R. Tague, Linden, and Gerald A. McNalley, Vassar, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 3, 1971, Ser. No. 139,678  
Int. Cl. F01p 9/04

U.S. Cl. 123—41.57

7 Claims



An engine cooling system wherein a fan shroud and fluid receptacle arrangement includes a rectangularly-shaped fan shroud having a cylindrical band or collar extending away from the radiator and a radiator fluid overflow receptacle and a windshield washer fluid receptacle integrally molded on opposite side surfaces of the cylindrical band or collar. The result is a compact one-piece arrangement which: (1) eliminates the need for space and fastening means for three different components; (2) eliminates the need for retooling for different component designs for specific vehicle models; (3) provides a substantial cost saving; and (4) prevents the shroud from becoming vibrated or excited by the rotating fan and caused to create noise by virtue of rigidity reinforcement provided in part by the receptacle structures and dampening provided by the fluids therein.

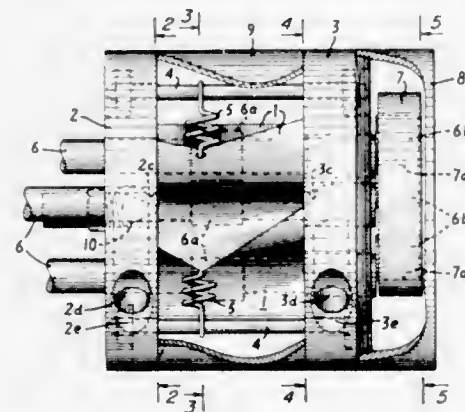
### 3,692,005 INTERNAL PRESSURE ENGINE

Norman L. Buske, 15 Indian Run Trail, Wakefield, R.I.

Filed April 19, 1971, Ser. No. 134,947  
Int. Cl. F02b 25/08

U.S. Cl. 123—51 R

18 Claims



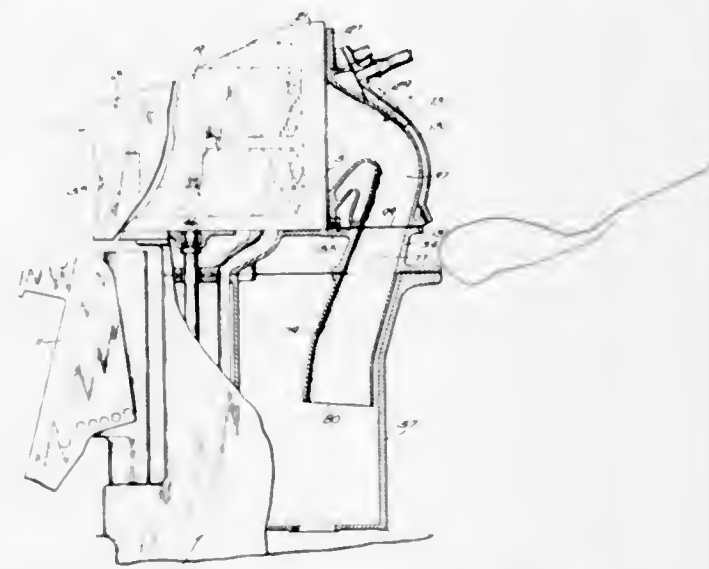
An internal combustion engine comprises at least three like members, called hedrons, between two parallel end plates. Each of the hedrons has end faces engaging the respective end plates, a concave side face and an adjacent convex side face. When the hedrons are assembled with the concave side face of each hedron slidably engaging the convex side face of an adjacent hedron, the concave side faces of the hedrons define a combustion chamber the volume of which is varied by inward and outward movement of the hedrons. Each of the hedrons is supported by an eccentric or crank on a shaft that extends between the end plates. The shafts are interconnected by a timing plate or by gears so that the rotation of the shafts and

corresponding movement of the hedrons is synchronized. The end plates are provided with intake and exhaust ports. A charge is introduced into the combustion chamber, compressed by inward movement of the hedrons and thereupon ignited. The expanding combustion products force the hedrons outwardly and this outward movement is converted into rotary movement of the shafts. Power is taken off any one of the shafts or from a central shaft driven by the individual shafts supporting the respective hedrons.

### 3,692,006 MULTI-CYLINDER PULSE CHARGING SYSTEM

George E. Miller, Zion, and Paul A. Kalb, Waukegan, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed July 13, 1970, Ser. No. 54,168  
Int. Cl. F01r 7/08; B63h 21/26; F01r 1/00  
U.S. Cl. 123—55 VE 18 Claims

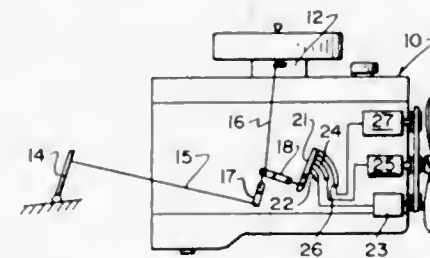


Disclosed herein is a marine propulsion device comprising an engine having at least three cylinders each with an exhaust port, means for establishing a sequential firing order for said cylinders, and exhaust gas discharge means communicating with said exhaust ports for establishing substantially equal acoustical flow distances between each of said exhaust gas ports and said exhaust port of the subsequently charged one of said cylinders. The acoustical flow distance is uniform so as to afford with respect to each firing of the engine, arrival of a compressive wave emanating from the opening of the exhaust port of one of the said cylinders at the exhaust port of the cylinder which is next charged at a time prior to closing of the last mentioned exhaust port.

### 3,692,007 METHOD AND APPARATUS FOR DECOUPLING ENGINE ACCESSORIES

Ole K. Nilssen, Barrington Hills, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 30, 1970, Ser. No. 102,712  
Int. Cl. F02d 11/08; F02b 77/00  
U.S. Cl. 123—98 2 Claims



There is provided means for sequentially decoupling accessory loads from an engine in such a manner that, particularly

when the engine is of optimum torque or power design, the decoupling action will not cause a sudden increase in engine torque output to be applied to the driving wheels of an automobile. Decoupling of the various engine accessories can be accomplished one at a time over a given limited range of throttle or torque demand settings or can be a gradual decoupling beginning at some predetermined throttle or torque demand setting and continuing to a condition of complete decoupling.

### 3,692,008 Patent Not Issued For This Number

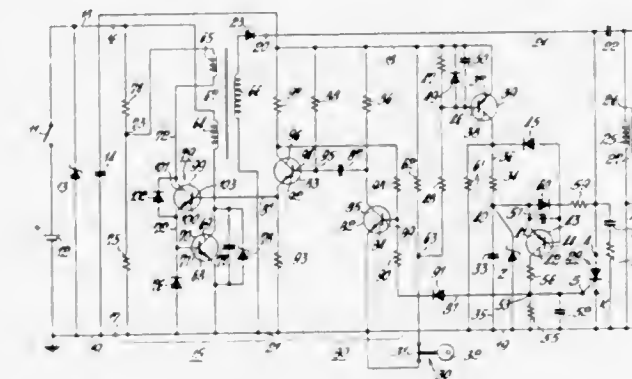
### 3,692,009 IGNITION ARRANGEMENTS FOR INTERNAL COMBUSTION ENGINES

Jorg Issler; Helmut Roth, both of Stuttgart, and Gerhard Sohner, Geradstetten, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sept. 22, 1970, Ser. No. 74,351  
Claims priority, application Germany, Oct. 18, 1969, P 19 52 603.5

U.S. Cl. 123—148 E Int. Cl. F02p 1/00

27 Claims



The ignition capacitor is connected to a DC to AC converter to be charged, and then discharged in synchronism with the desired firing of the spark plugs. The ignition capacitor is discharged by rendering conductive a thyristor, which has a de-ionization period. During discharge and immediately thereafter, a timer, consisting of a multivibrator, and an auxiliary switch prevent the DC to AC converter from charging for a period at least equal to the discharge period of the thyristor. The auxiliary switch can be a transistor that open circuits the conductive path to the control winding of the converter or a thyristor connected in series or in shunt with the secondary winding of the converter.

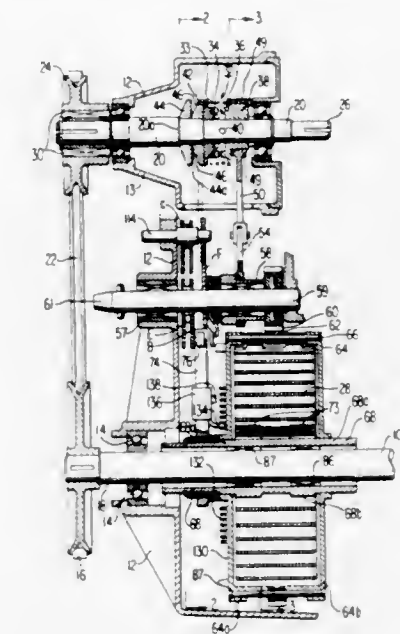
### 3,692,010 AUTOMATIC SYSTEM FOR SPRING STARTING AN INTERNAL COMBUSTION ENGINE

James Linville Dooley, Santa Monica, and Clarence John Harasta, Los Angeles, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Filed Nov. 27, 1970, Ser. No. 93,236  
Int. Cl. F02n 5/02

U.S. Cl. 123—185 C 18 Claims  
A system is provided for spring starting an internal combustion engine including a convolute spring disposed about the crankshaft axis of the engine. The spring drives the crankshaft through a one-way clutch operatively connected with one end thereof. The spring is fastened to a spring casing at the other end thereof. A spring rewind drive train drivingly connects the crankshaft with the spring casing and is operable to wind the spring when the crankshaft is being rotated by the engine after starting. The spring may also be either hand wound or wound by an electric or hydraulic motor or other motive power. A unique linkage mechanism is provided for

automatically controlling the winding and releasing sequences of the starter spring in response to the manipulation of a con-

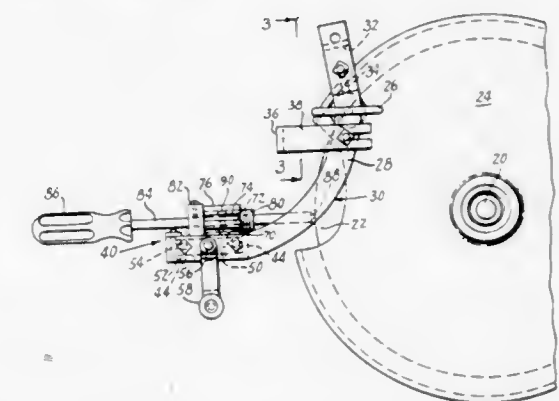


trol by a human operator. The linkage mechanism is designed to rotate, expand or contract to perform the necessary functions in response to single movements of the control rod.

### 3,692,011 WHEEL REFACER

Albert L. Reese, 1031 Sagamore Way 95822, Sacramento, Calif., and Christopher K. Miller, 926 43rd St., Sacramento, Calif.

Filed Jan. 18, 1971, Ser. No. 107,248  
Int. Cl. B24b 53/02 U.S. Cl. 125—11 NT 2 Claims



A frame securable to a wheel housing, a positioner movably mounted to said frame, and a tool mounted to the positioner for contact with the surface of the wheel.

### 3,692,012 COOKING DEVICE

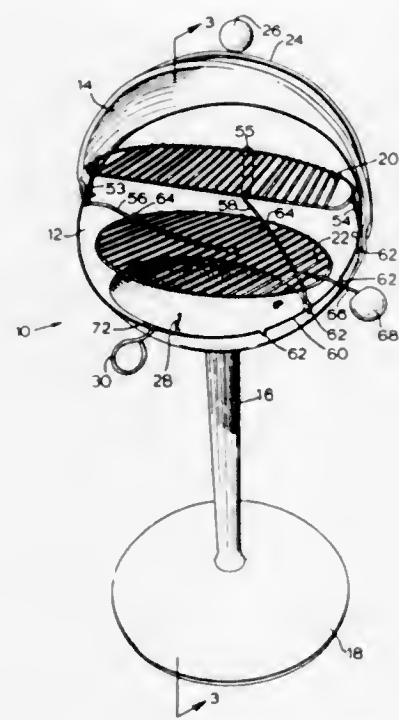
William H. Wiggins, 50A Sondon Ave., Toronto 7, Ontario, Canada

Division of Ser. No. 817,864, April 21, 1969, Pat. No. 3,617,022. This application Oct. 8, 1971, Ser. No. 187,695  
Int. Cl. A47j 37/00; F24b 3/00

U.S. Cl. 126—25 R 3 Claims  
A cooking device comprising upper and lower hemispheres wherein the peripheral rim of the lower hemisphere is tilted at an angle to the axis of a pedestal support to which it is rigidly secured. The upper hemisphere is rotatably mounted on the lower hemisphere so as to rotate about a common axis of each, and is dimensioned so as to rotate without interference over at least a portion of the outer surface of the lower hemisphere. Stop means are provided to preclude rotation of the upper hemisphere in the other direction over the lower hemisphere



so that the upper hemisphere forms a hood for the lower hemisphere. A grill is horizontally supported in the lower hemisphere.



sphere by means of ramp means on the inner surface of the lower hemisphere and a rigid rod on the grill that cooperates with the said tilted portion of the peripheral rim.

3,692,013

## GAS-FIRED COOKING GRILL

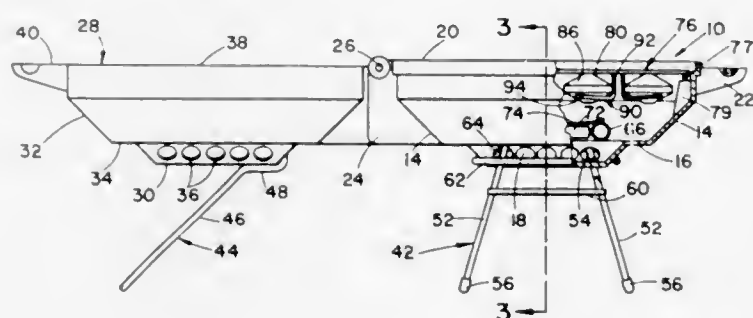
Jim R. Grafton, Moline, Ill.; Glenn E. Wilkins, Davenport, Iowa, and Joseph F. Murphy, Moline, Ill., assignors to Blackhawk Metal Products, Inc., Davenport, Iowa

Filed June 3, 1971, Ser. No. 149,522

Int. Cl. A47j 37/00; F24b 3/00; F24c 3/14

U.S. Cl. 126-41 R

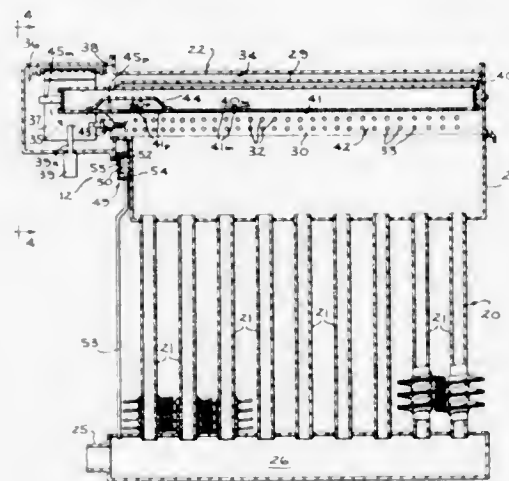
21 Claims



A portable gas-fired cooking grill includes a receptacle having an open top and a cover swingably mounted on the receptacle to form a closed housing when the cover is swung to its closed position, the cover being swingable to an open horizontal position wherein the open bottom of the cover faces upwardly alongside the open top of the receptacle. Removable stand means are provided for supporting both the receptacle and the cover in their open condition above a supporting surface. A pair of grills are respectively removably mounted over the open top of the receptacle and the opening in the cover. A gas burner is disposed in the bottom of the receptacle and is supplied with gas from a removable propane tank, which is storable in the cover. A plurality of ceramic briquettes are releasably clamped in a predetermined pattern in the receptacle above the gas burner.

3,692,014  
PILOT AND MAIN FUEL GAS SUPPLY MEANS FOR PRESSURIZED GAS-FIRED SPACE HEATER  
James D. Boucher, and Jesse L. Hopkins, both of Tyler, Tex., assignors to General Electric Company  
Filed May 26, 1971, Ser. No. 147,015  
Int. Cl. F23g 9/08; F24h 3/08  
U.S. Cl. 126-110 R

9 Claims

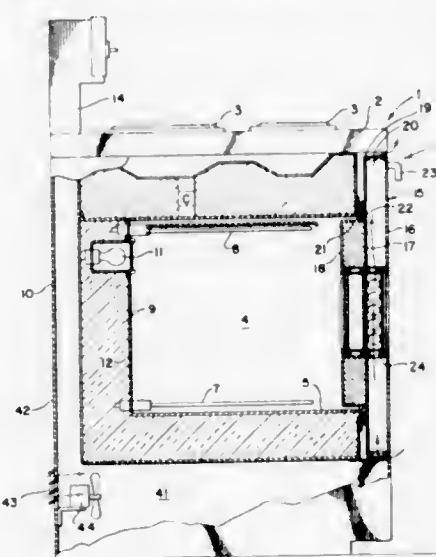


This invention provides improved means for supplying pilot and main fuel gas to the fuel gas-air mixing area of a gas-fired space heater employing pressurized combustor means to produce a highly intense heat source flame. These improved means include control, igniter, and sensor means for assuring that fuel gas will be first supplied to the mixing area pilot portion and ignited therein before any fuel gas is supplied to the mixing area main portion. In particular accordance with the present invention, pilot gas ignition sensor means are provided which are located wholly outside of the mixing area and are thus spared from direct exposure to the intensely hot flame.

3,692,015  
WINDOWED DOORS FOR SELF-CLEANING OVENS  
William B. Chase; Joseph E. Jendrisak, both of Northville, and Harold E. McKelvey, Plymouth, all of Mich., assignors to Shatterproof Glass Corporation, Detroit, Mich.  
Division of Ser. No. 848,547, Aug. 8, 1969, Pat. No. 3,612,825.  
This application June 1, 1971, Ser. No. 148,616  
Int. Cl. F23m 7/00

U.S. Cl. 126-200

5 Claims

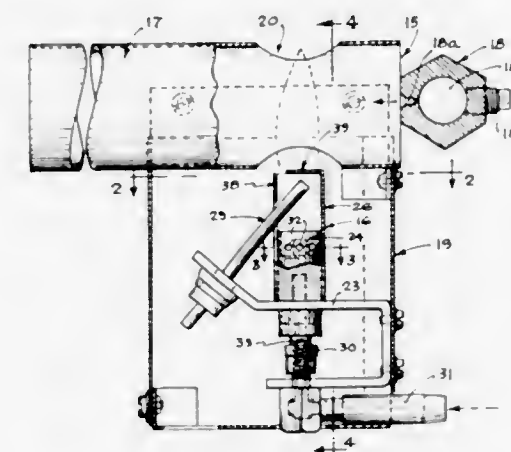


Windowed doors for self-cleaning household ovens where the window assembly has a series of spaced parallel glass window panels secured in alignment with two of such panels near the oven cavity enclosing a dead-air insulating space, and a third of such glass window panels being separated from the oven cavity by two dead-air space enclosing glass panels, with the space between the third panel and the two dead-air enclosing panels being ventilated for replacement of heated air

therein by natural circulation of cooler air, and a thin grid-like foraminous reflective coating on at least one of the glass panels disposed in the ventilated air space to reflect a relatively large proportion of radiant oven heat and to be cooled by the air wash during such ventilation.

3,692,016  
PILOT VALVE ASSEMBLY FOR A SWITCH HEATER  
Alexander P. Stikkens, Elgin; Albert E. Elzy, Algonquin, and Joseph L. Czyl, Glenview, all of Ill., assignors to Vapor Corporation, Chicago, Ill.  
Filed Oct. 29, 1970, Ser. No. 85,090  
Int. Cl. F23c 5/00; F23q 9/00  
U.S. Cl. 126-271.2 B

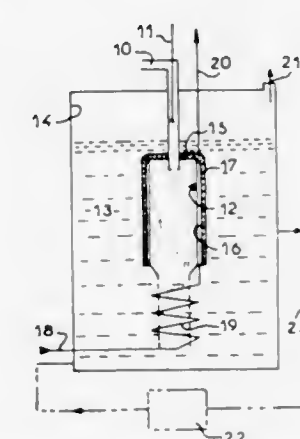
9 Claims



A pilot valve assembly for use with a railroad switch heater that resists sooting and blowout, and includes a burner nozzle, circular in cross section, and a shield and deflector unit mounted on the burner nozzle. The shield portion of the shield and deflector unit is square in cross section and extends from the burner nozzle terminating in a flame discharge opening. A deflector portion extends over the flame discharge opening and covers about one-third of the area opening.

3,692,017  
SUBMERGED COMBUSTION HEAT-GENERATOR, IN PARTICULAR FOR THE PRODUCTION OF VERY HOT WATER  
Luc Clement Dominique Glachant, Brunoy, and Remi Pierre Leon Alain Guillet, Saint Mande, both of France, assignors to Gaz de France, Paris, France  
Filed Nov. 30, 1970, Ser. No. 93,767  
Claims priority, application France, Nov. 28, 1969, 6941280  
Int. Cl. F24h 1/10; F28c 3/00  
U.S. Cl. 126-360 A

4 Claims

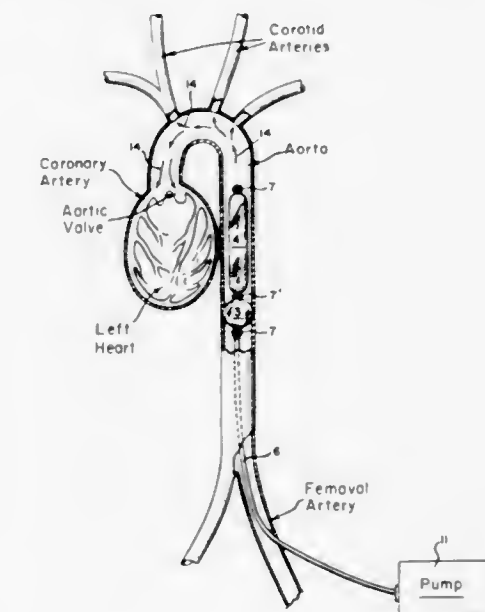


A submerged combustion heat-generator enabling the obtention of a high-temperature heat-carrying fluid. The heat generator of the invention uses a burner operating on combustion in a liquid bath, for instance of water and the combustion gases burn in a combustion chamber which is at least partially immersed in the said bath and at least partially heat-

insulated therefrom. Said combustion chamber comprises a second heat-exchanger which is mounted upstream of said first exchanger on the heat-carrying fluid path.

3,692,018  
CARDIAC ASSISTANCE DEVICE  
Robert H. Goetz, and Lionel J. Goetz, both of 80 Vernon Drive, Scarsdale, N.Y.  
Filed Feb. 11, 1970, Ser. No. 10,452  
Int. Cl. A61b 19/00  
U.S. Cl. 128-1 R

8 Claims



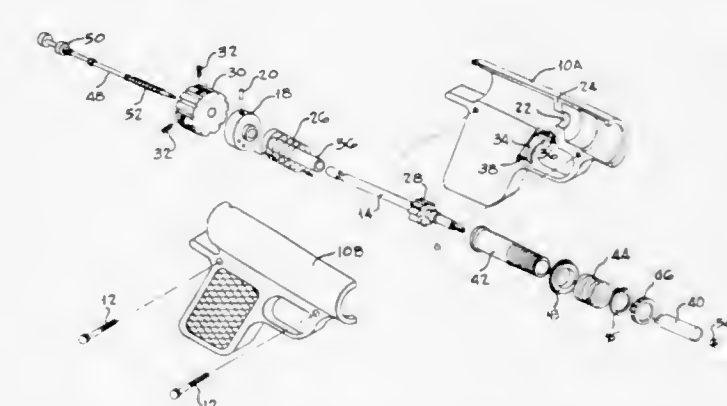
A cardiac assistance device is disclosed which produces a uni-directional pumping action assisting the heart when the device is activated after it has been introduced into a blood vessel by conventional surgical procedures.

3,692,019  
Patent Not Issued For This Number

3,692,020  
ROTARY PUNCH FOR EXCISING UNIFORM DIOPSY SPECIMENS  
Robert J. Schied, 7660 Berry Dr., Pasadena, Md.  
Filed April 29, 1971, Ser. No. 138,517  
Int. Cl. A61b 10/00

U.S. Cl. 128-2 B

1 Claim



A spring-powered instrument in the shape of a gun equipped with a cylindrical cutting blade and having a collar means to control the depth of the cut and rod means for ejecting the specimen from the cutting blade. The instrument is activated by a trigger mechanism which holds the spring means in tension until it is released.



3,692,021

Patent Not Issued For This Number

3,692,022

DIGITAL SPLINT

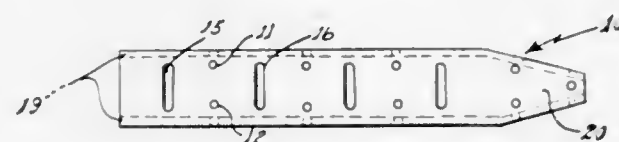
Dean E. Ewing, 633 Monroe N.E., 3, Albuquerque, N. Mex.

Filed Dec. 30, 1970, Ser. No. 102,584

Int. Cl. A61F 5/04

U.S. Cl. 128—87 A

1 Claim



A digital splint adapted for use with a finger of a human wearer. The splint includes a generally cylindrical, substantially rigid hollow member in which the finger is inserted, and at least one spring clip member which engages the finger through a pair of mutually opposed slots in the hollow member, and which thereby secures the hollow member to the finger.

3,692,023

FORMABLE ORTHOPEDIC CAST MATERIALS, RESULTANT CASTS AND METHOD

Benjamin Phillips, Riverside, Conn.; Dale Flavian Pollart, and Joseph Victor Koleske, both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed July 20, 1970, Ser. No. 56,727

Int. Cl. A61F 05/04

U.S. Cl. 128—90

37 Claims

Orthopedic casts for humans and animals are prepared from orthopedic cast materials in the form of webs or sheets containing cyclic ester polymers or blends of cyclic ester polymers and poly(vinyl alkyl ether). The preferred cyclic ester is poly-epsilon-caprolactone, and the preferred poly(vinyl alkyl ether) is poly(vinyl ethyl ether). The webs of cyclic ester polymer or blend can be heat fused or bonded to, embedded with, or impregnated into backing webs such as gauze, fabric, plastic film and the like. The cyclic ester polymer or blend can be dusted onto webs like gauze and heated to fuse it to the gauze to form a moisture-vapor permeable orthopedic cast material. The same can be obtained by impregnating the gauze with a solution of the cyclic ester polymer or blend, and driving off the solvent. Typically, the orthopedic cast material can be wrapped around a broken limb, heated, molded, and cooled to form a relatively rigid cast. Heating can be applied before or after the cast material is applied to the body portion. The cast is easily removed by heating it and, if necessary, manually manipulating it away from the body portion.

3,692,024

SURGICAL APPLIANCE

Robert E. Von Otto, Washington, D.C., assignor to Henry E. Nichols, Washington, D.C., a part interest

Filed Oct. 16, 1970, Ser. No. 81,323

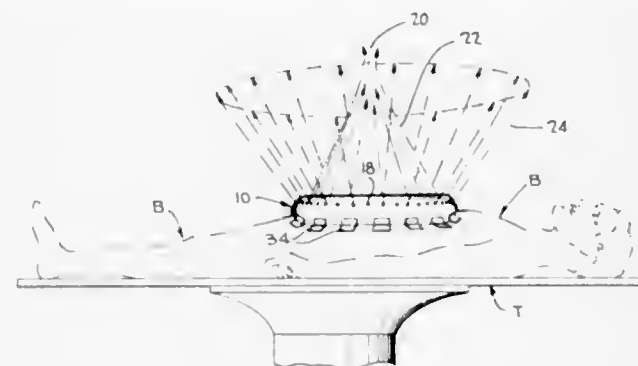
Int. Cl. A61b 17/00

U.S. Cl. 128—132

8 Claims

A disposable surgical appliance for application to a living body to provide a protective enclosure for isolating an operating field from the surrounding atmosphere. The appliance includes an endless hollow flexible tubular member which is adhesively secured in fluid-tight relation to the body around the operating field. A constantly flowing supply of sterile air at preselected temperature and humidity is delivered into the member for discharge through a series of openings in the form

of a plurality of relatively contiguous fluid jets which converge upwardly to form a continuous conical fluid curtain above the operating field. The conical curtain may be surrounded by one or more fluid walls, similarly formed by contiguous jets of fluid



3,692,025

MOUTHGUARD WITH LIP PROTECTOR

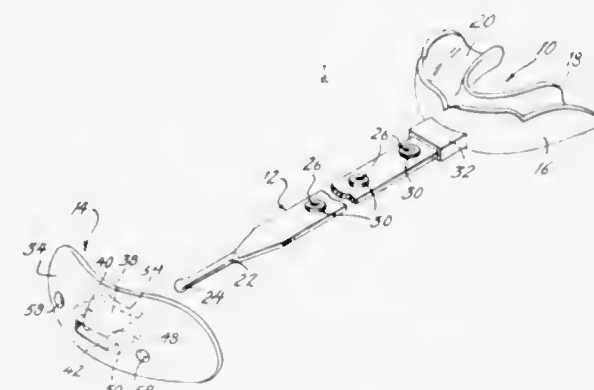
Samuel Greenberg, 1108 B. Cedarbrook Hill, Wyncote, Pa.

Filed Feb. 22, 1971, Ser. No. 117,610

Int. Cl. A61F 5/56; A61c 9/00

U.S. Cl. 128—136

9 Claims



A plastic guard of general U-shape and channel cross-section for insertion in the mouth to receive a set of teeth including a strap extending from the outer lower anterior portion of the guard and a protector for the lips and the surrounding facial areas slidable on the strap and frictionally retainable thereon in adjusted position to accommodate different lip thicknesses and jaw formations.

3,692,026

UNDERWATER BREATHING APPARATUS

Frederick Tepper, Owings Mills, Md., and John W. Mausteller, Evans City, Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Oct. 20, 1969, Ser. No. 867,610

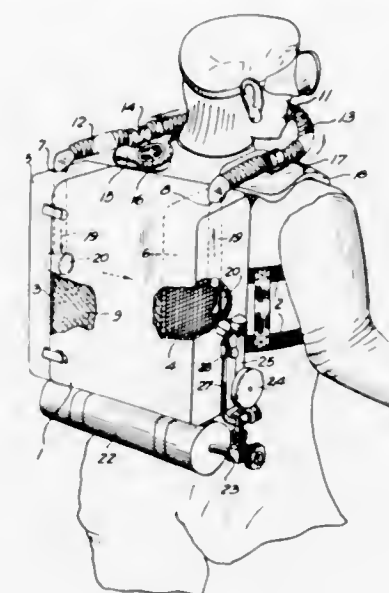
Int. Cl. A62b 7/04

U.S. Cl. 128—142.2

7 Claims

A conduit connects a mouthpiece with an exhalation bag and the inlet of a canister containing a bed of oxygen producing and carbon dioxide absorbing chemical. The bag is provided with a normally closed exhaust valve. Another conduit

connects the outlet of the canister with an inhalation bag and the mouthpiece. The outlet of a pressure tank containing a



3,692,027

IMPLANTED MEDICATION DISPENSING DEVICE AND METHOD

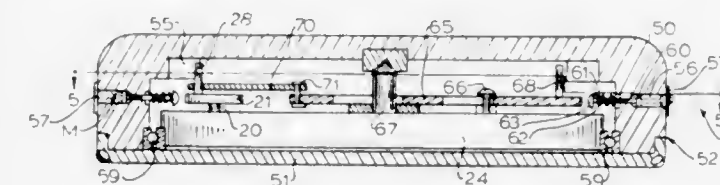
Everett H. Ellinwood, Jr., 3519 Tornbridge Way, Durham, N.C.

Filed April 23, 1971, Ser. No. 136,789

Int. Cl. A61m 7/00

U.S. Cl. 128—260

11 Claims



A self-micro-powered implanted device contains a store of medicine in powdered, liquid or other dispensable form and which is gradually discharged incrementally over a substantially long period of time.

3,692,028

EMERGENCY TREATMENT TANK

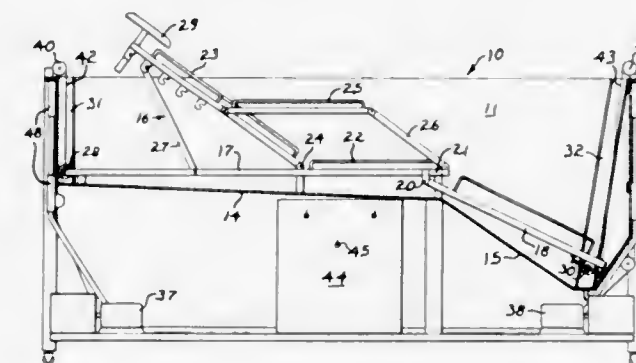
Ronald F. Etten, W. 302 Columbia, Spokane, Wash., and Lewis C. Duncan, 1744 Hacienda Place, El Cajon, Calif.

Filed Dec. 31, 1970, Ser. No. 103,066

Int. Cl. A61h 33/00

U.S. Cl. 128—369

8 Claims



A treatment tank for emergency burn victims. The tank is in an elongated rectangular form of minimum volume so as to permit maximum responsiveness in controlling temperature changes of a patient immersed therein. The tank is designed to

complement an articulated patient-supporting platform supported at its ends by elevating cable and winch assemblies. By manipulating the respective winches, the platform can be adjusted to raise or lower either end of the reclining patient, or to elevate the head or lower the feet as desired. Liquid circulating apparatus is provided for control of the liquid bath.

3,692,029

RETENTION CATHETER AND SUPRAPUBIC SHUNT

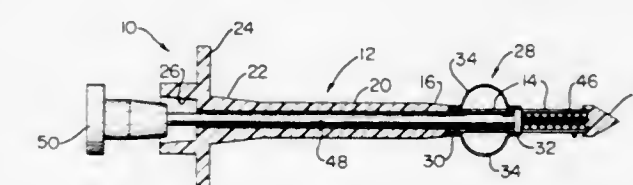
Edwin Lloyd Adair, 5985 South Crocker St., Littleton, Colo.

Filed May 3, 1971, Ser. No. 139,381

Int. Cl. A61m 25/00

U.S. Cl. 128—349 R

11 Claims



Retention catheter or suprapubic shunt of the expandable wing type characterized by a retainer comprising a sleeve affixed to a trochar tube, a second sleeve axially slidable on the tube, the wings extending between the sleeves, the slidable sleeve having spokes extending through longitudinal slots in the tube, the central portions of which may be engaged by a removable rod or stylet within the tube for collapsing the wings during insertion or removal of the catheter, the wings being expandable by a spring upon release or removal of the stylet. The insertable or distal end of the tube may be constructed to removably carry various tips or filiforms. The outer or proximate end is constructed to be removably connected by a suitable conduit fitting to a drain tube or cannula or to a source of fluid. The trochar tube, or portions thereof, may be relatively rigid or flexible, depending upon the requirements of the body entry passage configuration.

3,692,030

IGNITION TIP FOR CIGARETTES

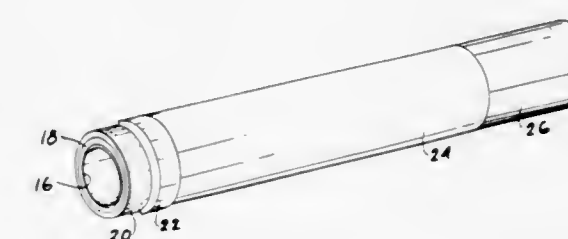
Kyu-Bong Whang, 7-16 Sun-Wha-Dong, Sue Dai, Mun-ku, Seoul, Korea

Continuation-in-part of Ser. No. 757,948, Sept. 6, 1968, abandoned. This application May 27, 1970, Ser. No. 41,041

Int. Cl. A24d 01/08

U.S. Cl. 131—7

7 Claims



A device adapted to be secured to one end of a cigarette to assist in lighting same and at the same time prevent smoke and fumes produced by ignition from passing through the body of the cigarette and impairing the smoking pleasure of the smoker.

3,692,031

WIG BLOCK

Earl C. Fields, 3660 Donegal Drive, Cincinnati, Ohio

Filed Feb. 13, 1970, Ser. No. 11,113

Int. Cl. A45d 1/00

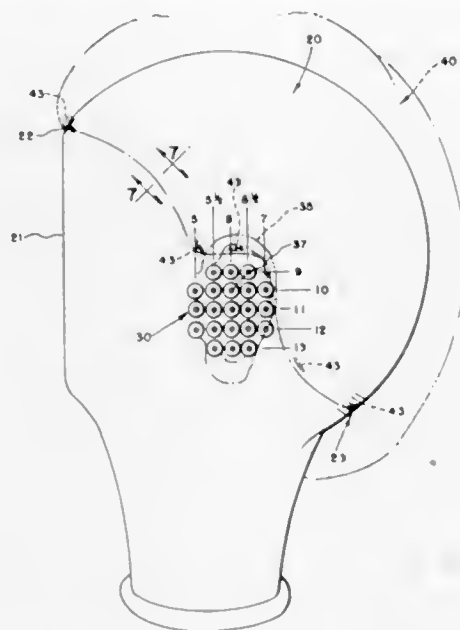
U.S. Cl. 132—9

6 Claims

A wig block is provided which permits variable disposition of simulated ears thereon, to conform closely to the conditions



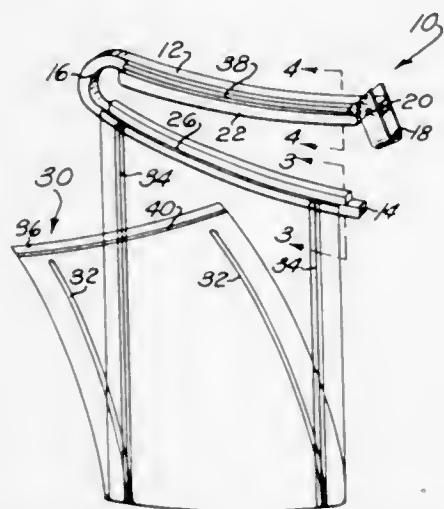
of a customer's head, and the wig block further is distinguished by markings enabling ready transfer of measurements determined in accordance with present novel method.



**3,692,032**  
**HAIR DRESSING APPLIANCE**  
Steven S. Regas, 1900 East 30th St., Cleveland, Ohio  
Filed April 27, 1970, Ser. No. 32,202  
Int. Cl. A45d 1/00

U.S. Cl. 132-9

6 Claims



A hair dressing appliance for use in practicing hair dressing procedures such as frosting and hair straightening, comprising a hair clamp to which is attached either permanently or releasably, hair isolating means, which may be in the form of a plastic bag, or one or more plastic sheets.

**3,692,033**  
Patent Not Issued For This Number

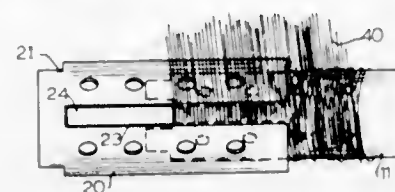
**3,692,034**  
**MULTIPLE NESTING HAIR CURLER**  
Alice B. Stone, 404 Severin St., Chapel Hill, N.C.  
Filed July 6, 1971, Ser. No. 159,622  
Int. Cl. A45d 2/30

U.S. Cl. 132-40

6 Claims

A multiple hair curling assembly and method of drying and curling hair utilizes an inner open ended, thin walled roller adapted to have the end portion of a strand of hair wound thereon and at least one larger outer open ended, thin walled roller equipped with a narrow longitudinal slot having one end open, said outer roller being adapted to receive and secure the

inner roller in a nesting relation with the hair strand passing through the slot and with a continuing portion being wound



upon the surface of the outer roller, thereby dramatically hastening the drying process and imparting curls of different curvature to the strand of hair.

**3,692,035**  
**FOLDABLE UMBRELLA**  
Jack W. Houston, 24 Malvern Lane, Stoney Brook, N.Y.  
Filed Jan. 27, 1971, Ser. No. 110,088  
Int. Cl. A45b 19/00

U.S. Cl. 135-25

10 Claims

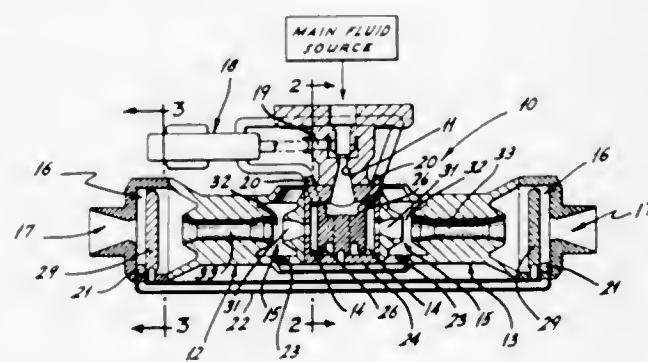


A foldable umbrella comprising a plurality of substantially rigid umbrella sections, each of which is tapered inwardly toward the center of the umbrella and is positioned with respect to the other sections to collectively define the umbrella. A plurality of flexible elongated strips are connected to the side edge portions of the umbrella sections and extend throughout substantially the entire length thereof. Preferably, the strips are slidably connected to the umbrella sections so as to be removable and replaceable. Each of the strips serves as a hinge for adjacent umbrella sections so that they are foldable with respect to each other when the umbrella is closed.

**3,692,036**  
**FLUID FLOW CONTROL APPARATUS**  
Warren F. Kaufman, Santa Ana, Calif., assignor to Philco-Ford Corporation, Philadelphia, Pa.  
Filed April 8, 1971, Ser. No. 132,314  
Int. Cl. F15c 1/16

U.S. Cl. 137-81.5

7 Claims



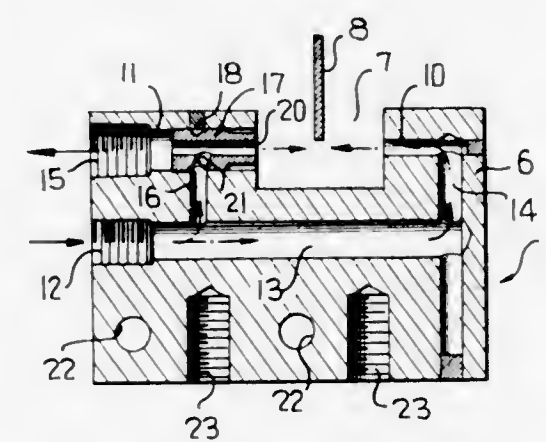
A fluidic diversion valve, having improved net thrust efficiency, comprises a shunt-staged vortex valve device in which

vortex amplifier valves in each of a pair of branches are staged in series with an ejector-diffuser element, and at least a pair of corresponding ones of the amplifier valves have their control ports connected to one another through a cross-bleed conduit.

**3,692,037**  
**JET SENSOR DEVICE**  
Carlos D. Pinkstaff, Kalamazoo, Mich., assignor to Parker-Hannifin Corporation, Cleveland, Ohio  
Filed Aug. 28, 1970, Ser. No. 67,893  
Int. Cl. F15b 5/00; F15c 5/14

U.S. Cl. 137-83

3 Claims

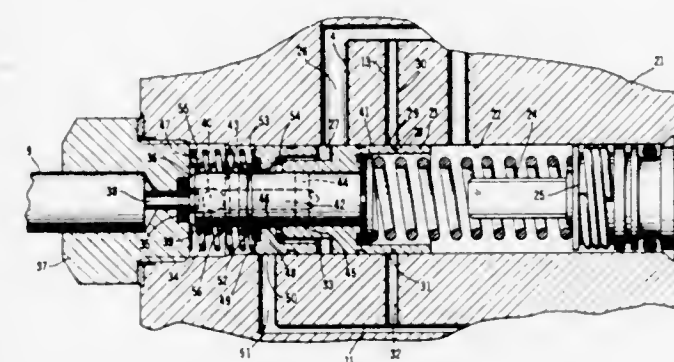


This disclosure relates to a jet sensor having a clog preventing flow out from a sensing passage in a direction opposite to the normal direction of flow. The clog preventing flow is controlled by an orifice plug seated in the sensing passage.

**3,692,038**  
**DEVICE FOR VENTING OIL PUMPS**  
Gunnar Lyshøj Hansen, and Jørgen Hartvig Petersen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark  
Continuation of Ser. No. 842,243, July 16, 1969, abandoned.  
This application April 8, 1971, Ser. No. 132,591  
Int. Cl. G05d 7/01

U.S. Cl. 137-116

6 Claims

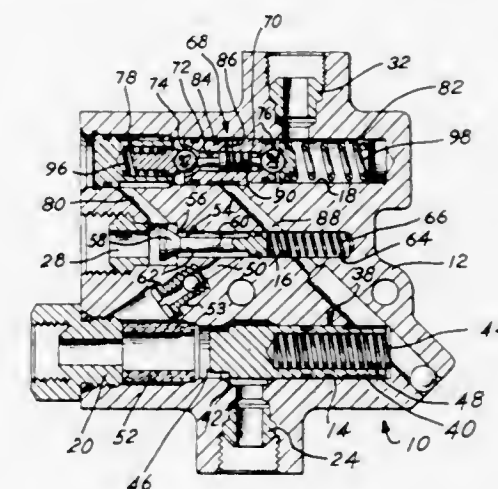


The invention relates to pump control apparatus of the type used for supplying fuel oil at a constant pressure to the nozzle of an oil burner unit. The control apparatus comprises a valve assembly for performing pressure regulating, cut-off and venting function. The venting function is performed when the pump is started by a venting valve interposed between the supply and return pipes. The venting valve is controlled so as to close before the predetermined operating pressure is reached at which time a cut-off valve opens to allow pressurized fluid to be delivered by the valve assembly.

**3,692,039**  
**CHARGING VALVE**  
Jerome T. Ewald, Lloyd G. Bach, and Richard L. Lewis, all of South Bend, Ind., assignors to The Bendix Corporation  
Filed Dec. 21, 1970, Ser. No. 99,796  
Int. Cl. G05d 16/10

U.S. Cl. 137-118

7 Claims

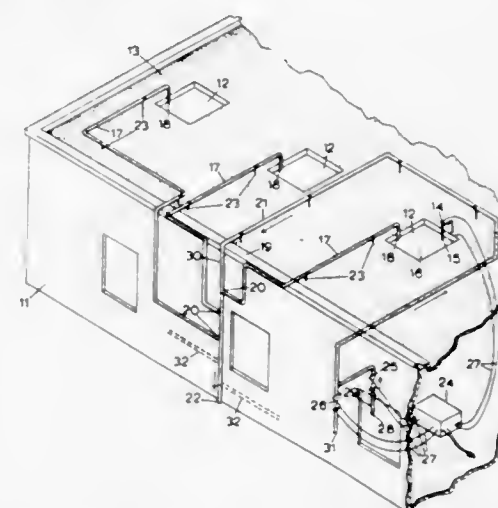


A charging valve is disclosed which controls flow of fluid into an accumulator used with a closed center hydraulic brake booster in a vehicle hydraulic system. The charging valve includes a back pressure producing device which creates a fluid pressure level within the charging valve sufficiently high to charge the accumulator while permitting sufficient fluid flow through the charging valve to operate the power steering gear of the vehicle. A shutoff valve is provided in the passage between the inlet of the charging valve and the accumulator. A second valve within the housing maintains the shutoff valve open as long as the fluid pressure level in the accumulator is below a predetermined value, but permits the shutoff valve to close when the fluid pressure level in the accumulator attains the predetermined value. The second valve also operates the back pressure producing device which restricts fluid flow between the inlet and the outlet when the fluid pressure level in the accumulator is below the predetermined value, but permits substantially unrestricted flow between the inlet and outlet of the charging valve when the fluid pressure level in the accumulator attains the predetermined value.

**3,692,040**  
**ROOF DRAINING SYSTEMS**  
Robert L. Kundert, Madison, Wis., assignor to Drain-Away, Inc., Madison, Wis.  
Filed Jan. 11, 1971, Ser. No. 105,322  
Int. Cl. F16l 43/00

U.S. Cl. 137-142

3 Claims



A roof draining system that automatically syphons water from roofs that are not completely self-draining. The system has a plurality of sumps and extending from each of said



sumps are syphon pipes which connect to a common discharge pipe. The common discharge pipe is automatically primed by a control means when water has accumulated in the control sump.

3,692,041

## VARIABLE FLOW DISTRIBUTOR

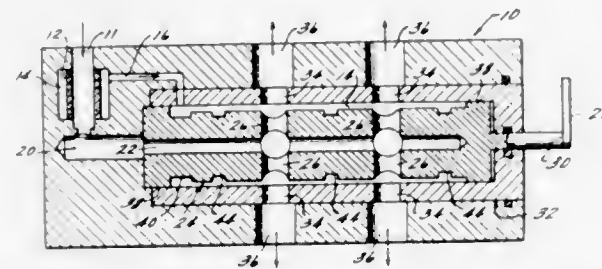
Pasquale Columbo Bondi, Revere, Mass., assignor to General Electric Company

Filed Jan. 4, 1971, Ser. No. 103,600

Int. Cl. F16k 5/22

U.S. Cl. 137—238

4 Claims



A variable flow distributor for disbursing contaminated fluids through a plurality of metering orifices, wherein the metering area of each orifice is uniformly regulated by offsetting the coaxial alignment of a pair of holes through adjacent movable partitions, such that seizure of the moving partitions from contaminants entering the area therebetween is prevented by the introduction of highly filtered fluid from conduit means which surround each orifice.

3,692,042

## FIRE HYDRANT

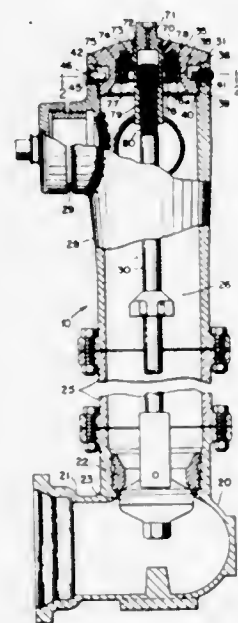
James William Dashner, Elmira, N.Y., assignor to Kennedy Valve Mfg. Co., Inc., Elmira, N.Y.

Filed Jan. 8, 1971, Ser. No. 104,992

Int. Cl. E03b 9/06

U.S. Cl. 137—296

5 Claims



A fire hydrant having an improved means for securing a cover plate to the upper standpipe section of the hydrant. The cover plate rests on the upper surface of the upper standpipe section and has an annular flange which projects into the upper standpipe section and against the inner surface thereof to form an annular cavity and to limit relative lateral movement. Shear pins are positioned in special bores in top of the upper standpipe section and extend into the cavity where they limit movement of the cover plate axially away from the upper standpipe section. A compressed resilient washer seals and secures each shear pin in its bore.

3,692,043

## SAFETY APPLIANCE

Carl A. H. M. Waskowsky, Oberglatt, Zurich, Switzerland, assignor to Patinvest Patent-und Investment A.G., Chur, Switzerland

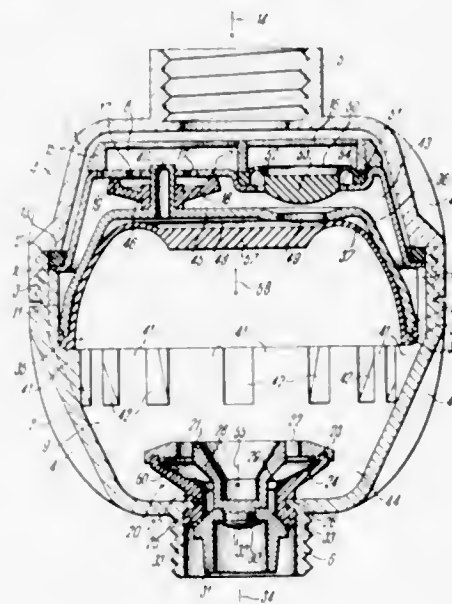
Filed Feb. 26, 1970, Ser. No. 14,517

Claims priority, application Germany, March 11, 1969, P 19 12 168.7

Int. Cl. F16k 17/24

U.S. Cl. 137—315

25 Claims



A safety appliance for preventing an excessive flow of a fluid, e.g. upon a rupture of a pipe or hose leading to a machine or container to which the fluid is supplied under pressure.

3,692,044

## TAPPING TEE

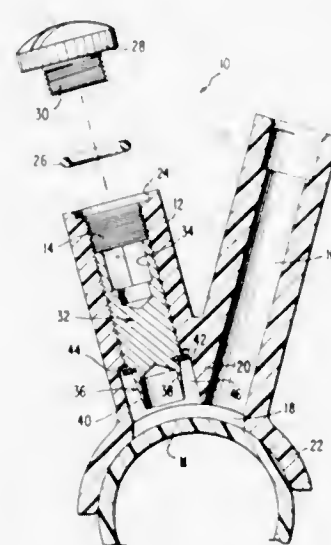
Eugene H. Wise, Newhall, Calif., assignor to R & G Sloane Manufacturing Company, Inc., Los Angeles, Calif.

Filed Jan. 18, 1971, Ser. No. 107,183

Int. Cl. B23b 41/08; F16e 41/04

U.S. Cl. 137—318

10 Claims



A tapping tee comprising a body portion defining a drive socket and one or more outlet sockets in communication with the drive socket, and a saddle portion adapted to mate with and be mounted on the exterior of a main pipeline formed of a plastic material or the like. A stem member is mounted within the drive socket for rotatable and axial movement therein, such as by threaded connection. At its inner end, the stem member comprises a cylindrical cutter having a thin annular wall with a downwardly and inwardly, uniformly tapering exterior surface. When the stem member is rotated within the

drive socket, such as by a suitable tool engaged with its outer end, the cutter is rotated and advanced inwardly into engagement with the plastic main pipeline. The cutter severs a circular coupon from the main pipeline and this coupon is retained within the cutter, owing to the slight deformation inwardly of the lower portion of the thin annular wall of the cutter as it is advanced through the pipeline. The tapered outer surface of the cutter creates a complementary annular tapered surface defining the opening in the pipeline. The cutter can thereafter be mated with this annular tapered surface of the pipeline to seal the opening cut therein, with the resultant advantage that the cutter can serve as a valve member for sealing the cut opening in the pipeline after the coupon is removed therefrom. A stop member is provided on the stem member above the cutter for the purpose of limiting the upward movement of the stem member and also preventing the cutter from extending too far into the main pipeline.

3,692,045

## CONTROL MECHANISM FOR IRRIGATION SYSTEM

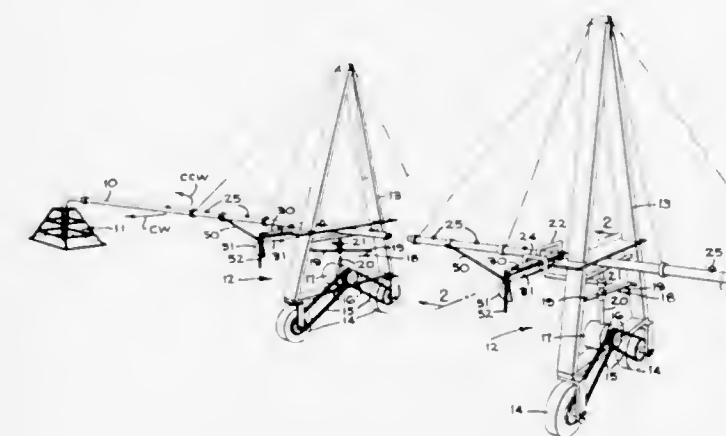
James P. Carr, East Lansing, Mich., assignor to FMC Corporation, San Jose, Calif.

Filed Aug. 31, 1970, Ser. No. 68,295

Int. Cl. B05b 9/02; E01h 3/02

U.S. Cl. 137—344

12 Claims



An irrigation system has a series of spaced carriages to support a water pipe for lateral movement. There is for each carriage motor valve a pivotal control member mounted on a support member and connected at one end to the water pipe. The control member has two alternative fulcrums straddling the valve so that the control member, selectively, will operate the valve in one direction or the other, depending on the fulcrum in use, when the pipe bends in a given direction because the particular carriage is leading or lagging other carriages. The connection of the control member to the pipe can be adjusted so that, if the water pipe is to move around a central pivot point, the motors for the outer carriages will normally run faster than the motors for the inner carriages.

3,692,046

## VANDAL PROOF VALVE CONTROL ASSEMBLY

Samuel D. Kersten, Jr., Highland Park, Ill.; Alton F. Sautter, Chicago, Ill., and John M. Simon, Downers Grove, Ill., assignors to Water Saver Faucet Co., Chicago, Ill.

Filed May 28, 1971, Ser. No. 148,011

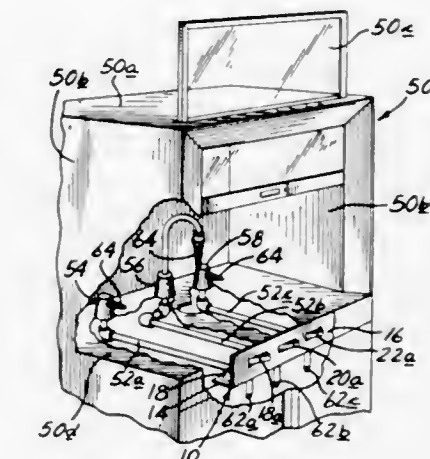
Int. Cl. F16k 27/12

U.S. Cl. 137—382

7 Claims

A vandal proof valve control assembly adapted to be mounted on a panel of a fume hood, for example. One embodiment of the assembly comprises an angled member to one leg of which a valve is secured. The other leg is provided with an opening to enable a portion of the control handle on the valve to protrude therethrough whereby the valve may be regulated while access to the valve, and the means employed to secure the control handle on the valve, is prevented. The

angled member may be of sufficient length to accommodate a plurality of valves, and advantageously is located at a position



which is remote from the fixture regulated by the valve secured thereon.

3,692,047

## AUTOMATICALLY REGULATED FIRE VALVE

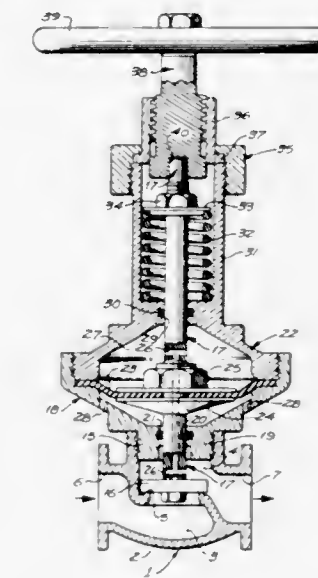
Alfred L. Camp, Brea, Calif., assignor to Wilkins Regulators Co., Los Angeles, Calif.

Filed July 20, 1970, Ser. No. 56,558

Int. Cl. F16k 31/14

U.S. Cl. 137—495

5 Claims



A valve for use in conjunction with a riser for supplying water, in case of fire, at all levels of a multiple story structure at a predetermined regulated pressure, the valve includes a diaphragm sensitive to pressure at the discharge side of the valve, tending to close the valve, a spring opposing the diaphragm, a normally inaccessible spring adjustment means, and a manually operated handle for overriding the spring and closing the valve without altering the adjustment means.

3,692,048

## APPARATUS FOR CONTROLLING A MASS FLOW RATE OF LIQUID IN A CHEMICAL PROCESS

Mitsuo Uchida, 14-232, Kasuga 3-chome, Ibaragi-shi, Osaka; Tadanao Iketani, A3-310, 3-1, Tsukumodai, Suita-shi, Osaka, and Naoyuki Mitani, 1-4, Sakaemachi, Otsu-shi, Shiga-ken, all of Japan

Continuation of Ser. No. 853,168, Aug. 26, 1969, abandoned.

This application March 31, 1971, Ser. No. 129,957

Claims priority, application Japan, Aug. 29, 1968, 43/61980

Int. Cl. D06f 39/00

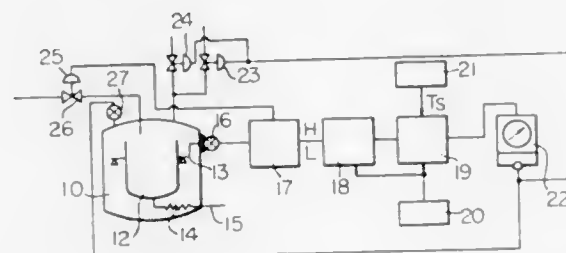
U.S. Cl. 137—403

11 Claims

An improved apparatus for controlling a mass flow rate of liquid in a chemical process, wherein a control system for



regulating a mass flow rate of liquid in a liquid passage of the process is automatically controlled in accordance with a deviation between a reference input of mass flow rate of liquid, and an average mass flow rate of liquid measured by a particularly designed measuring device. The measuring device is provided with a liquid container which is disposed in a liquid passage of the process and supported by a weighing mechanism. An opening or closing means and an automatic means for regulating the mass flow rate of liquid are mounted separately on the liquid passage at both opposed sides of the



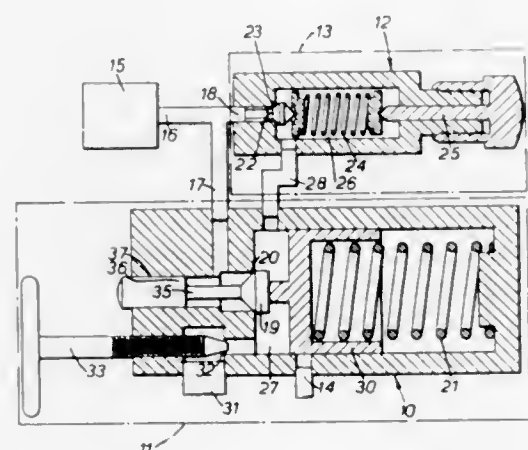
liquid container respectively, and the automatic regulating means is actuated as mentioned above. After opening or closing the opening or closing means, a weight difference  $\Delta W$  of liquid contained in the liquid container is measured at two measuring instances which are separated by a time interval  $\Delta T$ , then the average mass flow rate of the liquid is integrally calculated by an equation  $(\Delta W/\Delta T)$ . The measuring of the liquid weight is carried out together with measuring the net weight of the liquid container by way of the weighing mechanism.

3,692,049

**CONTROL APPARATUS FOR HYDRAULIC EQUIPMENT**  
Hubert Veare Norton; Leslie Buckingham Norton, and Douglas Edwin, all of Norton, Smallfield, England, assignors to Norton Tool Company, Limited, Surrey, England  
Filed Jan. 5, 1971, Ser. No. 104,097  
Int. Cl. F16k 29/02

U.S. Cl. 137—489.5

4 Claims

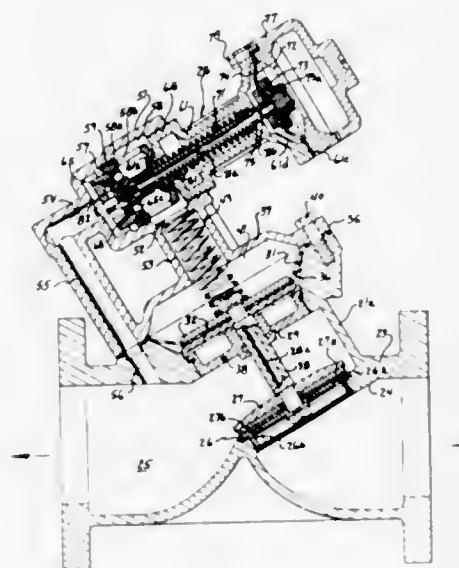


A control valve assembly for controlling hydraulic pressure comprising a non-adjustable unloader valve for large escape flow connected in parallel with a small adjustable trigger valve. The trigger valve opens when the pressure rises to an adjustable predetermined value and exposes to this pressure on actuating piston of the unloader valve which is thereby opened. Means are disclosed for adjusting the closing characteristics of the unloader valve.

3,692,050  
**APPARATUS FOR DETECTING LEAKS IN A FLUID DELIVERY LINE**  
Elmer M. Deters, Muscatine, Iowa, assignor to Red Jacket Manufacturing Company, Davenport, Iowa  
Filed May 10, 1971, Ser. No. 141,507  
Int. Cl. F16k 31/12

U.S. Cl. 137—491

11 Claims



An apparatus for detecting leakage in excess of a preselected rate from a fluid delivery line through which fluid is intermittently delivered under pressure, the apparatus including a main valve which controls flow of fluid to the delivery line and having a pressure responsive operator, and a leak detecting pilot valve for controlling the application of fluid pressure to the pressure responsive operator of the main valve.

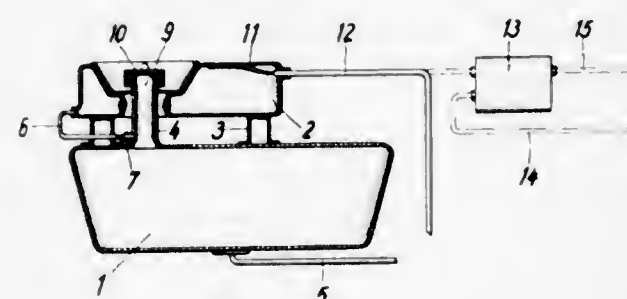
3,692,051  
**FUEL SYSTEMS FOR VEHICLES, ESPECIALLY MOTOR VEHICLES**

Wolfgang Eyb, Leonberg, Germany, assignor to Dr. Firma Ing h. c. F. Porsche KG, Stuttgart, Germany  
Filed Dec. 29, 1970, Ser. No. 102,372  
Claims priority, application Germany, Jan. 14, 1970, P 20 01 441.9

U.S. Cl. 137—544

Int. Cl. F16k 45/00

6 Claims

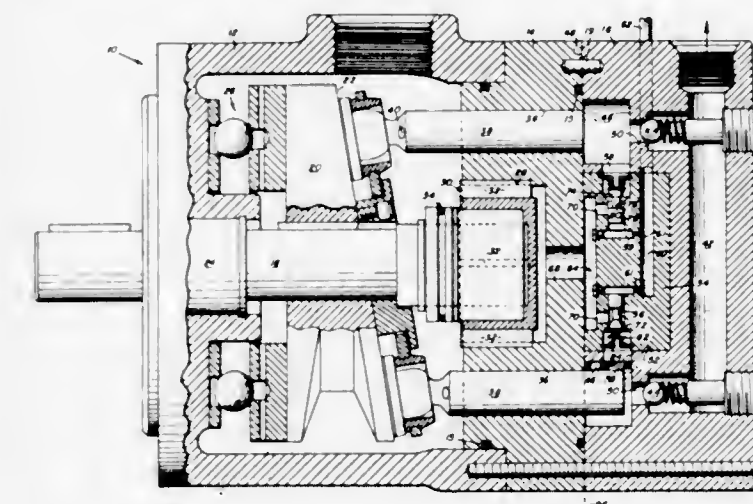


A fuel system for vehicles, especially motor vehicles, consisting of a fuel tank provided with a filling nipple adapted to be closed off in a gas-tight manner by means of a cap, an outlet or discharge line, and an expansion tank connected to the fuel tank via a branch line. A throttle is inserted in the branch line to decrease the flow cross-section of the branch line.

3,692,052  
**PRESSURE CONTROLLED VARIABLE PUMP OUTPUT BY-PASS SYSTEM**  
Hamish A. G. Cattnach, 140 Fulwell Rd., Teddington, Middlesex, England  
Division of Ser. No. 738,050, June 18, 1968, abandoned. This application March 27, 1970, Ser. No. 29,720  
Int. Cl. F04b 13/00

U.S. Cl. 137—561

7 Claims

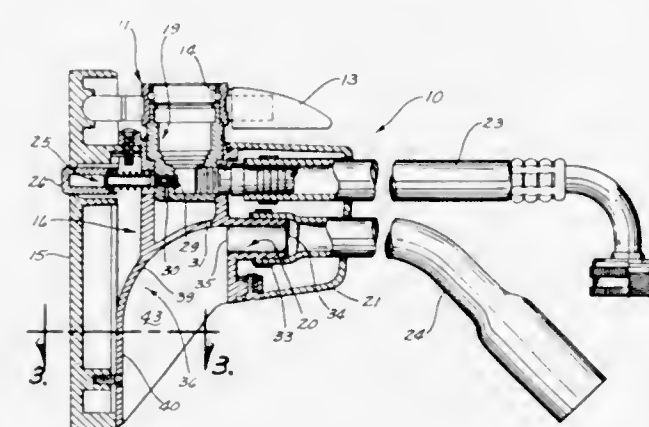


An axial pump having the capability of providing a plurality of independently adjustable fluid flows wherein there is an orifice network for returning adjustable amounts of pumped fluid from each piston to the inlet chamber depending on detected control pressures. A series of poppets are spring biased across orifices and the poppets adjust the open orifice period depending on the detected control pressures. The pump uses segmented bearings for its cam plate in combination with the aforesaid variable flow capacity. The pump further includes the use of a divided barrel wherein one portion houses reciprocating pistons and the other portion consists of a replaceable end-plate having passageways and valving means therein for determining the number of outputs and which of these outputs will be variable or fixed flow.

3,692,053  
**LIQUID DISCHARGE DEVICE**  
Henry J. Kaldenberg, Des Moines, Iowa, assignor to The Maytag Company, Newton, Iowa  
Filed Nov. 27, 1970, Ser. No. 93,079  
Int. Cl. F16l 39/00

U.S. Cl. 137—562

13 Claims

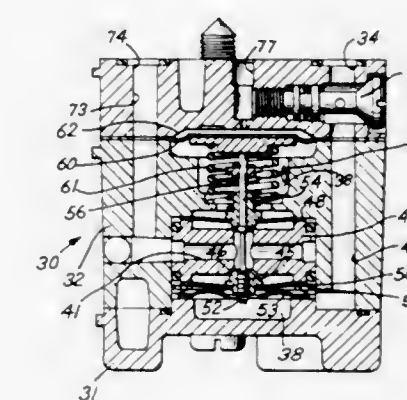


A coupler assembly for a portable washing machine includes a fluid deflecting surface adjacent to the outlet of the drain conduit for spreading the fluid into an energy-dissipating flow, such as a fan-like flow pattern, to reduce and substantially eliminate the objectionable splash of the high pressure fluid flow into a sink.

3,692,054  
**PNEUMATIC RELAY**  
Melvin Lawrence Buls, and Gerald Frank Varnum, both of Marshalltown, Iowa, assignors to Fisher Controls Company, Inc.  
Filed Feb. 9, 1970, Ser. No. 9,853  
Int. Cl. F15b 9/03, 9/08

U.S. Cl. 137—596.18

6 Claims

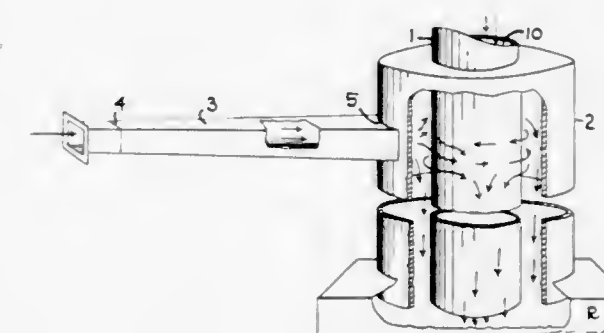


An adjustable gain pilot relay incorporates a body member having a pair of axially aligned valve seats therein and a valve plug coacting with each valve seat and supported by flexures which center the valve plugs relative to the valve seats and which hold the valve plugs in their operating positions. The valve plugs are adjustable relative to one another and to the valve seats in a novel manner such that both ports may be open at a steady-state condition, both valve ports may be closed at a steady-state condition, or that some travel of the exhaust valve stem relative to the relay housing is necessary to open either valve port. Thereby adjustment of the relay gain is made.

3,692,055  
**METHOD FOR UNIFORM DISTRIBUTION OF GASES IN AN ANNULUS AND APPARATUS THEREFOR**  
Floyd E. Benner, Jr., Scott Township, Pittsburgh, Pa., and Clifford E. Loehr, Akron, Ohio, assignors to PPG Industries, Inc.  
Continuation of Ser. No. 669,109, Sept. 20, 1967, abandoned, which is a division of Ser. No. 360,937, April 20, 1964, Pat. No. 3,467,498. This application Dec. 23, 1969, Ser. No. 884,770  
Int. Cl. F16l 41/00

U.S. Cl. 137—604

5 Claims



The production of pigmentary metal oxides, e.g., titanium dioxide, by vapor phase oxidation of the corresponding metal halides, e.g., titanium tetrachloride, is described. Method for providing effective mixing of reactant gases is discussed and a particular method for delivering reactant gases to the reaction zone in a uniform manner is described.



3,692,056

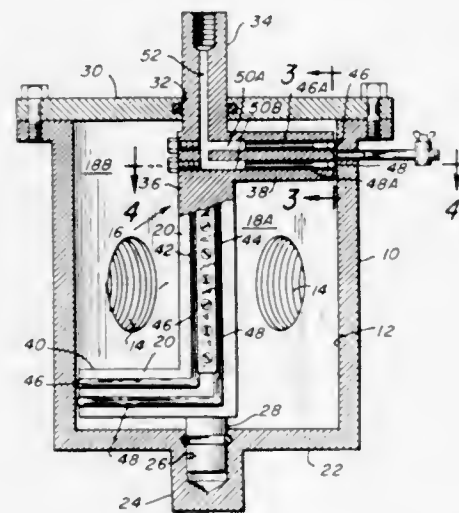
**MULTI-PORT VALVE HAVING IMPROVED SEAL RETAINING MEANS**

Creal E. Kirkwood, 3237 North Lewis, Tulsa, Okla.  
Continuation-in-part of Ser. No. 63,236, Aug. 12, 1970, Pat. No. 3,658,093. This application Aug. 25, 1971, Ser. No. 174,628

Int. Cl. F16k 11/07

U.S. Cl. 137—625.43

4 Claims



A valve having an internal cylindrical sealing surface and a plurality of spaced apart port openings, a gate member positioned in the body dividing it into two flow chambers, the gate member having opposed longitudinal sides and semicircular portions providing a continuous sealing surface, the gate member having spaced apart continuous grooves formed in the sealing surface, a continuous gasket member supported in each of the gate member grooves providing, when the gasket members are expanded by pressure applied externally of the valve, sealing engagement with the valve sealing surface, and an elongated gasket retaining plate affixed to each longitudinal side of the gate member, each gasket retaining plate being configured to form a portion of a groove in the gate member, the width of each groove being narrower at the contact surface than the diameter of the gasket member to prevent the gasket member from being dislodged.

3,692,057

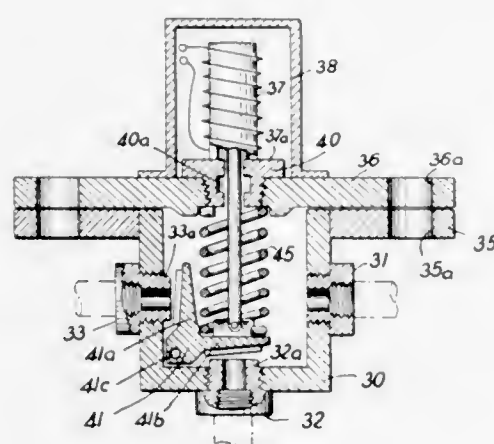
**SOLENOID VALVE**

John W. Barnd, 32 Hollybrook Rd., Paramus, N.J.  
Continuation of Ser. No. 812,583, April 2, 1969, abandoned, which is a division of Ser. No. 647,578, April 24, 1967, which is a division of Ser. No. 350,791, March 10, 1964, Pat. No. 3,351,128. This application April 12, 1971, Ser. No. 133,360

Int. Cl. F16k 11/02, 31/00

U.S. Cl. 137—625.44

10 Claims



A solenoid valve having two controlled outlet ports wherein a pivotally mounted valve closure member having two angularly displaced closure sections coupled to a movable solenoid

core is employed to simultaneously control the openings of the outlet ports.

3,692,058

**DUAL-STAGE VALVE**

Klaus Buhne, Gummersbach, Germany, assignor to Dr. Hermann E. Muller Metallwarenfabrik Bergneustadt GmbH, Bergneustadt, Bez, Cologne, Germany

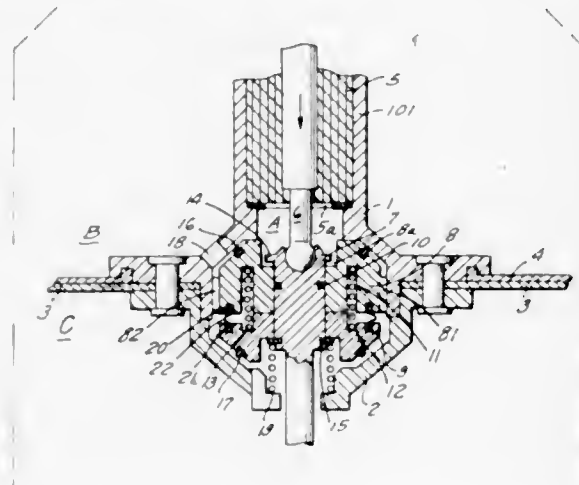
Filed Sept. 9, 1969, Ser. No. 856,368

Claims priority, application Germany, Sept. 11, 1968, P 17 80 398.4

Int. Cl. F16k 11/22, 31/12

U.S. Cl. 137—627.5

8 Claims



A dual-stage valve for braking-force amplifiers in vehicle braking systems and the like. A valve housing has opposite ends. An elongated valve control member is shiftable in this housing in direction towards one of the ends and has an axis which extends in this direction. A pair of valve members each fluid-tightly surround the valve control member and are slidable in-direction towards and away from the respective ends. A biasing spring biases the valve members apart along the axis of the valve control member. Limiting means on the valve control members limit axial movement of the valve members apart under the influence of the biasing spring. Shifting means serve to shift the valve control member in direction from one towards the other of the ends of the housing. A second biasing spring opposes this shifting movement.

3,692,059

**TUBE PLUGGING TOOL POSITIONER**

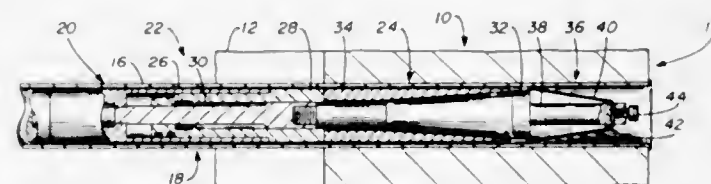
Charles O. Ice, Jr., Long Beach, Calif., assignor to Hydro-Vel Services, Inc., Monahans, Tex.

Filed June 3, 1970, Ser. No. 43,159

Int. Cl. F16l 55/10

U.S. Cl. 138—89

15 Claims



A tube plugging tool positioner includes a body and a locating member mounted on the body. The body is attached to the end of a tube plugging tool for movement therewith through a heat exchanger tube. The locating member is retracted relative to the body during movement of the positioner through a tube, and is extended as the body passes out of the remote end of the tube. The tube plugging tool is then positioned relative to the tube by withdrawing the positioner to the extent permitted by the locating member. The positioner may be either spring or gravity actuated, and is constructed for movement through a heat exchanger tube even though the tube has foreign matter in it or has holes through it.

3,692,060

**LONGITUDINALLY DIVIDED TUBE AND METHOD OF MAKING THE SAME**

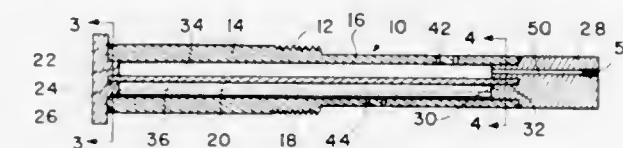
Paul E. Dussel, Ravenna, Ohio, assignor to Falls Machine Company, Summit, Ohio

Filed March 31, 1971, Ser. No. 129,679

Int. Cl. B23k 1/20; F16l 9/18, 59/10

U.S. Cl. 138—89

12 Claims



A tube length which is divided into two separate passages by a longitudinally extending wall. The tube is formed by the steps of providing diametrically opposed longitudinal slots in the walls of a tube with the slots extending somewhat less than the entire length of the tube to leave solid portions thereof at either end, positioning a metal plate within the slots, welding the plate to the tube walls, subsequently machining the outer cylindrical surface of the tube to provide a smooth surfaced tube of the desired external diameter, removing both end portions of the tube to leave a tube portion having the dividing wall along its entire length, capping both ends of the tube, and providing a plurality of holes in the tube walls on either side of the plate.

3,692,061

Patent Not Issued For This Number

3,692,062

**PIPE REPAIR CLAMP**

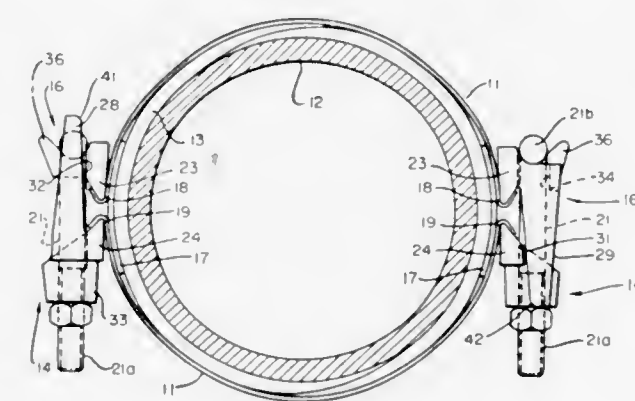
Paul G. Dunmire, Oakland, Calif., assignor to Christy Metal Products, Inc., Emeryville, Calif.

Filed Nov. 14, 1969, Ser. No. 876,789

Int. Cl. F16l 55/16

U.S. Cl. 138—99

5 Claims



A pipe repair clamp assembly employing a flexible, metal band to be strapped and tightened about a pipe or other conduit for closing a leak in its side wall by compressing a resilient gasket seal encircling the pipe. The repair clamp includes an improved pair of lugs secured to adjacent ends of the band wherein the lugs each extend longitudinally of the pipe being sealed. Radially outwardly extending lug extension portions are formed on one of the lugs and an opening is formed in each. Radially outwardly protruding pairs of spaced retainer ears are carried by the other lug to define a radially open slot between each pair of ears. Bolts having a transverse cross-head extend both through the openings and an associated one of the slots so that the cross-head will lie radially between the ears and the conduit. Elongated fingers, spaced longitudinally of the lugs, project from one lug toward the other and serve to resist rotation of the ears noted above upon tightening of the bolts.

3,692,063

**FLEXIBLE WAVEGUIDE AND METHOD OF PRODUCING**

Rolf Wagele, Isernhagen N.B., Germany, assignor to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

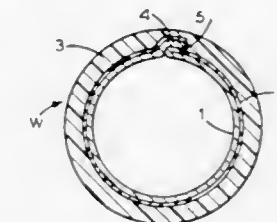
Filed March 15, 1971, Ser. No. 124,024

Claims priority, application Germany, March 17, 1970, P 20 12 572.8

Int. Cl. F16l 11/00

U.S. Cl. 138—139

9 Claims



A method of forming a waveguide for the transmission of electromagnetic waves, having a construction particularly adapted for transmission of high frequency waves and which is capable of sufficient flexure to allow the same to be wound on drums. The waveguide is formed from a thin metal tape converted to tubular form having a longitudinal tab seam portion which is welded and folded over against an outer surface portion of the tubing. An adherent coating of thermoplastic polymer and an outer sheath of synthetic resin are applied over the tubing.

3,692,064

**FLUID FLOW RESISTOR**

Gunther Ernst Hohnerlein, Dusseldorf; Gunther Max Meinhardt, Oberhausen, and Peter Hildebrand, 464 Wattenscheid, all of Germany, assignors to Babcock and Wilcox Ltd., London, England

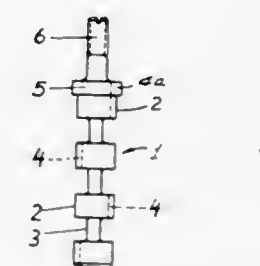
Filed Dec. 12, 1969, Ser. No. 884,443

Claims priority, application Germany, Dec. 12, 1968, P 18 14 191.8

Int. Cl. F15d 1/02

U.S. Cl. 138—42

10 Claims



A resistor for mounting into the tube of a heat exchanger to control the flow of fluid therethrough. The resistor is of unitary construction and includes a stem having laterally extending projections in the form of disk-like members spaced longitudinally of the tube. A flow path is defined through the resistor by providing an opening through each of the disk-like members with the openings of adjacent members being offset circumferentially. An alternate embodiment has the projections in the form of arcuate partitions laterally extending to one side of the stem with adjacent partitions being on opposite sides of the stem and including openings through the stem therebetween.

3,692,065

**EXPANDIBLE LOOM APRON**

Coy L. Saul, 211 Layton Ave., Danville, Va.

Filed July 27, 1971, Ser. No. 166,524

Int. Cl. D03j 1/00

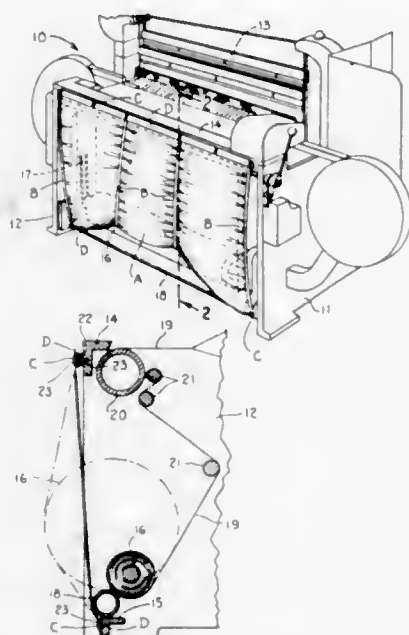
U.S. Cl. 139—1 C

2 Claims

An expandible loom apron for a cloth roll has a plurality of vertically spaced pleats formed by fastening a plurality of ver-



tical horizontally spaced elastic strips in stretched condition to an elongated thin sheet of plastic film, and means fastening the sheet of plastic film along upper and lower edges thereof in



position above and below a cloth roll so that as the cloth roll expands as it is filled with cloth during weaving the apron also expands to protect the cloth wound thereon.

3,692,066

## HAIR WASHING DEVICE

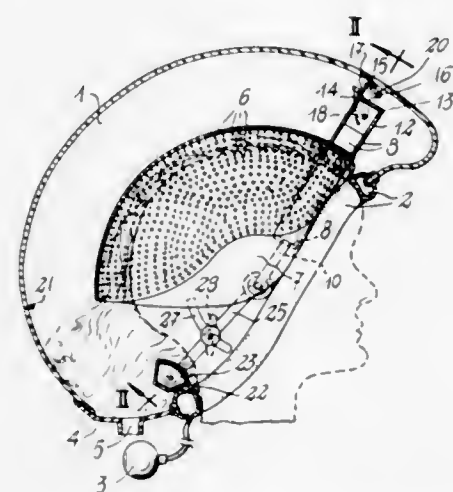
Ernesto Fava, Via Arce, 40, Salerno, Italy  
Filed Jan. 19, 1972, Ser. No. 218,934

Claims priority, application Italy, Jan. 29, 1971, 19950 A/71

Int. Cl. A45d 19/00

U.S. Cl. 132—9

5 Claims



Hair washing device comprising a helmet (hairdrier), internally of which a perforated grating is provided, a channel full of water and open to the grating moving in contact therewith, and being suitable to spray water over the entire hair mass of a helmet user's. The channel is reciprocated by the thrust of water jets alternately issuing from either of two holes on the two sides of the channel: these holes being alternately closed by a swinging lever which is displaced on contacting stationary stop elements.

3,692,067

Patent Not Issued For This Number

### 3,692,068 A METHOD OF AND A LOOM FOR PRODUCING A TAPE HAVING A LIST WITH LATERALLY PROTRUDING LOOPS

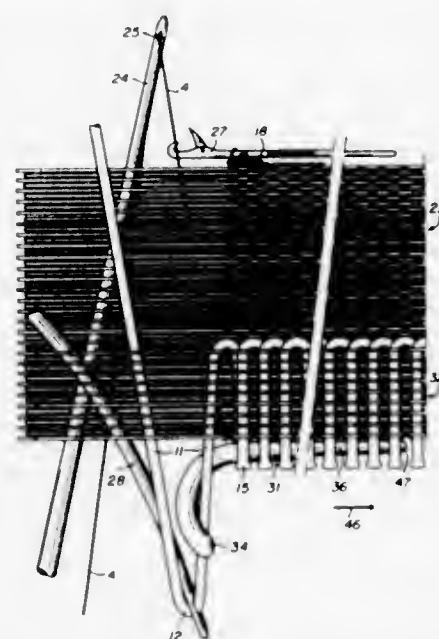
Ulrich W. Auer, Chene-Bougeries/GE, and Andre Nicole, Puplinge/GE, both of Switzerland, assignors to Interbrev S.A., Luxembourg, Luxembourg

Filed Sept. 23, 1970, Ser. No. 74,744

Int. Cl. D03d 47/00

U.S. Cl. 139—116

28 Claims



A method and a needle loom for producing a tape having a list with protruding loops along the edge at which is inserted the weft needle. An auxiliary sheet is superposed over one of the warp sheets and moves therewith; between these sheets there is inserted, in a direction opposite to the weft, double picks of a list thread with the heads thereof being held externally of the tape during weaving of the latter. The loom comprises a free needle disposed alongside the above-mentioned tape edge: the head of this free needle engages the double pick list heads and its shank allows them to slip off as the tape moves forward. The list is a double thickness fabric with intermediate links, in which is held the list thread forming the protruding loops. The tape can in particular be used to form a sliding clasp fastener: the list thread is then stiff and the heads of the protruding loops are then deformed to form the hooking elements of the fastener.

3,692,069

### COMPONENT LEAD FORMING TOOL AND METHOD

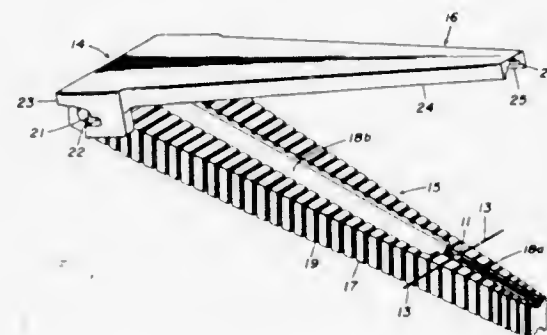
Leo Clendennen, Garland, and Charlie P. Smith, Irving, both of Tex., assignors to LTV Electrosystems, Inc., Greenville, Tex.

Filed Dec. 29, 1970, Ser. No. 102,400

Int. Cl. B21f 1/00, 45/00

U.S. Cl. 140—106

5 Claims



A tool and method for forming stress relieving loops in the axial leads of an electrical component. A wedge-shaped com-

ponent holding block includes generally flat upper and lower surfaces having a plurality of transverse lead receiving grooves formed across the upper and lower surfaces and down the sides. The wedged shape of the block results in side wall grooves which vary in spacing to allow lead formation for different spacing of component mounting holes. A component is placed in a central slot in the block and the leads are first bent downwardly into properly spaced grooves. Then a fulcrum member, pivotally attached to the holder, is placed over the bent leads of the component, and the leads are then bent upwardly about overhanging edges of the fulcrum member to form a stress relieving loop in each of the leads.

3,692,070

### METHOD OF AND APPARATUS FOR FILLING A TUBE OR A HOSE WITH A SOLID MATERIAL, PREFERABLY SAND

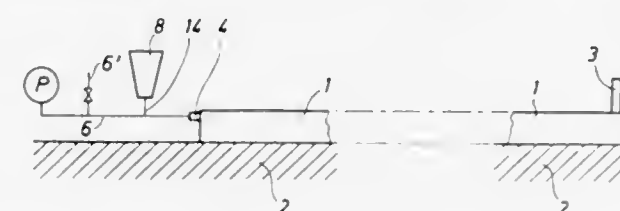
John Larsen, Odense, Denmark, assignor to Fyens Saekkekom-Pagni A/S, Odense, Denmark

Filed Dec. 1, 1970, Ser. No. 94,099

Claims priority, application Denmark, Dec. 3, 1969, 6406  
Int. Cl. B65b 1/04, 3/04

U.S. Cl. 141—1

7 Claims



A method of and an apparatus for filling a tube or a hose with a solid material, such as sand, preferably for preparing a solid sausage-like member for coast protection or the like in which a liquid, preferably water, by a water pump or other pressure source is transported in a continuous flow through the tube or hose being fed from one end of the tube or hose and escaping partly or fully from the other end. The solid material, preferably sand, is fed to the feed line between the pump or other pressure source and the tube or hose to be filled or to the inlet end of this. The flow rate of the liquid is varied in such a manner that as the area of flow owing to sedimentation of the solid material in the tube or hose is reduced the rate of flow is still kept substantially within the range in which sedimentation of the solid material will take place.

3,692,071

## NOZZLE FOR INFLATING BALLOONS

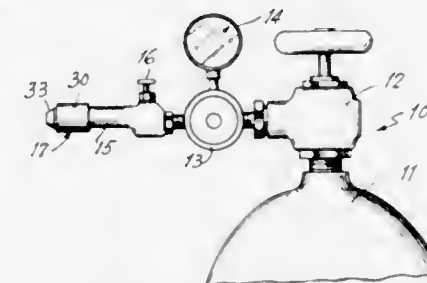
Manny Begleiter, Bronx, N.Y., assignor to Miner Industries Inc., New York, N.Y.

Filed Jan. 15, 1971, Ser. No. 106,662

Int. Cl. F17c 13/00

U.S. Cl. 141—313

3 Claims



An elastic balloon mounted on a hollow valve body which projects from the mouth of the balloon neck and is open axially only at its open end, with radial passages in the valve body being normally sealed by elastic engagement of the balloon neck therearound, is inflated with gas under pressure supplied to the interior of the valve body through a nozzle structure engaged by the valve body and functioning to prevent the escape of such gas from the valve body except into the balloon. The

nozzle structure comprises a core member dimensioned to extend into the valve body and having bores for the passage of the inflating gas therethrough and a frusto-conical surface for sealing engagement by the valve body at its open end, and an annular member extending around, and spaced from the core member and having an inner surface for engagement with the thickened rim at the mouth of the balloon neck.

3,692,072

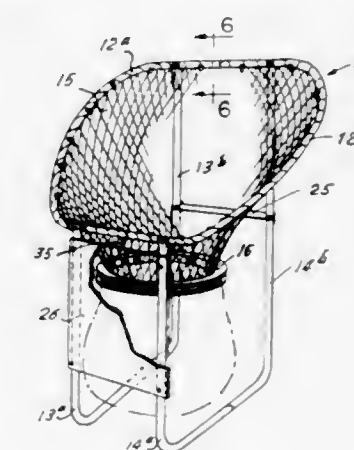
## LITTER COLLECTOR AND RECEPTACLE

James L. Kohls, 420 Arawe Circle E., Irving, Tex.  
Filed May 11, 1971, Ser. No. 142,209

Int. Cl. B65b 1/04, 3/04

U.S. Cl. 141—391

13 Claims



A collector for litter includes a tubular frame presenting a large, generally oval ring supported at an inclined plane on supporting legs. The ring defines a large target area and has suspended therefrom a net defining a collector funnel with a discharge opening at the bottom of the funnel defined by a discharge ring. The net funnel may discharge into a barrel or other container placed beneath the discharge ring; or the discharge ring may include means for attaching a receptacle, in the form of a plastic bag for example, which may be readily removed for transporting the litter from the site. The net is readily assembled to the frame ring and to the discharge ring by means of suitable fasteners which are readily assembled but difficult to remove. For convenience a subassembly of a plastic bag and bag ring may be preassembled and readily dropped into and supported by the receptacle discharge ring.

3,692,073

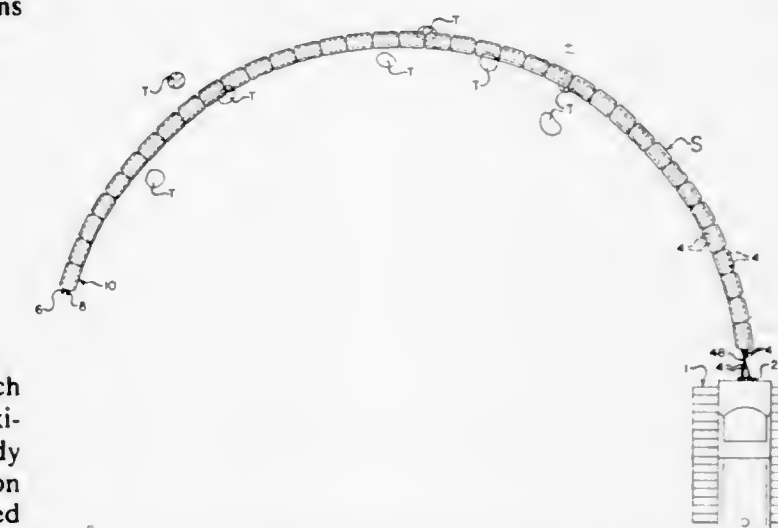
## DRAG SAW

Carl W. Easterwood, Rt. 2, Sulphur Springs, Tex.  
Filed Sept. 15, 1970, Ser. No. 72,433

Int. Cl. B27b 35/02, 35/14

U.S. Cl. 143—133 D

11 Claims

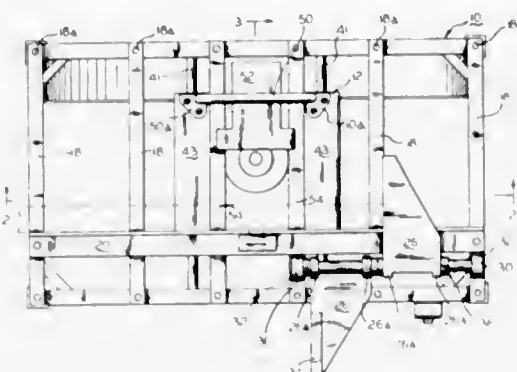


An elongated drag saw for sawing trees, which has saw elements in abutting relation and which saw elements are pulled



behind a traction element in a path other than straight, so that the toothed elements on the saw will engage trees and undergrowth to cut the trees and undergrowth at the surface of the ground or slightly therebelow. The cutting element has teeth on opposed longitudinal sides thereof, which toothed elements are mounted on a plurality of cables in such manner that the drag saw may be pulled by the cables from either end thereof. Provision is made for removing the toothed bars on which the saw teeth are formed and for replacing the saw elements from the cables and for replacing the saw elements thereonto. The saw elements are so constructed as to have great mass so that contact with the trees or the like will not impart lateral movement thereto, but will enable the saw to readily cut vegetation.

production basis for purposes of associating hinges therewith



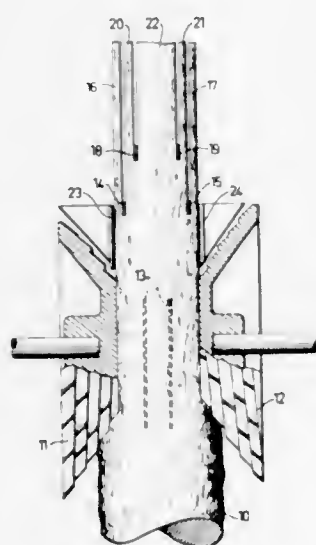
3,692,074

## CHIPPING AND SAWING MACHINE

Philip Nilsson, Soderhamn, Sweden, assignor to Kockum-Soderhamn Aktiebolag, Soderhamn, Sweden  
Filed March 3, 1970, Ser. No. 16,007  
Int. Cl. B27c 9/00

U.S. Cl. 144—39

2 Claims



that require slots formed in the panels. The routing tools are movable and the panels are held stationary.

3,692,076

Patent Not Issued For This Number

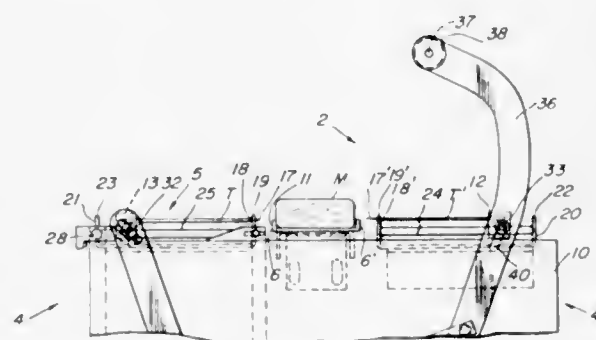
3,692,077

## HAND-FED, HAND-OPERATED MUFFIN SPLITTING MACHINE

Eugene M. Noel, 42 Kingston Rd., Newton Highlands, Mass.  
Filed Feb. 8, 1971, Ser. No. 113,340  
Int. Cl. B26f 1/24; B26d 1/06

U.S. Cl. 146—72

4 Claims



In a chipping and sawing machine a log is first passed through a chipping machine in which two opposite sides of the log are provided with planar parallel surfaces. As the log passes from the chipping machine at least one board is cut from each of the opposite sides by sawing members. The chipping machine consists of a pair of spaced chipping discs in the form of truncated cones with the small ends of the cones facing each other. As the log passes the chipping machine, it is directed on each side by guides into the path of the sawing members which are positioned adjacent the chipping machine so that the log contacts the sawing members while it is still guided between the discs of the chipping machine.

A muffin-splitting machine actuated by a link and curved lever mechanism having a handlebar for simultaneous timing of muffins from opposite sides with subsequent split of the muffin by lift of the upper half off the lower half, operated by easy down-sweep pulling motion of one hand of the operator, hand-fed by unobstructed cross-sweep of the operator's other hand, and having an adjustable cam lift so that the split of the muffins can be varied to suit particular consumer desires.

3,692,078

## LADY'S HANDBAG, POUCH OR PURSE

Georg Reitzel, Altenmittlau Kreis Gelnhausen, Germany, assignor to Drescher & Kiefer, Altenmittlau Gelnhausen, Germany and Randolph-Rand Corporation, New York, N.Y.

Filed Dec. 4, 1970, Ser. No. 95,292

Claims priority, application Austria, Dec. 12, 1969, A 11576/69

Int. Cl. A45c 13/04

U.S. Cl. 150—29

5 Claims

An accessory for personal use such as a French purse, a lady's handbag, wallet, etc., has a rigid frame formed of two U-shaped halves hinged together. The base of each half is channelled with the open side of the channels facing inwardly. Springy strips with cover material secured thereto are forcibly

3,692,075

## ROUTING DEVICE WITH MOVABLE ROUTING TOOL

Kenneth N. White, Orland Park, Ill., assignor to Harold Meyer, and White-Meyer Wood Products, Inc., Orland Park, Ill., part interest to each

Filed Dec. 31, 1969, Ser. No. 889,591

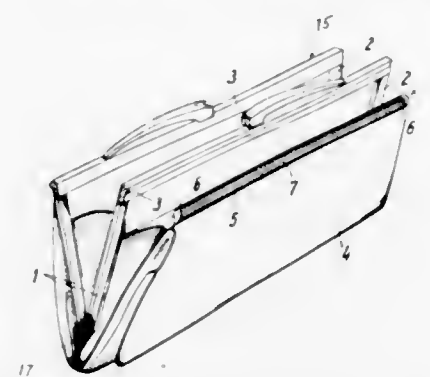
Int. Cl. B27f 1/02, 5/02; B27c 5/04

U.S. Cl. 144—136

2 Claims

Routing devices that can conveniently, quickly and efficiently cause door panels, or the like, to be slotted on a mass

inserted into the channel of each base in which the strips and thus the cover material are retained by engagement of the



3,692,079

Patent Not Issued For This Number

3,692,080

## REINFORCED TIRE

Jacques Boileau, Clermont-Ferrand, France, assignor to Compagnie Generale Des Etablissements Michelin, ralsion sociale Michelin & Cie., Clermont-Ferrand (Puy-de-Dome), France

Filed June 3, 1970, Ser. No. 43,121

Claims priority, application France, June 11, 1969, 6919439

Int. Cl. B60c 9/04, 9/20

U.S. Cl. 152—359

7 Claims



A tire reinforcement in the tread, carcass, or both is made of fiber glass, carbon whiskers, or a similar material closely associated with monofilaments. Each monofilament has a diameter greater than 0.5 mm and is made of an incompressible and extensible material that can be spun.

3,692,081

## TRUING APPARATUS

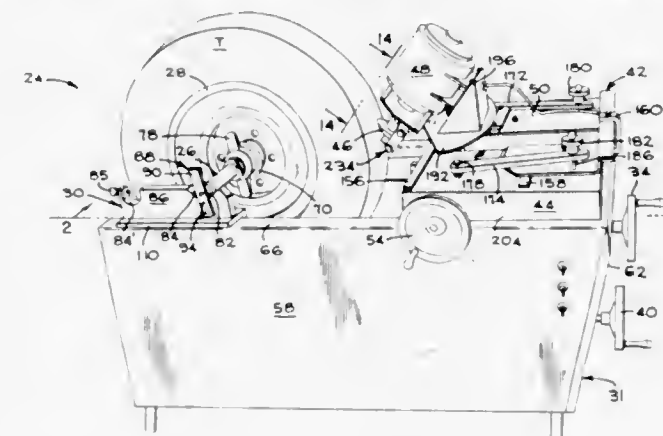
George May, Lansing, and Melvin H. Lill, Okemos, both of Mich., assignors to FMC Corporation, San Jose, Calif.

Filed Oct. 22, 1970, Ser. No. 82,923

Int. Cl. B29h 21/01

U.S. Cl. 157—13

26 Claims



A tire truing apparatus having a driven tire mounted for longitudinal movement toward and away from a motor driven

cutter mounted for movement transversely of the tire along a preselected tread contour forming path. A transversely movable carriage has a cutter motor supporting plate that is pivotally connected to its forward end and is pivoted relative to the carriage by a cam and connecting linkages. A pair of radius rods have first ends pivoted to a frame and have their other ends pivotally connected at preselected positions in arcuate slots formed in the carriage having radii equal to that of the radius rods and transcribed about the axes of said first ends when the carriage is centered transversely. The arcuate extent of the slots is sufficient to allow the radius rods to be adjusted from a divergent position through parallel position and into a plurality of preselected convergent positions for guiding the cutter along preselected paths which will cut transverse contours on the tires, which contours vary from small to progressively larger radii convex curvatures, to a flat cut, and finally to concave curvatures.

3,692,082

## JOINTED DOOR ASSEMBLY

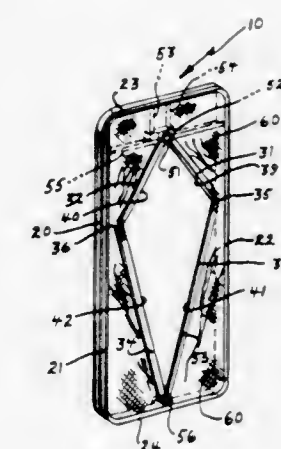
Douglas E. Cromwell, St. Charles, Ill., assignor to The United States of America as represented by the Secretary of the Air Force

Filed July 28, 1971, Ser. No. 166,888

Int. Cl. E06b 7/28, 7/32

U.S. Cl. 160—87

7 Claims



A door assembly which includes a metal door frame in the shape of a rectangle, and a door which includes an articulated four-piece metal frame, pinned and movable between the door frame. Between the articulated frame and the door frame, and secured to both is flexible material, such as butyl rubber coated nylon, which forms the main portion of the door. The articulated frame, when in an open position, forms a quadrilateral opening which defines a doorway and permits personnel to pass through. Suitably positioned springs make the open articulated frame self-closing and, thereby, close the doorway. The articulated frame may be mated with the articulated frame of another similar door assembly which is attached to another structure and, in that way, permits passage between the structures.

3,692,083

## PLURAL PANEL DOOR ASSEMBLY

Forrest V. Swanson, Wausau, and Raymond N. Sellon, Jr., Sussex, both of Wis., assignors to J. I. Case Company

Filed Dec. 7, 1970, Ser. No. 95,850

Int. Cl. E05d 15/26

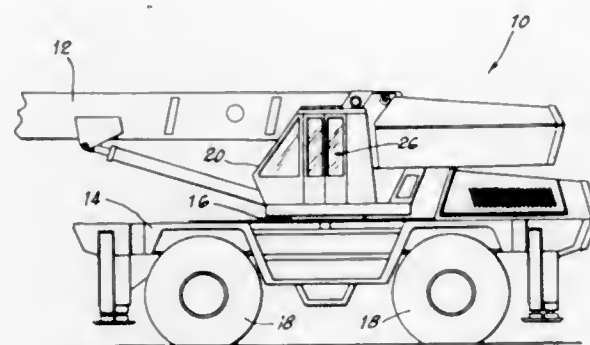
U.S. Cl. 160—206

13 Claims

A door assembly including a plurality of panels pivotally interconnected with a free end panel pivoted about a fixed axis adjacent one edge of an opening and the opposite end panel having guide means received in an elongated track located along an adjacent edge of the opening. The assembly further includes means adjacent the pivot axis for receiving the guide means when the door is in an open position wherein the panels are in overlapping relation and accommodating pivotal move-



ment of the panels about said axis from the open position to a further position where the panels are in overlapping relation



and extend substantially parallel to the elongated track and are positioned beyond the opening.

### 3,692,084 HOLE SHIELD

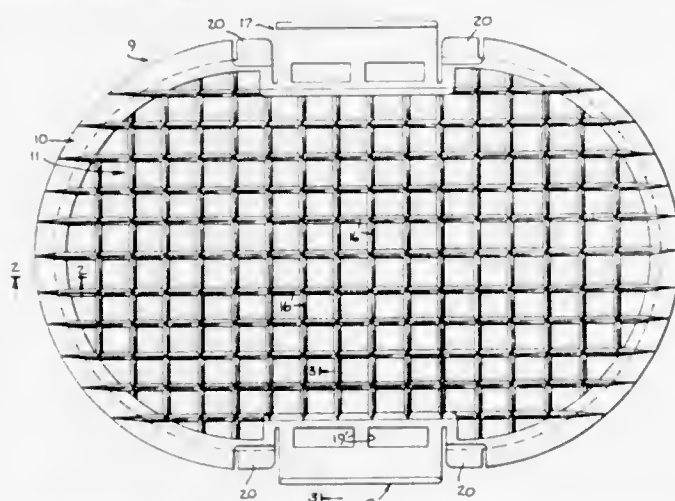
Chester A. Irvine, Chatham, N.J., assignor to Chatham Container Display Corp., Chatham, N.J.

Filed June 29, 1970, Ser. No. 50,375

Int. Cl. E05c 21/02; E04c 19/08

U.S. Cl. 160—368

13 Claims



The shield is constructed so as to snap into a painter's hole or like aperture in a structural member such as a bridge girder. The shield is constructed of plastic and has a pair of flexible retaining means at opposite sides which allow the shield to snap into the aperture of the member. The main section of the shield can be made of a mesh construction so as to permit the passage of air therethrough and avoid flutter or can be of solid construction.

### ERRATUM

For Class 162—164 see:  
Patent No. 3,692,092

### 3,692,085

#### PROCESS FOR PRODUCING CORES BY MICROWAVE HEATING

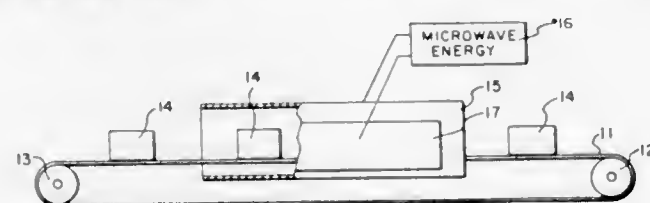
Lloyd H. Brown, 75 Victor Parkway, and Larry C. Stephens, 1044 Abington Dr., both of Crystal Lake, Ill.

Filed May 8, 1970, Ser. No. 35,902

Int. Cl. B22c 9/12

U.S. Cl. 164—15

1 Claim



A process for producing cores in which a core box is formed from a thermosetting resin. A lossy core forming material is in-

serted into the core box and microwave energy is applied to the core box in a manner which substantially eliminates standing microwaves in the core box.

### 3,692,086

#### METHOD OF MAKING A PRECISION CASTING LAYERED MOLD

Robert Michelin, Combes La Ville, France, assignor to U.C.P.I. S.A. R.L. Pour L'Utilisation des Ceramiques et des Plâtres dans L'Industrie, Nanterre, France

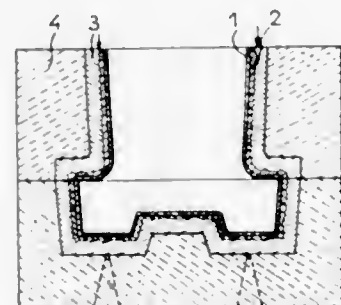
Filed Dec. 29, 1969, Ser. No. 888,315

Claims priority, application France, Dec. 27, 1968, 68181109; Dec. 2, 1969, 6941581

Int. Cl. B22c 9/12

U.S. Cl. 164—25

1 Claim



The disclosure relates to casting bodies usable in precision casting. These casting bodies are composed of a mixture of refractory materials of different granulometries, 2 to 600 microns for the fine grains and 250 to 6,000 microns for the coarse grains, the percentage of fine grains and coarse grains being comprised respectively between 20 and 77 percent and between 23 and 80 percent, and this mixture being bound with the aid of a binder obtained by gelation of a silicate.

### 3,692,087

#### METALLIC POROUS PLATES

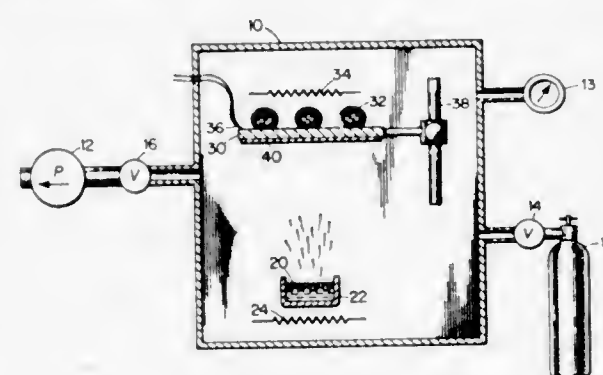
Robert E. Eberts, Framingham, Mass., assignor to Norton Company, Worcester, Mass.

Filed March 17, 1969, Ser. No. 807,814

Int. Cl. B22d 23/00; C23c 13/00, 13/02

U.S. Cl. 164—46

3 Claims



Porous plates made by vacuum evaporation of metal at relatively low vacuum levels. Such plates can be removed from the substrate for use. The pores in the porous structure so produced may be enlarged by etching.

### 3,692,088

#### METHOD AND APPARATUS FOR INVESTMENT CASTING

Frank M. Kulig, Bloomfield, Conn., assignor to The J. M. Ney Company, Bloomfield, Conn.

Filed Dec. 1, 1970, Ser. No. 94,116

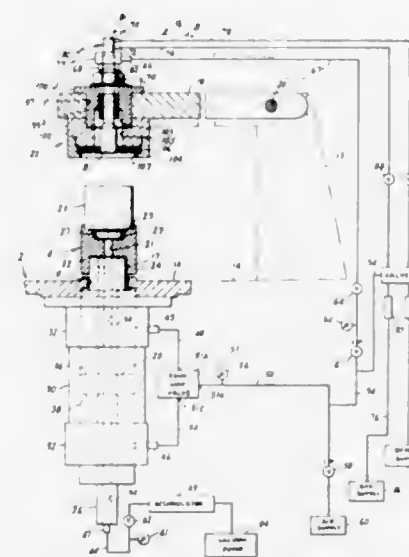
Int. Cl. B22d 27/14, 27/16

U.S. Cl. 164—62

16 Claims

A casting machine adapted for the manufacture of precision investment castings of the type used in dental applications has

a burner arm assembly including a torch and means adapted to sealingly engage and pressurize a mold assembly. The mold assembly is positioned on a support member and is heated by the burner assembly, after which it is raised against the burner assembly. Vacuum is drawn through the support member, and



molten metal is caused to flow from the crucible portion into the mold portion of the mold assembly, and by also supplying gas under positive pressure to the crucible portion to facilitate such flow. Control means extinguish the burner assembly and operate the vacuum as well as the produce movement of the support member.

### 3,692,089

#### PROCESS FOR CONTROLLING ORIFICE SIZE WHEN EXTRUDING MOLTEN MATERIALS

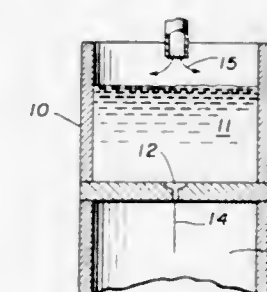
Wilbur Privott, Jr., 1208 Wicklow Dr., Raleigh, N.C., and Michael R. Sargent, 3810 Lancaster Dr., Cary, N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 3, 1970, Ser. No. 94,720

Int. Cl. B22d 11/12, 23/00

U.S. Cl. 164—66

4 Claims



The size of the orifice in a process for extruding low viscosity melts is controlled by maintaining at a predetermined level the partial pressure of a gas which enters into chemical reaction with the molten material contained within the crucible assembly, the materials comprising the crucible assembly, and the impurities contained in the melt.

### 3,692,090

#### METHOD OF MAKING A VENTED TIRE MOLD

Von H. Brobeck, and Mike Zulick, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 871,585, Nov. 10, 1969, Pat. No. 3,553,790, which is a continuation of Ser. No. 611,327, Jan. 24, 1967. This application July 20, 1970, Ser. No. 56,566

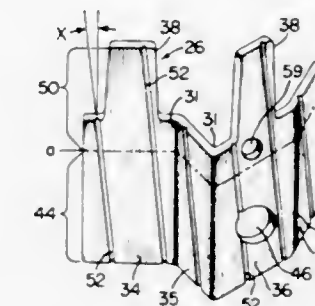
Int. Cl. B23k 19/00

U.S. Cl. 164—71

3 Claims

A method of enhancing the air escape flow capacity of a vented tire mold wherein the tire receiving cavity is fabricated by casting molten material around a design-forming preform providing with at least one air escape passage. The venting

capacity of the mold is increased by causing the preform to become slightly loosened from the mold body. The flow capacity may be further enhanced by etching the surfaces of the provided air escape passage in order to enlarge same.



The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application reference must be made to the accompanying drawing and the following detailed description.

### 3,692,091

#### SPLASH ARRESTER APPARATUS

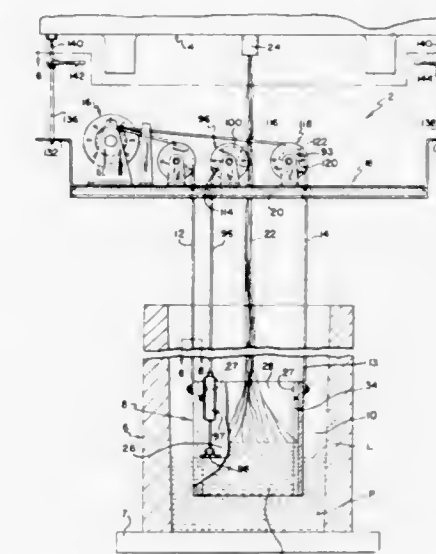
Robert A. Saxer, 12934 Linden Lane, Parma, Ohio

Filed March 5, 1970, Ser. No. 16,766

Int. Cl. B22c 19/04; B22d 7/12

U.S. Cl. 164—156

32 Claims



A splash arrester apparatus adapted for use in pouring molten metal into a mold including an open ended arrester device of refractory material adapted for positioning within the mold in spaced relation from the walls thereof, and adapted to encompass the stream of molten metal being poured into the mold. An actuating assembly is provided to progressively raise the arrester device in the mold while maintaining the outlet end submerged in the molten metal filling the mold. The arrester device may be used alone or equipped with a baffle-like impact member to receive the flow of molten metal entering the mold and change the shape of the stream to reduce the force of the molten metal striking the pool of molten metal contained in the arrester device and/or in the mold cavity.

### 3,692,092

#### PAPER CONTAINING A POLYETHYLENIMINE-FATTY ACID EPICHLOROHYDRIN PRODUCT

Juan Longoria, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 736,556, June 13, 1968, Pat. No. 3,622,528. This application April 1, 1971, Ser. No. 130,464

Int. Cl. D21h 3/58

U.S. Cl. 162—164

8 Claims

An improved polyethylenimine adduct for cellulosic products is prepared by condensing polyethylenimine with



0.05-0.4 mole of a  $C_{12}$ - $C_{22}$  fatty acid and thereafter capping the residual free amino groups by reaction in aqueous solution at  $0^{\circ}$ - $50^{\circ}$ C. with epichlorohydrin. The resulting product is an effective softener, sizing agent, and wet strength additive for paper and other cellulosic products with superior color stability and increased resistance to yellowing.

3,692,093

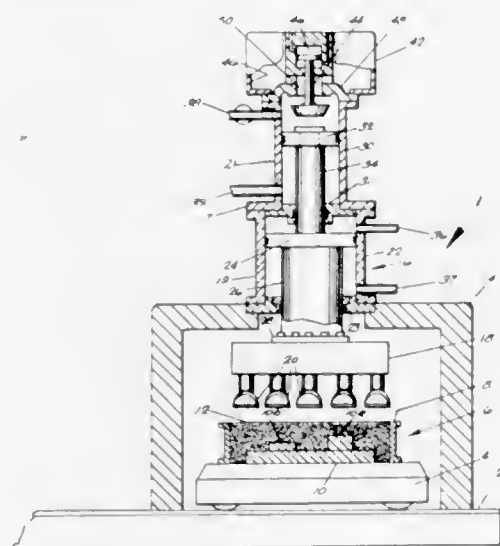
**HIGH IMPACT MOLDING MACHINE**

Russell W. Taccone, Erie, Pa., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.

Filed Sept. 8, 1970, Ser. No. 69,999  
Int. Cl. B22c 15/34

U.S. Cl. 164-212

4 Claims



An improved impact sand molding machine includes an impacting head supporting a plurality of impacting shoes for impacting sand in a mold for the purpose of obtaining improved packing of the sand around a pattern in the mold. Each impacting shoe is independently mounted on the head and is provided with impact absorbing means to allow each shoe to impact independently of other shoes thereby to compensate for areas of greater and lesser impact resistance on the surface of the mold. The impact machine may be movably mounted for more uniform packing of sand in a mold and for impacting molds of different sizes.

3,692,094

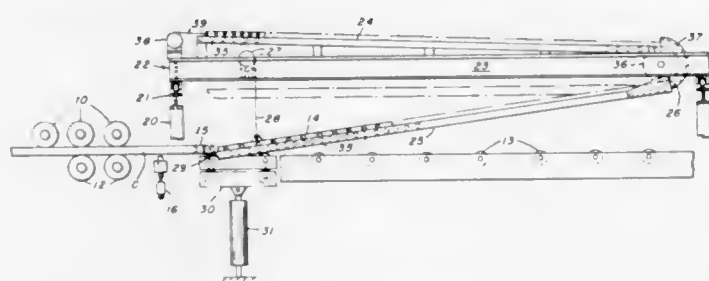
**APPARATUS FOR RECEIVING AND STORING A FLEXIBLE STARTER BAR**

George J. Wagner, North Fayette Tps., Allegheny County, Pa., assignor to United States Steel Corporation

Filed Dec. 30, 1970, Ser. No. 102,587  
Int. Cl. B22d 11/08

U.S. Cl. 164-274

6 Claims



An apparatus for receiving a flexible starter bar used in continuous-casting of metals and storing the bar between casting operations. The apparatus includes upper and lower ramps, the latter being pivotally supported, whereby it can be lowered to divert the starter bar. As the bar moves up the lower ramp, the tail is directed from the lower ramp back onto the upper ramp. Thus the bar is doubled on itself for compactness. The parts can be shifted transversely of the casting line to make them accessible for maintenance.

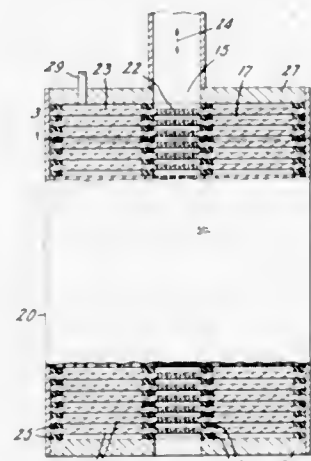
3,692,095  
**ULTRA-LOW TEMPERATURE THERMAL REGENERATOR**

Robert B. Fleming, Scotia, N.Y., assignor to General Electric Company

Filed Dec. 5, 1969, Ser. No. 882,487  
Int. Cl. F28d 17/02

U.S. Cl. 165-4

9 Claims



In a regenerator in which a fluid serves as the heat storage medium, axial motion of the fluid in the reservoir deteriorates the performance of the regenerator. Barriers are provided in the reservoir to significantly impede the flow of reservoir fluid in the longitudinal direction.

3,692,096

**BOILER PLANT INCLUDING TWO ROTARY REGENERATIVE AIR PREHEATERS**

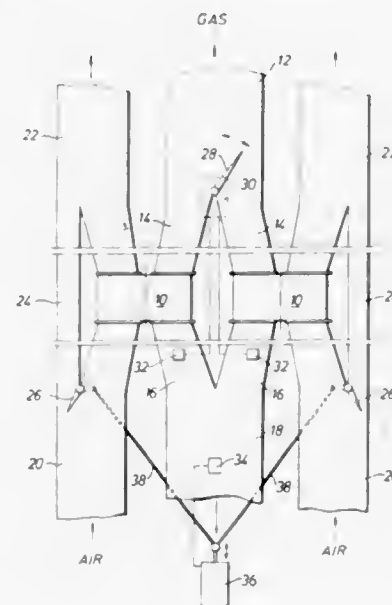
Birger Pettersson, Alta, and Bo Johansson, Kungsbacka, both of Sweden, assignors to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden

Filed April 12, 1971, Ser. No. 133,318  
Claims priority, application Great Britain, April 14, 1970, 17,666/70

Int. Cl. F28d 19/00

U.S. Cl. 165-7

5 Claims



In a boiler plant including two rotary regenerative air preheaters connected in parallel in conduits branched off from main air and gas ducts are provided flow distributing damper means controllable such as to keep the discharge temperatures of the gas flows from the preheater at the same value.

3,692,097

**THERMAL REGENERATORS**

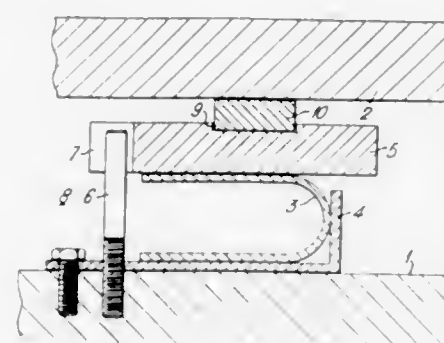
Robert Noel Penny, Solihull, England, assignor to Leyland Gas Turbines Limited, Lode Lane, Solihull, Warwick County, England

Filed Sept. 28, 1970, Ser. No. 75,887  
Claims priority, application Great Britain, Nov. 13, 1969, 55,513/69

U.S. Cl. 165-9

Int. Cl. F28d 19/04

4 Claims



A thermal regenerator of the kind having a rotary disc-type matrix, traversed by segregated flows of heat-exchanging fluids, is equipped with a sealing assembly in which a support of non-metallic refractory material locates and supports a sealing element that makes rubbing contact with the corresponding face of the matrix; the sealing assembly also including a flexible sealing member of thin sheet metal which is designed to be pressed firmly against the support by the pressure-differential of the heat-exchanging fluids.

3,692,098

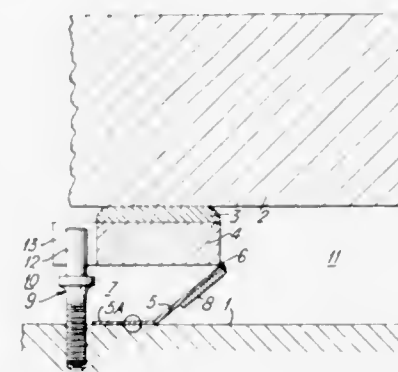
**THERMAL REGENERATORS**

Mark Cary Sedgwick Barnard, Kenilworth, England, assignor to Leyland Gas Turbines Ltd., Solihull, Warwick, England

Filed Feb. 2, 1971, Ser. No. 111,948  
Int. Cl. F28d 19/03

U.S. Cl. 165-9

3 Claims



A thermal regenerator having a rotary disc-type matrix enclosed in a casing which is traversed by two segregated flows of gaseous heat-exchanging fluids; and which is equipped with a sealing assembly which comprises: an endless counterface sealing pad that makes rubbing contact with the corresponding face of the matrix; a support ring carrying the sealing pad; a flexible sealing curtain of very thin metal secured to the support ring so as to be hingeable about a corner thereof, and extending obliquely across a gap existing between the support ring and the casing; a resilient backing member of sheet metal thicker than the curtain and secured to the support ring, which backing member supports the curtain and acts as a weak spring to maintain the pad in contact with the matrix; and seal-locating means permitting freedom of movement of the pad in a plane normal to the face of the matrix, and effective also to resist the torque applied frictionally to the pad by the rotation of the matrix.

3,692,099

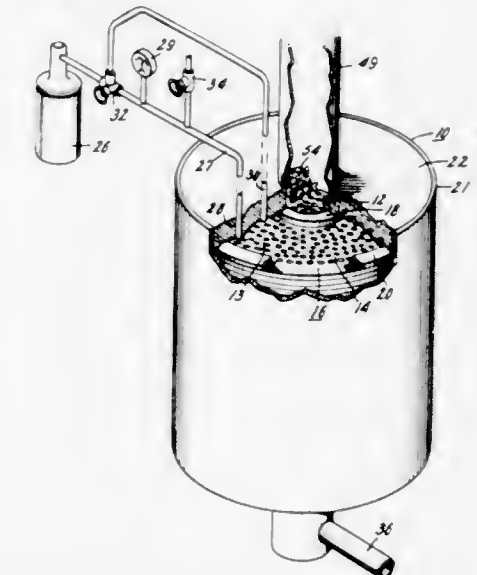
**ULTRA LOW TEMPERATURE THERMAL REGENERATOR**

Lloyd B. Nesbitt, and Robert B. Fleming, both of Scotia, N.Y., assignors to General Electric Company

Filed June 20, 1968, Ser. No. 738,535  
Int. Cl. F28d 17/00

U.S. Cl. 165-10

11 Claims



Temperatures below  $10^{\circ}$  K can be achieved operating on a Gifford-McMahon cycle by the utilization of a thermal regenerator having a pressure-regulated helium reservoir positioned within an annulus circumferentially disposed about a helium refrigerant flow channel. Thermal conduction between the cyclically flowing helium refrigerant and the helium reservoir is effected by a plurality of porous metallic plates disposed at a perpendicular attitude relative to the refrigerant flow stream with adjacent plates being separated by thermal insulators, e.g. plastic rings, bonded to the plates to inhibit longitudinal thermal conduction in the regenerator. Preferably the bonded rings are concentrically disposed to form external sidewalls defining the helium refrigerant flow channel and to contain the helium reservoir. Because the helium heat reservoir is situated at a location remote from the channel wherein the helium refrigerant flows, the heat capacity of the reservoir can be varied by adding or removing helium from the reservoir without adversely affecting the helium refrigerant flow through the regenerator.

3,692,100

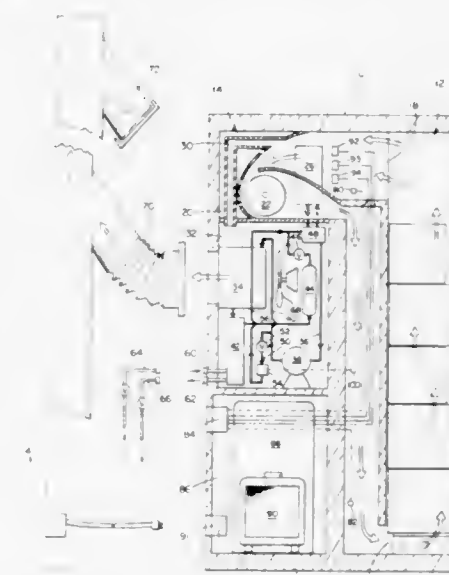
**MOBILE REFRIGERATOR SHIPPING CONTAINER UNIT**

George F. X. Gallagher, Jr., Medfield, Mass., assignor to United Brands Company, Boston, Mass.

Filed July 9, 1971, Ser. No. 161,153  
Int. Cl. F25b 29/00

U.S. Cl. 165-29

8 Claims



A mobile refrigerator shipping container unit adapted for both land and sea shipment has both air-cooled and water-



cooled condensers in the refrigeration system with connections which can be quick coupled to ship air exhaust and water circulating systems so that when the container is aboard ship it can utilize the ships systems including power and be relieved from operating on its own self-contained power generator which is operated only when external power is not available as during land transportation aboard a truck trailer or railroad car. The unit has other novel features and controls peculiarly adapted for use in such a container unit.

3,692,101

Patent Not Issued For This Number

3,692,102

Patent Not Issued For This Number

3,692,103

# **DEVICE FOR EVAPORATIVE COOLING OF METALLURGICAL FURNACES**

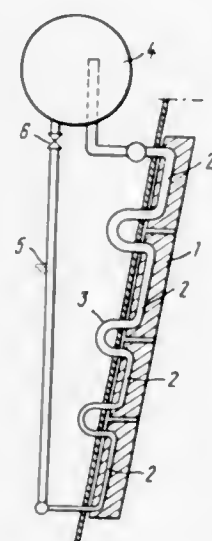
Sergei Mikhailovich Andoniev; Dorina Borisovna Kutsyovich; Leonid Moiseevich Gerber; Gennady Alexandrovich Kudinov; Grigory Ivanovich Kasyanov; Tamara Izovna Nissenbaum; Jury Bortsovich Raikovsky, all of Kharkov; Mikhail Semenovich Somchenko, and Oleg Vladimirovich Filipiev, Kharkov, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatskiy i proektny Institut po Ochistke Tekhnologicheskikh gazov i stochnykh vod i ispolzovaniyu vtorichnykh onogorodurov predpriyatiy chernoi metallurgii, Kharkov, USSR

Filed Nov. 3, 1970, Ser. No. 86,555

Int. Cl. C21b 7/10; F28j 13/08

U.S. Cl. 165-105

2 Claims



A device for the evaporative cooling of metallurgical furnaces has vertically arranged members provided with pipes for passing a coolant and the pipes of the members arranged at a lower level being connected with the pipes of the members of a higher level by means of external pipes, with the cross section of the pipes of both types in each higher member being greater than that of the lower types.

3,692,104

# **HEAT EXCHANGE**

Joseph Gerstmann, Sudbury, Mass., assignor to Steam Engine Systems Corporation, Newton, Mass.

Filed Feb. 3, 1970, Ser. No. 8,280

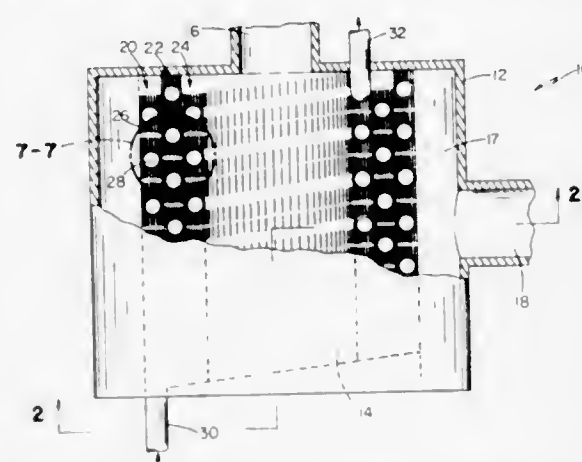
Int. Cl. F28f 1/14

U.S. Cl. 165-163

7 Claims

A thermoconductive, fluid-confining tube has a plurality of thermoconductive elements each having opposed major sur-

faces, in thermoconductive contact with the outer surface of the tube, each element having a major dimension extending outwardly from the outer tube surface and a major dimension extending substantially parallel to the axis of the tube, and a smallest dimension, and is adapted for heat exchange with a second fluid directed along the surface of the tube, in an



overall flow direction substantially parallel to the smallest dimension of the elements; the thermoconductive elements are spaced apart in the flow direction and define open areas perpendicular to the flow direction with the total per cent of open area perpendicular to the flow direction being less than the total per cent of open area in the plane perpendicular to the tube axis.

3,692,105

# **HEAT EXCHANGERS**

Joseph M. O'Connor, Chicago, Ill., assignor to Peerless of America, Incorporated, Chicago, Ill.

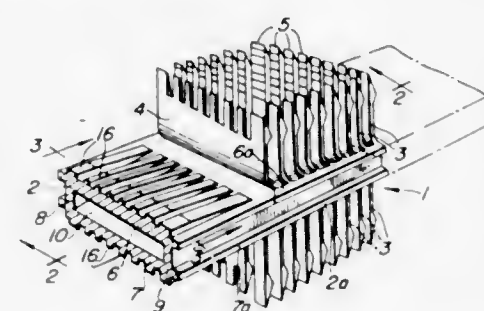
Continuation-in-part of Ser. No. 34,715, May 5, 1970,

abandoned. This application Sept. 2, 1970, Ser. No. 68,910

Int. Cl. F28f 1/16

U.S. Cl. 165-181

9 Claims



A heat exchanger embodying an elongated tubular member with integral elongated fins extending transversely thereacross and projecting outwardly therefrom, the fins terminating at their outer longitudinal edges in spaced spines.

3,692,106

# **APPARATUS FOR EJECTING FLUID IN A BOREHOLE**

Edward R. Basham, 4125 Driskell, Fort Worth, Tex., and William D. Smith, 4217 Sarita, Fort Worth, Tex.

Filed April 12, 1971, Ser. No. 133,155

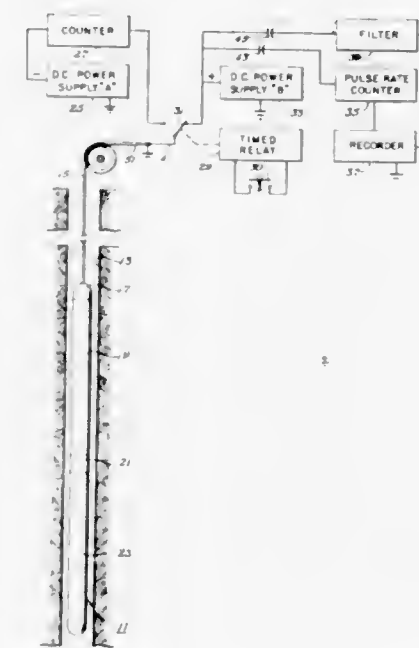
Int. Cl. E21b 43/00

U.S. Cl. 166-53

21 Claims

An improvement in apparatus for ejecting a fluid in a borehole penetrating subterranean formations characterized by; in addition to the conventional surface equipment, wireline, and downhole tool; a motor driving an accurate dispensing cylinder and piston, and a measuring and stopping means connected with the motor for measuring when a predetermined quantity of fluid has been ejected and for stopping the motor. Also disclosed are other aspects of a complete apparatus assembly including:

1. a sensor means in the downhole tool;
2. a timed relay and switch for supplying a timed power pulse to the motor and thereafter monitoring the sensor



- means; and
3. specific structure and electrical schematic diagrams for improving the accuracy of the ejection of the quantity of fluid, and for refilling the downhole tool at the surface.

3,692,107

# **TUBING HANGER ASSEMBLY AND METHOD OF USING SAME FOR HANGING TUBING IN A WELL UNDER PRESSURE WITH NO CHECK VALVE IN TUBING**

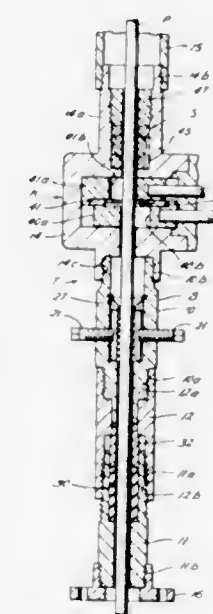
Damon T. Slator, and Archie W. Pell, both of Houston, Tex., assignors to Bowen Tools, Inc.

Filed Feb. 23, 1971, Ser. No. 117,946

Int. Cl. E21b 29/00

U.S. Cl. 166-55

6 Claims



A tubing hanger assembly and method of using same for hanging tubing in a well under pressure, wherein the tubing has no check valve therewith. The assembly includes means for sealing off around the tubing, supporting the tubing, cutting the tubing after so sealed and supported, shutting off flow through the tubing above the portion of the tubing remaining in the well after cutting it off, so that the wellhead equipment above the tubing hanger may be removed while leaving the tubing available for injecting chemicals into the well and for performing similar well operations.

3,692,108

# **PROPELLING DEVICES FOR TOOLS TO LOWER OR RAISE SAFETY APPLIANCES IN OIL WELLS**

Guy Soulie, No. 6, La Charlotte, 64 Billere, and Gerard Lozach, 39-45, avenue du Nord, 93 Neuilly-plaisance, both of France

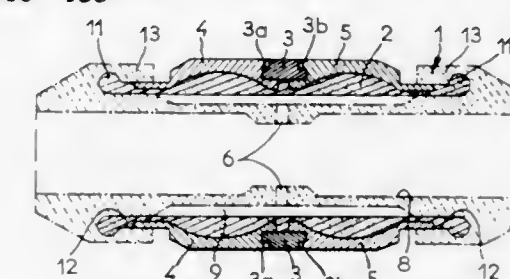
Filed April 15, 1971, Ser. No. 134,184

Claims priority, application France, April 17, 1970, 7013942

Int. Cl. E21b 33/127

U.S. Cl. 166-153

6 Claims



A hydraulic propelling device for oil-well tools, consisting of a hollow cylindrical body containing radial openings of small diameter, and characterized by the fact that a membrane of elastically deformable material, both ends of which are embedded in the said hollow cylindrical body, is equipped with one series of metal fittings, attached round the middle at right angles to the axis of the propelling device, with two other series of metal fittings on each side of this first series.

3,692,109

# **WIRE LINE CENTRALIZER ASSEMBLY**

Bobby W. Grayson, 7306 Pembroke Ave., Oildale, Calif.

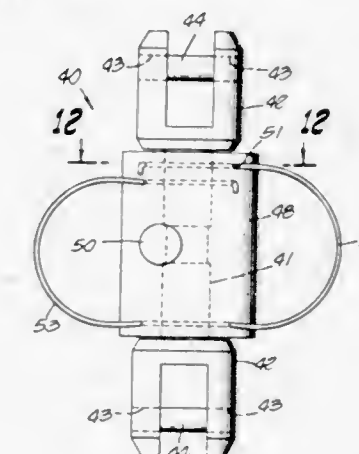
Division of Ser. No. 27,214, April 10, 1970, Pat. No.

3,572,245. This application Oct. 28, 1970, Ser. No. 84,738

Int. Cl. E21b 17/10

U.S. Cl. 166-241

8 Claims



A wire line centralizer designed for fast assembly to and disassembly from an oil well line. The centralizer body is slotted laterally to receive the wire line and includes fastener means for holding the centralizer in a selected place along the line with the aid of stop means fixed to the line crosswise of the centralizer slot.

3,692,110

# **IN SITU RETORTING AND HYDROGENATION OF OIL SHALE**

Guido O. Grady, Tulsa, Okla., assignor to Cities Service Oil Company

Continuation-in-part of Ser. No. 718,115, April 12, 1968, Pat.

No. 3,601,193. This application Dec. 31, 1969, Ser. No.

889,710

Int. Cl. E21b 43/24, 43/26

U.S. Cl. 166-245

8 Claims

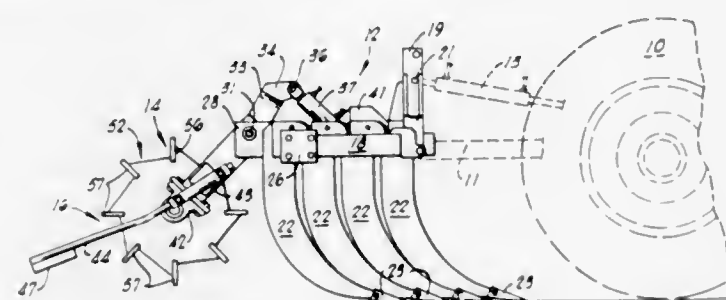
Initiation and support of the in situ retorting and hydrogenation of oil shale is accomplished by injecting a retorting fluid







portion of the frame, in a position behind the plow, means is located for pulverizing earth thrown up by the plow. The pulverizing means may include one or more reel structures, each of which has a plurality of horizontally-extending, radially disposed blades secured to and rotatable with one or more horizontal axes. In addition, adjusting means are provided for



rotating the pulverizing means in a limited arc around a portion of the rear of the plow to increase or decrease the depth of operation of the pulverizing means. If desired, a leveling blade may be secured to a portion of the pulverizing means to provide additional smoothing to the earth over which the apparatus is drawn.

3,692,121

#### HINGE LOCKING MEANS FOR A FOLDABLE AUXILIARY TOOL FRAME

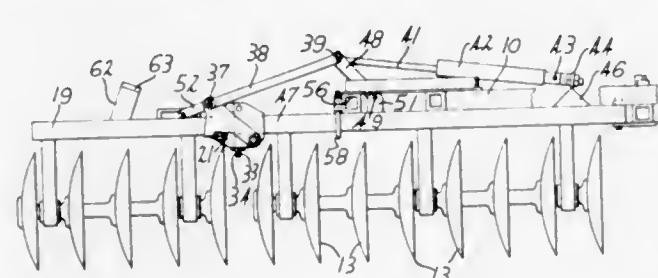
William D. Kenney, Meridian, Miss., assignor to Midland Manufacturing Company, Inc.

Filed Nov. 2, 1970, Ser. No. 85,894

Int. Cl. A01b 65/02, 63/32

U.S. Cl. 172-456

5 Claims



An earth working implement comprising a main frame which may carry earth working tools, together with foldable extendable side gangs of working tools. The invention is particularly directed to means to raise, lower, and lock the wing gangs in positive manner when in the working position. The invention embodies mechanism which permits the raising, lowering, locking and unlocking to be accomplished by a single motor such for instance, as a fluid pressure cylinder. The apparatus may be tractor drawn and the controls for the various cylinders may be located in easy reach of the tractor operator.

#### ERRATUM

For Class 172-116 see:  
Patent No. 3,692,164

3,692,122

#### HIGH FREQUENCY PNEUMATICALLY ACTUATED DRILLING HAMMER

Alfred R. Curington, Houston, Tex., assignor to Baker Oil Tools, Inc., Los Angeles County, Calif.

Filed Dec. 23, 1970, Ser. No. 100,887

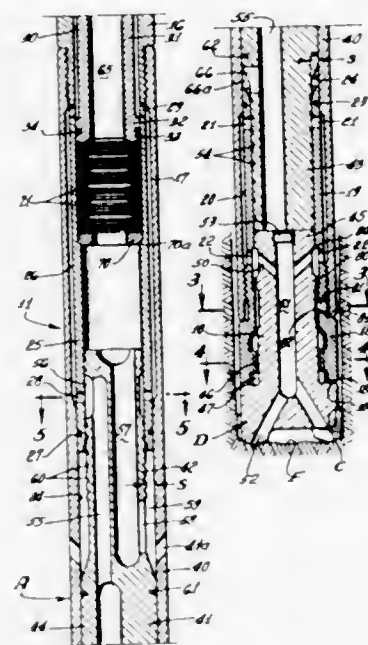
Int. Cl. E21b 1/06

U.S. Cl. 173-119

15 Claims

A drilling hammer in which a hammer piston in a cylinder is propelled in opposite directions by compressed air to impact repeatedly upon an anvil connected to a drill bit. On its return stroke, the hammer piston impacts against a spring device,

storing energy therein which is returned by the spring device to the piston on its downstroke, the spring device causing the frequency of reciprocation of the hammer piston to increase considerably, correspondingly increasing the power output of



the drilling hammer. Preferably, the spring device comprises a stack of Belleville springs or spring discs, which are more efficient in operation and which result in a more compact drilling hammer.

3,692,123

#### DRILLING MACHINE

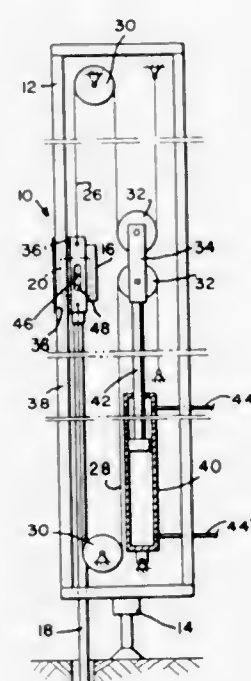
Laszlo Gyongyosi, Clarksburg, W. Va., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed Oct. 27, 1970, Ser. No. 84,271

Int. Cl. E21c 5/06

U.S. Cl. 173-147

2 Claims



A drilling machine comprising a tower formed of elongated members in which a drilling head assembly is slidably disposed for movement relative thereto by means of slide brackets. The brackets are slotted, and slidably receive dowels extending from the drilling head assembly to effect a loss of motion between the drilling head assembly and the brackets. Power-operated feed chains, in a manner well known, translate the slide brackets along the elongated members.

3,692,124

#### FEED DEVICE FOR A ROCK DRILL

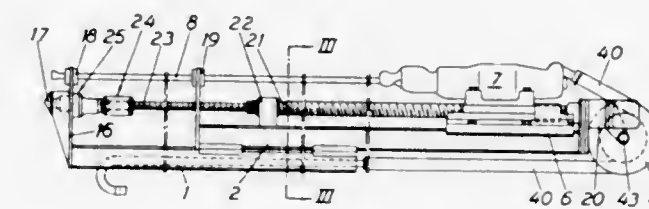
Erich Voldemar Kimber, 3 Mariebergsvagen, 130 50 Vendelso, and Josef Lewkowicz, 10 Edinsvagen, 130 10 Ektorp, both of Sweden

Filed March 29, 1971, Ser. No. 128,810

Int. Cl. E21c 5/02

U.S. Cl. 173-160

7 Claims



A feed device which is extendible by means of two cooperating feed screws and which comprises a coupling for locking the screws against rotation relative to each other or one of them relative to a girder unit. By interlocking the screws only half the feed range is available, and by locking one of them to a girder unit the full extended length can be used. One of the screws is hollow and provided with internal as well as external threads, the latter of which cooperates with a nut on a rock drill carrying slide. A hose guiding reel travels with half the speed of the rock drill and maintains a uniform tension in the hoses leading to the rock drill.

3,692,125

#### METHOD OF DRILLING OIL WELLS

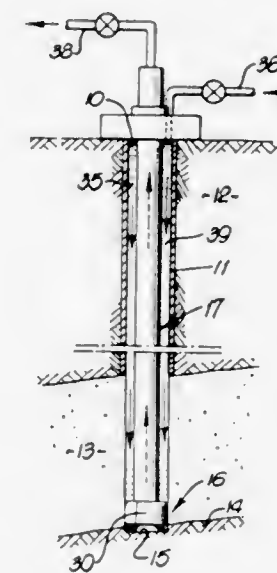
James L. Ruhle, 2535 E. Balfour Ave., Fullerton, Calif.

Continuation-in-part of Ser. No. 821,272, May 2, 1969, abandoned. This application Feb. 23, 1971, Ser. No. 117,966

Int. Cl. E21b 21/04

U.S. Cl. 175-65

8 Claims



A combination drilling and stimulation process for drilling oil wells and especially those through oil sand which contain a great deal of intergranular clay, which makes use of a clear solution containing calcium chloride instead of the usual drilling mud. The solution of calcium chloride is treated with a liquified surfactant, and the mixture is forced down the annulus formed between the drill pipe and drill collars, and the wall of the drill hole. At the bottom of the well the solution passes the cutting face of the bit and picks up the chips, flushing them outwardly through the drill collars and drill pipe and out at the top.

3,692,126

#### RETRACTABLE DRILL BIT APPARATUS

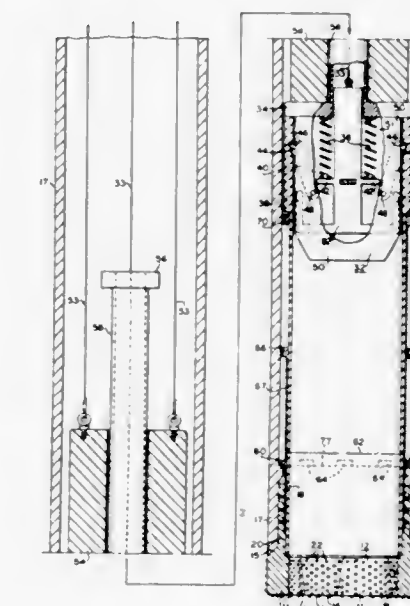
Frank C. Rushing, 6436 Bellevue Dr., and Albert B. Simon, 2918 Greenlow Court, both of Ellicott City, Md.

Filed Jan. 29, 1971, Ser. No. 110,870

Int. Cl. E21b 9/26

U.S. Cl. 175-259

4 Claims



Apparatus including a retractable annular drill bit formed by tightly interfitting groups of bi-directionally tapered sectors normally clamped in the lower end of a drill sub by an axially movable inner clamping sleeve. The sleeve is actuable by hammer blows from a releasable cable-operated elevator and hammer tool to effect expansion and contraction of such sector groups sequentially into and sequentially out of the drill sub interior for insertion and removal via the interior of the drill string to which the drill sub is attached. Axially movable flexible translational support stem assemblies for the bit sector groups, in affiliation with a system of radially fixed stop shoulders, cooperate with axial movement of the clamping sleeve to enable it to effect such sector group expansion and contraction. A separately removable core barrel accepts the core sample made by the bit.

3,692,127

#### ROTARY DIAMOND CORE BIT

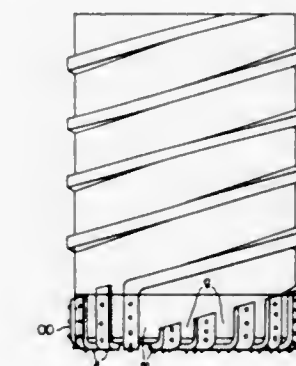
Walter R. Hampe, Severna Park; Albert B. Simon, Ellicott City, both of Md.; William H. Hampton, and William E. Decker, both of Punxsutawney, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh and Hoffman Diamond Products, Inc., Punxsutawney, Pa., part interest to each

Filed May 10, 1971, Ser. No. 141,684

Int. Cl. E21b 9/36

U.S. Cl. 175-330

4 Claims



Described is an improved rotary diamond core bit offering longer life in dry and in chip flush drilling. Grade AAAA dodecahedron diamonds within the range of 18 to 22 diamonds per carat size, each having a select rectangular



pyramid point region free of internal flaws and with an included angle of  $100^\circ$  to  $120^\circ$ , are anchored in a bit matrix to project such select point regions outwardly a distance of  $0.015 \pm 0.003$  inch from a semi-round angular bit face in hard-vector face-set orientation in the rotary cutting direction of the bit and with a negative rake angle of nominally  $4\frac{1}{2}^\circ$ . Such bit-face diamonds are arranged in circumferentially spaced-apart rows extending radially outward and backward with respect to rotary motion of the bit. Such "snow-plow" linear arrays of bit-face diamonds are disposed on respective discrete similarly snow-plow-oriented land areas or cutting segments of the annular bit face, and chip release face grooves extend from inner to outer diameter of the annular bit face between all cutting segments. The diamonds on the annular segmented cutting face are arranged with the tips of their projecting cutting portions at equal radial intervals of  $0.010 \pm 0.001$  inch along concentric line circles. Thirty-seven line circles cover the full annular segmented bit face region, and two diamonds are employed in all but the innermost and outermost line circles, which each have four. Axially extending chip release grooves at the inner and outer diameters of the bit register with opposite ends of the bit-face grooves, and axially extending rows of reaming diamonds continue from opposite ends of the rows of bit-face diamonds. A curvature of  $0.050 \pm 0.005$  inch at the intersection of each cutting segment surface and the inner and outer diameter portions of the bit enable proper non-girth-exposing anchoring and the  $0.015$  inch projection of the diamonds in the transition region between the bit-face diamonds and the reaming diamonds at the interior and exterior surfaces of the bit. The axially extending chip release grooves in the outer diameter portion of the bit feed into auger grooves formed in a continuing shank portion of the bit for dry or wet chip removal.

3,692,128

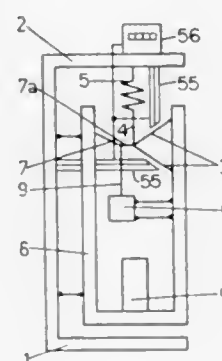
## ELECTRICAL MASS METER

Mario Gallo, Zurich, Switzerland, assignor to Gallo Wirth & Co., Zurich, Switzerland  
Continuation of Ser. No. 758,319, Sept. 9, 1968, abandoned.  
This application Jan. 26, 1971, Ser. No. 109,973  
Claims priority, application Switzerland, Sept. 25, 1967, 13392/67

Int. Cl. G01g 3/14

U.S. Cl. 177—210.

6 Claims



An electrical mass meter having a frame with a baseplate, a weighing platform, a pre-tensioning mass linked to a force distributor which is in turn linked to the weighing platform, a plurality of transversely vibratable pre-tensioned strings having one end fixed to the weighing platform and the other end to the force distributor, and a transmitting element fixed to the frame and the strings, supporting thereby the weighing platform and transmitting to the strings an additional force proportional to a mass to be measured.

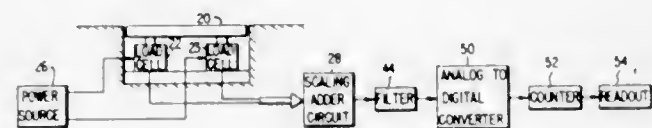
3,692,129  
LOAD CELL WEIGHING SYSTEMS  
Chapin A. Pratt, Rutland Town, Vt., and Gilbert A. Godwin, Oakland, N.J., assignors to Howe Richardson Scale Company, Clifton, N.J.

Filed April 12, 1971, Ser. No. 132,962

Int. Cl. G01g 3/14, 23/16, 23/37

U.S. Cl. 177—211

18 Claims



An electrical load cell-type weighing system having a plurality of load cells supporting a load-receiving structure and providing electrical potentials, the sum of which is a function of the weight of a load applied to the load-receiving structure. Summing resistor networks directly connect the load cell bridges independently of each other to a summing junction of a single ended operational summing amplifier. The potentials produced by the load cells are algebraically summed at the summing junction. Another disclosed feature pertains to a defective load cell testing circuit comprising a switch for selectively providing a short circuit connection across the output terminals of each load cell bridge to determine whether the load cell is defective. Another feature pertains to a special operational amplifier summing network which selectively provides weight measurements in different units of mass such as pounds and kilograms.

3,692,130

## IMPROVED OVERLAND VEHICLE

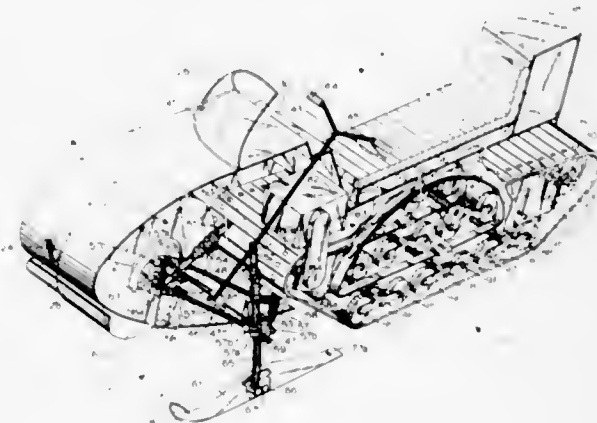
Jack C. Stacy, Jr., Rt. 2, Box 184, Santa Fe, N. Mex.

Filed Feb. 24, 1970, Ser. No. 13,526

Int. Cl. B62m 27/02

U.S. Cl. 180—5 R

6 Claims



An improved multi-purpose overland vehicle used for traversing dry land as well as snow, sand, and wet or marshy land, having an improved independent front suspension and steering system, with a mechanism for quickly exchanging front wheels for skis and vice versa, and a wobble boggie drive track support system, suspended by longitudinal leaf springs designed so as to provide maximum traction when traversing rough terrain and to elevate the rear idler sprocket mechanism of the track support assembly if desired.

3,692,131

Patent Not Issued For This Number

3,692,132

## IMPROVED MOTOR SLEDGE

Kyosti Johannes Pollanen, Isokyla, Finland, assignor to Velsa Oy, Kurikka, Finland

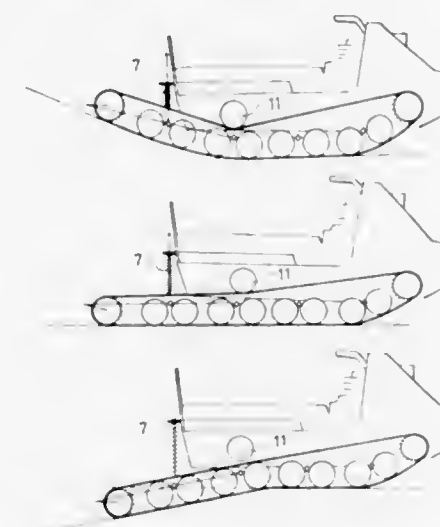
Filed April 26, 1971, Ser. No. 137,477

Claims priority, application Finland, April 27, 1970, 1168

Int. Cl. B62m 27/02; B62d 55/16

U.S. Cl. 180—5 R

2 Claims



In a motor sledge having a supplementary frame extending from the rear end of the frame construction and flexibly pivoting around a horizontal axis the slackening of the common drive belts due to upward movement of the supplementary frame is prevented by a pair of rolls freely rotatable above the point of pivoremment. When the supplementary frame pivots upwardly the upper surface of the drive belts are pressed against the rolls.

3,692,133

Patent Not Issued For This Number

3,692,134

## POWER FOLDABLE DELIMBING PLATFORM

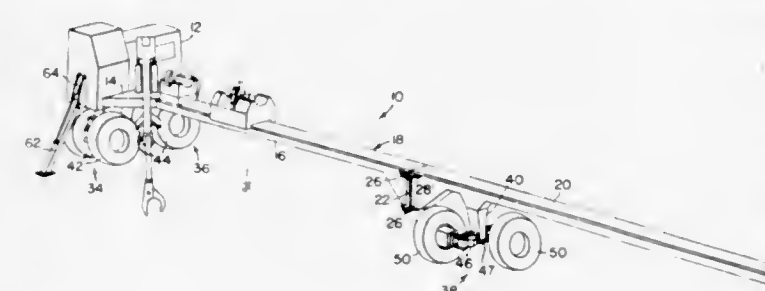
Leonard Laverne Shepherd, and Victor Charles Pierrot, both of Dubuque, Iowa, assignors to Deere &amp; Company, Moline, Ill.

Filed April 26, 1971, Ser. No. 137,154

Int. Cl. B62d 61/10

U.S. Cl. 180—12

4 Claims



A self-propelled delimbing machine includes a horizontal T-shaped frame having a length suitable for supporting full-length trees. First and second ground wheel assemblies are respectively supportingly connected to the opposite ends of the head portion of the frame and a third ground wheel assembly is supportingly connected to the leg portion of the frame at a location spaced more than half the length of the leg portion from the head portion. The leg portion of the frame is divided into first and second sections of approximately equal length, the first section extending from the head portion of the frame and the second section being connected in end-to-end relationship to the first section by a vertical hinge joint. The hinge joint is locked to prevent pivoting when the machine is

in a delimbing or working mode and is unlocked to permit the second section to be pivoted to a folded position alongside the first section to shorten the delimbing machine for transport. The pivoting of the second section on the hinge joint is accomplished by operation of the third wheel assembly, which includes drivable and steerable wheels. Stabilizer leg means are mounted on the head portion of the frame and are selectively operated to engage the ground and give added stability to the vehicle when the second section of the leg portion of the frame is being folded.

3,692,135

## SELF-PROPELLED PIPE CART

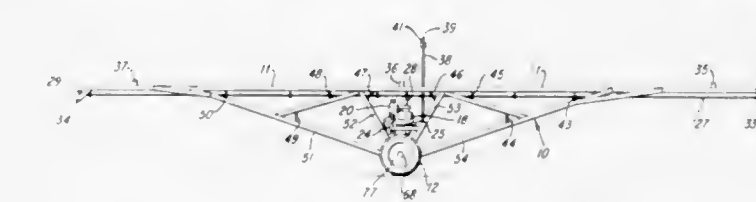
Paul Holzmann, Rt. 3, Box 151, Van Buren County, Mich.

Filed June 1, 1970, Ser. No. 42,157

Int. Cl. B62d 51/04

U.S. Cl. 180—19 R

6 Claims



Self-propelled pipe cart adapted to carry lengths of pipe comprises a frame having a platform and wheels mounted on said frame. Each wheel is driven by a separate hydraulic motor, preferably mounted on a floating axle.

3,692,136

Patent Not Issued For This Number

3,692,137

## VEHICLE POWER STEERING CONTROL DEVICE

Naohiko Inoue, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

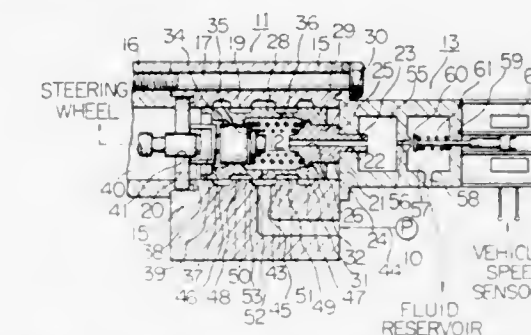
Filed May 11, 1971, Ser. No. 142,216

Claims priority, application Japan, Aug. 6, 1970, 45/68296

Int. Cl. B62d 5/08

U.S. Cl. 180—79.2 R

7 Claims



A vehicle power steering control device including a reaction assembly which applies a reaction force on the steering wheel that depends on both steering effort and vehicle speed. The device comprises a vehicle speed-responsive modulator valve adapted to control pressure in a reaction chamber transmitted from a fluid pump. Since the pressure from the fluid pump is proportional to steering effort on the power cylinder, the modulated pressure in the reaction chamber depends on both steering effort and vehicle speed and gives rise to a corresponding reaction applied on the steering wheel. The modulator valve is arranged to reduce the pressure in the reaction chamber in accordance with the decrease in vehicle speed. Thus, for low vehicle speeds, the driver encounters a small resistance in turning the steering wheel and, on the other hand for high vehicle speeds, a large turning resistance is provided to avoid the danger of too rapid turning of the steering wheel and road wheels.



3,692,138

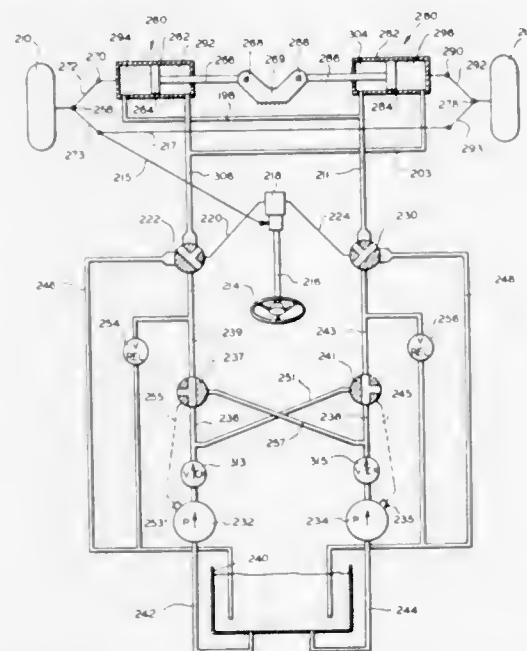
**DUAL STEERING SYSTEM**

Kenneth C. Witt, Buchanan, Mich., assignor to Clark Equipment Company

Filed Dec. 9, 1970, Ser. No. 96,559  
Int. Cl. B62d 5/08

U.S. Cl. 180—79.2 R

4 Claims



A dual fluid steering system utilizing two pumps to supply fluid to actuators which turn the wheels for steering. The control valves and other portions of the system are arranged so that each of the pumps supplies fluid to both of the actuators during normal operation whereby if one of the pumps fails, the other pump can continue to be utilized to operate both actuators and turn both of the wheels at a reduced rate under emergency conditions resulting from the failure of one pump. One control valve is connected to the head end of one actuator and the rod end of the other. The other control valve is connected to the rod end of the one actuator and the head end of the other.

3,692,139

**PARKING DAMAGE PREVENTION**

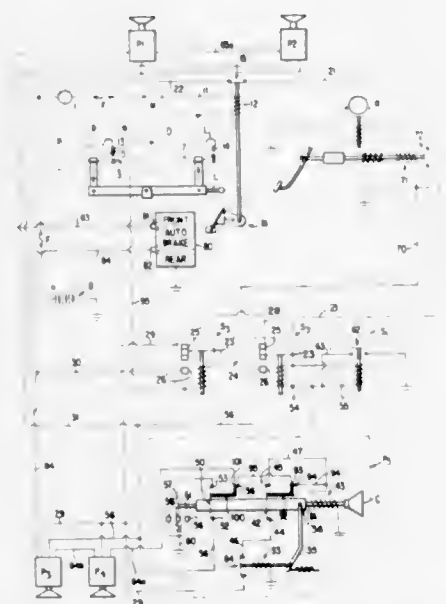
Lajos Pongracz, 429 Fairmount Ave. Apt. 110, Jersey City, N.J.

Filed Feb. 9, 1970, Ser. No. 9,735

Int. Cl. B60k 27/08; B60t 7/12

U.S. Cl. 180—94

10 Claims



An automatic braking system for parking which uses electromagnets to sense the proximity of adjacent cars and applies

the brakes before actual contact is made. A throttle-limit is preferably included to prevent involuntary override of the brake system by excessive gas pedal travel.

3,692,140

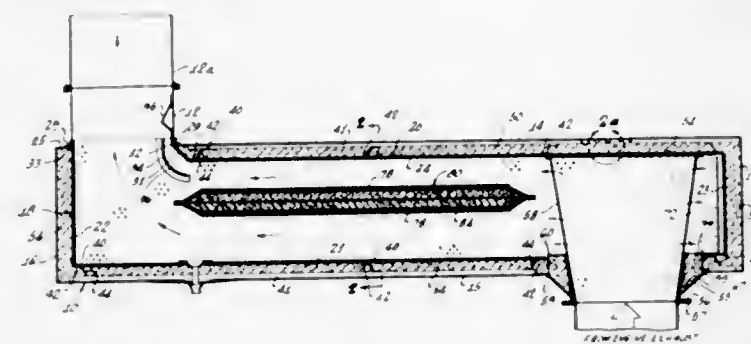
**EXHAUST NOISE SUPPRESSOR FOR GAS TURBINE**

Cloyd D. Smith, 14928 La Cumbre Dr., Pacific Palisades, Calif.

Filed April 5, 1971, Ser. No. 130,989  
Int. Cl. B64d 33/06; F01n 1/10, 7/18

U.S. Cl. 181—33 H

15 Claims



An exhaust noise suppressor is provided for a gas turbine. The turbine has an upwardly opening exhaust discharge port, and the suppressor is mounted thereabove, with its exhaust intake port receiving the turbine exhaust.

The suppressor comprises an elongated exterior shell, leading from the intake port to a stack, and inside thereof is a perforated interior wall structure or liner, spaced inside the shell walls to provide a space for a packing of high heat resistant sound insulation material. The interior perforated liner attains a high temperature, e.g., of the order of 1,100° F., and is subject to substantial thermal expansion. The invention features an arrangement by which the interior liner is free for thermal expansion within the longitudinal direction of the shell, as well as transversely thereof.

The turbine exhaust gas entering the intake port of the turbine casing opens inside a perforated conical diffuser, which reduces back pressure on the turbine to an important degree.

Running down the center of the longitudinal gas passage in the casing is a sound absorbing structure comprised of perforated side walls containing high heat resistant sound absorbing material.

The perforated walls are covered with fiber glass cloth.

3,692,141

**METHOD OF AND MEANS FOR NOISE ATTENUATION**

Andre Julien Labussiere, Fontenay-Fe-Fleury, and Joseph Henri Leon, Thiais, both of France, assignors to Avions Marcel Dassault, Rue du Professeur Pouchet, Vaucresson, France

Continuation of Ser. No. 844,794, July 25, 1969, abandoned.

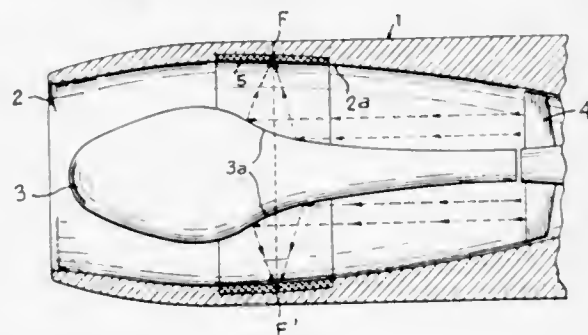
This application Oct. 28, 1971, Ser. No. 193,597

Claims priority, application France, July 26, 1968, 68160895

Int. Cl. B64d 33/06; F01n 1/24, 7/00

U.S. Cl. 181—33 E

8 Claims



The noise originating from acoustic energy transmitted through a duct is suppressed by focusing it, by means of

properly designed acoustic reflectors, so that it is concentrated on localized restricted zones of the duct wall, the provision of adequate sound absorptive linings being limited to these restricted zones. This noise suppressing system is applicable to air intakes of turbojets, turbofan casings, silencers for the jet of jet propulsion units.

3,692,142

**SPIRAL MUFFLER**

Leslie William Stemp, Ashford, England, assignor to Cowl Industries Limited, Ontario, Canada

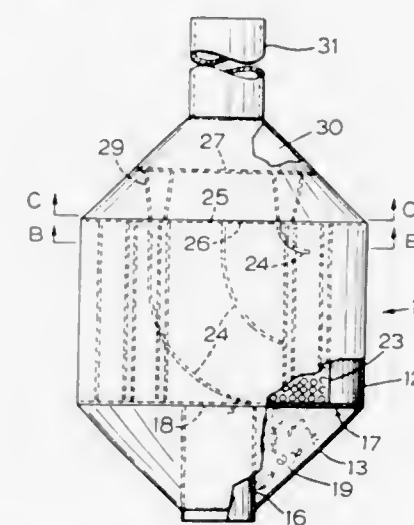
Filed June 14, 1971, Ser. No. 152,959

Claims priority, application Great Britain, June 19, 1970, 29,825/70

Int. Cl. F01n 1/10, 1/12

U.S. Cl. 181—50

11 Claims



A muffler or silencer having a spiral duct centrally disposed within a housing, with sound absorbent material between the ends of the housing and the ends of the spiral duct to reduce noise.

3,692,143

**EXTENSIBLE LADDER**

Walter Kummerlin, Gerokstrasse 6, 7120 Bisslingen, and Nikolaus Adalbert Kummerlin, Wannenstrasse 53, 7220 Schwenningen, both of Germany

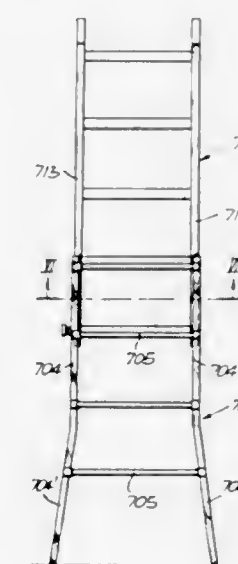
Filed Jan. 6, 1971, Ser. No. 104,395

Claims priority, application Germany, Jan. 14, 1970, P 20 01 416.8

Int. Cl. E06c 1/38

U.S. Cl. 182—24

13 Claims



An extensible ladder which is provided with at least two pairs of telescopically slidable stringers and in which each rung of the outer pair of stringers is divided longitudinally into

two rung parts between which the rungs of the other pair of stringers may be shifted longitudinally or locked so as to be in alignment with the rungs of the inner stringers. This ladder may also be designed as a convertible ladder consisting of two of these extension ladders which are pivotally connected at one end to each other so as either to permit them to be pivoted to an acute angle relative to each other to form a self-supporting double ladder or to be pivoted so as to be in straight alignment with each other to form a long straight ladder.

3,692,144

**FLUID DISTENSIBLE TRUSS**

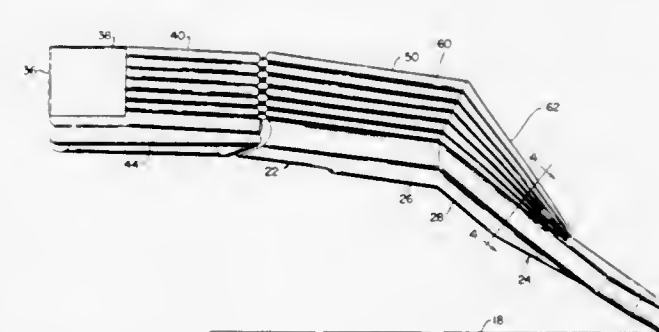
James R. Summer, and Randall F. White, both of Brielle, N.J., assignors to The Garrett Corporation, Los Angeles, Calif.

Continuation of Ser. No. 815,887, April 14, 1969, abandoned. This application Nov. 18, 1970, Ser. No. 90,819

Int. Cl. A62b 1/20; B65g 1/10

U.S. Cl. 182—48

20 Claims



Inflatable apparatus has a ramp body which is deployable over an aircraft wing as a walkway having a fabric walkway surface configured as essentially flat by tensioned partition strips in the ramp body, imparting to its walkway surface a slightly arcuately ribbed configuration. An inflatable slide body coupled to an end of the ramp body may support the ramp body end, or alternatively the end may be supported by an integral inflatable column body portion extending from the ramp end to the ground.

3,692,145

**EMERGENCY FIRE ESCAPE MEANS**

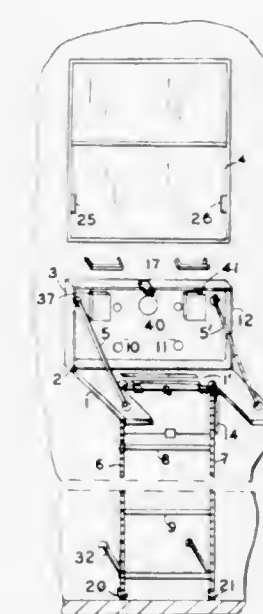
Philip M. Banner, 28 Oxford Rd., Massapequa, N.Y.

Filed April 26, 1971, Ser. No. 137,244

Int. Cl. E06c 9/14

U.S. Cl. 182—70

3 Claims



A fire escape device adapted to be mounted to an external wall of a building below a window. A platform is pivotally mounted on a wall. The chain or wire ladder is connected to the platform. When the platform is folded up, it provides an



enclosure for the folded ladder. When the enclosure is opened, the platform falls pivotally to a horizontal position. The platform has a trap door in it, operating on hinges that also allow it to pivot downward and release the ladder inside. The ladder descends to the ground.

3,692,146

**GASTURBINE WITH BEARING COOLING MEANS**

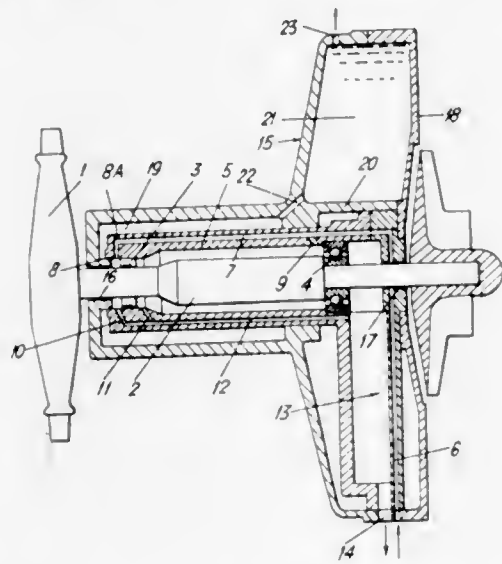
Lawrence Butler, Solihull, England, assignor to Leyland Gas Turbines Limited, Solihull, England

Filed Feb. 8, 1971, Ser. No. 113,314

Int. Cl. F16n 7/02

U.S. Cl. 184—6.1

4 Claims



A regenerative gas turbine engine in which each of the turbine shaft bearings is supported in a housing which forms part of a lubricating system and which has oilways leading to and from the corresponding bearing. Surmounting the bearing housing is an oil reservoir which, during running of the engine, becomes filled with oil bled from one of the oilways of the bearing housing. The reservoir has at its top an overflow hole through which surplus oil is returned to a sump and, when the engine is shut down, the oil stored in the reservoir is exploited to cool the shaft bearings.

3,692,147

**BRAKE SYSTEM USING VEHICLE'S OWN KINETIC ENERGY TO CONTROL THE BRAKE AND THE DEVICE THEREOF**

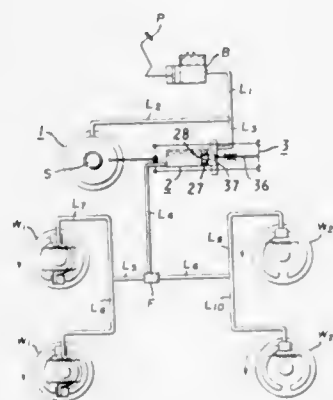
Chin-Jung Yeh, No. 307, Chung Cheng Rd, Hua-Lien, and Yu-Chi Yang, No. 3, Lane 196, Lin-Sen Rd., both of Taiwan, China/Taiwan

Filed April 9, 1971, Ser. No. 132,866

Int. Cl. B60t 1/06

U.S. Cl. 188—2 R

7 Claims



Disclosed herein is a brake system for a vehicle, wherein the kinetic energy of the vehicle is used to control the brake. An auxiliary brake wheel, and an intermediate high pressure oil

cylinder connected with the brake wheel by a link and piston rod assembly, are fitted between a brake master cylinder in the hydraulic brake system and an oil passage which distributes the brake fluid to the joints of branch oil tubes of various brake wheels. The auxiliary brake wheel is fitted to the end of the vehicle transmission shaft; the auxiliary brake wheel uses an angular displacement of its braking disc, upon application of the brakes, to produce a rectilinear motion of the link and piston rod assembly, thereby further pressurizing the high pressure oil cylinder; and the high pressure oil cylinder is connected by fluid lines to each of the vehicle wheels, so that a strong, fast-acting, and efficient braking effect is obtained.

3,692,148

**DISC BRAKE AND SUPPORT MEANS THEREFOR**

Jean-Marc Hauth, Pont-A-Mousson, France, assignor to Societe Des Fonderies De Pont-A-Mousson, Nancy, France

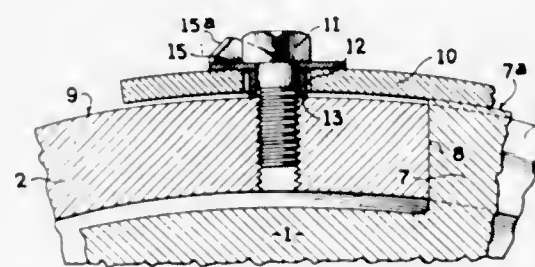
Filed June 4, 1971, Ser. No. 150,094

Claims priority, application France, June 16, 1970, 7022037

Int. Cl. B60t 1/06

U.S. Cl. 188—18 A

8 Claims



Disc brake having a floating disc driven in rotation by a drum through keying means. The keying means comprise projections on the disc which extend into recesses in the drum. A spring strip resiliently engages an outer peripheral face of each projection and is secured to the drum at each end of the strip by means which allow freedom of movement of the strip axially and circumferentially of the drum and maintain the strip in engagement with the peripheral face and substantially parallel to a plane perpendicular to the axis of rotation of the drum.

3,692,149

**CAM ACTUATED INTERLOCK FOR PIVOT ARM**

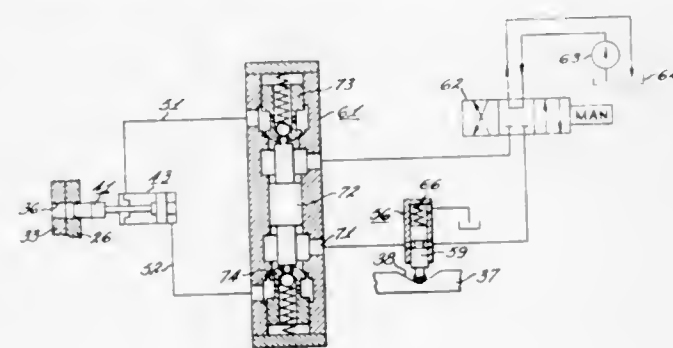
John H. Evans, Springfield, Ill., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed May 26, 1971, Ser. No. 146,900

Int. Cl. B62c 7/02

U.S. Cl. 188—69

9 Claims



A control circuit for a locking pin which releasably locks a swingable support member of a tool positioning mechanism to a vehicle frame member. A cam actuated blocking valve in the circuit prevents movement of the locking pin actuator when the pin is not aligned with a hole. A locking valve in the locking pin actuator circuit insures locking pin tightness.

3,692,150

**OXIDATION BARRIER FOR A CARBON FRICTION DISC**

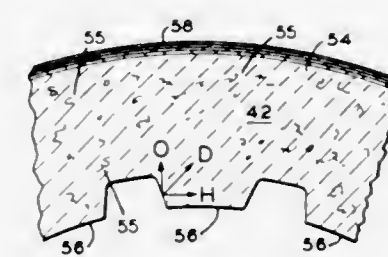
Joseph P. Ruppe, Jr., South Bend, Ind., assignor to The Bendix Corporation

Filed Oct. 26, 1970, Ser. No. 84,027

Int. Cl. F16d 55/36

U.S. Cl. 188—71.5

4 Claims



A carbon friction disc for a brake assembly having woven strips of carbon secured to the periphery thereof which is subjected to radial forces. The woven strip provides the carbon disc with the structural resistance which is necessary to inhibit oxidation of this periphery during high temperature operation of the friction disc.

3,692,151

**SPOT-TYPE DISK BRAKE**

Toyoaki Kobayashi; Yoshinori Mori, and Shiego Aiki, all of Kariya, Japan, assignors to Aishin Selki Kabushiki Kaisha, Aichi-ken, Japan

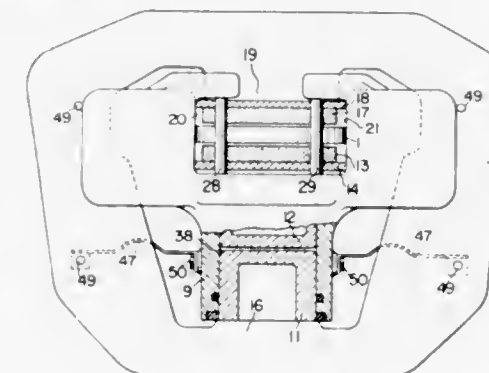
Continuation of Ser. No. 3,550, Jan. 16, 1970, abandoned, which is a continuation of Ser. No. 765,858, Oct. 8, 1968, abandoned. This application Nov. 13, 1970, Ser. No. 89,435

Claims priority, application Japan, Oct. 16, 1967, 42/66797; Oct. 16, 1967, 42/66798; Nov. 14, 1967, 42/95858

Int. Cl. F16d 55/228

U.S. Cl. 188—72.5

6 Claims



A hydraulic motor is mounted on a non-rotating or stationary part of a vehicle and has two opposed pistons in head-to-head arrangement within a single cylinder with open ends, one piston operating in braking operation to press, directly, a friction pad against one flat side of a brake disk fixed coaxially to a rotating part of a wheel, and the other piston operating, through a yoke-like movable member to press another friction pad against the other flat side of the brake disk. The friction pads are held and slidably guided by a part of the hydraulic motor structure, whereby the reaction force due to braking on the friction pads is received and borne by the stationary part.

3,692,152

**SLACK ADJUSTER CONNECTION ARRANGEMENT**

Karl Bertil Larsson, Malmö, Sweden, assignor to Srieniska Aktienbolaget Bromsregulator, Malmö, Sweden

Filed Dec. 15, 1970, Ser. No. 98,351

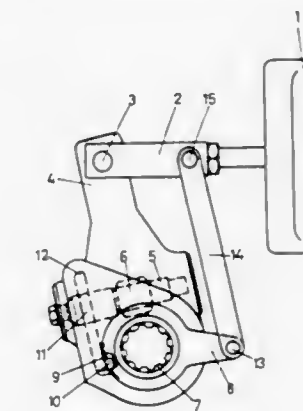
Int. Cl. F16d 65/56

U.S. Cl. 188—79.5 K

4 Claims

A slack adjuster is shown which is splined to a rotatable brake shaft. The slack adjuster serves to rock about that shaft

by a linkage coupling the shaft to a brake applying piston rod. The slack is adjusted by means of a worm wheel mechanism mounted on and secured against rotation relative to the shaft wherein slack is adjusted by altering the position of the linkage about the shaft when the worm wheel is rotated. In the linkage is coupled a radial arm rotatable about said shaft in a housing



forming part of the linkage. A rigid link is connected between the radial arm and the piston rod to confine rotation of the radial arm about said shaft.

3,692,153

**PNEUMATIC BRAKE ACTUATOR**

Peter De Hertel Eastcott, and William Herbert Jackson, both of Peterborough, Ontario, Canada, assignors to Canadian General Electric Company, Limited, Toronto, Ontario, Canada

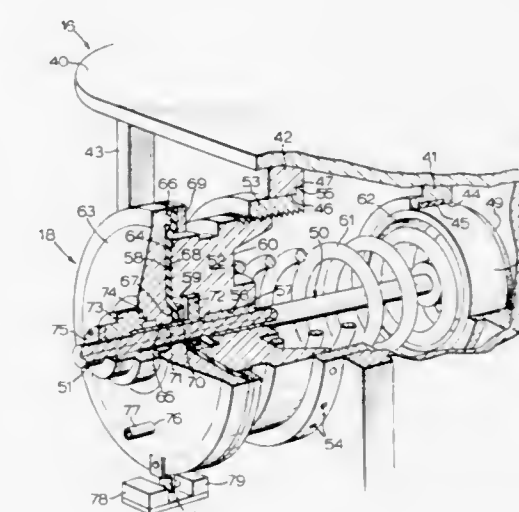
Filed Jan. 29, 1971, Ser. No. 110,990

Claims priority, application Canada, April 14, 1970, 080,032

Int. Cl. F16d 65/24

U.S. Cl. 188—170

7 Claims

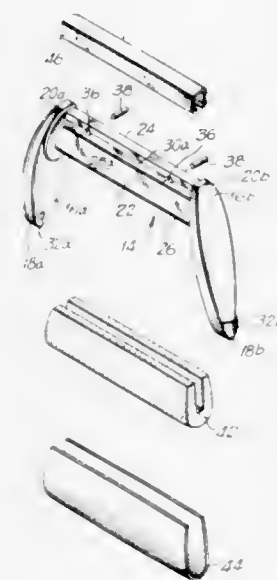


A pneumatic brake actuator comprises a coaxial array of a disc-shaped brake shoe, a cylindrical shoe carrier supported for axial movement, a compression coil spring, a fixed cylindrical carrier, a ring diaphragm, a disc-like head, a nut, and a rod secured to the movable carrier and projecting axially therefrom through the spring and through axial openings in the fixed carrier, diaphragm, head and nut. The rod is guided for axial movement by a bearing surface in the opening of the fixed carrier. It is fitted into the opening in the head and its free end is threaded into the nut so as to compress the spring between the two carriers. The diagram is located between flat surfaces on the fixed carrier and the head and is secured to the head along its outer and inner edges. An opening is provided in the head for admitting compressed air into the space between the head and the diaphragm. In operation, the spring applies the brakes and the compressed air releases them.



3,692,154  
Patent Not Issued For This Number

3,692,155  
**HANDLE ASSEMBLY**  
Joseph N. Laurita, Maspeth, N.Y., assignor to Lark Luggage Corporation  
Filed Oct. 22, 1970, Ser. No. 82,887  
Int. Cl. A45c 13/26  
U.S. Cl. 190—57 8 Claims

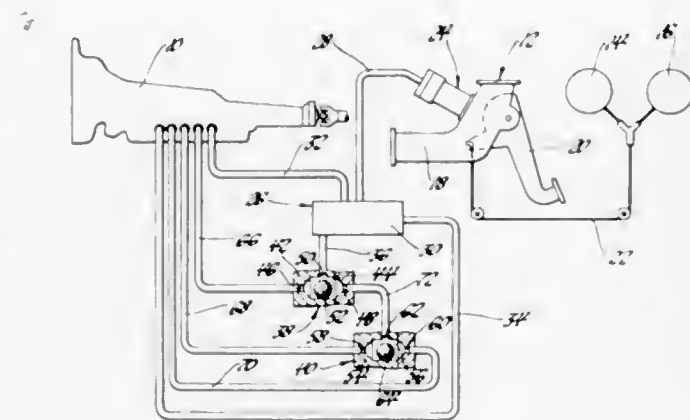


A handle assembly adapted to be connected with articles such as luggage and the like for carrying the same. The handle assembly includes substantially rigid and substantially U-shaped frame having a pair of opposed legs respectively terminating in inner ends to be connected with the article which is to be carried. An elongated cross member extends between and is fixed with said legs, this cross member having an outer edge region at the region of outer ends of the legs which are respectively distant from the inner ends thereof. The elongated cross member has an inner edge region spaced from but directed toward the inner ends of the legs. An elongated yieldable covering extends along the cross member at least at the inner edge region thereof and from the latter at least partly along opposed side surfaces of the cross member, while a suitable fastening means fixes this covering to the cross member. In this way the handle assembly is provided with a relatively soft, yieldable construction at least along the inner edge region of the cross member. The outer edge region of the cross member can retain its rigidity. This outer edge region can be covered by a relatively rigid channel which also serves to cover fasteners which fasten the yieldable covering to the cross member.

3,692,156  
**PARKING BRAKE RELEASED BY TRANSMISSION CONTROL PRESSURES**  
Nils Peder Week, Allen Park, Mich., assignor to General Motors Corporation, Detroit, Mich.  
Filed Oct. 12, 1971, Ser. No. 188,020  
Int. Cl. B60k 29/02  
U.S. Cl. 192—4 A 2 Claims

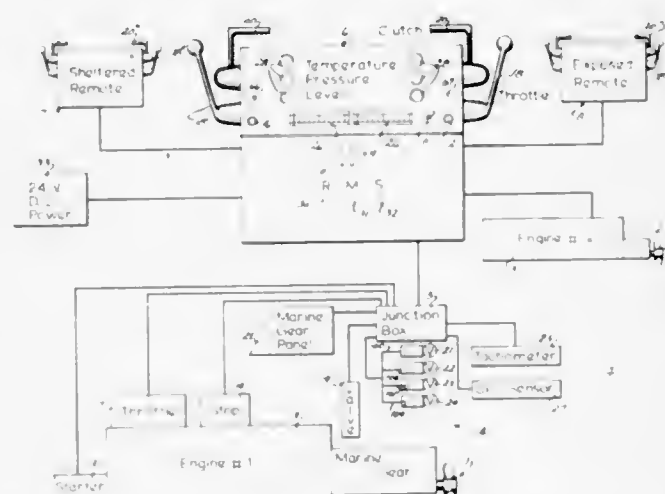
A vehicle parking brake release control mechanism is hydraulically actuated to release the parking brake. The mechanism is actuated by transmission line pressure and is controlled by the admission of the highest of transmission governor pressure or forward or reverse pressures to a control valve which controls the admission and exhaust of line pressure from the hydraulic release servomotor. The release servomotor is de-energized when there is insufficient governor or

forward or reverse pressure to actuate it. When the servomotor is energized the brakes may be modulatingly applied



through the parking brake control mechanism to stop the vehicle.

3,692,157  
**ELECTRICAL CONTROL APPARATUS FOR AN ENGINE AND VARIABLE TRANSMISSION APPARATUS**  
Bruce C. Arnold; John T. Auman, Jr., both of Racine, Wis.; Charles G. Kinnison, Cudahy, Wis., and James E. Lantz, Racine, Wis., assignor to Turin Disc Incorporated, Racine, Wis.  
Filed Jan. 13, 1971, Ser. No. 106,104  
Int. Cl. B60k 29/00; F16d 67/00  
U.S. Cl. 192—098 44 Claims



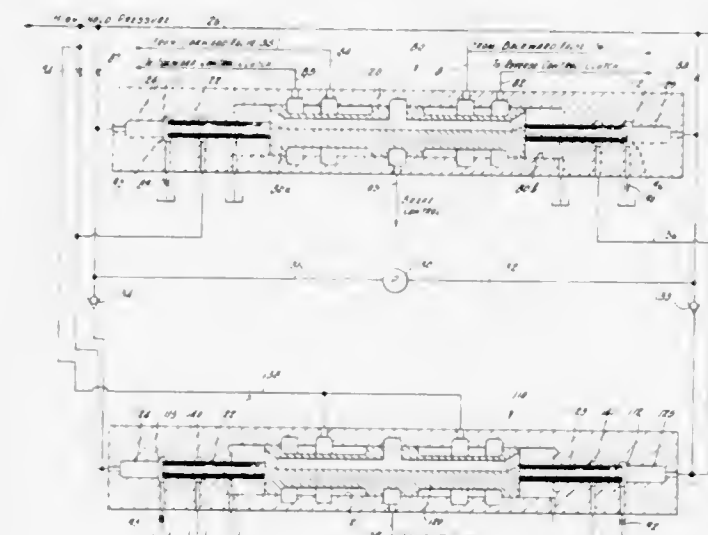
A dual marine gear installation includes three remote controls, one of which is a master control. Each control has control levers for positioning signal potentiometers providing input control signals to an engine governor throttle actuator and to a valve of a hydraulically actuated variable clutch. Each clutch lever also actuates a forward drive switch, a reverse drive switch and a brake release switch. A transistor diode logic circuit is connected to the forward and reverse drive switches and includes a selected control relay for each control and a transfer relay. A main selection switch only at the master control selectively energizes one of the control relays to condition the circuit for transfer of control. The transfer relay is controlled by the energization of the control relays and by the logic circuit to permit transfer only if the next selected control is in the same drive condition as the controlling station or in neutral. The master control includes the start switches and must initially be in control with the clutch lever in neutral to start the engines.

Operation can be transferred to a different control only at the master control but the master can retake control at any time subject to limitation of the setting of the clutch levers.

3,692,158  
Patent Not Issued For This Number

3,692,159  
Patent Not Issued For This Number

3,692,160  
**FLUID POWER CONTROL SYSTEM FOR VEHICLES**  
Conrad R. Hilpert, Winnebago, Ill., assignor to Turin Disc Incorporated, Racine, Wis.  
Filed Aug. 24, 1970, Ser. No. 66,282  
Int. Cl. F16d 67/04; F16h 57/06  
U.S. Cl. 192—4 C 4 Claims



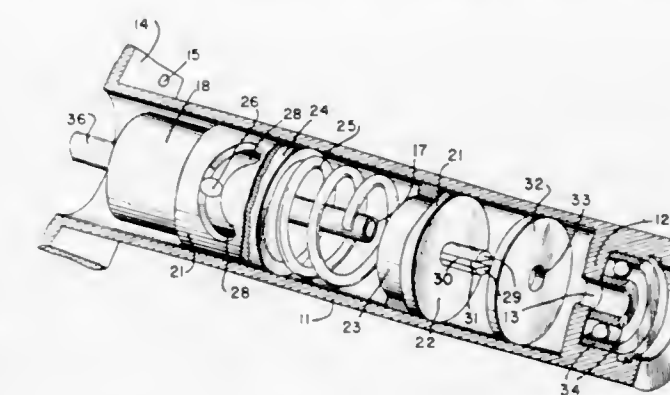
A fluid power control system for a vehicle having forward, reverse and speed range clutches, and the vehicle being driven from a source of power, such as an internal combustion engine, through a torque converter, which is controlled by a fluid actuated and modulated main clutch. The control system includes inhibitor valve means which functions to inhibit the shifting of the clutches between forward and reverse directions above predetermined vehicle speeds, and also inhibit speed gear shifting in a downward direction above a predetermined speed.

The control system also includes cross-over valve means connected with the direction clutches and the speed change clutches so that when a shift from one clutch to the other is called for by the action of the operator, the clutch which had been engaged is held in engagement until the newly selected clutch is at least partially engaged, and then the clutch which had been engaged is released. This functions to eliminate heat generation which is otherwise caused by slow shifting which in turn permits the vehicle power source to build up inertia energy in the power input parts, such as the flywheels, main clutch and torque converter. The cross-over valve means thus eliminates the heat build up due to the conventional between-gears-neutral position, and the valve means are effective regardless of how slowly the clutches are shifted.

3,692,161  
**SELF-LOCKING CLUTCH**  
Roy I. Katsuren, Penfield, N.Y., and Lloyd L. Salisbury, Kensington, Md., assignors to The United States of America as represented by the Secretary of the Army  
Filed Oct. 14, 1970, Ser. No. 80,653  
Int. Cl. F16d 67/00  
U.S. Cl. 192—8 R 1 Claim

A self-locking clutch for use in motorized prosthetic devices comprising a spring loaded brake cylinder rotatable by a

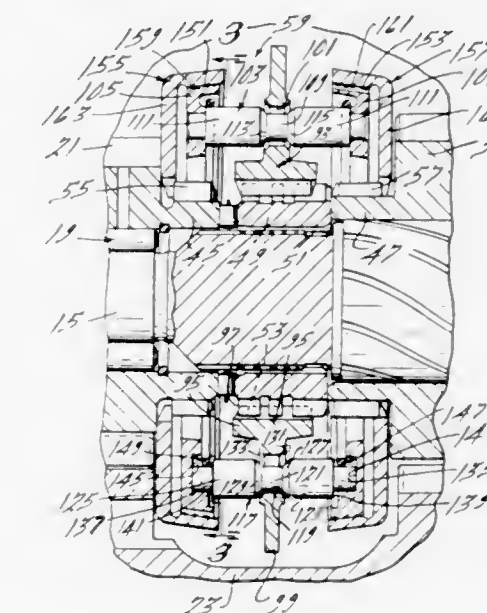
camming pin extending from the drive means which cams the cylinder away from a friction pad by riding in an arcuate slot in the wall of the cylinder. The cylinder is forced by the spring



to re-engage the friction pad when the motor is deactivated and functions as a back-block to prevent the output from driving the mechanism.

3,692,162  
Patent Not Issued For This Number

3,692,163  
**TRANSMISSION**  
Thurman O. Ruettinger, R.D. #1 West Lake Rd., Skaneateles, N.Y.  
Filed June 1, 1971, Ser. No. 148,772  
Int. Cl. F16d 23/02  
U.S. Cl. 192—53 F 10 Claims



Manual transmission having clutching and synchronizing assemblies using elongated spring means biasing energizing pins radially outwardly.

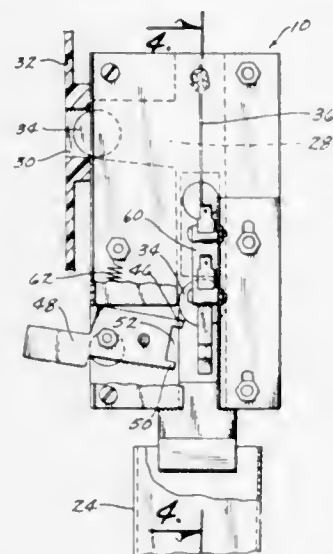
3,692,164  
Patent Not Issued For This Number

3,692,165  
**VENDING MACHINE COIN MECHANISM**  
Martelle J. Syverson, Albert Lea, Minn., assignor to Fountain Industries, Inc., Albert Lea, Minn.  
Filed Nov. 25, 1970, Ser. No. 92,710  
Int. Cl. G07f 13/10 15 Claims

A hot drink coin operated vending machine including a dry product which is dispensed in response to the proper coins



being inserted into the coin mechanism. The coin mechanism includes an inlet opening which gauges the thickness, height and flatness of the coin and the passageway through which the coin moves includes an undersized coin reject spring. A control lever manually operated, includes top and bottom elements which alternately project into the passageway when the lever is in raised and lowered positions. The space between the elements accommodates the desired number of coins and micro switches engage the sides of the coins to control the



flow of dry product. Upon release of the coins, the product dispenser is deactivated. A container collects the coins fed through the coin mechanism and upon a predetermined quantity of coins being received corresponding to the number of product servings, the container will move downwardly and deactivate the product dispenser and place the coin passageway in communication with a coin return passageway. A sold out sign and a ready sign are carried on the coin container and alternately register through a front panel window as the container moves between up and down positions.

3,692,166

Patent Not Issued For This Number

3,692,167

# KEY FOR THE KEYBOARDS OF ELECTRIC-INPUT OFFICE MACHINES

Teresio Gassino, Ivrea, Italy, assignor to Ing. C. Olivetti & C.S.p.A. Ivrea (Turin), Italy

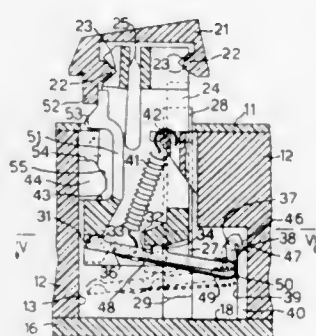
Filed April 1, 1970, Ser. No. 24,720

Claims priority, application Italy, April 4, 1969, 51303 A/69

Int. Cl. B41j 5/08

U.S. Cl. 197-98

10 Claims



A key for use in keyboards of electric-input office machines includes a shank for operating a movable electric contact that closes a circuit by touching on a fixed electric contact. The movable electric contact is carried by an insulating plate normally held by a spring to bear against the shank of the key, and is provided with a hook element engaging a fixed shoulder

during a first part of the depression stroke of the key to tension the spring. The hook element is released from the shoulder towards the end of the stroke to permit the spring to cause the plate to jump and the movable contact to touch the fixed contact temporarily through inertia, the spring then returning the plate to a position in which the movable contact is separated from the fixed contact.

3,692,168

# MANIPULATION OF SEMICONDUCTOR ELEMENTS BY MAGNETIC MEANS

Harry E. Hughes, Jr., Reading, Pa.; Jack A. Morton, South Branch, N.J., and Meyer H. Wachs, Reading, Pa., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

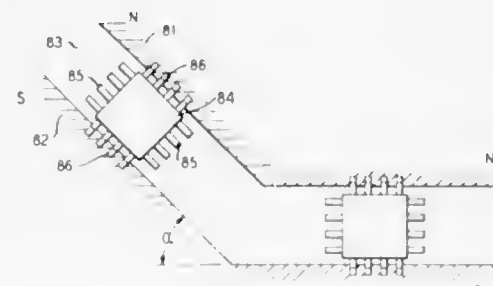
Division of Ser. No. 792,490, Jan. 21, 1969. This application

Sept. 4, 1970, Ser. No. 69,823

Int. Cl. B65g 47/00

U.S. Cl. 198-41

2 Claims



Ferromagnetic material is included selectively in semiconductor elements to enable handling of such elements during fabrication by means of magnetic fields. The invention is particularly, although not exclusively, adapted to beam leaded semiconductor devices in which ferromagnetic material may be included selectively in the beam leads as well as in or on the semiconductor body itself. Magnetic manipulation for a wide variety of purposes is disclosed.

3,692,169

# EGG GATHERING MECHANISM

Josef H. Kuhlmann, Horstmarer Strasse 9, 4401 Laer, Germany

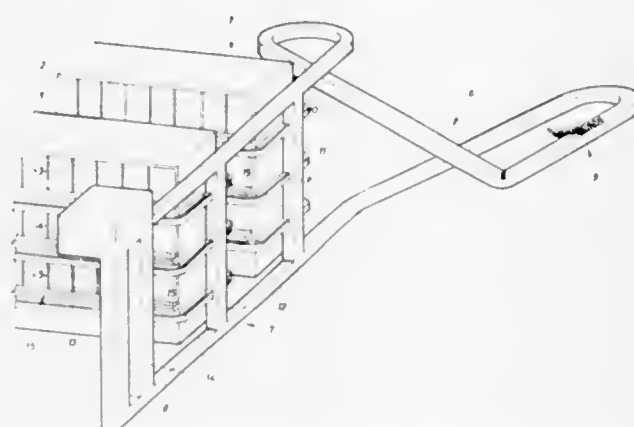
Filed Dec. 7, 1970, Ser. No. 95,857

Claims priority, application Germany, Dec. 12, 1969, P 19 62 423.8

Int. Cl. B65g 47/00

U.S. Cl. 198-43

10 Claims



An egg gathering mechanism for multi-level block-nest plants with egg conveyor mechanisms allocated to each level. The conveyor mechanisms feed into drop-tubes which have devices for retarding free-fall at the heads of the blocks as well as additional transport devices for the eggs allocated to the lower end of the drop-tubes. The invention is distinguished by the use of chaff to retard the free-fall of the eggs and by the

mechanisms provided above and below the drop-tubes for feeding and removing the chaff.

3,692,170

# HOLDER FOR SHEET MATERIAL

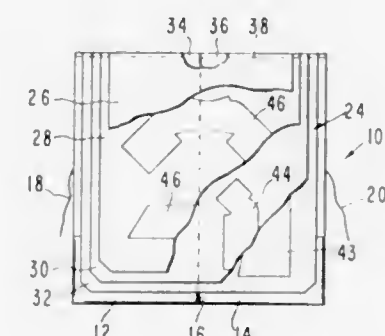
Henry L. Woodward, Jr., P.O. Box 384, Los Altos, Santa Clara County, Calif.

Filed Dec. 21, 1970, Ser. No. 99,902

Int. Cl. A45c 11/00

U.S. Cl. 206-1 A

8 Claims



A device for holding sheet material, such as sewing patterns, in a generally flattened condition comprising a backing support having a pair of backing members hingedly connected together to fold from first positions in which the holder is open to a second position in which the holder is closed. A number of stacked sheets are secured to one margin of the backing support with the sheets being individually movable about such margin and disposed to define dividers for sheet material to be held by the device. A tie-down means is provided to hold the backing members in their closed positions.

3,692,171

# PROTECTIVE CONTAINER FOR CLOTHING

Timothy Graham, 1811 Jefferson Avenue, Newport News, Va.

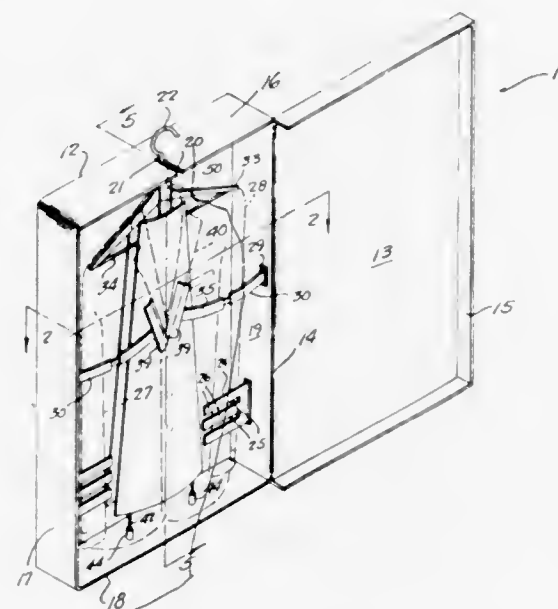
Substitute for Ser. No. 433,927, Feb. 19, 1965. This

application April 16, 1971, Ser. No. 134,896

Int. Cl. B65d 85/18

U.S. Cl. 206-7 C

8 Claims



A protective container for clothing formed as a box having a slot in its top wall to receive the shank of a clothes hanger, inwardly projecting resilient flanges on the lower opposite sidewall portions of the box for engaging the sleeves of a garment, inwardly projecting arms on the sidewalls above the flanges, and plate elements on the inner ends of the arms for supporting engagement beneath the lapels of the garment.

3,692,172

Patent Not Issued For This Number

3,692,173

# DISPLAY PACKAGE

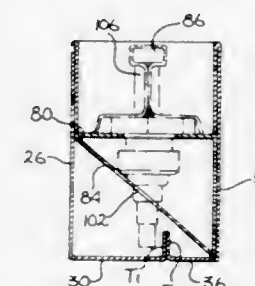
Larry R. Purciel, Sherman Oaks, Calif., assignor to Tool Research Engineering Corporation, Beverly Hills, Calif.

Filed May 27, 1971, Ser. No. 147,377

Int. Cl. B65d 5/50

U.S. Cl. 206-45.19

14 Claims



A display package or carton allowing for the mounting and display of hardware items, such as a door handle key lock assembly whereby a separate internal insert serves both as a mounting surface for displaying the item and as a structural member for providing rigidity to the overall package. An external component in the form of an outer box is provided to engage and enclose the internal insert in such a manner as to provide a sturdy package with an attractive "shadow box" appearance. The internal insert is comprised of a planar sheet blank which can be folded or formed to have a triangular cross-sectional configuration. This triangular configuration provides rigidity to the outer box component. The outer box-like member has two side panels, two end panels and two sets of end flaps. The end flaps are constructed so that one set of end flaps engage each other to enclose one end of the package. The other set of end flaps are configured to fold inwardly on themselves to engage one of the surfaces of the triangular internal inserts in such a manner as to provide a physical stop to position the internal insert and to provide an opening with a "shadow box" appearance for displaying the item mounted on the internal insert.

3,692,174

# COMBINATION BOOKCASE AND SHIPPING CONTAINER

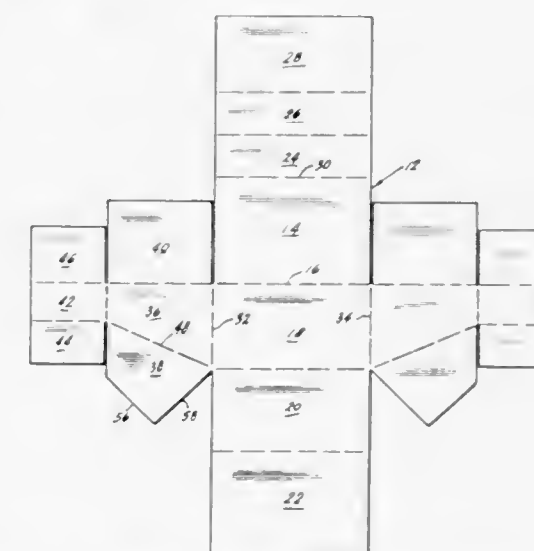
Richard H. Ross, 3605 Greenbrier, Ann Arbor, Mich.

Filed Oct. 30, 1970, Ser. No. 85,517

Int. Cl. B65d 25/00

U.S. Cl. 206-45.22

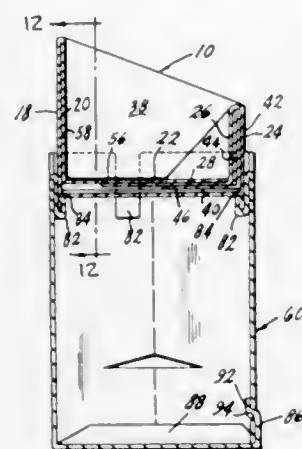
10 Claims



Paperboard or the like is blanked and formed to provide a



bookcase and a base for supporting the bookcase. The base and bookcase can be separated, and the base can be inverted



and placed over the bookcase as a cover to provide a shipping container for the books in the case.

3,692,175

**HINGED CONTAINER**

Gisbert Hordler, 34 Rontgenstrasse, Wiesbaden-Biebrich, Germany

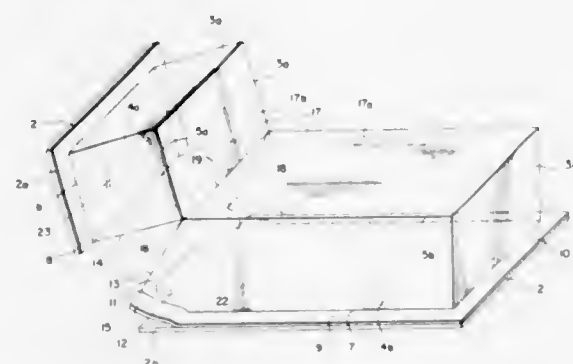
Filed May 22, 1970, Ser. No. 39,615

Claims priority, application Germany, May 24, 1969, P 19 26 739.1

Int. Cl. B65d 25/00

U.S. Cl. 206—45.34

7 Claims



This invention relates to a container, having a cavity which is surrounded on all sides, comprising a hood-like top the walls of which end in outwardly projecting flanges and a base plate to the upper surface of which the top is fastened with the underside of said flanges, the container in the closed condition having end walls and partial side walls extending downwardly from said top and terminating in said outwardly projecting flanges, the pair of partial side walls bordering on the lateral edges of the same end wall extending parallel to each other in the same direction so that the pairs of partial side walls issuing from different end walls meet upon each other, each pair of partial side walls extending in the same plane having a common pivot point and open edges which form an angle with the upper edges of these partial side walls between about 90° and 160°, and the base plate including two flat sections and having an overlapping zone formed by an overlapping arrangement of said two sections, the overlapping edge of the upper section extending vertically beneath a folding line in the top of the container.

3,692,176

**LABEL HANDLING SYSTEM**

John Glenn Templeton, and Calvin W. Seltz, both of Grand Rapids, Mich., assignors to Rospach Corporation, Grand Rapids, Mich.

Filed March 2, 1970, Ser. No. 15,649

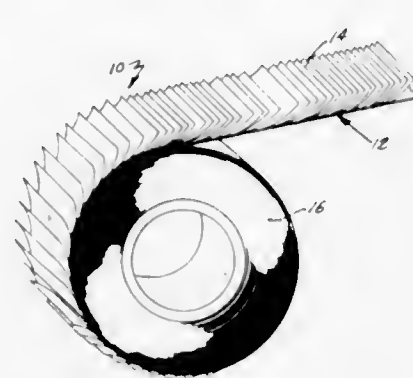
Int. Cl. B65d 83/08

U.S. Cl. 206—56 AB

2 Claims

Label and carrier tape assembly and method, especially for center fold type fabric labels, with each label having one end

removably adhered to a carrier tape and the opposite free end overlapping the adhered end of the adjacent label, with ad-



vancement of the tape in a non-linear path successively label ends to protrude for removal of labels from the tape and securement.

3,692,177

**Patent Not Issued For This Number**

3,692,178

**FILTRATION SYSTEM**

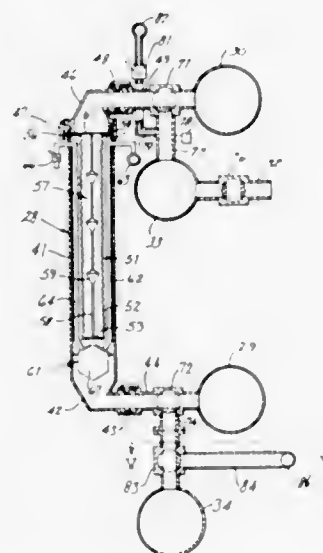
Thomas L. Reece, Portage, Mich., assignor to Dover Corporation, New York, N.Y.

Filed June 1, 1970, Ser. No. 41,986

Int. Cl. B01d 29/38

U.S. Cl. 210—82

17 Claims



A pressure filtering method and apparatus in which the residual process liquid present in the pressure filter housing at the end of a filtration cycle is discharged from the housing, prior to the backwash cycle, and is sent to a recovery system and is treated so that it can be returned to the main stream of the process liquid.

3,692,179

**APPARATUS FOR CONDITIONING WATER SUPPLIED TO A WATER HEATER TANK**

Samuel J. Moore, 185 Brookside Lane, Fayetteville, N.Y.

Filed March 31, 1971, Ser. No. 129,725

Int. Cl. C23f 14/00

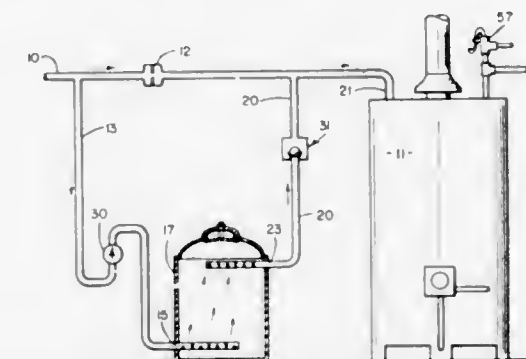
U.S. Cl. 210—94

5 Claims

The water supply main is connected to the inlet of the water heater by a supply line including a flow control orifice. A branch conduit line is connected to the supply line upstream from the orifice and extending to the inlet of a tank containing the water conditioning material. There is a second branch line extending from the supply line downstream from the orifice to the outlet of the conditioning tank. A check valve is con-

nected in one or both of the branch conduit lines to prevent back-flow of hot water from the heater through the tank containing the conditioning material. The orifice in the supply line

surface of the channel-shaped sector clamp has a pair of fulcrum blocks for contact with each of the locking arms which when forcibly deflected over the fulcrum block causes an in-



is dimensioned to permit back-flow from the heater through the supply line to the water main, due to the expansion of the heater water in the heater.

3,692,180

**COUNTERTOP WATER PURIFIER**

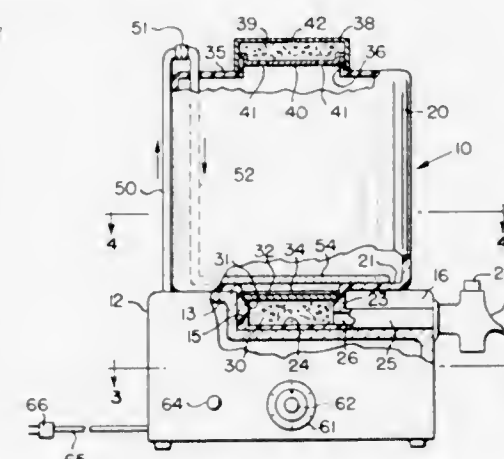
Julius LaRaus, 150 Crandon Way, Rochester, N.Y., assignor to Sadye R. LaRaus, Rochester, N.Y.

Filed April 5, 1971, Ser. No. 131,262

Int. Cl. B01d 35/02

U.S. Cl. 210—139

11 Claims



A small ozone generator (e.g., approximately 1 gr/hr.) is mounted in a portable base or stand together with a small air pump and transformer, which are controlled by a manually operable timer. A plastic water jug, which is removably mounted on the base, has a recessed lower end connected to a normally closed spigot, and containing an activated-charcoal filter. A vented cap containing another activated charcoal filter is removably mounted over the opening in the top of the container. When the timer is turned on, ozone gas from the generator is fed for a predetermined time to a diffuser in the bottom of the container which breaks the ozone into small bubbles that rise through the water in the container. The charcoal filters remove any excess ozone from the gases and water discharged from the unit.

3,692,181

**NOVEL CLAMPING DEVICE FOR SECTORS OF A ROTARY DISC FILTER**

Steven S. Davis, Bountiful, Utah, assignor to Envirotech Corporation, Salt Lake City, Utah

Filed March 4, 1971, Ser. No. 120,888

Int. Cl. B01d 33/26

U.S. Cl. 210—331

15 Claims

An improved clamping device for securing a filter sector to the central barrel of a rotary disc filter has been invented. The clamping device features a pair of opposed locking arms each interconnecting at one end to a pair of radial rods extending from said filter barrel. The other ends of the locking arms interconnect with a channel-shaped sector clamp. The upper



ward radial force which forces the channel-shaped clamp against the sector and further forces the sector in toward the central barrel, thereby holding the filter section firmly in position.

3,692,182

**APPARATUS FOR FORMING AND CUTTING FILTER CAKE**

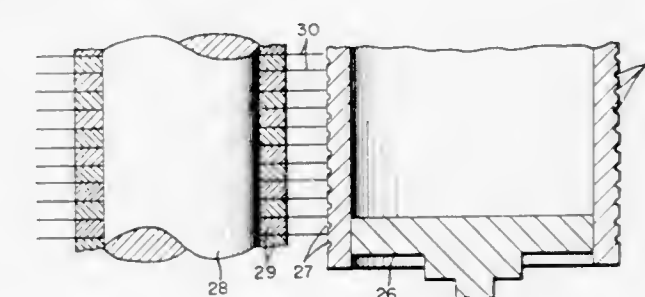
Wilbur L. Patton, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed March 16, 1971, Ser. No. 124,699

Int. Cl. B01d 33/02, 33/38

U.S. Cl. 210—386

5 Claims



Apparatus is described for deliquifying a slurry of particulate material, especially acicular pigments and fillers, to form a continuous, low-moisture, filter cake which is then cut in the longitudinal direction to form pieces suitable for rapid drying. The cutting is effected by passing the filter cake between a pair of rolls, one of which is provided with a series of spaced circular cutting edges.

3,692,183

**FILTER FOR CLEANING SUSPENSIONS**

Josef Tra, Heidenheim (Brenz), Germany, assignor to J. M. Voith GmbH, Heidenheim (Brenz), Germany

Filed March 8, 1971, Ser. No. 121,726

Claims priority, application Germany, March 26, 1970, P 20 14 700.6

Int. Cl. B01d 29/38; B07b 1/04

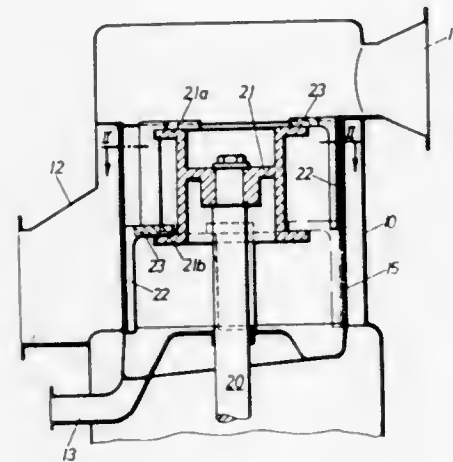
U.S. Cl. 210—415

8 Claims

The specification discloses a filter, especially for suspensions, in which a cylindrical screen is disposed in a closed housing between a suspension inlet and a suspension outlet so the suspension flows through the screen. Strips, or blades, extending axially along the upstream side of the screen are connected to a rotor for being moved thereby along the screen in the circumferential direction to dislodge filtered out impurities from the screen. The dislodged impurities are removed from the housing via an impurity outlet. To prevent the move-



ment of the strips, or blades, along the screen from developing pressure pulsations of an intensity and/or frequency which could interfere with the formation of a web in a paper making



machine supplied by the filter, the strips, or blades, are divided into axial sections which are offset circumferentially relative to each other, while the axial sections at at least one level are non-uniformly circumferentially spaced.

3,692,184

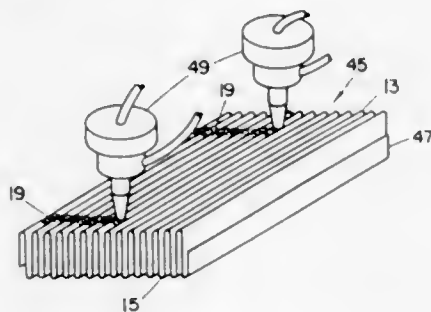
#### FILTER CARTRIDGE AND PACK THEREFOR AND METHOD OF MAKING SAME

Robert B. Miller, Jr., and Jerry E. Stephenson, both of Lebanon, Ind., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Oct. 7, 1970, Ser. No. 79,165  
Int. Cl. B01d 27/00

U.S. Cl. 210—437

9 Claims



An annular filter pack of longitudinally folded filter paper has a plurality of longitudinally spaced bands of adhesive resin disposed around the inside periphery so as to accurately position the inside folds and dimensionally stabilize the filter pack. The filter pack is incorporated into filter cartridges which may be used to filter a variety of fluids.

3,692,185

#### FILTER PAPER

Peter S. Columbus, Whitestone, N.Y., and Carl R. Erikson, Maywood, N.J., assignors to Borden, Inc., New York, N.Y.

Division of Ser. No. 698,705, Jan. 18, 1968, Pat. No. 3,542,706. This application Nov. 18, 1970, Ser. No. 90,848  
Int. Cl. B01d 29/06

U.S. Cl. 210—493

3 Claims

This instant invention relates to a filter paper suitable for use at an elevated temperature using an adhesive composition comprising a heat curable water-based polyvinyl acetate thermosetting resin adhesives comprising, in addition to the resins noted, water-soluble methyl cellulose in an amount sufficient to form a non-elastic continuous film on the adhesive surface when exposed to curing temperatures.

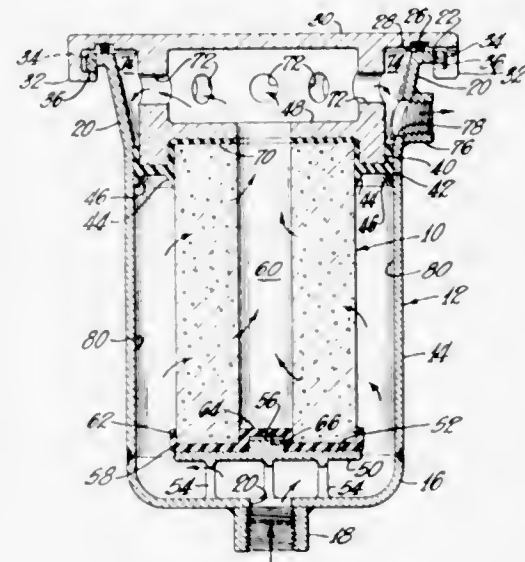
3,692,186

#### FILTER AND/OR ABSORPTION MEDIA

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation  
Continuation-in-part of Ser. No. 675,726, Sept. 5, 1967, abandoned, which is a division of Ser. No. 632,126, Feb. 21, 1967, Pat. No. 3,356,563, which is a continuation-in-part of Ser. No. 514,458, Dec. 17, 1965, abandoned, which is a continuation-in-part of Ser. No. 247,309, Dec. 26, 1962, abandoned. This application April 1, 1970, Ser. No. 24,775  
Int. Cl. B01d 27/08, 39/14

U.S. Cl. 210—494

4 Claims



A new and improved filter and/or absorption media prepared from a coiled package of leached glass fibers.

3,692,187

Patent Not Issued For This Number

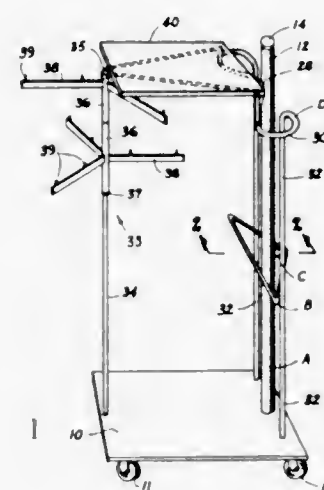
3,692,188

#### CLOTHES HANGER STORING AND DISPLAY DEVICE

Jimmy O. Bayne, Route 1, Simpsonville, S.C.  
Filed Aug. 28, 1970, Ser. No. 67,749  
Int. Cl. A47I 7/00

U.S. Cl. 211—49 D

4 Claims



A stand for storing and displaying clothes hangers including a vertical standard which has a spring supported bracket therein, that supports a rack upon which clothes hangers are stacked. As the weight of the stack of clothes hangers varies the vertical position of the rack varies accordingly so that the hangers can be loaded from a convenient position.

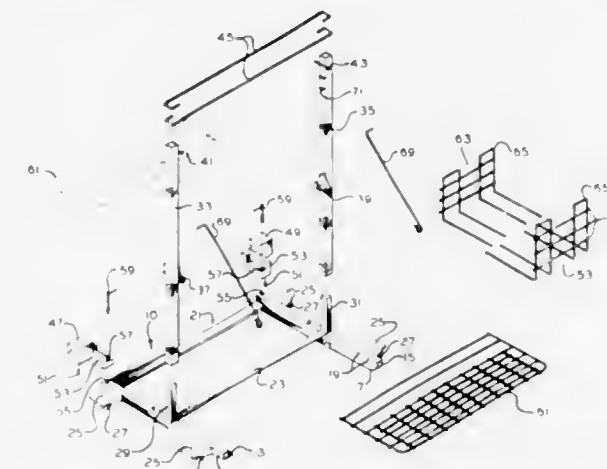
3,692,189

#### PACK HOLDER-REFOLD STAND

Norman H. Preston, Rochester, N.Y., assignor to Burroughs Corporation, Detroit, Mich.  
Filed Dec. 21, 1970, Ser. No. 100,214  
Int. Cl. A47I 5/08

U.S. Cl. 211—134

1 Claim



An easily moveable and adjustable stand for supporting a supply of continuous forms for processing in a business machine and for receiving, refolding and supporting processed continuous forms emerging from the machine. The stand can be pivotally attached to the machine for rapid loading and unloading without having to be realigned. The stand has several adjustable shelves which can be placed in different positions for supporting and receiving one or more stacks of continuous forms.

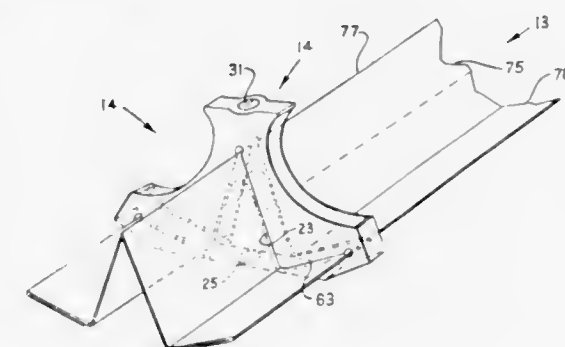
3,692,190

#### ADVERTISING AND DISPLAY DEVICE

Michael Dolas, 1164 Crestline Dr., Santa Barbara, Calif.  
Filed May 28, 1971, Ser. No. 147,832  
Int. Cl. A47I 5/00

U.S. Cl. 211—135

8 Claims



Display device of folded, die-cut paperboard construction having base members, poles supported thereby, shelf members supported by poles with up-tilted shelves, and brace members straddling shelf members and bracing same, the poles extending through junctions of shelf members and brace members. Also, pole support of die-cut paperboard construction with bottom and a plurality of foldable side members with overlapping tongues penetrated by a pole resting on bottom.

3,692,191

#### EXTENDIBLE AND RETRACTABLE PARTITION ASSEMBLY FOR DISPLAY SHELVING

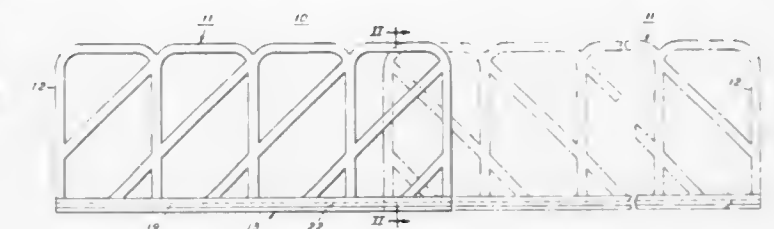
David M. Moore, 960 Harden Drive, Pittsburgh, Pa.  
Filed Nov. 2, 1970, Ser. No. 86,031  
Int. Cl. A47b 96/04; A47I 3/00, 5/10

U.S. Cl. 211—184

11 Claims

An extendible and retractable partition assembly for display shelving is detailed. The partition structure is more particu-

larly a binning and banding partition for use with shelving and counter tops for segregating displayed merchandise. Identifi-



cally formed linearly extending partition members are slidably connected to linearly extending coupling means to form the extendible and retractable partition structure.

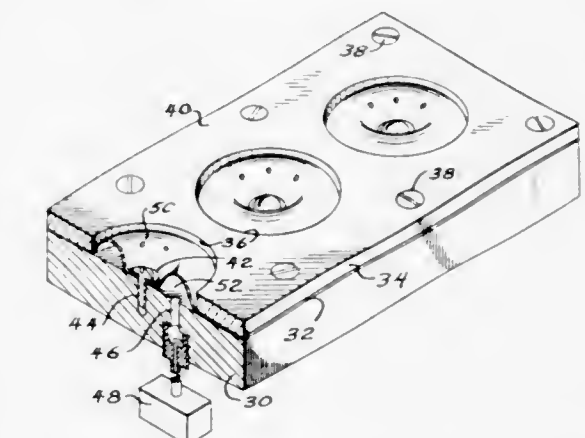
3,692,192

#### AIR CUSHION LIFT PAD ARRANGEMENT

Roman Baldur, Montreal, Canada, assignor to Borg-Warner (Canada) Limited, Oakville, Ontario, Canada  
Filed June 18, 1971, Ser. No. 154,380  
Int. Cl. B60v 1/00

U.S. Cl. 214—1 BE

6 Claims



An air cushion lift pad arrangement comprises a flat supporting plate having a flat flexible diaphragm sheet adjacent to it and a flat clamping plate with at least one opening therein adjacent to the diaphragm and fixed to the supporting plate. The diaphragm is also fixed centrally of the opening to the supporting plate and means are provided to introduce pressurized air into the interface between the supporting plate and the diaphragm in the uncovered area. There are perforations in the diaphragm to permit the passage of air so as to transmit a force between the inflated diaphragm and a flat surface adjacent to it.

3,692,193

Patent Not Issued For This Number

3,692,194

#### AUTOMATIC LAMP FILAMENT-TRANSFERRING EQUIPMENT

Tatsuro Uchiumi, Kanagawa, and Goro Nakano, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kanagawa-ken, Japan  
Filed July 16, 1971, Ser. No. 163,391  
Int. Cl. B66c 1/02

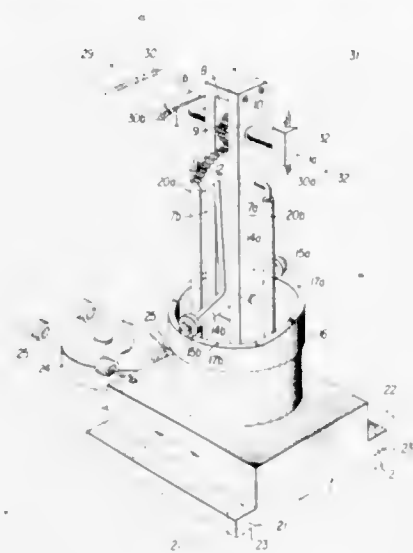
U.S. Cl. 214—1 BH

10 Claims

An automatic lamp filament-transferring equipment is provided with one shaft having chucks fixed on opposite ends thereof, each having a face oriented at right angles relative to the other, the shaft performing a revolution in a plane containing the shaft and being rotatable about the shaft axis. The



equipment, when installed in a conveyor system of an automatic mounting machine, is especially useful for manufactur-



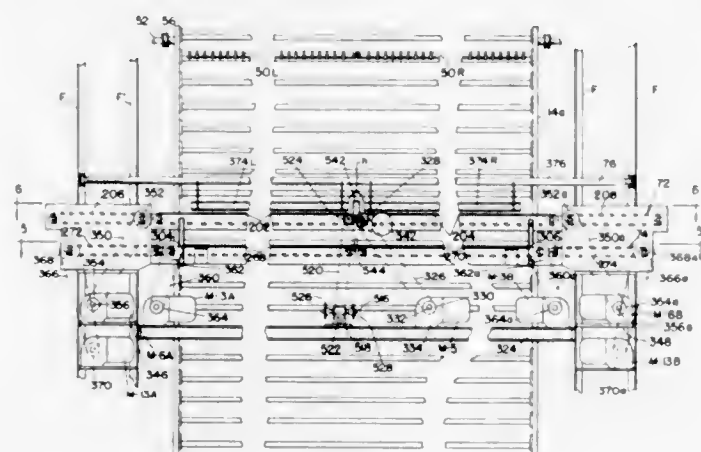
ing a lamp holding a filament mounted in parallel with the lamp axis.

3,692,195

**COOLING APPARATUS FOR BAKERY PRODUCTS**  
Carey L. Shirey, and William H. Gilgore, both of York, Pa., assignors to Teledyne, Inc., York, Pa.  
Filed June 7, 1971, Ser. No. 150,301  
Int. Cl. B65g 1/06

U.S. Cl. 214—16.4 C

10 Claims



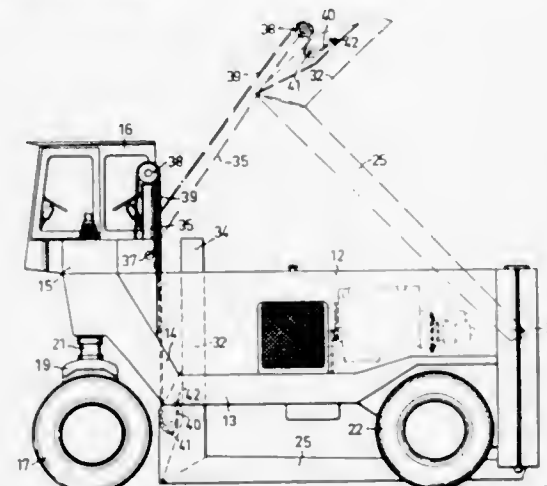
An article treating apparatus for use, for example, in cooling hot depanned loaves of bread wherein rows of hot loaves are supported on successive shelves movable by conducting means in a closed loop through a cooling zone from a loading station to an unloading station. A pair of end to end related transversely extending endless intermittently and simultaneously operated loading conveyors introduce into the loading station from opposite sides of the cooler a half shelf-width row of hot bread loaves in position to be loaded as a full shelf-width row by a common pusher from the pair of loading conveyors onto successive shelves. A pair of end to end related transversely extending endless intermittently and simultaneously operated unloading conveyors discharge from the unloading station to opposite sides of the cooler, each being arranged to receive a half of the full shelf-width row of cooled loaves pushed by a common pusher from successive shelves onto the pair of unloading conveyors. Shelf grids are fashioned to cooperate with the loaf loading and unloading means to provide guide means minimizing dislocation and jamming of loaves during transfer from the loading conveyors onto the shelves and transfer from the shelves to the unloading conveyors.

3,692,196  
Patent Not Issued For This Number

3,692,197

**TRANSPORT VEHICLE**

Erik Hannes Kurt Gelfgren, Ornskoldsvik, Sweden, assignor to AB Hagglund & Soner, Ornskoldsvik, Sweden  
Filed Jan. 22, 1970, Ser. No. 5,012  
Claims priority, application Sweden, Jan. 29, 1969, 1181/69  
Int. Cl. B60p 1/64, 1/34  
U.S. Cl. 214—390 1 Claim

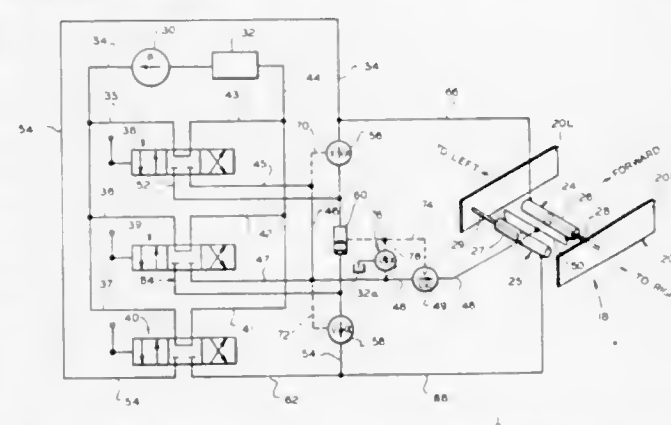


The invention concerns a vehicle for the transport of heavy objects or loads and combines in itself the properties of the known U-frame trucks and the straddle carriers. The vehicle has a frame comprising two vertical frame sides connected at their upper forward ends by a transverse frame member, preferably supporting the driver's cabin. A lifting frame capable of being hoisted and lowered parallel with itself and to be tilted about its rear ends is formed of two longitudinal parallel lifting beams supporting the load, which lifting beams are pivotally mounted in a vertical guide of the frame at their rear ends and connected with each other at their forward ends by a yoke having a transverse portion at about the same level as the transverse frame member when the lifting frame is in its lowermost position. Loads projecting outside the forward and rear ends of the vehicle can be picked up by the lifting beams as well as other loads like bins, which can be locked onto the lifting beams and tipped rearwards for dumping.

3,692,198

**HYDRAULIC LIFT TRUCK WITH SMALL NUMBER OF FLUID LINES**

Edward E. Lake, Battle Creek, Mich., assignor to Clark Equipment Company  
Filed Dec. 28, 1970, Ser. No. 101,547  
Int. Cl. B66f 9/18  
U.S. Cl. 214—653 7 Claims



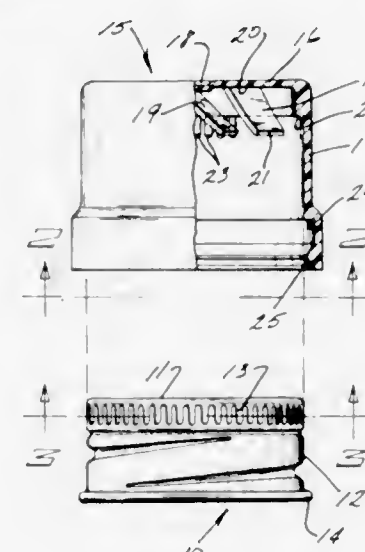
A lift truck of the type including a vehicle component having a mast, and a clamp on the mast having clamp arms for

gripping a load and moving it laterally as well as lifting it, including as few as three fluid lines to the clamp, for individually moving the arms laterally in clamping and releasing directions, and shifting both together laterally in each direction, and three manually operable control valves for effecting those movements.

3,692,199

**CHILD RESISTANT CLOSURE**

George V. Mumford, 3920 Estateway Road, Toledo, Ohio  
Filed Nov. 4, 1970, Ser. No. 86,672  
Int. Cl. B65d 43/02  
U.S. Cl. 215—9 2 Claims



A two-piece closure in which the inner closure member is formed of metal and composed of a circular top panel with integrally formed depending cylindrical skirt. The skirt is provided with the usual threads for attachment to the finish of a container. The lower end or edge of the skirt terminates in a rolled head or wire. The skirt portion just below the top panel is formed with knurling. A plastic overcap, having integrally formed, downwardly projecting spring members, is formed with a depending skirt which is adapted to enclose the metal inner closure. A bead is formed at the bottom of the skirt of the outer closure or overcap to retain the two caps loosely as a unit. Inwardly projecting ribs at spaced intervals about the inner surface of the overcap cooperate in one axial position to interlock with the knurling so as to provide means for removing the inner cap and in the unstressed or normal position, the tabs will maintain the two caps in a spaced relationship such that the outer cap will rotate freely relative to the inner cap.

3,692,200

**CONTAINER AND CLOSURE CAP ASSEMBLY**

Hermann Ritzenhoff, An der Schaferbuche 14, (D-355) Marburg, Lahn, Germany, assignor to Gebrüder Seidel KG  
Filed Oct. 27, 1970, Ser. No. 84,346  
Claims priority, application Germany, Nov. 11, 1969, P 19 56 586.7  
Int. Cl. B65d 41/20  
U.S. Cl. 215—42 2 Claims



Container and closure cap assembly comprises container with open top portion and closure cap for sealing top portion of container. Closure cap has lower portion secured to top portion of container and upper portion separated from lower portion by weakened line of connection. Upper portion of clo-

3,692,201

**MODULAR CONTAINER PANEL**

Gerald G. Garduna, 13691 Dawson St., Garden Grove, Calif.  
Filed Sept. 23, 1970, Ser. No. 74,753  
Int. Cl. B65d 9/34, 9/12  
U.S. Cl. 217—12 14 Claims

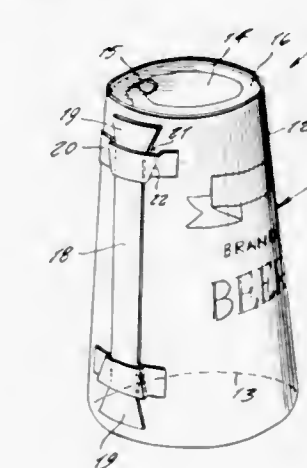


Modular panels adapted for interdigitated assembly to form containers of selectable size and shape. Each panel comprises a generally rectangular sheet of material of thickness  $t$ , with a square notch of size  $t$  by  $t$  in each corner. Between the corners, along each edge of the panel, are an odd number of alternating recesses and projections each of depth  $t$ . Preferably, the width of the end recess or end projection adjacent each corner is  $B$ , the width of all other recesses or projections being  $A = 2B + t$ . A container may be assembled by inserting the projections of one panel within the recesses of one or more adjacent panels. Because of its unique configuration, any panel or combination of panels may be used interchangeably as top, bottom, side or end of the container.

3,692,202

**BEER CAN STEIN WITH ATTACHED HANDLE**

Thomas J. Parlagreco, 5 Ferris Court, Ho-Ho-Kus, N.J.  
Filed Jan. 15, 1971, Ser. No. 106,694  
Int. Cl. B65d 25/28  
U.S. Cl. 220—1 BC 1 Claim



A metal beer can having a pull tab opening on the upper end thereof so to permit a person to drink directly therefrom, the beer can instead of being cylindrical in shape being slightly



tapered upwardly so to resemble the configuration of a beer stein, and the outer side of the can having a flat strap placed adjacent thereto, the center of the strap being able to be pulled away from the can so to form a convenient handle for being held in the hand while drinking.

3,692,203

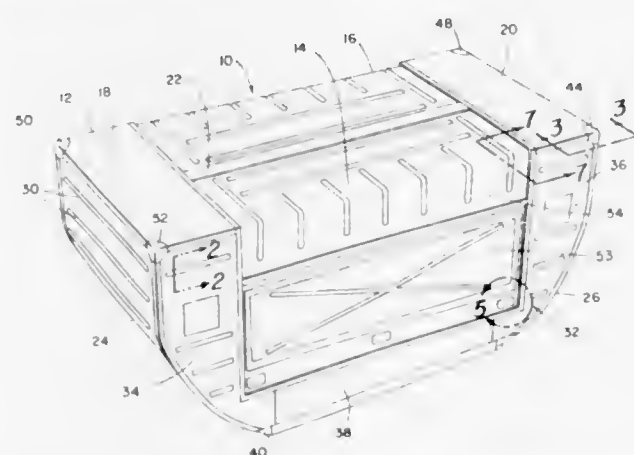
## CARGO CONTAINER FOR AIRCRAFT

Chester L. Byrd, and Randal L. Blackwell, both of Tulsa, Okla., assignors to Air Cargo Equipment Corp., Tulsa, Okla.

Filed May 3, 1971, Ser. No. 139,771  
Int. Cl. B65d 7/14

U.S. Cl. 220-1.5

12 Claims



A cargo container of lightweight material particularly designed and constructed for the carrying of luggage and the like in the lower portion or belly cargo compartment of commercial aircraft. The construction is largely of replaceable and interchangeable panels which are easily formed and particularly adaptable to the normal air freight environment.

3,692,204

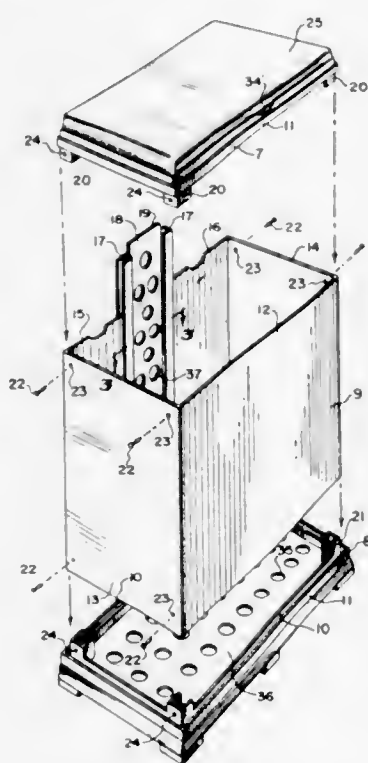
## KNOCK-DOWN HAMPERS

Mike A. Provi, and Vytant Aleks, both of Rockford, Ill., assignors to The Brearley Company, Rockford, Ill.

Filed June 28, 1971, Ser. No. 147,861  
Int. Cl. B65d 7/00

U.S. Cl. 220-4 R

12 Claims



In this knock-down hamper construction the molded plastic top frame with "live hinge" hinged cover and the molded

plastic bottom frame or base are both recessed annularly to accommodate the upper and lower edge portions of a one-piece body of solid paperboard sheet material that is unfolded from its compact folded form to define a front wall, two opposed end walls, and two inwardly extending rear wall portions, the vertical edges of which are received in channels defined in the opposed vertical edge portions of a perforated one-piece molded upright connecting panel that fits at its upper and lower ends in the aforesaid recesses in the top and bottom parts. Pressed-in molded plastic fastener pins entered in holes provided in the unfolded one-piece body panel and registering holes provided in upright corner projections on the top and bottom frames serve to fasten the assembled components together into a rigid sturdy hamper. Good ventilation of the hamper is assured with the amount of perforations provided in the bottom frame and in the full length of the middle panel in the back wall and with that kind of ventilation these is nothing to mar the external appearance of the hamper as a whole, which despite the simplicity and economy in construction is of pleasing overall appearance. The components in disassembled stacked relationship form a very compact light bundle adapted for economical shipping in a small container.

3,692,205

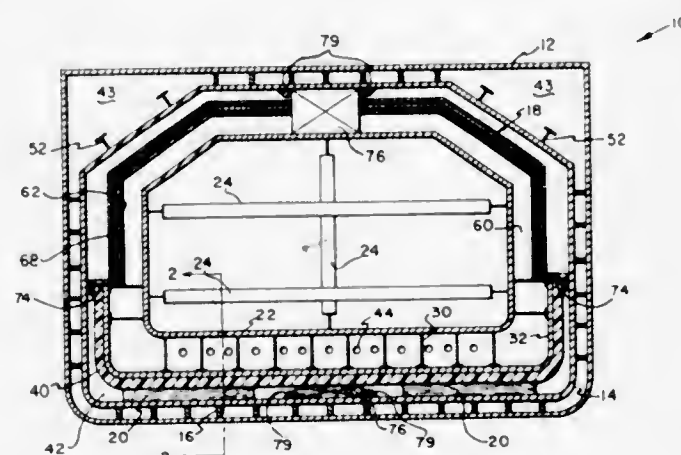
## DRIP PAN LNG TANK

Walter C. Cowles, Stamford, Conn., and Frank J. Iarossi, Middletown, N.J., assignors to Esso Research and Engineering Company

Filed Feb. 27, 1970, Ser. No. 15,054  
Int. Cl. B65d 25/18

U.S. Cl. 220-9 LG

10 Claims



A container tank useful in the transportation of liquefied gases at cryogenic temperatures in a tanker vessel comprises a primary liquid-tight barrier and a secondary liquid-tight barrier spaced apart from and surrounding the primary barrier and including a lower drip pan portion which is structurally integrated with the primary barrier and an upper splash shield portion which is structurally independent of but may be mechanically fastened to the primary barrier, i.e., the splash shield may be supported by the primary barrier but not structurally integral with said primary barrier.

3,692,206

## SUSPENSION SYSTEM FOR MULTI-WALLED CONTAINERS

Clarence J. Hornbeck, Wescosville, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

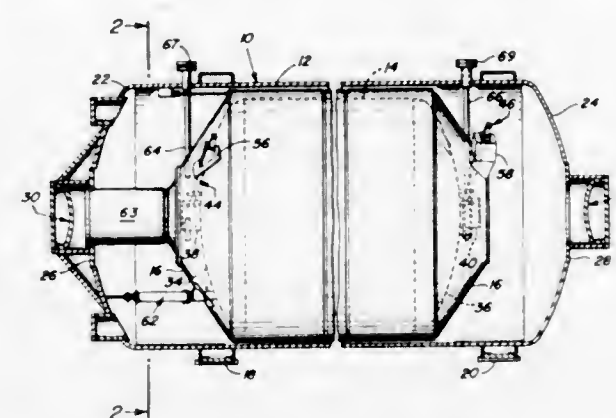
Filed Sept. 2, 1969, Ser. No. 854,364  
Int. Cl. B65d 25/00

U.S. Cl. 220-15

3 Claims

Disclosed is a system for suspending the inner vessel of multi-walled containers such as used for storing cryogenic fluids. The suspension system is characterized in that elongate members are used to hold the inner vessel in pure tension so

that the inner vessel can expand or contract without changing the load on any of the support members. There is also pro-



vided locking means to rigidly secure the inner vessel from movement during transport of the container.

3,692,207

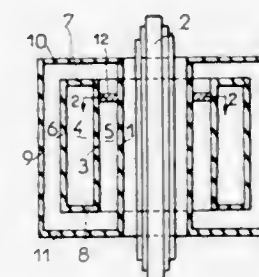
## CRYOGENIC ELECTRICAL TRANSFORMER

APPARATUS HAVING DOUBLE WALL CONSTRUCTION  
Henri Vayson de Pradenne, Paris, France, assignor to Alsthom-Savoisienne, Ouen, France

Filed Sept. 4, 1969, Ser. No. 855,316  
Int. Cl. B65d 25/00

U.S. Cl. 220-15

12 Claims



To prevent excessive deformation upon short circuit or other stresses tending to push spaced walls together, while avoiding heat loss by conduction, spacer members having teeth facing an opposed wall are applied to one wall, some of the teeth being recessed by 0.1 to 1 mm from the facing wall so that contact obtains only upon deformation. A suitable material for spacers is epoxy bonded fiber glass.

3,692,208

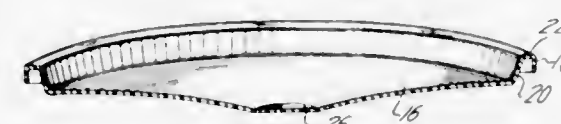
## CLOSURE FOR OPEN-MOUTHED CONTAINERS OR TUBULAR VESSELS

Jack V. Croyle, Woonsocket, and James B. Swett, Barrington, both of R.I., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed June 22, 1970, Ser. No. 48,404  
Int. Cl. B65d 39/12

U.S. Cl. 220-24.5

4 Claims



A closure suitable for insertion over the opening of a tubular or similarly constructed member and adapted to hermetically seal that opening. The closure construction includes a central wall having a toroidally shaped annular portion that is joined to a substantially planar center portion and sealing member, which annular portion peculiarly adapts it for placement upon the tubular member by the application of pressure to the approximate center of the central wall.

3,692,209

Patent Not Issued For This Number

3,692,210

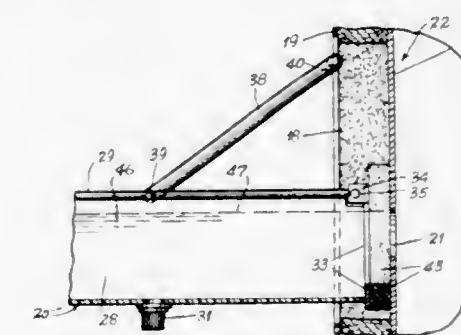
## ATTACHMENT FOR QUICK CHANGE OF IMMERSION HEATING ELEMENTS IN ELECTRIC HOT WATER HEATERS

Jerome G. Schmidt, Route 2, Imperial, Mo.

Filed April 13, 1970, Ser. No. 27,960  
Int. Cl. B65d 21/02

U.S. Cl. 220-23.4

7 Claims



The present novel method of removing and replacing the electric element of an electric hot water heater without draining the water comprises closing the cold water to and the hot water lines from the heater, mounting a water receiving device against the water tank adjacent to the plate supporting the electric element in the water tank, loosening the plate and permitting free water to run into the device, removing and replacing the element, and disposing of the free water. The present novel basket device for receiving free water includes an open-ended basin with controlled drain, and means for removably mounting the basket device about the electric element supporting plate secured to the water tank.

3,692,211

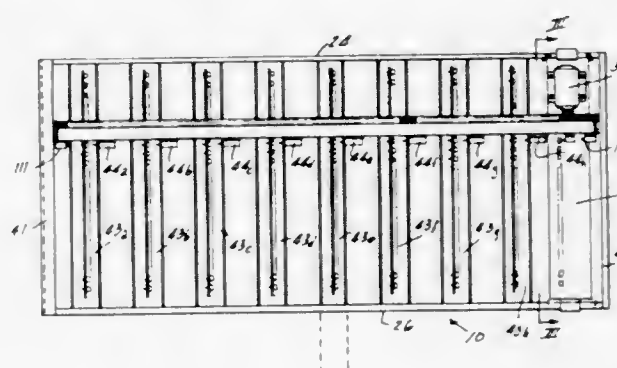
## VENDING MACHINE WITH CARRIAGE DRIVE SELECTOR

Charles H. Flubacker, 524 South Harvard Avenue, Arlington Heights, Ill.

Filed May 17, 1971, Ser. No. 143,924  
Int. Cl. G07f 11/64

U.S. Cl. 221-9

16 Claims



An improved vending machine for dispensing a large number of items and which includes improved article supporting and delivering features and incorporates a photocell detecting circuit for detecting when an article has been dispensed by the machine, and also provides an escrow structure which has a pair of opposed doors so as to direct money placed in the machine after the article has been dispensed or to return the money to the operator if a return button is pressed.



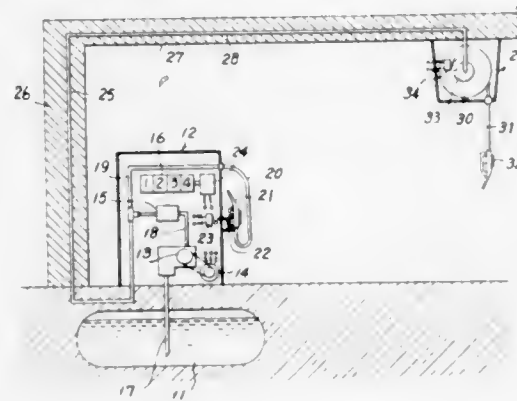
3,692,212

## FUEL SUPPLYING APPARATUS

Yoshihiko Irie; Shunro Yamawaki, and Yukio Ogawa, all of Tokyo, Japan, assignors to Tokico Ltd., Kawasaki-City, Kanagawa-ken and Tokico Yuki Ltd., Tokyo, Japan  
Filed June 7, 1971, Ser. No. 149,202  
Int. Cl. B67d 5/26

U.S. Cl. 222—32

7 Claims



A fuel supplying apparatus comprises a single fuel feeding port including a pumping means, a motor for driving the pumping means, a flowmeter and an indicator; and a plurality of fuel supplying parts which are fed the fuel through the flowmeter from the fuel feeding part. The fuel supplying apparatus further comprises an interlocking device actuating to stop the motor for driving the pumping means, when one fuel supplying part is operated to start the fuel supplying while other fuel supplying part is supplying the fuel, thereby to interrupt the fuel supplying and prevent the fuel supplying to be performed simultaneously at two or more fuel supplying parts.

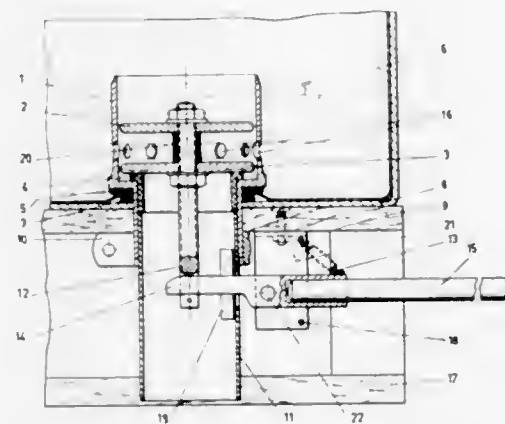
3,692,213

## CONTAINER OF THE THROW-AWAY TYPE PROVIDED WITH A DRAINING DEVICE

Dirk Alta, Beethovenstraat 340, and Derk Dille Doornbos, Mahlerstraat 12, both of Zutphen, Netherlands  
Filed May 28, 1971, Ser. No. 148,000  
Claims priority, application Netherlands, June 3, 1970, 7008018  
Int. Cl. B67d 35/56

U.S. Cl. 222—105

2 Claims



A container of the throw-away type having a draining device comprising a tubular housing in which a valve for closing or opening draining apertures in the housing is movable by means of a lift mechanism operable through the outlet of the housing. The housing outlet extends outwardly through the container wall and has a shoulder for clamping it to said wall. The container may be secured with its bottom to a pallet, the housing outlet shoulder then being clamped at the same time to the pallet and a rod for operating the lift mechanism being then pivoted to the pallet.

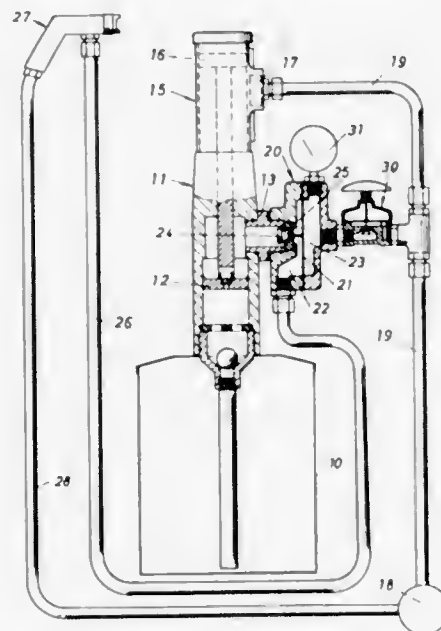
3,692,214

## METHOD AND MEANS FOR CONTROLLING THE DELIVERY OF LIQUID TO SPRAY GUNS

Kurt Herman Liedberg; Nils Erik Reinhold Jonsson, and Sten Gunnar Hugo Svensson, all of Skara, Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden  
Filed May 12, 1970, Ser. No. 36,509  
Int. Cl. G01f 11/00

U.S. Cl. 222—334

5 Claims



Delivery of liquid to spray guns is controlled by supplying the pump motor of the spray gun with air under substantially unchanged pressure while reducing in a liquid pressure reduction valve the pressure of the liquid delivered from the pump, and loading the liquid pressure reduction valve by selective air pressure taken from an air pressure reduction valve. Both positive and negative pressure pulses of a reciprocating pump are suppressed.

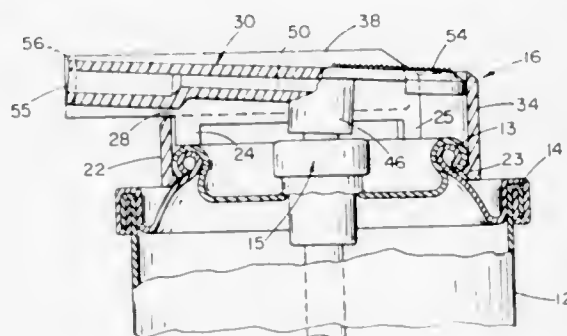
3,692,215

## ASSEMBLY FOR CONTROLLING DISCHARGE OF MATERIAL FROM A PRESSURIZED DISPENSING PACKAGE

Louis V. Nigro, 6 Altamont Avenue, Saugus, Mass.  
Filed Nov. 3, 1970, Ser. No. 86,469  
Int. Cl. B65d 83/14

U.S. Cl. 222—402.13

21 Claims



An actuator cap for a material dispensing package having a material container and a valve structure including a delivery passage for delivering material from the container; the actuator cap comprises an annular wall surrounding the valve structure and securing the cap to the container, and a spout including a discharge passage which spans the annular wall, extends past the cylindrical plane defined by the outer surface of that wall and secured to the valve structure with discharge passage of the spout in communication with the delivery passage of the valve structure, and supporting structure for the spout; the supporting structure is secured to the cap, and also extends

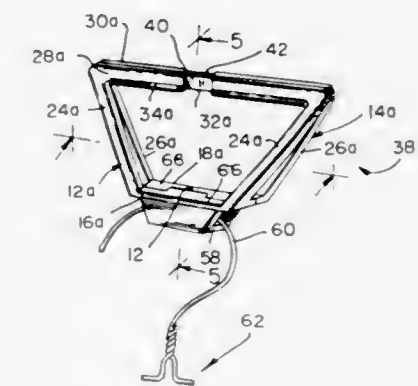
3,692,218

## ARTICLE CARRIER WITH LOCKABLE CARRYING HANDLES

Ira J. Friedman, 8 Whittier Place, Boston, Mass.  
Filed Oct. 7, 1970, Ser. No. 78,785  
Int. Cl. B65d 71/00

U.S. Cl. 224—45 T

21 Claims



Two molded plastic handle bails having a pair of spaced generally upright legs joined by a horizontal reach are utilized to hand carry articles with the user's hand being placed between the legs and his fingers grasping the reaches. The bails are locked in adjacent juxtaposed position to prevent inadvertent removal of articles. To lock the bails, a snap flange extends transversely from the lower edges of one reach toward and beyond the other reach. The flange terminates with an upwardly extending bead which snappingly engages the exterior face of the other reach adjacent the lower edge thereof. In one embodiment, the bails are secured at their lower ends to the side panels of a plastic tote bag.

In another embodiment, two bails are molded in one piece with their lower ends secured to a channel adapted to captively retain garment hanger hooks to thereby carry articles on garment hangers. A pair of spaced ribs extend upwardly from the channel base and transversely between side walls of the channel. A pair of cantilever flanges extend inwardly toward one another from opposed faces of the bails adjacent the lower end of the bail legs. The wire hook portions of garment hangers are forced against the ribs by the cantilever flanges when the reaches are brought together. A further embodiment includes a garment hanger hook receiving sling molded between the bases of each bail. Vertical ribs projecting from the side walls of the sling engage the wire hook portions of the garment hangers to prevent disengagement of the hook portions of the hangers from the sling.

3,692,219

## METHOD OF CUTTING AN ELONGATED TUBE AND APPARATUS

Newell A. Franks, Fawn River Township, St. Joseph, Mich., assignor to Burr Oak Tool & Gauge Company, Sturgis, Mich.

Division of Ser. No. 778,611, Nov. 25, 1968, Pat. No. 3,568,488. This application Oct. 22, 1970, Ser. No. 83,248  
Int. Cl. B26f 3/00

U.S. Cl. 225—2

7 Claims



A therapeutic appliance, for placing a stocking on the foot of a user, comprising a shaft having a stocking retaining yoke on its lower end. The yoke has at least one pair of complementary side tabs which together with a rear hook attached to the lower end of the shaft form a triangular fixture for retaining the stocking. The shaft of the appliance preferably is curved to incline the upward end of the shaft to a vertical position to enable the user to grasp the appliance at the normally extended position of his arm.

3,692,216

## GARMENT HANGER

Dante Becca, Via Bonistallo, 3, Empoli, Firenze, Italy

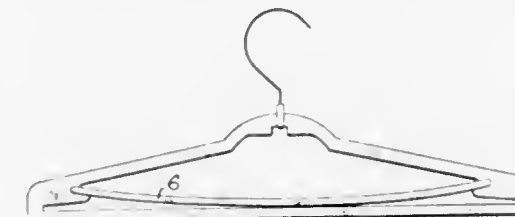
Filed Nov. 12, 1970, Ser. No. 88,573

Claims priority, application Italy, Nov. 12, 1969, 4856-A/69

Int. Cl. A47j 51/14

U.S. Cl. 223—91

6 Claims



A garment hanger comprises a frame of triangular form with inclined arms connected by a hanger bar. The frame is internally open and supports a flexed rod in the opening which is movable between a first position in which the rod is disengaged from the bar and permits unimpeded placement of a garment folded on the bar and a second position in which the bar can be manually pushed into engagement with the garment to clamp the same against the bar.

3,692,217

## STOCKING APPLIANCE

Edward I. Smith, 1316 Old Skokie Road, Highland Park, Ill.  
Filed Dec. 18, 1970, Ser. No. 99,456

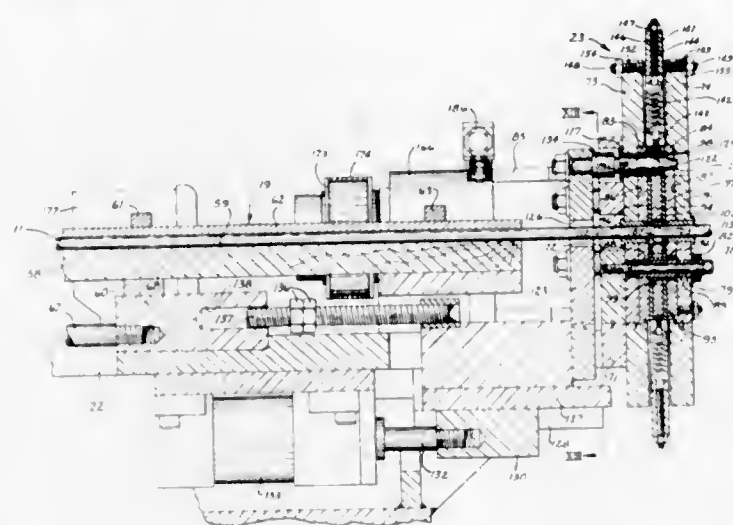
Int. Cl. A47j 51/06

U.S. Cl. 223—111

6 Claims



nular cutting member with a radially inner cutting edge through which the element is slideably received during said



advancement thereof. Actuating means effects movement of the cutting member in an eccentric path around the tubular element whereby the cutting operation is performed.

3,692,220

## DEVICE FOR BREAKING VIALS

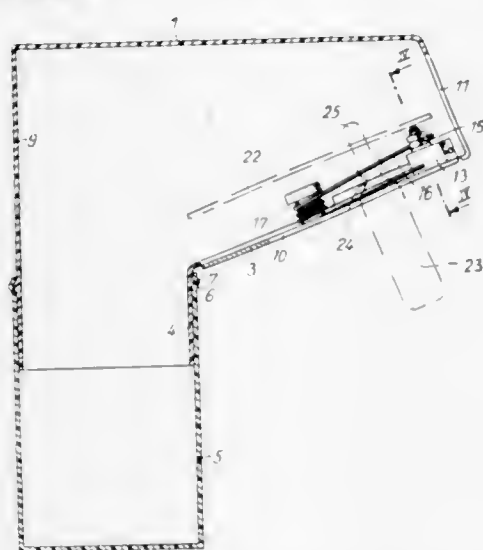
Gunter Seng, Lenzhalde 71, 7, Stuttgart, Germany

Filed April 20, 1971, Ser. No. 135,736

Claims priority, application Germany, Apr. 20, 1970, P 20 18 844.7

Int. Cl. B26f 3/00

U.S. Cl. 225—96.5



In a device for breaking vials there is provided a sloping plate having a slot and carrying a pivotable file urged by a spring into an inoperative position in which it partially overlaps said slot. The vial is inserted into the slot and slid therealong whereby the vial neck is scored by the resiliently yielding file. The vial head is broken off along the score by pivoting the vial normal to its preceding direction of travel and pressing the vial head against a breaking strip affixed inside said housing adjacent said slot.

3,692,221

## EDGE CONTROL APPARATUS FOR SHEET MATERIAL

Arthur Kinder Haslehurst, Northworthy, Louvain Rd., Derby, England

Filed July 30, 1971, Ser. No. 167,724

Claims priority, application Great Britain, Aug. 6, 1970, 37,904/70; Nov. 10, 1970, 53,365/70

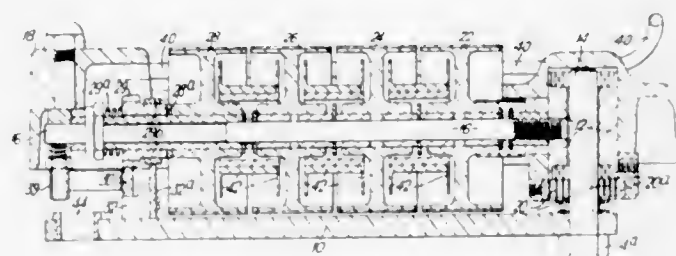
Int. Cl. B65h 25/06

U.S. Cl. 226—23

9 Claims

An edge control apparatus for sheet material whereby the edge of the material is maintained in or close to a given line,

comprises a spindle carrying at least two rollers, the spindle being mounted in a pivotal manner so that the axis of rotation of the rollers changes when the spindle is moved about its pivot, the spindle being pre-loaded to a position in which its angle is such that sheet material moving in contact with an inner roller tends to be urged outwardly, so that its edge moves across eventually on to an adjoining outer roller,



whereupon a pinion connected to this outer roller begins to be rotated and travels along a rack, thereby swinging the rollers and spindle to another position in which the changed axis of rotation of the rollers now tends to urge the edge of the sheet material inwards again, so that the flow of the sheet material is maintained close to a datum line at the adjoining edges of the said two rollers.

3,692,222

## MULTIPLE LABEL DISPENSER

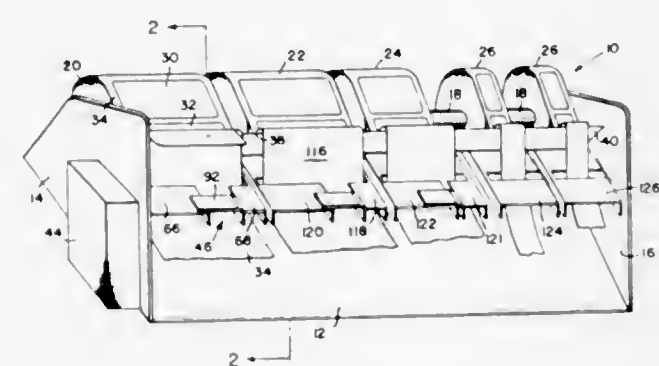
Fred H. Pargeon, Wayne, Pa., assignor to Globe Ticket Company, Philadelphia, Pa.

Filed July 12, 1971, Ser. No. 161,783

Int. Cl. B65h 17/22

U.S. Cl. 226—110

7 Claims



In a label dispenser in which a key selection can be made of any one of a plurality of label rolls, at least one of the keys is adjustable in width whereby various combinations of roll widths can be accommodated.

3,692,223

## ADJUSTABLE GUIDE FOR A MOVING SHEET

Roger E. Laigle, Torrington, and Antone F. Rakich, Waterbury, both of Conn., assignors to Anaconda American Brass Company

Filed Dec. 18, 1970, Ser. No. 99,630

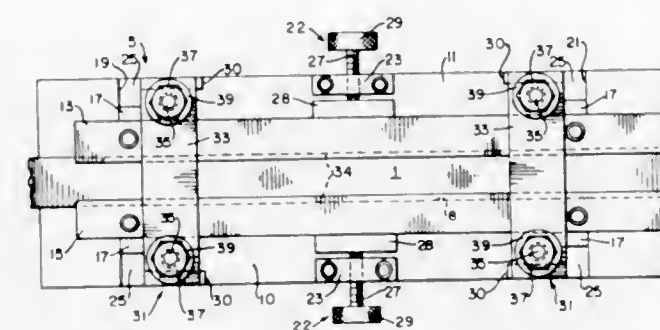
Int. Cl. B65h 23/04

U.S. Cl. 226—199

4 Claims

A device for guiding a metal sheet or strip during its movement in which the sheet is maintained in a slot which is formed

by a stationary plate and two adjustable notched guide bars. At least one of the bars is movable toward and away from



another bar using a fine-adjustment moving arrangement, while maintaining a substantially parallel relationship between the bars.

3,692,224

## SURGICAL APPARATUS FOR SUTURING TISSUE WITH STAPLES

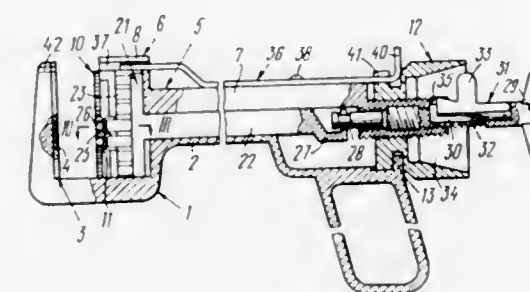
Georgy Vasilievich Astafiev, Rizhsky proezd, 7, kv. 108; Ivan Alexandrovich Korolkov, Polyarnaya ulitsa, 52, korpus 2, kv. 174, and Anatoly Nikolaevich Ozhgikhin, Oktyabrskaya ulitsa, 60, korpus 2, kv. 20, all of Moscow, U.S.S.R.

Filed Oct. 15, 1970, Ser. No. 80,934

Int. Cl. B25c 5/02

U.S. Cl. 227—19

3 Claims



A surgical apparatus for suturing tissues with staples, comprising a support housing having an open longitudinal cavity wherein slidable rods of the staple housing and pusher are accommodated. The staple housing has a head provided with a socket in which a magazine with staples is entirely inserted. The staple housing and the pusher are provided with screw drives to axially shift them relative to the support housing.

The apparatus also comprises a limit strip capable of retaining the magazine when it is completely pushed into the socket and holding the tissue being sutured. The limit strip interacts with the nut of the drive of the staple housing, whereby the drive of the pusher is blocked with the drive of the staple housing in such a manner that a predetermined sequence of actions is provided during the operation of the apparatus. In accordance with this sequence, the staple housing can move only after the magazine is completely pushed into the socket of the staple housing, and the pusher can displace only after the staple housing has defined for a maximal suturing gap between the working surface of the magazine and the die.

3,692,225

## SEMICONDUCTOR DEVICE FABRICATION APPARATUS

Milan L. Lincoln, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 732,772, May 28, 1968, abandoned.

This application Sept. 9, 1970, Ser. No. 69,422

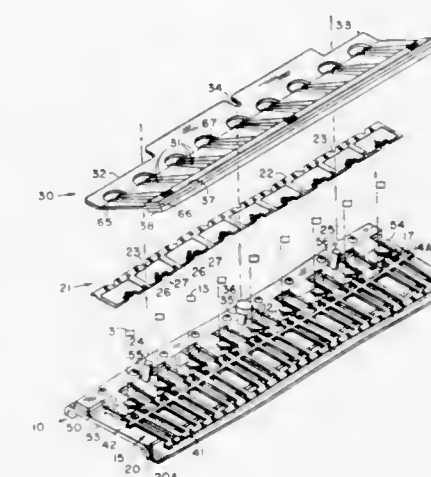
Int. Cl. B23k 11/00, 37/04

U.S. Cl. 228—4

21 Claims

A jigging tool and method for simultaneously bonding a plurality of semiconductor dice on a corresponding plurality of

mounting bases and to a plurality of electrical leads in strip form while accurately maintaining such plural structures in a fixed position. Pivoted weight means are disposed on a jigging



tool for forcing the electrical lead strip against the corresponding dice and the mounting base strip and the tool is mounted at an angle such that gravity forces the dice and the lead strip into an indexed relationship. The same indexing means in the form of posts or studs is used to locate the lead strip and the weight means which engages the lead strip to provide alignment between those structures. Rigid teeth-type aligning means in the jigging tool align the mounting portions of the mounting bases such that each such portion and each semiconductor die has the same respective relationship throughout the mounting base strip. The dice and lead strip are simultaneously soldered or otherwise bonded to the mounting portion, and at the same time portions of the lead strip are soldered or otherwise secured to contact portions on the dice. This simultaneous soldering is accomplished in the small mass of the tool such that the thermal inertia in the tool and maintained structures is minimized. A low profile in the tool provides ease of usage and handling. The lead strip is novel in that it has stable yet independently flexible contact portions for securing to the contact portions on the dice.

3,692,226

## REMOVABLE SIDE WALL FOR TIGHTLY SEALED DRUMHEAD CARTONS

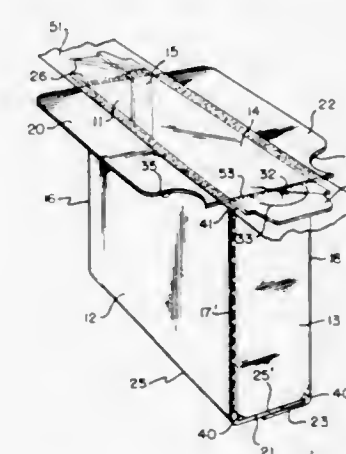
Chauncey Young, and William H. Watson, both of St. Louis, Mo., assignors to Riegel Paper Corporation, New York, N.Y.

Filed June 11, 1970, Ser. No. 45,507

Int. Cl. B65d 5/54, 5/08

U.S. Cl. 229—17 R

6 Claims



An improved opening arrangement for dispensing the contents of a hermetically sealed drumhead carton is disclosed herein. A totally removable side wall panel is included in the carton, and its removal is facilitated by an integral lift tab formed in a contiguous dust flap in the end closing structure.



The lift tab is arranged and pre-cut so that it may be readily grasped and removed along with the side wall panel to provide an open sided carton, without disturbing either of the drum-heads, for "eat-from-box;" "mix-in-box;" "grow-in-box;" "heat-in-box" product applications.

3,692,227

## POUR SPOUT CONTAINER

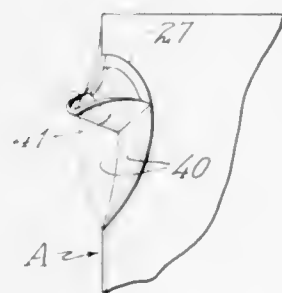
Russell J. Hennessey, St. Paul, and Edwin C. McLaren, Minneapolis, both of Minn., assignors to Hoerner Waldorf Corporation, Ramsey, Minn.

Filed Oct. 23, 1970, Ser. No. 83,516

Int. Cl. B65d 5/72, 83/00

U.S. Cl. 229—17 R

2 Claims



A pour spout carton is provided extending on opposite sides of a fold line connecting two adjacent carton panels. The spout has a generally oval outline with the lower end defined by outwardly bowed fold lines and the upper portion defined by cut lines or perforated lines. A pair of angularly related fold lines extend across the oval outline at the juncture of the outwardly bowed fold lines and outwardly bowed weakened line. Reinforcing panels are secured to the panel area containing the pour spout. Short connecting straps connect the portions of the reinforcing panels in face contact with the two adjacent carton panels so that the reinforcing panels do not interfere with the folding of these two adjacent carton panels.

3,692,228

## UNIT DOSE DEVICE

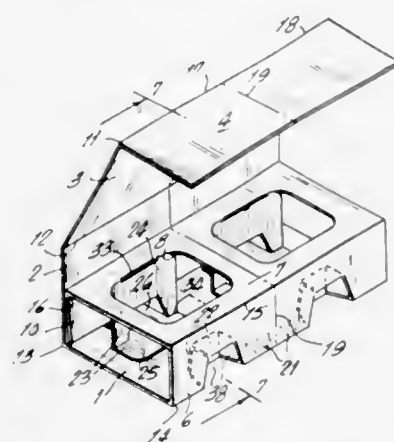
Harold B. Spiegel, Clearwater, Fla., assignor to Pharmicare, Inc.

Continuation-in-part of Ser. No. 886,147, Dec. 18, 1969, abandoned. This application Dec. 29, 1970, Ser. No. 102,392

Int. Cl. B65d 5/48

U.S. Cl. 229—29 F

16 Claims



A base extends between a back and a front. The base is connected to the back at a first fold and to the front at a second fold. A support, having a hole, extends substantially between the back and the front. The support is connected to the front at a third fold. A top is pivotally connected to the back at a fourth fold. The top is movable to cover the support. Means are provided for fixing the support to the back between the first and fourth folds. Means are also provided for removably securing the top in a position overlying the support and spaced apart therefrom.

3,692,229

Patent Not Issued For This Number

3,692,230

## BOX-SOX SYSTEM FOR PROTECTING CONTENTS OF OPENED BOXES

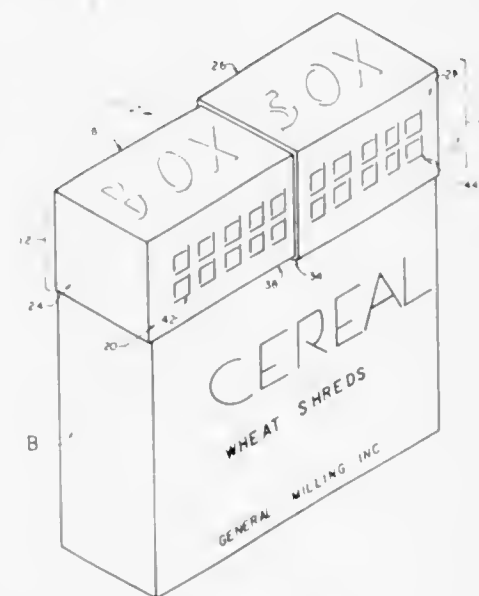
Anita L. Kapiloff, Mariposa, Stevenson Rd. Extended, Stevenson, Md.

Filed Jan. 4, 1971, Ser. No. 103,522

Int. Cl. B65d 5/64

U.S. Cl. 229—43

5 Claims



Adjustable semi-rigid, or rigid plastic covers for protecting the contents of opened food boxes and the like during storage and for preserving pouring sanitation; deep skirts are provided for simplest protection of all types of openings and special dovetail provisions are made to assure free, non-jamming operation.

3,692,231

## MEANS FOR LOCKING A LID TO A CONTAINER

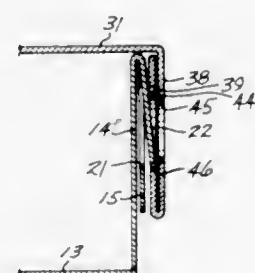
Nicholas R. Neitzke, Lakewood, and Chester E. Adams, Jr., Newbury Park, both of Calif., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Dec. 18, 1970, Ser. No. 99,385

Int. Cl. B65d 5/68

U.S. Cl. 229—45

3 Claims



A container having a downwardly extending locking tab on a downwardly extending flap of the container body. The tab fits into an aperture in the sidewall of the lid to hold the lid on the container body. The lid sidewall may be double layered. The locking aperture would be in the inner layer, and another aperture would be in the outer layer aligned with and providing access to the tab, allowing the tab to be pushed inwardly to unlock the lid.

3,692,232

## FINGER HOLE ARRANGEMENT FOR ARTICLE CARRIERS

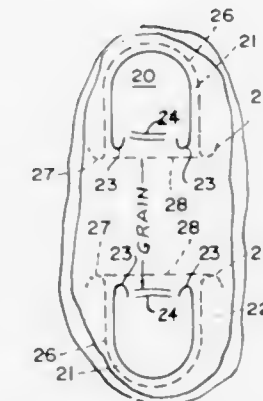
Charles Robert Helms, Barto, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Dec. 4, 1970, Ser. No. 95,095

Int. Cl. B65d 5/46

U.S. Cl. 229—52 B

3 Claims



An article carrier having a pair of top closure flaps arranged in overlapping and underlapping relationship is provided with spaced fold down tabs defining apertures for lifting the loaded carrier. The fold down tabs are each defined by a continuous cut line, each end of which terminates in a curved cut line. Preferably the tabs are of different areas to offset areas prone to tear, so that the area of a closure flap is reinforced by the continuous board of the other closure flap. This is especially important when the grain of the paperboard of the carton runs from finger hole to finger hole.

3,692,233

## SPECIALTY ENVELOPE

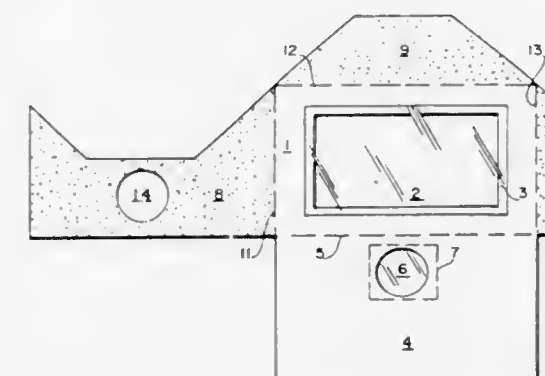
William J. Carter, Jr., 4700 LaVista Rd., Tucker, Ga.

Filed May 13, 1971, Ser. No. 143,039

Int. Cl. B65d 27/04

U.S. Cl. 229—71

9 Claims



A tamper proof specialty envelope includes a quadrilateral base panel to each edge of which a sealing flap is foldably joined. A main one of the sealing flaps is configured in the same general shape as the base panel and is folded into flat face-to-face relation therewith. The three remaining sealing flaps are foldably joined to the other three edges of the base panel respectively and are configured to form a composite panel formed of the three remaining coplanar flaps which are arranged in overlying relation to said one main sealing flap and secured thereto and constitute a tamper proof closure for an item such as a coin or a commemorative stamp disposed therein and observable through viewing windows formed in said base panel and in said main flap and in a certain one of said coplanar flaps. A sealing stamp is then affixed to portions of the three coplanar flaps and cancelling indicia is imprinted over the sealing stamp and over adjacent portions of each of the three coplanar sealing flaps.

3,692,234

Patent Not Issued For This Number

3,692,235

## LAMINATES

Carol Ann Franiel, 3 Cherry Tree Ave., Staines, England

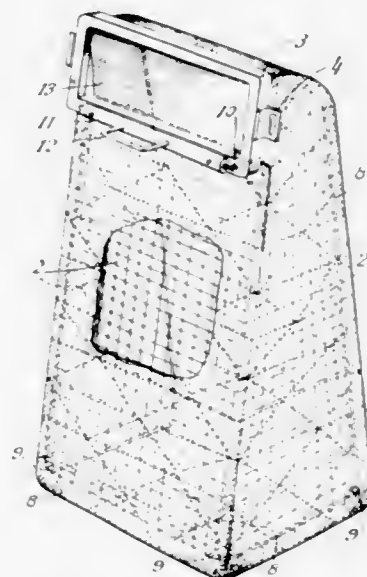
Filed July 17, 1970, Ser. No. 55,760

Claims priority, application Great Britain, July 21, 1969, 36,575/69

Int. Cl. A65f 1/00

U.S. Cl. 232—1

1 Claim



The invention provides a laminate comprising a ceramic layer faced with a fabric impregnated with synthetic rubber. The laminate is fire-proof and finds particular utility in the construction of waste disposal containers. The invention further provides a container comprising a waste inlet, an outer wall formed of a laminate in accordance with the invention, an inner bag to receive the waste and means operable from outside the container to draw the base of the inner bag towards the waste inlet thereby discharging the waste through the inlet.

3,692,236

## SELF-BALANCING CENTRIFUGE METHOD AND APPARATUS

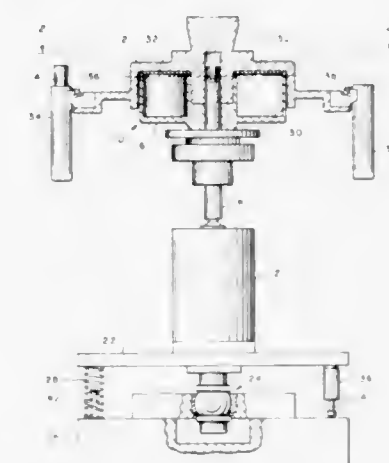
Stanley L. Livshitz, Bronx, N.Y., and Robert Alan Mayo, Verona, N.J., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,348

Int. Cl. B04b 9/12

U.S. Cl. 233—26

18 Claims



A centrifuge of the type used for a number of individual test samples in separate sample containers is dynamically balanced



automatically by means of a counterbalancing mass contained in an annular chamber within the centrifuge wheel. The centrifuge wheel is mounted as an inverted pendulum about a fixed pivot and spring biased to the vertical position. The counterbalancing mass, which is at the same vertical level as the sample containers, automatically moves angularly to the counterbalancing position at speeds above the speed corresponding to the natural vibration frequency of the pendulum system.

3,692,237

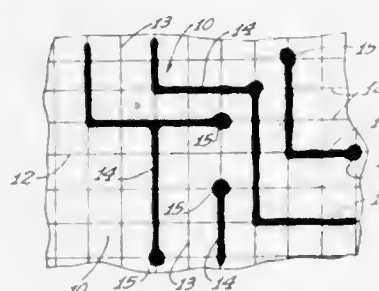
## PROCESS FOR DIGITIZING ELECTRIC CIRCUIT PATTERNS

Leo Fiderer, 5640 Aldea Ave., Encino, Calif.

Filed Aug. 3, 1970, Ser. No. 60,557

Int. Cl. G06k 1/00

U.S. Cl. 234-2



An improved process is provided for digitizing electric circuit patterns and for transferring such patterns into binary control data for subsequent use in automatic machinery in the fabrication of printed circuit boards and the like. In the practice of the process of the invention, a particular pattern is laid out on a transparent or translucent sheet or strip which has X-axis and Y-axis grid lines thereon. The grid sheet or strip is then passed over a read station at which photocells are used in conjunction with light sources to detect the presence or absence of a circuit line on each of a multiplicity of X- or Y-axis segments of the grid lines. The photocells generate binary digital signals which may be stored on any appropriate medium, such as a punched paper tape, or other media, for the subsequent control of automatic machinery in the fabrication of printed circuit boards and the like.

3,692,238

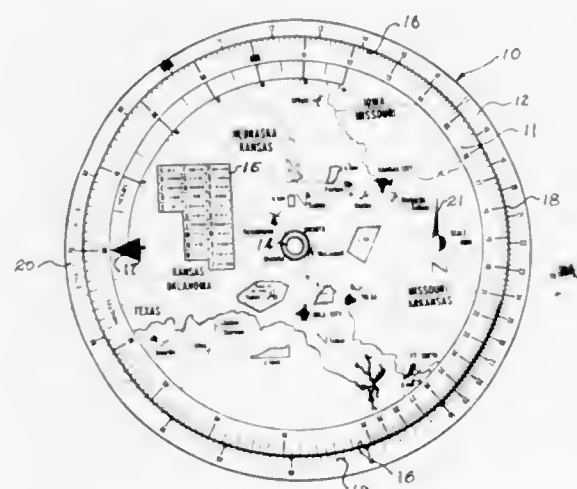
## NAVIGATION AID

George M. Boyd, 2904 Westover St., Wichita, Kans.

Filed July 30, 1970, Ser. No. 59,634

Int. Cl. G06c 3/00

U.S. Cl. 235-88



An air navigational aid device comprising the provision of the latitude and longitude of the air bases listed on the device;

a copy of the Morse code; a flight planning diagram for noting location, heading, distance, time, fuel, and/or ETA thereon; a map of a geographic area showing the runway patterns of the air bases, and locating and naming the air bases and restricted zones in the mapped area; a circular time-distance computer for calculating ground speed, flight time, and fuel supply; tables of headings and distances from a selected air base to the other air bases in the area; a statute mile to knot conversion scale; the location of each TACAN facility of each air base; and the elevations and runway headings for each air base; all on a device comprising a large circular disk sandwiched between two smaller disks that are rotatably connected together at their centers.

3,692,239

## CONTROL SYSTEM FOR A DOUBLE BURNER OVEN OR THE LIKE AND IMPROVED PARTS AND METHOD FOR THE SAME OR THE LIKE

Francis S. Genbauffe, Irwin, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

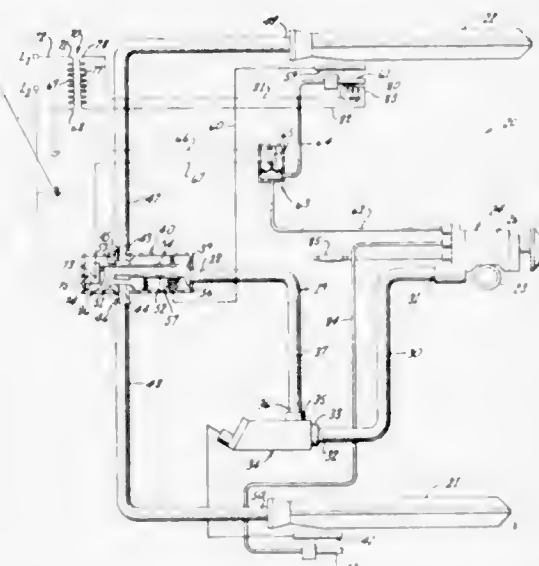
Continuation of Ser. No. 670,648, Sept. 26, 1969, abandoned.

This application Feb. 11, 1971, Ser. No. 114,691

Int. Cl. F23n 1/00; G05d 23/02

U.S. Cl. 236-15 A

12 Claims



This disclosure relates to a control system for a bake burner and a broil burner of a domestic oven or the like wherein a control device is adapted to interconnect a source of fuel to a conduit means leading to the bake burner and the broil burner, the conduit means having a diverter valve therein intermediate the control device and the burners with the diverter valve being so constructed and arranged that the same will direct the fuel issuing thereto from the control device only to the bake burner when the selector means of the control device is set for a baking operation and will only direct the flow of fuel issuing thereto to the broil burner when the selector means of the control device is set for a broiling operation. In addition, a safety valve is disposed in the conduit means either intermediate the control device and the diverter valve means or intermediate the diverter valve means and the bake burner to be only opened when a certain flame means exists at a bake pilot burner means for the bake burner, the control device thermostatically controlling the operation of the bake pilot burner means.

3,692,240

## PNEUMATIC CONTROL SYSTEM

Donald H. Spethmann, Arlington Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed July 24, 1970, Ser. No. 57,919

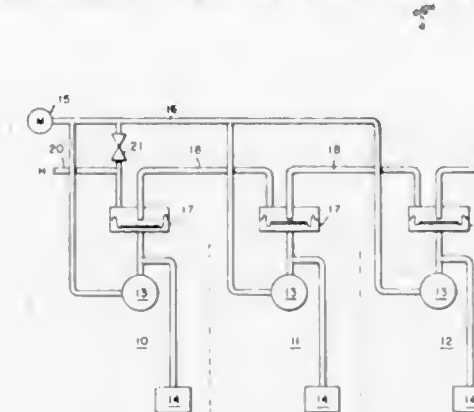
Int. Cl. G05d 23/08 5; G05b 11/48

U.S. Cl. 236-82

8 Claims

A pneumatic control system for optimally controlling a condition in a plurality of zones, each zone having a thermostat or

the like. Each thermostat is in communication and has proximately associated therewith valve means. The valve means are suitably interconnected and are in communication with a



source of air pressure and output means, which output means provides a signal indicative of either the highest or the lowest of the output pressures of the thermostats.

3,692,241

## SPRAY APPARATUS WITH ATOMIZATION DEVICE

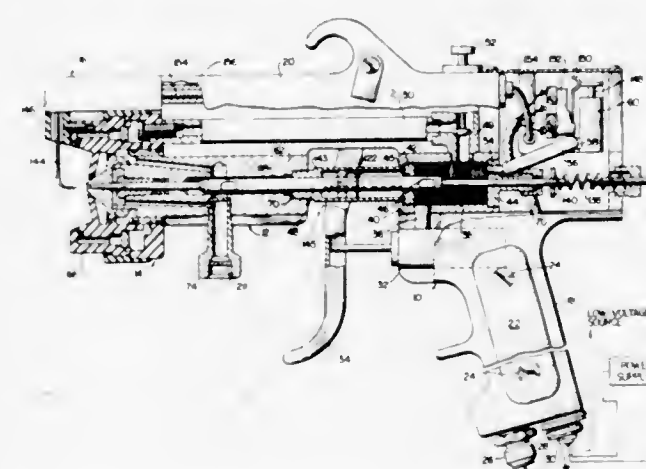
Arvid C. Walberg, Lombard, Ill., assignor to Gourdine Coating Systems, Inc., Livingston, N.J.

Filed Sept. 21, 1970, Ser. No. 73,700

Int. Cl. B05b 5/00; F23d 11/28

U.S. Cl. 239-15

7 Claims



An improved atomization device for spray apparatus in which the nozzle used for atomization of materials has an exposed surface to atmosphere that is continually wiped by the flow of the material dispensed therefrom which forms finely divided atomized particles. After the exiting material has been atomized into particles they tend to be confined in a region generally in the shape of a cone, the base of which is adjacent the nozzle and extends forward therefrom. The flow of the atomized particles out of the cone-shaped region along their flow path may be termed as turbulent flow. In one exemplary embodiment, an electrical atomization nozzle produces finely divided particles in the presence of an electrical corona discharge having its principal ionization component directed in a rearward direction along the path of the projected coating material particles to be charged. In the aforesaid embodiment, a substantial portion of the coating material particles exiting from the material dispensing nozzle flows along the exposed surface of the nozzle in the presence of the corona discharge in the region adjacent thereto where an associated air stream intercepts the exiting coating material, thereby creating a significant vacuum due to aspirating action in the region adjacent to the nozzle, enabling the coating material to flow across the external surface of the nozzle under the influence of air in circular or turbulent motion, causing the surface of the nozzle to be continuously wiped by the flow of the coating material be-

fore it subsequently forms finely divided atomized particles, which may be charged in the presence of the corona discharge.

3,692,242

## FLUID DIVERTING HOUSINGS AND AUXILIARY DEVICES

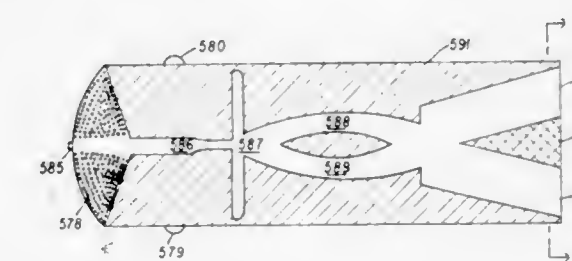
David John Wayfield, R.D. 1, Box 6, New Park, Pa.

Filed Oct. 9, 1968, Ser. No. 766,102

Int. Cl. B63h 11/10; B64c 15/00

U.S. Cl. 239-265.19

16 Claims



This invention relates particularly to water-borne craft constructed with a hull having cavities formed between the inner and outer surfaces of said hull. These cavities form fluid amplification means and passages leading to and away from said fluid amplification means. These passages may be defined as inlet, outlet and control passages which lead to apertures in said hull and through which said apertures, fluid is passed for the purpose of steering said craft.

3,692,243

## NOZZLE

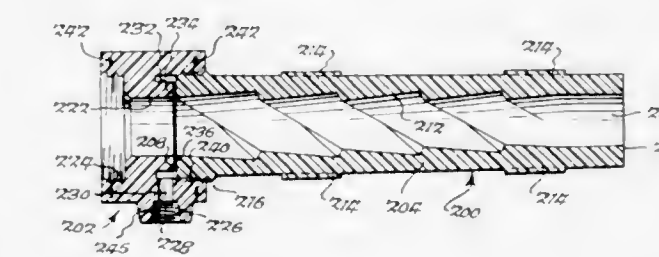
Maurice C. Breunbach, Hamburg, N.Y., assignor to Spirolet Corporation, North Tonawanda, N.Y.

Filed Feb. 2, 1970, Ser. No. 7,747

Int. Cl. B05b 7/10

U.S. Cl. 239-401

8 Claims



An elongated hollow body formed of a resiliently yieldable material having a bore therethrough. A thread formation of helical configuration is formed in the bore and the bore tapers gradually toward its outlet end. Passages formed in the inlet end of the nozzle are variable in size to control the rate of liquid flow into the bore.

3,692,244

## SPRAY NOZZLE FOR GAS SCRUBBERS

Roland L. Lincoln, Salvage, Calif., assignor to Fuller Company

Filed Nov. 19, 1970, Ser. No. 91,089

Int. Cl. B05b 7/04

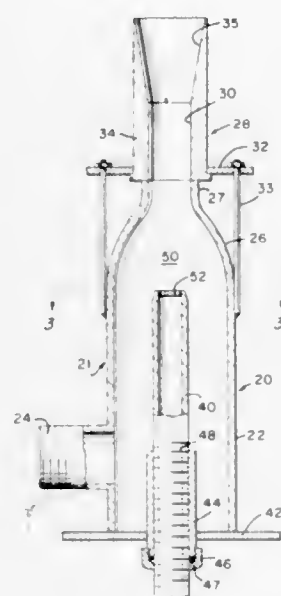
U.S. Cl. 239-419

2 Claims

A liquid spray nozzle which includes a pair of concentric tubular members. Liquid to be sprayed is supplied to the outer tubular member and compressed gas is supplied to the inner tubular member. The outer tubular member includes a reducer portion followed by an expander portion. The liquid and gas mix in the reducer portion and the liquid-gas mixture is discharged from the nozzle through the expander portion.



The nozzle is particularly designed for use with a gas scrubber and is positioned in the flow path of the gas to be cleaned as it



passes from the dirty gas inlet to the clean gas outlet. The liquid spray is countercurrent to the flow of gas to be cleaned.

### 3,692,245 FLUID ATOMIZERS

Arthur Michael Needham, Backwell, and David Tindall, Diben Purlieu, both of England, assignors to J. & T. Engineers (Ascot) Limited

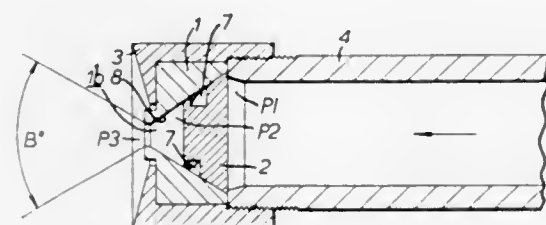
Filed Jan. 15, 1971, Ser. No. 106,716

Claims priority, application Great Britain, Jan. 16, 1970, 2,241/70

Int. Cl. B05b 1/34

U.S. Cl. 239—488

9 Claims



The invention comprehends a fluid atomizer comprising an atomizer nozzle having a discharge orifice communicating with a cavity in said nozzle of convergent axial section towards said discharge orifice, and a swirler insert snugly fitted in said cavity and having an axial section complementary thereto, said swirler insert being axially spaced from said discharge orifice to define between the smaller cross sectional end of said swirler insert and said discharge orifice a swirl chamber forming part of said cavity, said swirler insert having a plurality of passages extending in and along its peripheral wall to provide for fluid flow, between the interfitted peripheral surfaces of said atomizer nozzle and said swirler insert, through said passages each of said passages extending at its discharge end adjacent said swirl chamber in a direction generally tangential of said chamber, so that fluid emerging from said discharge end will flow in an axial direction generally following the peripheral surface of said swirl chamber and tangentially thereto.

### 3,692,246 FLUFF PREPARATION SYSTEM AND APPARATUS

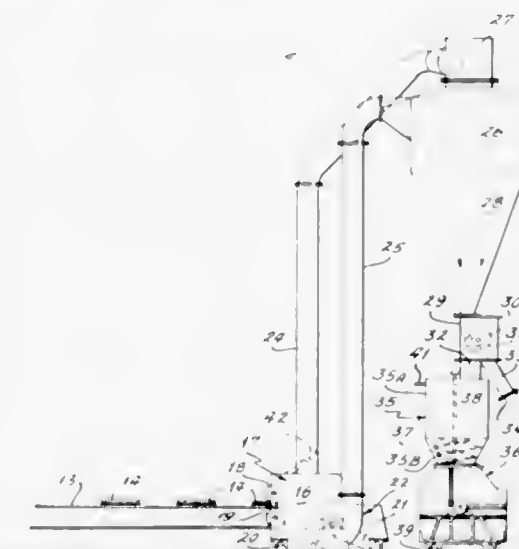
John E. Law, St. Louis, Mo., and Donald C. Cheesman, Oconomowoc, Wis., assignors to Williams Patent Crusher & Pulverizer Company, Inc., St. Louis, Mo.

Filed June 14, 1971, Ser. No. 152,872

Int. Cl. B02c 13/00

U.S. Cl. 241—28

9 Claims



A method or system of applying apparatus to the production of fluff which is used in the making of absorbent articles, like diapers, which after use can be thrown away. The method is directed to preparing fluff from cheap wood pulp sources in a way that yields a continuous stream of fluff for the final product producing machines suitable for direct delivery to overcome compacting which results from excessive handling or time delay between fluff preparation and incorporation into the final product.

### 3,692,247 SYSTEM AND METHOD OF CONTROLLING A HIGH-DISCHARGE COMMINUTING OR PULVERIZING MILL, SUCH AS A TUBE MILL

Heinz Jager, Bochum, Germany, assignor to Wedag Westfalia Dinnendahl Groppe Aktiengesellschaft, Bochum, Germany

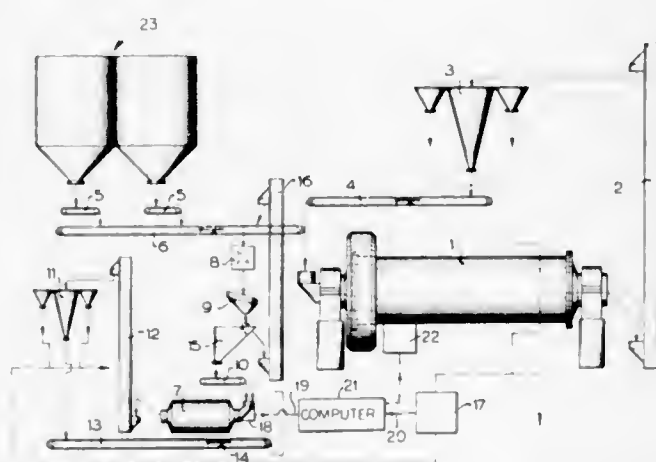
Filed Nov. 3, 1970, Ser. No. 86,477

Claims priority, application Germany, Nov. 5, 1969, P 19 55 569.2

Int. Cl. B02c 17/24

U.S. Cl. 241—30

2 Claims



Method of controlling a high discharge comminuting mill such as a tubular mill which comprises supplying part of a main flow of material to be comminuted in an operating comminuting mill to a control mill located upstream of the operating mill in direction of main flow and having a mode of operation substantially similar to that of the operating mill, comminuting the part of the material flow in the control mill, mea-

suring given physical properties at the control mill for determining technical data necessary for operating the operating mill, transmitting the data to a computer, converting the data in the computer to control values for the operating mill, and transmitting the control values to the operating mill for controlling the latter; and system for carrying out the method.

3,692,248

Patent Not Issued For This Number

### 3,692,249 LUBRICANT FEED MEANS FOR GYRATORY CRUSHERS

Hanns Decker; Heinz Hurtmanns, both of Cologne, and Helmut Stockmann, Wesseling, all of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

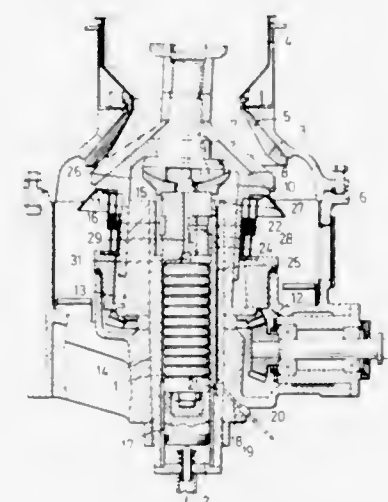
Filed Dec. 18, 1970, Ser. No. 99,543

Claims priority, application Germany, Jan. 2, 1970, P 20 00 141.6

Int. Cl. B02c 2/04

U.S. Cl. 241—215

2 Claims



A gyratory crusher provided with a wobbling crusher cone supported by a dish-shaped sliding bearing on the upper end of an axially slidable piston arranged in a stationary hollow cylindrical shaft is provided with a lubricating system which particularly supplies the sliding bearing with a lubricant. In the wall of the hollow cylindrical shaft is arranged a lengthwise extending bore whose lower end is supplied with lubricant by a supply channel in the housing of the crusher. Near the upper end of this bore the same communicates with a longitudinal slot in the piston from which a radial bore leads to an axial bore in the piston. This axial bore leads directly to the sliding bearing at the upper end of the piston and also communicates with its lower end with a chamber formed by the lower portion of the tubular shaft in which a supporting spring for the piston is arranged.

### 3,692,250 COIL WINDING MACHINE

Donald S. Lee, Brookfield, and Richard Settanni, Bethel, both of Conn., assignors to Leeson Corporation, Warwick, R.I.

Filed Dec. 22, 1969, Ser. No. 887,205

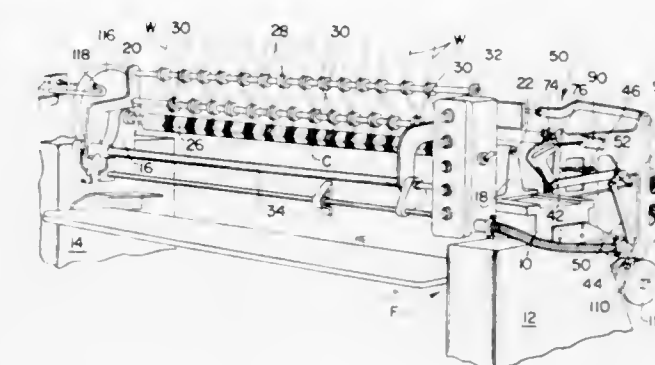
Int. Cl. H01f 41/12

U.S. Cl. 242—7.08

2 Claims

A machine for winding electrical coils in "gang" style on an elongated arbor. The machine includes serving means for inserting a sheet of paper or other insulating material automatically between each successive layer of wire in each of the coils on the arbor. Each sheet is cut automatically to a length sufficient to wrap around the then-existing layers of wire in the

coils, each sheet overlapping slightly at its beginning and terminal ends. Means are provided to commence serving each



sheet at the same relative location on each coil, thus causing all the overlaps to occur at the same radial location on the coil. A generally elliptically shaped coil is formed.

3,692,251

### WINDING, UNWINDING AND TENSIONING APPARATUS

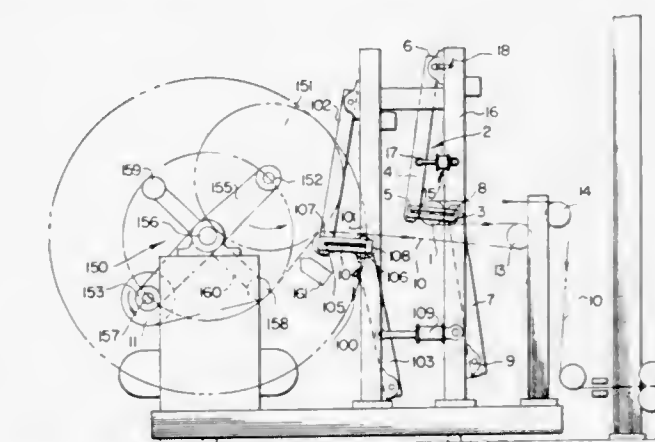
James J. Melead, West Chester, Pa., assignor to Beloit Corporation, Beloit, Wis.

Filed Oct. 26, 1970, Ser. No. 83,730

Int. Cl. B65h 19/12

U.S. Cl. 242—58.2

14 Claims



The invention relates to filament tension regulation apparatus useful to regulate the tension in a moving filament such as during the winding or unwinding of a web or threadlike filament. The invention relates further to a web guide roller assembly for assisting in the movement of a web relative to a roll of the web material such as a splicing roll apparatus useful in web unwinding or a lay-on roll apparatus for use in web winding. The invention further relates to web unwinding apparatus, to web winding apparatus, and to web winding and unwinding apparatus involving combinations of the splicing roll apparatus, the lay-on roll apparatus, and web tension regulating apparatus. The filament tension regulation apparatus comprises a roller mounted for rotation in members disposed at the ends of the roller, the members being supported by pivot arms extending upwardly and downwardly of the member. The arms are of equal length and the roller is centrally located on the member between the pivot areas such that the roller is capable of horizontal motion supported by the pivot arms. The moving filament engages the roller in such a way that horizontal force is applied to the roller in a direction in opposition to a desired pre-determined horizontal force. Changes in filament tension relative to the pre-determined horizontal force cause horizontal motion of the roller and this motion is utilized to adjust tension to a desired value such as by changing filament speed. The web guiding roll apparatus comprises a pair of rollers mounted for rotation and pivotally supported by pivot arms as in the case of the filament tension regulating device. The rollers, however, are located at points symmetrical about a point midway between the pivot



arms and thus will undergo pivoting motion. The arms are of equal length and the rollers are preferably of equal mass whereby the device is easily moved into and out of engagement with a web roll for splicing during unwinding or for forming a nip during winding.

3,692,252

## SURFACE WINDING APPARATUS

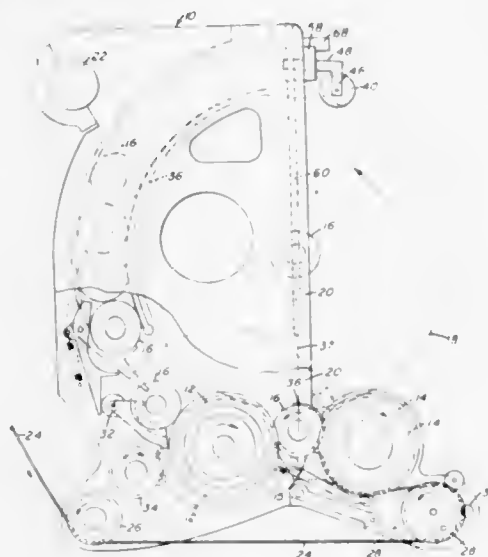
Thomas J. Perconti, Irondequoit, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,596

Int. Cl. B65h 17/08

U.S. Cl. 242—66

10 Claims



Surface winding apparatus for winding a narrow strip of film onto a flangeless core at high speed. The core is nested between rotatable drive and idler drums and moves along a vertical path as the strip is wound onto the core. A guide roller is supported for movement along a path displaced laterally from the path and toward the idler drum. The guide roller contacts the strip on the core at a point between the laterally displaced path and the idler drum.

3,692,253

## BELT RETRACTOR AND LOCKING MECHANISM

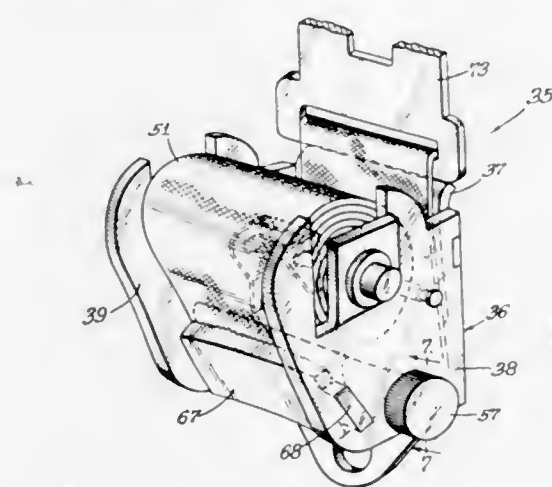
Robert J. Curran, Elmhurst, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed June 21, 1965, Ser. No. 465,629

Int. Cl. A62b 35/00

U.S. Cl. 242—107.4

28 Claims



A belt retracting apparatus includes a spring-motivated reel and a jaw clamp for gripping the belt. One portion of the jaw clamp is a freely rockable locking lever about which a portion of the belt is trained such that the tension exerted by the reel rocks the lever to unlock the clamp releasing the belt for retraction, and a greater tension rocks the lever in the op-

posite direction to lock the clamp gripping the belt to prevent extraction. A latch is provided for disabling the automatic gripping action during an initial extraction of the belt but once belt tension is relaxed, further extraction is prevented until the latch is reset by retracting a predetermined portion of belt. The latch may be reset by a double thickness of belt or by the number of convolutions on the reel. The other portion of the jaw clamp is a resilient bowed beam which deflects under load to increase the gripping area and also to change the effective lever arm ratio of the locking lever. Thus, the belt is protected against destructive gripping forces under extremes of belt tension by changing the leverage ratio of the locking lever and increasing the area of gripping contact.

3,692,254

## STRAND GUIDING APPARATUS

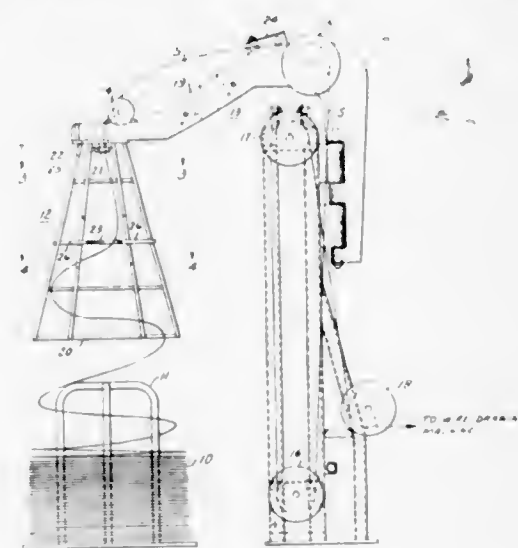
Robert J. Ebert, and William H. Paxton, both of Johnstown, Pa., assignors to Bethlehem Steel Corporation

Filed Dec. 17, 1970, Ser. No. 99,180

Int. Cl. D05b 49/00; B65h 49/00

U.S. Cl. 242—129.62

4 Claims



Apparatus for withdrawing a strand from a horizontally disposed coil having guide means adapted to control the build up of torsional stress in the strand and to carry the stress along with the strand to avoid formation of kinks therein.

3,692,255

## BELT DRIVEN TAPE CARTRIDGE

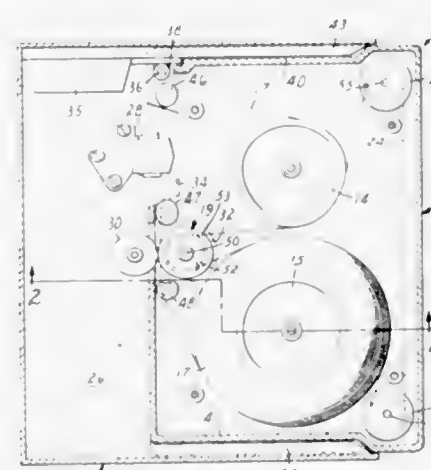
Robert A. Von Behren, Mendota, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 17, 1971, Ser. No. 154,039

Int. Cl. G11b 15/32

U.S. Cl. 242—192

12 Claims



A two-reel tape cartridge in which a flexible belt having a coefficient of elasticity in the range from 0.01 to 0.25 m./nt.m.

and a pretension of at least 1.6 nt. extends around guide rollers adjacent the reels and a driving roller between the reels and contacts the tape on the reel hubs. Rotation of the driving roller causes the belt to drive the tape reels to tension the tape and to move the tape between the reels. The cartridge construction permits low power bidirectional drive and rapid acceleration and deceleration of the tape by a single reversible drive motor.

3,692,256

## TAPE POSITIONING APPARATUS

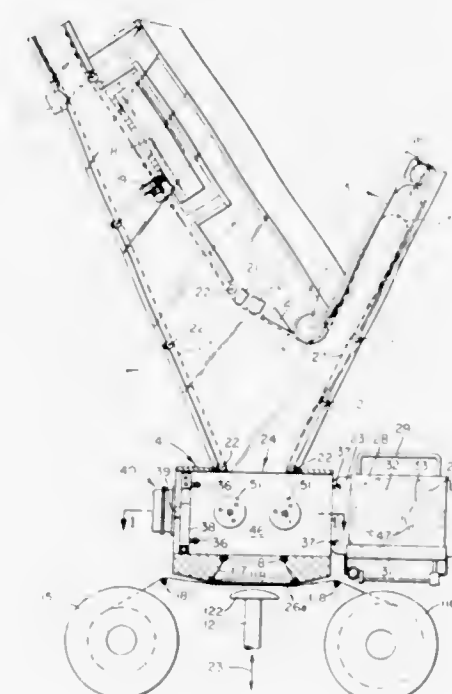
Bryan F. Kember, Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed April 1, 1970, Ser. No. 24,763

Int. Cl. G03b 1/04; G11b 15/32, 23/04

U.S. Cl. 242—198

11 Claims



A magnetic tape cassette, particularly for television, is arranged to be positioned against a precision wall of a tape transport for exposing a run of tape between the tape packs of the cassette in the precision place for acceptance by the transport. The hubs are formed with springloaded portions engageable with the cassette side walls for braking the hubs to avoid spilling the tape when the cassette is separated from the transport, and the hubs are adapted to be engaged by extension means from the transport for centering and driving the hubs and for releasing the brakes to allow free operative rotation of the hubs. The hub is constructed with the operative portions in two separable parts which support a tape mounting sleeve which is removable with the tape, saving the expense of providing more than two operative hub portions for each cassette. The tape is attached to the sleeve by means of a dovetail slot and toed clip member. An arrangement adapting the apparatus for positioning the run of tape when it is mounted on ordinary reels is also disclosed.

3,692,257

## AUTOMATIC TAPE RECORDING-REPRODUCING APPARATUS

Nardino Righi, Via Maniago 2, Milan, Italy

Filed May 24, 1971, Ser. No. 146,172

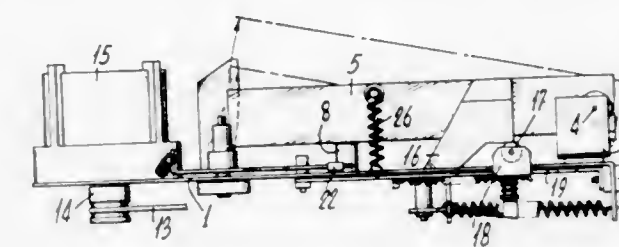
Int. Cl. G03b 1/04; G11b 15/32, 23/04

U.S. Cl. 242—198

4 Claims

An automatic type of "cassette" recording-reproducing apparatus, comprising a support plate to which a cartridge carrying frame is pivoted and movable between upper and lower positions for engaging a pair of drawing spindles with the corresponding tape take-up reel, wherein the drawing spindle

more closely spaced from the pivoting of said frame is made axially movable and cam means are provided which are effective to raise and lower said spindle as a cartridge is inserted and removed, respectively, so as to minimize the height dimension of the recording-reproducing apparatus.



tive to raise and lower said spindle as a cartridge is inserted and removed, respectively, so as to minimize the height dimension of the recording-reproducing apparatus.

3,692,258

## MISSILE CONFIGURATIONS, CONTROLS AND UTILIZATION TECHNIQUES

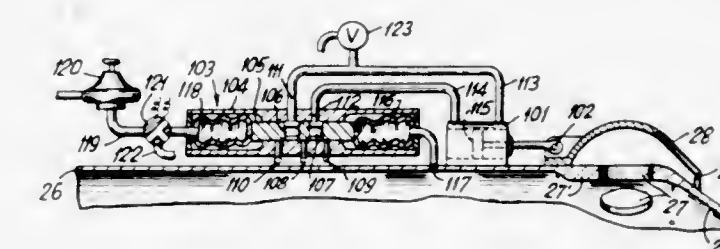
Arthur R. Parilla, P.O. Box 127, Mountain Lakes, N.J. Division of Ser. No. 607,068, Jan. 3, 1967, Pat. No. 3,489,373.

This application Oct. 3, 1968, Ser. No. 767,583

Int. Cl. F42b 15/18; F02k 1/08, 1/16

U.S. Cl. 244—3.21

31 Claims



Missile configurations with engine and propellant control systems are the subject of this application together with weapons and navigational techniques employing same. Reaction engine control systems employing relatively moveable plug-cowl configurations with associated control systems are described herein for providing control of thrust direction and magnitude, engine operating conditions, missile kinematics, and other parameters of liquid and solid propellant rockets.

3,692,259

## WING-TIP VORTICES CONTROL

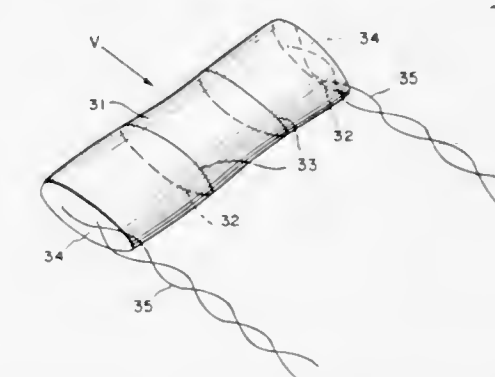
Shao Wen Yuan, 2021 Highboro Way, Falls Church, Va.

Filed June 26, 1970, Ser. No. 50,179

Int. Cl. B64c 23/06

U.S. Cl. 244—40

19 Claims



This invention is for wings of all types, such as fixed wings for aircraft and hydrofoil boat, and rotary blades (or wings) for helicopters and turbines, to be equipped with a row of chordwise tangential jets along the edge or end surfaces of the wing tips for counterbalancing and controlling the wing-tip or blade-tip vortices.



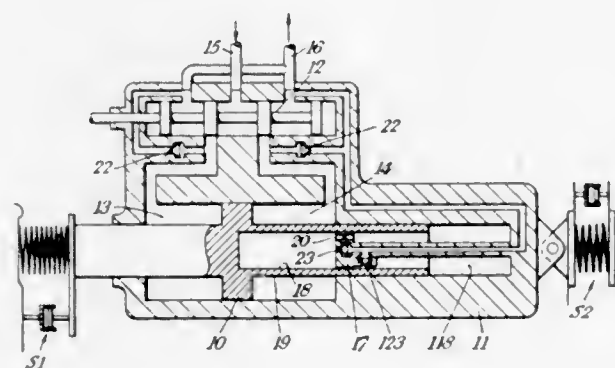
### 3,692,260 DAMPING DEVICES

Stanley George Glaze, Kingswinford; Charles Philip Smith, and Jerzy Leon Courtenay, both of Wolverhampton, all of England, assignors to H. M. Hobson Limited, London, England

Filed May 28, 1970, Ser. No. 41,441  
Int. Cl. B64c 13/40

U.S. Cl. 244-78

4 Claims



A hydraulic jack for actuating the flying control surface of an aircraft which includes a damper mechanically connected to the piston and cylinder assembly of the jack and effective to augment the stability of the installation.

3,692,261

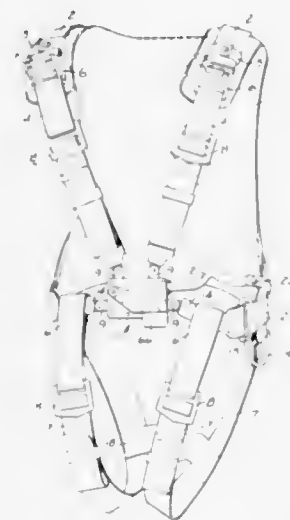
Patent Not Issued For This Number

3,692,262  
PARACHUTE HARNESS AND SINGLE POINT RELEASE  
John A. Gaylord, Greenbrae, Calif., assignor to H. Koch & Sons, Inc., Corte Madera, Calif.

Filed Dec. 11, 1970, Ser. No. 97,250  
Int. Cl. B64d 17/32

U.S. Cl. 244-151 A

4 Claims



A parachute harness in which all the straps and belts are connected to a single release, and the leg straps are so connected to the lap belts as to provide a single releasable connection for each leg strap and lap belt releasably connected to one another; the single release is detachably connected to one of the straps.

### 3,692,263 QUICK-RELEASE CONNECTING DEVICE FOR A PARACHUTE HARNESS AND A HARNESS INCLUDING SAID DEVICE

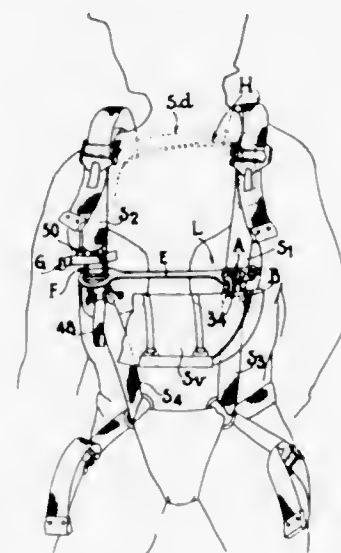
Marcel Pravaz, Clkchy, France, assignor to Etudes et Fabrications Aeronautiques, Paris, France

Filed Dec. 16, 1970, Ser. No. 98,804

Claims priority, application France, Feb. 27, 1970, 7007095  
Int. Cl. B64d 17/30

U.S. Cl. 244-151 A

7 Claims



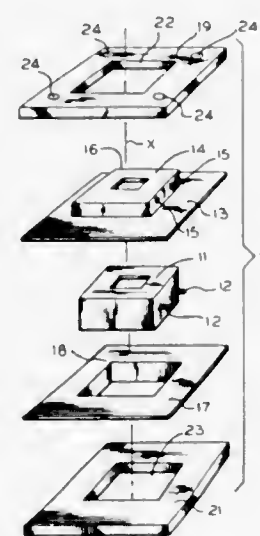
Quick-release connecting device for a parachute harness having two pairs of straps each of which pair includes a chest strap and a thigh strap. The connecting device comprises two hooking devices for respectively interconnecting the chest strap and thigh strap of their respective pair of straps and a bar pivoted to one of the hooking devices in the operative position of the bar. The bar locks the hooking devices in their chest strap and thigh strap interhooking condition in the operative position of the bar. Locking means locks the bar in the operative position.

3,692,264  
SHOCK ISOLATION MOUNTS FOR FRAGILE DEVICES  
Mablon D. Burkhard, Hinsdale, and Russell J. Maxwell, West Dundee, both of Ill., assignors to Industrial Research Products, Inc., Elk Grove Village, Ill.

Filed July 13, 1970, Ser. No. 54,461  
Int. Cl. G04c 3/00

U.S. Cl. 248-15

20 Claims



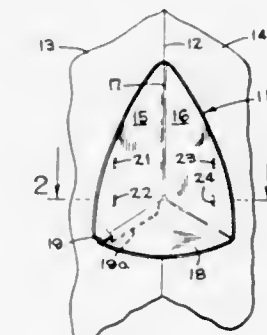
Shock isolation mounts for miniature microphones, sound reproducers, and other fragile devices, in which the device is suspended between thin film support members mounted on a rigid frame in a configuration such that shock stresses of sub-

stantial magnitude occurring in either direction along a given path are absorbed almost entirely by tensional stress of one or more of the film support members. Vibration isolation is also provided, separately from the shock isolation, by means of one or more vibration absorption elements, formed of rubber or other material of high resilience and high compliance in compression, interposed between the fragile device and support members or between the support members and the frame or between the frame and an external support structure. The support members are usually made of plastic, such as a polyester film, and may be pre-formed to fit the external configuration of the transducer or other device or may be flat strips with no pre-forming required.

3,692,265  
CORNER MOUNTABLE BRACKETS  
Forrest C. Barriger, 2617 Northwood Dr., San Jose, Calif.  
Filed Sept. 26, 1969, Ser. No. 861,332  
Int. Cl. G03b 21/00

U.S. Cl. 248-222

1 Claim

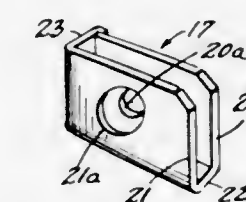


Disclosed herein are corner mountable brackets having sides which must be flexed to fit into place. The angle made by the sides of the bracket differs from the corner angle where the bracket is to be mounted so that the bracket must be flexed to fit into the corner. The bracket exerts spring tension against the corner so that it tends to push against the corner members. To fasten the bracket in place, its sides are provided with fastening means, such as sharp tabs projecting toward the walls forming the corner. The tabs are forced into the corner members by the spring tension.

3,692,266  
VERSATILE GRILL SUPPORTS  
Harry Jacobs, 640 W. 22nd St., Holland, Mich.  
Filed Oct. 26, 1970, Ser. No. 83,987  
Int. Cl. A47h 1/10

U.S. Cl. 248-224

4 Claims



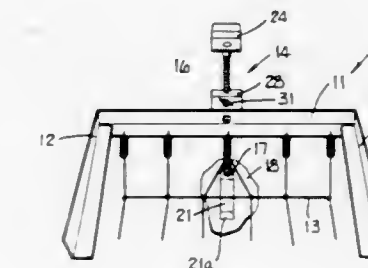
A plurality of mounting brackets are provided for attaching a grill to a door or window. Each bracket is formed in one embodiment from a pair of parallel, spaced vertical walls coupled together at the bottom edges and open along the top edges to receive a flat portion of the grill. When four such brackets are employed at the four corners of a window or door, the left side brackets include a third vertical wall joining the left edges of the pair of vertical walls and the right side brackets include a third vertical wall joining the right side edges of the pair of vertical walls. A grill can be easily dropped into the brackets for installation or lifted therefrom for removal.

3,692,267  
POSITIONAL ADJUSTMENT DEVICE FOR CASKET BEDS  
Nicholas T. Kronas, Danville, and Robert W. Ehrich, Georgetown, both of Ill., assignors to Estad Products, Inc., Danville, Ill.

Filed April 15, 1971, Ser. No. 134,344

U.S. Cl. 248-288

3 Claims

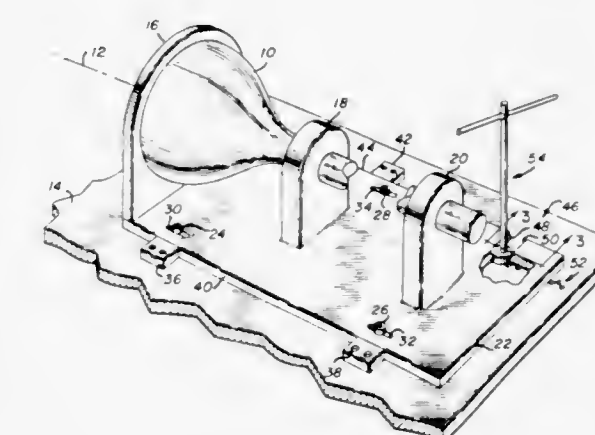


Disclosed is a mechanism for elevating or lowering a bed within a casket comprising a vertical threaded rod or elevating screw which carries a stop member which can be adjustably positioned on the rod for adapting the mechanism for various casket heights.

3,692,268  
POSITIONING MECHANISM  
Gerald J. Laughlin, Palo Alto, Calif., assignor to The Singer Company, New York, N.Y.  
Filed Feb. 3, 1971, Ser. No. 112,200  
Int. Cl. F16m 13/00; H05k 13/00

U.S. Cl. 248-346

4 Claims



The disclosed embodiment of the present invention is a mechanism for positioning the CRT (cathode ray tube) at the object plane of an optical system, thereby permitting focusing of the image projected by the system. A plate for supporting the CRT is provided with a notch in an edge parallel to the direction of travel of the plate. The CRT plate is supported by a mounting surface which contains a row of offset holes in such a position that they align with the notch when the CRT plate is installed thereon. A camming tool having a shaft with an eccentric member mounted thereon and a handle disposed for manual rotation thereof is provided for effecting relative motion between the CRT plate and the mounting surface. The diameter of the eccentric member attached to the shaft of the camming tool is substantially equal to the width of the notch in the edge of the CRT plate, and the diameter of the shaft of the camming tool is substantially equal to the diameter of the holes in the mounting surface. In use, the shaft of the camming tool is inserted into one of the holes in the mounting surface, such that the eccentric member is received within the notch. Rotation of the camming tool imparts a force on the CRT plate which, in turn, displaces the CRT along the optical axis.



3,692,269

## SHIRT DISPLAY HANGER

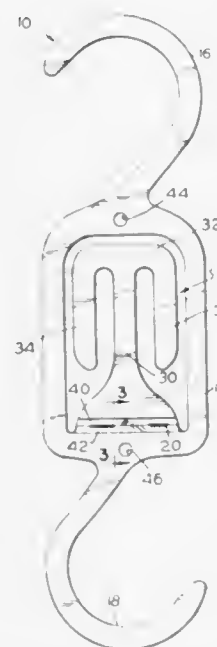
Paul N. Hales, 9050 S. W. Scholls Ferry Rd., Portland, Oreg.

Filed June 1, 1970, Ser. No. 42,341

Int. Cl. A47g 29/00

U.S. Cl. 248—360

2 Claims



Plastic shirt display hangers each includes a clip hinged to a hanger body between a first position extending perpendicular to the plane of the hanger body for holding a standup shirt package, and a second position substantially parallel to the plane of the hanger body for holding a flat shirt package.

3,692,270

## SEAT LATCH MECHANISM

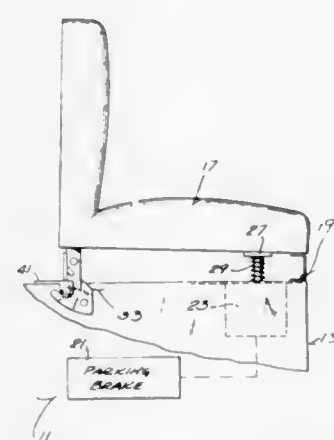
Gerald N. McAuliffe, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed May 5, 1971, Ser. No. 140,343

Int. Cl. F16d 65/14; E05c 3/00

U.S. Cl. 248—384

19 Claims



Disclosed herein is a seat which is mounted on a vehicle frame for pivotal movement relative to an in-use position, together with a parking brake operable to prevent vehicle movement upon movement of the seat through a first predetermined distance from the in-use position, and a latch mechanism on the seat and on the frame and including first means for preventing movement of the seat through the first predetermined distance from the in-use position, and second means selectively movable between first and second positions, and being operable, when in the first position, for preventing limitation of movement of the seat by the first means, whereby to allow pivotal movement of the seat from the in-use position beyond the first predetermined distance, and for preventing movement of the seat through a second predetermined

distance greater than the first predetermined distance from the in-use position and, when in said second position, for permitting seat movement prevention by the first means and for effecting movement of the second means to the first position upon movement of the seat toward the in-use position from a position at the first predetermined distance from the in-use position.

3,692,271

## ADJUSTABLE SEAT ASSEMBLY

Robert I. Homier, Farmington, and Raymond C. Posh, Livonia, both of Mich., assignors to Lear Siegler, Incorporated, Detroit, Mich.

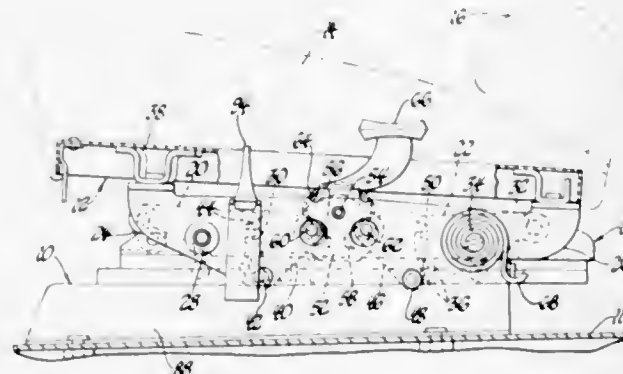
Continuation of Ser. No. 795,562, Jan. 31, 1969, abandoned.

This application Feb. 24, 1971, Ser. No. 118,512

Int. Cl. F16m 11/24, 13/00; B60n 1/02

U.S. Cl. 248—394

12 Claims



An adjustable seat assembly including a base, a seat support, and means for independently adjusting the vertical elevation of the front and rear portions of the seat support relative to the base including on each side of the assembly a pair of lever arms each being pivotally connected to the base and independently pivotally connected to the seat support. The pivotal connection of each of the levers to the seat support is disposed inwardly and between the pivotal connections of the levers to the base. The inward end of each of the levers has formed thereon a plurality of notches. Latch plates pivotally mounted on the seat support include tapered teeth engageable with any of the notches in the associated lever arms to latch the lever arms in desired angular dispositions corresponding to desired elevations. A pivotal control link is operable by way of an actuator arm to selectively disengage the latch plates from the associated lever arms. The lever arms and control links on opposite sides of the seat assembly are interconnected for synchronous operation. The base is longitudinally slidable to provide fore-and-aft adjustment.

3,692,272

## SLIDE RAIL ASSEMBLY FOR A VEHICLE SEAT

Arthur O. Radke, 133 W. Oregon St., Milwaukee, Wis.

Filed Nov. 30, 1970, Ser. No. 93,674

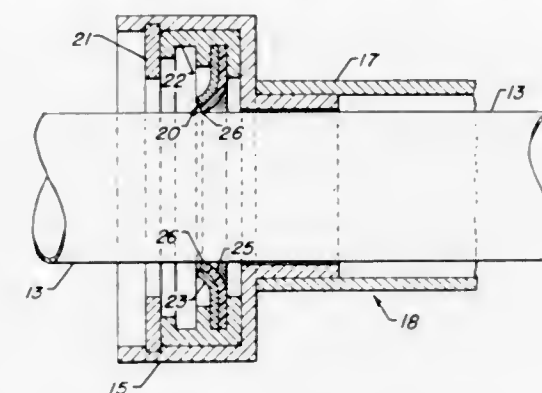
Int. Cl. B60n 1/02; F16c 29/08

U.S. Cl. 248—429

2 Claims

An improved slide rail assembly in a vehicle seat for moving a vehicle seat cushion assembly relative to a vehicle seat base assembly. The slide rail assembly has shaft members and

sleeve members slideably engaged and interposed between the cushion and base assemblies. Annular wiper members are



fastened to the ends of the sleeve members in continuous contact with the shaft members, thereby forming sliding seals between the shaft members and the sleeve members.

3,692,273

## STANDING EASEL FOR CLASSROOM USE

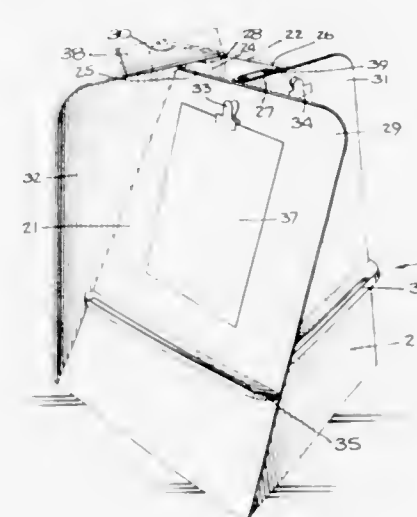
Myron Woolman, 55 E. 86th St., New York, N.Y.

Filed May 28, 1970, Ser. No. 41,169

Int. Cl. A47b 97/08

U.S. Cl. 248—460

24 Claims



An easel designed for classroom use and modifications thereof are disclosed wherein the novel construction includes an arrangement of at least one drawing panel and at least two support members for said drawing panel, all arranged for contact with the floor of the classroom, whereby each of these elements furnishes structural support for the remaining elements and each of the elements provide frictional contact with the floor of said classroom to stabilize said easel against movement by users. The elements may be made disengageable and collapsible in order to fold a given easel into substantially flat units.

3,692,274

## VALVE FOR PNEUMATIC MOTOR

Samuel R. Rosen, Lorain; Alvin A. Rood, Westlake, and Donald R. Scharf, Amherst, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Division of Ser. No. 809,235, March 21, 1969, Pat. No.

3,635,125. This application May 17, 1971, Ser. No. 143,812

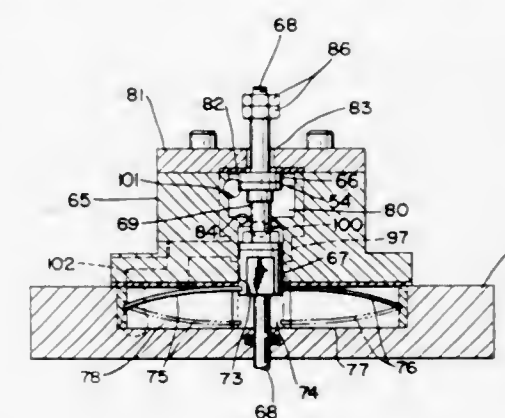
Int. Cl. F16k 31/44

U.S. Cl. 251—75

2 Claims

A hydraulic pump and double acting air motor therefor including means for controlling the inlet and exhaust of air to and from the opposite sides of the piston in the air cylinder. A pilot valve operated by the air piston controls one operating

valve for the cylinder and a pilot relay valve. The pilot relay valve controls another operating valve which is in reverse phase with respect to the first operating valve. The piston



operated pilot valve has a snap action feature so that the pilot valve, the pilot relay valve and the operating valves all reverse condition abruptly with a minimum dwell to provide a smoother power transmission.

3,692,275

## LINE COUPLING CONNECTOR FOR RAILWAY VEHICLES

Pierre Baronnet, and Ernst Katzer, both of Munich, Germany, assignors to Knorr-Bremse KG, Berlin and Munich, Germany

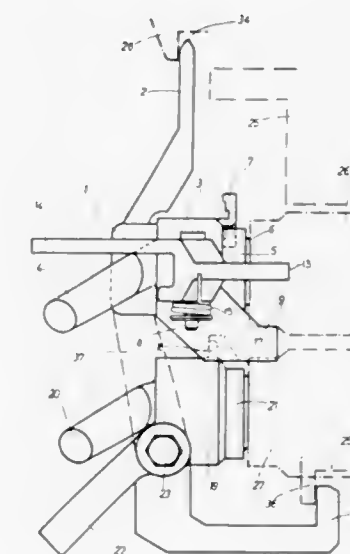
Filed Jan. 27, 1971, Ser. No. 110,192

Claims priority, application Germany, Feb. 24, 1970, P 20 08 540.9

Int. Cl. F16k 51/00

U.S. Cl. 251—149.2

8 Claims



A coupling device is disclosed for coupling a line to a corresponding line on a railway vehicle equipped with either an automatic central buffer coupler or a manually operated box coupler. The device may be attached to the end of an air or stream line and comprises several retaining arms and a hook which are lockingly engageable with existing structure on both the automatic coupler and the manual coupler. The device is also provided with radial closure guides which are spaced to correspond with the closure guides on a manual line coupler and which are positionable between guide flanges surrounding an air line opening on an automatic coupler. A further device is provided for coupling a second line to an automatic coupler with the second device having a radial extension received in a recess in the underside of the first device and a pivotable hook for lockingly engaging an abutment on the automatic coupler.



3,692,276

**BUTTERFLY VALVE**

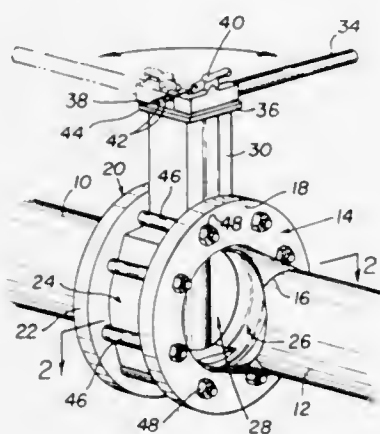
John A. Conners, Fairfield; Donald W. Liepelt, Madison, and William H. Baulieu, Monroe, all of Conn., assignors to Jenkins Bros., Bridgeport, Conn.

Filed May 27, 1971, Ser. No. 147,400

Int. Cl. F16k 1/22

U.S. Cl. 251-306

11 Claims



Butterfly valve assembly for installation in a pipe line between flanges. Assembly includes rigid tubular valve body and resilient valve seat insert to make tight seal with flanges when installed and to make tight seal with valve disc in service. Seat insert has certain dimensions undersize relative to valve body so that insert may be stretched when fitted to body and is further stretched when flanges are tightened during installation. Stretching assures secure fit between insert and body before installation and leak proof seal after installation. Seat insert and valve body have cooperating radial ledges asymmetrically located to prevent relative movement when valve disc is closed.

3,692,277

**DEVICE FOR STRESSING TENSIONABLE ARMATURES**

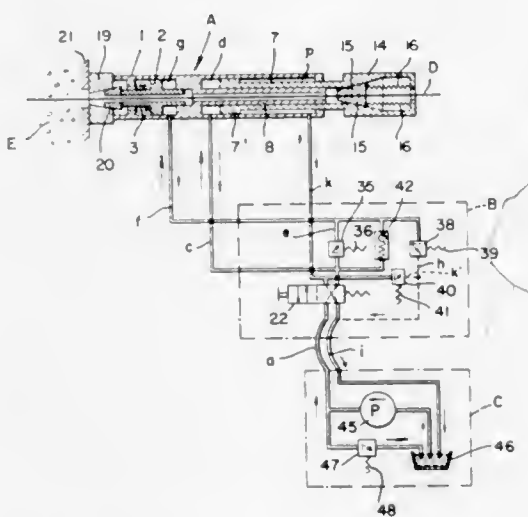
Robert Schwartz; Constantin Manolache; Marcel Tannenbaum; Gheorghe Vasile; Vasile Rey; Constantin Sima, and Aurel Cambureanu, all of Bucharest, Romania, assignors to Institutul de Cercetari in Constructii si Economia Constructiilor, Bucuresti, Romania

Filed March 3, 1971, Ser. No. 120,556

Int. Cl. E21b 19/00

U.S. Cl. 254-29 A

10 Claims



A tensionable armature passes axially through a jack comprising a hydraulic cylinder in which two pistons are slidable. The first piston projects from one extremity of the cylinder and carries a spring-loaded chuck for gripping the free end of the armature upon outward movement thereof, this piston being of the double-acting type and coacting with a fixed stem for positively disengaging the associated chuck from the arma-

ture upon inward retraction. The second piston, which is spring-loaded, bears upon another chuck at the opposite cylinder extremity on being urged outwardly against the spring force, thereby causing that chuck to hold the armature in its stressed position against the shell of a concrete casing. A distributor, comprising a set of four valves controlled by a common handle, has an operating position and a release position; in the former, an outward movement of the first piston to stress the armature is followed by a loading of the second piston to clamp the armature in place, whereas in the latter the first piston is retracted and the second piston is unloaded preparatorily to a new tensioning stroke.

3,692,278

**CARPET STRETCHER WITH RATCHET HANDLE**

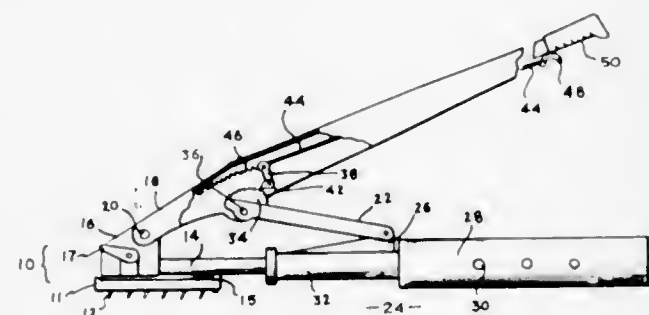
Bulford L. Payson, Garden Grove, Calif., assignor to Robert E. Strauss, Orange, Calif., a part interest

Continuation-in-part of Ser. No. 173,779, Aug. 23, 1971. This application Dec. 27, 1971, Ser. No. 212,127

Int. Cl. A47g 27/04

U.S. Cl. 254-62

7 Claims



A hand powered carpet stretcher is provided with the improvement of ratchet means carried by the stretcher handle to permit locking of the stretcher head at any of a plurality of extensions with remote actuation means to lock the ratchet so that the stretcher can be operated with a single handed motion. Positioning of the ratchet means in the handle of the stretcher permits a structure with minimum bulk and with a lever advantage of the ratchet mechanism which increases with increasing loading.

3,692,279

Patent Not Issued For This Number

3,692,280

**FASTENING OF TREADS TO DRIVE WHEEL OF FRICTION MINE HOIST**

Peter De Hertel Eastcott, and William Herbert Jackson, both of Peterborough, Ontario, Canada, assignors to Canadian General Electric Company Limited, Toronto, Ontario, Canada

Filed Jan. 29, 1971, Ser. No. 110,992

Claims priority, application Canada, April 14, 1970, 80031

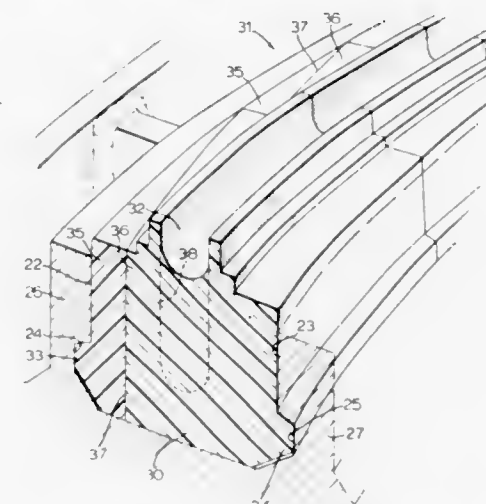
Int. Cl. B66d 1/36

U.S. Cl. 254-190

1 Claim

A tread for the drive wheel of a friction mine hoist has an annular array of plastic blocks placed end-to-end in a retaining groove on the periphery of the wheel. Each block has a small wedge-shaped piece split lengthwise off one side well to one side of the material under the rope, i.e., the rope wear material. During assembly of the blocks on the wheel, the small piece is placed in the groove first, after which the large piece is

driven lengthwise into place, narrowest end first, beside the small piece so as to wedge the two pieces in the groove as a



along a lower or material receiving section, an upwardly inclined or mixing section and a laterally extended delivery section. The materials supplied to the receiving station are conveyed to the mixing section where they are concurrently elevated and mixed due to the continuous falling downwardly from leading paddles of materials in excess of the conveying capacity of the paddles and the subsequent picking up of such materials by the paddles. The mixed materials are carried to the delivery section for distribution.

3,692,283

**DEVICE FOR PREPARATION OF SUSPENSIONS**

Theo Sauer, Starnberg; Rolf-Fred Posse, Leverkusen, and Gunter Schulz, Holzkirchen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

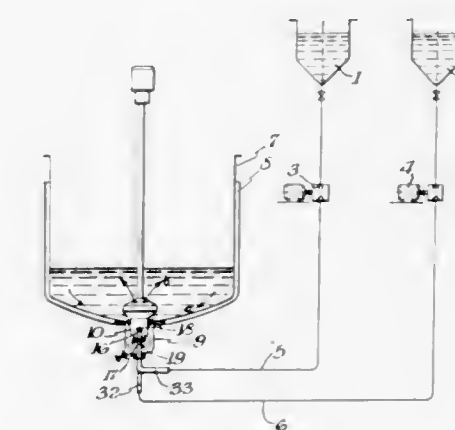
Filed Dec. 21, 1970, Ser. No. 100,275

Claims priority, application Germany, Dec. 20, 1969, P 19 63 919.1

Int. Cl. B01f 7/16

U.S. Cl. 259-24

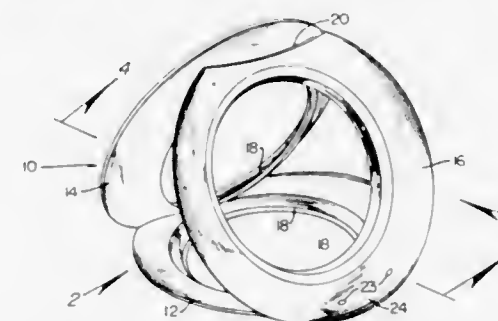
10 Claims



3,692,281  
**NESTABLE TRAFFIC MARKER**  
George W. Clayton, 4059 S. Wisteria Way, Denver, Colo.  
Filed Sept. 15, 1971, Ser. No. 180,605  
Int. Cl. E01f 9/00

U.S. Cl. 256-64

4 Claims

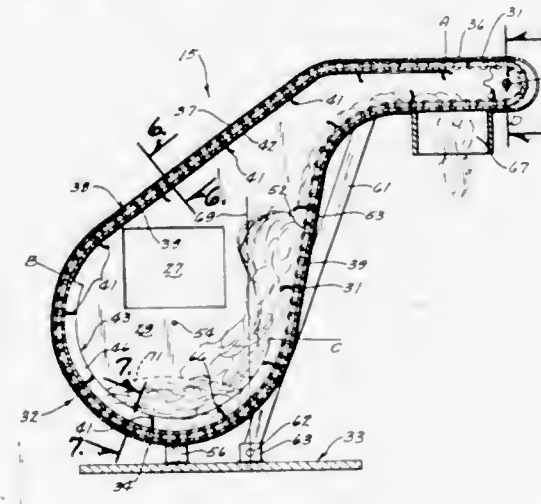


Traffic marker characterized by three members, each formed from a side wall and bead of a pneumatic tire, the members being hinged together for movement from a generally flat nesting relationship to an erect position.

3,692,282  
**MATERIAL MIXING AND CONVEYING APPARATUS**  
Harold D. Niblo, Redfield, Iowa  
Filed July 15, 1970, Ser. No. 55,134  
Int. Cl. B01f 5/26, 15/02

U.S. Cl. 259-4

4 Claims



An endless conveyor of chain and paddle type is moved longitudinally of a trough member so as to travel in succession

Suspensions, such as silver halide containing suspensions, are prepared by disposing a basic component in a kettle or tank and adding further components thereto by means of a separating tube in the tank. The upper section of the tube has a conveyor with a motor driven paddle or the like, while the lower section has mixing nozzle valves each of which has a variably opening circular slot which opens by means of flow pressure overcoming pretensioning in the valves.

3,692,284  
Patent Not Issued For This Number

3,692,285  
**MULTI-STAGE CALCINER**  
Hazelton H. Avery, 1202 W. Galina Blvd., Aurora, Ill.  
Filed Feb. 19, 1971, Ser. No. 116,999  
Int. Cl. F27b 1/10

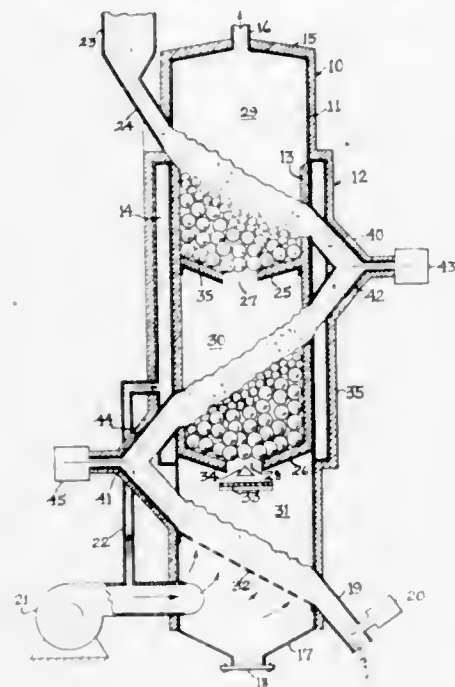
U.S. Cl. 263-30

8 Claims

A multi-stage apparatus for drying and hardening ion ore pellets as they flow over a high-temperature sloping grid and pass through separated pre-heating and pre-cooling full flow areas. The apparatus provides a drying stage separated by a



pre-heating area from the indurating stage that in turn is separated by a pre-cooling area from the cooling stage, with a



single directional flow of air forced longitudinally through each stage to sequentially dry, heat and cool the green pellets as they flow through the apparatus.

3,692,286

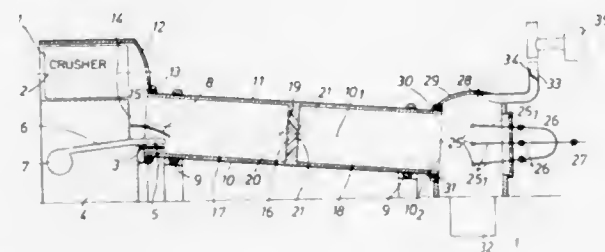
#### APPARATUS FOR THE MANUFACTURE OF SUPER-WHITE CEMENTS

Andre B. Borrelli, Montelimar, France, assignor to Societe Anonyme: Ciments Lafarge, Paris, France  
Filed July 31, 1970, Ser. No. 59,884

Claims priority, application France, Feb. 9, 1970, 7004502  
Int. Cl. F27b 7/20

U.S. Cl. 263—32 R

12 Claims



Apparatus for manufacturing superwhite cement from clinker, comprises an inclined rotating drum divided by an apertured partition into upstream and downstream compartments, a crusher delivering hot clinker and nozzles delivering hot reducing gas into the outer end of the upstream chamber, spray nozzles to introduce water vapor into the outer end of the downstream chamber, and closures sealing the ends of the drum from the outside atmosphere.

3,692,287

#### METHOD AND APPARATUS FOR REMOVING ALKALI FROM CEMENT SYSTEM

Robert F. Kohl, Shorewood, and Glenn A. Helan, Franklin, both of Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

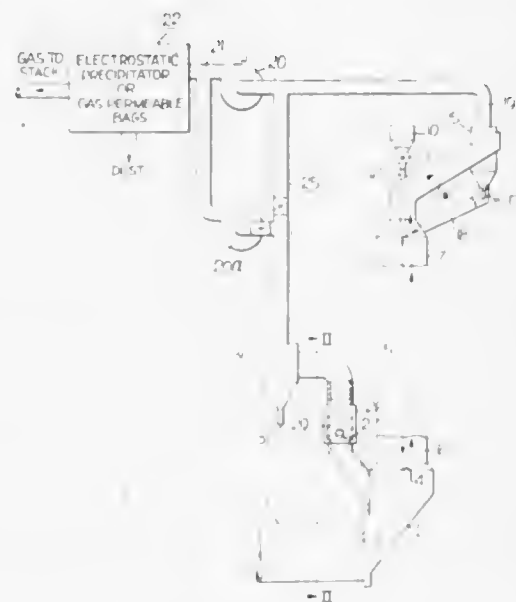
Filed Dec. 10, 1970, Ser. No. 96,776  
Int. Cl. F27b 7/20

U.S. Cl. 263—32 R

9 Claims

A method and apparatus is disclosed for reducing the alkali content of cement clinker in which dust and volatilized alkalis are removed from hot clinkering kiln exit gases utilized to preheat particulate raw material. A stream of kiln exit gases at

1,800° F., with entrained dust and volatilized alkalis, are collected by a hood that turns the stream upwardly countercurrent to the falling feed material. A portion of the upwardly moving stream is bypassed upwardly and away from the falling feed material and into a mixing box as close to the hood as is permitted by surrounding structures. Air is admitted to the mixing box and mixed with the bypassed portion of the stream to chill the mixture to below 600° F., to freeze the alkalis. This sudden chilling of the bypassed gas stream freezes the alkalis to particles, most smaller than 10 to 20 microns. The chilled gas stream is then passed through a cyclone separator to collect dust particles larger than 10 to 20 microns and a



minor portion of the frozen alkalis. The gas stream is then passed through an electrostatic precipitator or a plurality of gas permeable bags to collect dust particles smaller than 10 to 20 microns and a major portion of the frozen alkalis. The bypassed portion of the gas stream from the hood to the mixing box passes through a conduit that tapers toward the mixing box, and the stream from the mixing box to the cyclone separator passes through a conduit that tapers away from the mixing box, to provide an increase in velocity of the gas to maintain the dust and frozen alkalis suspended in the gas. A ported cage is mounted within the mixing box to create turbulence and efficient mixing of the air and gas.

3,692,288

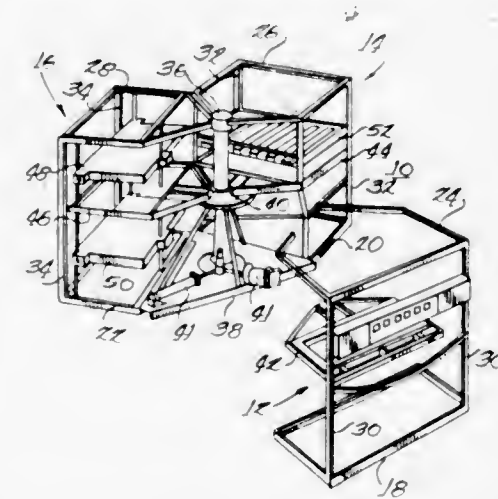
#### GAS-FIRED THERMOFORMING MACHINE

Robert E. Kostur, Oak Brook, Ill., assignor to Comet Industries, Inc., Bensenville, Ill.

Filed Dec. 24, 1970, Ser. No. 101,322  
Int. Cl. F27b 3/00

U.S. Cl. 263—40 R

10 Claims



To obtain a mixture of air and a combustible gas for burning, a first plurality of elongated infrared radiation gas burners

forming a bottom section and a second plurality of elongated parallel infrared radiation gas burners forming a top section of an oven of a thermoforming machine communicate with four manifolds, with each of the burners in a lower section communicating with two manifolds through two different gas lines and with each of the burners in the upper section communicating with the other two manifolds through two different lines, one of the lines between each burner and the manifold including a manually adjustable valve for controlling, within a range, the flow of gas to the burner. Gas is provided to the manifolds through gas lines under the control of (1) venturi type gas mixers; (2) automatically controlled regulating valves; (3) manual valves; and (4) valves that close the gas line between cycles of the thermoforming machine to clear the lines with air, and, when an infrared photocell determines that the plastic sheet is too hot, to cool the plastic sheet by blowing air upon it.

3,692,289

Patent Not Issued For This Number

3,692,290

#### PLANT FOR CONTINUOUSLY REFINING PIG IRON

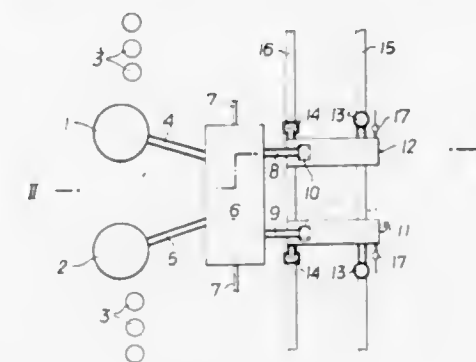
Alois Hager, Linz, Austria, assignor to Vereinigte Österreichische Eisen- und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed Feb. 17, 1971, Ser. No. 116,087

Claims priority, application Austria, Feb. 20, 1970, 1556  
Int. Cl. C21c 7/00

U.S. Cl. 266—13

3 Claims



The invention relates to a plant for continuously refining pig iron comprising a vessel for storing and keeping warm pig iron and a closed spray-refining vessel in which a gaseous refining agent is blown onto a falling pig iron stream and an about horizontal spraying cone is formed, in which the improvement resides in that the vessel for storing and keeping warm the pig iron is provided with at least one electromagnetic conveying groove starting from its floor and ascending slantingly, its upper end ending into a supply funnel of the spray refining vessel. With this arrangement the advantage is gained that a uniform amount of liquid pig iron may continuously be fed into a spray refining vessel so that the amounts of refining gas and additions need not be changed.

3,692,291

#### SILVER RECOVERY

Michael T. MacKay, 2489 E. Creek Rd., Sandy, Utah  
Filed Aug. 26, 1970, Ser. No. 67,111

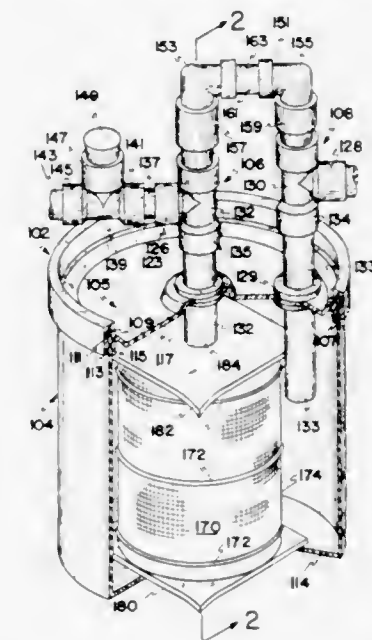
Int. Cl. C22b 61/00

U.S. Cl. 266—22

7 Claims

Equipment and methods for recovering silver from a silver-containing solution. The equipment comprises a plastic container and spaced connectors comprising an influent liquid passage and an effluent liquid passage. The connectors penetrate a lid which is sealed about the opening of the container in press-fit relation, with a sealant compound being

disposed between the lid and container adjacent the press-fit. Elastomeric grommets, carried in apertures on the lid, create a seal and slip-fit with each of the two spaced connectors. A recovery element made of metal above silver in the electromotive force series fits within the container. The metal-forming the element is arranged in a woven matrix, such as, for example, galvanized window screen, which is wound about itself



3,692,292

#### CYCLIC METAL CUTTING DEVICE

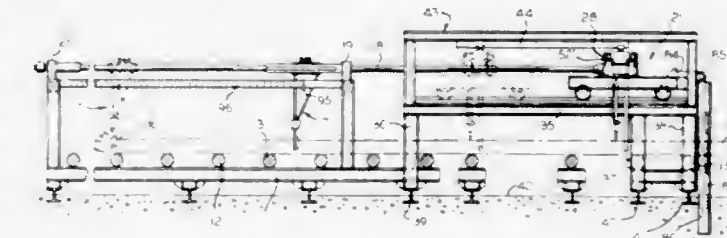
Joseph Rokop, and Geoffrey W. Hughes, both of Bethel Park, Pa., assignors to Pennsylvania Engineering Corporation

Filed Jan. 4, 1971, Ser. No. 103,643

Int. Cl. B23k 7/02

U.S. Cl. 266—23 K

12 Claims



Cutting torches are actuated transversely to cut into discrete lengths a metal strand that is moving longitudinally. The torches are on a longitudinally movable main carriage. The leading end of an incoming continuous strand engages the carriage and advances it longitudinally at which time the torches are shifted transversely by a follower and cam arrangement so that the torches cut in a straight line across the strand. Feelers on transversely movable carriages engage the edges of the strand and correctly position the torches which are transversely movable between the edge feeler carriages. Cams influence the torches toward the center of the strand where their cutting paths overlap. When a cut is completed the feeler and torch carriages shift transversely and the main carriage is disengaged from the strand so that return of the main carriage restores the feeler and torch carriages to their initial position.



3,692,293

**APPARATUS FOR BLOWING HIGH-TEMPERATURE REDUCING GAS INTO BLAST FURNACE**

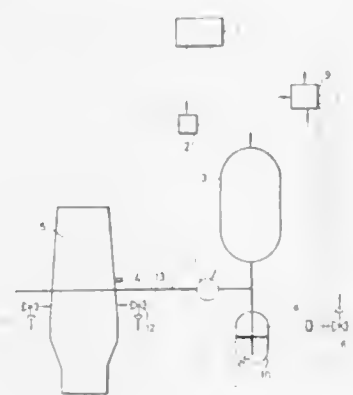
Yoshiaki Hara, Akio Masagaki, and Masaaki Iguchi, all of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed April 21, 1971, Ser. No. 136,073

Claims priority, application Japan, May 28, 1970, 45/45830  
Int. Cl. F27b 1/28

U.S. Cl. 266—29

2 Claims



An apparatus for blowing high-temperature reducing gas into a blast furnace comprising a device for settling the supply amounts of raw materials such as hydrocarbons, a raw material controlling device to control the supply amounts of hydrocarbons, oxygen (or air) and steam to a cracking furnace according to the signal of said supply amount settling device, a furnace pressure gauge provided in the blast furnace, a cut-off valve for branch pipe gas, a pressure control valve provided in a reducing gas exhaust pipe line, a producer gas pressure gauge provided in an inlet pipe line of said pressure control valve, and an indicator controller to calculate and instruct the degree of opening of said pressure control valve according to the signals from said supply amount settling device, the furnace pressure gauge and the producer gas pressure gauge, and also calculate and instruct the opening and closing of the cut-off valve for branch pipe gas.

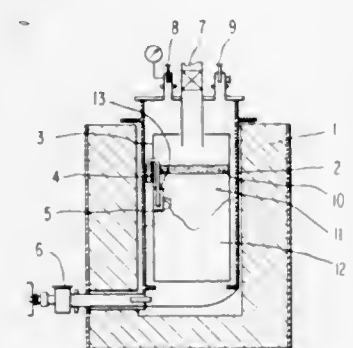
3,692,294

**APPARATUS FOR PRODUCTION OF ZIRCONIUM METAL**Kazuhiko Ishimatsu, and Takao Nakahara, both of Tokyo, Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan  
Filed Feb. 16, 1971, Ser. No. 115,267

Int. Cl. C22b 61/02

U.S. Cl. 266—34 R

10 Claims



In an apparatus adapted for the production of zirconium metal, by the reduction of zirconium tetrachloride with metallic magnesium with magnesium chloride being formed as a by-product, comprising a reaction vessel provided with means allowing for the introduction of zirconium tetrachloride vapor into said reaction vessel, a pressure control valve and means allowing for the introduction to and exhaustion from said reaction vessel of a gas, and an outer vessel surrounding said

reaction vessel defining an annular space therebetween, the improvement which comprises a first means communicating between the interior of said reaction vessel and said annular space allowing for the discharge of said by-product magnesium chloride from the interior of said reaction vessel to said annular space and a second means communicating between said annular space and outside of said outer vessel allowing for the discharge of said by-product magnesium chloride from said annular space.

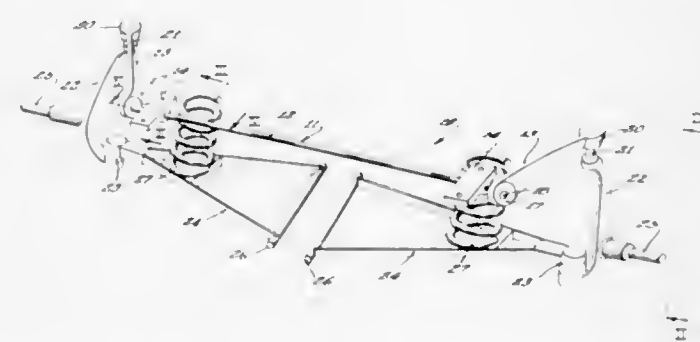
3,692,295

**TORSION BAR WHEEL SUSPENSION**Richard Cass, Birmingham, and Edward J. Herbenar, Detroit, both of Mich., assignors to TRW Inc., Cleveland, Ohio  
Filed May 25, 1970, Ser. No. 40,318

Int. Cl. B60g 11/18; F16f 1/14

U.S. Cl. 267—57

7 Claims



A three part stabilizer bar assembly for front or rear automotive wheel suspensions having separable torsion bar and stabilizer arms accommodating replacement of any worn or broken part without discarding the other parts. The three part assembly accommodates wide variations in torsional resistance without affecting load carrying requirements.

3,692,296

**AIR SPRING SHOCK ABSORBER UNIT**

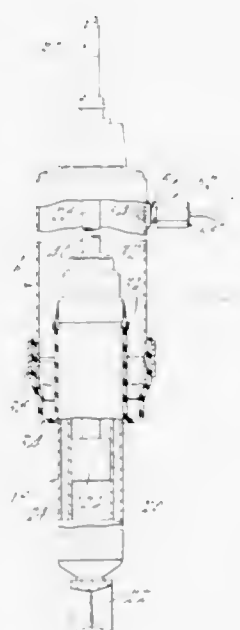
William W. Higginbotham, Monroe, Mich., assignor to Monroe Auto Equipment Co., Monroe, Mich.

Filed Dec. 16, 1970, Ser. No. 98,835

Int. Cl. F16f 5/00

U.S. Cl. 267—65

29 Claims



An air spring shock absorber unit comprising, a hydraulic direct acting shock absorber, a generally cylindrically-shaped

enclosure member extending coaxially around the shock absorber, a flexible diaphragm member connected at one portion thereof to the shock absorber unit and at another portion thereof to the enclosure member and defining a pressurized gas chamber therewith, conduit means for communicating pressurized gas to the chamber through a passage formed in the enclosure member, a fitting assembly for attaching one end of the conduit to the enclosure member and comprising first and second threadably engageable members, the first member being of a generally cup-shaped configuration and including an annular resilient flange portion defining in part a bore adapted for reception of the conduit, the second member having an end portion adapted for engagement with the flange portion whereupon threadable engagement of the first and second members results in the flange portion being biased radially inwardly into tight engagement with the periphery of the conduit; the fitting assembly optionally being provided with a minimum pressure valve mechanism which is adapted to function in maintaining a preselected minimum pressure within the gas chamber of the associated shock absorber unit.

3,692,297

Patent Not Issued For This Number

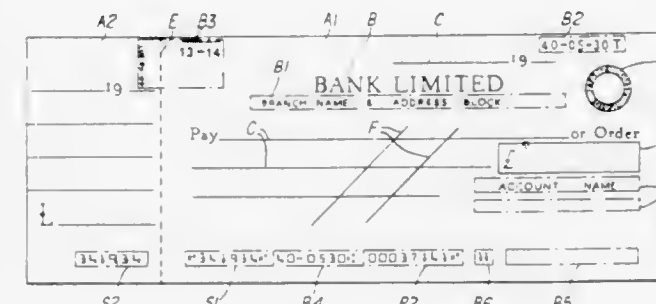
3,692,298

**PRINTING OF CHEQUES**Jack Peacock, Wimborne, Dorset, England, assignor to McCorquodale & Company Limited, Basingstoke, England  
Continuation-in-part of Ser. No. 752,233, Aug. 13, 1968, abandoned. This application Aug. 24, 1970, Ser. No. 66,304

Int. Cl. B41f 13/64; B65h 39/02; B30b 1/00

U.S. Cl. 270—12

14 Claims



To permit inexpensive printing of individual check books containing personalized checks and other documents and flexibility in the order of such documents in the check book, the unvarying information and background pattern are bulk-printed on a web or on large sheets and the web or each sheet is then cut into individual checks. The personalising and bank branch information, partly in machine-readable characters (e.g. in magnetic ink) is added by passing the separated checks and other documents through a high-speed printing machine capable of being rapidly reset. The checks travel in the direction of their lengths, permitting checks of different lengths to be accommodated, and pass through a quality monitor which can check each of a line of machine-readable characters added in the printing machine.

3,692,299

**APPARATUS FOR CONVEYING AND TREATING FOLDED BOOK SIGNATURES AND THE LIKE**

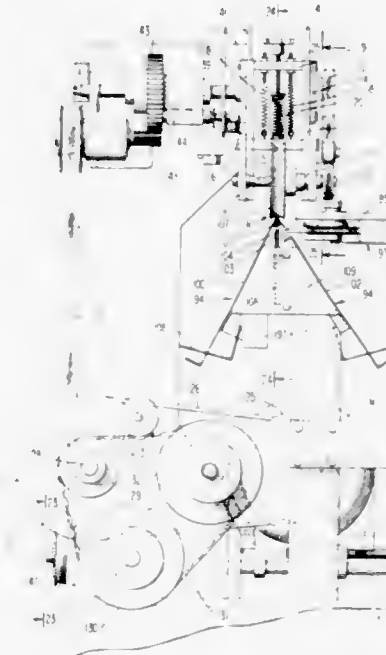
John O. McCahon, West Simsbury, Conn., and William J. Byrne, Pearl River, N.Y., assignors to Smyth Manufacturing Company, Bloomfield, Conn.

Division of Ser. No. 706,926, Feb. 20, 1968, Pat. No.

3,591,165. This application July 2, 1971, Ser. No. 159,226  
Int. Cl. B56h 39/02

U.S. Cl. 270—54

13 Claims



A pusher type saddle conveyor for folded book signatures and the like having means for compressing the backbone folds of the signatures.

3,692,300

**FEEDER AND FOLDER ARRANGEMENT FOR SIGNATURE GATHERING MACHINE**

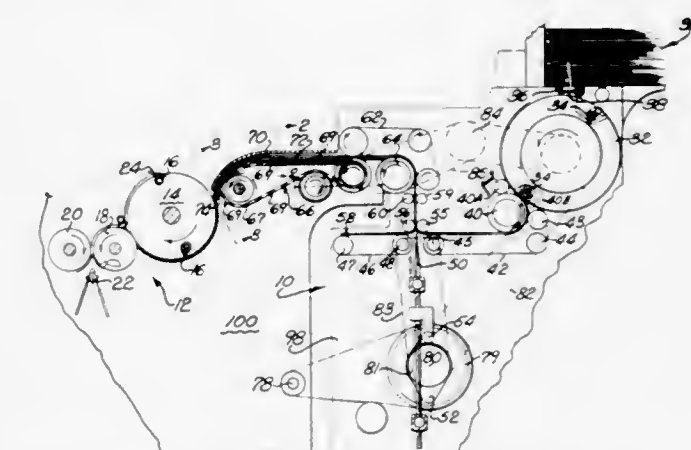
Henry R. Mebus, Nazareth, Pa., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed March 2, 1971, Ser. No. 120,279

Int. Cl. B65h 5/30

U.S. Cl. 270—55

13 Claims



A feeder folder unit for use with an inserter of the type having a rotary feed drum, a signature opening mechanism and a conveyor chain and wherein the feeder folder unit includes hopper means for supplying signatures in a horizontal position, rotary extractor drum for extracting these signatures from the hopper, transfer means for transferring extracted signatures from the rotary drum to a folder mechanism and transfer chain means for transferring the folded signatures in timed relation to the feed drum of the inserter. The feeder folder mechanism may be constructed as a separate unit but driven from the inserter drive and used with existing inserter



gatherers both to convert such gatherers from a vertical hopper feed to a horizontal hopper feed and to perform a fold operation during feeding of the signatures.

**3,692,301**  
**METHOD OF, AND APPARATUS FOR, OPENING FOLDED MULTI-SHEET PAPER PRODUCTS**

Jakob Wetter, Wetzikon, Switzerland, assignor to Ferag, Fehr & Reist AG

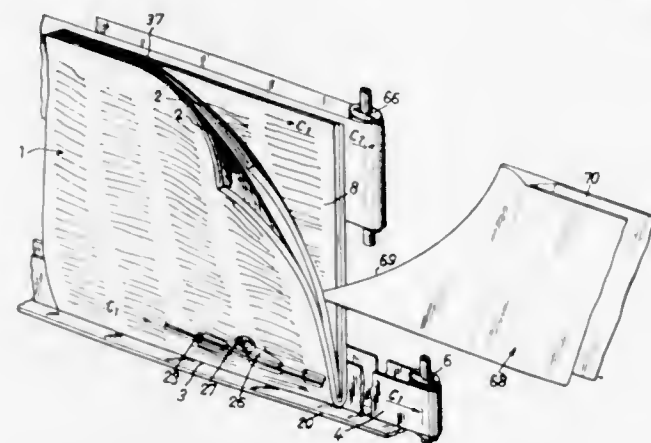
Filed July 13, 1971, Ser. No. 162,049

Claims priority, application Switzerland, July 21, 1970, 11051/70

Int. Cl. B65h 5/30

U.S. Cl. 270—55

12 Claims



A method of, and apparatus for, opening folded, multi-sheet paper products, especially folded newspapers, specifically for the purpose of introducing an insert into the thus opened paper product, wherein a pressure is exerted at the region of the fold of the paper product, this pressure extending transverse to the plane of the product itself. As a result the sheets of the product located to one side of the fold are raised from the sheets located at the other side of the fold. In accordance with a preferred constructional embodiment of the invention there is provided a clamping member equipped with a pressure element and a counter element, the printed product is introduced between these elements in order to carry out the product opening activity.

**3,692,302**  
**APPARATUS FOR INSERT TRAILING EDGE ALIGNMENT**

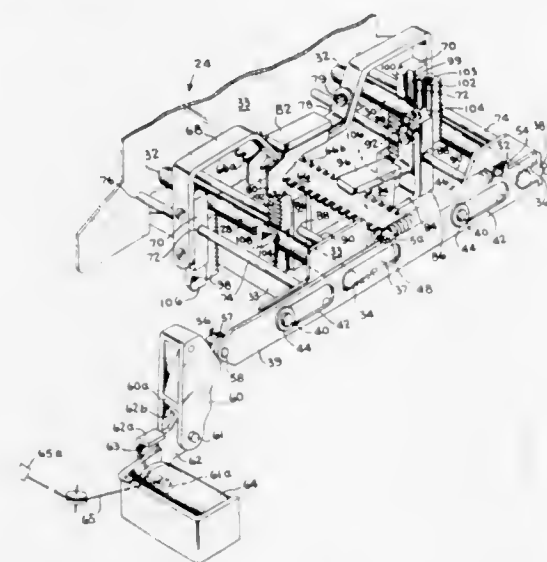
Eriks Parups, Norwalk, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Sept. 22, 1970, Ser. No. 74,253

Int. Cl. B65b 39/02, 57/10

U.S. Cl. 270—58

12 Claims



An envelope inserting machine includes a pair of insert feeding stations for delivery of inserts from each station suc-

cessively along a path including a passageway formed by a frame spaced above a pick-up station and having an inlet and an outlet. Stop means are provided at predetermined distances from the inlet and are movably mounted in the frame toward and away from the pick-up station, each being operatively connected to a separate insert feeding station through actuating means, to move to an extended position for arresting the movement of an insert moving on the pick-up station from its corresponding insert feeding station and to move to a retracted position disposed out of the passageway, when the insert delivered is from another insert feeding station. The predetermined distance from the inlet at which the stop means are positioned being such that the inserts are stopped at the pick-up station in trailing edge alignment for subsequent insertion into an envelope.

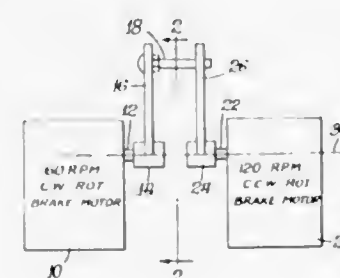
**3,692,303**  
**SENSING MEANS FOR FOLDER**  
Frederick W. Grantham, Los Angeles, Calif., assignor to Mecca Bros, Inc., North Collins, N.Y.

Filed July 23, 1971, Ser. No. 165,682

Int. Cl. B65h 45/00

U.S. Cl. 270—61

12 Claims



A sensing device for folders that are adapted particularly to folding textile pieces and laundry pieces; in the folding operation in such a folder, the means first senses the leading edge of the piece to be folded and initiates a first and slow movement of sensing control, and then senses the trailing edge and initiates a second and fast movement of the sensing control, whereby the fast movement occurs for a longer or shorter period according to whether the piece is respectively shorter or longer, and thereby effects operation of the folding element regardless of the length of the piece.

**3,692,304**  
**APPARATUS FOR FEEDING AND STACKING LOOSE PAPER SHEETS**  
Gerardus Johannes de Ridder, Bussum, Netherlands, assignor to Ingenieursbureau De Ridder N.V., Baarn, Netherlands

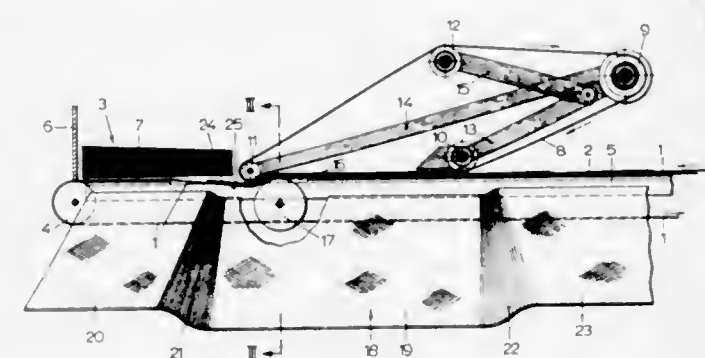
Filed April 7, 1971, Ser. No. 131,930

Claims priority, application Netherlands, April 10, 1970, 7005222

Int. Cl. B65h 29/16, 31/00

U.S. Cl. 271—75

6 Claims



An apparatus for feeding and stacking loose paper sheets having a stacking station with an upstanding end stop for the

sheets to be stacked and a lower and upper endless conveyor belt for clamping the sheets to be stacked therebetween and feeding the sheets to the stacking station. The lower conveyor belt extends underneath the stacking station and the upper conveyor belt passes around a return roller arranged a small distance upstream of the stacking station. Side guide members are arranged on each side of the lower conveyor belt for supporting the side portions of the sheets which side guide members are inclined from the lower conveyor belt downwardly and outwardly whereby the sheets are bent in the transverse direction. The side guide members and the lower conveyor belt have portions extending obliquely upward in the direction of feed of the sheets from a point lying upstream of the forward or upstream side of the stacking station to a point lying under the stacking station whereby any sheet fed without being overlapped by the preceding sheet can be pushed without disturbance, and without damaging its front edge, under the stack formed at the stacking station.

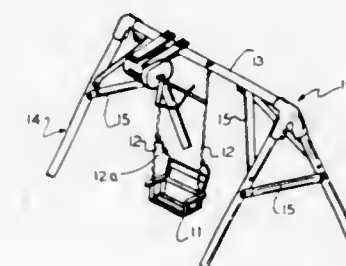
**3,692,305**  
**POWERED SWING**  
Charles F. Allen, Camillus, N.Y., assignor to Frank H. Booth, Syracuse, N.Y., a part interest

Filed March 31, 1971, Ser. No. 129,783

Int. Cl. A63f 9/14

U.S. Cl. 272—86

4 Claims



A chain-hung seat pendant from the top of a swing frame has a motor supported on the frame at the side of the top so that a crank keyed to its driven shaft rotates toward and away from a crossbar secured at its ends to the support chains near their top ends. A pull chain connected at one end to the outer end of the crank and at the other end to the center of the crossbar pulls the support chains in one direction during a portion of the rotation of the crank, the seat returning in the other direction by gravity during the other portion of the rotation of the crank. A stiffening bar may be secured to the pull chain adjacent the crank end and the other end of the chain may have a connection to the crossbar including a spring.

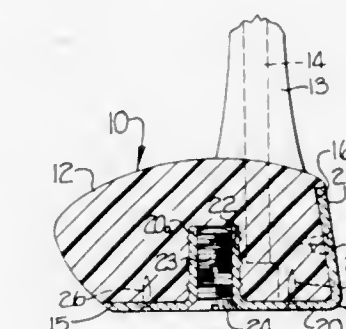
**3,692,306**  
**GOLF CLUB HAVING INTEGRALLY FORMED FACE AND SOLE PLATE WITH WEIGHT MEANS**  
Cecil C. Glover, P.O. Box 12705, Charlotte, N.C.

Filed Feb. 18, 1971, Ser. No. 116,460

Int. Cl. A63b 53/04, 53/02

U.S. Cl. 273—80.7

5 Claims



A golf club whose head is provided with a bracket having sole and face plates formed integral with each other and posi-

tioned against respective bottom sole and front face surfaces of the head, and wherein one or the other of the plates carries at least one inwardly projecting elongate tube which is embedded in the head, with weight means removably and adjustably secured in the tube.

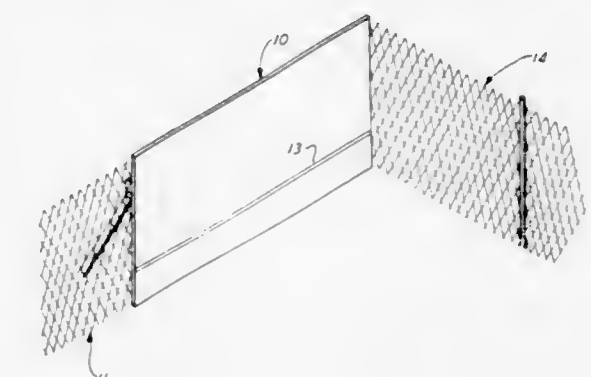
**3,692,307**  
**LIVE ACTION BACKBOARD**  
Francis B. Henry, 58 Winding Lane, Basking Ridge, N.J.

Filed Nov. 20, 1970, Ser. No. 91,241

Int. Cl. A63b 69/38

U.S. Cl. 273—29 A

12 Claims



This invention relates broadly to a new type of backboard or practice board which is used for returning tennis balls or other balls played against its surface. The backboard is constructed of materials and is so designed as to give to the practicing player the impression that he is actually facing a competitor who appears on the surface of the backboard. The backboard is in part constructed of pictorial parallax panoramagram units which depict in depth one or more tennis players in various positions. The units are designed so that the depicted players appear to move when the practicing player changes position with respect to the backboard.

**3,692,308**  
**Patent Not Issued For This Number**

**3,692,309**  
**TORSO STRUCTURE FOR A MECHANICAL PASS RECEIVER**

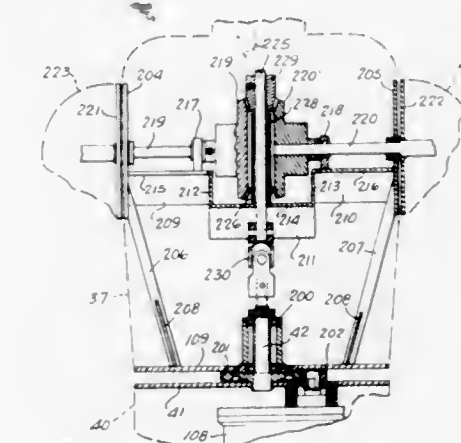
Audrey G. J. Mehrens, deceased, late of Rosenberg, Tex., Edith Marion Mehrens; Ronald Jay Mehrens; Donald Ray Mehrens and Jackie Fay Mehrens Shuler, independent executors

Filed Sept. 24, 1970, Ser. No. 74,985

Int. Cl. A63b 67/00

U.S. Cl. 273—55 R

6 Claims



A torso structure for a simulated football player on a radio-controlled, motor-driven carriage. The torso structure has



pivoted arms. The torso is rotated by a motor and the arms are geared to a common non-rotating pinion gear so that the arms rotate in opposite directions responsive to the rotation of the torso.

3,692,310

## BOARD GAME APPARATUS

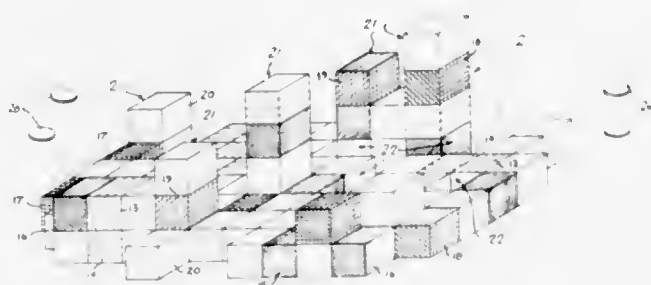
Ernest B. W. Martin, General Delivery, Hearst, Ontario, Canada

Filed June 2, 1970, Ser. No. 42,831

Claims priority, application Canada, June 2, 1969, 053,219  
Int. Cl. A63f 3/00

U.S. Cl. 273—131 AB

8 Claims



The present invention provides game apparatus which includes a playing surface comprised of a plurality of separate units. The units are each adapted for random assembly relative to the others whereby a playing surface of undetermined shape prior to commencement of a game may be formed therefrom. The units also are capable of manipulation into different mutual spatial relationships during a game in which the apparatus is used whereby the shape and arrangement of the playing surface can be altered; the units having value designation markings designating different respective values of said units, and at least two tokens positionable on any one of said game units.

3,692,311  
MAZE TOY

Ronald W. Redo, 773 Blossom Way, Hayward, Calif.

Filed Aug. 9, 1971, Ser. No. 170,056

Int. Cl. A63f 9/14, 9/06

U.S. Cl. 273—153 R

3 Claims



A maze toy including a parallel floor and cover joined together by impediments that define corridors therein. A token is provided so shaped that it can only pass through one of the corridors when a certain one of its sides is on the floor and through another corridor only when that certain side of the token is not on the floor. The distance between the floor and cover being less than the largest diagonal of token height and width, and thereby preventing rotation of the token from a position with one side on the floor to a position with another

token side thereon. A recessed area is provided adjacent to the floor where there is adequate space for the token to rotate from one side onto another. The user must determine a series of corridors and also when and how to enter a recessed area for changing the side on which the token travels.

3,692,312

## METHOD OF FABRICATING PICTURE PUZZLE AND PUZZLE PRODUCED THEREBY

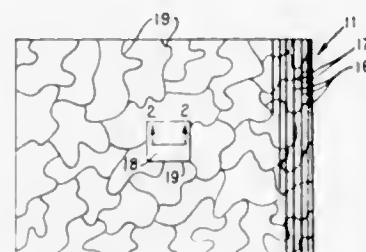
Alvin Meyer, 1690 Woodside Rd., Redwood City, Calif.

Filed Jan. 15, 1971, Ser. No. 106,847

Int. Cl. A63f 9/10

U.S. Cl. 273—157 R

12 Claims



A jigsaw type picture puzzle is produced by first forming a surface illusion on at least a portion of a picture by exposing a photographic emulsion through a specific type lens from at least two angles. The lens has a flat bottom and a top contoured with parallel protuberances which in cross-section are segments of a circle. The developed emulsion, or a reproduction thereof, is mounted on a backing and covered with a second lens identical in optical properties to the first, preferably by lamination. Portions, or all, of the backing, reproduction and lens are cut in jigsaw fashion. The fact that the individual pieces when viewed from different angles given different visual impressions makes reassembly of the puzzle more challenging. Alternatively, the surface illusion portions of the puzzle may be inserted as plugs in pockets formed in the conventional puzzle.

3,692,313

Patent Not Issued For This Number

3,692,314

## MOUNTING ARRANGEMENT FOR MAGNETIC TAPE HEAD

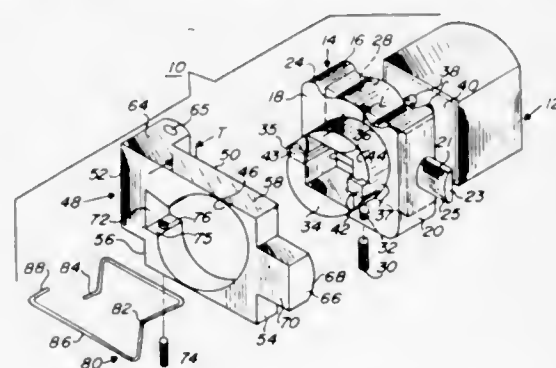
Donald J. Dattilo, Mt. Prospect, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed April 1, 1971, Ser. No. 130,350

Int. Cl. G11b 21/08

U.S. Cl. 274—4 A

8 Claims



An assembly for mounting a magnetic tape head in a cartridge type tape player includes a block mountable for vertical movement, a collar to which the tape head is fixedly mounted joined to the mounting block for rotational movement with respect thereto and a retainer spring connected to the collar to

secure the collar to the block. An adjustment screw extends through the block into engagement with a tab on the collar for rotating the collar against or in the direction of a biasing force also provided by the retainer spring, to position the collar including the tape head, rotationally with respect to the block.

3,692,315

## UMBRELLA SPINDLES FOR AUTOMATIC DISC CHANGING PHONOGRAPHS

Kenneth Charles Goulding, Plymouth, England, assignor to The Magnavox Electronics Company Limited, Barking, Essex, England

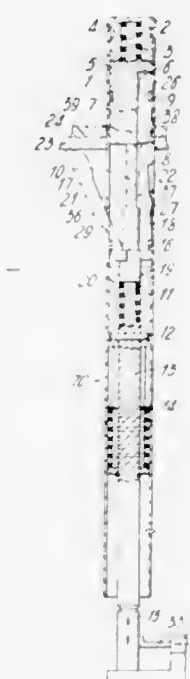
Filed March 17, 1971, Ser. No. 125,228

Claims priority, application Great Britain, March 17, 1970, 12852/70

Int. Cl. G11b 17/04

U.S. Cl. 274—10 S

11 Claims



A spindle of the umbrella type for use in an automatic disc changing phonograph has a number of main record support pawls spaced angularly around the spindle axis and movable between record supporting positions in which they project upwards and outwards through slots in the spindle casing and record release positions in which they are retracted downwards and inwards in response to movement of an upwardly and downwardly movable push rod within the casing. In operation the push rod is moved by the change cycle mechanism of the phonograph. The spindle also includes a number of secondary support pawls which are actuated as the main support pawls are moved downwards towards their release position so as to engage and support records above the lower most record in a stack on the spindle. Thus, when the main support pawls reach their record release positions the lower most record alone is allowed to fall down the spindle, the rest of the stack remaining supported on the secondary support pawls. In order to detect when no further records remain on the spindle so that the change cycle mechanism can be caused to stop after playing of the last record is complete, the spindle is provided with a record sensing finger which is movable downwards with the main support pawls and is biased so that during a part of the downward movement it projects through a slot in the casing at a level immediately above that of the tops of the main support pawls whereby, in use, it engages the edge of the central hole of the lower most record in the stack to restrict its outward projection, but which on downward movement of the main support pawls when there are no records remaining supported on the spindle projects further from the slot into a position in which it engages a fixed part of the spindle and prevents further downward movement on the support pawls and their inward retraction, thus

preventing the full cycle of operations of the spindle from taking place.

3,692,316

## WIRELINE BLOWOUT PREVENTER

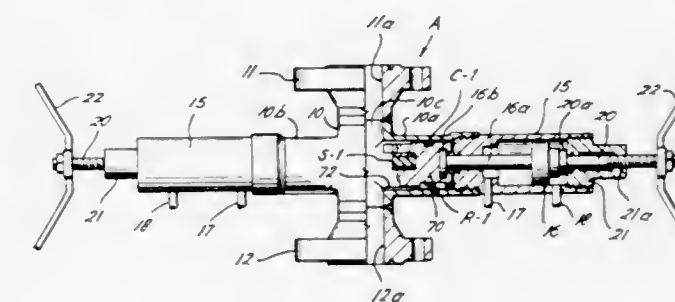
Thomas R. Bishop, and Archie W. Pell, both of Houston, Tex., assignors to Bowen Tools, Inc.

Filed Dec. 21, 1970, Ser. No. 99,914

Int. Cl. B65d 53/00

U.S. Cl. 277—73

8 Claims



A blowout preventer having a pair of preventer rams adapted to seal around a wireline in a well pipe, and having new and improved wireline guide means with each preventer ram which provides positive centering of the wireline as the rams move towards each other. Also, the guide means is strengthened as compared to the prior art and it eliminates inadvertent shearing of the wireline by the guide means as the rams move towards each other to the sealing position.

3,692,317

## SLIDE RING SEAL

Gustav Augustin, Heilbronn, Germany, assignor to Kupfer-Asbest-Co. Gustav Bach, Heilbronn, Germany

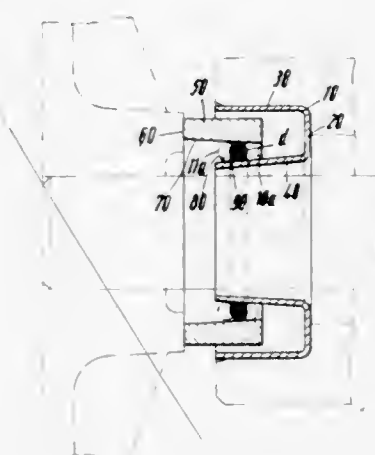
Filed Sept. 24, 1970, Ser. No. 74,982

Claims priority, application Germany, Sept. 25, 1969, P 19 48 502.0; Sept. 25, 1969, P 19 48 501.9; Sept. 25, 1969, P 19 48 499.2

Int. Cl. F16j 15/34

U.S. Cl. 277—81

12 Claims



A slide ring seal which includes housing means having an inner first substantially cylindrical wall surface and a slide ring coaxially arranged with regard to said first cylindrical wall surface and being radially spaced therefrom while that peripheral wall surface of said slide ring which faces toward said first cylindrical wall surface is designed as a second cylindrical surface, elastic O-ring means being interposed under preload between said first and second wall surfaces and being adapted in response to an axial relative movement between said housing means and said slide ring to roll on one of said cylindrical wall surfaces so as to be torsion loaded for maintaining the slide ring in sealing engagement with a surface engaged by said slide ring when said O-ring means is under torsion load.



3,692,318

**DUAL-LIP SHAFT SEAL WITH SPRING URGED  
AUXILIARY LIP**

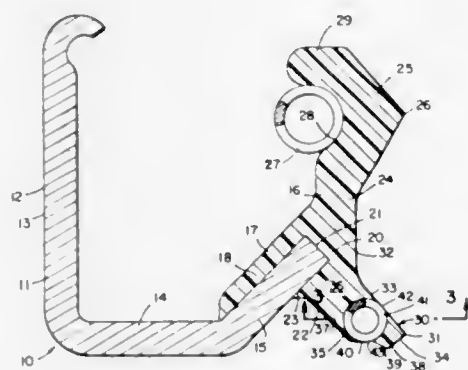
Frank A. Day, Farmington, and James A. Repella, Madison Heights, both of Mich., assignors to Federal-Mogul Corporation, Detroit, Mich.

Filed May 3, 1971, Ser. No. 139,719

Int. Cl. F16j 15/32

U.S. Cl. 277-164

5 Claims



A dual-lip radial shaft seal having a primary oil-sealing lip urged against the shaft by a free garter spring and provided with a novel auxiliary dust-sealing lip spaced from the primary lip and serving to exclude dust. This auxiliary lip is urged into engagement with the shaft by a garter spring stretched from its rest position and incorporated into the lip itself so that it lies tangent to the opposite sides of the auxiliary lip. This stretched garter spring in the auxiliary lip makes it possible to obtain better dirt exclusion at a location where it would be substantially impossible to provide an exposed garter spring and where such a garter spring, if used, would corrode unless made of expensive noncorrodible material.

3,692,319

**ROTARY TOOL DRIVE MEMBER**

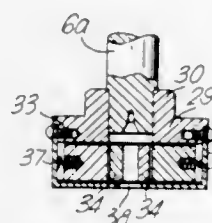
Cecil Isaac Taylor, 23 Poplars Rd., Buckingham, England

Filed Jan. 19, 1971, Ser. No. 107,664

Int. Cl. B23b 31/14

U.S. Cl. 279-1 C

3 Claims



A rotary tool drive member for laps or like tools having opposite flats formed on their shanks in which two opposed tool drive elements are carried in a groove formed in a rotatable circular block, each tool drive element having a tool engaging surface on one side of the rotational axis and a centrifugal weight on the other side of the rotational axis, and springs urge the centrifugal weights towards the axis, the tool engaging surfaces being separated to the maximum extent when the tool drive member is stationary and being moved towards each other to engage the flats on a tool when the centrifugal weights move apart under the influence of centrifugal force during rotation.

3,692,320

**CHUCK APPARATUS**

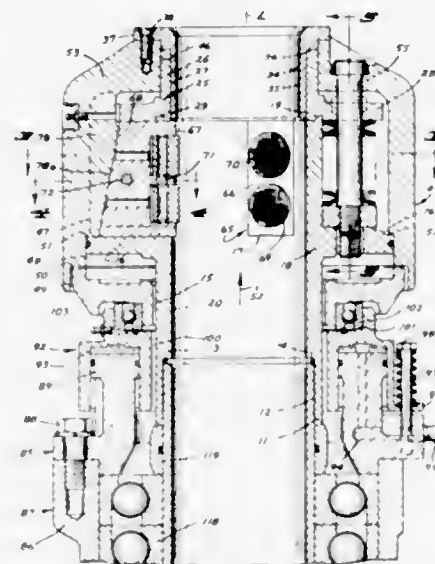
Leonard A. Lindelof, and Albert L. Linn, both of Minneapolis, Minn., assignors to E. J. Longyear Company, Minneapolis, Minn.

Filed Oct. 19, 1970, Ser. No. 81,697

Int. Cl. B23b 5/22

U.S. Cl. 279-4

22 Claims



A chuck assembly having a chuck body that mounts a plurality of jaw assemblies for radially movement between a rod clamping and a rod release position, a chuck hood axially movable relative to the body for releasably retaining the jaw assemblies in a clamping position, a piston cylinder combination for moving the hood relative to the body to a jaw release position, and a spring loading assembly for resiliently urging the hood to a jaw clamping position that includes resilient mechanism that is retained in a compressed condition even though the hood is removed; and a hydraulic swivel head for mounting the chuck assembly and rotating the chuck body relative to the hood.

3,692,321

**PNEUMATIC TOOL HOLDER**

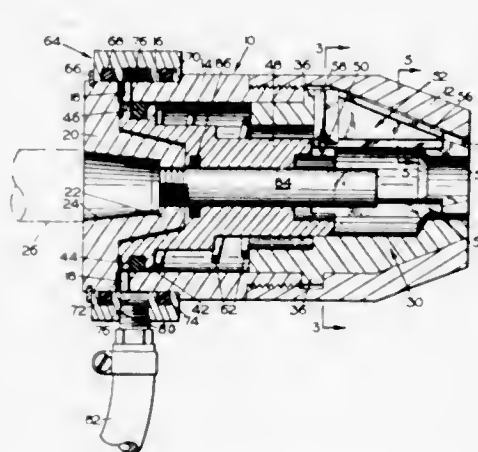
Chauncey H. Shattuck, Gresham, Oreg., assignor to Richard L. Alexander, Gresham, Oreg., a part interest

Filed April 26, 1971, Ser. No. 137,559

Int. Cl. B23b 31/30

U.S. Cl. 279-4

5 Claims



A pneumatic tool holder comprises a hollow, cylindrical case having a tapered, open nose. Mounted within the case are a hollow finger guide having radially spaced longitudinal guide slots receiving a plurality of grip fingers, and a piston to which the fingers are connected. A sleeve mounted for free rotation on the case connects to a compressed air source and communicates through a port with the interior of the case, behind the

3,692,324

**AUTOMOBILE SUSPENSION**

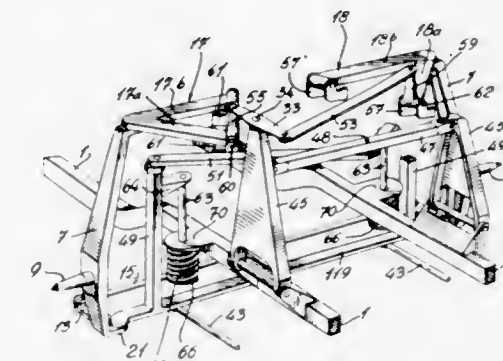
Paul Corbin, 7737 St. Denis St., Montreal, Quebec, Canada

Filed Jan. 29, 1971, Ser. No. 110,815

Int. Cl. B60p 1/00

U.S. Cl. 280-96.2 R

10 Claims

**TOE-OR-HEEL-HOLDING DEVICE FOR SAFETY SKI  
BINDINGS**

Hans Otto Frisch, and Bernd Payrhammer, both of 8105 Farchant, Germany, assignors to Hannes Marker, Garmisch-Partenkirchen, Germany

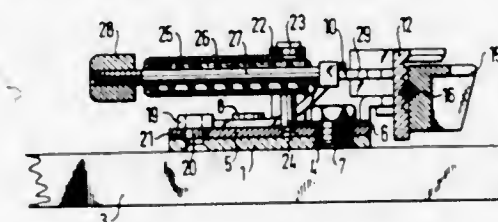
Filed May 18, 1970, Ser. No. 38,053

Claims priority, application Germany, July 4, 1969, P 19 34 060.4

Int. Cl. A63c 9/00

U.S. Cl. 280-11.35 T

5 Claims



At least one soleholder member is automatically movable against the resistance presented by at least one resistance element from a locking position to a release position. The resistance presented by the resistance element or elements is a function of the potential energy and kinetic energy. A final control element is provided, which controls the resistance element in response to control signals depending on the kinetic energy.

3,692,323

**BABY CARRIAGE**

Shinichi Sekine, 35-31 Shinkawa 6-chome, Mitaka-shi, Tokyo, Japan

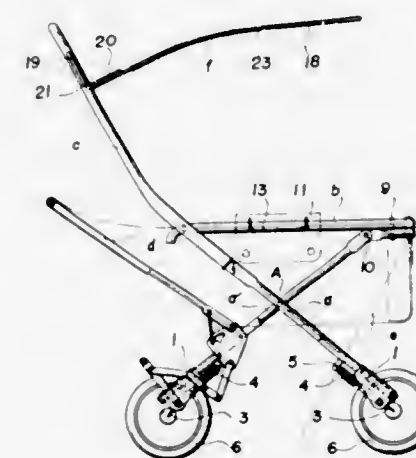
Filed Oct. 22, 1970, Ser. No. 83,081

Claims priority, application Japan, April 13, 1970, 45/31427; April 17, 1970, 45/37389

Int. Cl. B62b 11/00

U.S. Cl. 280-47.38

3 Claims



A baby carriage with a lower section to hold wheels thereon, a pair of tubes extending transversely across the width of the baby carriage with a separate wheel axle for each wheel journaled therein including holding means holding said wheel axles in said tubes, an outer section on said wheel axles having wheels thereon, a pulling piece on said outer section with a spring connected thereto and spring support means on said lower section to which said spring is connected whereby each of said wheels is separately provided with a shock absorbing arrangement.

3,692,325

**AIR SUSPENSION WITH SADDLE MEMBERS**

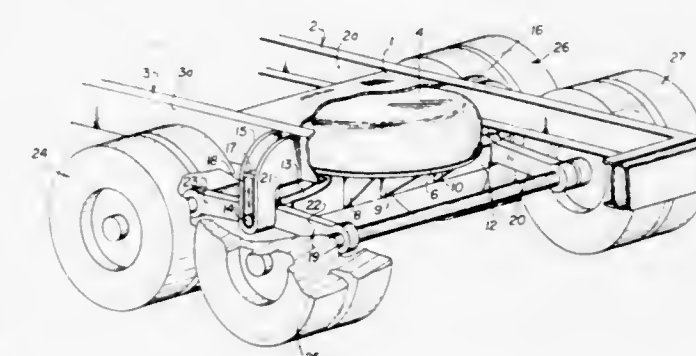
Rene Gouirand, New York, N.Y., assignor to Joseph Mercadante, Greenwich, Conn.

Filed March 22, 1971, Ser. No. 126,793

Int. Cl. B60g 5/02

U.S. Cl. 280-104.5 A

27 Claims



A vehicle air suspension system having an air bag located between upper and lower plate-like members further includes a pair of saddle members coupled to the vehicle adjacent each side of the air bag and fixed relative to the upper plate-like member. Each saddle member has a substantially vertically oriented slot-like opening therein through which a pivot shaft extends in the transverse direction of the vehicle. The pivot



shaft is fixedly connected to the lower plate-like member and is slidably engaged in the slot-like openings of the saddle for movement in the vertical direction. Rocker arms are rotatably coupled adjacent the ends of the pivot shaft and vehicle wheels are coupled to the ends of the rocker arms. The saddle members substantially restrain the pivot shaft against movement in the longitudinal or lateral direction of the vehicle.

3,692,326

# FULL AXLE SHEAR RUBBER SPRING SUSPENSION FOR VEHICLES

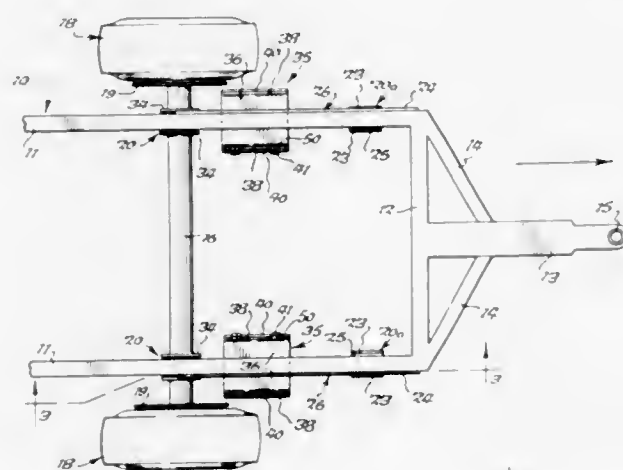
Albert F. Hickman, Eden, N.Y., assignor to Hickman Developments, Inc., Eden, N.Y.

Filed April 13, 1971, Ser. No. 133,564

Int. Cl. B60g 11/24

U.S. Cl. 280—124 R

6 Claims



A full or through axle supported by rubber tired wheels has each end connected through a bearing to one end of a link extending lengthwise of the line of travel. The opposite link end is connected through another bearing to the frame. Each such bearing is constructed, as by inclusion of a flexible rubber bushing, to permit oscillation of the parts connected thereby about its center. Axial movement of the axle laterally of the line of travel is inhibited by rectilinear upright movement shear rubber bodies between the links and frame, these bodies being mounted for this purpose so that their faces fixed, respectively, to their links and the frame, are generally parallel with the line of travel and are upright. These bodies have the added function of providing the resilient support for the frame on the links.

3,692,327

# PASSENGER EMBRACING SAFETY NETS FOR USE WITH AUTOMOTIVE VEHICLES

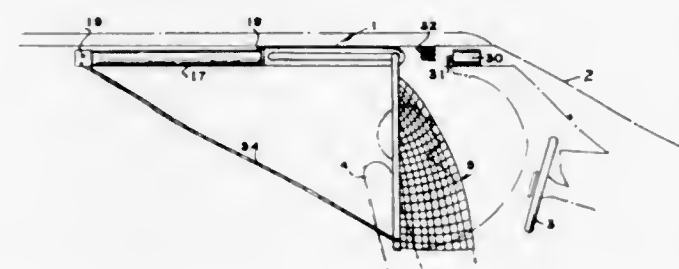
Thomas W. Barrick, Sr., and Billie L. Barrick, both of 737 Piedmont Ave., Portland, Oreg.

Filed June 23, 1971, Ser. No. 155,772

Int. Cl. B60r 21/10

U.S. Cl. 280—150 B

6 Claims



A generally rectangular restraining member or members for occupants of the front and/or rear seats of a passenger vehicle. Each restraining member comprises a frame, including a pro-

TECTIVE CURTAIN, preferably pivotally attached to the underside of the roof of a vehicle and so arranged that on sudden deceleration of vehicle momentum or at the moment of collision impact, said restraining members will be unlatched from their normal overhead positions and automatically swung downwardly to draw the protective curtain or screens into body embracing engagement to hold the passenger safely against forward thrust and injurious impact with the windshield.

3,692,328

# CONTROL MEANS FOR OCCUPANT RESTRAINT BELT RETRACTOR

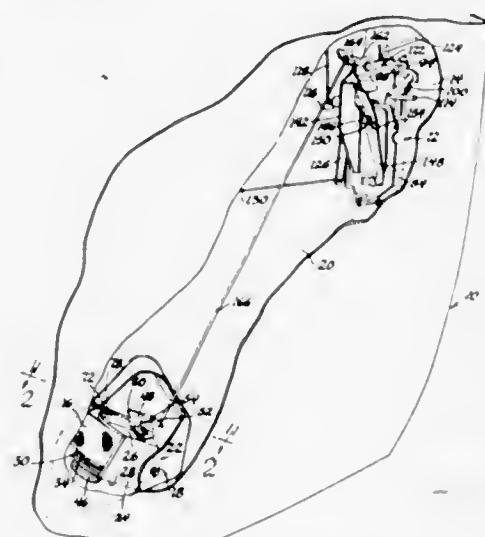
Alfonas Arlauskas, Troy, and Lloyd W. Rogers, Jr., East Detroit, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 21, 1971, Ser. No. 145,797

Int. Cl. B60r 21/02

U.S. Cl. 280—150 SB

4 Claims



A vehicle body includes a door movable between open and closed positions and mounting a door lock engageable with a striker on the body for holding the door in closed position. The lock is of the uncoupling type and includes inside and outside release handles connected to an operating lever which is selectively coupled to and uncoupled from the detent for the lock bolt. A restraint belt includes lap and shoulder belts which are moved between restrained and unrestrained positions with respect to an occupant seating position upon extension and retraction of an outboard belt relative to a belt retractor mounted on the door. The retractor includes a belt anchoring reel having ratchet end plates and a pawl which is normally spring biased into engagement with the end plates to block movement of the reel in a belt extending direction. A first release lever is mounted on the retractor and resiliently biased into engagement with a fixed stop to locate the lever in unactuated position. When the first lever is moved to actuated position, it engages a pawl extension to move the pawl into released position. A manually operable handle on the retractor is movable independently of the first release lever into engagement with the pawl extension to also move the pawl to released position. A blocking lever is mounted on the lock and is resiliently biased to blocking position. The blocking lever is moved to unblocking position by engagement with the striker when the bolt moves to latched position in engagement therewith. A second release lever is mounted on the lock for movement transversely of the path of movement of the blocking lever. A rod connects the first and second levers for simultaneous movement to thereby normally locate the second lever in unactuated position wherein it is engageable by the lock operating lever. When either release handle is operated and the lock operating lever is uncoupled from the detent, the lock operating lever moves the second release lever to actuated position transverse of the path of the blocking lever and likewise moves the first lever to actuated

position to release the pawl. When the release handle is released, the first and second levers return to unactuated position. When the lock operating lever is coupled to the detent, movement thereof by a release lever releases the pawl and also releases the lock bolt from the striker. The initial opening movement of the door permits the blocking lever to move to blocking position in the path of the second release lever and block return movement thereof and of the first lever to unactuated position when the release handle is released. The pawl thus remains released while the door is open.

3,692,329

# STABILIZING UNITS FOR PARKED VEHICLES

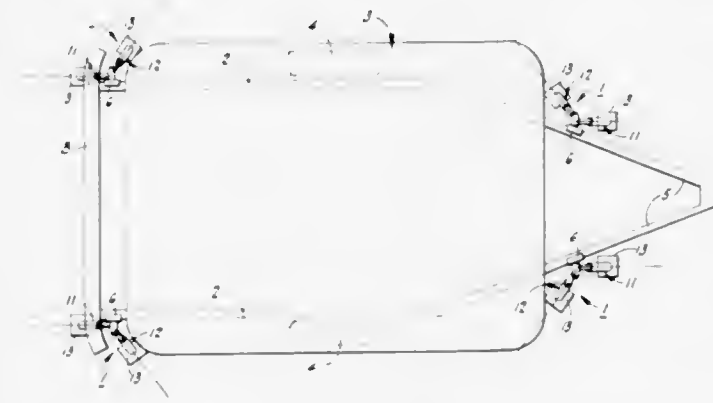
Tom E. Conner, P.O. Drawer BB, Elk Grove, Calif.

Filed Jan. 4, 1971, Ser. No. 103,517

Int. Cl. B60s 9/02

U.S. Cl. 280—150.5

2 Claims



A plurality of stabilizing units are detachably mounted on a parked vehicle—such as a house trailer or mobile home—in predetermined spaced relation thereon and serve to stabilize the vehicle against both longitudinal and lateral rocking motion; each such unit, which is in the nature of a stand, including a pair of downwardly divergent legs which are manually adjustable in length in order to place the same under load between the vehicle and a ground-engaging pad attached to the lower end of each of said legs.

3,692,330

# VERTICALLY ADJUSTABLE TWO BAR ASSEMBLY

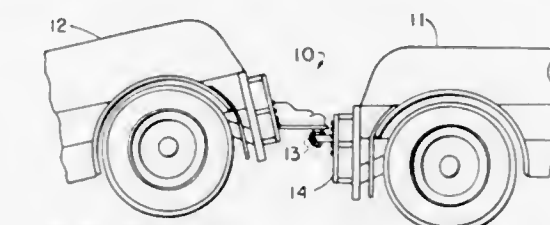
Ray E. Kendall, Box 1042, Alamogordo, N. Mex.

Filed June 11, 1971, Ser. No. 152,234

Int. Cl. B60p 3/06

U.S. Cl. 280—402

11 Claims



A tow bar assembly for towing one vehicle by another which enables the towed vehicle to be carried at a pre-determined or desired height above the ground, including a mounting plate having affixed thereto outwardly extending L-shaped brackets, each having a plurality of equally sized and spaced holes formed along a surface parallel to the surface of the mounting plate. A first wedge having a plurality of pins extending from it to engage selected ones of the holes in the brackets is provided together with a second wedge to maintain the interfitting engagement relationship of the pins in the holes, the second wedge jamming between the first wedge and the mounting plate. A tow bar, including a socket to receive a towing ball carried by a second vehicle, is mounted on the first

wedge extending in the general direction of the pins, but is mounted at an angle with respect to a perpendicular to the surface of the first wedge of between about 5° and 25°, to enable the tow bar to be disposed substantially parallel to the ground when in connection with the towing ball, but enabling the towed vehicle to be carried at a desired height off the ground.

3,692,331

# LOAD TRANSFER COUPLING MECHANISM

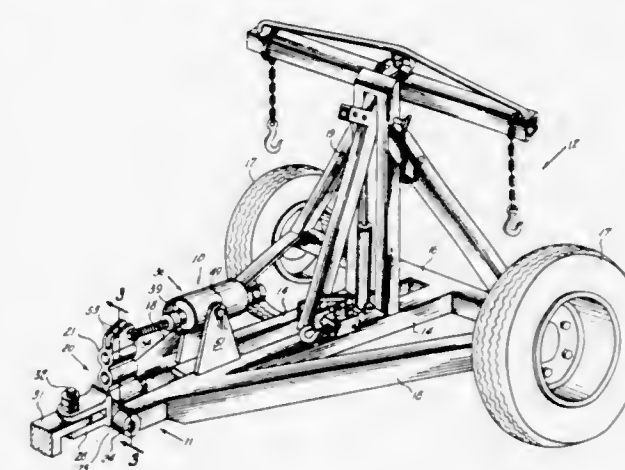
Lester S. Vegors, 300 E. Second St., Webster City, Iowa

Filed May 13, 1971, Ser. No. 142,915

Int. Cl. B62d 53/00

U.S. Cl. 280—405 R

6 Claims



The coupling mechanism includes a mounting bracket supported on the trailer tongue for pivotal movement along a transverse axis; and a coupling member having a rear and section supported on the bracket for pivotal movement about a longitudinal axis; and a front end section connected to the tractor vehicle for pivotal movement about a vertical axis. A spring loaded linearly adjustable unit pivotally interconnected between the bracket and tongue structure is selectively adjustable to pivotally move the bracket in either direction about the transverse axis therefor concurrently with providing for the application or removal of a load from the tongue structure to vary the distribution of the trailer and tractor loads.

3,692,332

# VEHICLE DRAWN TRAILER SYSTEM

Angel Betancourt Papatheodorou, Guanajuato 183-203, Mexico City, Mexico

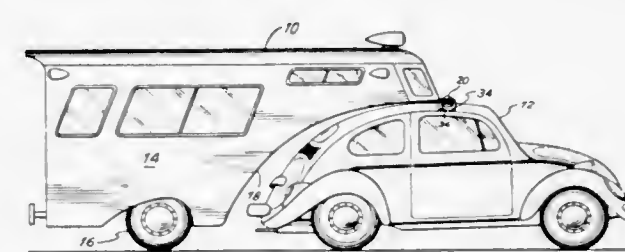
Filed May 22, 1970, Ser. No. 39,747

Claims priority, application Mexico, Jan. 19, 1970, 116717

Int. Cl. B62d 53/00

U.S. Cl. 280—423 R

6 Claims



A vehicle/trailer system wherein the shape of a trailer and the position at which the trailer is connected to a powered vehicle cooperate to allow unrestricted horizontal pivotal movement of the vehicle relative to the trailer when the two are connected together. A rigid hitch means, including a spherical member cooperable with a socket member, connectable to the roof portion of the vehicle along each side thereof is also disclosed.



3,692,333

Patent Not Issued For This Number

3,692,334

## COMBUSTION LINER ASSEMBLY

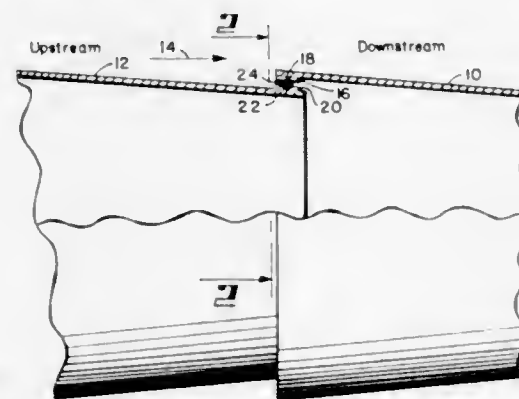
Brian W. Doyle, Shelton; Joseph Rygells, Monroe, and Ervin J. Sweet, Trumbull, all of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Jan. 28, 1971, Ser. No. 110,447

Int. Cl. F161 37/14, 53/00

U.S. Cl. 285—41

4 Claims



A combustion chamber liner is comprised of two telescoping sections, the leading edge of the downstream section overlapping the trailing edge of the upstream section. The end of the downstream section is provided with a plurality of peripherally spaced inwardly directed bosses. The inner peripheral surface of each of the bosses is grooved to accept a metal ring. The end of the upstream section is provided with a peripherally stepped surface having a groove which in the assembled position of the liner is opposed to the groove in the spaced bosses. The two telescoping sections are joined by threading a wire locking ring into the grooves through a tangential opening. The wire ring serves to prevent movement between the sections. When cool, the dimensions of the upstream and downstream sections are such that there is a loose connection between the sections. However, the upstream section is subjected to more heat than the downstream section, causing it to expand to provide a tight fit.

3,692,335

## COVERS AND DUCTS FOR MACHINERY

John Vickers, 64 Cleveland Ave., and John K. Vickers, 3 Mowden Walk, both of Darlington, England

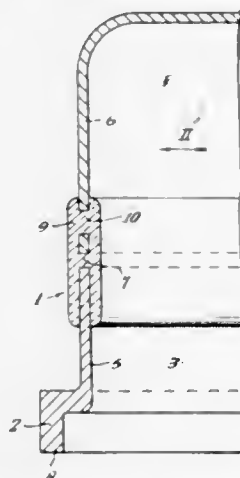
Filed May 3, 1968, Ser. No. 726,421

Claims priority, application Great Britain, May 4, 1967, 20,826/67

Int. Cl. F161 55/02

U.S. Cl. 285—49

4 Claims



The specification describes adapted to provide machinery covers and parts thereof including engine covers for internal

combustion engines in vehicles and aeroplanes. The members are constructed in two parts with a resilient material interposed to minimize vibration and vibratory noise caused by operation of the machinery.

3,692,336

## PIPE CONSTRUCTION

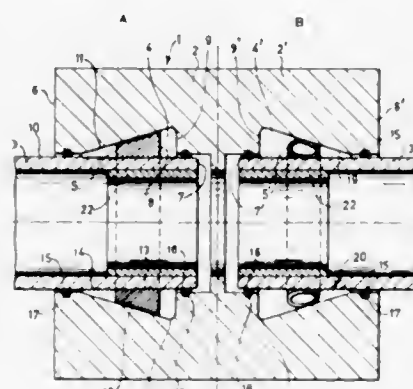
Cornelis Van Zon, Zwolle, Netherlands, assignor to Industriële Onderneming Wavin N.V., Zwolle, Netherlands

Filed Oct. 27, 1970, Ser. No. 84,417

Int. Cl. F161 21/08

U.S. Cl. 285—175

8 Claims



A tensile stress resistant pipe connection comprising two male pipes and a sleeve with two conically tapering recesses, sealing means at the ends of the sleeve and coupling means situated in said recess, the free end of one male pipe in the recesses being provided with left hand screw thread, a free end of the other one with right hand screw thread of about the same pitch.

3,692,337

## FLEXIBLE COUPLING

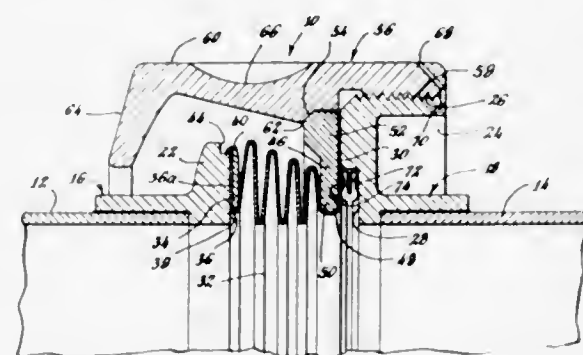
Howard T. Mischel, San Diego, Calif., assignor to AVICA Corporation, Middletown, R.I.

Continuation-in-part of Ser. No. 822,958, May 8, 1969, Pat. No. 3,574,354. This application Sept. 4, 1970, Ser. No. 69,660

Int. Cl. F161 27/10

U.S. Cl. 285—226

10 Claims



The disclosed flexible coupling is joining sections of rigid conduit, with provision for angular, axial and lateral flexibility, and static sealing against fluid leakage. The conduit sections are interconnected by a tubular metal bellows which has the shape of a truncated cone for applications requiring increase fatigue life. The bellows is secured to ferrules either welded or swaged to the conduit ends. An E-seal, O-ring or similar seal is provided in a recess in one ferrule abutting the end of the metal bellows to provide a sealing means which does not flex despite lateral, axial and angular flexure of the bellows. The bellows is secured to the respective ferrules by a coupling nut at one end and by welding at the other end. In an alternate embodiment the said other end of the bellows is swaged in place between the ferrule and the conduit section.

3,692,338

## CONNECTOR FOR TUBULAR ELEMENTS

Didier P. Nick, Nanterre, France, assignor to société des Verreries Industrielles Reunies du Loing, Perret, France

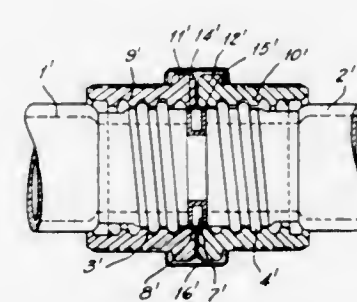
Filed Dec. 17, 1969, Ser. No. 885,768

Claims priority, application France, Dec. 18, 1968, 68178801

Int. Cl. F161 27/00

U.S. Cl. 285—272

4 Claims



A device for connecting tubular elements, especially fragile elements such as glass tubes, utilizing two interconnected half collars that permit relative rotation. An elastic and chemically inert joint comprising an elastomer core and an envelope of polytetrafluoroethylene is positioned between the tubular elements. The half collars may be interconnected by a male-female arrangement on bosses and a ferrule.

3,692,339

Patent Not Issued For This Number

3,692,340

## FINGER JOINT FOR JOINING BOARDS, BATTENS, PLANKS, AND OTHER COMPARABLE BODIES

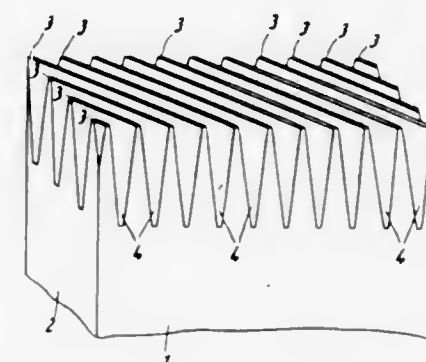
Ahti Adolf Roth, Runonlaulajatie 50, Helsinki 42, Finland

Filed April 9, 1970, Ser. No. 26,870

Int. Cl. F16b 7/00

U.S. Cl. 287—20.92 T

4 Claims



This invention relates to a novel finger joint for joining butt ends of timber, boards, planks and the like. Conventional finger joints have their fingers and notches extending transversely at right angles to two parallel side walls in the timber or plank. This means that at the juncture of a finger tip with a notch bottom that the effective glue surface is only equivalent to the width of the timber or plank. By making the fingers and notches diagonal to the two parallel side walls, the glue surface between contacting finger tips and notch bottoms is greatly increased thereby improving the strength characteristics of the jointed pieces.

3,692,341

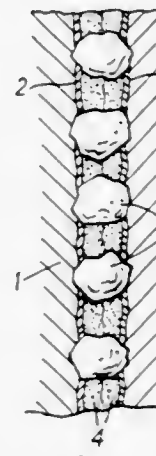
## BOLTED-UP FRICTION JOINTS IN STRUCTURAL STEEL-WORK

Kenneth G. Wynne Brown, Anchor House, Longcross Road, Chertsey, and Keith Julian Day, 19, Treemount Court, Grove Ave., Epsom, both of Surrey, England

Filed March 2, 1970, Ser. No. 15,789

Int. Cl. F16b 5/00

12 Claims



The mating faying surfaces in a structural steel-work joint are protected by a layer of corrosion-resisting material such as primer or galvanizing. This layer carries a further layer of a friction agent comprising a binder and friction-increasing particles such as grit or amorphous aluminum particles.

Both layers can be works-applied for greater reliability and consistency. The joint can be dismantled and reassembled without difficulty. The layer of corrosive-resisting material will be applied as an all-over protective layer for complete steel works components after cleaning off mill-scale.

3,692,342

## CONTAINER POST LOCKING MEMBER

John Patrick Scallan, 84 Killarney Drive, Killarney Heights, New S. Wales, Australia

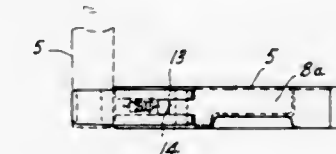
Filed Aug. 31, 1970, Ser. No. 68,335

Claims priority, application Australia, Sept. 3, 1969, 60461/69

Int. Cl. E05c 7/04

U.S. Cl. 292—128

7 Claims



A knock-down container has its walls, cover and base readily detachable from each other. The walls fit into the base and are locked in an upright position by a latch which pivots near one of its ends about a point in a recessed portion of the upper edge of a wall. The other end of the latch projects beyond the vertical edge of the wall on which it is pivoted and fits into a recessed portion in the top edge of an adjacent wall to lock the adjacent walls together at the corner.

3,692,343

## CLOSURE LATCH

Barthold F. Meyer, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 24, 1970, Ser. No. 49,289

Int. Cl. E05c 3/26

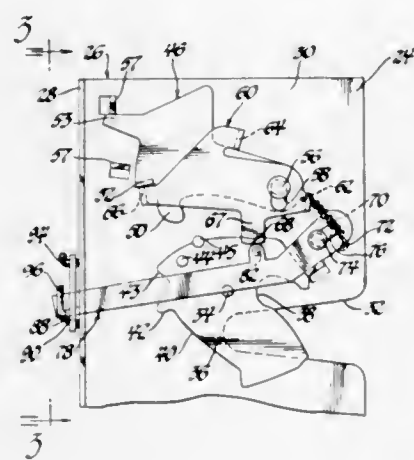
U.S. Cl. 292—216

3 Claims

A latch for a vehicle body closure, the latch including a latch bolt, a detent lever, means frictionally resisting move-



ment of the detent lever and a transfer lever operable to overcome the friction and move the detent lever into and out of a detenting position against the latch bolt. A control pin on the latch bolt engages the transfer lever during movement of the



latch bolt from an unlatched to a latched position to actuate the transfer lever and initiate simultaneous movement of the detent lever to the detenting position, the aforementioned friction functioning to maintain the detent lever in the detenting position.

3,692,344

Patent Not Issued For This Number

3,692,345

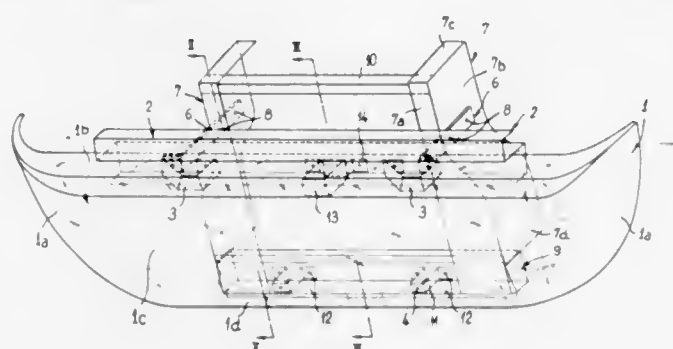
## COMPOSITE BUMPERS

Jean-Michel Dumontier, Billancourt, France, assignor to Regie Nationale Des Usines Renault, 07, Billancourt, Germany and Automobile Peugeot, Paris, France  
Filed April 5, 1971, Ser. No. 131,034  
Claims priority, application France, April 30, 1970, 7015924

Int. Cl. B60r 19/08

U.S. Cl. 293-71 R

4 Claims



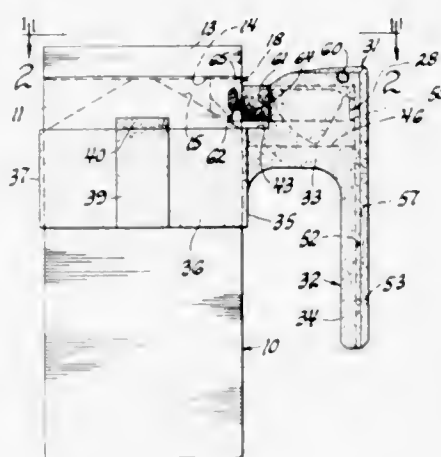
This automotive bumper is a composite structure comprising a shield of synthetic material and a rigid reinforcing member having a S-shaped cross-sectional contour, disposed between the front portion of the shield and the plane of the front cross member of the vehicle chassis, said rigid member extending substantially throughout the width of said front portion, this bumper further comprising a pair of side flanges connecting in overhanging relationship the lower loop of said reinforcing member to said chassis cross member, said flanges being vertically and rigidly connected to one face of said cross member so that in case of shock said flanges are sheared about an axis substantially parallel to said chassis cross member.

### 3,692,346 CAM OPERATED DETACHABLE CLAMPING CARTON HANDLE

James B. Simms, 8441 Birch Road, Taylor, Wis.  
Continuation-in-part of Ser. No. 34,310, May 4, 1970. This application Oct. 21, 1971, Ser. No. 191,178  
Int. Cl. A47b 95/02

U.S. Cl. 294-31 A

5 Claims



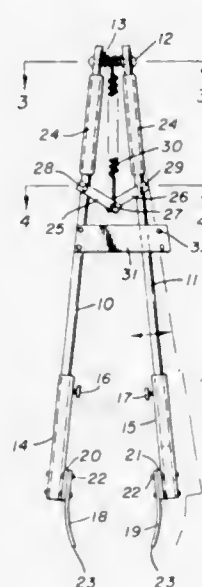
A cam operated detachable carton handle for use on milk cartons and the like, and which includes an integral rectangular housing adapted to be slidably mounted over the upper end of a carton. A handle is integrally formed on the housing. A plunger provided with retainer clip means is slidably mounted on the handle and a pivotally mounted cam is provided for camming the plunger into a recess in the upper end of the carton for releasably retaining the rectangular housing and handle in place on the carton.

### 3,692,347 PICKUP TONGS

George F. Bixler, 2816 Firney Ave., Youngstown, Ohio  
Filed Nov. 19, 1970, Ser. No. 91,078  
Int. Cl. A01b 1/18

U.S. Cl. 294-99 SAJ

1 Claim



A pair of pickup tongs comprises a pair of tubular arms loosely pivoted to one another adjacent their uppermost ends and having telescopically arranged lower end portions carrying opposed blades. Spring means and interconnecting levers positioned between the tubular arms normally urged the same apart. Guide means are provided for restricting the motion of the tubular arms with respect to one another and maintaining them in opposed relation.

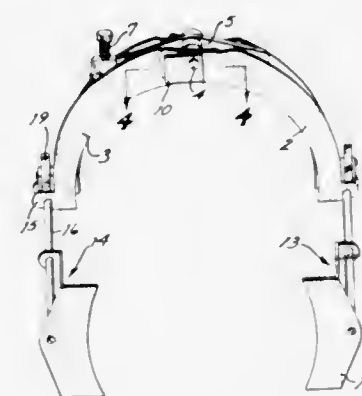
3,692,348

## PIPE GRIPPING TONGS

John T. Doty, 9936 E. Ramona Ave., Bellflower, Calif.  
Filed Sept. 3, 1970, Ser. No. 69,360  
Int. Cl. B66c 1/44

U.S. Cl. 294-106

5 Claims



When handling large diameter industrial pipe it is frequently necessary to move the pipe along its longitudinal axis, and either forwardly or backwardly, depending on the particular problem; and also pipe is frequently supported vertically while lowering the pipe into or removing the pipe from a well. The pipe which is being worked upon is securely gripped by the tongs, and the gripping action is achieved by a means other than the weight of the tongs itself and the pipe engaged thereby. A manually actuated tong operator is, therefore, employed to actuate the tongs and cause them to securely grip the outer surface of the pipe.

3,692,349

## TRAILER CONSTRUCTION

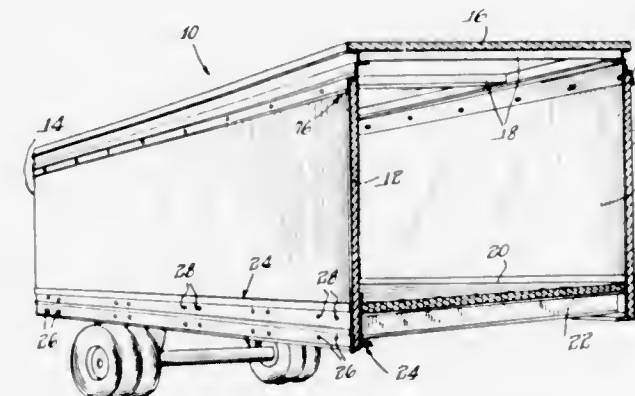
Donald J. Ehrlich, Monon, Ind., assignor to Monon Trailer Inc., Monon, Ind.

Filed Sept. 23, 1970, Ser. No. 74,713

Int. Cl. B62d 27/00, 25/02

U.S. Cl. 296-28 M

14 Claims



A trailer body is disclosed herein and generally includes a pair of side panels, an end panel, a top panel joining the side and end panels, and a floor positioned above and supported by a plurality of beams extending transversely of the side panels. Each of the side panels are secured to common ends of the support beams by an elongated channeled rail and fastening bolts extending transversely through the rail and side panel where they are fixed to the support beams, the bolts being positioned below the trailer body's floor so as not to interfere with cargo placed therein.

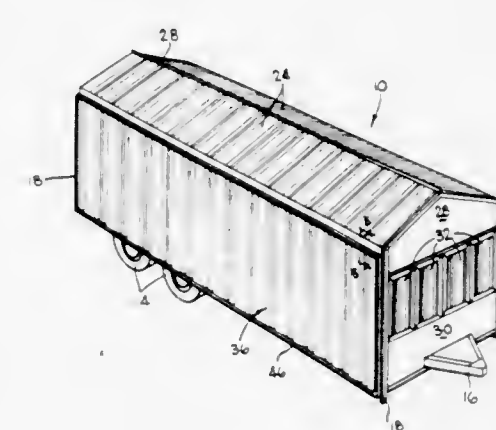
3,692,350

## MOBILE OUTDOOR DISPLAY UNIT

Carl W. Radtke, Chicago, Ill., assignor to Ickes-Braun Glasshouses, Inc., Deerfield, Ill.  
Filed May 10, 1971, Ser. No. 141,710  
Int. Cl. B60p 3/02

U.S. Cl. 296-21

7 Claims



A mobile display unit is provided which can be expanded on location to provide a shelter for the display of merchandise, the unit being so constructed that, when in the expanded condition, it is capable of protecting the merchandise from environmental weather conditions and from access by unauthorized persons.

3,692,351

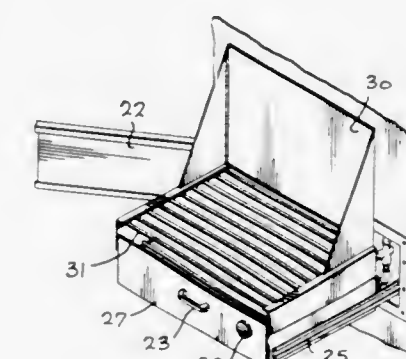
## COOKING APPARATUS

Paul G. Christopher, 1850 Phillips Way, Los Angeles, Calif., and Ronald E. Jelsvik, 16430 Superior St., Sepulveda, Calif.  
Filed May 17, 1971, Ser. No. 143,915

Int. Cl. A47j 37/00

U.S. Cl. 296-23 R

6 Claims



A cooking apparatus is disclosed herein having a stationary mounting unit carried on a motor vehicle for enclosing a cooking unit therein. A slide support is provided for mounting the cooking unit so that it will move laterally outward from the stationary unit to an in-use, exposed position. The cooking unit includes a grid for supporting a firebed of lava bricks or coals for supporting food intended to be cooked. A butane gas system is carried below the lava bricks for heating purposes.

3,692,352

Patent Not Issued For This Number



3,692,353

## SAFETY LOCK ASSEMBLY

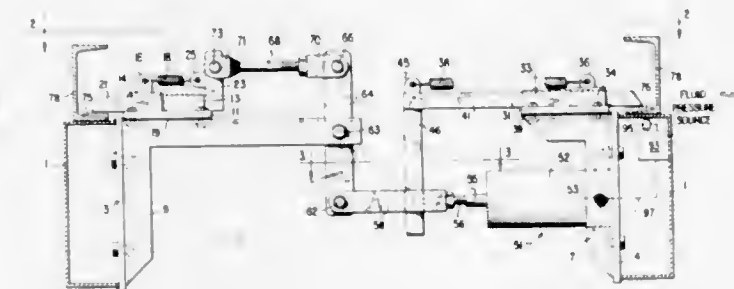
Edward A. Lynde, Golden Valley, Oreg.

Filed July 21, 1970, Ser. No. 56,843

Int. Cl. B62d 27/06

U.S. Cl. 296—35 A

2 Claims



A safety lock assembly for locking together in a predetermined relative position two members which are arranged for movement relative to one another, displacement means being provided for moving the members relative to one another out of the predetermined position and the safety lock assembly being normally maintained in a locking position and being arranged for movement out of the locking position under the influence of driving means, the driving means and displacement means being connected to a common power source and the driving means being actuated when the power from the source is lowered than that required for actuating the displacement means.

3,692,354

## TRUCK STAKE ARRANGEMENT

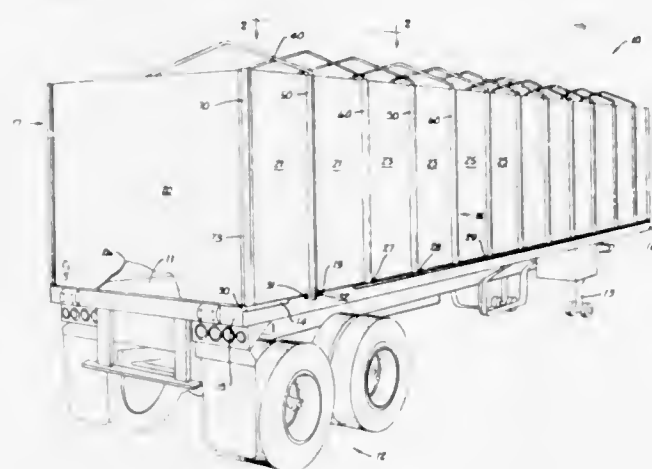
Robert P. Tuerk, 7710 Candlewood Lane, Indianapolis, Ind.

Filed Oct. 22, 1970, Ser. No. 83,118

Int. Cl. B62d 33/00

U.S. Cl. 296—36

12 Claims



An arrangement of stakes for supporting panels on a flatbed truck. Hollow stakes with tapered bottom ends seatingly fit into pocket brackets mounted to the periphery of the bed. The stakes have triangular shaped cross sections with the corners of the triangle being thickened. Side panels are mounted to the bed being supportingly received by stakes with T-shaped brackets. Corner stakes with parallel first and second walls define vertically extending grooves which receive the edges of end panels. A third wall integral and perpendicular to the second wall defines a vertically extending groove for receiving the edge of a side panel. Tarpaulin rods are secured to the hollow top ends of the stakes.

3,692,355

## AUTOMOTIVE VISOR

Soon Pil Hong, 1138 S. Ardmore Ave., Los Angeles, Calif.

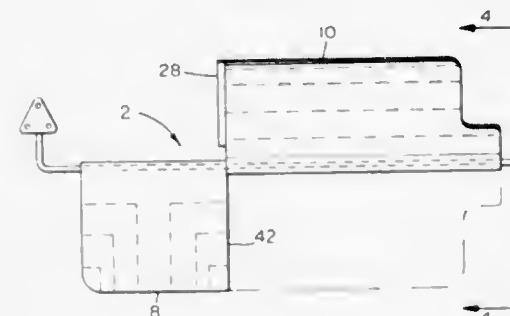
Filed Sept. 24, 1970, Ser. No. 75,187

Claims priority, application Republic of Korea, Apr. 8, 1970, 1653

U.S. Cl. 296—97 G

Int. Cl. B60j 3/02

11 Claims



A visor for use in automobiles to block out deleterious light rays is provided. The visor is of two-piece construction, forming left and right hand portions or shields of plastic material. The right hand shield has a horizontally oriented variation of coloration providing varying degrees of light transmission or translucency. The left hand portion has a similar variation in coloration in a combined horizontal and vertical arrangement. The left and right hand portions are selectively rotatable out of the driver's line of vision so that the entire visor may be used for daytime use while the right hand portion may be rotated up and out of the line of vision for night time use. A tab on the right hand shield facilitates coincident movement of both shields.

3,692,356

## HEAD REST WITH ADJUSTING DEVICES

Wolfgang Mertens, Karlsruhe, Germany, assignor to Firma

Kurt Herzer, Karlsruhe, Germany

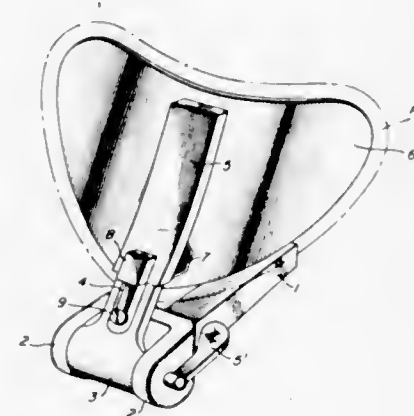
Filed Feb. 24, 1970, Ser. No. 13,575

Claims priority, application Germany, Sept. 2, 1969, P 19 44 414.5

U.S. Cl. 297—408

Int. Cl. A47c 7/38

6 Claims



The invention relates to tiltable head rests for attachment to the back rest of an automobile and includes a vertically adjustable head rest supported on a housing which includes a telescopic brace adapted to be moved relative thereto and associated at the opposite free end with locking members permitting the tilting operation.

3,692,357

## APPARATUS FOR CUTTING A SLOT IN A FOUNDATION MASS FOR DETERMINING DEFORMABILITY AND RESIDUAL STRESSES IN THE FOUNDATION MASS

Manuel Coelho Mendes da Rocha, Av. Estados Unidos da America, 9503°D., and Jorge Neves da Silva, Rua Cabo Verde 14-2°D., both of Lisbon, Portugal

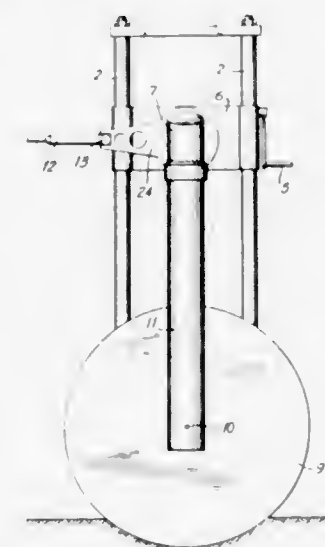
Division of Ser. No. 731,673, May 6, 1968, Pat. No. 3,533,283.

This application June 12, 1970, Ser. No. 45,772

Int. Cl. E21c 25/06, 39/00

U.S. Cl. 299—38

3 Claims



Apparatus for cutting a narrow slot in a foundation mass for measuring the deformability and the residual stress in the mass, the slot being formed by cutting a plurality of contiguous narrow slots with a rotatable cutting disc to a depth greater than the radius of the disc, whereafter a flat jack is inserted into the elongated slot and applies measured pressure against the faces bounding the slot whereby the faces undergo deformation which is measured by the jack.

3,692,358

## FOLDABLE ARTICLE OF FURNITURE

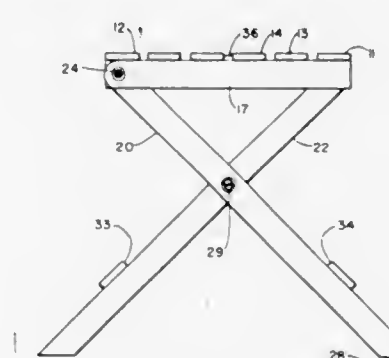
Albert Y. Sung, 1161 Buckingham Drive, Los Altos, Calif.

Filed June 9, 1971, Ser. No. 151,214

Int. Cl. A47b 39/00

U.S. Cl. 297—159

13 Claims



An article of furniture movable between an erect position and a folded generally planar position is provided including a top planar supporting surface formed by two mating halves when the article is in its erect position. A first pair of braces are secured to the undersurface of one of the halves and extend in a direction normal to the line of mating of the halves and under the undersurface of the other of the halves to support the other of the halves when the article is in its erect position. A second pair of braces are spaced inwardly of the first pair of braces and are secured to the undersurface of the other of the halves and extend in a direction opposite to the first pair of braces and under the undersurface of the first of the halves

to support the first of the halves when the article is in its erect position. Leg members for supporting the article in its erect position are pivotally secured to the free ends of the braces and cross on opposite sides of the top surface and are pivotally connected at their point of crossing. A bar is pivotally connected to the second pair of braces and the leg members pivotally connected thereto to provide both a support for the underside of the half having the first pair of braces secured thereto and a handle for carrying the article when it is folded into its generally planar position.

3,692,359

## PLAYSEAT WITH STABILIZER

Raymond Boucher, Dothan, Ala., assignor to Hedstrom Com-

pany, Bedford, Pa.

Filed Dec. 4, 1969, Ser. No. 882,171

Int. Cl. A47d 13/10

U.S. Cl. 297—258

5 Claims



An improved children's play seat is convertible between rocker, walker and bouncer positions. It has a pair of upwardly-curved rockers and a seat resiliently suspended from the rockers. Casters are provided at the ends of the rockers so that a child in the seat can propel the vehicle with his feet.

Outrigger type feet are pivotally mounted at the ends of the rockers. When the playseat is being used as a walker, these feet are swung up so that the casters engage the ground. On the other hand, when the seat is being used as a bouncer, the feet are swung down below the casters so that they engage the ground and thereby stabilize the seat.

3,692,360

Patent Not Issued For This Number

3,692,361

## SECURING ELEMENT FOR VEHICLE SAFETY HARNESES

Nils Ture Ivarsson, Kullavik, Sweden, assignor to Goteborgs Bandrarevi AB, Goteborg, Sweden

Filed April 22, 1971, Ser. No. 136,388

Claims priority, application Sweden, April 23, 1970, 5612/70

Int. Cl. A44b 21/00

U.S. Cl. 297—385

7 Claims

A connector-type securing element for attaching one lock-carrying part of a vehicle safety harness to the vehicle floor. The element consists of extensible synthetic resin threads wound about two spaced-apart trundles, and a plastic cover completely enclosing the thread and trundle unit. The cover preferably is made of a material with a lower tensile strength



value than the threads enclosed therein such that upon abnormal elongated stresses on the harness, such as for instance in



case of an accident, the cover will break, providing a readily visible indication that the harness is no longer fit for use and should be replaced.

### 3,692,362 TIPPING TRAILERS

John B. L. Craske, The Old Hall, Ringsfield, near Beccles, England

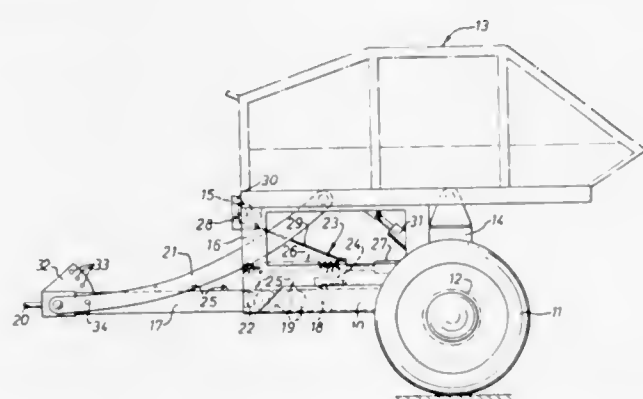
Filed July 20, 1970, Ser. No. 56,389

Claims priority, application Great Britain, July 28, 1969, 37,685/69

Int. Cl. B60p 1/04

U.S. Cl. 298—5

7 Claims



A tipping trailer for use, for example, in industry and agriculture where frequent tipping and frequent hitching to and disconnection from towing vehicles is involved, such trailer having a drawbar assembly which, by reversing the towing vehicle to which the trailer is connected while the trailer chassis is held stationary is operable to effect tilting or tipping of the trailer body or platform.

### 3,692,363 CONVERTIBLE VEHICLE BODY AND AUXILIARIES

Paul Tenebaum, Glenside, and Paul J. Seng, Langhorne, both of Pa., assignors to Strick Corp., Fairless Hills, Pa.

Filed May 18, 1971, Ser. No. 144,545

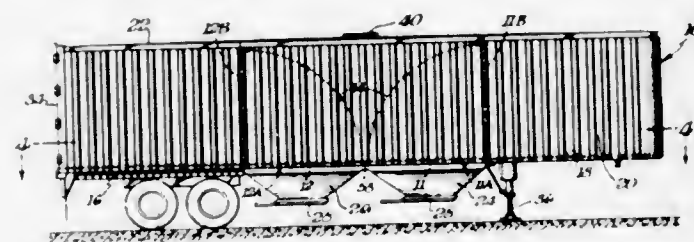
Int. Cl. B60p 1/56

U.S. Cl. 298—24

40 Claims

A truck-trailer body is converted to transport granular bulk cargo by raising a pair of central floor panels from over discharge hoppers to form the front and rear walls of a bin

area over the hoppers. The raised panels are secured against removable sealing poles, which are engaged within the side walls by insertion of projections into sockets in the roof and floor of the body. The panels are clamped to the poles and the poles are sealed to the sidewalls and panels by a cushioning strip projecting in two directions from the pole. The space between the ends of the panels and the roof is sealed by a resilient flap which may be rotated into contact with the roof by a projection extending from the sealing poles through holes in the corners of the panels or which may be fixed to and extend downwardly from the roof. The rotatable flap drops down below and within the edge of the partitioning panel into the hopper in the horizontal floor position. A winch pole for raising and lowering the panels by winding and unwinding a



flexible strap on a ratchet reel is also removably installed by engagement into sockets in the roof and floor fore and aft of the panels. The sealing and winch poles are stored out of the path of movement of discrete cargo in a storage rack in the front of the body.

The partitioning panels are supported without imposing a load on their hinge pins by a series of brackets laterally spaced under their hinge plates. Other lateral support ribs contact the spaces between the hinge plates to substantially seal them against passage of dust upwardly through the hopper into the body. Structural cross members spanning the hoppers have a minimum peaked horizontal surface area to shed granular material. The multiple plies of the partitioning panels and the resilient seals about their peripheries also help seal them against upward passage of any dust.

### 3,692,364 METHOD OF OPEN-PIT MINING

Sune Torsten Henriksson, Kvartsvagen 6, and Ragnar Ludvig Muotka, Kyrkogatan 46, both of 981 00 Kiruna, Sweden

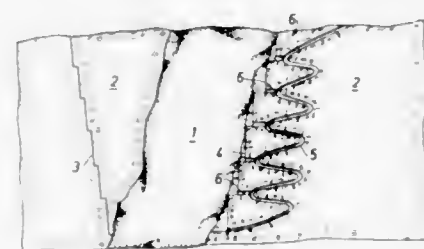
Filed Oct. 29, 1970, Ser. No. 84,963

Claims priority, application Sweden, Oct. 31, 1969, 14945/69

Int. Cl. E21c 41/00

U.S. Cl. 299—18

6 Claims



A method of open-pit mining according to which a transport ramp system is provided in a tunnel system outside the open pit and the body of materials which is mined for establishing communication between the surface and the different mining levels.

### ERRATUM

For Class 299—38 see:  
Patent No. 3,692,357

### 3,692,365

### METHOD AND APPARATUS FOR REGULATING BRAKE CONTROL PRESSURE

Rene Demarez, Gennevilliers, and Claude J. Dubois, Paris, both of France, assignors to Compagnie Des Freins Et Srgnaux Westinghouse, Freinville-Sevran, France

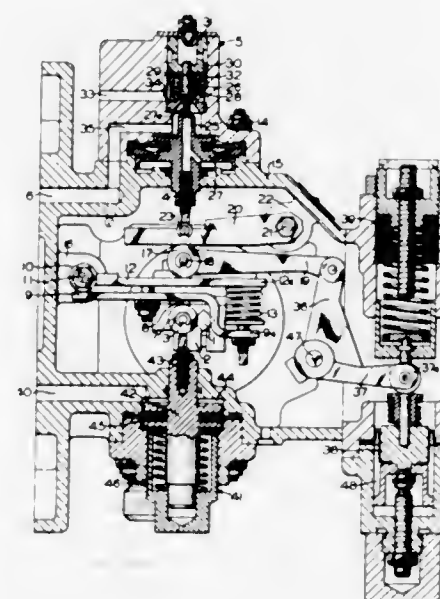
Filed Dec. 14, 1970, Ser. No. 97,509

Claims priority, application France, Dec. 12, 1969, 6943264

Int. Cl. B60t 13/74

U.S. Cl. 303—3

14 Claims



A friction/dynamic brake blending valve device is provided for a railway vehicle brake control system, in which a torque motor is arranged with opposing field windings so that its output shaft reflects the difference between an electric brake control current supplying one winding and an electrical signal representing the effective dynamic brake effort supplying the other winding. The output shaft acts through a lever arrangement to drive a pneumatic regulating valve which provides the necessary friction brake pressure to supplement the dynamic brake an amount sufficient to produce vehicle retardation, by the combined dynamic and friction brake efforts, corresponding to the brake control signal. The ratio of the output shaft torque to the pneumatic brake pressure is adjustable, in accordance with the vehicle load condition, through a movable fulcrum interposed between the lever arrangement connecting the output shaft and pneumatic regulating valve. Auxiliary pneumatic control means is provided to operate the pneumatic regulating valve through the lever arrangement independent of the torque motor to produce friction brake in the event electric failure renders the torque motor ineffective.

### 3,692,366

### FLUID PRESSURE BRAKE SYSTEM

Sergio Campanini, Lincolnwood, Ill., assignor to Berg Mfg. & Sales Co., Des Plaines, Ill.

Filed Jan. 13, 1971, Ser. No. 106,154

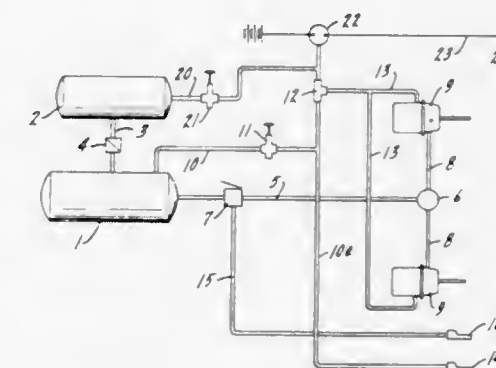
Int. Cl. B60t 13/22

U.S. Cl. 303—9

7 Claims

A tractor-trailer brake system having spring-applied, fluid pressure-released, emergency-parking brake actuators wherein a separate fluid pressure reservoir on the tractor may be communicated to the actuators to release the brakes and a

separate tank on the trailer is automatically communicated to the trailer actuators to release the same through electrical



### 3,692,367

### BRAKING FORCE CONTROL VALVE ASSEMBLY

Hiromu Kuromitsu, Kariya Aichi Prefecture, Japan, assignor to Aisin Seiki Kahishiki, Kaisha, Kariya, Aichi Prefecture, Japan

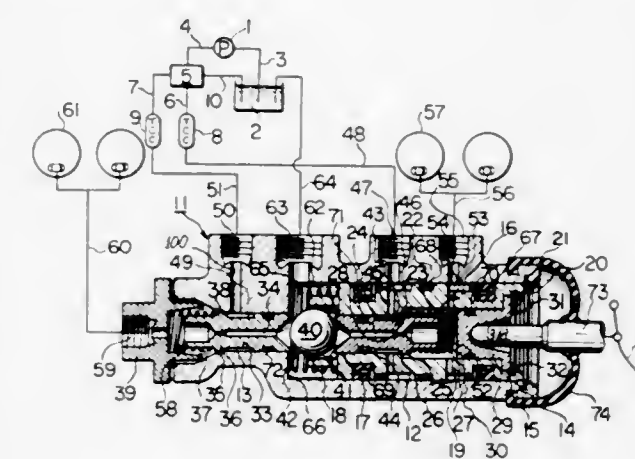
Filed April 16, 1971, Ser. No. 134,779

Claims priority, application Japan, April 17, 1970, 45/33254

Int. Cl. B60t 13/14, 15/04

U.S. Cl. 303—52

7 Claims



This invention relates to improvements in and relating to brake force control valve assemblies. More specifically, it relates to a brake force control mechanism to be used in such a hydraulic brake system wherein accumulated pressure fluid is conveyed from accumulator means through a control valve to wheel brake cylinders. In the inventive brake control valve assembly, a cylinder body thereof is formed with a stepped axial bore comprising a larger bore part and a smaller bore part. A hydraulic piston operatively connected with a brake pedal is slidably mounted in said larger cylinder bore part, said piston being formed with an axial bore. A first valve slider and a second valve slider are mounted slidably in the piston bore in an opposite arrangement to each other and a valve ball is positioned between the valve sliders with idle gaps. When the brake is actuated, these valve sliders and the ball valve acts as if they be rigid to each other, so as to establish a non-time-lag operation of these valve sliders.



3,692,368

**ACCUMULATOR RECOIL CYLINDER WITH OIL FILM APPLICATOR**

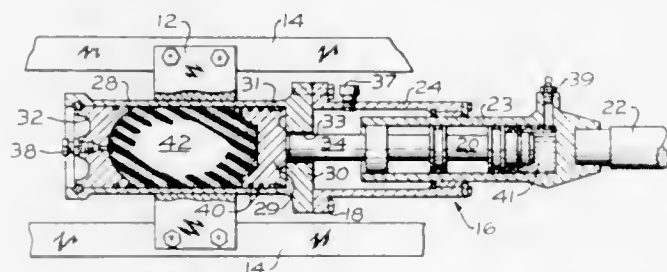
George F. Alexander, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 14, 1970, Ser. No. 80,680

Int. Cl. B62d 52/30

U.S. Cl. 305—10

12 Claims



An oil film applicator for the gas sealing means of a piston in a horizontally disposed accumulator cylinder in a crawler track recoil and adjuster device. The accumulator cylinder is substantially filled with an oil-saturated polyurethane foam which assures complete lubrication of all portions of said sealing means.

3,692,369

**MOP HANDLE MOUNTING**

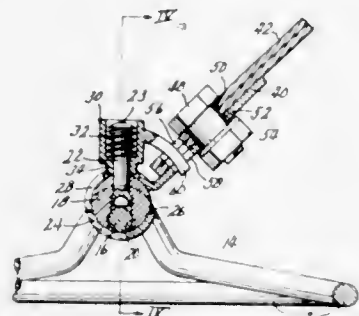
Erin O. Chase, Box 266, Seneca, Mo.

Filed June 10, 1971, Ser. No. 151,830

Int. Cl. A47l 13/252; B25g 3/38

U.S. Cl. 306—19

8 Claims



Mounting hardware for attaching a mop handle to a mop head including a mop head frame having a horizontal transverse cross bar, said hardware including a cylindrical barrel having a side outlet and having rotatably mounted therein a cylindrical spool with a groove formed in one side thereof, whereby when the groove and barrel outlet are angularly aligned, the cross bar may be inserted into said groove for rotation therein, and whereby when the spool is rotated out of alignment with the outlet, the barrel secures the cross bar in the groove, a manual lever for turning said spool in the barrel, a ferrule which may be fixed to the handle pivoted to said barrel on an axis at right angles to the spool, whereby the mop head can pivot universally relative to the handle, and means operable by the manual lever for selectively freeing or securing the ferrule against pivoting relative to the barrel, when the lever is in position to lock the cross bar in the spool groove.

3,692,370

**DAMPING MEANS FOR INCREASING THE MINIMUM DYNAMIC STIFFNESS OF A SHAFT**

John R. Hasz, 5686 Sherwood Drive, Milford, Ohio

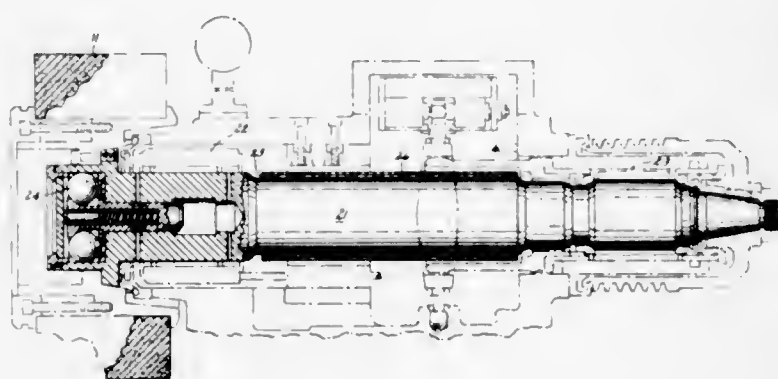
Division of Ser. No. 857,155, Sept. 11, 1969, Pat. No.

3,664,228. This application Sept. 23, 1971, Ser. No. 183,035

Int. Cl. B24b 45/00; F16f 15/00

U.S. Cl. 308—1

12 Claims



The minimum dynamic stiffness of a spindle of a grinding wheel is increased by having a sleeve of viscoelastic material bonded to the spindle between the bearing supports for the spindle. A sleeve surrounds the viscoelastic material sleeve to constrain the sleeve of viscoelastic material to increase its shear strains and is bonded thereto.

3,692,371

**ANTI-FRICTION BEARINGS**

Ted Geffner, Merrick, N.Y., assignor to The Barden Corporation, Danbury, Conn.

Continuation of Ser. No. 28,719, April 15, 1970, which is a continuation-in-part of Ser. No. 780,440, Dec. 2, 1968, abandoned, which is a continuation-in-part of Ser. No.

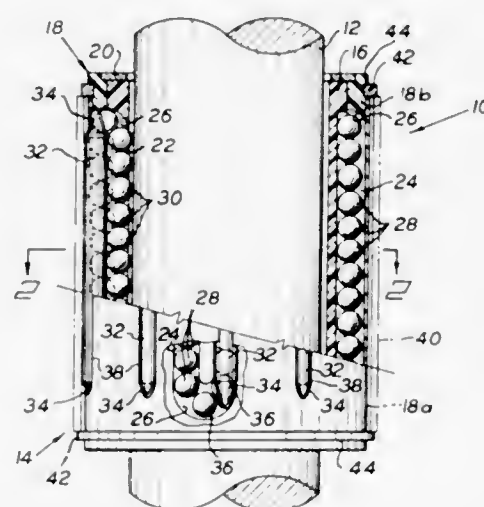
586,151, Oct. 12, 1966, Pat. No. 3,446,540. This application

Oct. 15, 1971, Ser. No. 189,730

Int. Cl. F16c 29/06

U.S. Cl. 308—6 C

20 Claims



Anti-friction bearings for use between working members that may move relative to each other and wherein the anti-friction bearings include a plurality of bearing elements for supporting loads between the working members and in which one of the bearing elements is constantly in load bearing position while another of the load bearing elements moves between active and inactive positions and when in the active position shares the load with the bearing element in load bearing position.

3,692,372

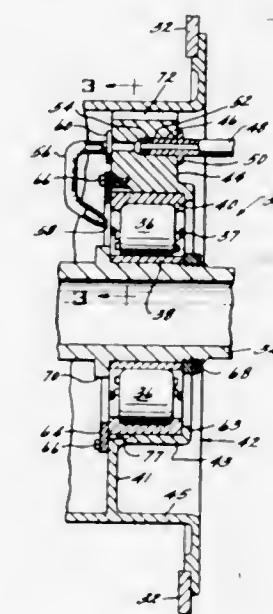
**THERMALLY EXPANSIBLE BEARING ASSEMBLY**  
Carroll Benson Pineo, Seabrook, N.H., assignor to General Electric Company

Filed June 24, 1971, Ser. No. 156,234

Int. Cl. F16c 35/04, 39/00

U.S. Cl. 308—15

3 Claims



A thermally expansible bearing assembly includes stress relief cuts in the circumferential structure thereof that permit a uniform radial expansion around the circumference of the outer bearing race when subjected to thermal stress.

3,692,373

**SLIPPER BEARING LUBRICATION AND SEAL**

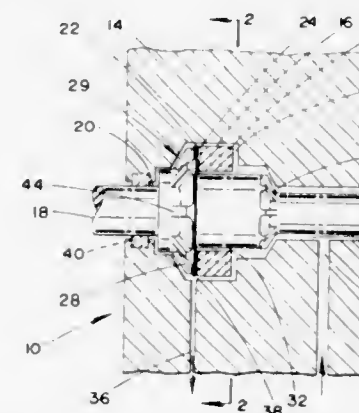
Kenneth E. Nichols, Arvada, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed June 22, 1971, Ser. No. 155,496

Int. Cl. F16c 33/72, 17/03

U.S. Cl. 308—36.3

6 Claims



A lubrication system and dynamic seal for floating slipper bearings including a lubricant pumping means responsive to rotation of a shaft supported by the bearings, a lubricant flow restriction communicating with the pumping means and a cavity that retains the bearings, and optionally, a second pumping means for raising lubricant pressure to the bearings.

3,692,374

**COMPOSITE TAPERED ROLLER BEARING RACE**  
Hudson B. Schelfele, 30165 Ponds View Road, Franklin, Mich.

Division of Ser. No. 870,681, Oct. 27, 1969, Pat. No.

3,597,819. This application June 28, 1971, Ser. No. 157,375

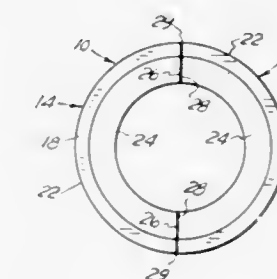
Int. Cl. F16c 33/58

U.S. Cl. 308—216

3 Claims

Suitable bearing race material is formed into bar stock having a longitudinally oriented grain structure and having a

cross-section corresponding to the cross-section of the prospective bearing race. From the thus-shaped bar stock are cut a plurality of pieces whose combined lengths substantially equal the circumferential length of the prospective bearing race. These pieces are then bent into circularly arcuate segments having curvatures corresponding to that of the prospective bearing race and having ends configured to fit one



another. These segments are then aligned end-to-end in an annular path and welded together into an annular body which is then hardened and ground. This bar stock is provided with an inclined side surface which, for an outer race, becomes the inner surface of the segment, and for an inner race becomes the outer surface of the segment, in each instance constituting the roller path.

3,692,375

**COMPOSITE PLASTIC BEARING AND METHOD FOR MAKING THE SAME**

Richard J. Matt, Simsbury, and Thomas P. Rolland, Bristol, both of Conn., assignors to Textron Inc., Providence, R.I.

Filed Dec. 1, 1970, Ser. No. 94,091

Int. Cl. F16c 33/14

U.S. Cl. 308—238

19 Claims



The invention contemplates an improved composite plastic sliding bearing or bearing element, and method and apparatus for making the same, wherein a fabric liner at a generally tubular bearing interface is backed by a particular reinforcement of tensed flexible strands which are embedded in a hard mass of bonding material. High radial-compression load on the bearing is stoutly resisted by the reinforcement which comprises interlaced winding traverses at different helical-advance angles.

3,692,376

**CASE FOR RECORDING TAPE CASSETTES**

Kevin P. McKinsey, Northfield, and Thomas C. Mills, Wheaton, both of Ill., assignors to Double Sixteen Company

Filed Dec. 17, 1970, Ser. No. 99,007

Int. Cl. A47b 81/06

U.S. Cl. 312—11

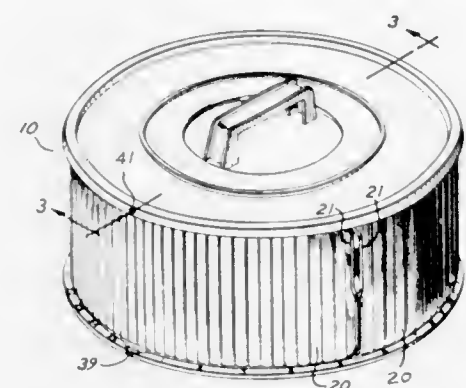
4 Claims

A carousel case for recording tape cassettes employs a spool-shaped cassette housing having a cylinder, a lower shelf



connected to one end of the cylinder and a top piece connected to the other end of the cylinder. The cassette housing is

dards coupled to support strips, brackets coupled to the standards, and shelf and clothes hanger apparatus coupled to the



rotatably mounted on a cone-shaped base. Radial slats are provided on the shelf and radial guides on the top piece to secure the cassettes within the housing.

3,692,377

# ELECTRICAL CONNECTION BOX ARRANGEMENT FOR APPLIANCE

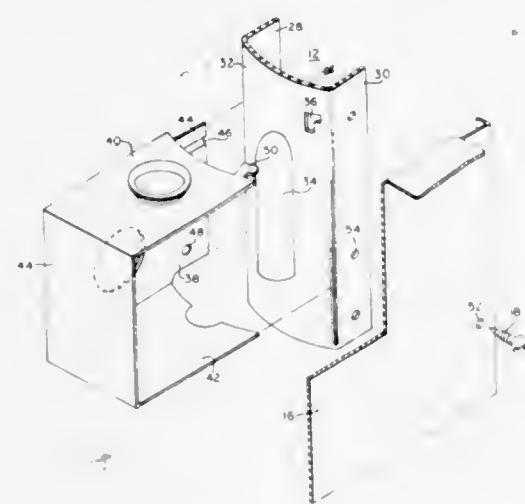
Charlie L. Hancock, Grove City, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 11, 1971, Ser. No. 105,349

Int. Cl. A47b 77/08, 81/00

U.S. Cl. 312—223

5 Claims



The subject connection box is formed with two open faces thereon and is mounted to a support leg for the appliance so that the leg closes one of the open faces of the box, while the other open face of the box is closed when the service toe panel is secured to the leg.

3,692,378

# SHELF AND CLOTHES HANGER APPARATUS AND METHOD

David D. Sharp, Flourtown, Pa., assignor to Reinhart, Inc., Philadelphia, Pa.

Filed July 17, 1969, Ser. No. 842,664

Int. Cl. A47b 67/02

U.S. Cl. 312—242

5 Claims

A shelf and clothes hanger apparatus, intended for use in closets or closet-like wall recesses, is provided. The apparatus comprises generally horizontal support strips, bridging and coupled to a plurality of wall studs, generally vertical stan-

brackets. The disclosed method is one wherein components of the apparatus are used as gauges to position the apparatus at desired locations on the supporting wall.

3,692,379

# METHOD OF FABRICATING A PHOTOCONDUCTIVE PICKUP TUBE

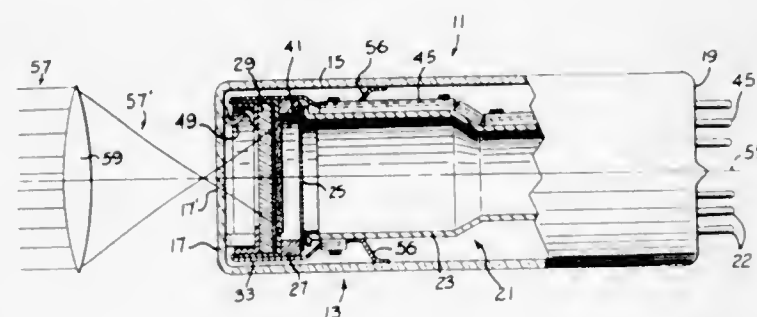
John J. Miller, Seneca Falls, and Carl W. Penird, Waterloo, both of N.Y., assignors to Sylvania Electric Products Inc. Division of Ser. No. 11,616, Feb. 16, 1970, Pat. No. 3,619,685.

This application May 24, 1971, Ser. No. 146,301

Int. Cl. H01j 9/18

U.S. Cl. 316—19

4 Claims



A method of fabricating a photoconductive pickup tube utilizing a one-piece envelope, with a closed-end faceplate portion, wherein a unitized mount structure is positioned. The integrated mount includes a beam forming portion with a mesh electrode oriented relative to the frontal end thereof. The unitized array continues whereof a target substrate, having a photoconductive target electrode formed thereon, is insulatively spaced from the mesh electrode. Resilient means are terminally employed to spaced the target substrate from the interior surface of the envelope faceplate, and a connective means for the target electrode is extended in an insulated manner along the mount to emerge from the base portion of the envelope.

3,692,380

# METHOD AND APPARATUS FOR PRODUCING HOLOGRAMS UTILIZING A PLURALITY OF SHORT FOCUS CONVEX LENSES

Takefumi Inagaki, Yokohama-shi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 1, 1971, Ser. No. 111,537

Claims priority, application Japan, Feb. 10, 1970, 45/11765

Int. Cl. G02b 27/22

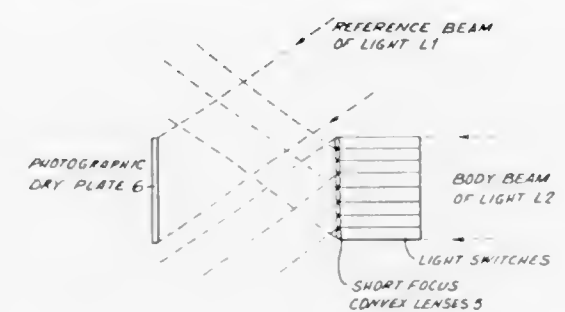
U.S. Cl. 350—3.5

7 Claims

A plurality of short focus convex lenses are irradiated with a coherent beam of light. The coherent beam of light is diffused

by the lenses and the diffused light is directed to a storage plate. The storage plate is irradiated with a reference beam of

cles fluorescent and reflecting from them, making the different classes of particles in various colors, etc. The method form of the invention involves selection of particle classes, each class having unique visual appearance and having sufficient differentiation between physical characteristics, such as size, shape, density, or any other properties affecting relative physical movement in such manner that the particles flow dif-



light in a manner whereby the reference beam of light interferes with the diffused beam of light.

3,692,381

# HOLOGRAPHY WITH SPECULAR OBJECTS

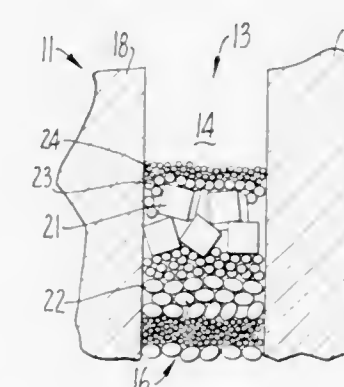
Edwin B. Champagne, Ann Arbor, Mich., assignor to GCO, Inc., Ann Arbor, Mich.

Filed March 25, 1971, Ser. No. 127,978

Int. Cl. G02b 27/22

U.S. Cl. 350—3.5

6 Claims



ferently and cause a heterogeneous array of concentrations and accumulations of the different classes of particles to provide a different design each time the particles are disturbed. Means is provided for continuous agitation of the particles to provide dynamic flow patterns in one modification of the invention, and a method is provided for retaining the particles in a desired configuration in another modification of the invention.

3,692,383

# OPTICAL ANALOG DISPLAY DEVICE

Donald M. Herod, Davison; John C. Engelman, Lapeer, and William J. Johnston, Flint, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 25, 1971, Ser. No. 118,846

Int. Cl. G02b 5/14

U.S. Cl. 350—96 R

3 Claims

A holographic analysis of the deflection occurring in an aircraft wing section as a result of loading is conducted to uncover defects in the structure. In forming the hologram a lens is employed to focus the object beam reflected from the specular wing surface near the hologram plane. The resultant high light energy distribution at the hologram plane allows very short exposure times, easing illumination source and vibration isolation requirements.

In an alternate embodiment, a second lens is placed so as to receive the focused beam and to image the object surface at the holographic plane, and two exposures are made on the plate before and after loading with reference beams that make different angles with the plate. The resulting hologram is reconstructed with separate reference beams which may be adjusted to vary the fringe pattern.

3,692,382

# PICTURE DEVICE AND METHOD OF MAKING PICTURES UTILIZING THE SAME

Roy L. Cloutier, 3086 Deseret Drive, Richmond, Calif.

Filed May 7, 1970, Ser. No. 35,469

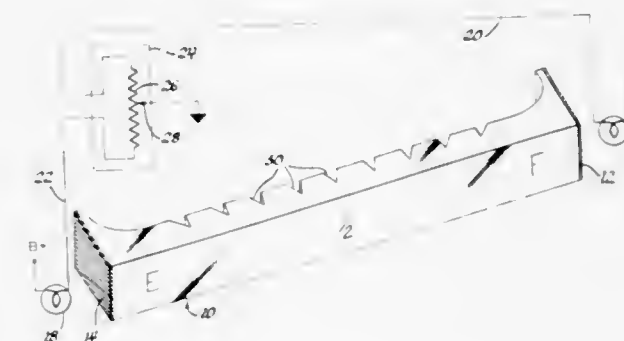
Int. Cl. G02b 27/08

U.S. Cl. 350—5

9 Claims

A device for creating and displaying artistic flow patterns in picture-like form utilizing different colored classes of particles carried in a picture-like container, with the different classes of particles having different physical properties causing the particles to form semi-random accumulations and concentrations to provide the artistically pleasing flow pattern effect. Two rectangular glass or plastic plates are held in closely spaced parallel relation by a surrounding frame and the particulate material is carried in the space between the two plates. In different forms of the invention, the artistic effect is enhanced by making at least some of the particles translucent and shining light through them, by making at least some of the parti-

A bar of light conducting material has notches formed in its rear face. The size of the notches are inclined at progressively different angles so that the efficiency of reflection of light toward the front face progressively varies along the length of the bar. Light filters of different colors are placed at each end of the bar and a lamp is provided adjacent each filter so that colored light is transmitted through the bar from each end to illuminate the sides of the notches so that the display apparent at the front face of the bar is a series of striated colored images. The color reflected from a given notch is a function of the relative intensities of light from the lamps. An electrical sending unit responsive to some condition varies the intensity of each lamp according to the amplitude of the condition. Thus as the condition changes, the striated bands progressively change in color.





3,692,384

**CURVED PROJECTION SCREENS**

Hiroshire Kimura, Uji-shi, Kyoto; Takeshi Nambu, Neyagawa-shi, Osaka; Kiyoshi Inoue, Uji-shi, Kyoto; Yoshiyuki Inahori, Nakakyo-ku, Kyoto-shi, Kyoto; Kenryo Yamaguchi, Kyoto-shi, Kyoto; and Kyoze Umemo, Uji-shi, Kyoto, all of Japan, assignors to Kabushiki Kaisha Midoukai, Osaka-shi, Japan

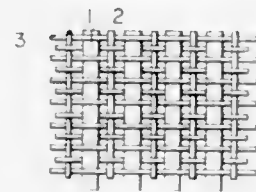
Filed May 15, 1970, Ser. No. 37,642

Claims priority, application Japan, May 15, 1969, 44/37516; May 20, 1970, 45/38962; Feb. 9, 1970, 45/11367

Int. Cl. G03b 21/56

U.S. Cl. 350—119

6 Claims



A curved wide angle projection screen fabricated of a material having vertical ridges for effectively reflecting toward the audience a high percentage of light incident upon the screen. In addition, the projection screen is provided with a plurality of holes for permitting efficient sound transmission through the screen. Finally, a large number of tape-shaped elements are attached in a louver fashion to the screen frame to overcome the difficulties inherent in curved screens.

3,692,385

**ROTATION SENSITIVE RETARDER SYSTEM**

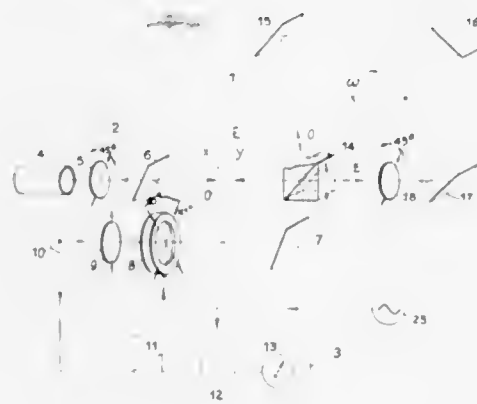
John George Gievers, 245 Wimpole Drive, Rochester, Mich.

Filed June 1, 1970, Ser. No. 41,849

Int. Cl. G02f 1/24

U.S. Cl. 350—157

37 Claims



A rotation sensitive retarder system comprising an optical loop around which two orthogonal linear polarized light beams are guided in opposite directions. A splitting and reunifying device is utilized in the optical loop for producing two orthogonal components and reunifying the components. Rotation in inertial space produces polarization-form conversion in the reunified beam which then is analyzed to determine the extent of the rotation.

3,692,386

**MODIFIED TRIPLETS WITH REDUCED SECONDARY SPECTRUM**

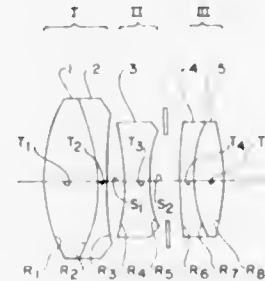
Charles J. Melech, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,630

Int. Cl. G02b 9/26

U.S. Cl. 350—227

3 Claims



A printer lens consists of a middle negative biconcave component surrounded by two positive doublets, with the lens parameters being selected to reduce secondary spectrum.

3,692,387

**ANTI-GLARE REAR VIEW MIRROR WITH HOUSING MOLDED OF PLASTIC MATERIAL**

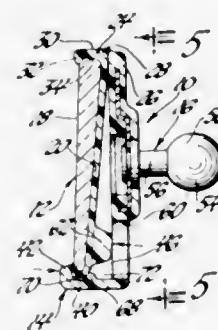
Karl R. Bowman; Lawrence L. Jemison, Jr., and Orval H. Parker, all of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 25, 1971, Ser. No. 118,624

Int. Cl. B60r 1/04; G02b 7/18

U.S. Cl. 350—281

1 Claim



An anti-glare rear view mirror wherein a one-piece plastic housing includes a mirror casing and support base which are hingedly connected at an integral flexible web. A prismoidal mirror element carried by the casing is selectively pivoted about the web between "day" and "night" viewing positions by cooperating finger actuated tabs and detents formed on the casing and the support base.

3,692,388

**ELECTRICALLY RESPONSIVE LIGHT FILTER**

John A. Hall, Jr., Boston, and John J. McCann, Belmont, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 28, 1969, Ser. No. 880,796

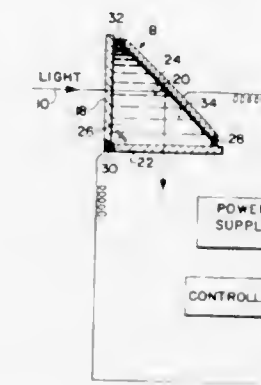
Int. Cl. G02f 1/28, 1/36; G02b 5/24

U.S. Cl. 350—312

20 Claims

A controllable light filtering element having an electrolytic cell in which is an electrode having a specularly reflecting surface. The electrode is positioned to reflect light entering the electrolyte through an entrance window toward an exit win-

dow. The electrolyte contains a redox agent. Electrode polarity and potential are selected to cause a light absorbing layer to



form adjacent the electrode's reflecting surface. Light transmission through the filter is regulated by controlling the current and voltage.

3,692,389

**VISUAL EFFECTS FOR MUSIC**

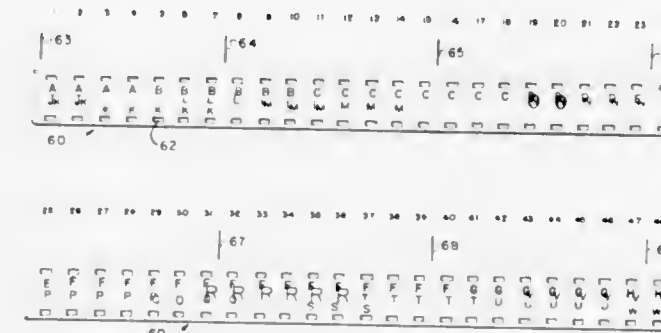
Selden Levy, New York, N.Y.; Stuart Grant, Baldwin, N.Y.; Vincent Coryell, Mt. Kisco, N.Y., and Fred Diamond, Island Park, N.Y., assignors to Disc-O-Lite Corporation, Inc.

Continuation-in-part of Ser. No. 878,140, Nov. 19, 1969, abandoned. This application June 18, 1971, Ser. No. 154,346

Int. Cl. G03b 31/06

U.S. Cl. 352—5

9 Claims



Method and apparatus for accentuating beats in a musical arrangement. A continuous loop of film is prepared containing sequential sets of different images. A predetermined number of the images is projected for no more than one-third of a second ensuring that there is a discrete image change within one-sixth of a second of the time of occurrence of a beat.

3,692,390

**AUDIO-VISUAL DEVICE**

Morton A. Siegel, Plainview, N.Y., assignor to Kinesonic Industries Ltd., New York, N.Y.

Filed March 2, 1970, Ser. No. 15,661

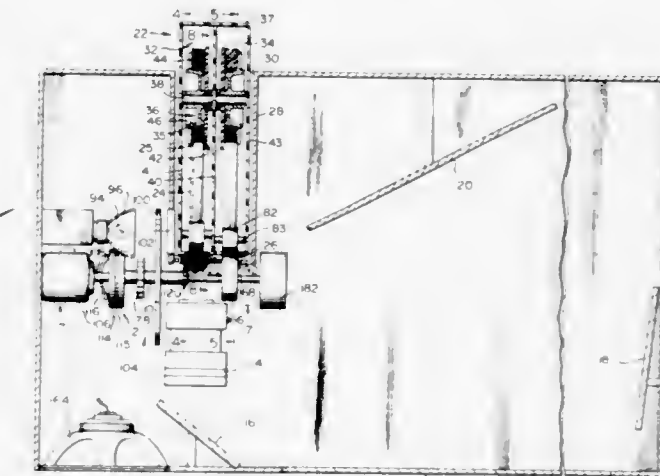
Int. Cl. G03b 21/38, 31/04

U.S. Cl. 352—17

4 Claims

A projector casts on a screen, from an endless loop picture film either a still image of a single frame or a moving image representing a blend of a succession of frames. The audio component accompanying the picture film is carried on an endless loop magnetic tape which additionally carries inaudible signals. The signals control an intermittently operating picture film advance. The film loop and the tape loop are both coiled in side-by-side relation in separate compartments of a twin-compartment cartridge. Separate magnetic pickups are included for the audio component and for the signals of the tape loop. The signals control a solenoid actuated detent which can stop the picture film advance at single pre-selected frames so that, when appropriate, a single frame image in the

still mode is projected, while the audio accompaniment continues uninterrupted. At other times the signals permit the film to advance at the same time as the tape. Thereby, a continuous running commentary is synchronized with any mixture of



still and moving pictures projected on the screen. The film advance drive includes a sleeve concentrically mounted on a rotating drive shaft. The sleeve is coupled to the rotating drive shaft by a clutch which slips when the detent engages the sleeve.

3,692,391

**PROJECTOR FOR USE WITH CONTAINERS FOR MOTION PICTURE FILM**

Alfred Winkler, Munich, and Johann Zanner, Jr., Unterhaching, both of Germany, assignors to AGFA Aktiengesellschaft, Leverkusen, Germany

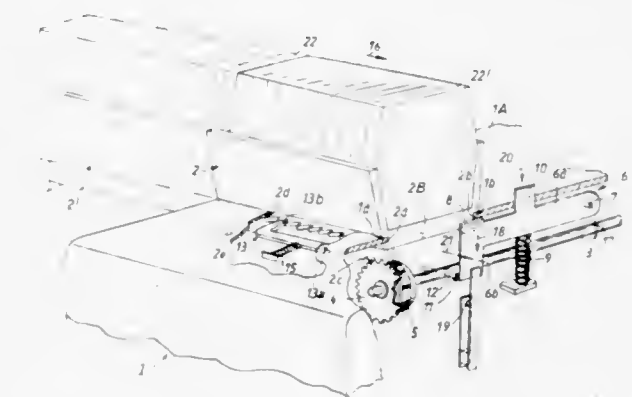
Filed Dec. 17, 1970, Ser. No. 99,178

Claims priority, application Germany, Dec. 20, 1969, P 19 64 006.3

Int. Cl. G03b 21/04

U.S. Cl. 352—123

10 Claims



The housing of a projector for use with cassettes for convoluted motion picture film defines a channel for lengthwise movement of shorter or longer trays which store stacks of cassettes. A blocking lever normally extends into the path of lengthwise movement of an inserted tray to arrest the tray in a starting position one step ahead of that position in which the foremost cassette in the tray is located in a projection position. The blocking lever is automatically moved away from the path of the inserted tray when the transporting mechanism which serves to move the tray lengthwise is operated in the starting position of the tray. The housing carries a pawl which engages a toothed portion of the inserted tray to prevent its movement in the rearward direction. The tray carries a pusher which causes the blocking lever to open a switch in the electric circuit of the projector when the transporting mechanism advances the tray beyond the starting position through such a distance that the rearmost cassette in a filled tray is moved beyond the projection position.



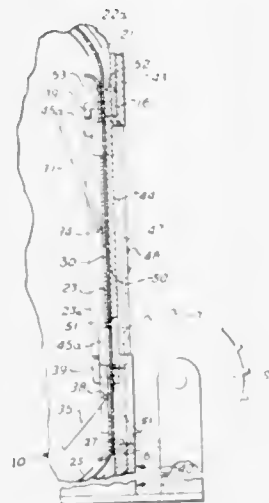
### 3,692,392 FILM CARTRIDGE

Henry L. Brill, Flushing, N.Y., assignor to E. R. E. Laboratory, Inc., West Orange, N.J.

Filed April 19, 1971, Ser. No. 135,160

Int. Cl. G03b 21/00

U.S. Cl. 352-128



An endless film cartridge has a lock pin to engage a sprocket hole of the film as the cartridge is removed from its holder. The lock pin holds the film correctly framed in the aperture window and assures proper engagement of the drive teeth with the film when the cartridge is mounted again in the holder. The guide pad on the holder pushes a pressure plate inwardly of the cartridge to release the film from the lock pin as the cartridge is mounted.

### 3,692,393 MOVIE CAMERA WITH DELAYED RELEASE AND SCENE LIMITING CIRCUITS

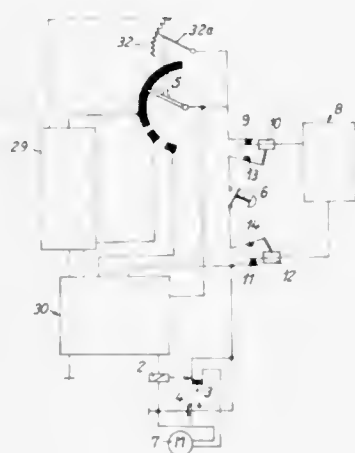
Peter Anderl, Munich, Germany, assignor to Niezoldi & Kramer GmbH, Munich-Allach, Germany

Filed Jan. 9, 1970, Ser. No. 1,740

Claims priority, application Germany, Jan. 9, 1969, P 19 00 877.6

Int. Cl. G03b 15/00

U.S. Cl. 352-175



In a movie camera, an energizing circuit including a supply source for the camera, a drive motor included into such circuit, releasing device having a rest position in which it is operable to open the energizing circuit and an operating position in which it is operable to close the energizing circuit, the releasing device including a manually operable releasing member having an open and a closed position and included in the energizing circuit, a control magnet in circuit relationship with the motor, with the supply source and with the releasing member, a timing network connectable across the releasing

member for affecting the energization of the control magnet after a predetermined time interval while the releasing member is in the open position.

### 3,692,394 MOTION PICTURE CAMERA MOTOR CONTROL

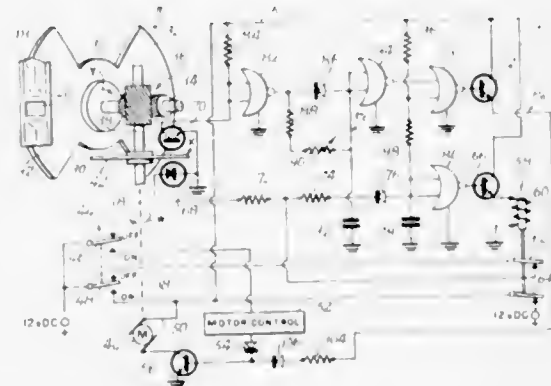
George W. Bauer, II, Westfield, N.J., assignor to Anton Bauer, Inc., Norwalk, Conn.

Filed Dec. 14, 1970, Ser. No. 97,545

Int. Cl. G03b 1/42

U.S. Cl. 352-176

14 Claims



A motion picture camera with a rotary shutter which, as it rotates, periodically permits an image from the camera lens to reach the film, and then reflects the image to the eyepiece, etc. Motor controls are provided for controlling the speed of the shutter so that the shutter automatically stops at a location in which it blocks and reflects images to the eyepiece rather than one in which images are permitted to reach the film. A pulse generator operates synchronously with the rotary shutter. During stopping of the shutter, whenever the speed of the shutter is insufficient to bring it to a stop at the desired location, the pulse generator produces electrical pulses whose energy would decrease as the position of the shutter changes, but for the decrease in speed of the shutter, and these pulses are fed to the shutter drive motor to control its speed at a level sufficient to bring it to the desired location. Preferably, the pulse generator includes a transparent disc with opaque lines spaced around it, together with an infrared light source and a phototransistor. The spacing between adjacent opaque lines gradually decreases at successive positions around the disc, and a relatively large opaque area is provided on the disc in the vicinity of the position in which the shutter is to be stopped.

### 3,692,395 MOTION PICTURE CAMERA CAPABLE OF AUTOMATIC OVERLAP PHOTOGRAPHING

Yozo Iida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 64,256, Aug. 17, 1970, abandoned.

This application Nov. 23, 1971, Ser. No. 201,588

Claims priority, application Japan, Aug. 18, 1969, 44/64708

Int. Cl. G03b 21/36

U.S. Cl. 352-217

15 Claims

This invention relates to a motion picture camera which is capable of automatic overlap photographing.

In the present invention, shutter operation or motion for depressing shutter release lever is separated into two steps. In the first step operation, normal photographing is effected, and in the second step operation, the automatic overlap mechanisms are actuated so that shutter blades vary their opening angle from full open to fully closed thereby fade-out photographing is accomplished, and succeeding said fade-out photographed film is rewound while the shutter opening is kept fully closed. When said rewinding of film completed, the fade-in operation is provided and in this state, by depression of the shutter release lever to its first step, fade-in operation is

carried out and after said fade-in photographing was completed, in other words, after the automatic overlap



### 3,692,396 SPLIT IMAGE MOTION PICTURE PROJECTOR AND FILM THEREFOR

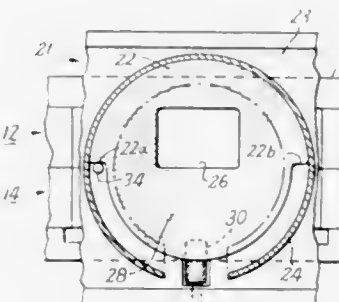
Vincent F. Novak, 155 Laurel Road, Princeton, N.J., and John William Mason, R.D. 2, Warren Lane, Hopewell Junction, N.Y.

Filed Aug. 26, 1970, Ser. No. 67,163

Int. Cl. G03b 1/48

U.S. Cl. 352-221

1 Claim



A conventional motion picture projector which has been adapted to receive and project a specially prepared film. The projector and film combination are capable of playing an entire feature length film lasting ninety minutes or so and employing but a single reel whether the projector is of the reel-to-reel or continuous loop type. The film is so prepared that each frame has a pair of independent image composites which are separately and serially projected. The projector is adapted to project the film due to a shutter in its lens system which permits only one of the image composites to be projected at any one instant of time, the shutter being capable of either manual or automated operation.

### 3,692,397 OPTICAL CHARACTER GENERATOR

Franz Schedewie, Boblingen, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed April 12, 1971, Ser. No. 133,024

Claims priority, application Germany, July 23, 1970, P 20 36 516.6

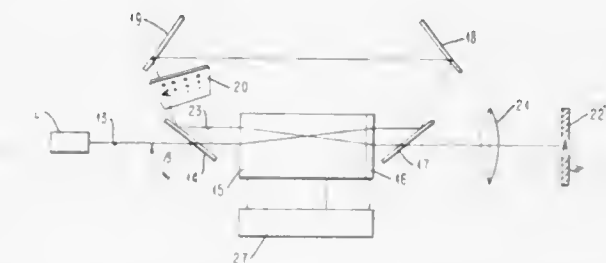
Int. Cl. G03b 23/00; G02f 1/26

U.S. Cl. 353-25

7 Claims

An optical character generator comprises in combination, a source (L) of collimated and polarized coherent light, a first polarization-dependent beam splitter 14 presenting a low impedance optical transmission path to the light 13, an electro-optic light deflector 15 which deflects light transferred to it by the beam splitter, an electro-optic rotator 16 operating selectively to rotate the plane of polarization of light exiting from

the deflector, a second low-loss polarization dependent beam splitter 17 having predetermined orientation with respect to light exiting from the rotator, mirrors 18, 19 for directing light reflected from second splitter 17 to character mask 20, and source 27 of deflection/polarization control voltages for coordinately operating the deflector 15 and rotator 16. With suitable voltages from the source 27 light 13 undergoes predetermined handling in the deflector and rotator and exits from the rotator with predetermined deflectional displacement and polarization rotation relative to the entering beam 13. The exit polarization plane is rotated by 90° from the entry plane so that the displaced exiting beam is reflected by splitter 17 and mirrors 18, 19 through a predetermined character opening of



the character mask and emerges shaped in the character image. The shaped beam impinges upon first splitter 14 and is reflected back into the deflector system due to its positional orientation and polarization state. The shaped re-entrant beam undergoes complementary deflection and polarization switching in the deflector and rotator whereby it exits from the rotator aligned with the path of the original beam 13 and is permitted to pass through the second beam splitter, optics 21 and fixed aperture A of the shutter 22. Thus the single deflector system performs the dual functions of deflecting the unshaped beam and re-centering the shaped beam, with coupling losses minimized by the adaptive use of the low-loss beam splitters.

### 3,692,398 PROJECTOR

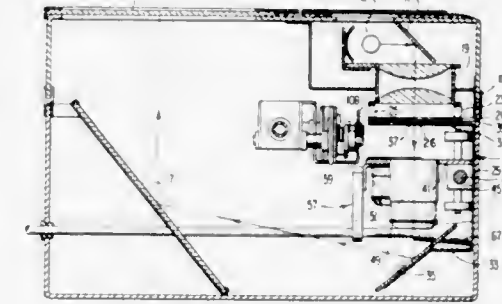
Martin Strauss, 6005 Durbin Road, Bethesda, Md.

Filed March 16, 1970, Ser. No. 19,766

Int. Cl. G03b 23/12, 21/22, 21/20

U.S. Cl. 353-26

8 Claims



A projector comprising a film supply support and a film receiving support for film supply means and film receiving means, respectively, means for advancing film from said film supply means to said film receiving means, a light source providing light through said film, an image surface, an optical system for projecting an image from the film to said image surface, said optical system comprising a lens of lower magnification and a lens of higher magnification positioned transversely one to the other with respect to a common field of view, shifting means for interchangeably positioning said lenses behind said film, said lens of higher magnification projecting an image reduced in area compared to that projected by said lens of lower magnification to project select areas of the image projected by said lens of lower magnification.



3,692,399

## MICROFILM VIEWER

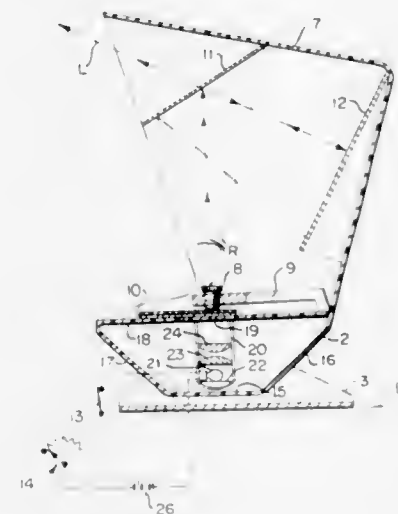
Marshall E. Stewart, Redondo Beach, Calif., assignor to  
Stewart Filmscreen Corp., Torrance, Calif.

Filed June 23, 1970, Ser. No. 49,028

Int. Cl. G03b 23/08, 21/28

U.S. Cl. 353—27

12 Claims



A microfilm viewer for viewing of microfilm frames by an individual and comprising a light source positioned to project a beam of light through a microfilm frame and a lens system onto a beam splitter which reflects the projected image of the microfilm frame onto a reflex reflector screen arranged to reflect the projected image back to and through the beam splitter to be viewed by the individual. Means are provided for varying the intensity of the light source to reduce the brilliance of the projected magnified and reflected image to an eye tolerable level. The magnified and reflected image has excellent definition and brilliance and may be viewed irrespective of ambient light conditions.

3,692,400

Patent Not Issued For This Number

3,692,401

## SAFETY SYSTEM IN ELECTROSTATIC COPIER

Yoshihisa Kawai, Aichi, Japan, assignor to Minolta Camera  
Kabushiki Kaisha, Osaka, Japan

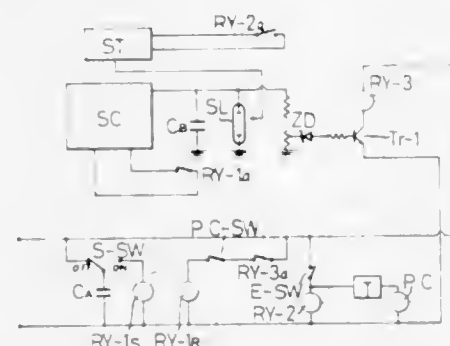
Filed July 15, 1970, Ser. No. 54,984

Claims priority, application Japan, Aug. 1, 1969, 44/73797;  
Aug. 1, 1969, 44/73798; Aug. 28, 1969, 44/81699; Sept. 8,  
1969, 44/85324

Int. Cl. G03g 15/00

U.S. Cl. 355—3

11 Claims



A copier is provided with a corona discharge device for charging copy paper and a discharge tube for exposing copy paper. In order to eliminate hazards attributable to high voltage attending repair and inspection of the machine, the copier further includes a system for stopping charging of a high volt-

age capacitor after the charge thereon has been released for exposing the last sheet of copy and a safety switch circuit for quickly releasing the charge on the high voltage capacitor simultaneously when a door or hinged part of the machine is opened.

3,692,402

## MATERIALS FOR FIBROUS DEVELOPMENT AND CLEANING MEMBER

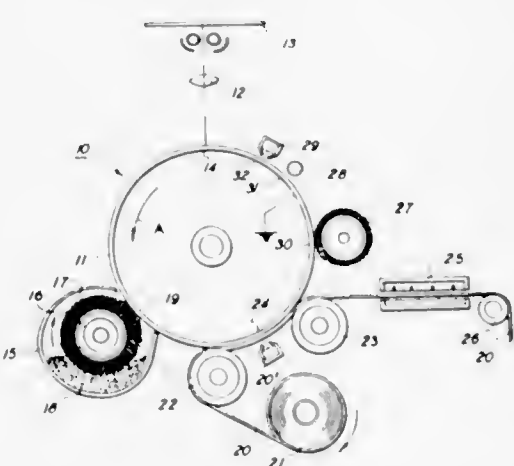
Thomas W. Solarek, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 847,284, Aug. 4, 1969, abandoned,  
and a continuation of Ser. No. 889,282, Dec. 30, 1969, Pat. No.  
3,610,693. This application April 26, 1971, Ser. No. 137,379

Int. Cl. G03g 15/08

U.S. Cl. 355—3

1 Claim



A woven cut pile brush whose pile tufts are formed from glass fibers is particularly well suited for cleaning toner particles from reusable electrostatic imaging surfaces and for developing latent electrostatic charge patterns formed on an insulating surface.

3,692,403

## AUTOMATIC CONTROL OF TONER CONCENTRATIONS

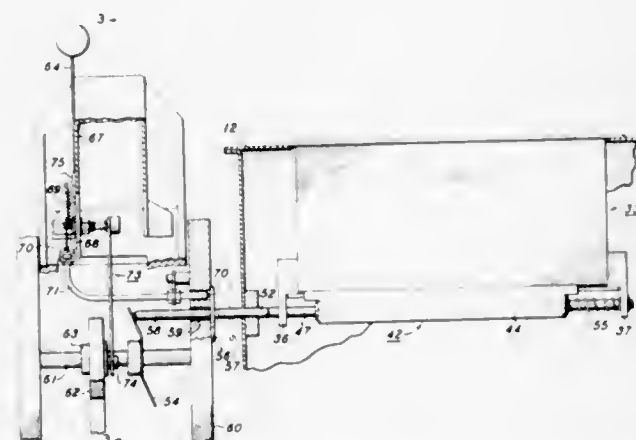
Lyman H. Turner, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1971, Ser. No. 211,380

Int. Cl. G03g 15/08

U.S. Cl. 355—3

17 Claims



Controls for manually selecting toner concentrations in a xerographic imaging system are overridden to prevent over-toning. A drive mechanism responsive to copy production incrementally resets the toner controls to a standard toner concentration when that level is exceeded.

3,692,404

## STRIPPABLE LAYER RELIEF PRINTING

Corrin Lester, 138 Highledge Drive, Penfield, N.Y., and Joan  
R. Ewing, 107 Normandy Ave., Rochester, N.Y.

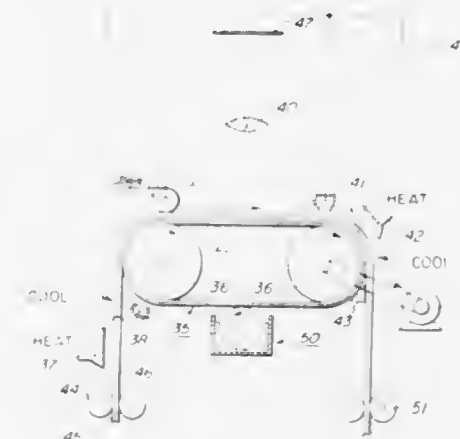
Division of Ser. No. 193,129, May 8, 1962, Pat. No. 3,615,387.

This application Oct. 29, 1970, Ser. No. 85,066

Int. Cl. G03g 15/00

U.S. Cl. 355—9

8 Claims



Overcoated layer relief electrostatic printing in which a latent electrostatic image is made visible by the deformation of a compliant layer. The relief deformation occurs in a thermoplastic layer superimposed on conventional xerographic materials such as the conductive substrate which has been coated with a photoconductive insulating layer, the thermoplastic material overcoating the photoconductive layer. Apparatus is disclosed for separable and permanent thermoplastic overcoating on the xerographic plate. An interlayer between the thermoplastic overcoating and the photoconductive layer is included which serves as a deformable support and to protect the photoconductive layer from any interaction between the particular thermoplastic used and the solvent or heat used to initiate the thermoplastic deforming action.

3,692,405

## ORTHOGRAPH

Theodore J. Blachut; Antoni J. Smialowski; Gerhardus H.  
Schut, and Phillip D. Carman, all of Ottawa, Ontario,  
Canada, assignors to Canadian Patents and Development  
Limited, Ottawa, Ontario, Canada

Filed Jan. 18, 1971, Ser. No. 106,956

Claims priority, application Canada, Feb. 10, 1970, 74,470

Int. Cl. G01c 11/18

U.S. Cl. 355—22

10 Claims



An orthograph is disclosed which is in the form of a mechanical photogrammetric plotter from which corresponding sections of stereophotographic images are corrected and transferred simultaneously by an optical train and printed simultaneously on light sensitive films in a printing unit. The

relative positions of both films in every point is rigidly controlled so that orthophotos are produced. Magnification of the image from the stereo-photographic images is varied in accordance with a Z-coordinate at right angles to X- and Y-coordinates and in accordance with an  $\omega$ -tilt about the X-axis and a  $\phi$ -tilt about the Y-axis, relative to the principal point. Scanning being performed in the X-direction, the image is rotated in accordance with the  $\omega$ -tilt about the X-axis.

3,692,406

## RELIEF SHADING APPARATUS

Theodore J. Blachut, 29 Cedar Road, Rothwell Heights, Ot-  
tawa, Ontario; Zbynek Marsik, 255 Durocher, Apt. 7, East-  
view, Ontario, and David M. Makow, 14 Davidson Crescent,  
Ottawa, Ontario, all of Canada

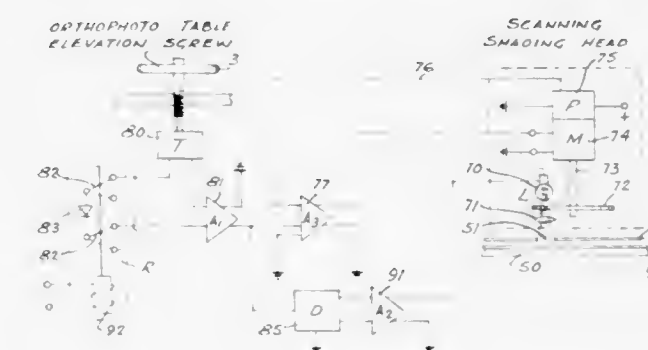
Filed Sept. 11, 1969, Ser. No. 857,035

Claims priority, application Canada, May 16, 1969, 51814

Int. Cl. G03b 35/20

U.S. Cl. 355—22

7 Claims



A method and apparatus is described for placing shading on a map representation of a three dimensional surface. The shading is developed by scanning a three dimensional representation of the surface and following the instantaneous height of the part of the representation being scanned. A signal is generated from the rate of change of such height and caused to affect a sensitive surface to place shading on it in those areas which represent the sides of features on the map facing away from a chosen direction of supposed illumination of the surface.

3,692,407

## METHOD AND APPARATUS FOR MAKING AERIAL SURVEY PHOTOGRAPHS SCALE

Morris Ramsay, 125 N. Main St., Greensburg, Pa.

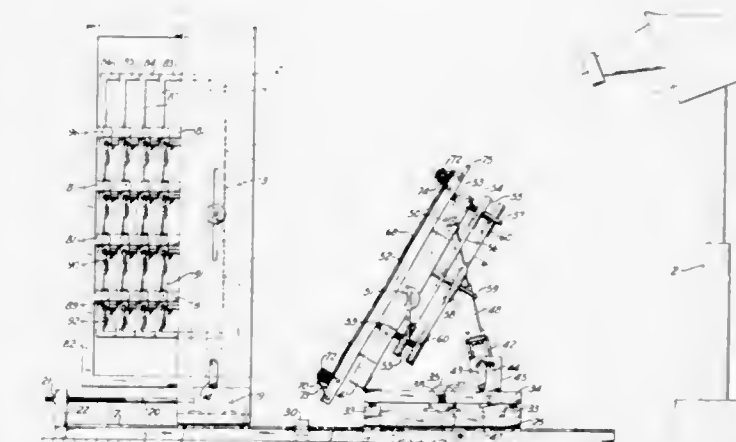
Continuation of Ser. No. 2,739, Jan. 14, 1970, abandoned.

This application Dec. 17, 1970, Ser. No. 99,323

Int. Cl. G03i 27/68

U.S. Cl. 355—52

17 Claims



The method of making an aerial survey photograph of a geographical area to scale and apparatus for use in said method. A plotting is made on a template, preferably posi-



tioned on an easel, at a given scale of the correct relative locations of key points of a geographical area. An image of an out of scale aerial survey photograph of said area showing said key points is projected onto a flexible reflective surface, preferably a mirror, which in turn reflects said image onto the template. The flexible reflective surface is manipulated, preferably by deforming the mirror by certain provided means, until the key points of said image registers with the corresponding key points on the template. The projection is then stopped, an unexposed photographic film placed at the template location, and the projection resumed, thereby making an inscale photograph at the same scale as the template of the geographical area.

3,692,408

**ENERGIZING CIRCUIT FOR A DUPLICATING MACHINE**  
Kitamaro Nakamura, Toyokawa, Japan, assignor to Minolta Camera Co., Ltd., Osaka-shi, Osaka-fu, Japan  
Filed Dec. 11, 1970, Ser. No. 97,120

Claims priority, application Japan, Dec. 12, 1969, 44/99402  
Int. Cl. G03b 27/72

U.S. Cl. 355—69

4 Claims



Circuits for controlling the energization of a lamp and a heater in a copying machine include rectifiers for conducting respective half cycles of an AC power source to the lamp and the heater. Control is also provided for varying the instant which the heater and lamp are energized in each respective half cycle so as to vary the amount of current to each device. Additionally, the circuitry provides for pre-heating of the lamp and heater in order to preserve the life of the lamp and to reduce the time for the heater to attain its necessary temperature.

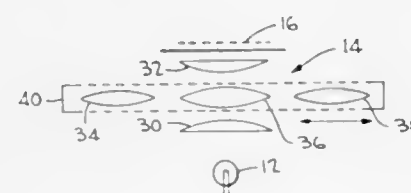
3,692,409

**APPARATUS FOR READING AND ELECTROPHOTOGRAPHICALLY REPRODUCING MICROPHOTOGRAPHS OF VARYING SIZES**  
Guy Paul Weber, Arques La Bataille, France, assignor to La Cellophane, Paris, France

Filed Feb. 9, 1971, Ser. No. 113,868  
Int. Cl. G03b 27/54

U.S. Cl. 355—45

7 Claims



Apparatus for reading and reproducing microphotographs of varying sizes including a source of light and a condenser assembly both adjustable in accordance with the size of microphotographs to be projected, a shutter mirror for selectively supplying light from the microphotograph to a viewing screen or an exposure plane, and a cam controlled electrophotographic reproduction system for automatically producing uniform copies of microphotographs of varying sizes.

**3,692,410**  
**APPARATUS FOR DETERMINING THE HEMOGLOBIN CONTENT AND HEMATOCRIT RATIO OF BLOOD SAMPLES**

Gyorgy Jurany; Andras Koman, and Pal Zillich, all of Budapest, Hungary, assignors to Medkor Muvek, Budapest, Hungary

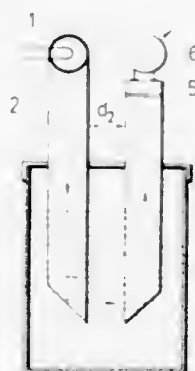
Filed Jan. 27, 1971, Ser. No. 110,067

Claims priority, application Hungary, Feb. 2, 1970, ME-1183

Int. Cl. G01n 33/16, 21/00

U.S. Cl. 356—40

5 Claims



A measuring arrangement for determining the haemoglobin content and haematocrit ratio of blood samples as well as the derivative of these two values by means of optical prisms and electrodes which are connected with an electronic circuit. This arrangement and device renders possible the observation of the content to be determined or undiluted samples without using a vessel or measuring cell.

3,692,411

Patent Not Issued For This Number

3,692,412

**APPARATUS FOR ANALYSING SUSPENDED PARTICLES**  
John Norman Chubb, Headington, England, assignor to United Kingdom Atomic Energy Authority, London, England

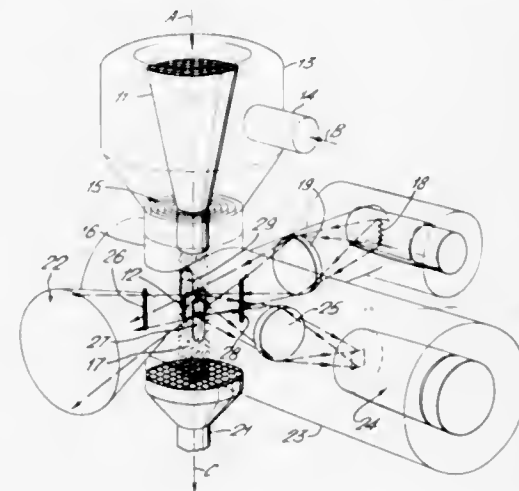
Filed Feb. 12, 1971, Ser. No. 114,983

Claims priority, application Great Britain, Feb. 12, 1970, 6,926/70

Int. Cl. G01n 21/00; G02f 1/36

U.S. Cl. 356—103

6 Claims



Fibrous particles are distinguished from the other particles by illuminating them, detecting scattered light, and simultaneously applying an electrostatic field, the orientation of which is oscillated or rotated. Fibers tend to align with the moving field and thus produce a "twinkle" in the scattered light.

**3,692,413**  
**SYSTEMS FOR ACCURATELY POSITIONING AN OBJECT IN A PLANE BY MEANS OF TRANSLATORY MOVEMENTS**

Raymond Marcy; Jean Bouygues, and Michel Lacombe, all of Paris, France, assignors to Thomson-CSF

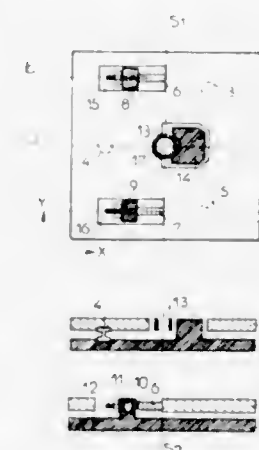
Filed Nov. 18, 1970, Ser. No. 90,610

Claims priority, application France, Nov. 25, 1969, 6940590

Int. Cl. C01b 11/26; B26d 7/16

U.S. Cl. 356—106

10 Claims



The invention relates to a system for displacing an object supported on a carriage sliding above a bench, in such manner as to follow accurately a rectilinear trajectory. The lateral and rotational deviations of the object from the ideal trajectory are sensed by means of interferometer optical means which control a plurality of electromechanical transducers for cancelling out said deviations.

3,692,414

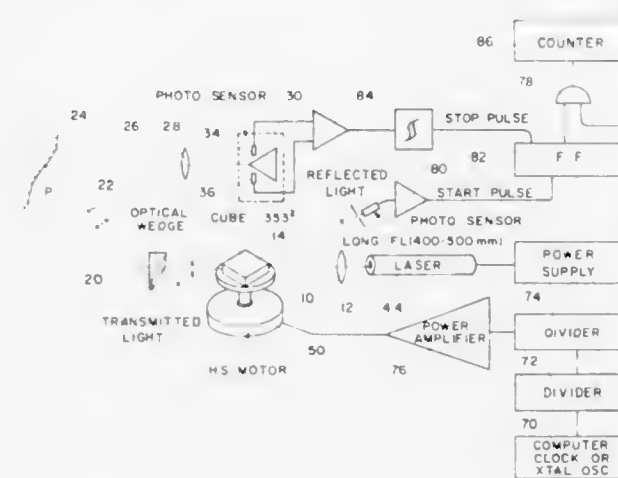
**NON-CONTACTING MEASURING PROBE**  
Harry L. Hosterman, 1146 Meadow Spur; Charles B. Barnett, 1475 Shanabrook Drive, both of Akron, Ohio, and Clarence A. Ripley, Jr., 809 Locust Drive, Tallmadge, Ohio

Filed Feb. 24, 1971, Ser. No. 118,311

Int. Cl. G01b 11/24, 11/30

U.S. Cl. 356—167

6 Claims



A non-contacting optical probe capable of giving a continuous reading of the distance from a given reference to a contoured surface. A collimated beam is projected on a first optical axis to the surface to be measured. A second optical axis extends from the surface to be measured at an angle to the first optical axis. When the projected beam meets the surface at the point of intersection of the second optical axis, a reflected beam passes along the second optical axis to a sensor which detects this beam. The projected light beam and its optical axis are caused to reciprocate at an angle to the surface, this being accomplished by passing the collimated beam

through a rotating prism. The prism is a regular polygon. A second sensor detects the rotation of the prism. The distance to the surface being measured is detected as the interval of time between the detecting of the prism position by the second sensor and the detecting of the reflected light beam by the first sensor.

3,692,415

**PHOTOMETRIC ANALYZER EMPLOYING FIBER OPTIC LIGHT TRANSMITTING MEANS**

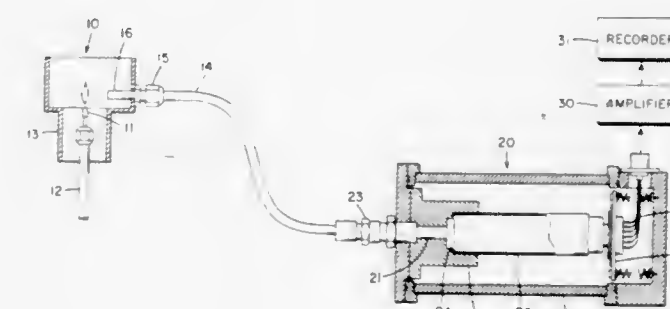
John W. Shiller, 8264 Bingham St., Detroit, Mich.

Filed March 22, 1971, Ser. No. 126,761

Int. Cl. G01j 3/48; G01n 21/58; G01j 3/30

U.S. Cl. 356—187

4 Claims



Photometric analyzer having a reaction chamber for exciting samples by thermal, chemical or other energy to emit characteristic light, the reaction chamber usually being operated at elevated temperature. A photometric light sensor is located remotely from the chamber away from the influence of heat therefrom. Characteristic light is transmitted from the chamber to the photometric light sensor by a fiber optic bundle.

3,692,416

**CARRIER FOR AN INDIVIDUAL SAMPLE CELL**  
Cecil Sidney Charles Tarbet, Cambridge, England, assignor to Cecil Instrument Ltd., Cambridge, England

Filed Oct. 5, 1970, Ser. No. 78,122

Claims priority, application Great Britain, Oct. 7, 1969, 49,161/69

Int. Cl. G01n 1/28

U.S. Cl. 356—244

14 Claims



A sample cell carrier receives an optical sample cell directly in a pre-determined alignment, and is inserted without intermediate parts into a carrier slide.



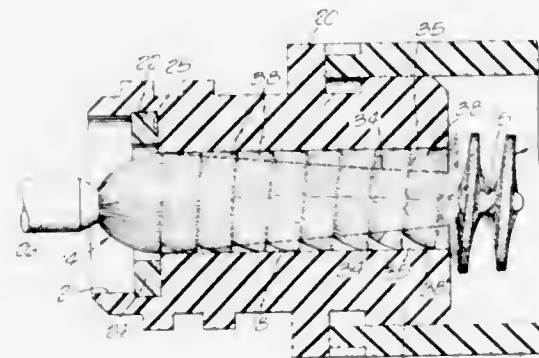
3,692,417

**APPLICATOR ASSEMBLY FOR FLUENT MATERIALS**  
Bruno D. Aston, 14421 Autumn Moon Drive, Hacienda Heights, Calif.

Filed May 12, 1969, Ser. No. 823,864  
Int. Cl. A46b 11/00

U.S. Cl. 401-122

6 Claims



A container for fluent material to be applied by an elongated brush with radial bristles has a relatively long entrance passage with re-entrant portions to control the quantity of material on the brush by contracting the brush for wiping action as the brush is withdrawn from the container.

3,692,418

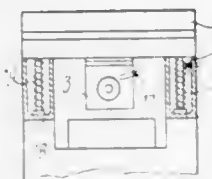
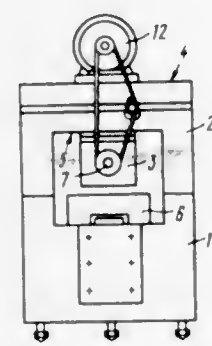
**PRECISION BORING MACHINE**

Fridrikh Lvovich Kopelev, Komsomolskaya ulitsa, 43, kv. 5, Odessa, U.S.S.R.

Filed Aug. 28, 1970, Ser. No. 67,733  
Int. Cl. B23b 39/22, 47/00

U.S. Cl. 408-8

11 Claims



A precision boring machine with compensated thermal deformation comprising a bed, one or two frames carrying, each, at least one spindle head and secured on the bed, and a work table for mounting the workpieces, said table sliding along the bed during boring operations, to compensate for the thermal deformations of the frame and spindle head and to improve the precision of machining, each spindle head is secured on the frame surface facing the work table so that it is located between the frame, and the work table.

3,692,419

**ELASTIC FLUID TURBINE SYSTEM**

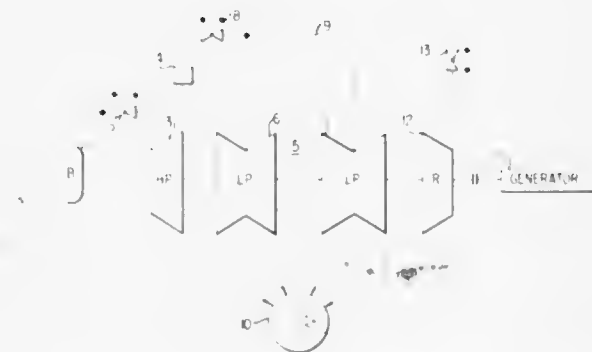
Shigenobu Katagiri, Kanagawa-ken, and Mitsubishi Yokota, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed June 3, 1971, Ser. No. 149,640

Claims priority, application Japan, June 4, 1970, 45/47608  
Int. Cl. F01b 25/06

U.S. Cl. 415-30

9 Claims



An auxiliary turbine having a steam admission control valve is provided in a turbine system for generating a reverse torque with respect to the main turbine unit. The steam admission control valve is actuated to open if the turbine speed rises above a predetermined value or at a rate of change above a predetermined value, whereby an undesirable turbine over-speed is prevented.

3,692,420

**INLETS OF CENTRIFUGAL COMPRESSORS, BLOWERS AND PUMPS**

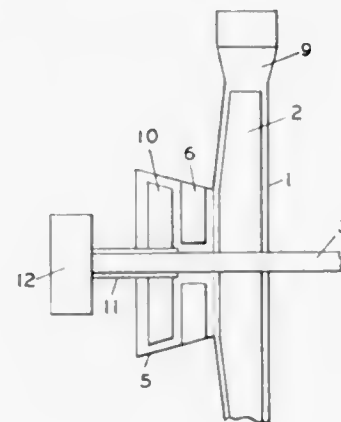
Georg S. Mittelstaedt, 274 73rd St., Brooklyn, N.Y.

Filed April 10, 1970, Ser. No. 27,314

Int. Cl. F01d 13/00

U.S. Cl. 415-62

1 Claim



This invention relates to improvements in the inlet of a centrifugal compressor.

A stator comprising a row of slanted stationary blades is disposed in the air inlet of a centrifugal compressor, directing the fluid against the impeller blading in the general direction of rotation.

A rotor is disposed in front of the stator, the rotor and stator forming a stage. The rotor produces velocity energy, and the stator reduces velocity energy with increase of pressure energy.

The inlet conduit is forwardly enlarged — rearwardly reduced around the rotor-stator stage, to provide a large intake opening and to help precompress the fluid before it enters the impeller.

Plural rotor-stator stages are disposed in the inlet conduit to increase pre-compression in the inlet.

A peripheral aperture is provided in the inlet conduit around the first rotor, or the first rotor is projected from the

lip of the inlet to increase the mass of intake and improve efficiency.

The invention, at least in part, may also be applied to centrifugal blowers and centrifugal pumps.

3,692,421

**CYCLONIC TURBINE ENGINES**

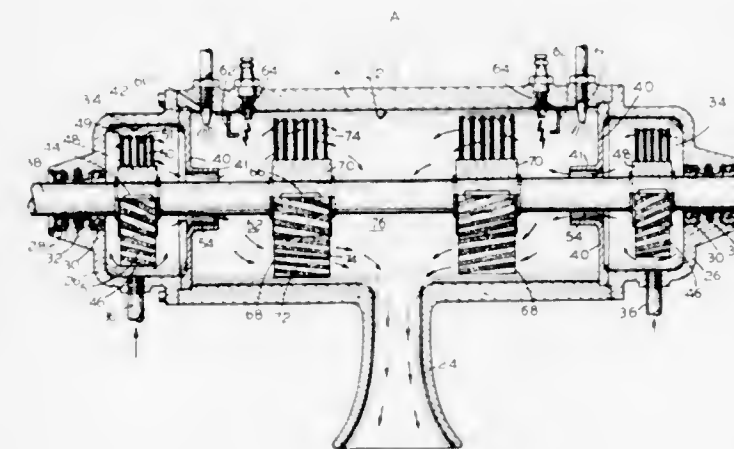
Michael Dworski, 468 French Road, Rochester, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,557

Int. Cl. F01d 1/34, 1/02; F02c 3/00

U.S. Cl. 415-76

7 Claims



Turbine engine having cyclonic effect with power and pump rotors having radial wires or serrated blades providing helical passageways and having internal combustion for creating expanding gases, or steam, either acting through partitions having uniformly spaced helical jets of decreasing cross section arranged concentric with the rotors.

3,692,422

**SHEARING PUMP**

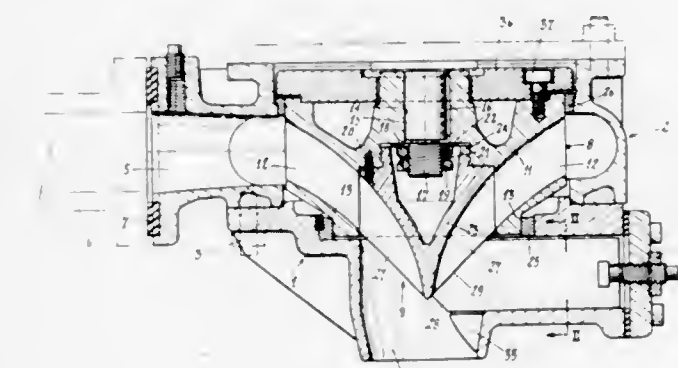
Jean-Pierre Girardier, Montargis, France, assignor to Etablissements Pierre Mengin, Montargis, France

Filed Jan. 18, 1971, Ser. No. 107,069

Int. Cl. F03d 9/00; F04d 29/02; F03b 3/12

U.S. Cl. 415-121 B

7 Claims



A rotary shearing pump for circulating liquids containing solid substances in suspension. The pump rotor comprises a hydraulic wheel and a shearing wheel which are assembled in detachable manner and each provided with curved vanes, the vanes of the shearing wheel being joined to those of the hydraulic wheel. The vanes of the shearing wheel cooperate with at least one radial blade for grinding the solid substances and preventing clogging of the pump. The vane profiles of the hydraulic wheel are designed solely in accordance with hydrodynamic conditions. The inlet edges of the shearing-wheel vanes are located on a conical surface which is coaxial with the rotor.

3,692,423

**APPARATUS FOR SPINNING SYNTHETIC "ISLANDS-IN-A-SEA" TYPE COMPOSITE FILAMENTS**

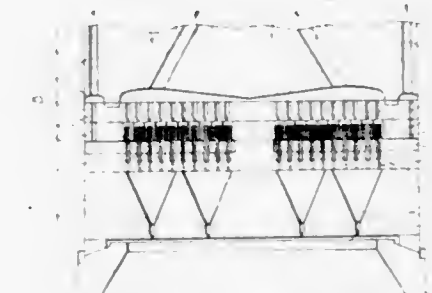
Miyoshi Okamoto, Osaka; Keiichi Ashida, Kyoto; Koji Watanabe, and Shinzo Taniguchi, both of Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed June 24, 1970, Ser. No. 49,244

Int. Cl. D01d 3/00

U.S. Cl. 425-131

14 Claims



A spinning apparatus valuable for obtaining uniform "islands-in-a-sea" type composite filaments comprises a uniting chamber comprising a funnel-shaped space having a converging angle of at most 75°. The apparatus may further include means for supplying the sea constituent polymeric liquid into a central portion and an outside portion of the uniting chamber, and means for incorporating the island constituent polymeric liquid with the sea constituent polymeric liquid in an eccentric manner.

These means are effective for maintaining the "islands-in-a-sea" type composite stream in the uniting chamber at a favorable equilibrated condition for a long spinning period.

3,692,424

Patent Not Issued For This Number

3,692,425

**COMPRESSOR FOR HANDLING GASES AT VELOCITIES EXCEEDING A SONIC VALUE**

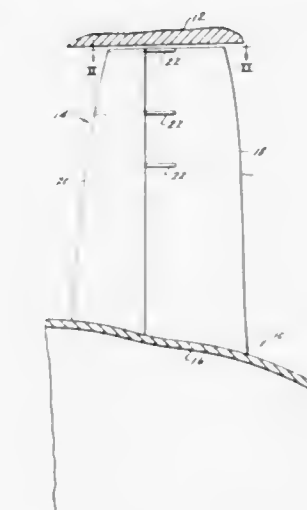
John R. Erwin, Cincinnati, Ohio, assignor to General Electric Company

Filed Jan. 2, 1969, Ser. No. 788,359

Int. Cl. F04d 29/58, 29/38

U.S. Cl. 415-181

7 Claims



In the fan portion of a turbofan engine, rotor blades comprise a primary cambered airfoil and an auxiliary airfoil. Where air flow exceeds a sonic velocity relative to the blades, the throat section between adjacent blades positions the normal air shock wave on the auxiliary airfoil. Each auxiliary airfoil forms a nozzle in combination with the pressure surface of



its adjacent primary airfoil. This minimizes energy losses normally associated with such normal shock waves riding on the suction surfaces of cambered airfoils in regions of relatively thick boundary layer air. Lateral struts projecting from the primary airfoil, and used to position the auxiliary airfoil, create oblique shock waves which weaken the normal shock wave and minimize energy losses associated with a normal shock wave's effect of distributing boundary layer air on an airfoil surface. These features are also effective in reducing the generation of noise.

**3,692,426**  
**FLUID MACHINES**

Michael Leslie Ryall; Guido Pezzani, and Albert Bocking, all of Glasgow, Scotland, assignors to Weir Pumps Limited, Glasgow, Scotland

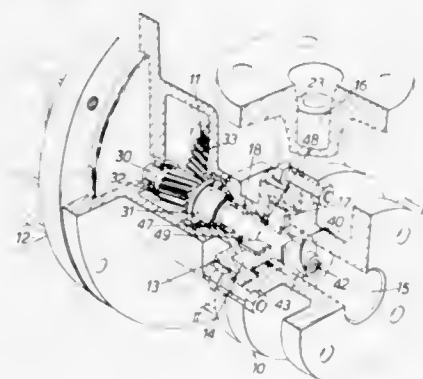
Filed March 9, 1971, Ser. No. 122,353

Claims priority, application Great Britain, March 31, 1970, 15,292/70

Int. Cl. F04b 29/44, 29/40, 1/10

U.S. Cl. 415—207

3 Claims



A pump including a substantially cylindrical casing in which a radial-bladed impeller is rotatably mounted, has an axial inlet and its outlet is arranged tangentially of the casing periphery. A diffuser is arranged in the outlet passage, the diffuser comprising a cylindrical recess in communication with the pump casing, a diffusing section downstream of said recess which is divergent in the direction of fluid flow and an intermediate section which is convergent in the direction of fluid flow, the intermediate section having a convex periphery.

**3,692,427**  
**HIGH SPEED MIXING IMPELLER**

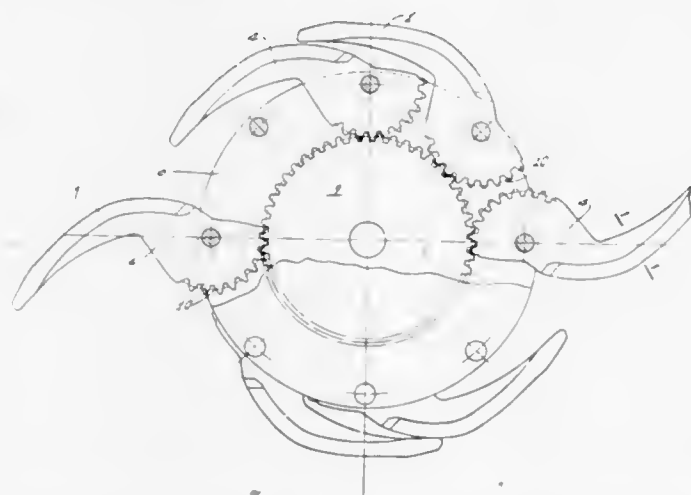
Jean Risse, Medingen, Grand Duchy, Luxembourg, assignor to Colortex S.A., Grand Duchy, Luxembourg

Filed July 13, 1970, Ser. No. 54,381

Int. Cl. B01f 7/24

U.S. Cl. 416—143

2 Claims



A mixing impeller having vanes mounted at the periphery of a supporting disc, each vane having a root section by which it

is pivotally mounted to the disc and an arm extending from the root section. The arms are shaped to correspond substantially to the shape of the supporting disc periphery and the sum of the peripheral developments of all the arms is greater than the periphery of the supporting disc.

**3,692,428**  
**CENTRIFUGAL BLOWER**

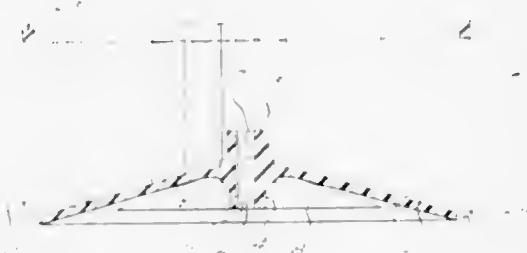
Daniel F. Bubb, Grafton, and James M. Callihan, Elyria, both of Ohio, assignors to The General Industries Company, Elyria, Ohio

Filed Jan. 12, 1970, Ser. No. 2,182

Int. Cl. F01d 5/04

U.S. Cl. 416—187

2 Claims



A centrifugal blower has a frusto-conical end wall with a central hub and a plurality of elongated blades disposed parallel with the hub axis and carried around the outer periphery of the end wall. A continuous ring is connected to the distal ends of the blades with portions of the blades projecting both radially inwardly and outwardly of the ring. End edge portions of the blades adjacent to the end wall project radially outwardly beyond the periphery of the end wall and are both tapered backwardly in the opposite axial direction and beveled.

**3,692,429**  
**ROTOR STRUCTURE AND METHOD OF BROACHING THE SAME**

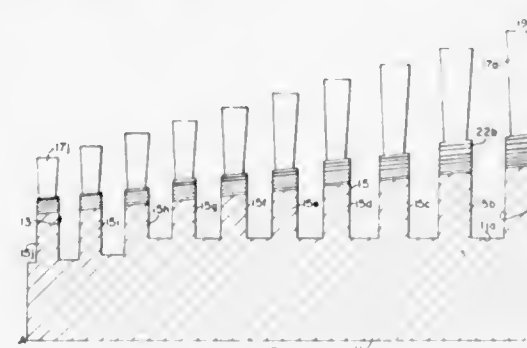
Arnold H. Redding, Export, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 1, 1971, Ser. No. 111,531

Int. Cl. F01d 5/06

U.S. Cl. 416—201

9 Claims



A method of broaching an axial row of grooves for roots or rotor blades in a multi-stage, frusto-conical rotor structure by inclining the angle of reciprocation of the cutting tool of the broach relative to the periphery of the rotor structure and to the axis of rotation of the rotor. The grooves in the largest diameter land are cut to the full size of the broach, while the succeeding lands are cut with a smaller portion of the cutting tool in a diminishing manner, with the smallest diameter land having blade root grooves of smallest cross-sectional area.

The resulting structure is a rotor having a plurality of increasing diameter lands, each land having an annular row of grooves, the grooves in each land axially aligned with the grooves in the adjacent lands to form a plurality of axial rows of grooves. The grooves in the smallest diameter lands have smaller grooves than those in the largest diameter lands.

**3,692,430**  
**LIQUID PUMPING SYSTEM**

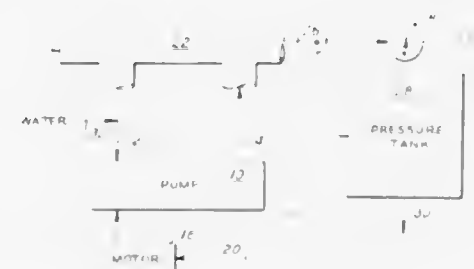
John W. Timmons, 452 W. Chocolate Ave., Hershey, Pa.

Filed June 18, 1971, Ser. No. 154,554

Int. Cl. F04b 49/00

U.S. Cl. 417—26

8 Claims



A system for pumping liquid as the liquid is being drawn from a dispensing line of the system by a pump having a prescribed pumping rate. The system is so constructed that the pump will stay on continuously while the liquid is being drawn from the system despite the fact that the pump is pumping the liquid at a greater rate than the liquid is being drawn through the dispensing line.

**3,692,431**  
**APPARATUS FOR GENERATING A GAS JET**

Rudolf Gebel, Tennenlohe, near Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

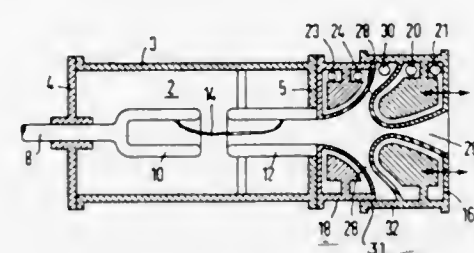
Filed Oct. 23, 1970, Ser. No. 83,520

Claims priority, application Germany, Oct. 31, 1969, P 19 54 851.7

Int. Cl. F04f 5/48; G21d

U.S. Cl. 417—183

10 Claims



An apparatus for generating a gas jet of high velocity along a jet axis has a nozzle assembly coaxial with the axis and having a gas inlet thereon. Also provided, is an arcing chamber structure disposed adjacent to the nozzle assembly for transmitting the gas along the axis to the gas inlet. The nozzle assembly has two nozzle members one of which has a first nozzle passage coaxial with the axis and communicating with the gas inlet. The nozzle passage terminates in a nozzle opening. The two nozzle members can jointly form a second nozzle passage communicating with the gas inlet and have a nozzle outlet arrangement laterally of the jet axis.

**3,692,432**  
**TWO-STAGE POSITIVE DISPLACEMENT PUMP**

Po-Lung Liang, Livonia, and Staley L. Pierce, Jr., Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 22, 1970, Ser. No. 100,611

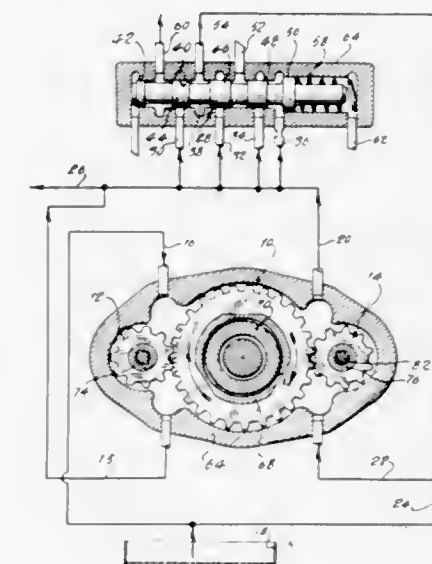
Int. Cl. F04b 49/08

U.S. Cl. 417—286

7 Claims

A positive displacement pump comprising a first pumping gear arranged in engagement with second and third pumping gears thereby establishing primary and secondary pump stages; each pump stage being adapted to displace fluid from a low pressure port to a high pressure port, regulator valve means communicating with the high pressure port of each

pump for establishing a controlled bypass between said high pressure ports and low pressure fluid supply circuit and a feed-back circuit connecting the inlet side of the secondary pumping stage to the outlet side of said regulator valve means whereby a pressure buildup occurs on said inlet side thereby



rendering the secondary pump stage inactive when the driven speed of said pumping gears exceeds a predetermined value, both pumps being active during operation at low speeds and the secondary pump being rendered inactive during operation at high speeds.

**3,692,433**  
**DAMPING AND AUXILIARY PUMPING APPARATUS**

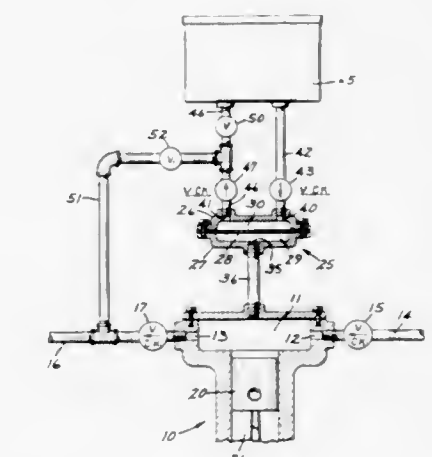
John F. Finger, Beresford, S. Dak., assignor to Sioux Steam Cleaner Corporation, Beresford, S. Dak.

Filed March 1, 1971, Ser. No. 122,565

Int. Cl. F04b 17/00, 35/00, 43/06, 45/00

U.S. Cl. 417—382

1 Claim



A pulsating fluid pump, such as a piston-type pump, defining a fluid flow therethrough and a housing defining a cavity therein with a flexible diaphragm dividing said cavity into first and second chambers with the first chamber connected in communication with the fluid flow through the pump and the second chamber having inlet and outlet ports therein. Check valves attached to said inlet and outlet ports for allowing fluid to flow only into said inlet and only out of said outlet. A fluid reservoir in communication with said check valves and ports providing a flow of fluid in response to pulsating or oscillatory movement of the diaphragm. A restriction valve in the fluid path from said outlet port to said inlet port for providing a variable amount of restriction or damping action on the movement of the diaphragm.



3,692,434

## FLUID COMPRESSOR APPARATUS

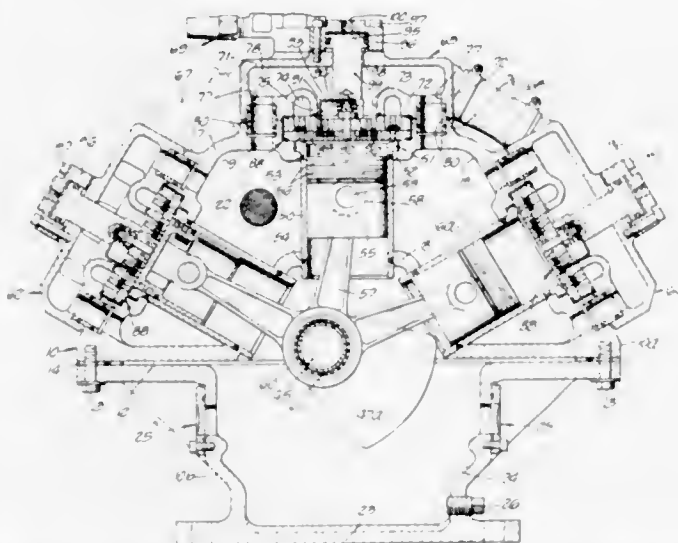
Donald M. Schnear, Anaheim, Calif., assignor to Kohlenberger, Inc., Fullerton, Calif.

Filed Nov. 2, 1970, Ser. No. 86,079

Int. Cl. F04b 17/00, 35/00; F01b 1/06, 13/06

U.S. Cl. 417-360

6 Claims



Fluid pumping apparatus, particularly for compressing fluid refrigerants, with a plurality of cylinder piston units mounted in diverging angular relationship, the pistons being connected to a single crankjournal on the crankshaft by one-piece connecting rods with antifriction bearings in the crank connected ends.

The crankshaft is of two-piece construction and releasably connected at the crank journal to facilitate assembly and disassembly of the connecting rods.

The compressor frame is of hollow sectionalized construction and arranged with a crank case which is split at the axis of the crankshaft to facilitate assembly and disassembly of the shaft, the shaft supporting bearings, and the pistons.

Each cylinder is closed at its outer end by a cavitated head cap with an inlet compartment and outlet exhaust compartment, the inlet compartment being connected to a common fluid inlet cavity formed in the hollow frame, and from which fluid is fed to all of the pumping cylinders.

Provision is made for valve unloading which permits selective incremental control of the output capacity level of the compressor.

3,692,435

## HERMETICALLY SEALED ELECTRIC COMPRESSOR

Toshikatsu Iida, Shizuoka, and Bunzi Sato, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

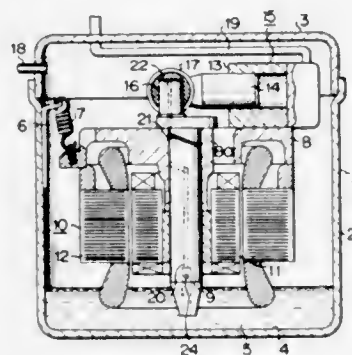
Filed Feb. 2, 1971, Ser. No. 111,982

Claims priority, application Japan, March 25, 1970, 45/28855

Int. Cl. F04b 17/00, 35/00, 39/02; F01m 9/00

U.S. Cl. 417-372

5 Claims



A hermetically sealed electric compressor comprising a casing, a frame received therein so as rotatably to support a

revolving shaft and suspending an electric motor and a compressing unit, wherein a lubricant passage provided in the revolving shaft includes a receptacle for trapping solid foreign matter entrained with a lubricant and gas passage for causing said receptacle to communicate with the interior of the casing, thereby eliminating in the receptacle foreign matter and refrigerant from the lubricant supplied to the rotating and sliding parts from its reservoir through the lubricant passage.

3,692,436

## THERMAL COMPENSATING SUPPORT FOR TURBOCHARGER SHAFTS

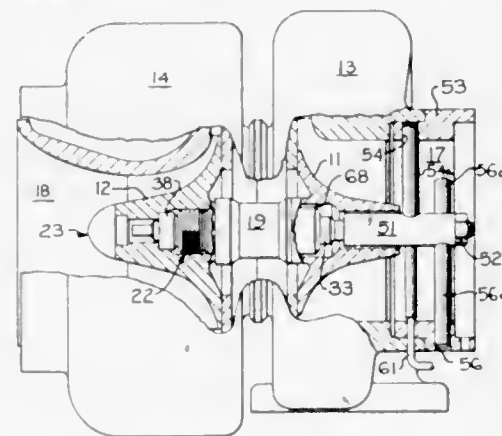
Donald H. Connor, Chillicothe, and George E. Olson, Lacon, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 20, 1971, Ser. No. 145,178

Int. Cl. F04b 17/00, 35/00

U.S. Cl. 417-406

5 Claims



A compensating support assembly for a turbocharger having a turbine wheel and compressor wheel interconnected for rotation together by a tubular shaft, a support shaft being supported in cantilevered fashion by two axially spaced apart sets of radially extending pins which are slidably mounted in the turbine housing, anti-friction bearings mounting the tubular shaft on the support shaft, an annular passage for providing lubricant flow across the bearings being formed about the support shaft by the tubular shaft and the two wheels.

3,692,437

## PUMP

William A. Ray, North Hollywood, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

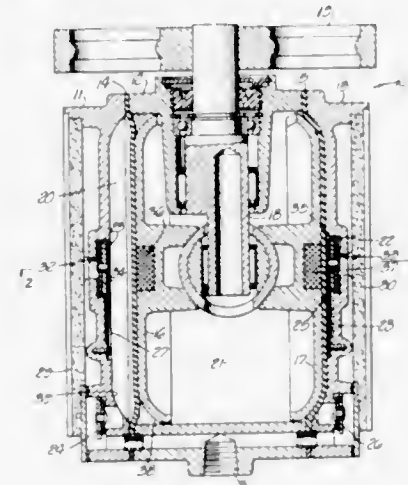
Continuation of Ser. No. 745,597, July 17, 1968, abandoned.

This application Jan. 29, 1970, Ser. No. 6,975

Int. Cl. F04b 23/04, 21/02; F01b 19/00

U.S. Cl. 417-533

11 Claims



The invention includes a diaphragm pump in which the space behind the diaphragm is evacuated to give the pump a maximum intake efficiency.

3,692,438

## POSITIVE DISPLACEMENT PUMP

Rodney E. Schapel, 322 Walnut St., Newport Beach, Calif.

Filed Oct. 21, 1969, Ser. No. 868,025

Int. Cl. F04b 21/04, 15/08

U.S. Cl. 417-547

1 Claim



A positive displacement pump with the transfer (or outlet) valve seated in the piston head perpendicular to the piston axis and parallel to the inlet valve. The head space between the valves is thereby reduced to a minimum, eliminating the problem of residual liquid in the head space.

3,692,440

## ECCENTRICALLY DISPOSED MALE AND FEMALE SPLINE TEETH

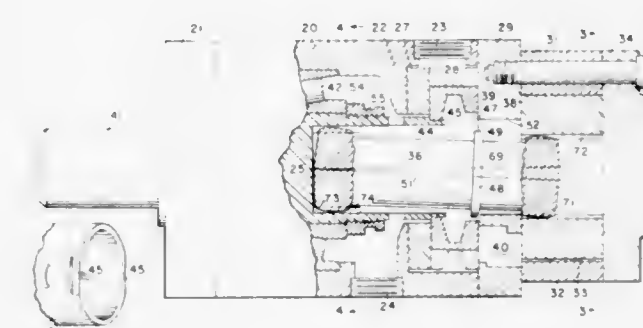
George V. Woodling, 22077 W. Lake Road, Rocky River, Ohio

Filed Feb. 8, 1971, Ser. No. 113,136

Int. Cl. F16d 3/04, 3/18; F03c 3/00

U.S. Cl. 418-61

5 Claims



Eccentrically disposed male and female spline teeth having unlike contact engagement therebetween from one succeeding set of teeth to the next and like contact engagement therebetween only once per revolution.

3,692,441

## SCREW ROTOR MACHINE FOR COMPRESSIBLE MEDIA

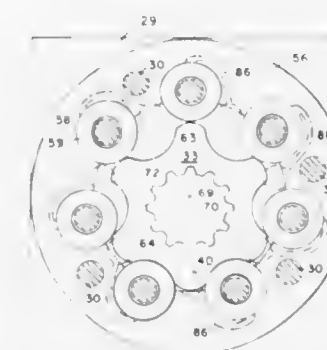
Pavel Evgenievich Amosov, ulitsa Kronverzhskaya, 29/37, kv. 87; Vitaly Konstantinovich Smekhov, ulitsa Kolomenskaya, 33/40, kv. 25; Valery Leonidovich Trofimov, ulitsa Matrosova, 12, kv. 8, all of Leningrad; Avels Isaich Shvarts, ulitsa Kosmonavtov, 3, kv. 45; Vladimir Borisovich Shnepp, ulitsa Zarya, 4, kv. 5, both of Kazan, and Alexandr Petrovich Razumovsky, Drovyanoi pereulok, 3, kv. 3, Leningrad, all of U.S.S.R.

Filed May 20, 1971, Ser. No. 145,179

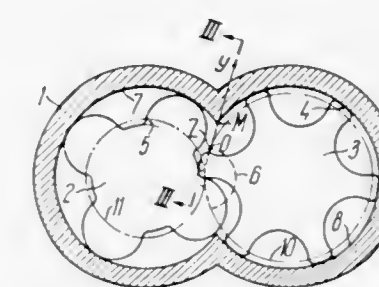
Int. Cl. F01c 1/16, 1/08, 17/12

U.S. Cl. 418-191

1 Claim



Fluid pressure responsive mechanism in a fluid pressure device including first and second internal fluid chamber housing means and fluid pressure operating means, wherein said fluid pressure operating means include first and second pressure containing means mountable for relative movement. Said first fluid containing means surrounds said second containing means and defines therewith operating chamber means and includes at least an open pocket having a major closed side and a minor open side in communication with said operating chamber means. Said second containing means has at least a contractable portion. Said open pocket has fluid pressure responsive means mounted therein with a minor portion exposed through said minor open said of said pocket for contact with said contractable portion. Said pocket is pressurized by fluid from said first and second fluid chamber housing means through internal wall conduction means extending internally from said fluid chamber housing means and leading internally to said pocket. When the pocket is pressurized, the exposed minor portion of said fluid pressure responsive means tends to seek contact with said contractable portion.



A screw rotor machine for compressible media comprising a driving and at least one driven rotors with conjugated profiles of the addendum of the tooth of the driven rotor and the dedendum of the tooth of the driving rotor. The profile of the flank face of the addendum is a section of an epicycloid butted to a section of an elongated hypocycloid.

## ERRATUM

For Class 425-131 see:  
Patent No. 3,692,423



3,692,442

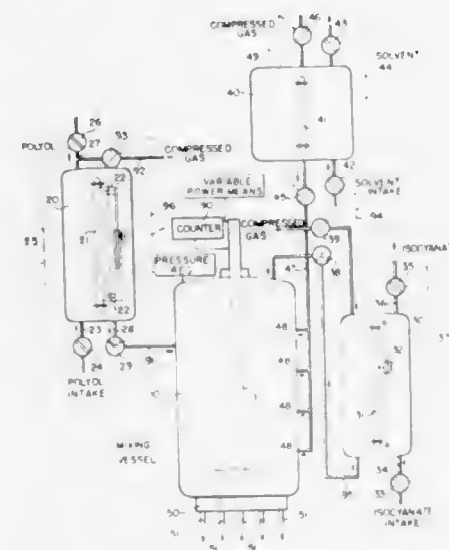
**APPARATUS FOR THE SIMULTANEOUS INJECTION OF A FOAMING PLASTIC RESIN IN A PLURALITY OF LOCATIONS**

Victor L. Gerbert, Rua Gurindibia 162, Apt. #104, Rio de Janeiro, Brazil

Filed Nov. 23, 1970, Ser. No. 91,623  
Int. Cl. B29d 27/04

U.S. Cl. 425-4

5 Claims



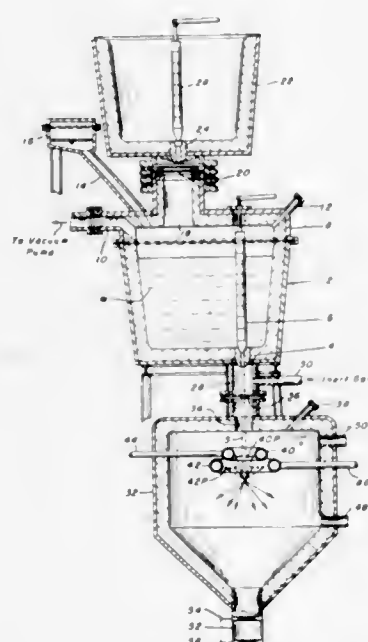
An apparatus and method are disclosed for simultaneously injecting a reactive mixture consisting of components which form a polyurethane or isocyanurate foam out of a plurality of injection tubes leading from a single mixing vessel into several molds or into one mold having several injection openings. Simplification and cost reduction are two of the main advantages of this invention.

3,692,443

**APPARATUS FOR ATOMIZING MOLTEN METAL**Max W. Lightner, Mount Lebanon Township, Allegheny County, Pa., assignor to United States Steel Corporation  
Filed Oct. 29, 1970, Ser. No. 85,044  
Int. Cl. B22d 23/08

U.S. Cl. 425-7

8 Claims



Apparatus for atomizing molten steel or the like into powder in which the molten steel is degassed and then poured in a vertical stream into an atomizing chamber. The metal in the stream is atomized by directing atomizing fluid at the stream.

3,692,444

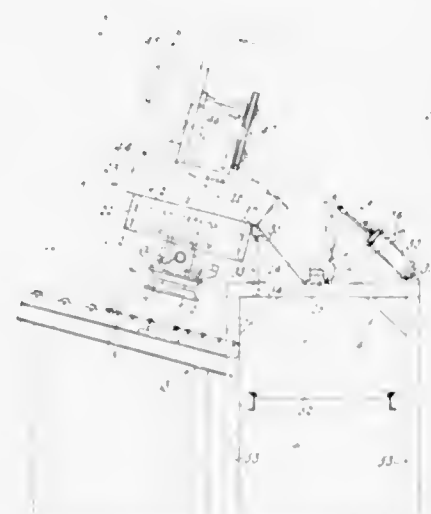
**APPARATUS FOR COOLING TIRES DURING POST INFLATION**

Richard H. Hugger, Wyckoff, N.J., and Robert J. Brown, Grosse Pointe Farms, Mich., assignors to Uniroyal, Inc., New York, N.Y.

Continuation of Ser. No. 822,746, May 7, 1969, abandoned, which is a continuation of Ser. No. 596,122, Nov. 22, 1966, abandoned. This application May 5, 1971, Ser. No. 140,602  
Int. Cl. B29h 5/02

U.S. Cl. 425-28

9 Claims



Apparatus for rapidly and uniformly cooling tires under post inflation by means of jets of preferably ambient curing room air is disclosed as comprising a cooling chamber with a peripheral boundary wall adapted axially to surround the tread of a tire on a post inflation chuck, the peripheral boundary wall of the cooling chamber being provided with orifices distributed circumferentially of the chamber and the tire tread so as to provide a specified pattern of air jets. The air handling system is such that the jets of air are directed in the first instance against the tread surface of the tire, preferably in the shoulder regions thereof, so as to achieve a prescribed and controlled rate of heat transfer from the tire to the air. Normally, two cooling chambers are provided for each dual press unit, and such chambers are incorporated in a box structure and may be brought into surrounding relation to the respective post inflation chucks by appropriate relative movement between the latter and the box structure. This abstract is not to be taken either as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,692,445

**PROGRESSIVE FORM APPARATUS FOR CONCRETE CONSTRUCTION**

Konrad Kubitzek, Am Eichenbusch 7, 504 Bruhl near Cologne, Germany

Filed Aug. 20, 1970, Ser. No. 72,563

Claims priority, application Germany, Aug. 26, 1969, P 19 43 242.9

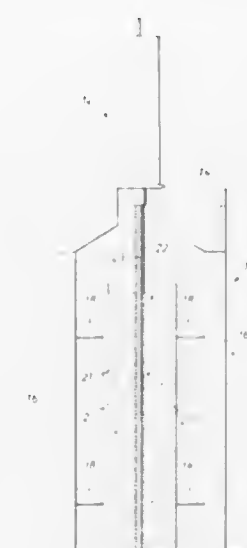
Int. Cl. E04g 11/22

U.S. Cl. 425-63

15 Claims

A progressive form supporting frame box including adjustable poured concrete wall forming panels to be raised along a climb rod disposed in, and withdrawn after completion of, the wall section, in combination with a mechanical lift jack unit comprised of a housing securable to the form box top with the climb-rod therethrough, a lift pair of opposed jaws on opposite sides of the rod a similar pair of support jaws spaced therefrom along the rod, the pairs alternatingly grippable and releasable

for lifting the combination along the rod. The jack is power operated through a portable electric motor unit, such as an



electric drill, acting through a motion converting mechanism directly on the lift jaw pair. The jack may be inverted for use in withdrawing the rod from the finished work.

3,692,446

**APPARATUS FOR FORMING AND LIFTING MULTI-STORY COLUMNS IN ONE STORY INCREMENTS**

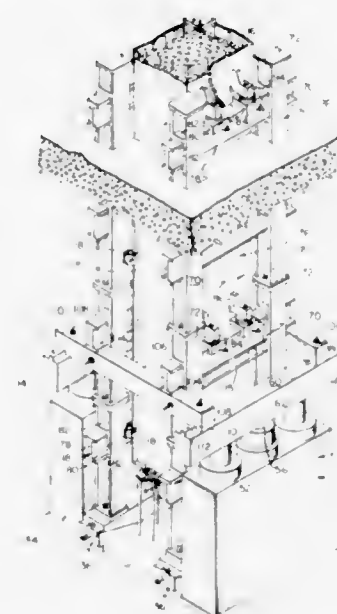
Peter M. Vanderklaauw, Miami, Fla., assignor to Research Corporation, New York, N.Y.

Filed Feb. 11, 1971, Ser. No. 114,455

Int. Cl. E04g 13/02

U.S. Cl. 425-63

7 Claims



The basic supporting framework of reinforced concrete slabs and columns for a multi-story building is formed in a roof down fashion and erected in a continuous lifting process from the foundation level. Auxiliary column sections, which retain molding formworks for the columns and are supportingly tied to the formed concrete columns, support the load of the building, until the concrete at the bottom hardens, by bearing on adjustable bearing platforms at the foundation. Lifting devices at the foundation cooperate with the supporting auxiliary column sections to push the building up after each floor is built. The lifting devices raise the auxiliary columns off the cooperating adjustable bearing platforms to permit the insertion under and attachment to the auxiliary column assemblies of a further auxiliary column section with the lifting devices operating in step-by-step alternation with support of the auxiliary column assembly on the bearing platforms until the building is raised to the desired height for a new floor at which

time a reinforcement cage for a new permanent concrete column to be poured is fixedly inserted in the newly created space within the auxiliary column and attached to the preceding column.

3,692,447

**MULTIPLE EXTRUSION APPARATUS**

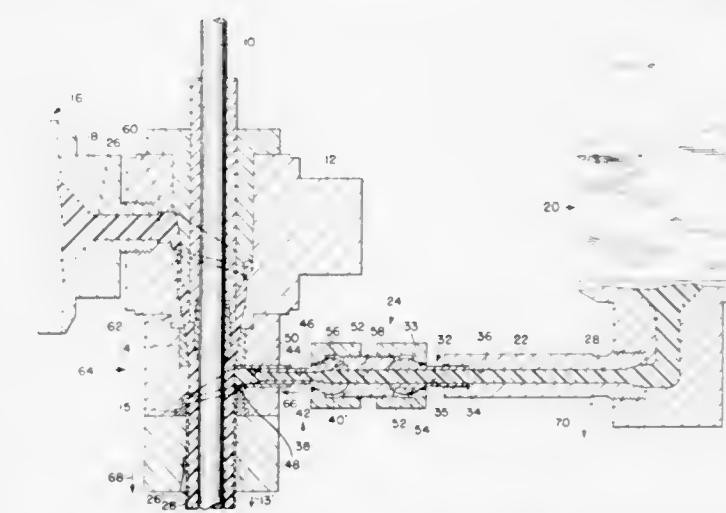
Alden W. Nelson, West Mystic, Conn., assignor to Crompton &amp; Knowles Corporation, Worcester, Mass.

Filed Nov. 30, 1970, Ser. No. 93,675

Int. Cl. B29f 3/10

U.S. Cl. 425-113

11 Claims



An extruding apparatus wherein a die-head containing dies for forming two or more layers of thermoplastic material, such as on a core passing through the head, is supplied with material by as many extruder barrels as there are layers. The barrels are connected to the die-head at different points, one of the barrels being fixed to the die-head and the other barrel or barrels being connected to the die-head by a connector which compensates for thermal expansion of the barrels and die-head. This connector has a telescoping component and a universal joint component to compensate for thermal expansion in any direction.

3,692,448

**CABLE JACKET EXTRUSION APPARATUS AND DIE WITH WIRE POSITIONING MEANS**

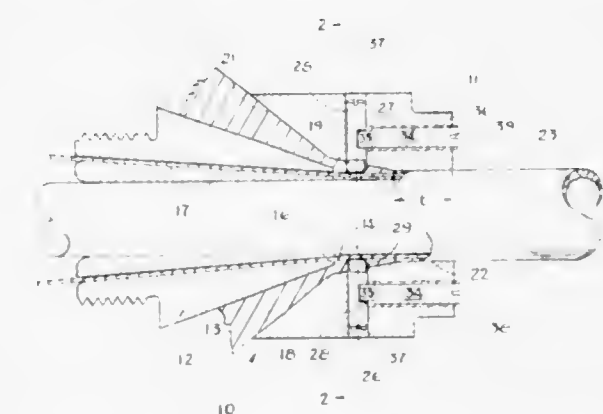
George N. Menasoff, Hastings-on-Hudson, N.Y., assignor to Anaconda Wire and Cable Company

Continuation-in-part of Ser. No. 740,594, June 27, 1968, Pat. No. 3,531,962. This application July 22, 1968, Ser. No. 746,557

Int. Cl. B21c 3/00

U.S. Cl. 425-113

8 Claims



An extrusion die for cable jackets with embedded drain wires is provided with radially adjustable shoes to position the wires.



3,692,449

# DEVICE FOR THE SPRAYING OF SHOE SOLES ONTO SHOE SHAFTS

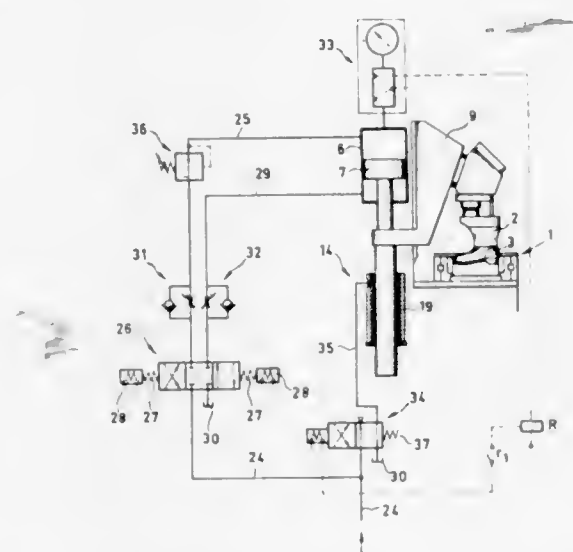
Manfred Niklarz, Rinteln, Germany, assignor to Stubbe Maschinenfabrik G.m.b.H., Vlotho, Germany  
Filed Oct. 8, 1970, Ser. No. 79,006

Claims priority, application Germany, Oct. 15, 1969, P 19 51 955.2

Int. Cl. B29f 1/06

U.S. Cl. 425—119

6 Claims



The improved device disclosed herein is used for the spraying of shoe soles onto shoe shafts. The shoe shafts are drawn over a last that is carried by a movable last slide and are emplaceable upon the sealing edge of molding jaws, which sealing edge bounds a hollow space corresponding to the dimensions of the shoe sole to be formed. The emplacement operation continues until a preselected pressure has been reached between the shoe contour of the shoe shaft and the sealing edge of the molding jaws. When this preselected pressure is reached, an arresting device is actuated to hold the last slide, and thus the last and shoe shaft, against further movement while the soles are formed on the shoe shafts.

3,692,450

# APPARATUS FOR THE PRODUCTION OF CONTAINERS

Peter Blandford Feldman, Saint Denis-Western, Belgium, assignor to Monsanto Chemicals Limited, London, England

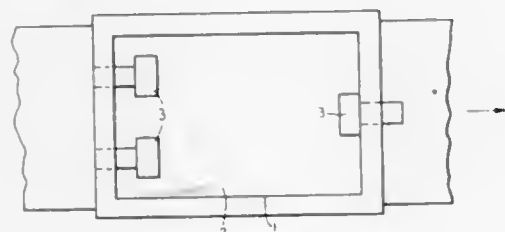
Division of Ser. No. 750,225, Aug. 5, 1968, Pat. No. 3,619,443. This application Oct. 29, 1970, Ser. No. 85,136

Claims priority, application Great Britain, Aug. 15, 1967, 37519/67

Int. Cl. B29c 17/04

U.S. Cl. 425—183

6 Claims



A method and apparatus for altering the configuration of a limited portion of a container defining surface of a mold wall after each cycle of a container thermoforming operation, without removing the mold from its place in a machine, so as to prevent successively produced containers from sticking together when stacked or nested.

# APPARATUS FOR PROCESSING AND CONVEYANCE OF STICKY MATERIALS

Helmut Sollich, Talle, Albernberg, Germany, assignor to Sollich oHG Industries-trasse

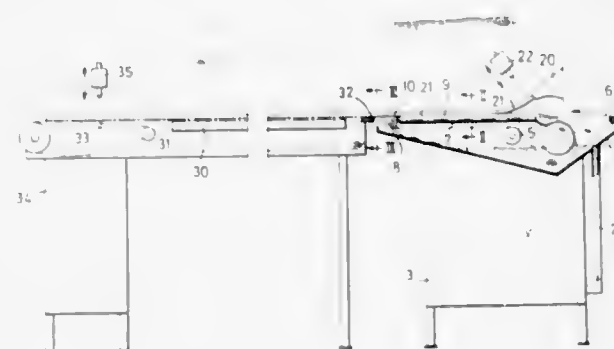
Filed Jan. 15, 1971, Ser. No. 106,744

Claims priority, application Germany, March 10, 1970, P 20 11 175.5

Int. Cl. A21c 00/00

U.S. Cl. 425—223

4 Claims



The invention describes a method for the processing and conveyancing of sticky materials such, for example, as fillings for chocolate. The invention teaches the formation of a molten layer of a first material and the sticky material is floated thereon for subsequent transport and/or treatment. The invention further discloses apparatus for carrying out the method by providing a lattice conveyor and a support plate disposed thereunder, the bottom layer being formed about said lattice conveyor and maintained in the molten state so that the layer is dragged by the conveyor over the support plate to effect transport of the same.

3,692,452

Patent Not Issued For This Number

3,692,453

# BLADE AND ANVIL PINCH-OFF WITH COMPRESSION SEALING MEANS

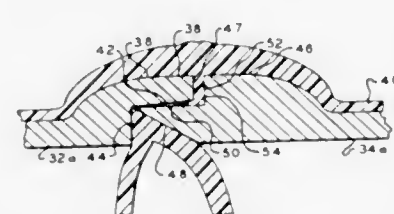
Donald J. Quigg, c/o Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 4, 1971, Ser. No. 103,372

Int. Cl. B29d 23/03

U.S. Cl. 425—326

8 Claims



A mold half in a blow molding apparatus has a projecting blade offset from a bottom wall forming surface thereof. This blade cooperates with a recessed area on a second mold half in a relationship similar to that of a halved or lap-spliced joint, to sever a parison and form a compression seal adjacent the severed end. In this way, a seal can be obtained on a parison which is at a temperature below that at which it is generally regarded as sealable.

3,692,454

# APPARATUS FOR MAKING HOLLOW PLASTIC ARTICLES

Erwin Kruger, Fildazhofen/Wurt, Germany, assignor to Ludwig Verpackungen Zach, Schubertstrasse, Germany

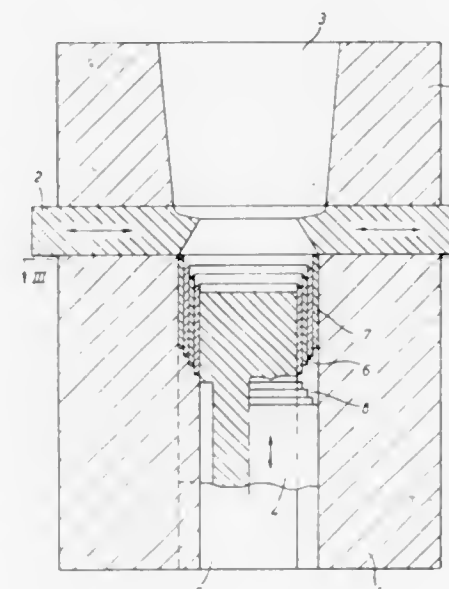
Filed June 9, 1970, Ser. No. 44,851

Claims priority, application Great Britain, March 11, 1970, 11,724/70

Int. Cl. B29c 3/00, 17/03

U.S. Cl. 425—355

11 Claims



Apparatus for heat-shaping plastics articles produces hollow containers having hollow bases. Each article is formed from a plastics sheet which is stretched into a cavity of a matrix or die. The hollow base is then formed by pushing in a lower portion of the sheet in re-entrant fashion. This is done by a punch co-operating in turn with a series of telescopically-slidable sleeves.

3,692,455

Patent Not Issued For This Number

3,692,456

# APPARATUS FOR CONVERTING MOLTEN THERMOPLASTIC IN CUP-LIKE ARTICLES

John A. Foster, Rockford, Ill., assignor to J. L. Manufacturing Co., Rockford, Ill.

Continuation-in-part of Ser. No. 789,183, Jan. 6, 1969, abandoned. This application Dec. 28, 1970, Ser. No. 101,926

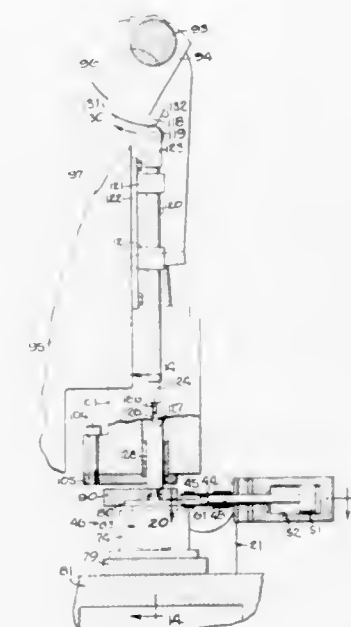
Int. Cl. B29c 3/00

U.S. Cl. 425—412

4 Claims

Thermoplastic melted and pressurized in a conventional extruder is confined in and forced through a heated tube to form a molten viscous stream from which globs of accurately measured volumes are cut off successively, immediately deposited one by one into an open mold and converted into a thin walled cup in the telescoping of male and female dies which, when fully closed, define a cavity corresponding precisely in volume and shape to the cup. The dies are mounted in a flywheel actuated press and, after receiving each glob, are closed immediately and rapidly with enough propelling energy to subject the glob, in the final closing of the mold, to an impact of sufficient magnitude to first spread the plastic across the bottom of the cavity, then force an upward flow through the thin side wall thereof and finally into the bead part of the cavity so as to fill and preferably overflow the latter. The dies are main-

tained below the solidification temperature of the plastic and are held closed long enough in each cycle to insure cooling



and solidification of the plastic for retention of the cavity shape and easy ejection of each cup formed in the extremely short cycles of the molding press.

3,692,457

# APPARATUS FOR CENTRIFUGALLY FORMING HOLLOW ARTICLES

Charles B. Pekor, Columbus, Ga., assignor to Pekor Iron Works, Columbus, Ga.

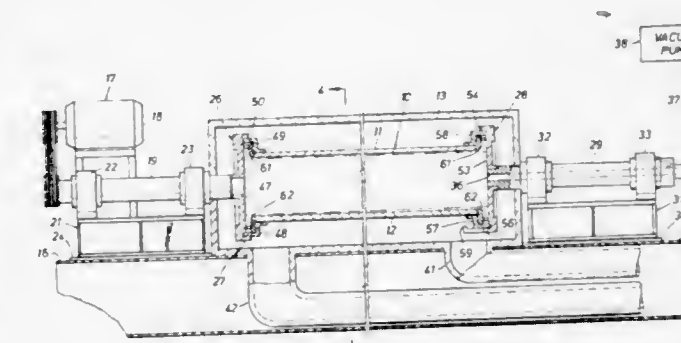
Division of Ser. No. 2,778, Jan. 14, 1970, Pat. No. 3,584,105

Filed Feb. 10, 1971, Ser. No. 114,163

Int. Cl. B22d 13/04; B29c 5/04, 25/00

U.S. Cl. 425—435

10 Claims



Apparatus for making hollow cylindrical articles includes a mold which is longitudinally split into two mold halves and can be opened to receive a quantity of hardenable liquid material. The open ends of the mold are sealed and a pressure differential is produced between the exterior and interior of the mold to induce compressive forces which urge the longitudinal edges of the split mold halves together. The mold is rotated at a speed which is sufficient to centrifugally distribute the liquid material uniformly in the mold. The compressive forces produced by the pressure differential counteract the centrifugal forces generated during rotation to seal the longitudinal edges of the mold halves together. The mold may be



heated or cooled, depending on the material used, to harden the material after it is uniformly distributed along the mold interior.

3,692,458

# WALL SURFACING DIE FOR SIMULATING BUILDING BLOCKS

Albert Kirsch, Erie, Pa., assignor to H-K International, Inc., Erie, Pa.

Filed June 22, 1970, Ser. No. 48,089

Int. Cl. B29c 5/08

U.S. Cl. 425—469

2 Claims



This application discloses a process for forming a layer of masonry-like material on the outside of walls or panels. The process is carried out by using a die which is the same size as the area to be coated. The die is made up of a rigid outside frame with partitions extending between the sides and the ends of the frame. The partitions are rectangular in cross section and are laid out in a pattern which defines the outline of a masonry block of a constructed wall of brick or stone. The material of the partitions have the same thickness as the material to be placed on the wall and the frame of the die is provided with clamps in one embodiment of the invention. The clamps are suitable for clamping it to the panel. In another embodiment of the invention, the die may be supported on suitable supports and lowered into the material after it is placed on the panel or wall.

## ERRATUM

For Class 425—370 see:  
Patent No. 3,692,615

3,692,459

# PRODUCTION OF HEATED GASEOUS MATERIALS FROM CRYOGENIC LIQUIDS

George H. Erb, Cuttingsville, Vt., assignor to America Velcro, Inc., Manchester, N.H.

Filed May 24, 1971, Ser. No. 146,192

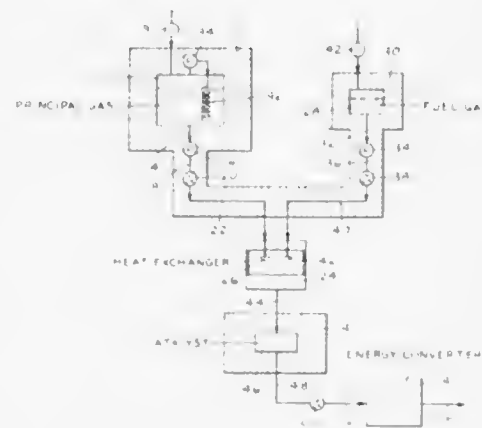
Int. Cl. F23d 11/44

U.S. Cl. 431—11

7 Claims

Production of heated and/or pressurized gaseous products from a source of principal gas in liquefied form which contains

oxygen such as liquid air and a separate source of liquefied fuel gas which consists at least in part of hydrogen in free or combined form. The liquefied principal and fuel gases are pumped as liquids at predetermined volumetric rates into heat exchanging means where they are vaporized. The vaporized gases are mixed in the heat exchanger or, when separate heat exchangers are used, the vaporized gases are subsequently mixed and passed over a catalyst to cause all of the hydrogen to combine with at least some of the oxygen to form water, in the form of water vapor, and heat, the heat thus produced being effective to raise the temperature of the entire volume



of the mixed gases. The amount of hydrogen, having regard for the amount of oxygen in the mixture is so regulated, by control of the relative rates of pumping of the liquefied materials, that the mixture of gases is not combustible in the ordinary sense, that is the mixture cannot be ignited and will not support a self-perpetuating flame at normal temperatures or at the temperature to which the mixture is heated by catalytic reaction. The energy contained in heated and/or pressurized gaseous product is utilized in any desired way, such as driving suitable engines, turbines or the like, or it may be utilized for heating of enclosed spaces.

3,692,460

# INDUSTRIAL BURNER

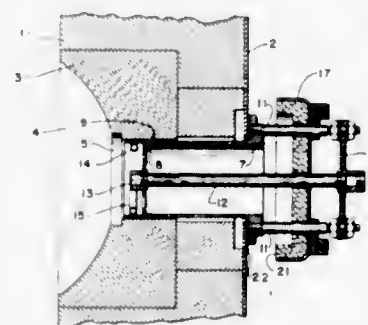
Charles W. Morck, Jr., Philadelphia, Pa., assignor to Selas Corporation of America, Dresher, Pa.

Filed Feb. 16, 1971, Ser. No. 115,636

Int. Cl. F23d 15/04

U.S. Cl. 431—348

7 Claims



The invention is directed to an industrial burner that will operate, without change of parts, with any fuel gas and with a wide turndown range.

## CHEMICAL

3,692,461

# HAIR DYE COMPOSITION AND METHOD OF DYEING HUMAN HAIR THEREWITH

Gregoire Kalopissis, Paris, Jack Bertrand, Tremblay-les-Gonesses, and Andree Bugaut, Bologne-sur-Seine, France, assignors to Societe Anonyme dite, l'Oreal, Paris, France

No Drawing. Continuation-in-part of application Ser. No. 428,867, Jan. 28, 1965. This application May 15, 1970, Ser. No. 37,903

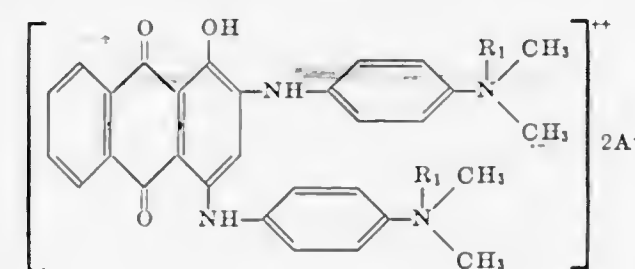
Claims priority, application France, Feb. 5, 1964, 962,659, Patent 1,430,091

Int. Cl. D06p 3/00

U.S. Cl. 8—10

6 Claims

A hair dye composition comprising a solvent and a quaternary ammonium salt having the formula



in which R<sub>1</sub> is a lower alkyl having 1-4 carbon atoms and A<sup>-</sup> is an anion, and the method of dyeing human hair with this composition.

3,692,462

# DYEING SILK AND WOOL WITH CHROMABLE FIBER-REACTIVE AZO DYESTUFFS AND POLYGLYCOL-ETHER AMINES

Gerhard Back, Loerrach, Germany, and Heinz Abel, Reinach, Basel-Land, Arthur Buehler, Rheinfelden, and Alfred Litzler, Itingen, Switzerland, assignors to Ciba-Geigy AG

No Drawing. Filed Mar. 4, 1970, Ser. No. 16,618

Claims priority, application Switzerland, Mar. 10, 1969, 3,548/69

Int. Cl. C09b 62/50; D06p 1/38

U.S. Cl. 8—43

13 Claims

A process for dyeing natural protein fibres wherein dyeing is performed at 80 to 110° C. in the presence of a nitrogen-containing polyglycol derivative of an aliphatic compound of high molecular weight, a chromium-releasing agent and a water-soluble fibre-reactive, chromable mono- or disazo dyestuff containing groups capable of complex formation, at least one sulfonic acid group imparting solubility in water, and a fibre-reactive acylamino group.

3,692,463

# DYEING SILK AND WOOL FIBERS IN AQUEOUS BATH OF METALLIZABLE FIBER-REACTIVE AZO DYES AND NITROGEN-CONTAINING POLYGLYCOLS WITH AFTER-TREATMENT USING METAL RELEASING AGENT

Gerhard Back, Loerrach, Germany, and Heinz Abel, Reinach, Arthur Buehler, Rheinfelden, and Alfred Litzler, Itingen, Switzerland, assignors to Ciba-Geigy AG

No Drawing. Filed Mar. 3, 1970, Ser. No. 16,208

Claims priority, application Switzerland, Mar. 10, 1969, 3,549/69

Int. Cl. C09b 45/04

U.S. Cl. 8—43

14 Claims

The present invention relates to a process for dyeing natural protein fibers, preferably wool, with metallizable

fiber-reactive monoazo dyestuffs in the presence of a nitrogen-containing polyglycol compound. Upon after-treatment with metal-yielding agents dyeings of excellent wet and light fastness are obtained.

3,692,464

# SOLVENT TREATMENTS OF TEXTILES

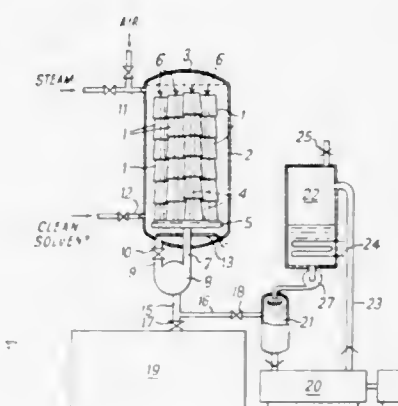
Will Furness, Thurnby, England, assignor to Samuel Pegg & Son Limited, Leicester, England

Filed Oct. 26, 1970, Ser. No. 83,772

Int. Cl. B05c 8/02, 9/12

U.S. Cl. 8—149.1

4 Claims



In the dyeing of textile substrates by the action of a dye liquor comprising a dyestuff having as a vehicle an organic solvent, a method of and an apparatus for, performing the dyeing on substrate arranged in a sealed treatment vessel and for subsequently removing the dye liquor from the substrate, whilst the latter remains in the said vessel, by the passage of steam through the substrate under reduced pressure.

3,692,465

# THREE ROLL PROCESSING APPARATUS, AND METHOD FOR UTILIZATION THEREOF

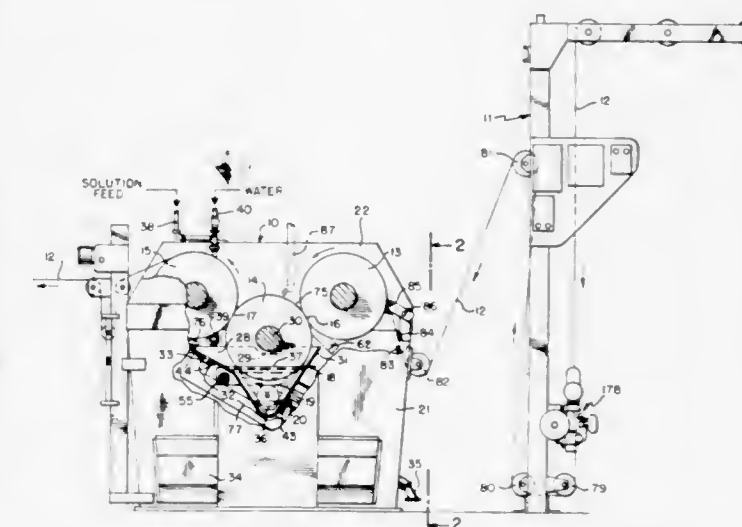
Eugene Cohn, Great Neck, and Robert Frezza, Carle Place, N.Y., assignors to Samco Holding Corporation, Woodside, N.Y.

Filed May 11, 1971, Ser. No. 142,128

Int. Cl. D06f 45/10, 45/12, 45/26

U.S. Cl. 8—151

17 Claims



The disclosure is directed to an apparatus for the processing of web materials, particularly, but not exclusively,



fabrics in the open width. The apparatus preferably comprises three processing rollers arranged with their axes in parallel relation and arranged in an inverted triangular configuration. The central, lower roller is in contact at spaced points with the upper processing rollers at the entry side and exit side of the system. A first processing nip is formed at the entry side and typically may be utilized for extracting. A second processing nip is formed at the exit side and typically is used for padding. All of the processing rollers are resiliently covered.

The fabric is directed downwardly through the first or extracting nip, around the bottom of the central roller and upwardly through the second or padding nip. A pan of treating solution is disposed under the central, lower roller, and the lower extremities of this roller are immersed in the treating solution so that the fabric is impregnated with solution as it travels around the roller. Liquid squeezed from the fabric at the extracting nip flows laterally and is collected in drainage chutes disposed at the ends of the processing rollers. The drainage chutes direct the extracted liquid away from the treating solution disposed in the pan directly below. The apparatus of the invention provides a particularly simplified and reliable system for effecting an extracting-padding processing sequence in a three roller apparatus.

The new apparatus is also useful to great advantage in so-called "double dip" processing, in which reactive solutions are applied in sequence to the fabric.

3,692,466

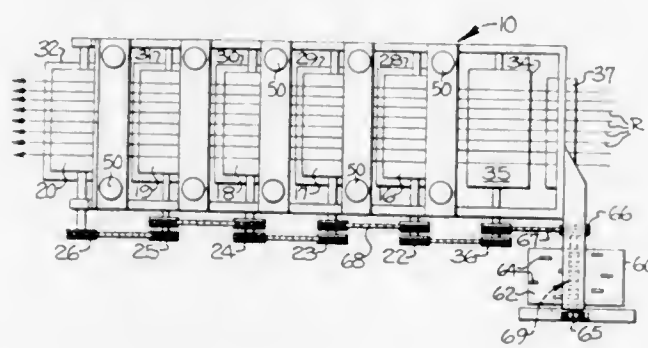
## METHOD FOR SPACE DYEING YARNS

Harry L. Mercer, 106 Sharon St., Cheraw, S.C. 29520  
Filed Oct. 23, 1970, Ser. No. 83,451

Int. Cl. B05c 1/08; D06p 7/00

U.S. Cl. 8—151.2

6 Claims



A method and apparatus for the high volume production of space dyed yarns wherein a large number of yarn strands are initially collected into a unitary yarn rope. A plurality of such ropes are conveyed along a substantially horizontal path of travel, and differing dyes are applied to sequential portions of the ropes while they are so conveyed. In the illustrated embodiment, the dyes are applied by an arrangement which includes a plurality of laterally aligned dye applicator rollers positioned immediately below the path of travel, and a printing roller is carried above each applicator roller and is adapted to be translated between a lowered position to depress the yarn ropes into operative contact with the associated applicator roller, and a raised position removed from the yarn ropes. Movement of each printing roller is controlled according to a predetermined program such that sequential portions of the yarn ropes are brought into operative contact with different applicator rollers. Subsequent to the application of the dye, the yarn ropes may be passed through a suitable fixation device, and then separated into the component yarn strands by a suitable comb or the like and wound either onto individual spools in a quiller or directly onto a section beam.

### 3,692,467 TEXTILE TREATING PROCESSES AND APPARATUS INVOLVING BOTH WATER AND AN IMMISCIBLE SOLVENT

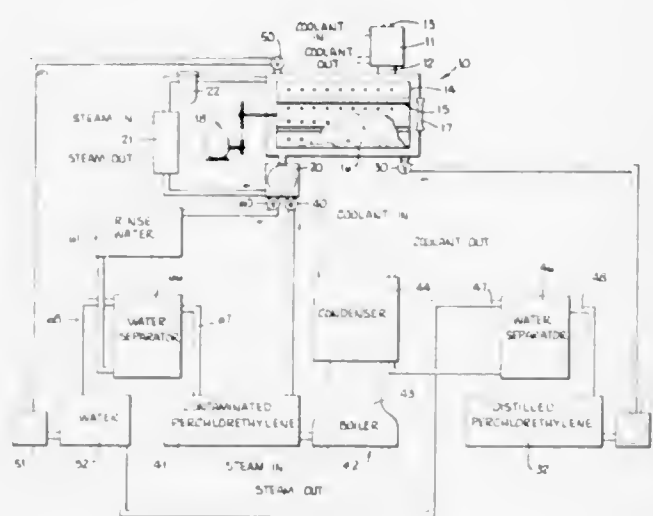
Larry L. Durr, Indianapolis, and Byron Jan Clay, Brownsburg, Ind., assignors to Textile Technology, Inc., San Diego, Calif.

Filed July 6, 1971, Ser. No. 159,851

Int. Cl. D06f 43/08

U.S. Cl. 8—158

20 Claims



Process and apparatus are disclosed which relate to the use of water and a liquid halogenated hydrocarbon in textile processing. A device for rapidly and efficiently separating the two liquids is disclosed and uses a glass wool containing coalescer and a Teflon coated metal water screen. A method is also disclosed for removing the solvent from textiles.

3,692,468

## APPARATUS FOR STERILIZING PACKAGED MATERIAL

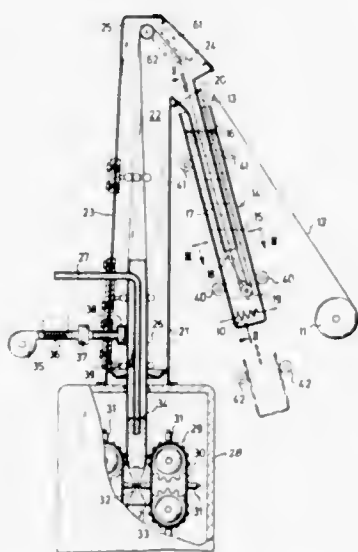
Willi Loliger and Rudolf Schmied, Konolfingen, Switzerland, assignors to Alpura AG, Bern, Switzerland  
Filed July 21, 1970, Ser. No. 56,900

Claims priority, application Switzerland, July 29, 1969, 11,531/69

Int. Cl. A61l 3/00, 5/00, 7/00

U.S. Cl. 21—58

12 Claims



The strip of packaging material is led through the liquid sterilization chamber in a looped path so as to expose

the strip for an extended period of time. The exit end of the looped path communicates in sealed relation with an enclosed chamber which is maintained in a sterile atmosphere. An extended sterilizing path is thus provided to kill germs that may otherwise exist on the packaging strip.

3,692,469

## APPARATUS FOR APPLYING EXTERMINATING AND PRESERVATIVE COMPOSITIONS FOR WOOD

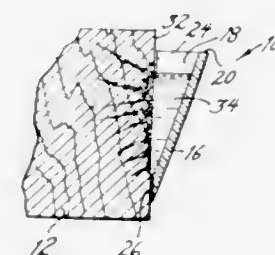
Franklin Peace, Philadelphia, Pa., assignor to National Volume Sales Corporation, Philadelphia, Pa.

Filed Oct. 26, 1970, Ser. No. 84,094

Int. Cl. B27k 3/02

U.S. Cl. 21—63

13 Claims



A container for a wood-penetrating preservative and insecticide composition. Composition in the container contacts a wood member to be treated, and penetrates into it. In one embodiment, the composition is dispensed from the container by gravity feed through a small opening. Adhesive material or conventional fasteners may be used to fasten the container to a member to be treated. The composition, when substantially viscous, may be retained in the container prior to use by means of a removable sealing member.

3,692,470

## CRYSTALLINE ZEOLITE ZSM-10

Julius Cric, Glassboro, N.J., assignor to

Mobil Oil Corporation

No Drawing. Filed Oct. 9, 1969, Ser. No. 865,193

Int. Cl. C01b 33/28

U.S. Cl. 423—328

6 Claims

A family of zeolites, known as ZSM-10, having the X-ray diffraction interplanar spacings of Table 1 of the specification; the preparation of same from a reaction mixture containing silica, alumina, potassium oxide, an oxide of 1,4-dimethyl-1,4-diazoniabicyclo(2,2,2)octane, and water; and organic compound conversion with a catalytically-active form of said zeolite.

3,692,471

## PROCESS FOR REMOVAL OF POLYSULFIDES

John Edwin Lyberger, Kingsville, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed Aug. 27, 1970, Ser. No. 67,565

Int. Cl. C01f 11/00; C01g 3/12

U.S. Cl. 423—561

5 Claims

The process disclosed herein comprises the treatment of a solution of barium sulfide or strontium sulfide containing undesired polysulfides for removal of these polysulfides by reaction with metallic copper which effects removal of the polysulfide by reaction therewith to produce insoluble sulfides.

The barium or strontium sulfide solution is thereby sufficiently reduced in polysulfide content to permit subsequent precipitation of the corresponding carbonate without contamination by polysulfides.

3,692,472

## RECOVERY OF SULFUR DIOXIDE

Warren E. Winsche, Bellport, Edward Wirsing, Jr., Mattituck, and Richard H. Wiswall, Jr., Brookhaven, N.Y., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Apr. 28, 1971, Ser. No. 138,370

Int. Cl. C01b 17/60; B01j 11/32

U.S. Cl. 423—244

3 Claims

A process for recovering SO<sub>2</sub> from a gas in which the gas is passed through a bed of reactive UO<sub>2</sub> to absorb the SO<sub>2</sub>. The saturated bed is reconstituted by passing sulfur vapor diluted by an inert gas through the bed to reduce the latter back to UO<sub>2</sub>.

3,692,473

## METHOD AND APPARATUS FOR REGENERATING SPENT CAUSTIC CRESYLATE SOLUTIONS

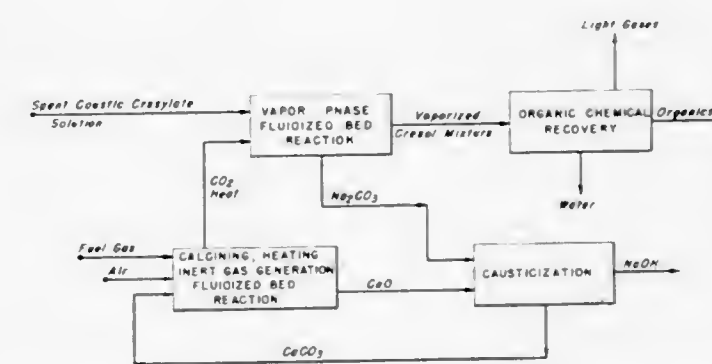
James F. Grutsch, Hammond, and Russell C. Mallatt, Crown Point, Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed Apr. 26, 1971, Ser. No. 137,332

Int. Cl. C01d 1/20; C07c 37/22

U.S. Cl. 423—183

5 Claims



Disclosed is an apparatus and process for reclaiming sodium hydroxide and phenolics from spent caustic cresylate solutions utilizing a pair of fluid bed reactors in series.

3,692,474

## PREPARATION OF METAL NITRIDES

Scott Gordon Arber, Chessington, and Oswald William John Young, Surbiton, England, assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

No Drawing. Continuation-in-part of application Ser. No. 795,083, Jan. 29, 1969, now Patent No. 3,607,042. This application Nov. 3, 1970, Ser. No. 86,615

Claims priority, application Great Britain, Nov. 26, 1969, 57,947/69

Int. Cl. C01b 21/06; C01f 7/00

U.S. Cl. 423—344

10 Claims

Refractory metal nitrides, such as aluminum nitride, are produced by heating a mixture of the refractory metal, carbon and a zinc or cadmium compound in the presence of nitrogen at a temperature of at least about 950° C. The zinc or cadmium compound is reduced to the corresponding elemental metal and evaporated from the reaction mass to leave the desired nitride.

3,692,475

## METHOD FOR MAKING CRYSTALLINE ZEOLITE Y

Carl E. Johnson, Brookhaven, Miss., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,148

Int. Cl. C01b 33/28

U.S. Cl. 423—329

2 Claims

Crystalline zeolite Y is produced in good yield in a short period of time from aqueous alkaline silica-contain-



ing solutions and sodium aluminate solutions by the expediency of using elevated temperatures, good agitation and by the careful control of the alumina concentration of the aqueous aluminate solution.

3,692,476

METHOD OF PREPARING OCIF<sub>3</sub>

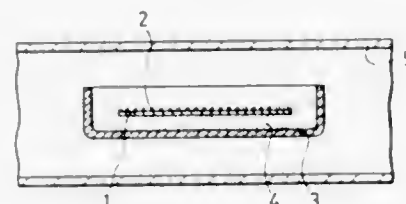
Donald Pilipovich, Canoga Park, and Carl J. Schack, Chatsworth, Calif., assignors to North American Aviation, Inc.

No Drawing. Filed May 13, 1966, Ser. No. 551,490  
Int. Cl. C01b 11/00, 11/02

U.S. Cl. 423—466

4 Claims

1. The method of making OCIF<sub>3</sub> comprising reacting ClNO<sub>3</sub> with F<sub>2</sub> and recovering OCIF<sub>3</sub>.



which at the surface approximately correspond in size to the thickness of the crystals to be grown.

3,692,477

## PROCESS FOR ENRICHMENT BY COUNTER-CURRENT MASS TRANSFER

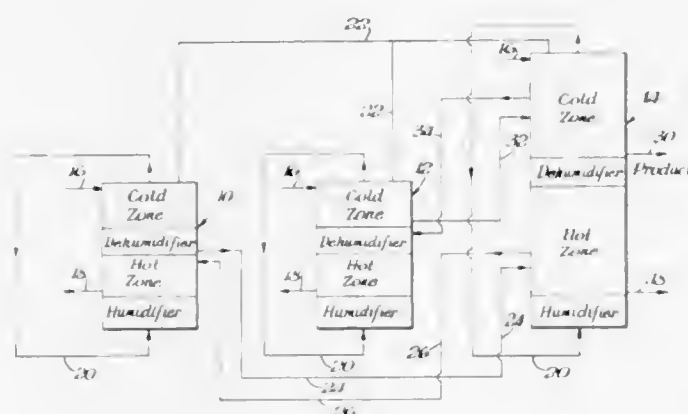
Victor R. Thayer, R.D. 3, Newark, Del. 19711

Filed Aug. 4, 1969, Ser. No. 847,305

Int. Cl. C01b 5/02, 19/16; B01d 59/22

U.S. Cl. 423—580

6 Claims



A chemical compound, element or isotope of an element is concentrated or enriched by physical or chemical exchange between two fluids passing countercurrently to each other in a plurality of concentrating units (vessels or towers). Each of the vessels is capable of operating independently. A feed fluid is supplied simultaneously to each of the units which concentrate and enrich it. The degree of enrichment occurring in a particular vessel depends upon the physical length of the particular vessel. The enriched products produced in the shorter vessels are fed, in contradistinction to prior art processes, to the longer vessels for further concentration. The process may be operated continuously regardless of the shut-down of one or more of the individual vessels utilized in the process.

3,692,478

## METHOD OF MANUFACTURING SILICON CARBIDE WHISKERS

Wilhelmus Franciscus Knippenberg and Gerrit Verspui, both of Emmasingel, Eindhoven, Netherlands

Filed Feb. 2, 1970, Ser. No. 7,593

Claims priority, application Netherlands, Feb. 1, 1969, 6901661

Int. Cl. C01b 31/36, 21/06; C01f 7/02

U.S. Cl. 423—345

2 Claims

Whiskers of approximate desired diameter are grown on a uniform rough surface of a substrate by means of a

nucleating substance due to the presence of crystallites projecting from the surface the lateral dimensions of

3,692,479

## PREPARATION OF BINARY BORIDES, CARBIDES AND SILICIDES

Geoffrey W. Meadows, 312 S. Marshall St., Kennett Square, Pa. 19348, and Paul C. Yates, 2120 Shipley Road, Wilmington, Del. 19803

No Drawing. Continuation-in-part of application Ser. No. 250,442, Jan. 9, 1963, which is a continuation-in-part of application Ser. No. 824,943, July 6, 1959. This application Sept. 10, 1968, Ser. No. 758,830

Int. Cl. C01b 31/34, 33/06, 35/00

U.S. Cl. 423—291

2 Claims

Binary carbides, borides and silicides, such as tungsten carbide, having an average particle size of less than a micron, are prepared by reacting a pair of suitable reactants such as tungstic oxide and calcium carbide, in a molten metal halide bath such as sodium chloride, at a temperature of between 200 and 1200° C. in the presence of an alkali metal or alkaline earth metal reducing agent. The binary compounds thus produced are particularly useful in preparing hard, dense refractory materials.

3,692,480

## METHOD FOR CONTROLLING A SULFUR RECOVERY PROCESS

Jacobus Snoek and Jaap E. Nabers, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed May 19, 1971, Ser. No. 144,834

Claims priority, application Netherlands, May 27, 1970, 7007611

Int. Cl. C01b 17/04

U.S. Cl. 423—239

7 Claims

A sulfur recovery process based on the reaction of hydrogen sulfide with sulfur dioxide wherein at least part of the sulfur dioxide is derived from the regeneration with a reducing gas of a loaded solid acceptor used in flue gas desulfurization is controlled by measuring the difference between the volume of reducing gas used in regeneration and the volume of off-gas obtained from regeneration, and employing this difference to control, either directly or indirectly, the composition of the gas mixture to the sulfur recovery process.

3,692,481

## METHOD OF DETERMINING THE CONCENTRATION OF INORGANIC SULFUR COMPOUNDS IN A GAS

James E. Mitchell, Westfield, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed Mar. 30, 1971, Ser. No. 129,600

Int. Cl. G01n 31/12

U.S. Cl. 23—230 PC

10 Claims

The concentration of inorganic sulfur compounds is determined by measuring the ion concentration decrease

3,692,484

Patent Not Issued For This Number

3,692,485

## NITRIC OXIDE DETECTION

Radhakrishna M. Neti, Brea, and Colin C. Bing, Placentia, Calif., assignors to Beckman Instruments, Inc.

Filed July 2, 1971, Ser. No. 159,266

Int. Cl. G01n 21/26

U.S. Cl. 23—232 R

10 Claims

of a flame, produced by the combustion of a mixture comprising a hydrocarbon, hydrogen and oxygen, which results from introducing said inorganic sulfur-containing compound into said flame. Preferably the inorganic sulfur compound is chosen from the group consisting of SO<sub>2</sub>, SO<sub>3</sub>, H<sub>2</sub>S, COS, S, H<sub>2</sub>SO<sub>4</sub> and H<sub>2</sub>SO<sub>3</sub>, and the ion concentration decrease is measured by a decrease in current flowing through an electrical circuit of which the flame is an integral part. In a particularly preferred method, a gas chromatograph fitted with a flame ionization detector and a recorder is used to measure the concentration of said inorganic sulfur compound by introducing said inorganic compound into a reference mixture, comprising H<sub>2</sub>, O<sub>2</sub> and hydrocarbon, and measuring the ion concentration decrease.

3,692,482

Patent Not Issued For This Number

3,692,483

## TITRATION METHOD AND APPARATUS

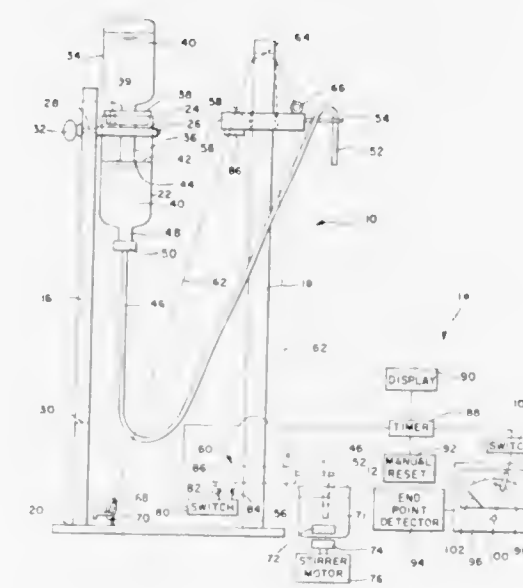
James C. Sternberg, Fullerton, Calif., assignor to Beckman Instruments, Inc.

Filed Feb. 22, 1971, Ser. No. 117,283

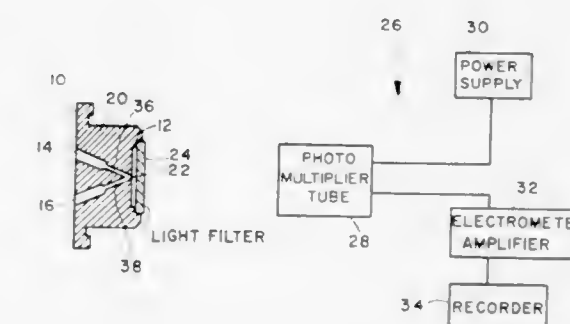
Int. Cl. G01n 31/16

U.S. Cl. 23—230 R

7 Claims



A method and apparatus for performing titrations in which a substantially constant hydrostatic head of titrant is maintained in a titrant reservoir. An elongated capillary tube is connected at one end to the reservoir and the other end of the tube, constituting the titrant delivery tip, is normally positioned at least as high as the level of titrant in the reservoir so that no titrant flows through the tube. A sample is delivered to a cell below the titrant delivery tip. The titrant delivery tip is lowered to adjacent the cell whereby titrant will flow by gravity into the cell to commence a titration reaction. Means are provided for detecting the end point of the titration reaction in the cell. The time elapsed between the introduction of titrant into the cell and the time such end point is reached is measured. After the end point has been detected, the titrant delivery tip is raised to the level of titrant in the titrant reservoir to cease further flow of titrant into the sample cell. Since a constant hydrostatic head of titrant is provided, the titrant will flow at a constant known rate into the cell. By knowing the rate of flow of titrant and the time that titrant flows into the sample cell, the titer of the sample may be determined.



A method of measuring the nitric oxide concentration in a gas stream is disclosed. The gas stream is mixed with ozone at the entrance to a reaction chamber so that the mixture enters the reaction chamber as a point source. The intensity of the light emitted as a result of the chemiluminescent reaction between the ozone and the nitric oxide at the point source is measured. The intensity of the emitted light is a function of the nitric oxide concentration in the gas stream, whereby the nitric oxide concentration is measured. Apparatus for measuring the nitric oxide concentration in a gas stream is also disclosed. The apparatus includes a walled vessel having a reaction chamber and having two inlet passages and an exhaust passage in the wall thereof. The two inlet passages converge together to a common inlet opening into the chamber. A light window is positioned in the wall of the chamber opposite and in close proximity to the common inlet so that the light emitted by a chemiluminescent reaction between the gases and the two inlet passages at the common inlet can be measured as a point source. Means are associated with the light window for measuring the light emitted by the chemiluminescent reaction.

3,692,486

## METHODS AND APPARATUS FOR OBTAINING THE QUANTITATION AND THE CONCENTRATIONS OF PRECIPITIN REACTIONS AND PARTICIPATING MOLECULES IN BIOLOGICAL FLUIDS

William G. Glenn, Ingleside, Tex., assignor to Cybertek, Inc., New York, N.Y.

Filed July 12, 1971, Ser. No. 161,541

Int. Cl. C12k 1/06, 1/10; G01n 33/16

U.S. Cl. 23—230 B

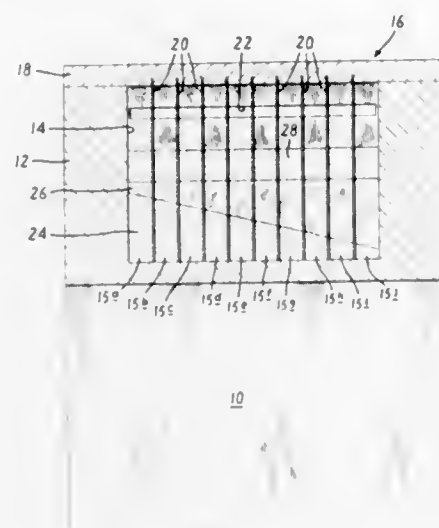
8 Claims

A method and apparatus for obtaining the quantitation and the concentrations of precipitin reactions and participating molecules in biological fluids. A continuous gradient of reference reactant stabilized in a gel formation is positioned in an enclosed chamber. The continuous gradient is then calibrated by dividing the chamber into a plurality of cells, by which procedure each cell has a different reactant concentration. A second reactant containing the molecules of interest in a biological solution is then placed interfacing the reference reactant in each of



the cells and the precipitin reaction allowed to proceed. The equivalence point between the reference reactant and

located in sockets provided in a baseplate. Individual transfer passages radiate from a central supply chamber in the manifold and terminate in orifices aimed at the open tops of the test-tubes. A reagent material is expelled



the second reactant in one of the cells is then observed and the reactant concentration derived from a prepared table.

3,692,487

**COAGULOMETER CAPSULE**

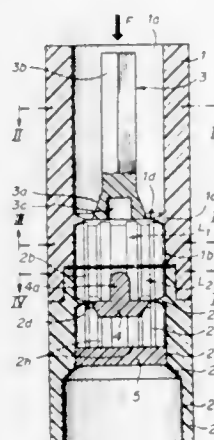
Manuel Claude Sanz, Geneva, Switzerland, assignor to Micromedic Systems, Inc., Philadelphia, Pa.

Filed Mar. 17, 1970, Ser. No. 20,340

Claims priority, application Switzerland, Mar. 19, 1969, 4,124/69

Int. Cl. G01n 11/14, 33/16, 33/26

U.S. Cl. 23—253 R 22 Claims



A two piece tubular capsule for conducting coagulation tests on blood and other liquids having three separate chambers, the first two communicating with each other, defined by two frangible membranes and a solid disc. A shaft having a recessed stirring end is attached to the first membrane and cooperates with a stirring slug attached to said second membrane. The shaft is moved axially to break the second membrane and mix the liquids in each chamber. The shaft is then rotated relative to the body of the capsule to stir the mixed liquid to determine the coagulation time of the sample liquid being tested.

3,692,488

**BACTERIOLOGICAL IDENTIFICATION SYSTEM**

Lazar M. Schwartz, 660 Overlook Terrace, New York, N.Y. 10040

Filed Sept. 24, 1970, Ser. No. 74,975

Int. Cl. B65b 3/04; B67d 5/00; B67c 3/00

U.S. Cl. 23—253 R 9 Claims

A plurality of test-tubes, containing samples to be tested, are surmounted by a circular distribution manifold and

from a flexible container, under the action of cam-operated clamp plates, into the central supply chamber of the manifold and distributed to the test-tubes through the radial passages.

3,692,489

Patent Not Issued For This Number

3,692,490

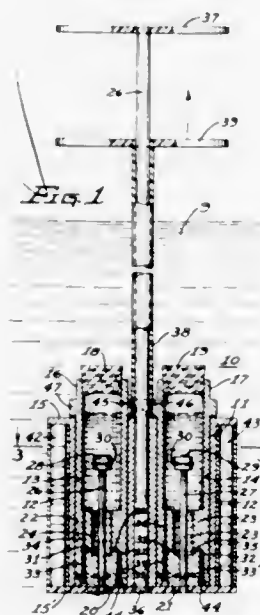
**WATER TESTER FOR POOLS**

Thomas A. Hall, 3417 E. Sells Drive, Phoenix, Ariz. 85018

Filed Oct. 23, 1970, Ser. No. 83,540

Int. Cl. G01n 1/14, 21/06, 33/18

U.S. Cl. 23—253 R 8 Claims



3,692,491

**COMPLEMENT FIXATION TESTING TRAY**

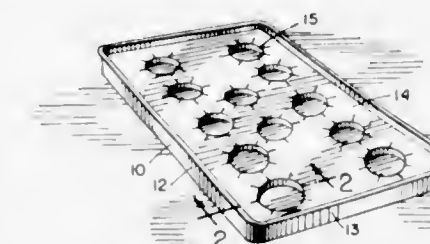
Elmer F. Trentelman, Miami, Fla., assignor to American

Hospital Supply Corporation, Evanston, Ill.

Filed June 30, 1971, Ser. No. 158,446

Int. Cl. C12b 1/08; C12k 1/10; G01n 33/16

U.S. Cl. 23—253 R 8 Claims



An agar-containing tray for use in a complement fixation testing procedure for visually determining whether a sample of body fluid contains a given antigen or antibody. Sensitized animal (sheep) red cells (hemolysin-sheep red blood cell complex) are embedded in the agar medium. Wells are provided in the agar layer, each of the wells having a plurality of slits radiating therefrom. When the test results are negative, indicating the absence of the given antibody or antigen in the fluid introduced into a well, hemolysis occurs along the margins of the slits and about the border of the well to produce a readily observable sunburst design.

3,692,492

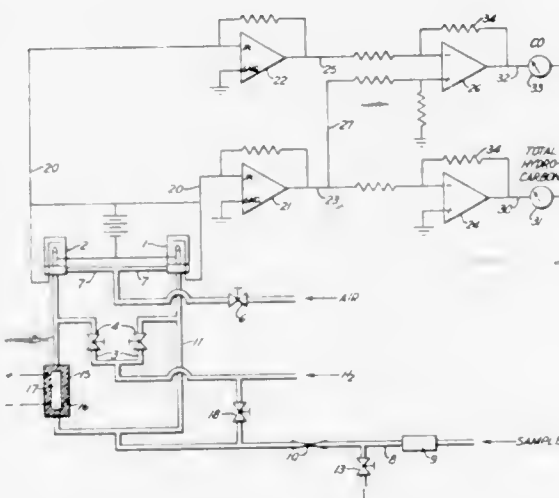
**APPARATUS FOR MEASURING CARBON MONOXIDE AND TOTAL HYDROCARBONS IN GAS SAMPLE**

Albert A. Poli, Jr., and Sidney D. Delaune, Pittsburgh, Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Feb. 8, 1971, Ser. No. 113,548

Int. Cl. G01n 25/00, 25/22

U.S. Cl. 23—254 E 10 Claims



First and second means for measuring hydrocarbons in a gas sample are provided. A conduit delivers part of the sample to the first means, and a second conduit delivers the rest of the sample to the second means at the same time. In the second conduit there is a reactor for converting carbon monoxide to methane, so the portion of the sample delivered by the second conduit will contain a greater amount of hydrocarbons than the part delivered by the first conduit.

3,692,493

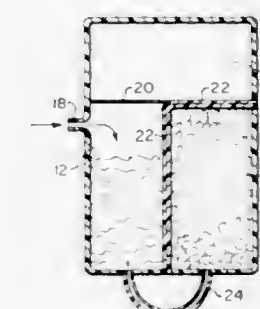
**LYMPHOCYTE TRANSPORT BAG**

Paul I. Terasaki, Los Angeles, Calif., assignor to the United States of America as represented by the Secretary, Department of Health, Education, and Welfare

Filed Sept. 22, 1970, Ser. No. 74,276

Int. Cl. B011 3/00

U.S. Cl. 23—259 6 Claims



A compartmented mixing and shipping bag for blood. The bag, formed of plastic, is provided with three compartments; the first compartment, into which the blood is injected, contains nylon to which the undesirable granulocytes adhere. A second compartment contains a flushing ingredient and the seal between the first and second chambers is broken and the flushing medium is used to flush the lymphocytes from the first chamber into a third chamber. The third chamber is separated from the first two chambers and is used as a shipping container.

3,692,494

**BANK OF MIXER SETTLERS**

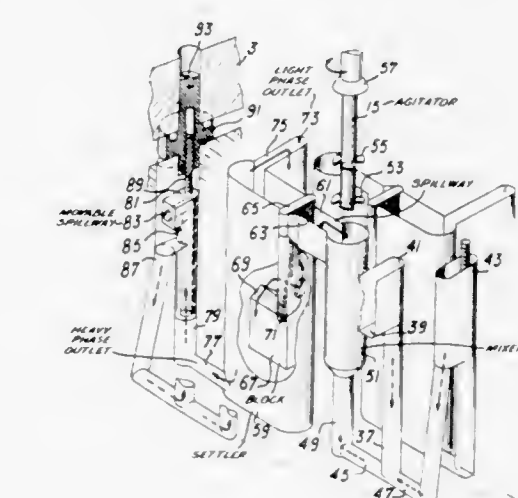
André Bathellier, 1 Boulevard Colbert, 92 Sceaux, France, and Gérard Faudot, 118 Rue de Javel, 75 Paris 15 eme, France

Filed Feb. 7, 1969, Ser. No. 797,636

Claims priority, application France, Feb. 14, 1968, 139,892

Int. Cl. B01d 11/04

U.S. Cl. 23—270.5 3 Claims



A bank of mixer-settlers consisting of a plurality of serially-disposed stages each comprising a substantially vertical supply duct for a relatively heavy liquid phase which is fed into said duct by overflow, a substantially vertical supply tube for a relatively light liquid phase which is also fed into said tube by overflow, a mixer



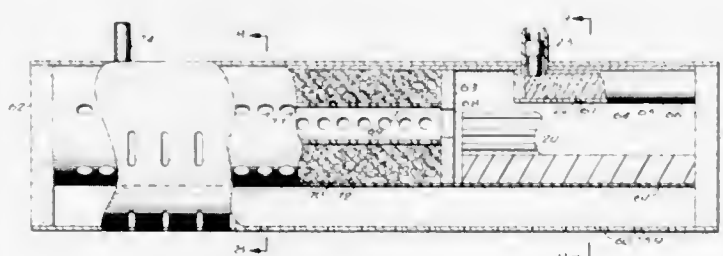
which is joined to the lower portions of the duct and of the tube and provided with agitation means, a settler which is connected to the top portion of the mixer by means of a spillway and joined to the supply tube of the preceding stage, a block within each settler for reducing the cross-sectional area at the level of the interface.

### 3,692,495 GAS GENERATOR

Fred E. Schneider, Ogden, Howard E. Jorgensen, Hyrum, and Leland E. Davis, Brigham City, Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.  
Filed June 19, 1970, Ser. No. 47,788  
Int. Cl. B01j 7/00

U.S. Cl. 23—281

3 Claims



A gas generator, suitable for filling inflatable structures in the presence of humans has a special, nontoxic, solid fuel in an orificed pressure vessel, ignition means therefor, and coolant means for cooling the gases produced on combustion of the fuel before they enter an inflatable structure.

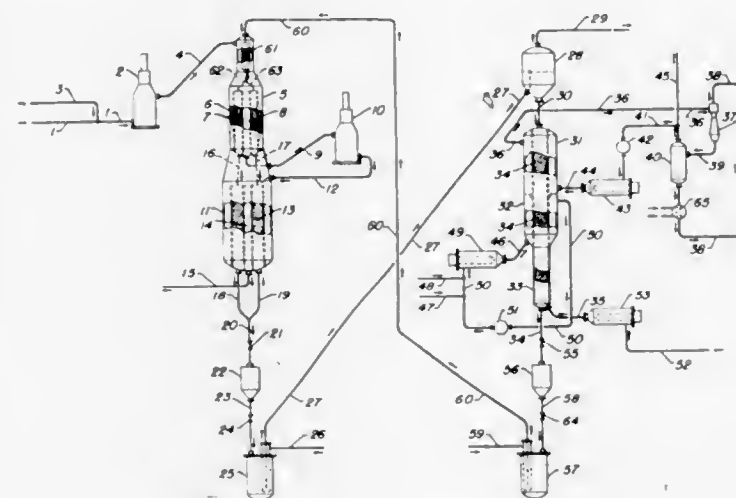
### 3,692,496 APPARATUS FOR CONTINUOUS REFORMING-REGENERATION PROCESS

Arthur R. Greenwood, Niles, and Kenneth D. Vesely, Arlington Heights, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.  
Original application Sept. 25, 1969, Ser. No. 860,905.  
Divided and this application Apr. 19, 1971, Ser. No. 135,266

Int. Cl. B01j 9/12

U.S. Cl. 23—288 G

6 Claims



An apparatus system for operating a continuous reforming-regeneration process comprising a plurality of stacked reforming reactors and employing a platinum catalyst wherein catalyst activity is maintained at a predetermined level by continuous regeneration thereof without the removal of any reactor from the process stream.

### 3,692,497 CATALYTIC EXHAUST GAS TREATMENT APPARATUS

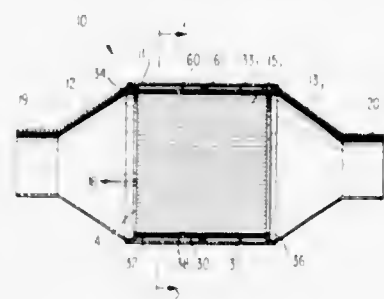
Carl D. Keith, Summit, John J. Mooney, Wyckoff, and Louis J. Vanmansart, Upper Saddle River, N.J., assignors to Engelhard Minerals & Chemicals Corporation, Newark, N.J.

Filed May 20, 1971, Ser. No. 145,266

Int. Cl. F01n 3/14; B01j 9/04

U.S. Cl. 23—288 R

11 Claims



A catalytic apparatus for purifying gases, e.g. the exhaust gas of an internal combustion engine, in which a unitary, catalytic element having gas flow paths there-through, is secured within a surrounding casing by at least one end flange, preferably two end flanges, a resilient, flexible member surrounding said catalytic element, and at least one surface projecting inwardly from the interior wall of the casing and in contact with the resilient, flexible member. Rotation of the catalyst is prevented by one or a plurality of such surfaces, preferably at least three. When using a plurality of these surfaces it is preferred that at least two or at least three be spaced apart from each other by at least about 90° with respect to the center of the casing. Longitudinal movement of the catalyst is prevented by the flanges and further movement of this type can also be counteracted by providing a recess in the exterior surface of the catalytic element or an inwardly projecting surface on the interior wall of the casing, and in contact with the resilient, flexible member.

### 3,692,498 CHEMICAL TESTING APPARATUS

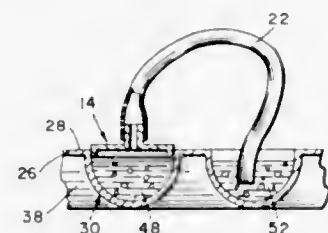
Morton E. Frank, Dix Hills, N.Y. (% Lab-Aids, Incorporated, 160 Rome St., Farmingdale, N.Y. 11735); Jesse Gross, Plainview, N.Y. 11803; and Sol Lesh, New Hyde Park, N.Y. 11040

Filed Oct. 12, 1970, Ser. No. 79,763

Int. Cl. B01l 3/00, 5/02; G01n 1/28

U.S. Cl. 23—292

8 Claims



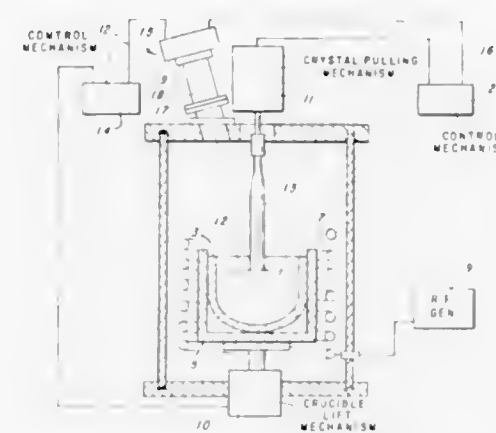
Dimensionally identical recesses in a molded plastic body are adapted to receive drop quantities of chemical ingredients. Any of the recesses may receive a funnel member to seal a chamber from which gas generated by chemical reaction may be conducted through flexible tubing for collection or delivery to an adjacent recess.

### 3,692,499 CRYSTAL PULLING SYSTEM

Dmetro Andrychuk, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.  
Filed Aug. 31, 1970, Ser. No. 68,282  
Int. Cl. B01j 17/18

U.S. Cl. 23—301

18 Claims



There is disclosed a new method and apparatus for the controlled pulling of crystal rods for use in semiconductor component manufacturing. Changes in the diameter of the crystal rod are monitored by opto-electrically detecting changes in the physical location of a halo surrounding the rod at an interface between the rod and the molten material from which it crystallizes. A linear electrical signal is produced by a monitoring device for use in controlling the parameters affecting crystal diameter during the pulling process. An electrical signal proportional to changes in the level of the molten material within the crucible is also produced by the monitoring device.

### 3,692,500 PROCESS FOR THE SEPARATION OF ELEMENTS OF THE LANTHANIDE GROUP AND ELEMENTS OF THE TRANSPLUTONIUM GROUP WHICH ARE PRESENT IN AN AQUEOUS SOLUTION

Bernard Coupat, Montferriand, and Claude Musikas, Bourg-la-Reine, France, assignors to Commissariat a l'Energie Atomique, Paris, France  
Filed Nov. 14, 1968, Ser. No. 775,797

Claims priority, application France, Nov. 17, 1967, 128,624

Int. Cl. C01g 56/00

U.S. Cl. 423—7

4 Claims

A process for separating the elements of the lanthanide rare-earth group and the elements of the transplutonium group which are present in an aqueous solution. The process comprises adding nitrate ions and an alcohol to the solution to be treated, passing the solution through an anion-exchange resin on which the elements to be separated are adsorbed, eluting the resin with a solution which contains nitrate ions, an alcohol and a complexing agent consisting of an ethylenediaminoacetic acid.

### 3,692,501 DIFFUSION BONDED SUPERALLOY ARTICLE

George S. Hoppin III, Reed E. Yount, Thomas F. Berry, and James F. Barker, Cincinnati, Ohio, assignors to General Electric Company  
Original application July 11, 1969, Ser. No. 841,093.  
Divided and this application Mar. 26, 1971, Ser. No. 128,400

Int. Cl. B32b 15/00

U.S. Cl. 29—196.6

5 Claims

An improved diffusion bonded, age hardenable joint between superalloy members results from a method which combines the benefits of vacuum high temperature brazing and pressure solid state diffusion bonding through use of an age hardenable bonding powder related to the

superalloy and including temperature depressants selected from B, Si, Mn, Cb, Ta and their mixtures. The method avoids the need for pressure during the diffusion bonding portion.

### 3,692,502 METAL-COATED THERMOPLASTIC ARTICLE

Gunther Bernhardt, Hangelar, Robert Buning, Oberlar, and Werner Trautvetter, Spich, Germany, assignors to Dynamit Nobel AG, Troisdorf, Bezirk-Cologne, Germany

No Drawing. Continuation of application Ser. No. 718,904, Apr. 4, 1968. This application Oct. 29, 1970, Ser. No. 78,733

Claims priority, application Germany, Apr. 7, 1967, D 52,737

Int. Cl. B32b 15/08; C23b 5/60  
U.S. Cl. 29—195  
Substrates of copolymers of vinyl chloride with maleate or fumarate diesters are coated with metal by electroless deposition and then electroplated.

### 3,692,503 ACTIVATED MANGANESE CONTAINING ADDITIVE FOR FUELS

Ira Kukin, West Orange, N.J., assignor to Apollo Chemical Corp., Clifton, N.J.  
No Drawing. Filed Feb. 26, 1969, Ser. No. 802,684  
Int. Cl. C10I 1/32, 9/10

U.S. Cl. 44—4

14 Claims

An activated manganese containing additive composition for fuels for retarding the corrosiveness of the ash and the ash slag buildup of such fuels upon combustion, such fuels including vanadium containing fuels and alkali, sulfur and iron containing coals. The said additive composition comprises a preparation of a manganese compound preferably and a metal salt of an alkyl-aryl sulfonate brought to a particle size in the range of 0.25 to 20 microns.

### 3,692,504 PROCESS FOR GELLING NORMALLY LIQUID HYDROCARBONS AND PRODUCT PRODUCED

Rufus V. Jones and Peter J. Canterino, Bartlesville, Okla., assignors to Phillips Petroleum Company  
No Drawing. Filed May 19, 1953, Ser. No. 356,098  
Int. Cl. C10I 7/02

U.S. Cl. 44—7 E

30 Claims

1. The preparation of a gelled hydrocarbon product which comprises dissolving in a normally liquid hydrocarbon 1-10% by weight, of said liquid hydrocarbon, of a synthetic hydrocarbon elastomer, having an appreciable degree of unsaturation, soluble therein, adding to the solution thus obtained a catalyst effective to cause reaction between an olefinic compound and sulfur dioxide in a proportion effective to cause said reaction, then adding 0.5-20% by weight, of said elastomer, of sulfur dioxide to the resulting mass and then allowing the mass to react and to stand until gel formation occurs, the said elastomer being selected from the group consisting of a homopolymer of a conjugated diene and copolymers of a conjugated diene with at least one of styrene, alkyl-substituted styrenes, methyl acrylate, methyl methacrylate, methyl vinyl ketone, acrylonitrile, methacrylonitrile.

24. A gelled hydrocarbon composition containing a normally liquid hydrocarbon and a small proportion of a synthetic elastomer having an appreciable degree of unsaturation therein, a catalytic proportion of a catalyst effective to cause a reaction between an olefinic compound and sulfur dioxide, and sulfur dioxide, at least a portion of said hydrocarbon, sulfur dioxide, synthetic elastomer and catalyst being present as a reaction product of said sulfur dioxide and said synthetic elastomer in said hydrocarbon and at least a portion of the said hydrocarbon, elastomer and sulfur dioxide being present in said composition



in a physical gel structure; the said elastomer being selected from the group consisting of a homopolymer of a conjugated diene and copolymers of a conjugated diene with at least one of styrene, alkyl-substituted styrenes, methyl acrylate, methyl methacrylate, methyl vinyl ketone, acrylonitrile, methacrylonitrile.

3,692,505

## FIXED BED COAL GASIFICATION

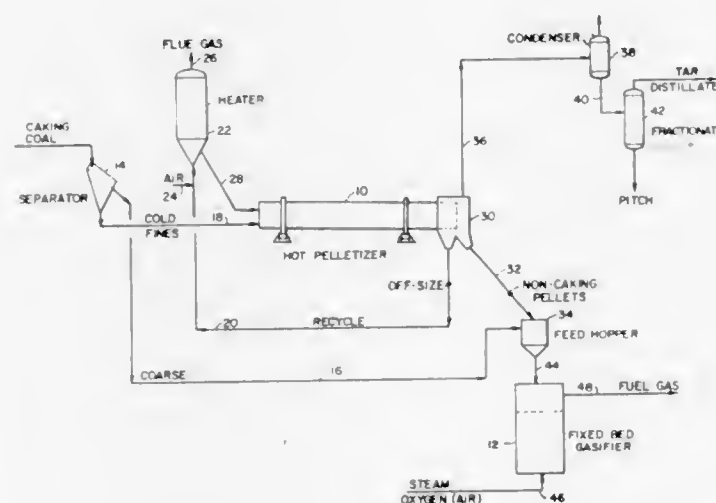
Eric H. Reichl, Pittsburgh, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa.

Filed Apr. 5, 1971, Ser. No. 131,330

Int. Cl. C10j 3/16

U.S. Cl. 48—206

3 Claims



The gasification of a caking coal in a fixed bed is effected by feeding a suitable mixture of coarse caking coal and non-caking pellets of substantially the same size made by pelletizing fines, previously separated from the caking coal, in a hot pelletizing rotary kiln, whereby a substantially improved feedstock is provided for the fixed bed gasifier.

3,692,506

## HIGH BTU GAS CONTENT FROM COAL

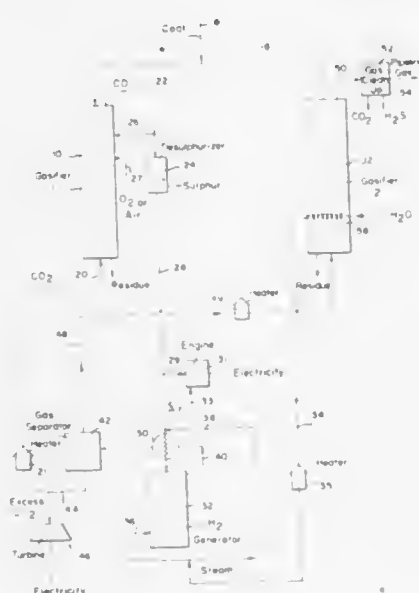
Cecil J. Johnson, Columbia City, Ind., assignor to Total Energy Corporation, Columbia City, Ind.

Filed Feb. 13, 1970, Ser. No. 11,151

Int. Cl. C10j 3/00; C10k 3/00

U.S. Cl. 48—210

5 Claims



A unitary process for the production of high methane content gas employing a single supply of coal, char or other

3,692,507

## PRODUCTION OF ALKALI METAL SILICATE FIBERS

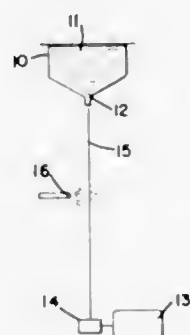
Kurt P. Gladney and Ramesh P. Rao, Sarnia, Ontario, Canada, assignors to Fibreglas Canada Limited, Toronto, Ontario, Canada

Filed Dec. 29, 1969, Ser. No. 888,989

Int. Cl. C03b

U.S. Cl. 65—2

12 Claims



Foamable fibers of alkali metal silicate glass are prepared by dispersing flowing fine streams of molten glass to centrifugation or to a high velocity blast of gas thereby forming fibers of random length and average diameters in the range 0.1 to 1.0 mil, and hydrating the resulting staple fibers to a moisture content of 5 to 40% by treatment with steam or a water spray. If desired, fiberizing may be effected by centrifugally dispersing the molten streams in a first step and then subjecting the dispersed streams to the high velocity gas blast. The gas is preferably superheated steam, hot compressed air or a fuel gas flame. The thus-hydrated product may be foamed by conventional foaming techniques.

3,692,508

## PROCESS FOR THE MANUFACTURE OF FLAT GLASS

Georges Prislán, Boussois, France, assignor to Boussois Souchon, Neuvesel, Paris, France

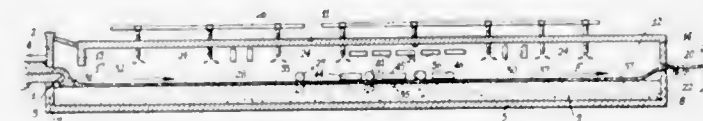
Filed June 15, 1970, Ser. No. 45,975

Claims priority, application France, July 1, 1969, 6922172

Int. Cl. C03b 18/00

U.S. Cl. 65—91

1 Claim



Process for the manufacture of a fire-polished glass ribbon by longitudinal displacement thereof over the surface of a molten metal bath in which it is intended to obtain a predetermined thickness of smaller value than the glass-bath equilibrium thickness by gripping the edges of the ribbon in order to regulate the rate of displacement thereof along the bath, bringing the ribbon to a temporary plastic state and subjecting said ribbon to a longitudinal tractive force in order to produce acceleration and drawing-out, stabilizing the ribbon at the desired predetermined

thickness and then cooling it in order to permit withdrawal from the bath. The ribbon having been gripped laterally while having a viscosity which is substantially within the range of  $10^7$  to  $10^8$  poises in the drawing zone located downstream of the gripping points, a transverse central band of the ribbon which is located between two edge bands is re-heated so that the viscosity of the central band should be at least forty times lower than that of the edge bands while maintaining the viscosity of said edge bands at a sufficiently low value to ensure that they are still capable of being drawn. It is thus possible to carry out a controlled extension of the glass ribbon in the drawing zone without thereby transmitting the tractive forces upstream of the edge-gripping rollers.

3,692,509

## LEHR ROLL MILLBOARD FORMED FROM ASBESTOS FIBERS AND EMPLOYING COLLOIDAL SILICA-CALCIUM LIME AND BENTONITE AS A BINDER

Richard C. Breiner, Hathboro, Pa., assignor to Nicolet Industries, Inc., Ambler, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 641,469, May 26, 1967. This application Aug. 10, 1970, Ser. No. 62,629

Int. Cl. C03b 13/16; C04b 43/04; D21f 5/18

U.S. Cl. 65—118

14 Claims

An asbestos millboard particularly useful for the manufacture of lehr rolls consists essentially of asbestos fibers, such as 15-45% by weight chrysotile asbestos fibers, 40-55% by weight anthophyllite asbestos fibers and 0-25% by weight amosite asbestos fibers. As a binder for the asbestos in the millboard there is present a substantially calcium silicate free admixture consisting essentially of colloidal silica, calcium lime and bentonite clay, in the amounts 1.5-7% by weight, 3-9% by weight and >1.5-5% by weight, respectively, based on the millboard.

3,692,510

## FLOW AND EDGE CONTROL IN VERTICAL SHEET DRAWING

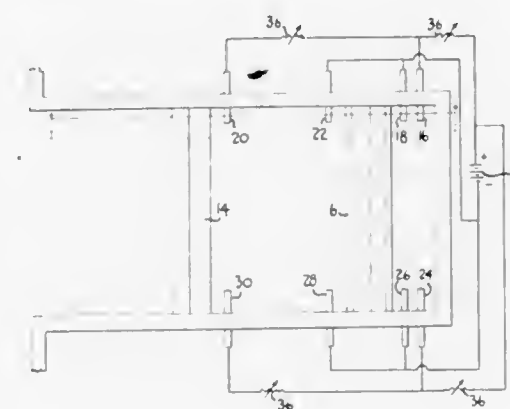
Arnold J. Goldberg, Lower Burrell, and Leonard A. Knavish, Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sept. 1, 1970, Ser. No. 68,713

Int. Cl. C03b 15/08

U.S. Cl. 65—203

1 Claim



Four pairs of electrodes are provided, protruding through side walls of a drawing kiln. One pair on each side is positioned to the front of the meniscus, and the other pair is to the rear. Electric current is supplied to each of the above-mentioned pairs, whereby electrical heating is provided to spring or edge zones of the glass in the drawing kiln. The manner of heating described prevents devitrification, provides warmer edges, and makes it possible to adjust as desired the electric heating effect in a given spring or edge zone.

3,692,511

## LIMESTONE GRANULATION

Joseph F. Wilson and Wallace D. Southworth, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Continuation of abandoned application Ser. No. 694,391, Dec. 29, 1967. This application Nov. 17, 1970, Ser. No. 90,458

Int. Cl. C05c 9/00

U.S. Cl. 71—29

7 Claims

Limestone particles are granulated by charging a binder material and water to a tumbling bed of particulate limestone and separating granules of a specific size from the tumbled material. The granules are of suitable size for use in conventional fertilizer application equipment, are essentially round, and extremely hard, yet decompose readily upon contact with the soil.

3,692,512

## CONTROLLING AGRICULTURAL CHEMICAL SPRAY DRIFT WITH FOAM

Norman Henry Sachnik, P.O. Box 1484, San Angelo, Tex. 76901

No Drawing. Continuation-in-part of applications Ser. No. 561,740, June 30, 1966, and Ser. No. 634,551, Apr. 28, 1967. This application June 3, 1969, Ser. No. 830,088

Int. Cl. A01n 5/00

U.S. Cl. 71—65

15 Claims

Chemicals, such as insecticides, herbicides, soil sterilants or other chemicals for agricultural purposes, are incorporated in a dense foam. The foam is made by mixing foaming materials and, generally, low surface tension surfactants with water. Then the liquid is expanded to about 8 times the liquid volume by mixing it with air. Said foam has a wide scope of applications and has proved particularly advantageous in large-scale operations.

3,692,513

## PROCESS FOR PRODUCING FOAMED METAL

Crayton G. Hall, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,788

Int. Cl. C22c 1/08, 21/00, 23/00

U.S. Cl. 75—20 F

6 Claims

Foamed metals having improved cellular structure are produced by melting the metal, thickening the molten metal with a gaseous viscosity increasing agent, degassing the thickened metal, and foaming the degassed, thickened metal with a heat decomposable foaming agent. Degassing is accomplished by either cooling the molten metal just to solidification so that residual thickening gas is squeezed out by metal contraction, or the molten metal is subjected to a vacuum which removes residual thickening gas.

3,692,514

## ALLOY STEEL CONTAINING COPPER AND NICKEL ADAPTED FOR PRODUCTION OF LINE PIPE

Peter Paul Hydrean, Mahwah, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 721,086, Apr. 12, 1968. This application Dec. 13, 1968, Ser. No. 783,746

Int. Cl. C22c 37/10

U.S. Cl. 75—124

10 Claims

A low alloy steel combining strength and toughness and adapted for line pipe production. Steel contains carbon, nickel, manganese, copper, chromium, molybdenum, columbium and usually silicon, the balance being essentially iron. Chromium and molybdenum are correlated such that the total thereof is at least about 0.5%. Unnecessary to liquid quench.



### 3,692,515 FERROUS ALLOYS AND ABRASION RESISTANT ARTICLES THEREOF

Stewart G. Fletcher and Walter T. Haswell, Jr., Latrobe, Pa., assignors to Latrobe Steel Company  
No Drawing. Continuation-in-part of application Ser. No. 429,621, Feb. 1, 1965. This application July 30, 1968, Ser. No. 748,631

The portion of the term of the patent subsequent to Jan. 13, 1987, has been disclaimed  
Int. Cl. C22c 39/20

U.S. Cl. 75—126 A 7 Claims

An abrasion resistant alloy stock material consisting essentially of carbon about 1% to 4.25%, said carbon being in excess of that necessary to impart a desired hardenability, silicon about 1.5% maximum, manganese about 1.5% maximum, chromium about 10% to about 15%, molybdenum less than about 2%, titanium about 0.5% to about 5%, tungsten less than about 3%, nickel less than about 3%, cobalt less than about 5%, vanadium less than about 5%, sulfur up to about 0.25% and the balance iron with residual impurities in ordinary amounts, said titanium being combined with said excess carbon in a weight ratio of 4:1 and the vanadium with carbon in a weight ratio of about 4.2 (V-1):1, said stock material having been reduced by working at least about 5% in cross-section.

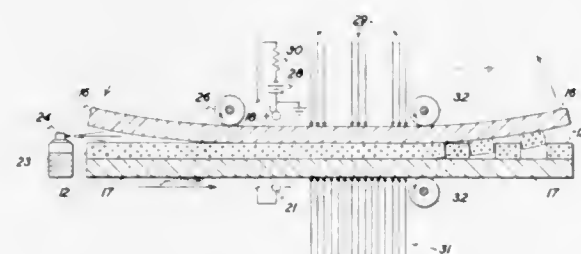
3,692,516

### MANIFOLD IMAGING METHOD

Ivar T. Krohn and Geoffrey A. Page, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.  
Filed July 1, 1969, Ser. No. 838,280

Int. Cl. G03g 13/00

U.S. Cl. 96—1 R 11 Claims



An improved imaging process wherein a cohesively weak electrically photosensitive imaging layer is sandwiched between a donor layer and a receiver layer. While subjected to an electric field the imaging layer is exposed to an imagewise pattern of electromagnetic radiation from the receiver side and to uniformly distributed electromagnetic radiation from the donor side. Upon separation of the sandwich, the imaging layer fractures in imagewise configuration with a positive image adhering to one of the donor or receiver layers and a negative image adhering to the other layers.

3,692,517

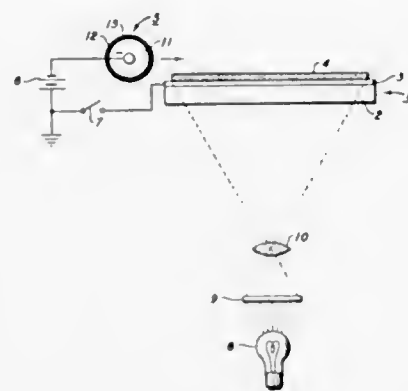
### PHOTOELECTROPHORETIC IMAGING PROCESS EMPLOYING AN INSULATING CARRIER LIQUID CONTAINING AN UNSATURATED COMPOUND

Raymond L. Jelfo, Sodus Point, N.Y., assignor to Xerox Corporation, Rochester, N.Y.  
Filed May 29, 1967, Ser. No. 641,981

Int. Cl. G03g 5/00, 7/00, 17/00

U.S. Cl. 96—1 R 1 Claim  
This invention relates to a monochromatic imaging system utilizing an imaging suspension comprising a photo-responsive pigment dispersed in an insulating carrier

liquid. The insulating liquid carrier utilized in the process comprises a substantially non-volatile, unsaturated organic composition which is in liquid form at room temperature. The suspension is interpositioned between a pair of elec-



trodes and subjected to a potential difference while simultaneously being selectively exposed to a light image. The monochromatic imaging process of the present invention produces relatively high contrast, background free images in a single pass system.

3,692,518

### MANIFOLD IMAGING PROCESS

Gedeminas J. Reinis and Vsevolod Tulagin, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.  
Filed Apr. 18, 1969, Ser. No. 817,442

Int. Cl. G03g 13/00

U.S. Cl. 96—1 R 10 Claims



An improved imaging process wherein a cohesively weak electrically photosensitive imaging layer is sandwiched between a donor sheet and a receiver sheet. The imaging layer is subjected to an electric charge provided at least in part by a static charge on one of the sheets and the imaging layer is exposed to a pattern of electromagnetic radiation to which the imaging layer is sensitive. Subsequently, the charge bearing sheet or sheets are electrically charged a second time. While under an electrical charge the sandwich is separated whereby the imaging layer fractures in imagewise configuration.

3,692,519

### ELECTROPHOTOGRAPHIC COLOR PROCESS

Toru Takahashi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan  
Filed July 14, 1969, Ser. No. 841,256

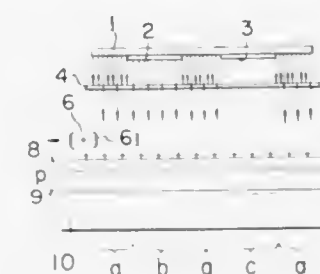
Claims priority, application Japan, July 23, 1968, 43/52,077

Int. Cl. G03g 13/00

U.S. Cl. 96—1.2 20 Claims  
An electrophotographic process for preparing a multi-colored copy from a multi-colored original comprises applying a primary charge on a photosensitive member, irradiating an optical image of a color which it is desired to

reproduce, applying a secondary discharge contemporaneously with irradiating an optical image of colors other than said desired color, exposing the whole surface of the photosensitive member if necessary, developing the formed

materials. These materials are characterized by low memory effect, improved charging characteristics and are capable of accepting either positive or negative charges to obtain either positive or negative copies.



### 3,692,523 PROCESS FOR DEVELOPING ELECTROSTATIC LATENT IMAGE AND LIQUID DEVELOPER USED THEREFOR

Yasuo Tamai and Satoru Honjo, Asaka, Japan, assignors to Fuji Photo Film, Ltd., Ashigara-Kamigun, Kanagawa, Japan

Filed Feb. 5, 1970, Ser. No. 8,955

Claims priority, application Japan, Feb. 5, 1969, 44/8,516

Int. Cl. G03g 9/04

U.S. Cl. 96—1.4 4 Claims

latent image and transferring the image corresponding to the image of the desired color onto a transfer medium, and repeating these steps for each color of the multi-colored original.

3,692,520

### DEVELOPING ELECTROSTATIC IMAGES EMPLOYING FATTY ACID ESTERS TO INHIBIT DEVELOPER BUILD-UP

Joseph Mammino and Alan B. Amidon, Penfield, N.Y., assignors to Xerox Corporation, Rochester, N.Y.  
No Drawing. Filed Oct. 31, 1969, Ser. No. 873,105

Int. Cl. B05c 1/16, 1/20; G03g 9/04

U.S. Cl. 96—1.3 19 Claims

An electrostatic imaging system wherein a hydrogenated vegetable oil derivative is added to the photoconductor surface in the presence of a liquid developer. The additive may be separately added or be dispersed in the liquid developer and to provide improved cycling ability of the imaging surface.

3,692,521

### PANCHROMATIC RASTER PLATE FOR ELECTROPHOTOGRAPHIC USE

Walther von Grable, Königstein, Germany, assignor to A. N. Zimmerman & Co., Neuss, Germany

No Drawing. Filed Oct. 21, 1970, Ser. No. 82,858

Int. Cl. G03g 5/02

U.S. Cl. 96—1.5 3 Claims

A new plate coating and structure for photographic use. The coating comprises a mixture of hexagonal selenium in a matrix of amorphous selenium with the distribution of the hexagonal component controlled to achieve panchromatic sensitivity to illumination through the visible spectrum and greatly improved tonal rendition of large dark areas. Methods for forming the matrix are also disclosed.

3,692,522

### ELECTROPHOTOGRAPHIC MATERIAL OF ZINC OXIDE TREATED WITH GUANAZOLE

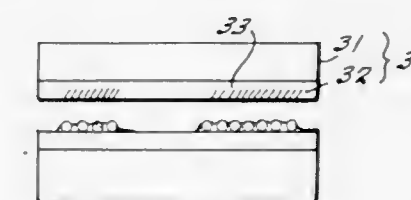
Robert Joseph Noe, Mortsel, Jozef Frans Willems, Wilrijk, Albert Lucien Poot, Kontich, and Karel Eugene Verhille, Mortsel, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Original application June 6, 1969, Ser. No. 831,253, now Patent No. 3,634,080. Divided and this application July 21, 1971, Ser. No. 164,821

Claims priority, application Great Britain, June 6, 1968, 27,045/68

Int. Cl. G03g 7/00

U.S. Cl. 96—1.8 23 Claims  
Electrophotographic recording material containing photoconductive zinc oxide treated with guanazole and processes of electrophotographic recording using such ma-



A process for converting an electrostatic latent image on an insulating recording layer to a material image and fixing the material image, the process comprising the steps of developing with a liquid developer comprising a non-polar carrier liquid having a specific volume resistivity not less than  $10^{10}$  ohms-cm., the liquid containing (1) finely-divided gelatin particles having a mean particle diameter between 0.01 and 20 microns where the amount of the gelatin particles is from 0.001 to 5% by weight of the carrier liquid and (2) a synthetic resin soluble in the carrier liquid but insoluble in at least one of an isoparaffinic solvent and a fluorochlorinated hydrocarbon solvent where the concentration of the resin is not lower than that of the gelatin particles and not more than 30% by weight of the carrier liquid to form an image of gelatin, and then rinsing the gelatin image with at least one of the isoparaffinic solvent and the fluorochlorinated hydrocarbon solvent to thereby insolubilize the resin to fix the gelatin image on the insulating image recording layer, bringing the fixed gelatin image into contact with an aqueous solution of a water soluble dye thereby imbibing the dye into the fixed gelatin image, and placing a dye-receiving sheet comprising a surface coating which easily absorbs water-soluble dyes so that the dyed gelatin image contacts the surface layer, whereby the dye in the gelatin image is transferred onto the sheet, forming a final dye print.

3,692,524

### PRINTING FROM COLOR TRANSPARENCIES

Max A. Bideau, Joinville-le-Pont, Charles E. Chauveton, Villiers-sur-Marne, Alain Fruchard, Nogent-sur-Marne, and Marc Laurens, Clichy-sous-Bois, France, assignors to Eastman Kodak Co., Rochester, N.Y.

Filed Sept. 3, 1970, Ser. No. 69,204

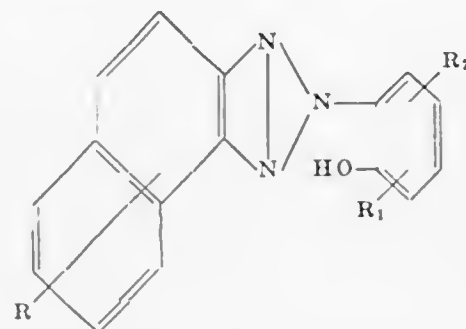
Int. Cl. G03c 5/06, 7/04, 7/16

U.S. Cl. 96—6 1 Claim  
High quality prints of a projection transparency may be inexpensively obtained by use of an unsharp black-and-white mask sandwiched over such transparency. The mask serves not only to sharpen the print image, but also to modify the overall contrast of the "sandwich," whereby printing may be made on color reversal paper. The mask



material is in the nature of a web having adhesive areas to which transparencies stick; and the mask material is

tween the support and a gelatin layer containing an ultra-violet absorbing hydrophobic compound represented by the following formula:



wherein R, R<sub>1</sub> and R<sub>2</sub> can be hydrogen or an alkyl group of 1 to 20 carbon atoms with at least one of the groups having at least 3 carbon atoms.

### 3,692,526 PHOTOSENSITIVE/PHOTOTHERMIC COMPOSITION AND PROCESS

Cynthia Geer Ulbing, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.  
No Drawing. Filed Apr. 1, 1971, Ser. No. 130,434  
Int. Cl. G03c 1/28, 5/24

U.S. Cl. 96—108 12 Claims  
A combination of a mercury halide with thiourea dioxide in photosensitive and thermosensitive elements and compositions provides reduced print-out. A latent image in these elements or compositions can be developed by heating the element or composition. The photosensitive and thermosensitive element can contain photosensitive silver halide and addenda commonly employed in photosensitive and thermosensitive materials, such as activator-toning agents, sensitizing dyes and reducing agents.

### 3,692,527 SILVER HALIDE EMULSION CONTAINING A MERCAPTO PYRIMIDINE DERIVATIVE ANTIFOGGANT

Anita von König and Hans-Joachim Kabbe, Leverkusen, Helmut Mäder, Odenthal-Hahnenberg, and Rigobert Otto and Helmut Reuss, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany  
No Drawing. Filed Dec. 4, 1970, Ser. No. 95,401  
Claims priority, application Germany, Dec. 13, 1969, P 19 62 605.2  
Int. Cl. G03c 1/34

U.S. Cl. 96—109 4 Claims  
The stability in storage and development of silver halide emulsion layers against deformation of uniform fog is improved by the addition of mercapto pyrimidine derivatives as antifoggants.

### 3,692,525 ULTRAVIOLET PROTECTION OF PHOTOGRAPHIC MATERIALS

James J. Hartigan and Robert J. Clementi, Binghamton, N.Y., assignors to General Aniline & Film Corporation, New York, N.Y.  
No Drawing. Continuation of application Ser. No. 676,731, Oct. 20, 1967. This application May 14, 1971, Ser. No. 143,619  
Int. Cl. G03c 1/84

U.S. Cl. 96—84 R 8 Claims  
A finished photographic element, having a support and, thereon a plurality of developed and fixed photographic emulsion layers containing developed dye images at least one of said dye images being subject to fading by the action of ultraviolet radiation, the emulsion layer containing the developed dye images subject to fading lying be-

### 3,692,528 Patent Not Issued For This Number

### 3,692,529 PROCESS OF OILING

Loren J. Rychman, 406 Giles Place, Albert Lea, Minn. 56007  
No Drawing. Continuation of abandoned application Ser. No. 615,891, Feb. 14, 1967. This application Sept. 8, 1970, Ser. No. 70,474  
Int. Cl. C05 9/02; A23k 1/00

U.S. Cl. 99—2 5 Claims  
There is provided a process for mixing finely divided solids with larger granular carriers to obtain a homoge-

neous free-flowing product which may be subsequently blended with a granular solid such as fertilizers to produce a composite fertilizer material.

### 3,692,530 NEUTRALIZATION OF STRAW BY ADDING POTATO PEELINGS

Robert P. Graham, Western Regional Research Laboratory, El Cerrito, Calif. 94710  
No Drawing. Filed Jan. 21, 1972, Ser. No. 219,834  
Int. Cl. A23k 1/00, 1/23

U.S. Cl. 99—10 8 Claims  
Animal feed prepared from agricultural wastes. Example: Straw is treated with steam under superatmospheric pressure and the product mixed with sufficient alkaline potato peelings to provide an essentially neutral feed material.

### 3,692,531 METHOD OF PREPARING PROTEIN FORTIFIED VEGETABLE PRODUCT

Wilhelmus Heusdens, Kirkwood, and Balagtas F. Guevara, St. Louis, Mo., assignors to Ralston Purina Company, St. Louis, Mo.  
No Drawing. Filed July 24, 1969, Ser. No. 844,663  
Int. Cl. A23l 1/10, 1/12, 1/30

U.S. Cl. 99—17 7 Claims  
A process for producing nutritious protein fortified products by fortifying carbohydrate materials such as substantially gelatinized starch with a protein material which has not been heat gelled. The fortified carbohydrate material can be formed into a variety of food particles, such as pie shells, fortified fried potatoes, and snack chips, which exhibit an increased shelf life, improved organoleptic properties, and improved nutritional value. The fortified starch products can be formed into intermediate food products which reconstitute rapidly to form a cooked final product when subjected to heat.

### 3,692,532 MILK-FRUIT JUICE BEVERAGE AND PROCESS FOR PREPARING SAME

David R. Shenkenberg, 1111 Cameron Road, Alexandria, Va. 22308; Jiann C. Chang, 2414 Kensington St., Arlington, Va. 22207; and Locke F. Edmondson, 7110 Kempton Road, Lanham, Md. 20801  
No Drawing. Filed Oct. 27, 1970, Ser. No. 84,532  
Int. Cl. A23l 1/04

U.S. Cl. 99—28 9 Claims  
Dry mixture of sweetener and sodium carboxymethylcellulose is mixed with a milk ingredient containing casein at a temperature below 90° F. The mixture is allowed to stand for at least 10 minutes causing the sodium carboxymethylcellulose to complex with the casein. Fruit juice is added to the complexed mixture after which the beverage is aged, pasteurized, and homogenized. Alternatively, the complexed mixture is pasteurized, homogenized, cooled, and then combined with fruit juice that has been pasteurized and cooled to form the beverage. The resulting beverage is a homogeneous, free-flowing, non-congealed liquid having a viscosity of less than 30 centipoises at 45° F. and stable at a pH below 5.

### 3,692,533 MODIFICATION OF THE PHYSICAL PROPERTIES OF FREEZE-DRIED RICE

Thomas O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Clayton S. Huber, Houston, Tex.  
No Drawing. Filed Aug. 28, 1970, Ser. No. 68,023  
Int. Cl. A23l 1/10

U.S. Cl. 99—80 PS 8 Claims  
A process for preparing dehydrated rice wherein the rice is cooked in water to a gelatinized state. The grain

includes about seventy-five percent moisture content. Thereafter, the granular rice is subjected to freezing and then thawing for two or more cycles. Then, it is frozen and freeze dried to remove moisture. The dehydrated granular rice is quickly rehydrated by placing it in hot water.

### 3,692,534 METHOD OF THE PRESERVATION OF FOOD AGAINST PUTREFACTION

Ryuzo Ueno, Nishinomiya-shi, Tetsuya Miyazaki, Itami-shi, and Shigeo Inamine, Nishinomiya-shi, Japan, assignors to Ueno Pharmaceutical Co., Ltd., Osaka, Japan  
No Drawing. Filed Nov. 20, 1969, Ser. No. 878,528  
Int. Cl. A21d 2/14; A23l 3/34

U.S. Cl. 99—90 P 4 Claims  
A method of preserving food which must be cooked against putrefaction which comprises adding to the starting materials of a food product granules of a size of less than 500 $\mu$  comprising powder of a pH lowering agent coated with a hardened oil having a melting point of 50 to 80° C., the pH lowering agent being selected from the group consisting of fumaric acid, monosodium fumarate, tartaric acid, malic acid and citric anhydride, and being contained in the granules in an amount of 25 to 40% by weight, together with a powder of an organic acid type food preservative selected from the group consisting of sorbic acid, potassium sorbate, calcium propionate and sodium propionate.

### 3,692,535 PROCESS FOR MAKING A READY-TO-BAKE PIE CRUST

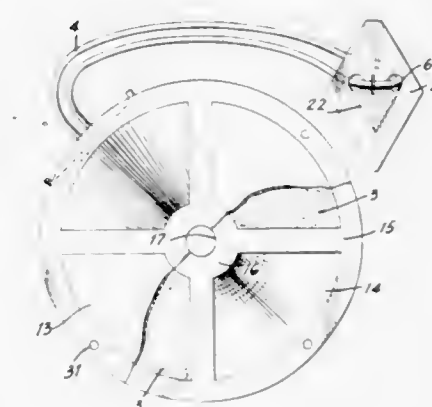
Norrain E. Norsby, Hopkins, and Ernest W. Johnson, Minnetonka, Minn., assignors to General Mills, Inc.  
No Drawing. Filed June 1, 1970, Ser. No. 42,521  
Int. Cl. A21d 13/08

U.S. Cl. 99—92 4 Claims  
Ready-to-bake pie crust dough which is shelf stable and can be rolled out or otherwise handled without crumbling or breaking. The dough contains, in addition to shortening, flour and water, a fraction of developed wheat gluten.

### 3,692,536 FOOD PACKET

Mae Belle Esco Fant, 214 McSwain Drive, Greenville, S.C. 29607  
Filed Aug. 19, 1969, Ser. No. 851,499  
Int. Cl. B65b 29/04

U.S. Cl. 99—77.1 6 Claims



A food packet comprising a porous encasement having a void or voids therewithin filled with food particles to be used in flavoring foods and beverages and further provided with a string and a tag for anchoring said packet to a cooking container.



3,692,537

**METHOD OF PRODUCING AN EXPANDED POTATO PRODUCT**

Dirk R. D'Arnaud Gerkens, Breda, Netherlands, assignor to N.V. Preservenbedrijf, Breda, Netherlands  
No Drawing. Continuation-in-part of application Ser. No. 633,700, Apr. 26, 1967. This application Aug. 10, 1970, Ser. No. 62,646

Int. Cl. A231 1/12

U.S. Cl. 99—100 P

9 Claims

Producing an expanded fried potato product wherein raw potatoes are ground to form a liquid slurry, raw starch is added to this slurry, then this slurry is dried and gelatinized on a drum drier to obtain a potato powder, which is then ground to potato flour, low grade potato flour is added to adjust the reducing sugar content and reduce the swelling power, subsequently the resulting potato flour is mixed with water and salt and extruded into bands, which are cut into piecelets and then dried and fried in deep fat to produce a crispy expanded product.

3,692,538

**METHOD OF PREPARING MEATY-FLAVORED PROTEIN HYDROLYZATES FROM MEAT CARCASS COMPONENTS**

Valentin G. Moss, Monona, and Jack C. Trautman, Madison, Wis., assignors to Oscar Mayer & Co. Inc., Madison, Wis.

No Drawing. Filed July 14, 1970, Ser. No. 54,860

Int. Cl. A22c 18/00; A23k 1/10

U.S. Cl. 99—107

23 Claims

Subdivided meat carcass components (e.g., bones and offal) are mixed with water and heat and/or enzyme hydrolyzed so as to solubilize a substantial portion of the protein content. A clear and essentially fat-free aqueous solution of protein-hydrolyzate is separated and treated with a relatively high concentration of acid (preferably hydrochloric acid) under refluxing conditions for a sufficient time to develop a meaty or brothy flavor while concurrently eliminating offalish and bitter flavor.

3,692,539

**MANUFACTURE OF SAUSAGE PRODUCTS**

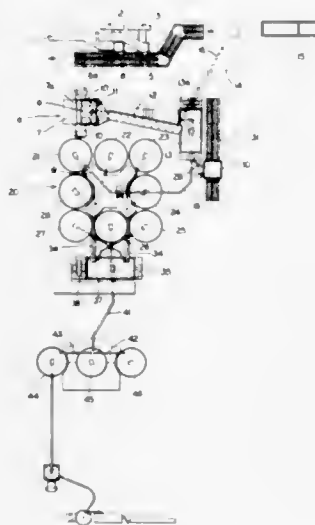
Robert L. Dearth, Canton, Ohio, and Rodger M. Lingle, Dallas, Tex., assignors to Sugardale Foods, Inc., Canton, Ohio

Continuation-in-part of application Ser. No. 753,029, July 17, 1968. This application Jan. 19, 1971, Ser. No. 107,722

Int. Cl. A22c 11/00

U.S. Cl. 99—109

4 Claims



A procedure for handling ground meat components of various types in a meat packing plant production line for

the manufacture of sausage products. Each type of primary or raw meat component used in formulating various wiener, bologna, or other sausage products, in chunks or trimmings as received from a slaughter house in boxes or barrels and in frozen or fresh refrigerated condition, is ground and converted separately and immediately to a semi-liquid or slurry. The slurry is handled and pumped as a liquid to and from separate storage tanks or silos, one for each type of meat component used. The meat component slurries then are pumped as semi-liquids to a mixing and formulating blender from which the formulated product is pumped to a silo serving the stuffing equipment for the particular sausage product to be made.

3,692,540

**PREPARATION OF PASTA FILATA CHEESE**

Robert R. Mauk, Northbrook, Ill., assignor to Kraftco Corporation, New York, N.Y.

No Drawing. Filed Sept. 8, 1969, Ser. No. 856,189

Int. Cl. A23c 19/02

U.S. Cl. 99—116

6 Claims

Pasta filata cheese is prepared by a method involving forming pasta filata curd in whey, holding the curd in the whey until the acidity of the whey is from 0.25 to 0.30 percent, draining the whey from the curd, washing the curd, salting the curd, pressing the curd, dividing the pressed curd into pieces, heating the curd pieces to a temperature of 130 to 160° F. while at a pH of 5.0 to 5.4 in the absence of working while immersed in water to form a soft plastic curd mass and packaging the plastic curd mass to provide pasta filata cheese.

3,692,541

**CANNED APPLE GEL AND METHOD OF PREPARING SAME**

Vincent F. Altieri, Duxbury, and James E. Tillotson, Cohasset, Mass., assignors to Ocean Spray Cranberries, Inc., Hanson, Mass.

Filed July 6, 1970, Ser. No. 52,432

Int. Cl. A231 1/04

U.S. Cl. 99—132

4 Claims

A canned apple gel having a solids content of 30–60% and containing a non-gelling gum as a can release agent to permit the contents of the can to be easily removed as an unbroken unit.

3,692,542

**SOFT CANDY CONTAINING CONFECTIONERY SYRUP**

Raoul Guillaume Phillipe Walon, Brussels, Belgium, assignor to CPC International Inc.

No Drawing. Filed Aug. 17, 1970, Ser. No. 64,637

Int. Cl. A23g 3/00

U.S. Cl. 99—134 R

6 Claims

Soft candies which include fat, a flavoring agent, an emulsifier and a syrup, said syrup is characterized as having a D.E. less than 60, a levulose content of 3–16%, a dextrose content of 10–35%, a maltose content of 10–25%, and 40–60% of oligosaccharides having a degree of polymerization of 6 and higher, said percentages based on total carbohydrate solids present.

3,692,543

**FOOD PRODUCTS**

Louis A. Powell, Winter Haven, Fla., assignor to Wellman-Lord, Inc., Lakeland, Fla.

No Drawing. Filed Jan. 28, 1971, Ser. No. 110,636

Int. Cl. A231 1/24; A23j 3/02

U.S. Cl. 99—144

10 Claims

Solid, unconstituted free flowing granular food base products having a long storage life and being capable of constitution with water to yield emulsified mayonnaise-like

3,692,544

**PIE PACKAGE**

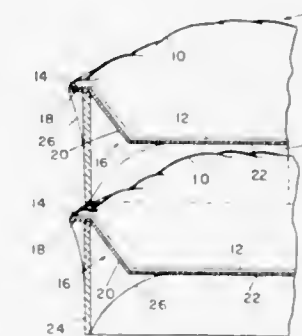
Peter C. Dendrinis, Traverse City, Mich., assignor to Chef Pierre, Inc., Traverse City, Mich.

Filed Dec. 4, 1970, Ser. No. 95,014

Int. Cl. B65b 25/16

U.S. Cl. 99—172

8 Claims



A packaging arrangement for frozen pies providing an extremely attractive package while incorporating a unique stacking feature for display purposes and to facilitate shipping and handling. A ring-like member is fixed under the lip of the formed aluminum pie pan and a shrinkable plastic film is fitted over the ring, the pan, and the product to seal the package. The ring diameter and the pie pan diameter are such that a plurality of sealed packages may be stacked for shipping and display purposes.

3,692,545

**FROZEN COOKED WHOLE COLD NORTH ATLANTIC LOBSTER**

Robert Moore, 240 Forest Ave., Salem, Mass. 02025

Filed Oct. 14, 1970, Ser. No. 80,734

Int. Cl. A23b 3/06

U.S. Cl. 99—195

7 Claims

Cold North Atlantic lobsters are boiled for about 9 minutes in salted fresh water, removed, rinsed and cooled with about 45° F. fresh water, sleeved in warmed, flexible plastic film bags which are then vacuum sealed after a resting period during which heat from the lobster transfers to the bag. The vacuum packed lobsters are then cooled and frozen over a period of 2–12 hours to permit moderate sized ice crystals to form in the meat. During the process, the lobsters are kept upside-down, i.e. feet-up to preserve a desirable position for the lobster's blood and internal substances.

3,692,546

**METHOD OF DRYING FRUITS**

Amior Dolev, Chaim H. Mannheim, and Moshe Schimmel, Haifa, Israel, assignors to Centre for Industrial Research, The National Council for Research and Development, Haifa, Israel

No Drawing. Filed Mar. 13, 1970, Ser. No. 19,480

Claims priority, application Israel, Mar. 21, 1969,

31,873

Int. Cl. A23b 7/00

U.S. Cl. 99—204

14 Claims

A method for the manufacture of dehydrated fruits, which comprises in combination the steps of fissuring the skin of the fruit by immersion in a dilute aqueous alkaline

3,692,547

Patent Not Issued For This Number

3,692,548

**UNIVERSAL AQUEOUS INK CONTAINING 2-BUTYNE-1,4 DIOL**

Marvin Packer, Broomall, Pa., assignor to Honeywell, Inc., Minneapolis, Minn.

No Drawing. Filed Apr. 1, 1971, Ser. No. 130,466

Int. Cl. C09d 11/00

U.S. Cl. 106—22

12 Claims

A single unique universal ink mixture containing polyethylene oxide polymer and other ingredients which can be used in place of the numerous different types of tailor made slow drying, quick drying and general purpose-medium drying inks that have heretofore been required to make different types of records. This multi-purpose ink is also useful in inscribing a clear continuous line on a marking surface e.g. a chart during adverse writing conditions such as when it is required to be transmitted through a long length of capillary tubing to a pen and when it is to be used in an abnormally humid or below freezing climate.

3,692,549

**STOP LEAK COMPOSITION**

Thomas E. Martin, 414 Brookside Terrace, Oklahoma City, Okla. 73137

No Drawing. Filed Feb. 25, 1971, Ser. No. 118,953

Int. Cl. C09k 3/10, 3/12

U.S. Cl. 106—33

3 Claims

A composition for sealing small leaks in metal, including engine blocks and the like, consisting essentially of from about five to about six parts by volume of flax meal, to one part by volume of a mixture which contains three parts by volume of graphite to two parts by volume of aluminum powder.

3,692,550

**FACING AGENTS FOR MOLDING SAND**

Ronald E. Melcher, Madison, and Robert W. Somers, Florham Park, N.J., assignors to Whitehead Brothers Company, Florham Park, N.J.

No Drawing. Continuation-in-part of application Ser. No. 18,715, Mar. 11, 1970. This application May 11, 1971, Ser. No. 142,351

Int. Cl. B28b 7/38

U.S. Cl. 106—38.25

14 Claims

Acenaphthylene, when incorporated into foundry molding sand, prevents burn-on of the sand granules to the casting surface, and provides a sand having good collapsibility and good recycle life.

3,692,551

**CORE FOR USE IN PRESSURE MOLDING**

William R. Weaver, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Feb. 24, 1970, Ser. No. 13,703

Int. Cl. B28b 7/34

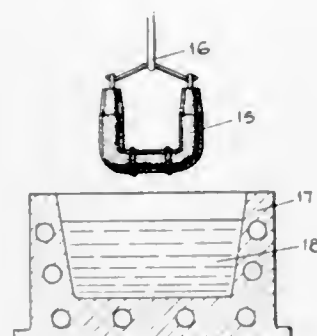
U.S. Cl. 106—38.3

3 Claims

This application discloses core structures that exhibit strength and a hard, ceramic-like surface finish; methods



of producing the same which involve mixing particles of core materials, and/or coating core shapes, with molten



salts or mixtures thereof; and methods of injection molding plastic articles around such cores.

3,692,552

## LIQUID LAUNDRY STARCH

Hans Rüggeberg, Hilden, Rhineland, Germany, assignor to Henkel & Cie GmbH, Düsseldorf-Holthausen, Germany

No Drawing. Filed July 15, 1970, Ser. No. 55,273  
Claims priority, application Germany, Aug. 9, 1969,  
P 19 40 655.4

Int. Cl. C08b 25/00

U.S. Cl. 106—208

6 Claims

A liquid laundry starch comprising an aqueous suspension of starch or starch derivatives in an aqueous solution of xanthan gum and/or water-soluble derivatives of xanthan gum.

3,692,553

## CARBON BLACK CONTAINING ORGANOMETAL COMPOUNDS OF THE ALLYLIC OR BENZYLIC TYPE

Richard L. Smith and Carl A. Uranek, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed May 7, 1971, Ser. No. 141,430  
Int. Cl. C08h 17/08; C09c 1/48, 1/56

U.S. Cl. 106—307

8 Claims

Organometal compounds of the allylic or benzylic type are combined with carbon blacks containing at least 0.2 percent oxygen. As a result, the hydrophilic properties of the carbon blacks are increased, and the cure rates of vulcanizable rubber compositions are retarded when the blacks are compounded with these.

3,692,554

## PRODUCTION OF PROTECTIVE LAYERS ON COBALT-BASED ALLOYS

Karl Bungardt, Gunter Lehnert, and Helmut Meinhardt, Krefeld, Germany, assignors to Deutsche Edelstahlwerke Aktiengesellschaft, Krefeld, Germany

Filed Dec. 3, 1970, Ser. No. 94,752  
Claims priority, application Germany, Dec. 5, 1969,  
P 19 61 047.0

Int. Cl. C23c 9/00

U.S. Cl. 117—22

4 Claims

Cobalt-based alloys have their surface treated to provide high-temperature corrosion resistance, by diffusing nickel, a metal of the Platinum Group, and aluminum into the surface of the alloy. The metals may be heat-diffused simultaneously or in succession.

3,692,555  
PHOTOGRAPHIC FILM SUPPORT HAVING AN ANTIHALATION LAYER

Masazumi Aono and Ikuo Funagawa, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Apr. 7, 1971, Ser. No. 132,229  
Claims priority, application Japan, Apr. 7, 1970,  
45/29,504

Int. Cl. G03c 1/84

U.S. Cl. 117—33.3

14 Claims

A photographic film support comprising a film support having formed thereon an antihalation layer containing at least one member selected from the group consisting of a hydroxyalkylalkyl cellulose hexahydrophthalate and a hydroxyalkylalkyl cellulose tetrahydrophthalate, wherein said alkyl group has a carbon range of from 1 to 4 carbon atoms and includes two or more alkyl groups.

3,692,556

## PROCESS FOR PRODUCING PRESSURE-SENSITIVE TRANSFER SHEETS

Giorgi Cecconi, Via de Amicis-Palazzo Bianchi, 20090 Segrate, Italy

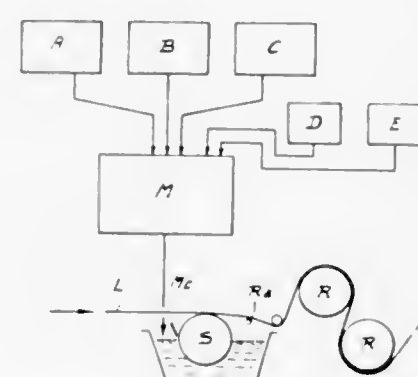
Filed May 24, 1968, Ser. No. 731,830

Claims priority, application Italy, Mar. 1, 1968,  
804,044/68

Int. Cl. B41c 1/06; B44d 1/46

U.S. Cl. 117—36.1

11 Claims



A process for producing a pressure-sensitive transfer sheet having an essentially coherent but particulate transfer color-yielding layer adherent to one face of a sheet support, comprising the steps of providing a fine colloidal suspension in water of pigments and fillers, of providing a colloidal solution in water of a film-forming macromolecular substance capable of irreversibly precipitating upon dehydration of the solution, of mixing said suspension and solution, of forming a layer of the resulting mixture on said face, of causing progressive elimination of the water from said layer to promote formation on said face of an essentially dry film wherein said pigments and fillers are embedded into a precipitated macromolecular pellicular structure.

3,692,557

## PROCESS FOR PRODUCING AN ANTIQUE FINISH

Luigi Oscar Sormani, Omaha, Nebr., assignor to Raymond J. Walowski, Omaha, Nebr.

Continuation of abandoned application Ser. No. 808,092, Mar. 18, 1969. This application Nov. 23, 1970, Ser. No. 92,266

Int. Cl. B44d 1/14; C09d 5/28

U.S. Cl. 117—41

6 Claims

Decorative "antique" finishes are produced by the three step process of this invention whereby a first composition comprising an acrylic emulsion polymer, ground marble and a liquid polyurethane composition are applied to an appropriate surface; upon drying, a second composition comprising a water soluble coloring material is applied;

and finally the first composition is again applied. The first step can be eliminated if the surface to be finished is of a



non-absorbent substance, for example, metal, glass, or finished furniture.

3,692,558

## ARTICLE COATED WITH FLUOROCARBON POLYMER PRIMER AND FLUOROCARBON POLYMER TOPCOAT

Ervin R. Werner, Jr., Levittown, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 45,944, June 12, 1970, which is a division of application Ser. No. 778,828, Oct. 25, 1968. This application Dec. 22, 1970, Ser. No. 100,765

Int. Cl. B32b 15/08; B44d 1/36

U.S. Cl. 117—72

12 Claims

Articles primed with compositions containing 10–75% lithium polysilicate, 25–90% of a fluorocarbon polymer and a liquid carrier to improve adhesive of a fluoropolymer topcoat.

3,692,559

## PROCESS FOR PREPARING POLYESTER BLEND FABRICS WITH DURABLE FLAME RESISTANCE

Stancil Driftwood Powell, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

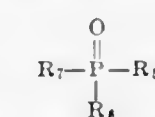
No Drawing. Filed Nov. 12, 1970, Ser. No. 88,995

Int. Cl. B44d 1/14; C09k 3/28

U.S. Cl. 117—76 T

5 Claims

There is provided a process for imparting flame retardancy to a fabric comprised of at least 30 percent of polyester fiber, at least 5 percent of cellulose acetate fiber, and at least 15 percent of a cellulosic fiber. In said process of the fabric is passed through a bath comprised of a flame retardant amount of tetrakis(hydroxymethyl)phosphonium chloride. Thereafter the fabric is cured at a temperature of from about 225 to about 400 degrees Fahrenheit for from about 15 seconds to about 10 minutes. To impart flame retardancy to the polyester portion of said fabric the fabric is passed through a solution or emulsion comprised of a flame retardant amount of a compound of the formula



wherein  $\text{R}_5$ ,  $\text{R}_6$ , and  $\text{R}_7$  are selected from the group consisting of hydroxy, chlorine, fluorine, bromine, iodine, haloalkyl of 1 to about 18 carbon atoms, and haloalkoxy-alkyl of 1 to about 18 carbon atoms, provided that at

least one of  $\text{R}_5$ ,  $\text{R}_6$ , and  $\text{R}_7$  is haloalkyl or haloalkoxy-alkyl. The use of cellulose acetate as one of the components of the aforementioned fabric allows one to obtain more durable flame retardance and better fabric aesthetics with reduced quantities of flame retardant.

3,692,560

## ACID HARDENING RESINS WHICH CAN BE ACTIVATED BY ULTRAVIOLET LIGHT

Hans-Jürgen Rosenkranz, Krefeld, and Hans Rudolph and Hans-Joachim Kreuder, Krefeld-Uerdingen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 31, 1970, Ser. No. 68,541  
Claims priority, application Germany, Sept. 18, 1969,  
P 19 47 194.4

Int. Cl. C09d 3/52, 3/54, 3/58

U.S. Cl. 117—93.31

6 Claims

The invention relates to acid-hardening resin compositions having incorporated therein a benzophenone compound each of the two benzene nuclei of which being substituted by a halogenated methyl group. If said compositions are irradiated by UV-light said benzophenone compound splits off hydrogen halide which, in turn, catalyzes the hardening of the resin composition.

3,692,561

## METHOD OF TREATING PENTACHLOROPHENOL

Frederick M. Hager, Elmira, Waterloo, Ontario, Canada, assignor to Uniroyal Ltd., Montreal, Quebec, Canada

No Drawing. Filed June 29, 1970, Ser. No. 50,891

Int. Cl. B44d 1/02; C09k 3/22

U.S. Cl. 117—100 A

20 Claims

Method of treating pentachlorophenol flakes, pellets or prills with an oil and a glycol to prevent formation of dust during storage.

3,692,562

## COATED TABLETS HAVING PLASTIC PARTICLES DISPERSED IN THE COATING

Ryuichi Kawata, 16-12 Sendagi, Sendagi 3-chome, Bunkyo-ku, Tokyo, Japan; Hiroitsu Kawada, 30-29-22 Hasune 2-chome, Itabashi-ku, Tokyo, Japan; Tadayoshi Ohmura, 2681-101 Katayamanaka-dori, Niiza-machi, Kitaadachi-gun, Saitama, Japan; Sumio Uematsu, 440 oaza-Tazima, Urawa-shi, Saitama, Japan; and Takeshi Kohinata, 16-1 Hasune 3-chome, Itabashi-ku, Tokyo, Japan

No Drawing. Filed Nov. 17, 1970, Ser. No. 90,429

Claims priority, application Japan, Dec. 2, 1969,  
44/96,243

Int. Cl. A61k 17/00; B44d 5/00

U.S. Cl. 117—100 A

10 Claims

Tablets are coated with a coating composition comprising a coating material and fine particles of a solid plastic.

3,692,563

Patent Not Issued For This Number

3,692,564

## WAX COATING PROCESS FOR CORRUGATED PAPERBOARD

Stewart J. Gonta, Marina Del Rey, and Thomas Hallis, Jr., Brea, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 678,540, Oct. 27, 1967. This application Oct. 14, 1970, Ser. No. 80,769

Int. Cl. B05c 11/10

U.S. Cl. 117—102 R

4 Claims

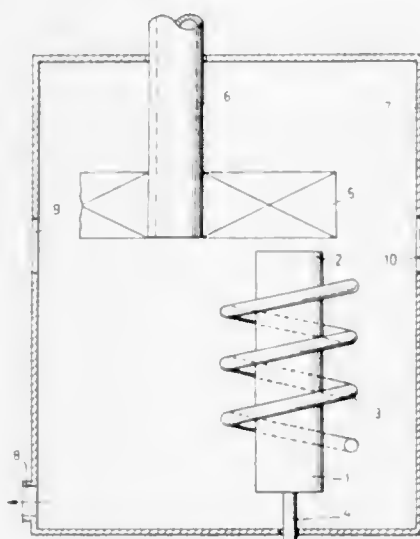
Wax coated corrugated paperboard of improved water resistance and fiber tear properties is produced by dipping



partially hydrated corrugated paperboard into molten wax at a temperature between the melting point of the wax and the boiling point of water, and then draining the dipped paperboard at a temperature between the melting point of the wax and the boiling point of water. The time and temperature of the dipping and draining steps are controlled and correlated with the initial water content of the paperboard and the viscosity of the molten wax so as to achieve maximum surface coating with minimum wax penetration into the interior of the paperboard elements.

### 3,692,565 METHOD OF DEPOSITING SUBSTANCES FROM THE GAS PHASE

Bernd Lersmacher, 31 An den Weiher, 5105 Laurensburg, Aachen, Germany; Hans Jurgen Lydtin, 9 Am Goepelschacht, 519 Stolberg, Germany; and Rolf Josef Wilden, 62 Brandstrasse, 5101 Roetgen, Germany  
Filed Oct. 22, 1970, Ser. No. 83,017  
Int. Cl. C23c 11/00, 13/00, 17/02  
U.S. Cl. 117—106 R 2 Claims



The invention relates to a method of depositing substances on a heated substrate by decomposition of gases. A highly satisfactory and fast deposition is obtained in that the thickness of the gas film at the surface of the substrate is maintained small by mechanical means.

### 3,692,566 METHOD OF DEPOSITING ISOTROPIC BORON NITRIDE

Louis E. Branovich, Neptune, William B. P. Fitzpatrick, Wall, and Martin L. Long, Jr., West Belmar, N.J., assignors to the United States of America as represented by the Secretary of the Army  
No Drawing. Filed Nov. 24, 1970, Ser. No. 92,519  
Int. Cl. C23c 11/08

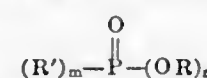
U.S. Cl. 117—106 R 1 Claim  
Chemical vapor deposited isotropic boron nitride is formed on the inner walls of a reaction chamber by forming a vapor mixture of an oxygen containing organic boron compound with ammonia and reacting the vapor mixture in said reaction chamber at about 1100 degrees C. to about 1900 degrees C. at pressures of about one torr to atmospheric.

### 3,692,567 METHOD FOR CONTROLLING NOXIOUS VAPORS

Calvin Vogel, Easton, Pa., assignor to GAF Corporation, New York, N.Y.  
No Drawing. Filed June 1, 1971, Ser. No. 148,952  
Int. Cl. B44d 1/44; C09k 3/28  
U.S. Cl. 117—62 7 Claims

Method for substantially removing noxious vapors liberated from materials treated with highly halogenated

flame retarding agents upon exposure to heat is provided comprising applying to said materials an organophosphorus compound having the structural formula:



wherein R is a member selected from the group consisting of alkynyl, alkenyl and aralkenyl radicals, R' is a member selected from the group consisting of alkyl, haloalkyl and alkenyl radicals, m is a whole number from 0 to 1 inclusive, and n is a whole number from 2 to 3 inclusive, such that m+n equals 3.

### 3,692,568 WAX COATED POLYMERIC ARTICLES

Richard C. Clark, Orange, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.  
No Drawing. Filed July 13, 1970, Ser. No. 54,586  
Int. Cl. B44d 1/22  
U.S. Cl. 117—138.8 UA 4 Claims

An article comprising a polymer substrate made up principally of an acrylic polymer or copolymer is coated with a highly adhesive wax blend comprising paraffin wax and a minor proportion of a compatibility agent consisting essentially of a copolymer of an olefin monomer and an acrylic monomer.

### 3,692,569 SURFACE-ACTIVATED FLUOROCARBON OBJECTS

Walther Gustav Grot, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Continuation-in-part of application Ser. No. 779,265, Nov. 26, 1968, which is a continuation-in-part of application Ser. No. 595,332, Nov. 18, 1966. This application Feb. 12, 1970, Ser. No. 10,997  
Int. Cl. B44d 1/09; B32b 27/06

U.S. Cl. 117—138.8 UF 8 Claims  
The surface activity of a fluorocarbon polymer having the surface character ranging from no surface activity to some surface activity is increased by coating the polymer with a copolymer of a fluorinated ethylene and a sulfonyl-containing fluorinated vinyl monomer. The fluorocarbon polymer is thereby rendered water-wettable, printable, and cementable. Porous sheeting of the so-coated fluorocarbon polymer is useful as an electrochemical cell matrix and non-porous, ion conductive sheeting thereof can be used as a fuel cell membrane.

### 3,692,570 MICROPOROUS SHEET STRUCTURES AND A PROCESS FOR THE PREPARATION THEREOF

Harro Träubel, Leverkusen-Kueppersteg, and Klaus König, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany  
No Drawing. Filed Nov. 29, 1968, Ser. No. 780,263  
Claims priority, application Germany, Dec. 7, 1967, F 54,240

Int. Cl. B29d 27/00; C09d 3/48; D06n 3/04  
U.S. Cl. 117—161 7 Claims  
Microporous sheet structures are prepared by reacting a compound having at least two terminal NCO groups and a molecular weight of between 100 and 10,000, a compound having at least two OH or NH groups and a molecular weight of 500 to 10,000 and/or a compound having a molecular weight of 18 to 500 which contains at least two OH, two NH or at least one OH and one NH group in an inert medium that dissolves the reactants but not the product, the reaction being conducted stepwise by adding one of the reactants to the others in at least two increments such that the reaction is substantially complete after each addition, applying the reaction mixture to a substrate and removing the inert medium.

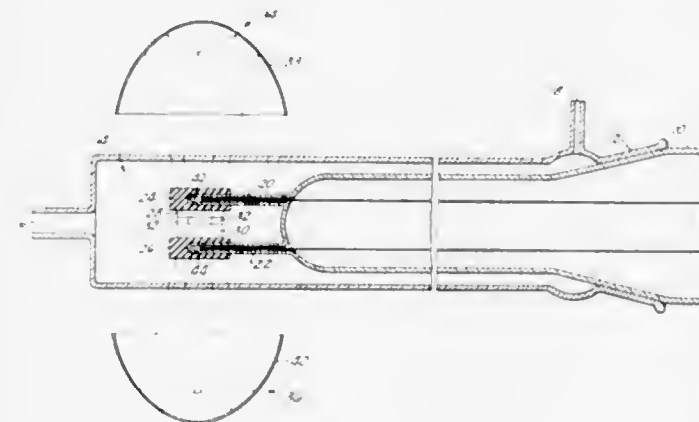
### 3,692,571 METHOD OF REDUCING THE MOBILE ION CONTAMINATION IN THERMALLY GROWN SILICON DIOXIDE

Douglas Roy Colton, Kanata, Ontario, and Yiu Chung Cheng and Rudolph John Kriegler, Ottawa, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada  
No Drawing. Filed Nov. 12, 1970, Ser. No. 89,097  
Int. Cl. H01l 7/00; C23c 11/08

U.S. Cl. 117—201 8 Claims  
A typical process for thermally oxidizing a silicon semiconductor material is disclosed with an improvement consisting of the addition of a halogen substance, such as HCl, to the oxidizing atmosphere. This additional step in the oxidation process has the effect of obviating unstable electrical characteristics, caused by mobile ion contamination in thermally grown silicon dioxide. This process is particularly applicable in the manufacture of discrete and integrated MOSFET devices.

### 3,692,572 EPITAXIAL FILM PROCESS AND PRODUCTS THEREOF

Wolfgang Strehlow, 3M Center, St. Paul, Minn. 55101  
Int. Cl. B44c 1/02, 1/18; H01s 3/08  
U.S. Cl. 117—201 17 Claims



A process for producing epitaxial films comprising reacting a crystalline source material with a gaseous reagent at a first temperature to form vapor phase reaction products and exposing a substrate to the reaction products at a second lower temperature to grow an epitaxial film on the substrate. And, the process further comprising reflective coating at least one film surface and one other surface of either the film, substrate, or an attached support to form a resonant cavity. Products according to the process described.

### 3,692,573 ELECTROCONDUCTIVE AND HEAT BARRIER COATINGS FOR CERAMIC BODIES

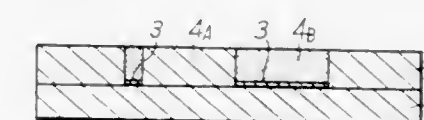
Alexander G. Gurwood, 298 NW. 105th St., Miami Shores, Fla. 33153  
No Drawing. Continuation-in-part of application Ser. No. 858,871, Sept. 17, 1969. This application Apr. 5, 1971, Ser. No. 131,407  
Int. Cl. H01b 1/06; H05b 33/28  
U.S. Cl. 117—211 19 Claims

This invention is directed to a uniformly electroconductive and heat barrier, stable, transparent coating for large sized pieces of glass or other ceramic bodies, said coating being produced by a composition comprising a monosaccharide hexose sugar, a tin halide, a halide hydracid and a monohydric alcohol having 1 to 3 carbon atoms.

### 3,692,574 METHOD OF FORMING SEEDING SITES ON A SEMICONDUCTOR SUBSTRATE

Isamu Kobayashi, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan  
Filed Dec. 5, 1968, Ser. No. 781,542  
Claims priority, application Japan, Dec. 12, 1967, 42/79,961  
Int. Cl. B44d 1/18

U.S. Cl. 117—212 10 Claims



Method for locating seeding sites on a semiconductor substrate for the subsequent growth of polycrystalline areas thereon which involves forming a masking layer over the substrate, depositing a semiconductor material in selected areas of the mask in which the seeding sites are to be developed, covering the resulting assembly with another masking layer, selectively removing portions of the second masking layer and thereafter selectively removing the remaining portions of the first masking layer, leaving seeding sites composed of a semiconductor material in the pre-selected locations.

### 3,692,575 METHOD FOR THE PRODUCTION OF DISPENSER CATHODE FOR ELECTRONIC DISCHARGE VESSELS

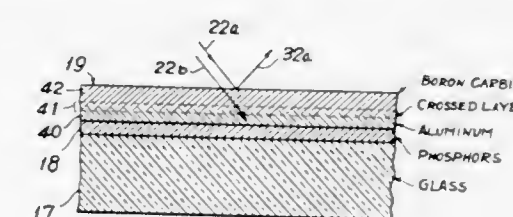
Wolfgang Nestler, Munich, Germany, assignor to Siemens Aktiengesellschaft  
No Drawing. Continuation of application Ser. No. 606,003, Dec. 30, 1966. This application Oct. 23, 1970, Ser. No. 83,673  
Claims priority, application Germany, Jan. 19, 1966, S 101,520  
Int. Cl. B44d 1/02; H01j 9/00

U.S. Cl. 117—213 2 Claims  
A method of providing a layer of metal of the platinum group, i.e., osmium, iridium, on the cathode of a dispenser cathode structure, by the separation through chemical extraction out of an appropriate soluble compound of the metal, for example, oxide hydrate or chloride, with reduction, possibly in an H<sub>2</sub> atmosphere, and sintering.

### 3,692,576 ELECTRON SCATTERING PREVENTION FILM AND METHOD OF MANUFACTURING THE SAME

Kenjiro Takayanagi, Kamakura, Kihachiro Matsuyama, Tokyo, Tadashi Fujiwara, Kawasaki, Hideaki Mizuno, Tokyo, and Naoki Akiyama, Naka-gun, Japan, assignors to Victor Company of Japan, Limited, Moriyama, Kanagawa-ku, Yokohama, Japan  
Filed Jan. 9, 1970, Ser. No. 1,647  
Claims priority, application Japan, Jan. 12, 1969, 44/2,238  
Int. Cl. H01j 29/28

U.S. Cl. 117—217 7 Claims



A film for the prevention of scattering of electrons comprising an electrode layer, a crossed layer formed



thereon consisting of an electrode constituent material and a material for the prevention of scattering of electrons smaller in atomic number than that of the electrode constituent material, and a scattering preventing layer and on which is formed a layer for the prevention of scattering of electrons of the second material on said crossed layer. A method of manufacturing the above electron scattering prevention film is also disclosed.

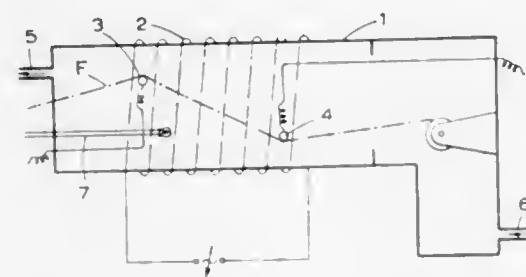
3,692,577

**CARBON FILAMENTS**

Cyril G. Evans, Devon, England, assignor to John Heathcoat and Company Limited, Tiverton, Devon, England  
Filed Dec. 2, 1969, Ser. No. 881,490  
Int. Cl. C23c 13/04

U.S. Cl. 117—225

19 Claims



Carbon filaments are formed by graphitizing a carbon containing filament in an atmosphere of inert gas and vapors of Groups I, II, IV and VI metals.

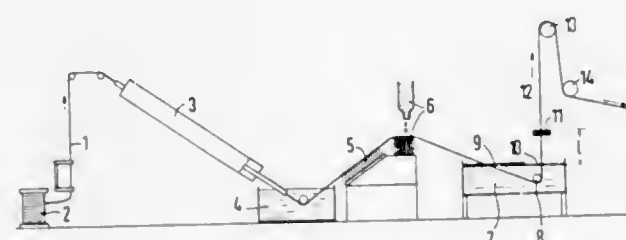
3,692,578

**METHOD OF PRODUCING TIN LAYERS OR TIN ALLOY LAYERS ON COPPER OR COPPER ALLOY WIRES BY HOT TIN PLATING**

Horst Schreiner and Henryk Fidos, Nuremberg, Germany, assignors to Siemens Aktiengesellschaft, Munich, Berlin and Erlangen, Germany  
Filed Nov. 10, 1970, Ser. No. 88,400  
Claims priority, application Germany, Nov. 13, 1969, P 19 57 031.1  
Int. Cl. C23c 1/04

U.S. Cl. 117—227

7 Claims



The invention relates to a method and a device for tin plating copper jump wires. The copper wire passes through a tin bath and is guided through a stripper nozzle, situated a distance from the bath surface. The stripper nozzle is heated. The bore of the stripper nozzle possesses a wave shaped cross section. For a wire diameter of 0.5 mm., 6 to 20 half waves are provided and the diameter of the bores as well as the depth of the half waves are adjusted to the diameter of the wire. The copper wires tin plated according to the invention, have a uniform tin layer with a thickness  $>3 \mu$  and are extremely solderable.

Our invention relates to a method of producing tin layer or tin alloy layers on copper or copper alloy wires having a diameter of  $<0.5$  mm. The method is effected by hot tin plating at a uniform thickness of  $>3 \mu$  across the wire circumference. The wire is then passed through a tin bath or a tin alloy bath and is guided through a profiled stripper nozzle.

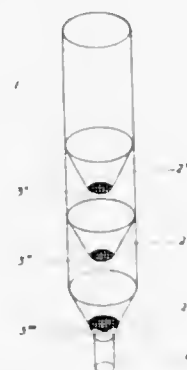
**3,692,579  
PROCESS AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF SOLUTIONS**

Karl Lauer, Strahlenburg, Schriesheim, Germany, and Peter Stephan, Romerstrasse 52, Worms am Rhine, Germany

Filed Jan. 15, 1970, Ser. No. 3,166  
Claims priority, application Germany, Jan. 22, 1969, P 19 03 027.4  
Int. Cl. B01f 1/00

U.S. Cl. 127—22

20 Claims



Solutions of readily soluble material, e.g. sugar, having any desired solute concentration are produced continuously on a large scale by introducing measured amounts of a solid solute into a downwardly moving current of solvent wherein a constricted passage for the solvent is provided to accelerate solvent flow, the constricted passage being closed by a sieve, and the product solution is withdrawn through the sieve.

3,692,580

**PROCESS FOR THE PRODUCTION OF STARCH SYRUPS**

Mamoru Hirao and Masakazu Mitsuhashi, Okayama, Japan, assignors to Hayashibara Company, Okayama, Japan  
No Drawing, Filed Oct. 23, 1970, Ser. No. 83,651  
Claims priority, application Japan, Oct. 24, 1969, 44/85,577  
Int. Cl. C13k 1/06

U.S. Cl. 127—29

8 Claims

A starch syrup having a low D.E., a low viscosity and good chemical stability is prepared by adding to a first starch syrup prepared by an acid or an enzyme (such as alpha-amylase) hydrolysis of starch, a second starch syrup prepared from a starch hydrolysis involving the action of alpha-1,6-glucosidase. The second syrup may be hydrogenated or the syrup mixture may be hydrogenated.

3,692,581

**ACID MODIFICATION OF FLOUR AND STARCH WITH HCl AND HF**

Peter J. Ferrara, Ridge Road, Cornwall, N.Y. 12518  
No Drawing, Filed Feb. 23, 1971, Ser. No. 118,181  
Int. Cl. C13l 1/08

U.S. Cl. 127—38

7 Claims

Improved acid modification of starches and flours by treating such in the conventional manner with a mixture of hydrogen fluoride and at least one other mineral acid.

3,692,582

**PROCEDURE FOR THE SEPARATION OF FRUCTOSE FROM THE GLUCOSE OF INVERT SUGAR**

Asko J. Melaja, Kantvik, Finland, assignor to Suomen Sokeri Osakeyhtio (Finnish Sugar Company), Helsinki, Finland

Filed July 31, 1970, Ser. No. 59,987  
Int. Cl. C13k 3/00, 9/00

U.S. Cl. 127—46 A

8 Claims

Process for separating fructose from an aqueous invert sugar solution involving supplying the invert sugar solu-

tion to a 2.5–5 meter column of an alkaline earth metal salt of a polystyrene sulfonate-divinylbenzene cation exchange resin. Three fractions are collected: a glucose-rich fraction, a fraction containing glucose and fructose and a fructose-rich fraction.

3,692,583

**DESMUTTING ETCHED ALUMINUM ALLOYS**

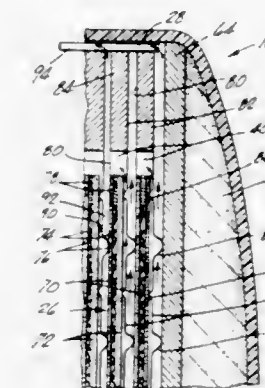
Paul R. Muceniks, Trenton, and Dirk J. Muyskens, Princeton Junction, N.J., assignors to FMC Corporation, New York, N.Y.

No Drawing, Filed Mar. 1, 1971, Ser. No. 119,885  
Int. Cl. C23g 1/22

U.S. Cl. 134—3

4 Claims

Aluminum alloys which are covered with an insoluble smut due to alkali or other treatment are cleaned and brightened by aqueous compositions containing mineral acids and peroxydiphosphate ions.



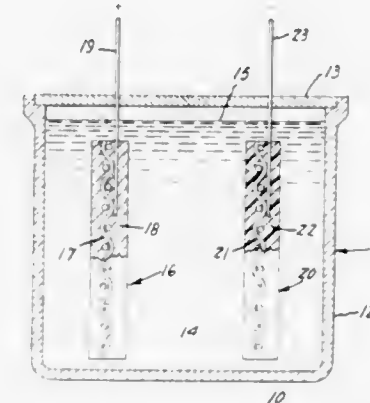
3,692,584

**SEALED ELECTROCHEMICAL CELL WITH AN ELECTROLYTIC SOLUTION CONTAINING AN ELECTROLYTE AND A DISSOLVED FUEL**

Randall N. King, Johnstown, N.Y., assignor to General Electric Company  
Filed Oct. 27, 1969, Ser. No. 869,567  
Int. Cl. H01m 11/00

U.S. Cl. 136—83 R

4 Claims



A sealed electrochemical cell has a casing, an electrolytic solution containing an electrolyte and a dissolved fuel in the casing, a metallic oxide positive electrode positioned in the electrolytic solution, and a negative electrode positioned in the solution and spaced apart from the positive electrode. An electrode is described which comprises an electrically conductive screen, and a coating of a noble metal and polyethylene graphite thereon. A method of making such an electrode is also described.

3,692,585

**FUEL CELL BATTERY**

Alfred M. Mayo, 30828 Marne Drive, Palos Verdes Peninsula, Calif. 90274  
Filed May 21, 1969, Ser. No. 826,419  
Int. Cl. H01m 27/02, 27/04

U.S. Cl. 136—86 R

8 Claims

Battery is made very light, compact, and efficient by making fuel cell units very thin and generally flat and rectangular. Cell units are stacked in facewise relation to make box like structure and electrically connected in series for working voltage. Each unit comprises fuel and oxidant electrode layers spaced by permeable insulating layer to provide electrolyte passage. Impervious, conductive barrier layer between each pair of adjacent cell units and in contact with both. In one form barrier layer has protuberances on each side contacting units to provide

fuel and oxidant gas passages. Insulating layer has wettable surface and maintains electrolyte in contact with electrodes for high efficiency. It is about .010 inch or less thick to produce minimum ion path. Electrode layers

are about .005 inch thick or less. All elements are held in tight facewise contact for compactness and also to cause all elements to provide structural support for each other.

3,692,586

**METHOD OF BATTERY PLATE MANUFACTURE UTILIZING ULTRASONIC VIBRATIONS**

Roland H. Williams, Jackson, Mich., assignor to Sparton Corporation, Jackson, Mich.  
No Drawing, Filed May 18, 1970, Ser. No. 38,566  
Int. Cl. H01m 35/26

U.S. Cl. 136—67

1 Claim

The method of impregnating sintered battery plates or plaques with a salt bath solution which, when subjected to electrical current, forms an active metal on the battery plate utilizing ultrasonic vibrations to create a cavitation-implosion cycle within the pores of the sintered plate which augments penetration and retention of the salt bath solution within the plate.

3,692,587

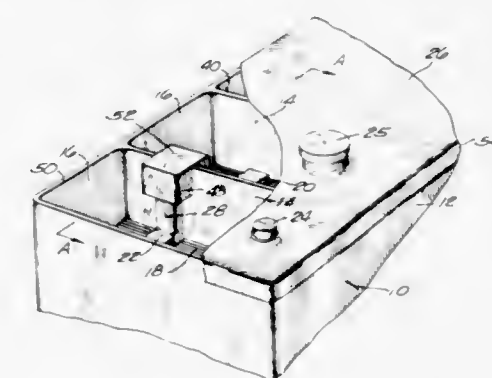
**MULTICELL STORAGE BATTERY**

Earl Leon Vetter, Germantown, and Helmuth Faust, Milwaukee, Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Aug. 13, 1970, Ser. No. 63,467  
Int. Cl. H01m 5/00

U.S. Cl. 136—134 R

8 Claims



A multicell storage battery having a thermoplastic cover and container and utilizing up-and-over intercell connector construction is provided with a thermoplastic material, preferably an ethylene vinyl acetate compound, which encapsulates the link connecting the battery elements in adjoining cell compartment through a notch in the cell partitions so that the cover is capable of being heat sealed onto the container to obtain welded, fluid-tight joints between the cover and container.



### 3,692,588 ARRANGEMENT FOR ASSEMBLING STORAGE CELLS IN BATTERIES

Pierre Chamodon, Bordeaux, France, assignor to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme) Pont de la Folie, Romainville, Seine-Saint-Denis, France

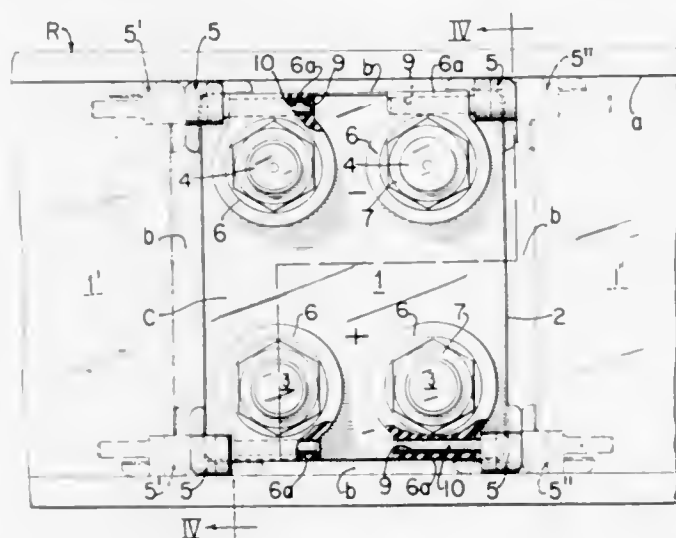
Filed June 19, 1970, Ser. No. 47,670

Claims priority, application France, June 27, 1969, 6921648

Int. Cl. H01m 1/04

U.S. Cl. 136—171

20 Claims



An arrangement for assembling storage cells in batteries, so as to maintain them spaced apart side by side and insulated from each other in a supporting rack, including corner members of insulating material mounted on the cell terminal posts over the cell covers which embrace side faces at the cell corners and abut side parts of the rack and adjacent corner members of adjacent cells to space the cells apart for air circulation as well as to insulate them from each other. The bottom of each cell is also insulated and spaced from a bottom part of the rack by an insulating member centered with respect to the cell casing bottoms and means associated with it to prevent longitudinal and lateral translation of the cells relative to each other and base parts of the rack.

### 3,692,589 METHODS FOR REDUCING WEAR AND SEIZURE BETWEEN RUBBING TITANIUM AND STEEL SURFACES

Arthur M. Shapiro, Philadelphia, Pa., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Nov. 19, 1970, Ser. No. 91,155

Int. Cl. C23f 1/00

U.S. Cl. 148—6

6 Claims

Processes for improving wear and seizure resistance between high speed rubbing titanium and steel surfaces by reacting the titanium initially with sodium fluoride at elevated temperatures over an extended period, the metal surfaces being lubricated with a dialkyldithiophosphate.

### 3,692,590 FLUX FOR SUBMERGED ARC WELDING

Tomokazu Godai and Osamu Tanaka, Kamakura, Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Sept. 2, 1970, Ser. No. 68,966

Claims priority, application Japan, Sept. 3, 1969, 44/69,843

Int. Cl. B23k 35/24

U.S. Cl. 148—23

11 Claims

A flux for submerged arc welding comprising 5–17% potash glass, 5–18% magnesia, 5–15% calcium carbonate,

10–20% alumina, 20–33% rutile, and 5–18% of at least one fluoride compound, optionally with less than 7% manganese dioxide added thereto.

### 3,692,591 METHOD FOR EFFECTING THE RAPID HEAT- TREATMENT OF STEEL PLATE

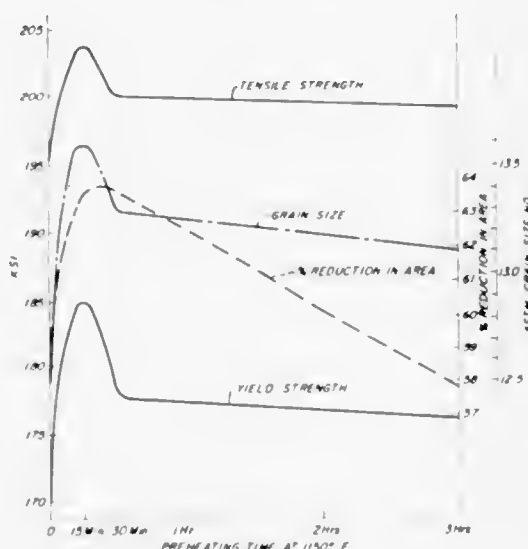
Donald S. Dabkowski, Penn Hills Township, Allegheny County, and Lew F. Porter, Monroeville, Pa., assignors to United States Steel Corporation

Filed Aug. 31, 1970, Ser. No. 68,205

Int. Cl. C21d 1/18

U.S. Cl. 148—144

3 Claims



The response of steels to the production of ultra-fine grains by a cyclic-rapid austenitization is enhanced by the preconditioning treatment of this invention. This preconditioning is accomplished by heating the article to a temperature just below the  $A_1$  temperature of the steel, for a time of about 5 to 30 minutes.

### 3,692,592 METHOD AND APPARATUS FOR DEPOSITING EPITAXIAL SEMICONDUCTIVE LAYERS FROM THE LIQUID PHASE

Donald Paul Marinelli, Trenton, N.J., assignor to RCA Corporation

Filed Feb. 12, 1970, Ser. No. 10,883

Int. Cl. H01l 7/38

U.S. Cl. 148—172

10 Claims

One or more epitaxial layers of a semiconductor material are deposited on a substrate in a furnace boat containing for each layer to be deposited a reservoir well adjacent to but vertically above a growing well. A charge of the ingredients of each of the epitaxial layers is placed in a separate one of the reservoir wells and the boat is heated to melt the charges. The melted charges are successively poured from their respective reservoir wells into their adjacent growing wells and the substrate is placed into the respective growing wells to permit an epitaxial layer to deposit on the substrate.

### 3,692,593 METHOD OF FORMING SEMICONDUCTOR DEVICE WITH SMOOTH FLAT SURFACE

Frank Zygmunt Hawrylo, Trenton, and Henry Kressel, Elizabeth, N.J., assignors to RCA Corporation

Filed June 18, 1971, Ser. No. 154,553

Int. Cl. H01l 7/38

U.S. Cl. 148—172

9 Claims

An epitaxial layer of single crystalline gallium arsenide or aluminum gallium arsenide having a low concentration

of aluminum is deposited on a body of single crystalline semiconductor material by liquid phase epitaxy. An additional layer of single crystalline aluminum gallium arsenide having a relatively high concentration of aluminum is deposited by liquid phase epitaxy on the epitaxial layer. The additional layer is then completely etched away by an etchant which does not attack the material of the epitaxial layer, such as boiling hydrochloric acid, to expose the entire surface of the epitaxial layer and provide the epitaxial layer with a smooth, flat surface.

### 3,692,594 METHOD OF FORMING AN EPITAXIAL SEMI- CONDUCTIVE LAYER WITH A SMOOTH SURFACE

Vincent Michael Cannuli, Trenton, N.J., assignor to RCA Corporation

Filed June 21, 1971, Ser. No. 154,824

Int. Cl. H01l 7/38

U.S. Cl. 148—172

9 Claims

An epitaxial semiconductor layer having a smooth surface is formed on a substrate by first depositing the epitaxial layer on the substrate from a first solution of the semiconductor material dissolved in a molten metal solvent and then bringing the epitaxial layer having a film of the first solution thereon into contact with a second solution of a molten metal solvent saturated with a semiconductor material and containing a metal which increases the surface cohesion of the solution. The epitaxial layer is held in contact with the second solution only long enough to dissolve the film of the first solution in the second solution. The substrate is then removed from the second solution without retaining any of the second solution on the surface of the epitaxial layer so as to provide the epitaxial layer with a smooth surface.

### 3,692,595 METHOD OF FABRICATING A SEMICONDUCTOR MAGNETIC TRANSDUCER

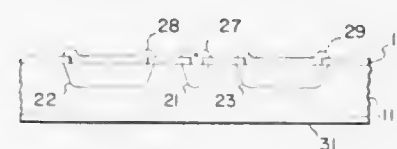
Edward C. Hudson, Jr., Derry, N.H., assignor to Hudson Corporation, Londonderry, N.H.

Filed May 28, 1969, Ser. No. 828,665

Int. Cl. H01l 7/44

U.S. Cl. 148—187

6 Claims



The semiconductor magnetic transducer disclosed herein is fabricated by first doping a semiconductor wafer so that the concentration of the doping impurity diminishes as a function of distance from one surface of the wafer. An emitter region and a pair of collector regions are then diffused into the one surface of the wafer with the collector regions being equally spaced from the emitter region and on either side thereof. When the base-emitter junction is forward biased, charge carriers flowing from the emitter region are concentrated at the portion of the region furthest from the diffusion surface and are proportioned between the collector regions as a sensitive function of magnetic flux generally parallel to the one surface and in a plane separating the collectors.

### 3,692,596 DISPERSION STRENGTHENED NICKEL- CHROMIUM ALLOYS

Robert William Fraser, P.O. Box 1031, Fort Saskatchewan, Alberta, Canada; Bud William Kushnir, 14827 75th St., Edmonton, Alberta, Canada; and Bauke Weizenbach, R.R. 2, Fort Saskatchewan, Alberta, Canada

No Drawing. Application Apr. 14, 1969, Ser. No. 815,780, which is a continuation-in-part of application Ser. No. 570,389, July 22, 1966. Divided and this application Mar. 2, 1971, Ser. No. 120,326

Int. Cl. C22c 19/00; C23c 9/00

U.S. Cl. 148—31.5

3 Claims

High temperature and oxidation resistant alloy products consisting of a nickel matrix containing uniformly disseminated sub-micron sized refractory oxide particles and having deposited thereon up to about 35%, by weight chromium with the highest concentration of chromium being at the surface of the strip. The matrix is substantially free of recrystallization and has elongated, fibrous grains which have a stable sub-structure.

### 3,692,597 POLYURETHANE PROPELLANT COMPOSITIONS AND THEIR PREPARATION

Charles E. Brockway, Akron, Charles S. Schollenberger, Cuyahoga Falls, and Eugene F. Sachara, Cleveland, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed June 29, 1955, Ser. No. 518,985

Int. Cl. C06d 5/06

U.S. Cl. 149—19

24 Claims

2. A composition of matter useful in generating large volumes of gas on combustion and comprising essentially a finely-divided, solid, inorganic, strong, oxidizing salt, a cohesive, plastic, rubbery, combustible polymer of an aromatic diisocyanate and a hydroxyl terminated polyester of an aliphatic dibasic acid and a glycol and cured with a polyfunctional aliphatic hydroxyl curing agent and at least one solid, finely-divided, heat resistant burning rate modifier, said salt being present in a major amount sufficient to burn said polymer and said curing agent to obtain at least gaseous CO and H<sub>2</sub>O on combustion, said polymer being present in a minor amount sufficient to bind said composition into a cohesive mass, said curing agent being present in an amount sufficient to cure said uncompound polymer to a tough, rubbery state and said burning rate modifier being present in a very minor amount sufficient to enhance the linear burning rate of said composition.

### 3,692,598 CASTABLE NITRATE PROPELLANTS

Wallace W. Thompson, Tarzana, Calif., assignor to North American Aviation, Inc.

No Drawing. Filed Oct. 5, 1966, Ser. No. 584,945

Int. Cl. C06d 5/06

U.S. Cl. 149—19

5 Claims

1. The process of curing a prepolymer composition comprising:

mixing a carboxy terminated or substituted prepolymer and from 10 percent to 90 percent, by weight of the composition, of a nitrate salt with a compound selected from a group consisting of hexa[1-(2-methyl)aziridinyl] triphosphatriazine, hexa(1-aziridinyl) triphosphatriazine, and mixtures thereof; and maintaining a temperature of between 10° C. and 150° C.; and curing the reactants within said temperature range between 20 and 100 hours.



3,692,599

**PROCESS OF FORMING HIGH-ENERGY PROPELLANT BINDERS**

John B. Gardiner, Mountainside, and Herschel T. White, Montclair, N.J., assignors to Esso Research and Engineering Company  
No Drawing. Filed Feb. 28, 1963, Ser. No. 262,296  
Int. Cl. C06d 5/06

U.S. Cl. 149—19

4 Claims

2. In curing a polyether acrylate which contains an  $\text{NF}_2$  group attached to each of 2 to 4 carbon atoms in recurring monomer units and which is used as a binder in a high-energy solid rocket propellant, the improvement which comprises curing the polyether acrylate to a stronger binder with an admixed proportion of 0.1 to 4 wt. percent of a dialkyl peroxycarbonate having 2 to 4 carbon atoms in the alkyl groups as curing initiator, the curing being carried out at a temperature in the range of about 20° to 50° C.

4. In curing a polyether acrylate to form a stronger binder as set forth in claim 2, said polyether acrylate being an acrylate of poly[bis( $\text{NF}_2$ ) pentene-1 oxide] with 1 to 3 terminal acrylate groups, said polyether acrylate being mixed with a liquid oxidizer containing  $\text{NF}_2$  groups, a solid oxygen containing oxidizer, and a metal fuel as it is being cured by diethyl peroxycarbonate as a dialkyl peroxycarbonate curing initiator.

3,692,600

**HIGH TEMPERATURE-RESISTANT PROPELLANTS**

David C. Sayles, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army  
No Drawing. Filed Dec. 5, 1969, Ser. No. 885,394  
Int. Cl. C06d 5/06

U.S. Cl. 149—19

2 Claims

A novel compound, polybutadieneimine, serves as a crosslinking agent or chain-extending agent for carboxyl-terminated polybutadiene prepolymer or hydrogenated carboxyl-terminated polybutadiene prepolymer. The cross-linked prepolymer is used in conjunction with aluminum as the metal fuel, ammonium perchlorate as the inorganic oxidizer, and other additives to form a high temperature-resistant propellant. The chain-extended prepolymer is used in a like manner with the specified propellant ingredients.

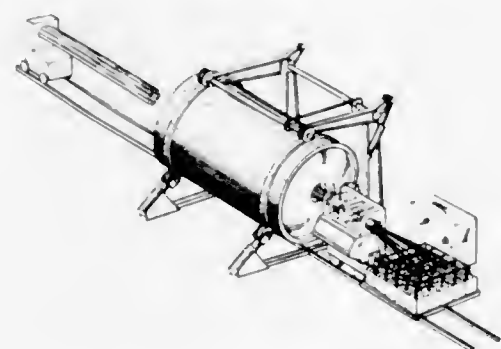
3,692,601

**METHOD FOR MAKING A STORAGE TANK BY APPLYING CONTINUOUS FILAMENTS TO THE INTERIOR SURFACE OF A ROTATING MOLD**

William B. Goldsworth, Palos Verdes Estates, and Ethridge E. Hardesty, Pine Valley, Calif., assignors to Goldworthy Engineering, Inc.  
Filed July 27, 1970, Ser. No. 58,482  
Int. Cl. B32b 31/16; B65h 81/00

U.S. Cl. 156—74

7 Claims



A fiberglass reinforced storage tank formed by constructing a filament reinforced cylindrical side wall and enclosing the transverse ends with a pair of end domes. The end domes are prefabricated in a circular mold of

proper contour and size. A solvent dispersed mold release agent is sprayed into the mold over the entire mold surface. Glass filaments are then laid along with a spray of catalyzed binder resin in the rotating heated mold, beginning at the center and extending to the outer periphery thereof to form the resin cured rigid end domes. The annular cylindrical side wall is formed by applying fiberglass resin to the interior surface of a rotating cylindrical mold in the presence of a catalyzed binder resin with the formed end domes secured to the transverse ends of the mold during side wall formation. A particulate matter such as sand may be added to the composition. The mold is divided into longitudinal arcuate sections which are capable of separating for removal of a finally formed storage tank.

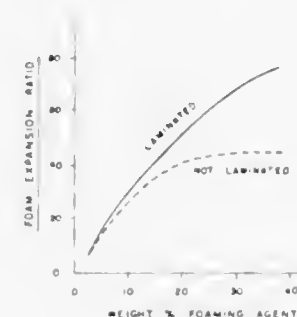
3,692,602

**PROCESS FOR PREPARING A THERMOPLASTIC RESIN FOAM**

Hiroshi Okada, Atsushi Osakada, and Satoyuki Minami, Sonoyama, Otsu-shi, Shiga-ken, Toshikazu Aoki, Beppo, Otsu-shi, Shiga-ken, Tetsuo Hisamori, Aobadai, Kohoku-ku, Yokohama-shi, Kanagawa-ken, and Hiromitsu Koyanagi and Hiromi Otsuka, Sonoyama, Otsu-shi, Shiga-ken, Japan, assignors to Toyo Rayon Company, Ltd., Tokyo, Japan  
Filed June 23, 1969, Ser. No. 835,718  
Int. Cl. B32b 5/20

U.S. Cl. 156—79

20 Claims



A process for making thermoplastic resin foam comprising forming a laminate comprised of a sheet of foamable thermoplastic interposed between and bonded to outer thermoplastic resin films. When the laminate is heated, a foam product is formed which, because the outer films limit the escape of foaming gas, may be thinner and/or have higher expansion ratios than thermoplastic resin foams heretofore producible by any other atmospheric process.

3,692,603

**METHOD OF MANUFACTURING QUILTED FABRIC MATERIAL**

Cecil John Rhodes, Great Kills, N.Y., assignor to Celanese Corporation, New York, N.Y.  
No Drawing. Continuation of application Ser. No. 871,530, Nov. 4, 1969, which is a continuation of application Ser. No. 471,435, Nov. 12, 1968, both now abandoned. This application Jan. 8, 1971, Ser. No. 105,132  
Int. Cl. B29c 27/00; D03d 3/08

U.S. Cl. 156—85

1 Claim

Method for producing a laminated textile material possessing a quilt-like surface design corresponding to a predetermined pattern by pattern laminating two sheets of fibrous material having differential shrinkage properties and subjecting said laminate to shrinking conditions to shrink one of the layers to an extent substantially greater than the other layer.

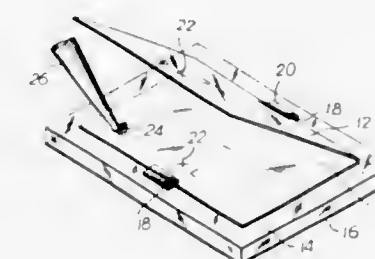
3,692,604

**METHOD OF MAKING NEAR-POINT CARDS FOR BINOCULAR REFRACTION**

Bernard Grolman, Worcester, Mass., assignor to American Optical Corporation, Southbridge, Mass.  
Original application June 30, 1969, Ser. No. 837,631, now Patent No. 3,572,911. Divided and this application Oct. 12, 1970, Ser. No. 80,245  
Int. Cl. B32b 31/04, 31/14

U.S. Cl. 156—108

4 Claims



Near-point cards for binocular refraction and a lamination process for producing them are described wherein the product comprises a film having thereon a reproduction of the target for one eye with its image side upward cemented to a film having thereon a reproduction of the target for the other eye with its image side downward. The back of the film for the one eye is silvered and the two films are provided with a single frame which is riveted to center the targets. The process includes the steps of aligning the films, laminating them, re-aligning if necessary, spraying the back of the bottom film, and mounting the laminated films in a frame.

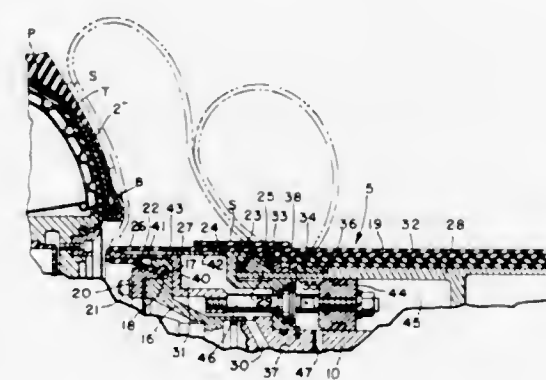
3,692,605

**PLY TURN-UP AND SIDE WALL APPLYING BLADDER FOR TIRE BUILDING MACHINE AND METHOD**

Armando Cantarutti, Akron, Ohio, assignor to NRM Corporation, Akron, Ohio  
Filed July 22, 1970, Ser. No. 57,043  
Int. Cl. B29j 17/20, 17/22

U.S. Cl. 156—132

18 Claims



Ply turn-up and side wall applying mechanism includes an inflatable bladder having a folded or looped inner marginal portion adapted to be positioned adjacent the ends of a tire building drum, and an annular insert axially movable within the bladder between a retracted position permitting freedom of movement of the inner marginal portion for proper ply turn-up and an extended position

restricting such movement for accurate placement of the side wall material on the tire during inflation of the bladder.

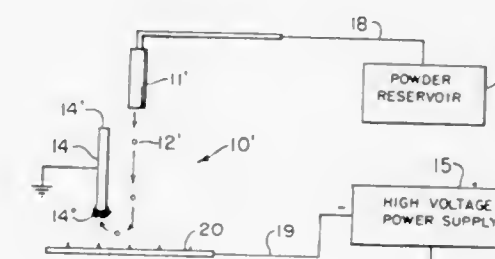
3,692,606

**METHOD OF ELECTROSTATICALLY DEPOSITING PARTICLES ONTO THE TRAILING EDGE OF A SUBSTRATE**

Emery P. Miller and Richard O. Probst, Indianapolis, Ind., assignors to Ransburg Electro-Coating Corporation, Indianapolis, Ind.  
Filed Mar. 28, 1969, Ser. No. 811,549  
Int. Cl. B05b 5/00

U.S. Cl. 156—151

14 Claims



An apparatus and a method for depositing charged particles of a powdery substance onto an edge of a substrate. The apparatus may include means for emitting particles of a powdery substance toward the substrate. Substantially all of the particles are propelled beyond a leading edge of the substrate to the vicinity of a trailing edge of the substrate. Another means is adjacent the trailing edge of the substrate which is capable of causing electrostatic deposition of the particles onto the trailing edge of the substrate.

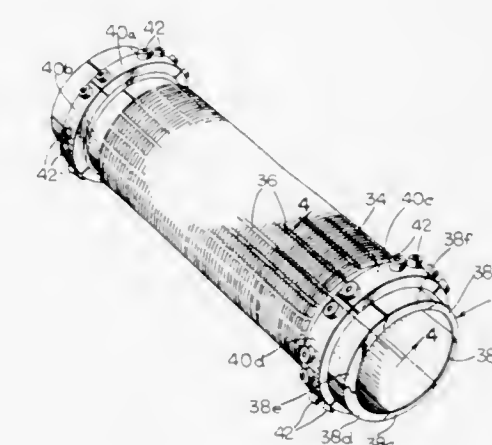
3,692,607

**METHOD AND APPARATUS FOR MAKING A REINFORCED PLASTIC WELL SCREEN**

Samuel M. Shobert, 17760 Dragoon Trail, Mishawaka, Ind. 46544  
Continuation-in-part of application Ser. No. 695,778, Jan. 4, 1968. This application Feb. 9, 1970, Ser. No. 9,635  
Int. Cl. B65h 81/00

U.S. Cl. 156—175

9 Claims



Apparatus for fabricating a well screen includes a hollow cylindrically shaped form having a multiple turn,



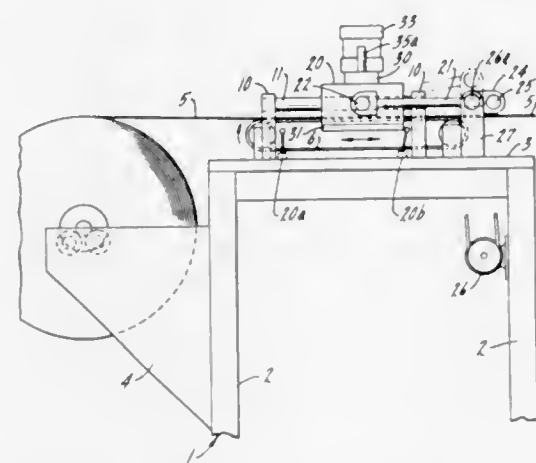
helical groove in the periphery thereof and a plurality of longitudinally extending grooves in the periphery which intersect the helical turns. The helical groove is in a form corresponding to a screw thread and serves as a mold for receiving bundles of plastic-wetted glass filaments which can conform to the shape of the mold. The cylindrically shaped form is composed of a plurality of part-cylindrical segments detachably secured together, these segments being individually movable radially inwardly for collapsing the form. Means are provided for securing the segments together in the cylindrical shape whereby plastic impregnated bundles of glass filaments may be inserted into all of the grooves.

The method of this invention includes the steps of (a) wetting a plurality of glass filaments with a liquid heat-hardenable plastic, (b) collecting said wetted filaments together into an elongated bundle, (c) inserting length portions of the bundle in circumferentially spaced longitudinal grooves in a cylindrical mandrel, (d) winding the bundle into a helical groove in said mandrel in overlying engagement with the bundles in the longitudinal grooves, the helical groove being composed of a plurality of turns which intersect the longitudinal grooves, the helical groove in cross-section being V-shaped with the apex thereof being radially innermost, the cross-section of the helical bundle having a corresponding V-shape, (e) curing said bundles while on the mandrel, and (f) removing the mandrel from the cured bundle assembly.

3,692,608

**SEALING MEANS AND METHOD**  
Ernest Milton Risgaard, Baraboo, Wis., assignor to Nasco Industries, Inc., Fort Atkinson, Wis.  
Filed Jan. 20, 1971, Ser. No. 108,086  
Int. Cl. B32b 31/08, 31/20  
U.S. Cl. 156—282

9 Claims



Spaced hot and cold bars are moved into contact with film to be sealed. The film and bars are then moved together. The film is stopped and the bars are raised and indexed rearwardly to place the cold bar in contact with the seal just made and the hot bar in contact with the film to create another seal.

3,692,609

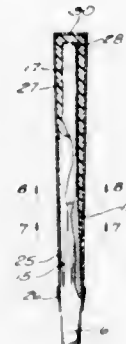
**METHOD OF PRODUCING BILLIARD CUE**  
Hubert G. Eckes, Rte. 3, Box 101A, Marshfield, Wis. 54449  
Filed June 12, 1970, Ser. No. 45,711  
Int. Cl. B29c 27/00

U.S. Cl. 156—242

7 Claims

A method for forming the handle of a billiard cue by cutting out the design of the handle in the body of the cue, including the conventional prongs or points above the grip of the handle to form tapered recesses in the cue so that the design of the handle is formed in intaglio. A

paper sleeve is then tightly drawn about the portion of the cue containing the intaglio design and plastic is poured into the space between the sleeve and the body of the cue

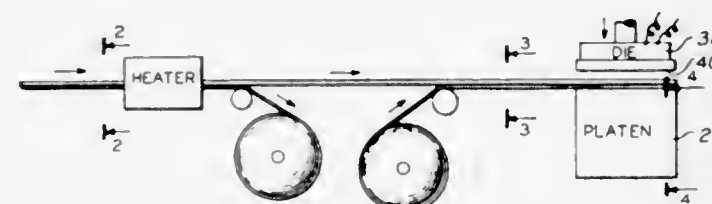


to fill the recesses and thereby create the desired handle design in plastic with the plastic prongs extending from the grip toward the tip of the cue.

3,692,610

**METHOD AND APPARATUS FOR MAKING A METALIZED INDICIUM**  
Irving Kornstein, 200 Leroy Ave., Tenafly, N.J. 07670  
Filed Sept. 10, 1970, Ser. No. 70,951  
Int. Cl. B32b 7/06, 3/00  
U.S. Cl. 156—249

4 Claims



A method and apparatus for making a metalized pressure-sensitive adhesive backed indicium from a laminate having a polypropylene backing layer in which the laminate is provided with a metalized polyester film outer layer, a vinyl film interlayer adjacent the metalized film layer, a rubber saturated paper interlayer adjacent the vinyl film interlayer and a pressure-sensitive adhesive interlayer between the vinyl film interlayer and the polypropylene backing layer. The polypropylene backed laminate is provided by replacing a silicone-coated paper backing layer of a starting laminate with the polypropylene backing layer. The indicium is formed by hot-die cutting the polypropylene backed laminate, which has been placed on a platen, with a die which is slightly worn or blunted. The platen is provided with a stacked plurality of sheet-like materials including a first 20 mil spring steel bearing plate upon which the laminate is placed, a second 20 mil spring steel plate, a paper make-ready between the spring steel plates, and a cold-rolled steel underlying plate adjacent the second spring steel plate.

3,692,611

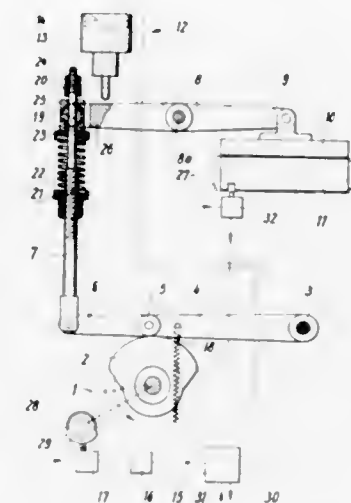
**HEAT SEAL TOOL**  
Paul Kühnle, Winnenden, Germany, assignor to Fr. Hesser Maschinenfabrik AG, Stuttgart-Bad Cannstatt, Germany  
Filed Dec. 28, 1970, Ser. No. 101,618  
Int. Cl. B30b 15/34; G05g 15/00

U.S. Cl. 156—358

8 Claims

A heat sealing arrangement in a packaging machine, in which a mechanical drive sequentially operates the heat seal tool in correlation with the speed of the machine. A pneumatic or electric control mechanism, including a

delay switch, is arranged to intercede in the sealing or welding operation and movement of heat seal tool when

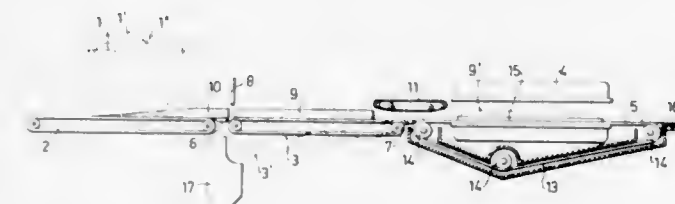


the drive is slowed down or interrupted, in order to complete the sealing step.

3,692,612

**SYSTEM FOR MANUFACTURING PARTICLE BOARD OR THE LIKE**  
Bengt Carlsson and Mauritz R. G. Sundberg, Motala, Sweden, assignors to Aktiebolaget Motala Verkstad, Motala, Sweden  
Filed Dec. 18, 1968, Ser. No. 784,843  
Claims priority, application Sweden, Dec. 22, 1967, 17,732/67; Dec. 6, 1968, 16,742/68  
Int. Cl. B32b 5/16; B29j 5/08  
U.S. Cl. 425—305

2 Claims



There is disclosed a machine for manufacturing particle board according to which wood chips are spread on a conveyor belt, referred to as a spreader belt, forming a slab which is cut into sections of predetermined length by a saw positioned between said spreader belt and a belt referred to as a transfer belt which conveys the individual sections to a third belt which is referred to as a presser belt where the sections are compressed by a press, and the machine includes a fourth conveyor belt positioned between the transfer belt and the presser belt at the input end of the presser belt for exerting comparatively light pressure against the top surface of each section as it passes to the press.

3,692,613

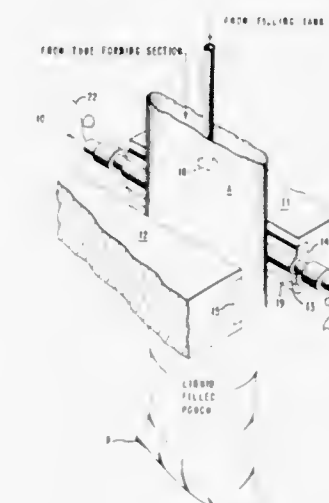
**APPARATUS FOR SEALING AND CUTTING LAYERS OF THERMOPLASTIC FILM**  
Ronald E. Pederson, Kingston, Ontario, Canada, assignor to Du Pont of Canada, Limited, Montreal, Quebec, Canada  
Filed May 18, 1971, Ser. No. 144,431  
Claims priority, application Canada, June 10, 1970, 085,158  
Int. Cl. B32b 31/00; B30b 15/34

U.S. Cl. 156—498

6 Claims

An improved electrical impulse sealer which is mounted in one of a pair of sealing jaws comprising a hollow

metal tube extending beyond each end of the sealing jaw and adapted to convey a cooling fluid, two metal fins less than one-third the thickness of the tube wall and connected to the tube along the length of the sealing jaw, the fins projecting in opposite directions from the tube and being in substantially the same plane as the layers of film, the tube and fins being adapted to contact one of the

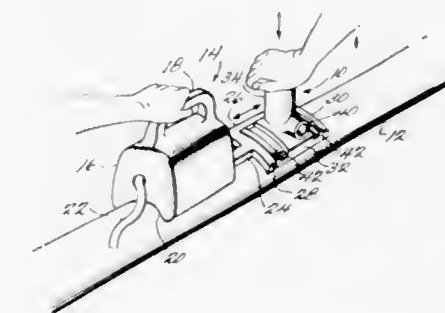


layers of film when the sealing jaws are closed. This impulse sealer is particularly useful in sealing and simultaneously cutting through at least two layers of thermoplastic film moving intermittently in one plane such as that encountered in a liquid "form-and-fill" machine used to package low thermal conductive liquids such as oil or ethylene glycol.

3,692,614

**PLASTIC SERVICE FITTING AND METHOD AND APPARATUS FOR ATTACHING SAME**  
Robert R. Roos, Decatur, Ill., assignor to Mueller Co., Decatur, Ill.  
Filed Sept. 8, 1970, Ser. No. 70,115  
Int. Cl. B32b 31/00  
U.S. Cl. 425—108

2 Claims



Apparatus for attaching a plastic service fitting to a plastic main carrying fluid under pressure wherein a tubular fitting having a lateral outlet and a saddle portion formed with a concave face for engaging the exterior wall of the plastic main is friction welded to the main. The tubular fitting is provided with a threaded through-bore in which is disposed a tapping plug having a coupon retainer and cutter. The U-shaped arm of an oscillating tool engages the saddle portion of the tubular fitting and upon actuation of the tool rectilinear reciprocation of the fitting is effected so that, while pressure is applied to the tubular fitting, frictional heat is developed between the surface of the saddle portion of the tubular fitting and the exterior wall of the plastic main to melt the material of the surfaces in contact so that fluid-tight seal is formed.



3,692,615

**APPARATUS FOR FORMING LONGITUDINAL CORRUGATIONS IN SHEET MATERIAL**

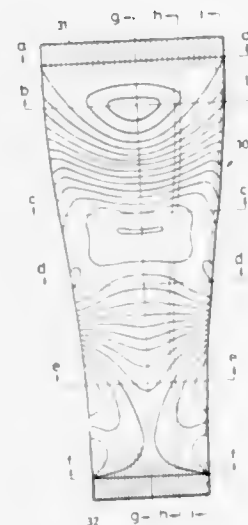
Koichiro Ohmori, 1421, 2-chome, Matsugaoka, Kugenuma, Fujisawa, Japan

Filed Mar. 12, 1970, Ser. No. 19,032

Int. Cl. B31f 1/20

U.S. Cl. 425—370

8 Claims



There is disclosed an apparatus for forming longitudinal corrugations in the web of sheet material, comprising a generally curved, rigid and elongated guide bed having an inlet end and an outlet end each disposed perpendicular to the direction of the sheet travel, a plurality of flutes extending between said outlet and inlet ends of the bed and having alternate ridges and grooves, said flutes converging toward said outlet end becoming progressively greater in amplitude and smaller in period, the guide surface containing said ridges and grooves of the flutes has a geometry such that the longitudinal surface lengths of the sheet material measured with a certain surface distance from the longitudinal side edges of the bed and transverse wavy surface lengths of the sheet material measured with a certain surface distance from the inlet or outlet end of the bed are held substantially equal, respectively, at any portion of the bed.

3,692,616

**METHOD AND APPARATUS FOR HEAT TREATMENT OF PACKAGED PRODUCTS**

Lennart Arvid Stenstrom, Huddinge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

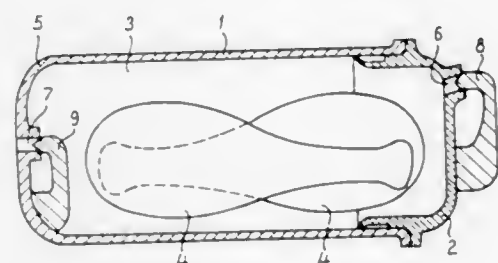
Filed Apr. 27, 1970, Ser. No. 32,184

Claims priority, application Sweden, May 7, 1969, 6,443/69

Int. Cl. F25b 13/00

U.S. Cl. 161—2

2 Claims



The packaged product is placed in a container and heated by passing heat-inducing waves through the container walls from an external source while the package is surrounded by a medium which increases in pressure in response to an internal pressure increase in the package,

thereby providing an over-pressure around the package to prevent destruction thereof due to said internal pressure increase. A cooling medium under pressure is then directed into the container and caused to flow around the package and maintain said over-pressure until the pressure in the package decreases to a value which is harmless to the package.

3,692,617

**MODULAR TREE USING TAPERED FRAME AND RINGS OF BRANCHES**

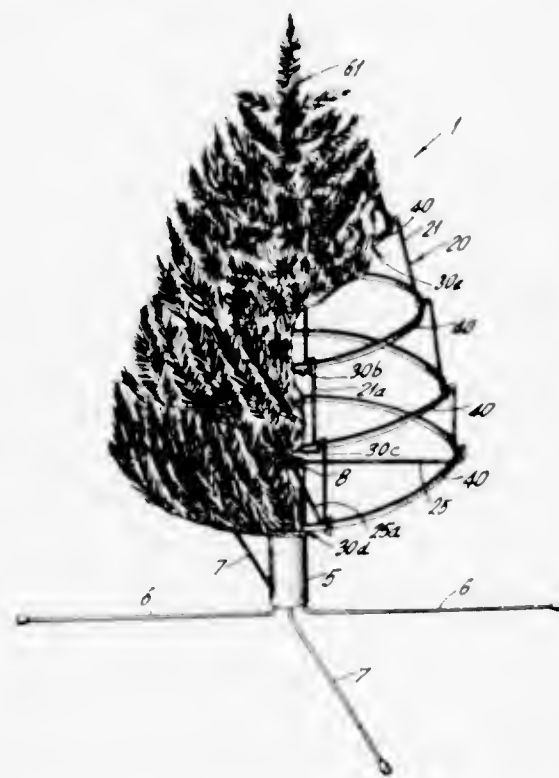
Theodore Marks, Hartsdale, and Si Spiegel, Briarcliff Manor, N.Y., assignors to American Technical Industries, Inc., Mount Vernon, N.Y.

Filed Aug. 31, 1970, Ser. No. 68,319

Int. Cl. A41g 1/00; A47f 5/04

U.S. Cl. 161—24

4 Claims



A modular tree comprising a frame assembly preferably of wire elements which can be secured together to define a tapering frame. Rings are provided of different diameters to fit over said frame, each ring having a plurality of branch elements secured at points intermediate the branch ends to respective points along the ring. The branches face outwardly and define rows of simulated tree branches.

3,692,618

Oskar Dorschner, Bad Homburg, Franz Josef Carduck, Bergen-Enkheim, and Christoph Storkebaum, Egelsbach, Germany, assignors to Metallgesellschaft AG, Frankfurt am Main, Germany

Continuation-in-part of abandoned applications Ser. No. 693,017, Dec. 22, 1967, and Ser. No. 783,556, Dec. 13, 1968. This application Oct. 9, 1969, Ser. No. 865,128

Claims priority, application Germany, Oct. 8, 1969, P 19 50 669.5

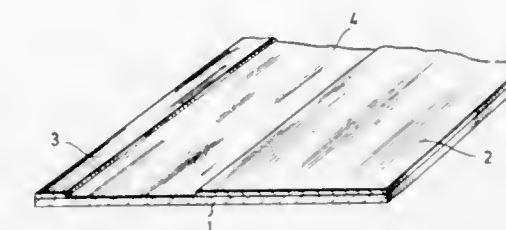
Int. Cl. D04h 1/04, 3/16

U.S. Cl. 161—72

14 Claims

Formation of a nonwoven web suitable for the production of textile-like or paper-like sheet material by simultaneously spinning a multiple number of continuous filaments of a synthetic polymer such as polypropylene, gathering the filaments into a straight row of side-by-side, substantially evenly spaced apart, untwisted bundles, each containing at least 15 filaments, simultaneously drawing each bundle downwardly at a velocity of at least 3,000

meters per minute in an individual surrounding gas column flowing at supersonic velocity, as for example by passing the bundles through a row of air guns and directing the same to impinge on a horizontal carrier belt moving in a direction so that the bundles in their surrounding gas columns extend in a straight row across the carrier at right angles to the direction of its movement; controlling the gas column by a control of its divergent width and/or oscillating the same so that the limits of contact of the edge of each column with the carrier overlap the limits of contact of the edge of the adjacent column by at least 50 percent of the overall width of contact of an individual gas column with the carrier, and maintaining the lay-down speed of the filaments in relation to the speed of the carrier movement so that prior to and/or as the bundles impinge against the carrier, they are divided into sub-bundles of parallel filaments



vided on at least both longitudinal edges and on one side of the tape.

3,692,620

**LAMINATED GYPSUM BOARD**

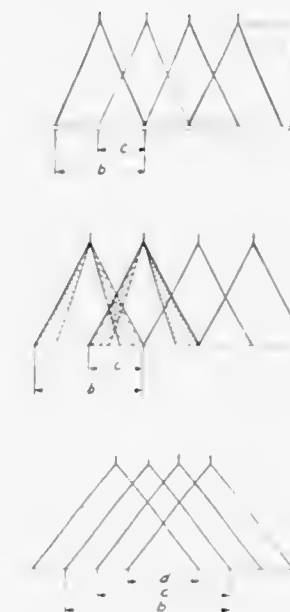
Robert L. Schmidt, St. Charles, Ill., and Hubert J. Beckman, Bloomington, Minn., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Oct. 23, 1967, Ser. No. 677,264

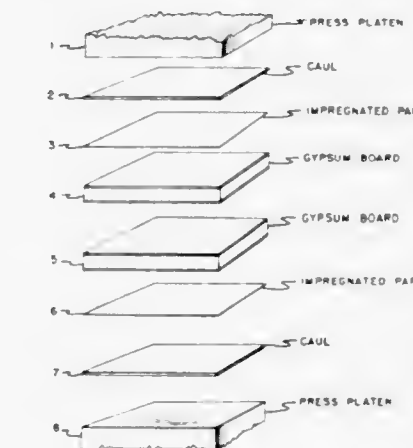
Int. Cl. B32b 13/12, 27/10

U.S. Cl. 161—88

5 Claims



which deposit on the carrier in a loop-like arrangement extending back and forth across the direction of travel of the carrier within the limits of the gas column surrounding the bundle, forming a web which is characterized by a multiple number of side-by-side lengthwise sections, each section being formed by the sub-bundles of parallel filaments lying in a loop-like arrangement extending back and forth across the width of the section and containing multiple overlapping secondary smaller loops and swirls with the adjacent individual sections overlapping each other without stratification and with the loops, secondary loops and swirls of one section randomly substantially completely intermingled with the overlapping portion of the adjacent section. The web after its lay-down may be initially stabilized by heat-sealing, needling or treating with a binder such latex and subjected to further treatments conventional in the nonwoven art.



Laminates are produced from gypsum board and resin-saturated paper by a low pressure, thermosetting process. The resulting laminated gypsum board is useful as a building material, for example, on or as part of a wall. These laminates can be made at a low cost with a variety of decorative surfaces and with physical properties similar to the expensive, high pressure laminates (e.g. melamine-aldehyde laminates).

3,692,621

UNIVERSAL GRAPHIC DISPLAY MATERIAL  
Everett Bryant Frech, Charlotte, N.C., assignor to Riegel Paper Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 738,780, June 21, 1968, now Patent No. 3,549,463. This application July 10, 1970, Ser. No. 53,986

The portion of the term of the patent subsequent to Dec. 22, 1987, has been disclaimed

Int. Cl. B32b 3/30; B43l 1/12; G03b 21/60

U.S. Cl. 161—116

3 Claims

A durable graphic display material suitable for displaying written, projected, and three dimensional subject matter is disclosed. The new material includes an embossed polyvinyl fluoride film outer surface having a matte finish, bonded to a substrate layer of thermoplastic material. The

3,692,619

**PROTECTIVE BANDAGE FOR PIPELINES TO BE PROTECTED AGAINST CORROSION**

Benno Wedekind and Werner Kirsch, both of Felderstr. 24, Leverkusen-Rheindorf, Germany

Filed Feb. 9, 1970, Ser. No. 9,737

Claims priority, application Germany, Mar. 1, 1969, G 69 08 286.6

Int. Cl. B32b 3/00

U.S. Cl. 161—88

2 Claims

A bandage for protecting pipelines against corrosion is disclosed which is formed from a plastically and elasti-



new display material also includes a ferrous component for attracting and holding magnetized articles such as display markers used for illustrative purposes.

3,692,622

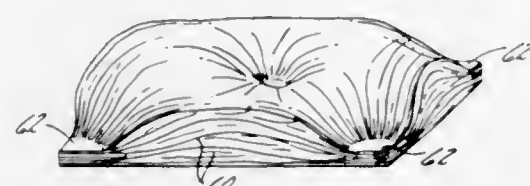
**AIR FORMED WEBS OF BONDED PULP FIBERS**  
Charles E. Dunning, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of abandoned application Ser. No. 783,877, Dec. 16, 1968. This application Dec. 4, 1969, Ser. No. 882,257

Int. Cl. D21h 5/26; D04h 1/04

U.S. Cl. 161—124

10 Claims



Paper products useful as sanitary wipes and towelling are prepared by air laying a web of wood pulp fibers and binding the web by passing it through a nip formed between a smooth roll and a patterned roll. Prior to bonding, the moisture content of the web is adjusted to 6–35%. The products so prepared, have a very desirable combination of strength, absorbency, and tactile properties compared with conventional products. The products need not be creped to develop the improved characteristics.

3,692,623

**LINING FOR SHOES**

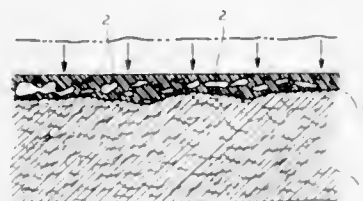
Yasuo Kimura, Neyagawa, Japan, assignor to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo-to, Japan  
Filed Sept. 21, 1970, Ser. No. 74,015

Claims priority, application Japan, Sept. 27, 1969, 44/77,274

Int. Cl. B32b 5/18

U.S. Cl. 161—159

4 Claims



A continuously porous synthetic resin layer having numerous macropores is provided on the surface of a substrate, the synthetic resin layer being compressed to a thickness of not greater than 70% of the original thickness with application of heat so as to deform the macropores to depressed pores, while being rendered smooth-surfaced or provided with a pattern-embossed smooth surface, if desired, the layer being finished by further

coating, and the lining for shoes thus obtained is satisfactory in air permeability, moisture permeability, water absorption and has a smooth surface and excellent touch.

3,692,624

**MEASURING AND REGULATION METHOD, FOR WATER SOLUBLE, OXIDIZING OR REDUCING COMPOUND PARTICULARLY IN PULP BLEACHING**

Ilmo Yrjala, Rauma, Finland

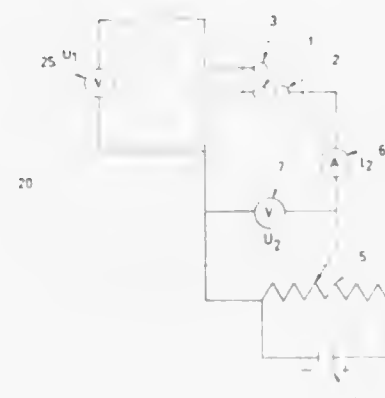
Filed Feb. 19, 1970, Ser. No. 12,681

Claims priority, application Finland, Feb. 21, 1969, 563/69

Int. Cl. D21c 7/12

U.S. Cl. 162—49

7 Claims



A method for continuously measuring and regulating dosage for water soluble oxidizing or reducing compounds of the type having rapid concentration variation by maintaining a constant potential difference between a measuring electrode and a comparison electrode. The current value necessary to maintain said potential difference is measured and used to automatically regulate the dosage in a compound as the compound moves with respect to the electrodes.

3,692,625

**PROCESS FOR COMBATING SLIME IN PAPER PULP BY USING AMIDINOUREAS AND AMIDINOTHIUREAS**

Royal A. Cutler, Sand Lake, and Samuel Schalit, Albany, N.Y., assignors to Sterling Drug Inc., New York, N.Y.  
No Drawing. Original application Aug. 5, 1968, Ser. No. 749,986, now Patent No. 3,652,766. Divided and this application Nov. 19, 1970, Ser. No. 91,164

Int. Cl. D21d 3/00; D21h 5/22

U.S. Cl. 162—161

14 Claims

A method of combatting slime in paper pulp which comprises using antibacterial and antifungal mono- and disubstituted amidinoureas and amidinothiureas which are obtained by interaction of guanidines and isocyanates or isothiocyanates.

3,692,626

**APPARATUS FOR FORMING AND CONTAINING PLASMA**

Tihiro Ohkawa, La Jolla, Calif., assignor to the United States of America as represented by the Atomic Energy Commission

Filed Mar. 21, 1969, Ser. No. 809,280

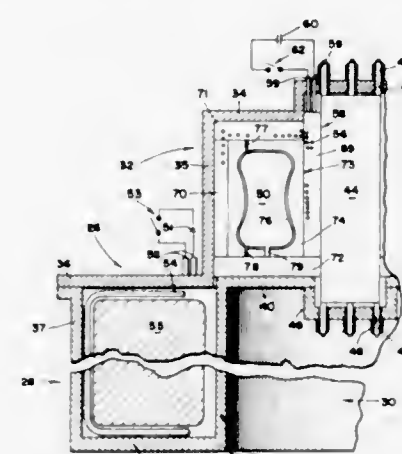
Int. Cl. G21b 1/00

U.S. Cl. 176—3

8 Claims

A plasma method and apparatus is provided with a toroidal plasma confinement region in which a toroidal magnetic field is produced by external magnetic field producing means. A toroidal electrical field is induced within the region by conductors disposed outside of the plasma region

so as to produce and maintain a plasma current. The electrical field is produced without producing any substantial additional magnetic field in the region. A second magnetic field in the region is produced by means disposed



outside the region so as to provide a plurality of nests of closed toroidal flux surfaces in the toroidal plasma region, thus approximating a field produced by conductors within the region without the losses associated therewith.

3,692,627

Patent Not Issued For This Number

3,692,628

**PROCESS FOR PRODUCING L-SERINE**

Kiyoshi Nakayama, Sagami-hara-shi, and Hiroshi Kase, Koganei-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Filed Apr. 17, 1969, Ser. No. 817,202  
Claims priority, application Japan, Apr. 18, 1968, 43/25,529

Int. Cl. C12d 13/06

U.S. Cl. 195—28 R

13 Claims

L-serine is produced by a fermentation process which comprises culturing a microorganism belonging to the genus *Arthrobacter*, *Brevibacterium* or *Corynebacterium* in an aqueous nutrient medium which does not contain DL-glycemic acid as a substrate. Inexpensive carbohydrates or hydrocarbons can be used as the carbon source in the medium. The strains exemplified include *Arthrobacter paraffineus*, *Brevibacterium ketoglutamicum* and *Corynebacterium hydrocarboclastus*.

3,692,629

**OXIDATION OF STEROIDS**

Ewart Ray Herbert Jones and George Denis Meakins, Oxford, and Andrew Samuel Clegg, Moxborough, England, assignors to Glaxo Laboratories Limited, Greenford, England

No Drawing. Filed Apr. 5, 1971, Ser. No. 131,432  
Claims priority, application Great Britain, Apr. 6, 1970, 16,255/70

Int. Cl. C07c 167/08

U.S. Cl. 195—51 R

27 Claims

Process for the microbiological 1 $\beta$ ,11 $\alpha$ -bis-hydroxylation of ring A- and C-saturated 5 $\alpha$ - and 5(6)-dehydro-pregnan-20-ones wherein the steroid substrate is incubated with one of the microorganisms *Aspergillus ochraceus*, *Aspergillus nidulans*, *Rhizopus arrhizus*, *Corticium pratense* or *Polystictus sanguineus* and recovering the bis-hydroxylated product.

3,692,630

**COMPOSITION FOR PREPARING PROCESS CHEESE**

Thomas P. Kichline, Chesterfield, and Lewis G. Scharpf, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Division of application Ser. No. 843,849, July 22, 1969, now Patent No. 3,635,733, and a continuation-in-part of application Ser. No. 639,306, May 18, 1967. This application May 21, 1970, Ser. No. 48,593

Int. Cl. C07g 7/02; A23c 19/12

U.S. Cl. 195—63

5 Claims

A composition for preparing process cheese comprising an intimate admixture of a process cheese emulsifying agent in an amount of at least 90% of the composition and a proteolytic enzyme from bacterial or fungal source in an amount to provide 1 casein unit of protease activity to about 8,000 casein units of protease activity per gram of emulsifying agent.

3,692,631

**METHOD FOR BACTERIAL PROTEINASE**

Alworth D. Larson and Hugh D. Braymer, Baton Rouge, and Evest A. Broussard III, Metairie, La., assignors to Research Corporation, New York, N.Y.

No Drawing. Filed Feb. 19, 1970, Ser. No. 12,850

Int. Cl. C12d 13/10

U.S. Cl. 195—66 R

2 Claims

High yields of extracellular proteinase are elaborated when a specific strain of *Serratia marcescens* (ATCC No. 25,419) is cultured under aerobic conditions in a protein-containing nutrient medium. The proteinase, isolated from cell-free culture, is most effective at alkaline pH's and is suitable for use as an additive to laundry detergents or in laundry presoak compositions.

3,692,632

**PROCESS FOR PRODUCING LIPASE**

Osamu Terada, Tokyo, Japan, assignor to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Continuation of application Ser. No. 572,688, Aug. 16, 1966. This application July 11, 1968, Ser. No. 743,939

Claims priority, application Japan, Aug. 17, 1965, 40/49,715

Int. Cl. C12d 13/10

U.S. Cl. 195—66 R

4 Claims

A process for producing lipase by fermentation. A microorganism of *Trichosporon* is cultured in a nutrient medium under aerobic conditions at 25°–35° C.

3,692,633

**PROCESS FOR PREPARING 6-CHLORO-2-QUIN- OXALINECARBOXYLIC ACID-1,4-DIOXIDE**

Edward O. Stapley, Spotwood, N.J., Justo M. Mata, Madrid, Spain, and Frank J. Wolf, Westfield, and Thomas W. Miller, Carteret, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Sept. 26, 1968, Ser. No. 763,008, now Patent No. 3,598,819, dated Aug. 10, 1971. Divided and this application Aug. 21, 1970, Ser. No. 66,129

Int. Cl. C12d 9/00

U.S. Cl. 195—80 R

1 Claim

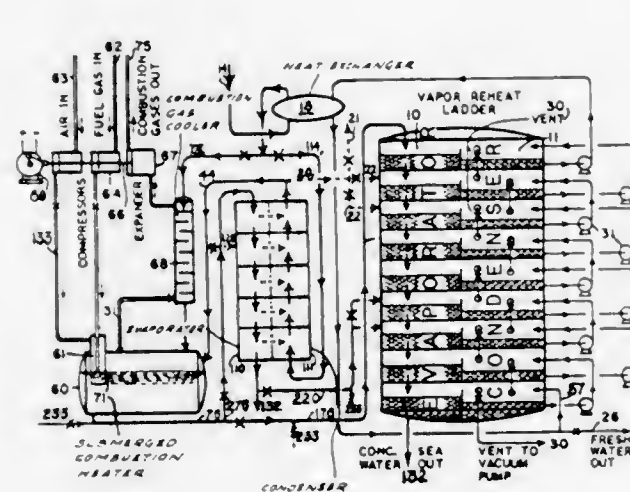
A novel antibiotic substance, identified as 6-chloro-2-quinolinecarboxylic acid-1,4-dioxide, has been produced by cultivating strains of *Streptomyces ambofaciens*, var. NRRL 3455. The salts, as well as derivatives such as esters, amides and N-substituted amides, likewise demonstrate antibiotic activity.



**3,692,634**  
**METHOD FOR PRODUCING PURE WATER FROM SEA WATER AND OTHER SOLUTIONS BY FLASH VAPORIZATION AND CONDENSATION**  
 Donald F. Othmer, 333 Jay St., Brooklyn, N.Y. 11201  
 Continuation-in-part of application Ser. No. 826,135, May 20, 1969. This application May 7, 1970, Ser. No. 35,485

Int. Cl. B01d 3/10  
 U.S. Cl. 203—11

35 Claims



Various liquid solutions with or without fine suspended particles may be purified by: (a) flash evaporation for cooling the heated dilute solution; after (b) a process which may be physical or chemical; preceded by (c) a preheating of the liquid solution using the heat of condensation of the vapors from (a). The process may be an extraction, a precipitation of a solid at a high temperature, or a chemical reaction; e.g., a submerged combustion which may supply the required external heat by oxidation with added air or oxygen of either a fluid fuel or combustible organic material dissolved or suspended in the solution. Purification here may be by removing impurities by combustion or other chemical action or by extracting or distilling some of the water from the dilute solution.

**3,692,635**  
**PROCESS FOR SEPARATING HALOGENATED HYDROCARBONS BY EXTRACTIVE DISTILLATION**  
 George B. Fozzard, % Phillips Petroleum Co., Bartlesville, Okla. 74003  
 No Drawing. Filed May 19, 1971, Ser. No. 145,050  
 Int. Cl. B01d 3/40; C07c 19/08  
 U.S. Cl. 203—62

4 Claims

A process for separating 1,1,2-trichlorotrifluoroethane from a first mixture consisting essentially of 1,1,2-trichlorotrifluoroethane and 1,2-dichloro-1,1-difluoroethane by adding a cycloalkane to the first mixture to form a resultant second mixture and thereafter extractively distilling the second mixture in an extractive distillation zone to separate the 1,1,2-trichlorotrifluoroethane from the 1,2-dichloro-1,1-difluoroethane.

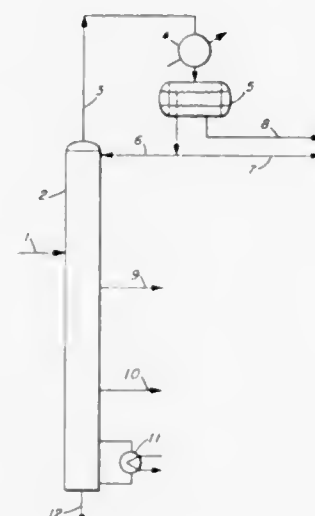
**3,692,636**  
**SEPARATION OF A MIXTURE COMPRISING VINYL ACETATE, ETHYL ACETATE, AND ACETIC ACID BY DISTILLATION**  
 Juan L. Huguet, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.  
 Filed Nov. 28, 1969, Ser. No. 880,957  
 Int. Cl. C07c 67/06

U.S. Cl. 203—71

16 Claims

Vinyl acetate substantially free from heavy ends is separated by an azeotropic distillation method from a crude

mixture comprising vinyl acetate, water, ethyl acetate, and acetic acid such as the reaction product obtained in the reaction of ethylene and acetic acid in the presence of molecular oxygen and a catalyst to form vinyl acetate. When the vinyl acetate-forming reaction is carried out in the liquid phase in the presence of a noble metal and a redox agent, the crude product also typically contains 1-acetoxy-1-butene, which is also separable from the vinyl acetate by the present process with minimum formation of butyraldehyde, product contamination by which is a



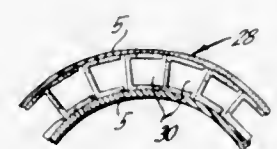
problem in the prior art vinyl acetate recovery processes. The process comprises azeotropically distilling the vinyl acetate out of the crude feedstock in a column operated to maintain the temperature breakpoint below the feed point. Unusually effective separation of vinyl acetate from higher-boiling compounds such as ethyl acetate obtains. In a particular embodiment, ethyl acetate, dioxolane, and other compounds boiling between vinyl acetate and acetic acid are removed in a side stream drawn from the column in the vicinity of the temperature breakpoint.

**3,692,637**  
**METHOD OF FABRICATING A HOLLOW STRUCTURE HAVING COOLING CHANNELS**  
 Carl-Helmut Dederra, 87a Mozartstrasse, 8012 Ottobrunn, Germany, and Karl Butter, 17 Hans Denzinger Str., 8 Munich 13, Germany  
 Original application Nov. 15, 1967, Ser. No. 683,176. Divided and this application Nov. 24, 1969, Ser. No. 877,591

Int. Cl. C03b 7/02

U.S. Cl. 204—9

2 Claims



A method of fabricating a structural part for use as a wall of a device subject to high temperatures, such as a rocket combustion chamber, a heat shield, or a nose cone of a missile wherein individual tubular elements having either an opened or a closed cross section are fitted together to form a wall and are connected in a mechanically strong and pressure proof manner by a layer of material which is applied galvanoplastically on either one

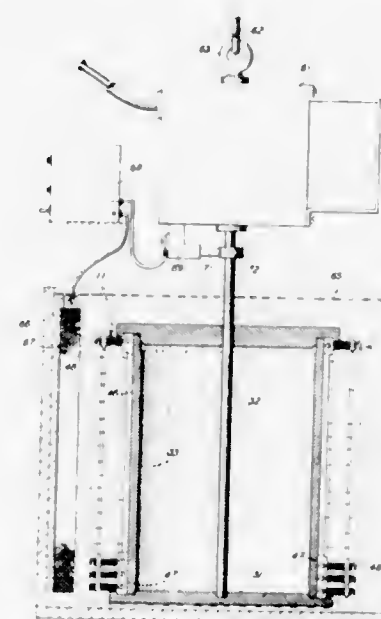
or both sides thereof. Various structural configurations are possible and in some instances the resultant structure is reinforced by a reinforcing member such as a steel strip.

**3,692,638**  
**PROCESS FOR SUPPORTING AND NON-UNIFORMLY TREATING ARTICLES**  
 John J. Rackus, Whitehall, John P. Skilbeck, Allentown, and Alfons H. Szkudlapski, Bethlehem, Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 21, 1970, Ser. No. 100,176  
 Int. Cl. C23b 5/48, 5/70; B01k 3/00

U.S. Cl. 204—15

14 Claims



In making transistors using lead frames, improved bonds and savings in gold result from plating gold more heavily and in controlled amounts at the ends of the lead frames where wire and semiconductive chip bonds are to be made. To accomplish such nonuniform plating, the lead frames are arranged in a cylindrical configuration so that the ends of the frames where bonds are to be made are on the outer periphery of the configuration and are spaced one from the other. Also, the opposite carrier strips, which are eventually trimmed away, are on the internal portion of the configuration. A cathode is connected to the lead frames, which are then rotated past an anode in a plating bath, thereby nonuniformly plating the lead frames. Such arrangement of the lead frames and rotation of them in the bath also results in the plating of a large number of frames using a minimum volume of a tank holding the bath. An increase in plating rates is also achieved.

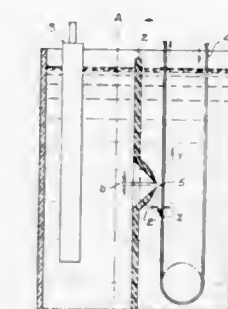
**3,692,639**  
**MULTIPLICATION OF METAL SURFACE BY ELECTROPLATING OR ANODIC DISSOLUTION**  
 Alkis Alexander Delmouros, Athens, Greece, assignor to Center of Scientific and Applied Research Ltd., Athens, Greece

Filed Sept. 4, 1970, Ser. No. 69,723  
 Claims priority, application Greece, Oct. 13, 1969, 25,508/69

U.S. Cl. 204—28

11 Claims

A method of and an apparatus for multiplying the effective area of a metal surface by electroplating and/or anodic dissolution by using a high density electroplating current while at the same time the current density at the start of the electroplating can be suitable for maintaining the cohesion with the original surface, and simultaneously neutralizing all anomalies which result from a steady



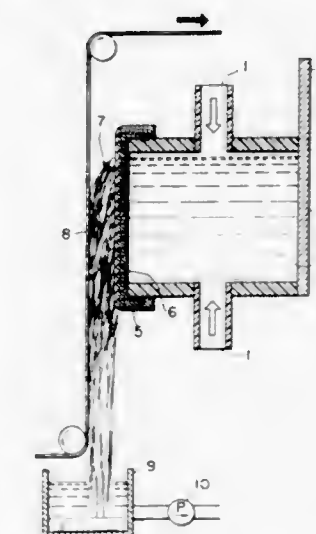
creased current density at the cathode is achieved and the harmful effect of the released hydrogen is avoided.

**3,692,640**  
**CONTINUOUS ANODIC OXIDATION METHOD FOR ALUMINUM AND ALLOYS THEREOF**  
 Takeshi Hamabe and Takashi Suzuki, Toyonaka-shi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 14, 1970, Ser. No. 72,022  
 Claims priority, application Japan, Sept. 18, 1969, 44/75,605; Nov. 25, 1969 (utility model), 44/112,251; Dec. 9, 1969, 44/99,659, 44/99,660; Dec. 11, 1969 (utility model), 44/118,210, 44/118,203

Int. Cl. B01k 3/00; C23b 9/02  
 U.S. Cl. 204—28

7 Claims



A method of continuously forming an oxide film on aluminum and alloys thereof by anodic oxidation without resorting to a conventional process using an electrolytic cell, and an apparatus for practicing the method which is compact in size and is capable of not only high current density treatment and high speed treatment but also various types of electrolysis.

**3,692,641**  
**ELECTRODEPOSITION OF LOW STRESS RUTHENIUM ALLOY**  
 Salvatore Losi, Geneva, René Henzi, Carouge, and André Meyer, Grand-Saconnex, Switzerland, assignors to Sel-Rex Corporation, Nutley, N.J.  
 No Drawing. Filed Mar. 22, 1971, Ser. No. 126,886  
 Claims priority, application Switzerland, Mar. 20, 1970, 4,235/70

U.S. Cl. 204—43

Int. Cl. C23b 5/32

10 Claims

Thick electrodeposits of ruthenium alloy can be obtained by adding an element of Group III-A of the



Periodic Table. The deposits obtained are primarily characterized by their low stress and absence of surface cracks at thicknesses up to about 10 millimicrons.

### 3,692,642 ELECTRODEPOSITION OF OSMIUM AND BATHS THEREFOR

John Michael Nottley, Birmingham, England, and James Barr, Dundas, Ontario, Canada, assignors to The International Nickel Company, Inc., New York, N.Y.  
No Drawing. Filed Oct. 23, 1970, Ser. No. 83,680  
Claims priority, application Great Britain, Oct. 27, 1969, 52,553/69

U.S. Cl. 204—47 10 Claims  
Int. Cl. C23b 5/24  
An osmium plating bath is composed of a soluble hexachlorosmate (IV), for example, diammonium hexachlorosmate, acidified with sulfuric or sulfamic acid or a mixture thereof. Plating is accomplished from such a bath which may also contain ammonium sulfamate as an anodic depolarizer, at a pH below about 4 and at a current density of from about 1 to about 8 amperes per square decimeter.

### 3,692,643 ELECTROFLUORINATION PROCESS USING THIOESTERS

Dewey George Holland, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.  
No Drawing. Filed May 17, 1971, Ser. No. 144,253  
Int. Cl. C07b 29/06; C07c 51/58, 143/70

U.S. Cl. 204—59 R 18 Claims  
The presence of a small amount of a thioester of aromatic or aliphatic carboxylic acids in the electrolyte during the electrofluorination of alkyl substituted or unsubstituted, aromatic or aliphatic, sulfonic or carboxylic, acid halides decreases the rate of electrode decomposition, raises the yield of perfluorinated product and decreases the formation of viscous materials.

3,692,644  
SELF-COLORING ANODIC OXIDATION OF ALUMINUM AND ITS ALLOYS  
Giancarlo Paolini and Ciro Micheletti, Novara, Italy, assignors to Società per l'Esercizio dell'Istituto Sperimentale dei Metalli Leggeri, Milan, Italy  
No Drawing. Filed Aug. 12, 1969, Ser. No. 849,503  
Claims priority, application Italy, Aug. 14, 1968, 20,177/68

Int. Cl. C23b 9/02 1 Claim  
Improvements are obtained in the anodic oxidation of aluminum or its alloys by electrolytic treatment in aqueous solutions in which the aluminum acts as an anode, by separating the electrolytic cell into an anodic compartment and a cathodic compartment with a porous separator. Formation of precipitates in the electrolyte solution with subsequent clogging and other disadvantages are minimized. Further improvement is obtained by using different electrolytes in the two compartments.

3,692,645  
ELECTROLYTIC PROCESS  
Borut Marincek, Kusanacht, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland  
No Drawing. Original application May 15, 1967, Ser. No. 638,249, now Patent No. 3,562,135, dated Feb. 9, 1971. Divided and this application Oct. 19, 1970, Ser. No. 82,153

Int. Cl. C22d 3/00, 3/08, 3/12 1 Claim  
U.S. Cl. 204—67  
Process for the electrolysis of molten oxides, especially of alumina, in which a gas permeable anode is separated from the melt being electrolyzed by a layer, in contact with the anode and the melt, of an oxygen-ion-conducting

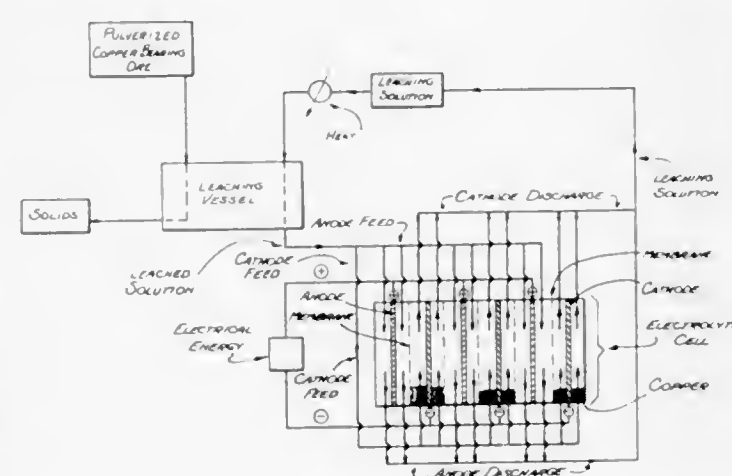
material, for example zirconium oxide stabilized with calcium oxide or other oxides, which is resistant to the melt at the temperature of the electrolysis.

3,692,646  
ELECTROCHEMICAL CHLORINATION OF HYDROCARBONS IN AN HCl-ACETIC ACID SOLUTION  
William B. Mather, Jr., Hopewell Junction, and Edwin R. Kerr, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.  
No Drawing. Filed Sept. 2, 1971, Ser. No. 177,484  
Int. Cl. C07b 9/00, 27/06

U.S. Cl. 204—81 9 Claims  
A process of electrochemically halogenating hydrocarbons in an aqueous hydrohalic acid electrolyte comprising passing current from a cathode to an anode immersed in an electrolyte comprising a mixture of aqueous hydrohalic acid and 10–90 volume percent of an aliphatic acid of 2–4 carbon atoms. Typically, the process involves chlorinating an aliphatic, cycloaliphatic or aromatic hydrocarbon in an electrolytic cell employing graphite electrodes using a mixture of hydrochloric acid and acetic acid. Using the mixed acid electrolyte prevents rapid deterioration of the anodes and increases the solubility of the hydrocarbon starting material in the electrolyte.

3,692,647  
ELECTROLYTIC COPPER PRODUCING PROCESS  
Wayne L. Chambers and Ronald W. Chambers, Fontana, Calif., assignors to Chamber's Process, Ltd., and Philip Zurich, fractional part interest to each  
Filed Jan. 25, 1971, Ser. No. 109,473  
Int. Cl. C22d 1/00; B01k 3/08, 3/10

U.S. Cl. 204—105 R 34 Claims

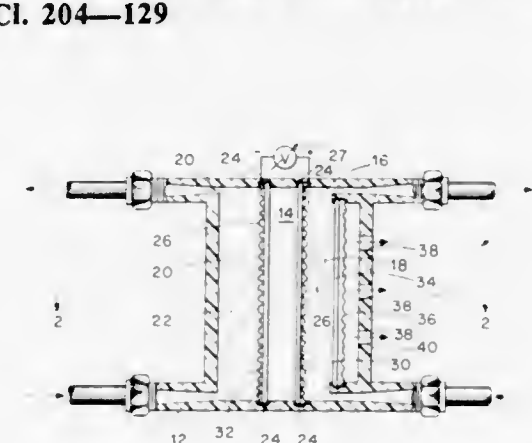


A process for producing metallic copper comprising the steps of: (1) leaching a copper-containing ore with a leaching solution under substantially oxygen-free conditions, the leaching solution comprising cupric chloride and a solubilizing agent for cuprous chloride, the leaching being for a time at a temperature sufficient to chemically convert at least a substantial proportion of the copper in the ore to a reaction product of the copper and the agent, which product is soluble in the resulting solution; (2) separating the remaining solids from the resulting solution subsequent to the leaching step, while maintaining the substantially oxygen-free conditions; (3) electrolytically (a) reducing at least a portion of the resulting solution to precipitate copper metal from the reduced solution and (b) oxidizing at least a portion of the resulting solution to produce a solution comprising cupric chloride; the electrolytic reduction and oxidation being carried out under conditions whereby the reduced solution is of lesser specific gravity than the resulting solution,

and whereby the oxidized solution is of greater specific gravity than the resulting solution, while maintaining the substantially oxygen-free conditions; (4) combining: (a) the reduced solution of the reduction step with (b) the oxidized solution of the oxidation step; while maintaining the substantially oxygen-free conditions, and thereby forming the aqueous leaching solution; and, (5) recovering the precipitated metallic copper.

3,692,648  
PROCESS FOR OXYGENATING BLOOD AND APPARATUS FOR CARRYING OUT SAME  
Jack M. Matloff, Los Angeles, Calif., and Robert A. Sanford, Marblehead, Mass., assignors to Meditech Energy and Environmental Corporation, Inc., Danvers, Mass.  
Filed Mar. 24, 1970, Ser. No. 22,408  
Int. Cl. C01b 13/04; B01k 1/00

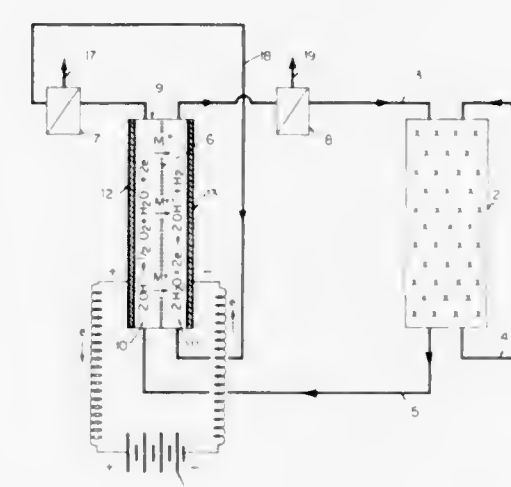
U.S. Cl. 204—129 16 Claims



A blood oxygenating device comprising an oxygen-generating electrode in a blood-oxygenating compartment and carbon dioxide-permeable windows for removing carbon dioxide from the blood being oxygenated therein.

3,692,649  
PROCESS FOR REMOVING CARBON DIOXIDE FROM GASES  
Michel Prigent, 49 Rue du Lieutenant Colonel de Montbrison, 92 Rueil-Malmaison, France, and Claude Dezael, 50 Avenue Egle, Residence Egle, 78 Maisons-Lafitte, France  
Filed Nov. 7, 1969, Ser. No. 874,921  
Int. Cl. C01b 13/04; C01d 7/34; H01m 27/28

U.S. Cl. 204—129 9 Claims

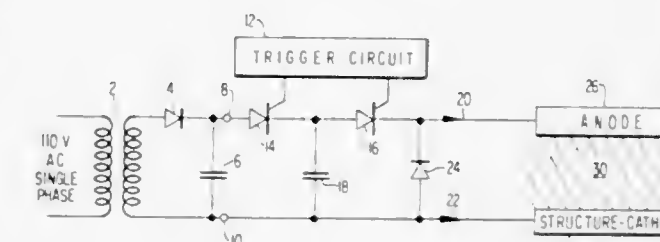


A process for producing oxygen and extracting carbon dioxide from a gas or gaseous mixture by extraction with

a basic solution, evolving the carbon dioxide and oxygen in the anode compartment of an electrolytic cell, and passing the depleted base to the cathode compartment of the cell for regeneration.

3,692,650  
CATHODIC PROTECTION SYSTEM  
Harry J. Kipps, South Laguna Beach, and Thaddeus M. Donigian, Laguna Beach, Calif., assignors to Signal Oil and Gas Company, Los Angeles, Calif.  
Filed Aug. 24, 1970, Ser. No. 66,239  
Int. Cl. C23f 13/00

U.S. Cl. 204—147 10 Claims



A method and apparatus for cathodic protection of structures, such as well casing and pipe lines by the use of a pulsed voltage and continuous current. The width of the voltage pulses is sufficiently wide to permit acid ion conversion but not wide enough to permit undesirable chemical reactions. The pulse repetition frequency is made equal to the resonant frequency of the series circuit formed by the protected structure which acts as a cathode, the medium in which the structure is located, and an anode placed in the medium. The series circuit includes an inherent inductance between the anode and cathode and an inherent series capacitance known as the taffel double layer capacitance. By operating at the resonant frequency, maximum cathodic protection power is derived for a given input power. Further, the inductance between the anode and cathode causes a continuous current to flow after each voltage pulse has terminated.

3,692,651  
PROCESS FOR PREPARING CIS 5-FLUORO-2-METHYL-1-(p-METHYLSULFINYL)BENZYLIDENE-3-INDENYL ACETIC ACID  
Meyer Slettinger, 135 Rockview Ave., North Plainfield, N.J. 07060; Ronald Harmetz, Willow Drive, R.D. 3, Dover, N.J. 07801; and Donald F. Reinhold, 564 Parkview Ave., North Plainfield, N.J. 07060  
No Drawing. Filed May 1, 1970, Ser. No. 33,975  
Int. Cl. C07c 147/14

U.S. Cl. 204—158 R 2 Claims  
Isomerization of trans 5-fluoro-2-methyl-1-(p-methylsulfinylbenzylidene)-3-indenyl acetic acid to its cis isomer.

3,692,652  
PHOTOSYNTHESIS OF KETONES FROM ORGANO-MERCURY COMPOUNDS AND CARBON MONOXIDE  
Dietmar Seyferth, Lexington, Mass., and Ralph J. Spohn, Scotch Plains, N.J., assignors to Massachusetts Institute of Technology, Cambridge, Mass.  
No Drawing. Filed Oct. 19, 1970, Ser. No. 82,178  
Int. Cl. B01j 1/10

U.S. Cl. 204—158 R 6 Claims  
Diarylmercury compounds in THF solutions react with carbon monoxide in the presence of dicobalt octacarbonyl and ultraviolet light to produce diaryl ketones.



3,692,653

**SHAPED ARTICLES HAVING ENHANCED SURFACE BONDING AND ADHESION PROPERTIES AND IMPROVED ELONGATION CHARACTERISTICS**

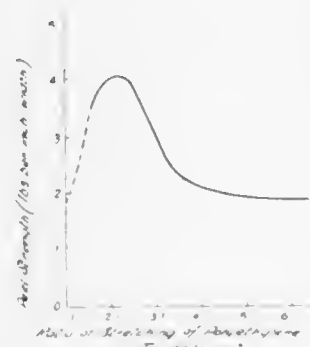
Arthur H. Drelich, Plainfield, and Bobby R. Bowman, East Brunswick, N.J., assignors to Johnson &amp; Johnson

Filed Oct. 14, 1969, Ser. No. 866,221

Int. Cl. C08f 47/22, 3/08

U.S. Cl. 204—165

3 Claims



Films, sheets, filaments, fibrous webs, and similar synthetic, organic, polymeric shaped articles having enhanced surface bonding and adhesion properties, excellent ink-printability with improved elongation characteristics which are obtained by exposing said shaped articles and structures, while in partially stretched or drawn and partially oriented form, to the action of an electrical corona discharge in an atmosphere containing a reactive gas.

3,692,654

**ELECTROPHORETIC PROCESS**

Per Just Svendsen, Glostrup, Denmark, assignor to LKB-Produkter AB, Bromma, Sweden

No Drawing, Filed Apr. 7, 1971, Ser. No. 132,204

Claims priority, application Sweden, Apr. 8, 1970, 4,779/70

Int. Cl. B01k 5/00

U.S. Cl. 204—180 R

6 Claims

An electrophoretic process for separating electrically charged components in a solution includes the steps of adding a mixture of ampholytes with different mobility and different isoelectric points to the components to be separated, and applying an electric field to the mixture of ampholytes and components to be separated to form a migrating pH-gradient and a migrating mobility gradient so that the desired components will be separated by the different ampholytes.

3,692,655

**METHOD OF RADIOFREQUENCY SPUTTER ETCHING**

John Louis Vossen, Jr., Bedminster, N.J., assignor to RCA Corporation

Filed Apr. 5, 1971, Ser. No. 131,387

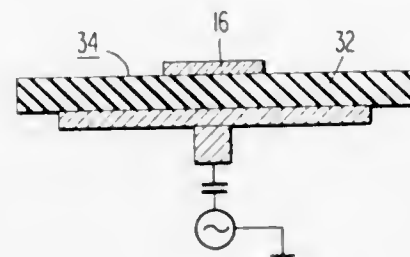
Int. Cl. C23c 15/00

U.S. Cl. 204—192

5 Claims

A method for radiofrequency sputter etching a pattern defined by an organic photoresist mask on a surface of

a material from which there are dissociated, under the conditions of sputter etching, elements or complexes which are reactive with organic photoresist. The method



includes back-scattering of a relatively inert material to the photoresist to reduce degradation of the photoresist by the reactive elements or complexes.

3,692,656

Patent Not Issued For This Number

3,692,657

Patent Not Issued For This Number

3,692,658

**CURRENT SUPPLY FOR ELECTROLYSIS CELLS**

Luciano Mose, Dortmund, Germany, assignor to Friedrich Uhde GmbH, Dortmund, Germany

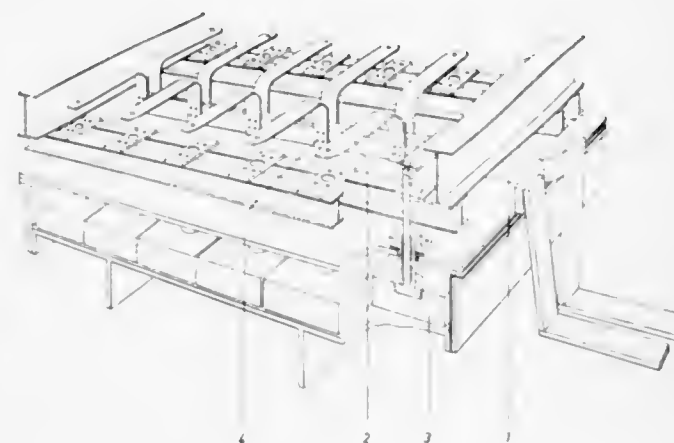
Filed May 14, 1969, Ser. No. 824,655

Claims priority, application Germany, May 17, 1968, P 17 71 393.8

Int. Cl. B01k 3/00; C22d 1/04

U.S. Cl. 204—219

2 Claims



In electrolytic cells of the horizontal type having a series of adjustable anodes arranged in a row within a housing provided with mercury cathode and having a cover flexibly sealed to the rim of the housing, electric current is delivered to the anodes by a strip of copper or the like which extends in the direction of the connection line between the anode axes and is arranged above the cover through which the anode rods connected to the strip project.

3,692,659

**ELECTROLYTIC REVERSIBLE COLOR DISPLAY DEVICE**

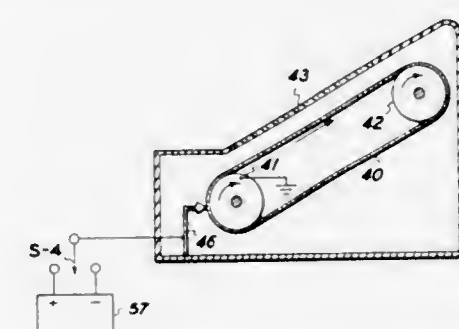
Harold D. Lees, Henrietta, Paul F. Evans, Pittsford, Martin S. Maltz, Rochester, and Edward W. Vipond, Rush, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 28, 1970, Ser. No. 67,731

Int. Cl. C23b 5/68

U.S. Cl. 204—224

1 Claim



A reversible color display device utilizing a porous member impregnated with an electrolytic indicator having a pH range very near the pH at which the indicator undergoes a color change. The impregnated porous member is placed between a pair of electrodes one of which may be a writing electrode such as a stylus and the other a backing electrode. Upon the application of current to this structure color marks are made on the porous member. The color change is reversible by applying a current of the opposite polarity to the device.

3,692,660

**ELECTROLYTIC CELL**

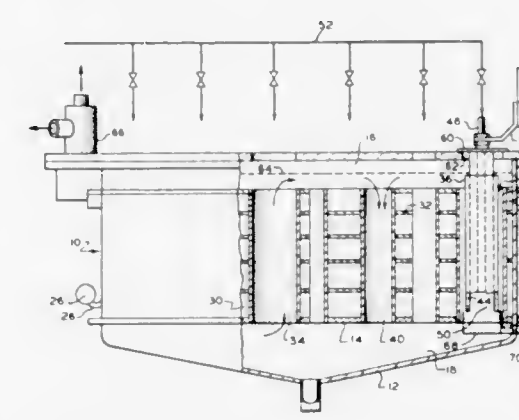
Robert B. MacMullin, Niagara Falls, N.Y.; and Homer M. Fox, Forrest N. Ruehlen, and William V. Childs, Bartlesville, Okla. (all % Phillips Petroleum Company, Bartlesville, Okla. 74003)

Filed Sept. 25, 1970, Ser. No. 75,316

Int. Cl. B01k 3/00

U.S. Cl. 204—246

12 Claims



An electrolytic cell having a heat exchanging shell disposed therein and dividing the cell container into an upper and lower electrolyte chamber. Electrode tube means extend through said shell and are in communication with said electrolyte chamber. Electrode means are disposed in said electrode tube means in a manner to preserve said communication. Downcomer tube means, interspersed among said electrode tube means, also extend through the shell into communication with said electrolyte chamber. Baffle arrangements in said shell, and arrangements of said electrode tube means and said downcomer tubes, improve the efficiency of the cell.

3,692,661

**APPARATUS FOR REMOVING POLLUTANTS AND IONS FROM LIQUIDS**

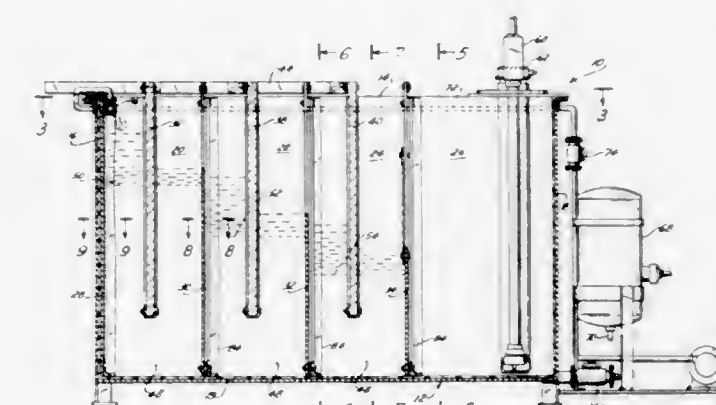
Joe H. Shockcor, Guilford, Conn., assignor to Resource Control, Inc., West Haven, Conn.

Filed Sept. 17, 1969, Ser. No. 858,758

Int. Cl. C02b 1/82; B01d 43/00

U.S. Cl. 204—269

9 Claims



Apparatus and method for electrochemically removing ions and other contaminants from aqueous liquids by passing the liquid to be treated into a treatment vessel wherein a plurality of cathodes and anodes are positioned to form a number of treatment cells. The cathodes and anodes are connected to a source of direct current and a bed comprising a multitude of solid elements forming a medium of low electrical conductivity is placed about the cathodes and anodes. The cathodes and anodes are positioned so that they form a circuitous path for the liquid being treated as it passes through the bed while flowing through the vessel.

3,692,662

**COAL LIQUEFACTION AT STAGED TEMPERATURES**

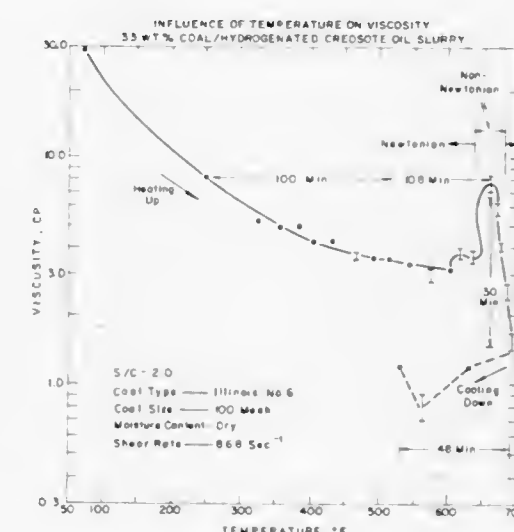
Edward L. Wilson and Robert E. Pennington, Baytown, Tex., assignors to Esso Research and Engineering Company

Filed Oct. 9, 1970, Ser. No. 79,609

Int. Cl. C10g 1/04

U.S. Cl. 208—8

9 Claims



In the solvent liquefaction of slurried caking-type coal solids at elevated depolymerizing temperatures above 700°



F., the formation of unconvertible coal residues is reduced by first forming a substantially complete dispersion of the coal in the solvent before exposing the coal to depolymerizing temperatures. For example, the slurry is first maintained at temperatures within the range from about 500° F. to about 700° F. while being agitated until the viscosity of the slurry, after having increased to a maximum, falls from the maximum to a viscosity within a predetermined range lower than the maximum which indicates the formation of a substantially complete dispersion. Thereafter, the dispersed slurry is heated at depolymerizing temperatures above 700° F. in intimate contact with free radical chain terminators such as provided in a hydrogen-donor solvent, resulting in the markedly reduced formation of intractable polymers.

3,692,663

## PROCESS FOR TREATING TARS

Koza Ueda, Kyoto, Jitsumi Kimoto, Takarazuka, and Mitsuru Moritake, Suita, Japan, assignors to Osaka Gas Company, Limited, Osaka-shi, Japan  
No Drawing. Filed Mar. 19, 1971, Ser. No. 126,356  
Int. Cl. C10c 3/02

U.S. Cl. 208—44

8 Claims

The process for treating tars of this invention comprises steps of (1) heating a starting tar to a temperature of 320 to 470° C. under increased pressure of 1 to 20 kg./cm.<sup>2</sup> gauge to produce gas, oil and pitch, (2) separating oil and pitch by distillation to produce pitch having a softening point of at least 60° C. and containing 20 to 45% by weight of benzene-insoluble content and 3 to 20% by weight of quinoline-insoluble content, (3) heating the resulting oil under increased pressure of 3 to 35 kg./cm.<sup>2</sup> gauge at a temperature ranging from 370 to 540° C. and at least 10° C. higher than the heating temperature in the first step to produce gas, oil and pitch, and (4) separating oil and pitch by distillation to produce pitch having a softening point of at least 60° C. and containing 15 to 40% by weight of benzene-insoluble content and not more than 2% by weight of quinoline-insoluble content.

3,692,664

Patent Not Issued For This Number

3,692,665

## CATALYTIC CRACKING WITH CATALYST OF HIGH-ACTIVITY ZEOLITE STABILIZED BY CATION AND THERMAL STABILIZATION

Carl V. McDaniel, Laurel, Richard William Baker, Ellicott City, and Clark Ace Rundell, Wheaton, Md.; said McDaniel and Rundell assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Application Nov. 19, 1969, Ser. No. 878,249, which is a continuation-in-part of application Ser. No. 796,215, Feb. 3, 1969, now Patent No. 3,595,611. Divided and this application May 3, 1971, Ser. No. 139,811

Int. Cl. C10g 11/04; C01b 33/28

U.S. Cl. 208—120

1 Claim

A process for preparing a faujasite type zeolite having a silica to alumina ratio of at least 3.2 by treating the faujasite with a combination of ammonium ion exchange and metal cation exchange, including rare earths, to reduce the Na<sub>2</sub>O level in the product to below 3% followed by thermal stabilization. The final step in the process is replacement of at least part of the residual cations with aluminum ions by exchange with an aluminum salt solution. The resulting zeolite is characterized by high surface area, exceptional catalytic activity and a favorable catalytic selectivity. The zeolite has exceptionally high activity and selectivity when used as a component in a hydrocarbon cracking catalyst.

3,692,666

## LOW PRESSURE, LOW SEVERITY HYDROCRACKING PROCESS

Ernest L. Pollitzer, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 823,521, May 9, 1969. This application Sept. 21, 1970, Ser. No. 74,236

Int. Cl. C10g 13/02, 23/02, 37/00

U.S. Cl. 208—112

3 Claims

A catalytic process for converting a hydrocarbonaceous charge stock at a low operating severity including a maximum catalyst bed temperature of 350° F. to about 650° F. and a pressure of 200 to about 500 p.s.i.g. The catalyst is a composite of a Group VIII noble metal component, or a nickel component, and the reaction product of alumina and a sublimed Friedel-Crafts metal halide. A preferred technique involves introducing a low molecular weight olefin into the conversion reaction zone.

3,692,667

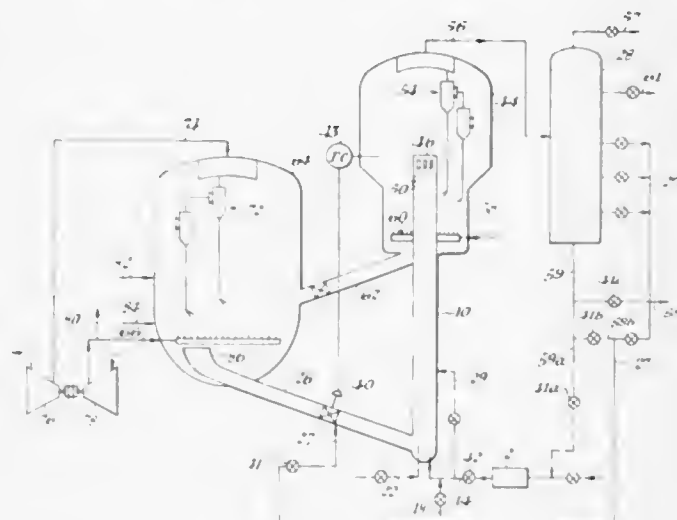
CATALYTIC CRACKING PLANT AND METHOD  
Joel D. McKinney, Indiana Township, Allegheny County, and George F. Ondish, Penn Hills Township, Allegheny County, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 12, 1969, Ser. No. 875,829

Int. Cl. C10g 11/18

U.S. Cl. 208—120

35 Claims



We disclose a process for cracking a primary hydrocarbon charge capable of being cracked to lower boiling constituents including petrochemicals and the like in the presence of a stream of fluidized cracking catalyst, said process comprising the steps of maintaining a predetermined range of temperatures within said catalyst stream, adding said charge to said catalyst stream, recycling at least a portion of the normally liquid effluent product of said cracking process to said catalyst stream, and adding said recycle portion to said catalyst stream at a point having a higher temperature than that at which said charge is added so that a significant proportion of said recycle effluent is cracked by said catalyst.

3,692,668

## PROCESS FOR RECOVERY OF OIL FROM REFINERY SLUDGES

Drew E. McCoy, Richmond, William N. Gilmer, Chesterfield, and Edward C. Johnson, Richmond, Va., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 3, 1971, Ser. No. 120,521

Int. Cl. B01d 12/00

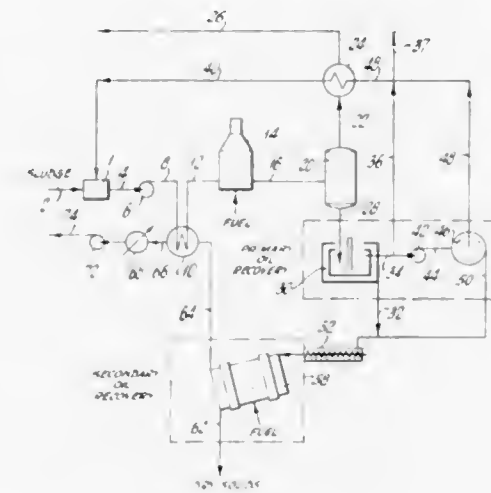
U.S. Cl. 210—18

8 Claims

In the first stage of a continuous process refinery sludges are mixed and diluted with oil, such as recycle oil derived from the process, to improve the handling characteristics of the sludge, heated to a temperature of about

220° to 300° F. at a pressure of from about 15 to about 25 p.s.i.a. to separate the sludge into a water vapor phase and an oil-sludge slurry phase. The water vapor is condensed to yield water with a reduced Chemical Oxygen Demand which, in most instances, can be discharged in receiving bodies of water without polluting the same, or can, if required, be further treated before discharge from the process, while most of the oil from oil-sludge slurry

resins which are contaminated with solid particles of ferric oxide and other metal oxides such as cupric oxide by contacting said mixture of exchange resins with a reducing agent which will reduce the ferric oxide to the ferrous state and form a water soluble ferrous salt and, if necessary, reduce the cupric oxide to the corresponding water soluble cuprous salt thereby easily removing said oxides. At the same time, the cation of the reducing agent as well as the ferrous ion substantially exhausts the cation exchange resin while the anion of the reducing agent substantially exhausts the anion exchange resin thereby creating a significant density differential between the anion and cation exchange resin so that said resins can be easily separated prior to regeneration.



phase is separated therefrom by, for example, centrifugation. In the second phase of the process, the concentrated sludge from the centrifugation step is heated at a temperature of about 400° to 800° F. and a pressure of about 1 to about 20 p.s.i.a. to remove by vaporization the remaining oil which is collected and condensed thus yielding dry, oil-free, free-flowing solids useful for a wide variety of applications, such as for land fill.

3,692,669

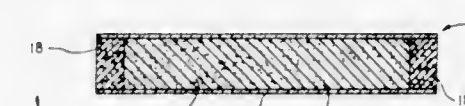
## METHOD AND APPARATUS FOR MICRO DRY COLUMN CHROMATOGRAPHY

Albert J. Bauman, Sierra Madre, Calif., assignor to California Institute of Technology, Pasadena, Calif.  
Filed Aug. 10, 1970, Ser. No. 62,366

Int. Cl. B01d 15/08

U.S. Cl. 210—31

13 Claims



Micro-sized dry chromatographic columns are prepared by plugging at least one end of a glass capillary tube with a material impervious to the particles of adsorbent but, pervious to the chromatographic solvent, filling the tube with adsorbent, compacting the adsorbent and plugging the other end of the column. An analysis is conducted by imbibing sample onto the solvent pervious plug, solvent development through said plug, separating the bands by breaking the tube into segments and analyzing the bands.

3,692,670

## TREATMENT OF CATION AND ANION EXCHANGE RESINS WITH SODIUM SULFITE

William C. Burns, Fullerton, and Donald Robinson, Arcadia, Calif., and Sidney H. Newberry, Caledonia, Ill., assignors to Water Treatment Corporation, City of Industry, Calif.

No Drawing. Continuation of application Ser. No. 775,529, Nov. 13, 1968. This application Dec. 29, 1969, Ser. No. 888,146

Int. Cl. B01d 15/06

U.S. Cl. 210—32

4 Claims

A method for purifying, reconditioning and separating mixtures of cation exchange resins and anion exchange

3,692,671  
RARE EARTH ION REMOVAL FROM WASTE WATER

Howard L. Recht, Northridge, and Masood Ghassemi, Canoga Park, Calif., assignors to North American Rockwell Corporation

No Drawing. Filed Oct. 1, 1970, Ser. No. 77,390

Int. Cl. C02c 1/40

U.S. Cl. 210—45

15 Claims

A method is provided for chemically removing trivalent rare earth ions from waste water by treating the trivalent rare earth ion-containing water with a carbonate salt, such as an alkali metal carbonate, to form an insoluble rare earth carbonate precipitate and then separating the precipitate from the water. The rare earth ions may be regenerated in the form of a soluble rare earth salt, for example, by treating the separated rare earth carbonate precipitate with acid, such as hydrochloric or sulfuric acid.

3,692,672

Patent Not Issued For This Number

3,692,673

## WATER-SOLUBLE SULFONATE POLYMERS AS FLOCCULANTS

Donald Irvin Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Filed Feb. 12, 1971, Ser. No. 115,085

Int. Cl. B01d 21/01

U.S. Cl. 210—52

13 Claims

Polymers of acrylamido sulfonic acids and their salts, especially 2-acrylamido-2-methylpropanesulfonic acid and its salts, are useful as flocculants for aqueous systems, especially in combination with inorganic co-flocculants.

3,692,674

## FILTER SCREEN TRAINING MECHANISM

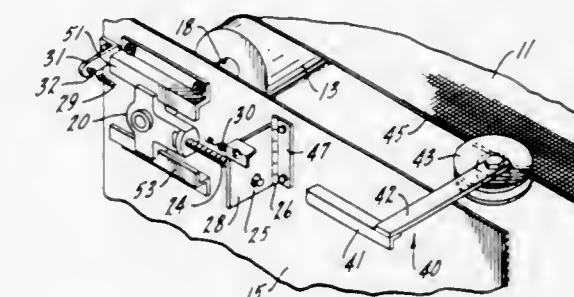
Marvin E. Wood, Lenexa, Kans., assignor to Ecodyne Corporation

Filed Nov. 4, 1970, Ser. No. 86,820

Int. Cl. B01d 33/14

U.S. Cl. 210—401

4 Claims



An improved belt training mechanism having an endless belt maintained under tension between a pair of



rollers, by means of which one of the rollers over which the filter screen travels may be skewed, to correct the alignment of the belt. The invention includes a single guide means to feel the movement of an edge of the filter screen and align the belt accordingly. Spring means are provided to reduce the force applied to the edge of the belt by the guide means.

3,692,675

# INHIBITOR TO CORROSIVE ATTACK AND METHOD OF USE

Kenneth H. Nimerick, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.  
No Drawing. Continuation-in-part of application Ser. No. 36,464, May 11, 1970. This application Nov. 4, 1970, Ser. No. 86,951

Int. Cl. C23f 11/12, 11/14

U.S. Cl. 252-8.55 E

16 Claims

A composition of matter which is useful for protecting metal exposed to a corrosive environment and use thereof in the treatment of metal parts, e.g. located in well bores, equipment, etc., is disclosed and claimed. The composition contains as an essential constituent an acid salt of the reaction product of (a) a fatty or resin acid, (b) a polymerized higher fatty acid, (c) a partial ester formed by reacting a polyhydric alcohol with a polymerized higher fatty acid and (d) aminoethyl ethanolamine.

3,692,676

# METHOD OF FRICTION LOSS REDUCTION IN OLEAGINOUS FLUIDS FLOWING THROUGH CONDUITS

John D. Culter, Rolla, Mo., and Gifford G. McClafflin, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.  
No Drawing. Filed Dec. 22, 1969, Ser. No. 887,375

Int. Cl. E21b 43/25

U.S. Cl. 252-8.55 R

3 Claims

A method of reducing the friction loss normally occurring when oleaginous fluids flow through conduits by adding to the oleaginous fluid a minor amount of a very high molecular weight polyolefin.

3,692,677

# GREASES THICKENED WITH QUINACRIDONE PIGMENTS

Garth M. Stanton, San Anselmo, and John L. Dreher, Kensington, Calif., assignors to Chevron Research Company, San Francisco, Calif.  
No Drawing. Filed May 18, 1970, Ser. No. 38,549

Int. Cl. C10m 5/02, 5/20

U.S. Cl. 252-25

9 Claims

A composition comprising greases thickened with substituted or unsubstituted quinacridone pigments.

3,692,678

# METALWORKING LUBRICANT COMPOSITION AND METHOD FOR ITS USE

Torrence F. Stiffler, Pittsburgh, Pa., assignor of a fractional part interest to Alfred M. Murphy, Richmond, Va.  
No Drawing. Continuation-in-part of application Ser. No. 42,473, June 1, 1970. This application Apr. 30, 1971, Ser. No. 139,206

Int. Cl. C10m 1/24, 1/26

U.S. Cl. 252-37

5 Claims

A metalworking lubricant composition particularly adapted for use in drawing aluminum tubing and the like and containing as essential constituents sulfur-free degreas, aluminum stearate, castor oil wax and a chlorohydrocarbon solvent.

3,692,679

# STABILIZED ORGANIC MATERIAL

James D. O'Neill, Southfield, Mich., assignor to Ethyl Corporation, New York, N.Y.  
No Drawing. Application Mar. 10, 1969, Ser. No. 805,808, which is a continuation-in-part of application Ser. No. 603,716, Dec. 22, 1966. Divided and this application June 18, 1970, Ser. No. 47,557

Int. Cl. C10m 1/54

U.S. Cl. 252-46.4

2 Claims

The combination of a dihydrocarbyl tin sulfide (e.g., di-n-butyl tin sulfide) with a phenolic antioxidant exhibits a synergistic stabilizing effect, especially in lubricating oils. Representative phenolic antioxidants are dialkylhydroxybenzyl amines (e.g., N,N-dimethyl 3,5-di-tert-butyl-4-hydroxybenzyl amine).

3,692,680

# STABILIZATION OF ORGANIC SUBSTANCES

Henryk A. Cyba, Evanston, Ill.  
(30 Algonquin Road, Des Plaines, Ill. 60016)  
No Drawing. Continuation-in-part of application Ser. No. 780,601, Dec. 2, 1968, now Patent No. 3,598,855. This application Dec. 21, 1970, Ser. No. 100,439

Int. Cl. C10m 1/54

U.S. Cl. 252-49.6

9 Claims

Stabilization of organic substance by incorporating therein a stabilizing concentration of a cyclic borate of polymeric alkanolamine. One example is the stabilization of plastics and another example is the stabilization of hydrocarbon distillates.

3,692,681

# DISPERSION OF TEREPHTHALIC ACID IN DETERGENT CONTAINING HYDROCARBON OIL MEDIUM

Thomas V. Liston, Kentfield, Calif., assignor to Chevron Research Company, San Francisco, Calif.  
No Drawing. Filed Aug. 2, 1968, Ser. No. 749,614

Int. Cl. C10m 1/20, 1/32

U.S. Cl. 252-51.5 A

4 Claims

Terephthalic acid is dispersed in a hydrocarbon medium containing highly hindered acylated alkylene polyamines.

3,692,682

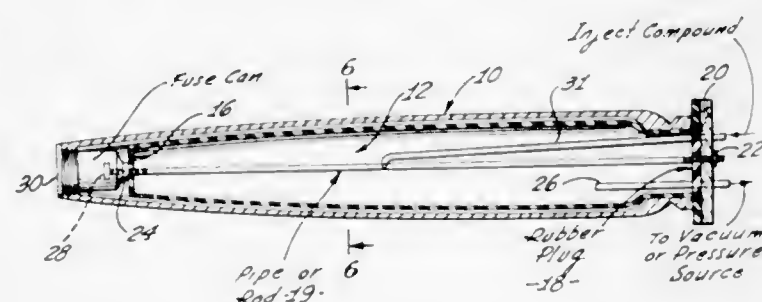
# HEAT BARRIER MATERIAL AND PROCESS

Carlo Ré, Glendale, Earl O. Conrad, Santa Ana, and Jack R. Conrad, Costa Mesa, Calif., assignors to DynaShield, Inc., Santa Ana, Calif.  
Filed Dec. 18, 1969, Ser. No. 886,075

Int. Cl. C04b 43/00; C09k 3/28; E04b 1/94

U.S. Cl. 252-62

2 Claims



An improved material is provided which serves as a protective heat barrier for explosives, or other combustible products, and which may be applied, for example, as a paste or a liquid, to the external or internal surface of the casing containing the explosive, to create a hard coating for the casing of extremely low heat transfer characteristics and low heat rate transfer characteristics. Although the coating will be described herein in such an environment, it will be evident as the description proceeds,

that it may be used in any application in which a heat barrier is required for protective, or other purposes. The material is composed of a mixture of water-extended polyester (WEP) and particles of a heat proofing material, such as powdered or fibrous asbestos, or powdered glass. An improved process and apparatus for applying the material is also provided.

3,692,683

# PROCESS FOR PREPARING MAGNETIZABLE MATERIAL

John W. Geus, Geleen, Netherlands, assignor to Stamcarbon N.V., Heerlen, Netherlands  
Filed Mar. 26, 1970, Ser. No. 23,032  
Claims priority, application Netherlands, Mar. 28, 1969, 6904796

Int. Cl. C10g 49/08; C04b 35/26

U.S. Cl. 252-62.62

8 Claims

A process is described for the preparation of a permanently magnetizable iron-containing particulate metal material wherein from a ferrous ion containing solution, wherein other metals are present in an atomic quantity not larger than half that of the ferrous ion, the metals are co-precipitated by gradual and homogeneous conversion of at least 3/4 part of the bivalent iron to trivalent iron to a pH between 2 and 6.5 and under controlled temperature conditions, and said conversion is controlled to proceed at a rate no greater than at most 0.3 gram atoms per liter of solution per hour. The precipitate is subsequently separated from the solution and washed and dried.

3,692,684

# DETERGENT

Gerhard Oskar Hentschel, Göteborg, Sweden, assignor to Valter Sven Erwin Hentschel, Göteborg, Sweden  
No Drawing. Filed Mar. 17, 1970, Ser. No. 20,425  
Claims priority, application Switzerland, Oct. 1, 1969, 13,492/69

Int. Cl. C11d 3/20

U.S. Cl. 252-89

3 Claims

A detergent containing alkaline salts of organic, aliphatic and/or aromatic carboxylic acids and/or anhydrides of the same with one or several carboxylic groups. These salts replace in the detergent previously used phosphates which caused a eutrophication and endangered the ecology.

3,692,685

# DETERGENT COMPOSITIONS

Vincent Lamberti, Upper Saddle River, and Mark D. Konort, Haworth, N.J., and Ira Weil, New York, N.Y., assignors to Lever Brothers Company, New York, N.Y.  
No Drawing. Continuation-in-part of application Ser. No. 879,627, Nov. 24, 1969, which is a continuation-in-part of application Ser. No. 731,700, May 24, 1968. This application Oct. 12, 1970, Ser. No. 80,166

Int. Cl. C11d 3/20, 7/26

U.S. Cl. 252-89

5 Claims

There are disclosed herein detergent compositions containing a water-soluble organic detergent compound and as a builder therefor the normal alkali metal, ammonium or alkanol amine salts of carboxymethylsuccinic acid.

3,692,686

# NOVEL NON-FLAMMABLE AZEOTROPE SOLVENT COMPOSITION

Oliver A. Barton, Florham Park, N.J., and Kevin P. Murphy, Orchard Park, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.  
No Drawing. Filed Oct. 1, 1970, Ser. No. 77,388

Int. Cl. C09d 9/00; C11d 7/50; C23g 5/02

U.S. Cl. 252-171

10 Claims

Tetrachlorodifluoroethane (sym., asym., and mixtures thereof) nitromethane, water and isopropanol or second-

3,692,687

# PROCESS FOR STABILIZING HYDROX COMPOSITIONS CONTAINING MAGNESIUM OXIDES

Allen A. Duswalt, West Chester, Pa., assignor to Hercules Incorporated, Wilmington, Del.  
Filed June 4, 1971, Ser. No. 149,979

Int. Cl. C06b 19/06; C06d 5/06

U.S. Cl. 252-184

13 Claims

Gas generating compositions having improved stability are prepared from alkali or alkaline earth metal nitrites, ammonium salts and magnesium oxide. The components are predried before mixing. The metal nitrites and ammonium salts must be predried separately. The predried magnesium oxide is admixed with either the alkali or alkaline earth metal nitrite or ammonium salt prior to admixing with the remaining unmixed component. The calculated water content of the final admixture must be less than 0.0015% by weight.

3,692,688

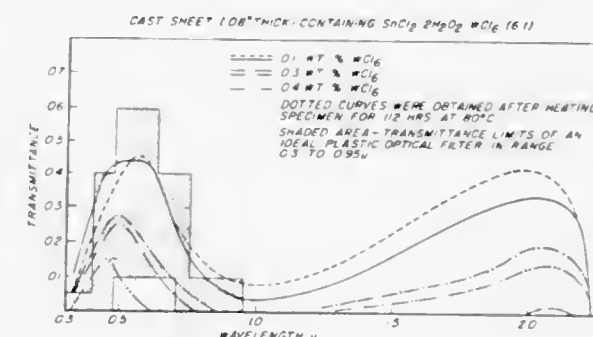
# PLASTIC OPTICAL FILTER

George Augustus Castellion, Stamford, Conn., and Joseph Peter Habermann, North Salem, N.Y., assignors to American Cyanamid Company, Stamford, Conn.  
Filed June 1, 1971, Ser. No. 148,662

Int. Cl. F21v 9/02; G02f 5/20

U.S. Cl. 252-300

3 Claims



Tungsten hexachloride and stannous chloride incorporated together as solutes in polymethylmethacrylate formulations produce a reduced tungsten species than filters infrared effectively while maintaining visible light transmittance. Plastic optical filters are made with the described composition.

3,692,689

# PHOSPHOR COMPRISING LANTHANUM CERIUM THORIUM PHOSPHATE

Mary V. Hoffman, South Euclid, Ohio, assignor to General Electric Company  
No Drawing. Filed Mar. 25, 1971, Ser. No. 128,187

Int. Cl. C09k 1/36

U.S. Cl. 252-301.1 L

8 Claims

Improved cerium-activated phosphate phosphors of lanthanum and cerium are provided by incorporating small but effective amounts of the thorium ion in the crystalline lattice of the phosphor. Superior luminescent properties are obtained in the phosphor by this means and the phosphors can be prepared by a method which is simpler and easier to control than presently in use. The improved phosphors are useful in cathode-ray tubes, lamps, X-ray image intensifier tubes and other applications.



3,692,690

**ENCAPSULATION PROCESS BY COMPLEX COACERVATION USING POLYMERS AND CAPSULE PRODUCT THEREFROM**

Georg Horger, Steppach, Germany, assignor to The National Cash Register Company, Dayton, Ohio  
No Drawing. Filed May 27, 1970, Ser. No. 41,111  
Int. Cl. A61k 9/04; B01j 13/02; B44d 1/02

U.S. Cl. 252—316

5 Claims

A process is disclosed for manufacturing capsules, en masse, by use of a liquid-liquid phase separation which includes polysilicate inorganic material as a complexing, phase-separation-inducing, polymer. The disclosed process is conducted in an aqueous capsule manufacturing vehicle and the material which emerges as a liquid phase is an aqueous solution of organic hydrophilic polymeric material and inorganic polysilicate material. The liquid-liquid phase separation of this invention is the type generally named "complex" coacervation wherein the separated, emergent, liquid phase includes a major portion of both, the organic hydrophilic polymeric material and the phase-separation-inducing material;—in this invention, polysilicate polymeric material. The organic polymeric material and the inorganic polymeric material are complexed together by virtue of opposite electrical charges, the complex is least partially immiscible with the manufacturing vehicle, and the manufacturing vehicle contains only a minor amount of either polymeric material. Preferred materials for use in practicing the present invention include gelatin as the organic hydrophilic polymeric material and polysilicates as the inorganic polymeric phase-separation-inducing material.

3,692,691

**PREPARATION OF DIHYDROCARBYL 2- OR 4-HYDROXYBENZYL C<sub>4-20</sub> ALKYL ETHERS**

Bernard R. Meltsner, Royal Oak, Mich., assignor to Ethyl Corporation, New York, N.Y.  
No Drawing. Filed May 17, 1971, Ser. No. 144,284  
Int. Cl. C07c 41/10, 43/20

U.S. Cl. 252—404

10 Claims

Dihydrocarbyl 2- or 4-hydroxybenzyl C<sub>4-20</sub> alkyl ethers are prepared by reacting a dihydrocarbyl 2- or 4-hydroxybenzyl methyl ether with a higher primary alcohol in the presence of an acid catalyst under conditions such that methanol is distilled out. The dihydrocarbyl hydroxybenzyl methyl ether may be formed by reacting a dihydrocarbyl 2- or 4-hydroxybenzyl halide with a mixture of methanol and higher primary alcohols such that the methyl ether forms first and undergoes transesterification with the higher alcohol. The products are useful antioxidants.

3,692,692

**REJUVENATION OF DAMAGED ZEOLITE-SUPPORTED METAL CATALYSTS**

John W. Ward, La Habra, and Danford E. Clark, Fountain Valley, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Oct. 29, 1970, Ser. No. 85,241  
Int. Cl. B01j 11/18, 11/08, 11/30

U.S. Cl. 252—412

12 Claims

Siliceous zeolite catalysts comprising zeolitic mono- and/or divalent metal cations and a non-zeolitic Group VIII metal hydrogenating component supported thereon, which catalysts have undergone damage by thermal and/or hydrothermal stresses resulting in a maldistribution of the metal components, are rejuvenated in activity by a sequential treatment with an aqueous ammonium salt to exchange out at least a portion of the zeolitic mono- and/or divalent metal ions, and with aqueous ammonia to effect a redistribution of the Group VIII metal. The treatments may be performed in either order.

3,692,693

**DESULFATION OF REFORMING CATALYSTS**

Harry E. Gunning, Edmonton, Alberta, and Bruce G. Jameson and Jackson Eng, Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Co.  
No Drawing. Filed Oct. 15, 1970, Ser. No. 81,153  
Int. Cl. B01j 11/74, 11/18, 11/30

U.S. Cl. 252—415

12 Claims

A process for the regeneration of sulfur deactivated catalysts by contact, or reaction, of the said catalyst with methane. A catalyst, or catalyst composite, which has been poisoned, and thereby deactivated, by contact with sulfur in sufficient concentration and exposed to oxygen to form the sulfate, can be regenerated by contact with methane. Such catalyst regeneration technique finds particular utility in semiregenerative type reforming processes. Reforming catalysts, particularly catalyst composites which contain alumina, e.g. noble metal on an alumina base such as platinum-on-alumina, which has been deactivated by sulfur compounds can be regenerated by contact with methane at temperatures ranging generally from about 700° F. to about 1050° F., and at pressures ranging from about 15 p.s.i. to about 300 p.s.i.

3,692,694

**CATALYST FOR HYDROCARBON CONVERSION**

Stanley Kravitz, Wicopee, and John H. Estes and Robert M. Suggitt, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed June 25, 1970, Ser. No. 49,896  
Int. Cl. B01j 11/78

U.S. Cl. 252—439

16 Claims

A method for preparing a hydrocarbon conversion catalyst by providing a composite composed of alumina having associated therewith a Group VI-B, VII-B or VIII metal or compound and contacting the composite with an activator system comprising carbon monoxide and sulfur fluoride or thionyl fluoride. The catalysts so prepared are useful in such hydrocarbon conversion processes as isomerization, hydrocracking, reforming, alkylation, disproportionation, polymerization and hydrogenation.

3,692,695

**FLUORIDED COMPOSITE ALUMINA CATALYSTS**

Robert M. Suggitt and John H. Estes, Wappingers Falls, and Stanley Kravitz, Wicopee, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed June 25, 1970, Ser. No. 49,897  
Int. Cl. B01j 11/78

U.S. Cl. 252—439

14 Claims

A method for preparing a hydrocarbon conversion catalyst by providing a composite composed of alumina having associated therewith a Group VI-B, VII-B or VIII metal or compound and contacting the composite with an activator system comprising hydrogen and sulfur hexafluoride. The catalysts so prepared are useful in such hydrocarbon conversion processes as isomerization, hydrocracking, reforming, alkylation, disproportionation, polymerization and hydrogenation.

3,692,696

**CATALYST FOR HYDROCARBON CONVERSION**

Stanley Kravitz, Wicopee, and John H. Estes and Robert M. Suggitt, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed June 25, 1970, Ser. No. 49,898  
Int. Cl. B01j 11/78

U.S. Cl. 252—439

14 Claims

A method for preparing a hydrocarbon conversion catalyst by providing a composite composed of alumina having associated therewith a Group VI-B, VII-B or VIII metal or compound and contacting the composite with an activator system comprising carbon monoxide and

3,692,700

**PROCESS AND COMPOSITIONS FOR CRACKING HYDROCARBON FEEDS**

Willard H. Sawyer and Harry E. Robson, Baton Rouge, La., assignors to Esso Research and Engineering Company

Filed Aug. 31, 1970, Ser. No. 68,213  
Int. Cl. B01j 11/40, 11/32

U.S. Cl. 252—455 R

4 Claims

A process, and compositions of matter, for cracking hydrocarbon feeds, e.g., at temperatures ranging from about 400° C.—650° C. The feeds are cracked at cracking conditions by contact with catalysts selected from the groups consisting of (a) magnesium chrysotile and (b) magnesium chrysotile, nickel chrysotile and cobalt chrysotile substituted by certain selected concentrations of aluminum. Flake forms of chrysotile are preferred, especially those of surface areas ranging from about 250 m<sup>2</sup>/g.—500 m<sup>2</sup>/g., and higher. Particularly useful catalysts are formed by incorporation of these materials in matrices which possess Bronsted acidity.

3,692,701

**GROUP VIII METALS ON TIN-CONTAINING SUPPORTS DEHYDROGENATION CATALYSTS**

E. O. Box, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed July 15, 1970, Ser. No. 55,213  
Int. Cl. B01j 11/08, 11/22

U.S. Cl. 252—466 B

6 Claims

Longevity of catalyst composites comprising supported Group VIII metal compounds is improved by incorporation of a tin compound into the support prior to calcination of the support. After calcining of the support, the Group VIII metal components are incorporated by conventional procedures. The resulting catalysts are especially useful in dehydrogenation processes and, in addition to improved longevity, can be repeatedly regenerated to a conversion activity commensurate with fresh catalysts.

3,692,702

**SEMICONDUCTIVE CONTACT ADHESIVE**

Anthony R. Lania, Watertown, and Neil Kirkegard, Jr., Randolph, Mass., assignors to Chase Corporation, Randolph, Mass.

No Drawing. Filed Aug. 26, 1970, Ser. No. 67,239  
Int. Cl. H01b 1/06

U.S. Cl. 252—511

15 Claims

A semiconducting contact adhesive comprising a vulcanizing agent, a vulcanizable polymer such as poly(2-chloro-1,3-butadiene), and a carbon black for imparting semiconducting properties thereto. The carbon black is advantageously of a high surface:absorptivity ratio. The adhesive is characterized by its excellent viscosity characteristics, excellent shelf life, very high initial strength, and high degree of surface-selectivity.

3,692,703

Patent Not Issued For This Number

3,692,697

**FLUORIDED METAL-ALUMINA CATALYSTS**

Stanley Kravitz, Wicopee, and John H. Estes and Robert M. Suggitt, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed June 25, 1970, Ser. No. 49,899  
Int. Cl. B01j 11/78

U.S. Cl. 252—439

16 Claims

A method for preparing a hydrocarbon conversion catalyst by providing a composite composed of alumina having associated therewith a Group VI-B, VII-B or VIII metal or compound and contacting the composite with an activator system comprising hydrogen and sulfur fluoride or thionyl fluoride. The catalysts so prepared are useful in such hydrocarbon conversion processes as isomerization, hydrocracking, reforming, alkylation, disproportionation, polymerization and hydrogenation.

3,692,698

**HYDROPROCESSING CATALYST**

Kenneth L. Riley and Willard H. Sawyer, Baton Rouge, La., assignors to Esso Research and Engineering Company

Filed Dec. 28, 1970, Ser. No. 101,956  
Int. Cl. B01j 11/74, 11/40

U.S. Cl. 252—439

10 Claims

A hydroprocessing catalyst having preferred surface area and pore volume ranges located in pores having diameters ranging from 30–80 Å. and greater than 2000 Å. Pore volume in the 200–2000 Å. diameter range is kept to a minimum. The catalyst is a mixture of Group VI-B and Group VIII metal oxides or sulfides on an alumina support. The catalyst shows exceptional activity maintenance in hydrosulfurization of heavy hydrocarbon feed stocks containing asphaltenes. Pore volume and surface area is obtained in the desired ranges by forming the composite support from certain size ranges of particle-form support material.

3,692,699

**V<sub>2</sub>O<sub>5</sub>/TiO<sub>2</sub>/K<sub>2</sub>SO<sub>4</sub> CATALYST SUITABLE FOR PREPARATION OF PHTHALIC ANHYDRIDE**

Shiro Hojo, Niigata-shi, and Kuniko Komiya, Kurashiki-shi, Japan, assignors to Japan Gas-Chemical Company, Inc., Tokyo, Japan

No Drawing. Filed Mar. 8, 1968, Ser. No. 711,515  
Claims priority, application Japan, Mar. 13, 1967, 42/15,757

U.S. Cl. 252—440

6 Claims

A catalyst for the preparation of phthalic anhydride which comprises vanadium pentoxide, titanium oxide and potassium sulfate and a process for preparing phthalic anhydride by the use of said catalyst. The molar ratio of V<sub>2</sub>O<sub>5</sub>/TiO<sub>2</sub>/K<sub>2</sub>SO<sub>4</sub> is 1/0.1–5/0.01–0.2.



3,692,704

## METHOD OF LAUNDERING FABRICS

James K. Stamm, Erlanger, Ky., Edwin R. Loder, Cincinnati, Ohio, Charles A. Brungs, Fort Wright, Ky., and Herman Kerst, Des Plaines, Ill., assignors to Chemed Corporation, Cincinnati, Ohio  
No Drawing. Filed Oct. 19, 1970, Ser. No. 82,091

Int. Cl. C11d 3/065, 3/066

U.S. Cl. 252—525

2 Claims

Method for improving the brightness of fabrics which comprises forming a solution of a built detergent composition in water having a hardness of from 0 to 5 grains per gallon, said detergent composition containing, as the builder component, 50% of a mixture consisting of 30% by weight sodium polyacrylate having a weight average molecular weight of 100,000 and 20% by weight of poly (N,N-dicarboxymethyl acrylamide) having a weight average molecular weight of 50,000, and laundering said articles in said laundering solution.

3,692,705

## EPOXY PHTHALIMIDE RESINS

Herbert A. Newey, Lafayette, and Howard V. Holler, Oakland, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Sept. 24, 1970, Ser. No. 75,254

Int. Cl. C08g 30/00

U.S. Cl. 260—2 EP

10 Claims

Novel epoxide-containing phthalimide resins are described having at least two epoxy groups per molecule, at least one of which is a glycidyl group attached to the nitrogen atom of a phthalimide structure or hydrogenated phthalimide structure. These resins may be cured with conventional epoxy curing agents to produce hard, flexible insoluble compositions.

3,692,706

## FOAMED MATERIALS AND THEIR PREPARATION

Graham Arthur Igglesden, Saffron Walden, England, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Jan. 18, 1971, Ser. No. 107,494  
Claims priority, application Great Britain, Feb. 6, 1970, 5,946/70; Sept. 10, 1970, 43,399/70

Int. Cl. C08j 1/26

U.S. Cl. 260—2.5 F

33 Claims

Phenol-formaldehyde resins containing a blowing agent are foamed and cured without the application of external heat by adding a liquid which reacts exothermically to form a polymer under the influence of the curing agent, a strong acid. Thus, a foam is prepared by mixing the phenol-formaldehyde resin with a liquid, exothermically-reacting substance, especially furfuryl alcohol, and a blowing agent, and then adding a strong acid such as toluene-p-sulphonic acid or phosphoric acid. Optionally, an emulsifying agent and an accelerator may be incorporated.

3,692,707

## PREPOLYMERS AND FIRE RETARDANT POLYURETHANES THEREFROM

Ronnie M. Pruitt and Howard D. Jones, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 19, 1970, Ser. No. 65,242

Int. Cl. C08g 22/18, 22/48

U.S. Cl. 260—2.5 AJ

11 Claims

Novel halogen or phosphorus-containing prepolymers are employed to prepare polyurethane compositions having improved fire retardant properties.

3,692,708

## MICROPOROUS POLYURETHANE FILMS AND THEIR PRODUCTION

Ernst Meisert, Hellmut Striegler, Hans-Joachim Koch, and Wolfgang Klebert, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 14, 1970, Ser. No. 37,298

Claims priority, application Germany, May 21, 1969, P 19 25 997.3

Int. Cl. B29d 7/14, 27/00; C08g 22/14

U.S. Cl. 260—2.5 AY

8 Claims

Porous sheet structures and a process for producing them from thermoplastic elastomers are provided wherein about 100 parts by weight of a thermoplastic elastomer are processed in the presence of from about 60 to about 150 parts by weight of sodium-hydrogen carbonate and from about 3 to about 15 parts by weight of an aliphatic organic carboxylic acid having a molecular weight of from about 150 to about 5000 and an acid number of at least 2.5 on calenders, particularly heated calenders, and the films obtained are freed from salt by a subsequent rinsing process. The structures thus obtained are excellent leather substitutes.

3,692,709

Patent Not Issued For This Number

3,692,710

## CELLULAR PLASTICS OF POLYMERS OF PERFLUOROLEFINS AND PROCESS FOR MAKING THEM

Otfried Lörcher, Burghausen (Salzach), and Robert Steffen, Burghausen an der Alz, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed May 1, 1969, Ser. No. 828,070

Claims priority, application Germany, May 7, 1968, P 17 69 315.1

Int. Cl. C08f 29/16, 47/08

U.S. Cl. 260—2.5 L

13 Claims

The present invention relates to cellular plastics of polymers of perfluorolefins and a process for making them by adding determined amounts of a hydroxyl substituted hydrocarbon containing at least three hydroxyl groups to the aqueous dispersion of the polymer and then whipping while introducing a gas and finally treating the stiff foam obtained at increasing temperatures. The cellular plastics have a unit weight within the range of from 70 to 1000 kg./m.<sup>3</sup> and a heat resistance of up to 250° C.

3,692,711

## RUBBER-POLYESTER COMPOSITIONS

David Crawford Eaton and Boris Nicholas Leyland, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Oct. 5, 1970, Ser. No. 78,307

Claims priority, application Great Britain, Oct. 20, 1969, 51,364/69; Apr. 23, 1970, 19,559/70

Int. Cl. C08c 9/16; C08d 9/10; C08g 39/10

U.S. Cl. 260—3

9 Claims

Compositions containing rubber in contact with polyester material, especially vulcanised composition, are sta-

bilised against thermal degradation of the polyester by incorporation of a halogen-substituted heterocyclic compound containing in one aromatic heterocyclic ring one or two groups of the formulae



The preferred compounds are 2-chloro-s-triazines having alkyl-substituted amino groups, or especially unsubstituted amino groups, in the 4- and 6-positions.

3,692,712

## ALPHA-OLEFIN POLYMER COMPOSITION AND PROCESS FOR PREPARING SAME

Rosalie Brooks Crouch, % Imperial Chemical Industries Limited, Plastics Division, Bessemer Road, and Anthony David Caunt, 32 Digswell Road, both of Welwyn Garden City, Hertfordshire, England

No Drawing. Filed July 15, 1968, Ser. No. 744,656

Claims priority, application Great Britain, July 28, 1967, 34,836/67; Nov. 20, 1967, 52,710/67; June 14, 1968, 28,359/68

Int. Cl. C08f 1/56, 29/00, 29/06

U.S. Cl. 260—878 R

12 Claims

An olefine polymer composition comprising a blend of a crystalline olefine polymer or copolymer, for example 4-methyl pentene-1 or propylene, with a minor proportion of a cationic polymer, for example of 4-methyl pentene-1.

The polymer may be prepared in a single polymerisation process in which the polymerisation mechanism is changed during the polymer production, for example by initially polymerising with a Ziegler catalyst and then adding hydrogen chloride gas to change to a cationic polymerisation process.

3,692,713

## LABELING ADHESIVE COMPOSITION

Peter Spiros Columbus, Whitestone, and Ronald Thomas Mason, New York, N.Y., assignors to Borden, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 477,293, Aug. 4, 1965. This application Dec. 23, 1969, Ser. No. 887,785

Int. Cl. C08f 15/16

U.S. Cl. 260—17.4 ST

3 Claims

This invention relates to an adhesive composition suitable for adhering cellulosic materials to plastics comprising (1) an interpolymer of vinyl acetate with a C<sub>2</sub> to C<sub>10</sub> ester of an acid selected from the group consisting of fumaric, maleic, acrylic acids and mixtures thereof and 0 to 5% based on total weight of interpolymer of a monomer selected from the group consisting of ethenoid bond containing carboxylic acids, acid amides and mixtures thereof; (2) a starch component selected from the group consisting of waxy starches, hydroxyalkyl starch ethers, acid modified starches, oxidized starches and dextrans, and; (3) a water soluble rosin salt there being on a solids basis about two parts of interpolymer and rosin salt com-

bined for each part of the starch component; and to laminates made with such adhesives.

3,692,714

## AQUEOUS DISPERSION OF A COMPATIBILIZED REACTION PRODUCT FORMED BY HEAT REACTING A FATTY ACID ESTER ADDUCT WITH A POLYAMIDE

Jacobus M. Keyman, Kapel-Avezaath, Netherlands, and Arnold E. Maschke, Cologne, Germany, assignors to Mobil Oil Corporation, New York, N.Y.

No Drawing. Filed Feb. 2, 1970, Ser. No. 8,052

Claims priority, application Netherlands, Feb. 28, 1969, 6903222

Int. Cl. C08g 45/12

U.S. Cl. 260—18 PN

11 Claims

Drying oil fatty acid ester, and especially an epoxy resin ester, is adducted with an unsaturated polycarboxylic acid such as maleic anhydride to provide a resin which is cooked with a resin having amine and acid functionality such as a polyamide having terminal amino and carboxylic acid groups, made by the self-condensation of an amino acid to provide a compatibilized reaction product which can be dispersed in water with the aid of a base and deposited at the anode by a unidirectional current.

3,692,715

## METAL SALT CATALYSTS FOR EPOXY-ANHYDRIDE RESIN SYSTEMS

Gaylord L. Groff, North St. Paul, Minn., and Ronald H. Williams, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed May 1, 1970, Ser. No. 33,942

Int. Cl. C08g 51/74

U.S. Cl. 260—18 EP

6 Claims

The invention provides a heat-curable, one-part, catalyst-containing resin composition which remains as a liquid having a viscosity below 5,000 cps. at room temperature for at least three months and consists essentially of, (a) an epoxy resin selected from the group consisting of polyglycidyl ethers of polyhydric phenols and polyglycidyl esters of aromatic and cycloaliphatic polycarboxylic acids, said epoxy resin containing at least 1.5 oxirane groups per average molecular weight and having a viscosity of less than 30,000 cps. at 24° C.; (b) a dicarboxylic anhydride in an amount sufficient to provide about 0.5–1.2 anhydride groups per oxirane group; and (c) a catalyst comprising a metal-aliphatic carboxylic acid salt, the metal of which is selected from the group consisting of titanium, zirconium, hafnium, cerium and thorium and wherein the aliphatic acid component has from 3 to 18 carbon atoms; and wherein said composition is capable of being substantially completely cured at 155° C. within about eight hours.

3,692,716

Patent Not Issued For This Number



3,692,717

**MODIFIED NON-GELLED ALKYD RESIN COMPOSITION AND PROCESS FOR ITS PREPARATION**

Werner Josef Blank and Jerry Norman Koral, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 42,482, June 1, 1970. This application May 13, 1971, Ser. No. 143,234

Int. Cl. C09d 3/66, 9/24

U.S. Cl. 260—21 10 Claims

This invention relates to a modified, homogeneous alkyd resin composition comprising a mixture of the esterification reaction product of an oxatetracyclo undecanol, a substantially unsaturated higher fatty acid, followed by  $\alpha$ -addition or Diels-Alder reaction with an  $\alpha,\beta$  ethylenically unsaturated dicarboxylic acid and further modified by a mixture of a polymerizable styrene and an  $\alpha,\beta$  ethylenically unsaturated monocarboxylic acid, and to a process for its preparation.

3,692,718

**GAS PHASE POLYMERIZATION OF VINYL CHLORIDE**

Jean Pierre Golstein, Brussels, Belgium, assignor to Solvay & Cie, Brussels, Belgium

Continuation-in-part of application Ser. No. 663,540, Aug. 28, 1967. This application June 22, 1970, Ser. No. 48,185

Claims priority, application Belgium, Aug. 29, 1966, 32,626

Int. Cl. C08f 1/00

U.S. Cl. 260—23 XA 10 Claims

Polyvinyl chloride is prepared by contacting gaseous vinyl chloride with a free radical initiator in the complete absence of a liquid phase and in the presence of an inert solid, at a temperature between about 40 and 80° C. and at a pressure above the polyvinyl chloride-gaseous vinyl chloride modification point and below the saturated vapor pressure of vinyl chloride.

3,692,719

**DELAYED ACTION VULCANIZATION ACCELERATOR SYSTEM**

Raymond C. Srail, Parma, and Ray D. Taylor, Brecksville, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Dec. 10, 1970, Ser. No. 96,926

Int. Cl. C08d 13/28

U.S. Cl. 260—23.5 A 18 Claims

A useful delayed action vulcanization accelerator system is obtained when polythiocarbonates and amine- or imine-blocked isocyanates are incorporated in unsaturated rubber compositions. These accelerator systems have the advantage of being stable during processing therefore minimizing scorch of the rubber but upon increasing the temperature for vulcanization the accelerator is formed so that very rapid cures are achieved.

3,692,720

**RESINOUS COMPOSITIONS FROM HYDROXY-ALKYLATED ROSIN DERIVATIVES**

Martin F. Sloan, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 765,655, Oct. 7, 1968. This application Jan. 25, 1971, Ser. No. 109,555

Int. Cl. C08l 11/04

U.S. Cl. 260—24 7 Claims

Novel resin compositions useful in manufacture of printing inks are prepared by reaction of hydroxalkylated rosin and hydroxyalkylated rosin adducts with an isocyanate.

3,692,721

**THERMOSETTING BONDING AGENTS**

Friedrich Josten, Tervoorstr. 16, Rheinkamp-Uffort, Germany; Wilhelm Lucker, Wilhelmstr. 63, Homburg, Lower Rhine, Germany; Hans Albrecht Meyer-Stoll, Kuhlmannstr. 11, Rheinkamp, Germany; and Wolfgang von Minden, Heldestr. 76, Rheinkamp-Repelen, Germany

No Drawing. Filed Apr. 23, 1970, Ser. No. 31,399

Claims priority, application Germany, Apr. 30, 1969, P 19 22 015.6; Mar. 17, 1970, P 20 12 588.6

Int. Cl. C08g 37/18, 37/04

U.S. Cl. 260—29.3 12 Claims

This invention relates to thermosetting bonding agents which are condensation products of phenol, urea, acetone, formaldehyde and alkanediol. Further, it pertains to the manufacture of said agents by reacting phenol, formaldehyde, urea and acetone under alkaline conditions followed by reacting the resultant product mixture with alkanediol under acidic conditions. It also relates to compositions comprising said agents and sand useful as foundry mold and cores.

3,692,722

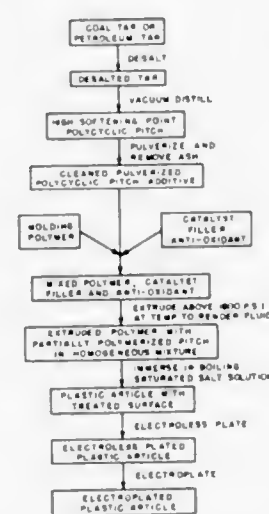
**POLYMERIC COMPOSITIONS AND METHODS OF TREATING**

Edgar W. Clarke, 121 Fairmont Ave., Laurel Springs, N.J. 08021

Continuation-in-part of application Ser. No. 862,523, Sept. 30, 1969. This application Feb. 20, 1970, Ser. No. 13,011

Int. Cl. C08g 51/52; C08f 45/52; C08h 13/08

U.S. Cl. 260—28 18 Claims



An organic polymer is prepared incorporating a novel polymerized pitch additive which facilitates the homoge-

neous blending and molding of dissimilar polymers, the inclusion of relatively large proportions of various fillers such as powdered metals, and the electroplating of the molded product.

3,692,723

**AQUEOUS DISPERSION OF A COPOLYMER OF ETHYLENE AND VINYL ACETATE AND HEAT MELTING ADHESIVE COMPRISING SAME**

Masanori Kasagi and Koreaki Gunjigake, Tokyo, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Mar. 17, 1970, Ser. No. 20,428

Claims priority, application Japan, Mar. 20, 1969, 44/20,799

Int. Cl. C08f 3/56, 29/12

U.S. Cl. 260—29.6 E 12 Claims

Aqueous dispersions and heat melting adhesives comprising same, which dispersions contain a copolymer of at least ethylene and vinyl acetate wherein the ethylene content is from 30 to 98% by weight, the copolymer having been prepared by a copolymerization process utilizing a particular combination of nonionic emulsifier, anionic emulsifier and protective colloid.

3,692,724

**WATER EXTENDIBLE POLYESTER RESINS**

John C. Van Dyk, Oklahoma City, Okla., assignor to Woods Research and Development Corp., Oklahoma City, Okla.

No Drawing. Filed July 6, 1970, Ser. No. 52,737

Int. Cl. C08f 43/02

U.S. Cl. 260—29.6 NR 20 Claims

A solid water extended polyester resin is formed by esterifying a polycarboxylic acid with a polyol, adding a crosslinking agent, forming a water in oil emulsion stabilized by an emulsifying agent, and thereafter polymerizing the resin. The emulsifying agent is selected from benzyl-dimethylamine, trimethylhexamethylenediamine, isophoronediamine and morpholine.

3,692,725

**STABILIZED BINDER FOR WATER-FLUSHABLE NON-WOVEN WEBS**

David V. Duchane, Menasha, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

No Drawing. Filed Oct. 28, 1970, Ser. No. 84,880

Int. Cl. C08f 29/26

U.S. Cl. 260—29.6 BM 12 Claims

A stabilized binder mixture for application to non-woven webs to provide a water-flushable wrapper for absorbent pads such as sanitary napkins, diapers and the

like. A highly viscous solution of polyvinyl alcohol containing reactive chemicals which form crosslinking alkaline borates in situ upon heating is reduced to workable viscosity by saturating the solution with carbon dioxide. Alternatively a solution initially low in viscosity is maintained at workable viscosity by saturating the polyvinyl alcohol solution with CO<sub>2</sub> before adding the other chemicals.

3,692,726

**PROCESS FOR THE PRODUCTION OF AQUEOUS POLYMER DISPERSIONS WHICH ARE SUBSTANTIALLY FREE FROM RESIDUAL MONOMER**

Klaus Oehmichen, Wesel, Germany, assignor to Reichhold-Albert-Chemie-Aktiengesellschaft, Hamburg, Postfach, Germany

No Drawing. Continuation-in-part of application Ser. No. 793,886, Jan. 24, 1969. This application Mar. 19, 1971, Ser. No. 126,329

Claims priority, application Germany, Jan. 27, 1968, P 17 45 360.0

Int. Cl. C08l 15/36, 37/14

U.S. Cl. 260—29.6 R 3 Claims

A process for the production of dispersions containing polymers or copolymers, practically free from monomers, which are obtained by emulsion polymerization or copolymerization in an aqueous medium in which monomers are used which contain unsaturated acids or their esters such as acrylic acid and/or methacrylic acid or their esters, emulsifiers, water-soluble redox-systems with pH values between 2 and 6 and peroxy compounds the improvement comprising adding peresters and/or perketals to the reaction mixture, the decomposition temperatures of the peresters or perketals being preferably between 30 and 150° C., so that the mixture is polymerized at the polymerization temperature until the residual monomer content becomes negligible.

3,692,727

**POLYTETRAFLUOROETHYLENE DISPERSION COATINGS CONTAINING AMMONIUM CHROMATE OR AMMONIUM CHROMATE-AMMONIUM PHOSPHATE MIXTURE**

Norman Duffield Peschko, Haddonfield, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 794,785, Jan. 28, 1969. This application May 14, 1971, Ser. No. 144,648

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 F 3 Claims

An aqueous dispersion of polytetrafluoroethylene useful for applying a "non-stick" coating to substrates contains from about 2% to about 5% of a soluble salt selected from the group consisting of ammonium chromate and a mixture of ammonium chromate and ammonium phosphate wherein there is at least 0.5 weight percent of the chromate. The salt additive gives the dispersions storage-stability and promotes adhesion of the PTFE coating to the substrate.



3,692,728

**HYDRAULIC BINDERS AND COMPOSITIONS INCLUDING THESE BINDERS**

Bernard Bonnel, Lyon, France, assignor to Progil, Paris, France  
No Drawing. Continuation of application Ser. No. 705,948, Feb. 16, 1968. This application Mar. 8, 1971, Ser. No. 122,161

Int. Cl. C04b 7/32

U.S. Cl. 260—29.4 UA

4 Claims

Compositions for mortars and cements which harden rapidly and give great resistance including a hydraulic binder of high alumina cement and a polymer of acrylamide and formaldehyde and a polymerization catalyst.

3,692,729

**PROCESS FOR THE MANUFACTURE OF INSOLUBLE SYNTHETIC PRODUCTS ON THE BASIS OF EPOXY COMPOUNDS CONTAINING URETHANE GROUPS**

Herbert Kolbel, Georg Manecke, and Hussain Kashif El-Ghatta, Berlin, Germany, assignors to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany  
No Drawing. Filed Sept. 21, 1970, Ser. No. 74,148  
Claims priority, application Germany, Sept. 22, 1969, P 19 47 873.0

Int. Cl. C08f 45/32; C08g 45/04

U.S. Cl. 260—30.4 EP

7 Claims

The invention relates to the manufacture of insoluble plastics by reaction of epoxide compounds containing urethane groups with compounds which possess functional groups capable of reaction with epoxide groups, in the presence of unsaturated polymerizable monomers and/or reactive diluents. The epoxide compounds are obtained by reaction of an adduct with at least 2 NCO groups, which is manufactured from a polyisocyanate or diisocyanate and a compound with at least 2 hydroxyl groups, and compounds which contain one hydroxyl group and one epoxide group.

3,692,730

**MOLD RELEASE AGENT FOR NYLON**

Willard M. Sims, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.  
No Drawing. Filed Apr. 15, 1971, Ser. No. 134,415  
Int. Cl. C08g 51/44

U.S. Cl. 260—32.6 N

11 Claims

The mold release properties of nylon compositions are significantly improved by incorporating about 0.01 to 5.0 parts per 100 parts of nylon of a hydrocarbon diamine having about 25 to 50 carbon atoms in the hydrocarbon chain.

3,692,731

**METALLIZING COATING COMPOSITIONS CONTAINING COATED METAL FLAKES**

Walter R. McAdow, Grosse Pointe Farms, Mich., assignor to Mobil Oil Corporation  
No Drawing. Filed Apr. 29, 1970, Ser. No. 33,106  
Int. Cl. C08g 51/04, 51/34

U.S. Cl. 260—32.8 R

12 Claims

Metallizing coating compositions having greater sparkle and glitter are formed by including in the coating composition insoluble resin-supported planar reflective metal flakes in an amount of from about 0.0003% to about 0.035% of metal (particularly aluminum) based on the weight of the composition. The flakes are supported and rendered more planar by using a metal film surfaced on both sides with a relatively insoluble resinous film having a thickness of at least 0.01 mil. When the supported metal film is broken up to form flakes, the flakes are flatter and reflect light over a larger portion of their surface to permit use in smaller amount.

3,692,732

**CURABLE POLYORGANOSILOXANE ELASTOMERS AND PROCESS FOR CURING SAME**

Bruno Degen, Schildgen, Heinz Goller, Cologne, Wilfried Kniege, Bergisch-Gladbach, Walter Noll, Opladen, and Werner Buchner, Leichlingen, Germany (all % Farbenfabriken Bayer AG, Leverkusen, Germany)  
No Drawing. Filed Mar. 26, 1971, Ser. No. 128,573  
Claims priority, application Germany, Apr. 1, 1970, P 20 15 402.3

Int. Cl. C08g 51/04

U.S. Cl. 260—37 SB

12 Claims

The present invention relates to a process for the production of an improved polyorganosiloxane composition convertible by heating to the solid elastic state wherein cerium carbonate is admixed with the polyorgano-siloxane in order to reduce the curing time thereof and in order to increase the thermal stability of the cured elastomer.

3,692,733

**RESIN COATED SAND**

Calvin Keith Johnson, Palos Heights, Ill., assignor to CPC International Inc.  
No Drawing. Filed Mar. 8, 1971, Ser. No. 122,125  
Int. Cl. C08g 51/04

U.S. Cl. 260—38

6 Claims

A resin coated sand exhibiting low dust levels consisting essentially of about 1,000 parts of resin coated sand, and from about 0.01 to about 1.0 parts of silicone fluid.

3,692,734

**PROCESS OF MAKING A RUBBER COMPOSITION FOR ADHERING RUBBERS AND TEXTILES**

Erhard Klötzer, Hanau am Main, and Willi Clas, Bruhl-Berzdorf, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt, vormals Roessler, Frankfurt am Main, Germany  
No Drawing. Filed Oct. 10, 1969, Ser. No. 866,143  
Claims priority, application Germany, Oct. 12, 1968, P 18 02 761.7

Int. Cl. C08c 11/10; C08d 9/10; C08g 51/04

U.S. Cl. 260—38

7 Claims

A premix is made for incorporation in a natural or synthetic vulcanizable rubber mixture of improved adhesion to textiles by coagulating an aqueous dispersion of finely divided precipitated silicic acid or silicate as a rubber latex and mixing resorcinol and hexamethylenetetramine as resin-forming components into the dry coagulate.

The invention also comprises the vulcanizable premix thus made in which specific amounts of synthetic rubber, silicic acid, resorcinol and hexamethylenetetramine are incorporated.

3,692,735

**INORGANIC LITHIUM-CHROME-SILICATE PIGMENTS**

Gordon H. Johnson, Olmsted Falls, Ohio, assignor to Ferro Corporation, Cleveland, Ohio  
Continuation-in-part of application Ser. No. 645,353, June 12, 1967. This application Aug. 15, 1969, Ser. No. 850,610

Int. Cl. C08f 45/04; C08g 51/04; C09c 1/34

U.S. Cl. 260—41

25 Claims

This invention relates to inorganic green lithium chrome silicate pigments of the formula  $R\text{Cr}(\text{SiO}_3)_2$  wherein R is sodium, lithium and/or any mixture of sodium and lithium adding up to the stoichiometric equivalent of one molar equivalent of R. These compositions may also include mixtures of a compound such as defined above, with one or more of the polymorphic forms of silica. These compounds are prepared by calcining an admixture of a sodium compound and/or a lithium compound with a chromium compound and a silicon compound.

3,692,736

**POLYESTER RESIN GRANULATES AND PROCESS FOR PREPARATION OF SAME**

Jean-Claude Besnard, 38-40 rue Louis Braille, 95-Deuil-La-Barre, and Lyllan M. L. Pasteur, 11, rue Michelet, 92-Rueil-Malmaison, both of France, assignors to Resines Et Dispersions "Redis," Paris, France  
Filed Aug. 17, 1970, Ser. No. 64,578

Claims priority, application France, Aug. 18, 1969, 6928212

Int. Cl. C08g 51/04

U.S. Cl. 260—40 R

13 Claims

Free-flowing, non-tacky polyester resin compositions for use in molding and a method for the preparation of same wherein a polyester resin, a monomer, reinforcing fibers, an initiator, a thickener and a charge filler are mixed in at least four stages wherein at least the polyester resin, the monomer, the reinforcing fibers, the initiator and the charge filler are mixed in a first stage at ambient temperatures, the balance of the components are added and the resulting mixture mixed in a second stage until the composition has a dough-like consistency, the resulting composition is mixed in a third stage while cooling and the composition is mixed in a fourth stage in the presence of lamellar filler to imbibe the filler in the composition whereby the composition is relatively non-tacky and free-flowing.

3,692,737

**STABLE POLYDIORGANOSILOXANE GUMS**

Thomas L. Laur, Sanford, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Feb. 1, 1971, Ser. No. 111,639

Int. Cl. C08g 51/04, 51/56

U.S. Cl. 260—45.75 R

2 Claims

Polydiorganosiloxane gum is stabilized by the addition of fume titanium dioxide. The stabilized polydiorganosiloxane gums can be used to make silicone rubbers and adhesives.

3,692,738

**ULTRAVIOLET STABILIZER SYSTEM FOR POLYOLEFINS**

Ronald D. Mathis, Mauldin, and James S. Dix, Taylors, both of S.C., assignors to Phillips Petroleum Company  
Filed April 8, 1971, Ser. No. 132,618

Int. Cl. C08f 45/62

U.S. Cl. 260—45.75 N

10 Claims

An ultraviolet light stabilizer composition for polyolefins which comprises (2,2'-thiobis [4-tert-octylphenolato])-n-butylamine nickel (II) and a nickel complex of a halogenated  $\beta$ -diketone.

3,692,739

Patent Not Issued For This Number

3,692,740

**PHENOLIC-SOLVENT-SOLUBLE AROMATIC POLYAMIDE-IMIDE AND PROCESS FOR PRODUCING SAME**

Munehiko Suzuki, Yokosuka; Etsuo Hosokawa, Yokohama; Misao Waki, Kawasaki, and Masatada Fukushima, Yokohama, all of Japan, assignors to Showa Electric Wire & Cable Co., Ltd., Kawasaki-shi, Japan

Filed June 18, 1970, Ser. No. 47,380

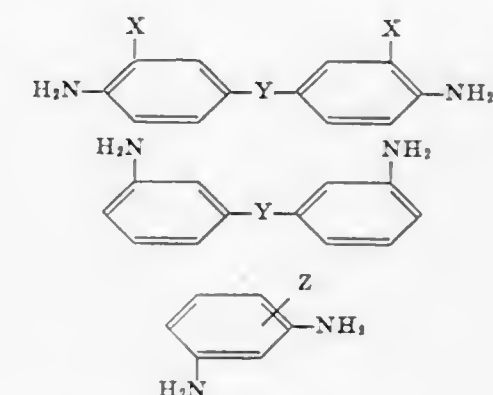
Claims priority, application Japan, June 24, 1969, 44/49959  
Int. Cl. C08g 20/32

U.S. Cl. 260—47 CP

12 Claims

A novel aromatic polyamide-imide is synthesized by heating and reacting a mixture of trimellitic acid and 3,3', 4,4'-

benzophenone tetracarboxylic acid with a diamine represented by the formula:



in substantially equimolar amounts in an organic solvent. Up to 70 mole per cent of said acid component may be replaced by other aromatic tetracarboxylic acids and up to 70 mole per cent of said diamine component may also be replaced by other aromatic diamines. The greatest feature of said novel aromatic polyamide-imide is that it is soluble in phenolic solvents. The solution of the polyamide-imide in a phenolic solvent can be used as a varnish for forming a heat-resistant film and as a magnet wire and in other various fields.

3,692,741

**METAL 2,5-DIMETHOXY CINNAMIC SALTS AS CATALYSTS-OPTICAL BRIGHTENERS FOR POLYESTER RESINS**

John A. Price, 225 N. Princeton Ave., Swarthmore, Pa., and Mary J. Stewart, 2 War-Trophy Lane, Riddlewood, Media, Pa., assignors to TMC Corporation, Philadelphia, Pa.  
Continuation-in-part of Ser. No. 886,757, Dec. 19, 1969, abandoned. This application July 15, 1970, Ser. No. 55,266  
Int. Cl. C08g 17/013

U.S. Cl. 260—47 C

4 Claims

Metal salts of 2,5-dimethoxy cinnamic acid and polyester resins comprising the condensation polymerization product of (a) a lower alkyl diester of a dicarboxylic acid, (b) an aliphatic diol, and (c) a minor amount of a manganese, cobalt, or zinc salt of 2,5-dimethoxy cinnamic acid.

3,692,742

**WATER RESISTANT POLYURETHANE/POLYMER LAMINATE**

Theodore A. Underwood, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio  
Continuation-in-part of Ser. No. 408, Jan. 2, 1970. This application Sept. 8, 1970, Ser. No. 70,464  
Int. Cl. B65d 25/14

U.S. Cl. 220—63 A

5 Claims

A water resistant laminate comprising a cured ethylenic unsaturated polymer of an olefin containing from two to 20 carbon atoms and a polyurethane comprising a reaction product of 4,4'-dicyclohexyl methane diisocyanate, with an aromatic diamine and a polyester selected from the group consisting of polyhexamethylene adipate, polyhexamethylene azelate and polytetramethylene azelate and polytetramethylene adipate.

3,692,743

**PREPARATION OF 2,5-DIMETHYLHEXADIENES**

Robert M. Thompson, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.  
Filed April 16, 1971, Ser. No. 134,857  
Int. Cl. C07c 11/12

U.S. Cl. 260—681 R

8 Claims

Selective formation of 2,5-dimethylhexadiene-2,4, or mixtures of the same with the corresponding 2,5-dimethylhexadiene-1,4, or of the latter with 2,5-dimethylhexadiene-1,5 in



good yield is achieved by the vapor phase ring opening dehydration of 2,2,5,5-tetramethyltetrahydrofuran, using alkali or platinum selected metal oxide catalysts at varying temperatures and liquid hourly space velocities.

3,692,744

**INJECTION MOLDED BRANCHED POLYESTERS**  
Rene Rich, and Yves Vaginay, both of Lyon, France, assignors to Societe Rhodiaceta, Paris, France  
Division of Ser. No. 717,415, March 29, 1968, abandoned.  
This application Sept. 11, 1970, Ser. No. 71,330  
Claims priority, application France, Jan. 4, 1968, 134,897

Int. Cl. C08q 17/04

U.S. Cl. 260—75 T 4 Claims  
Polyester moulding materials which can be injection moulded on a technical scale to give products having good mechanical properties are obtained by having present in the polyesterification mixture, besides a terephthalic or mainly terephthalic acid component and a diol component, 0.05–3 moles percent, on the acid component, of a compound containing at least 3, preferably 3 or 4, ester-forming groups this may for example be a tri- or tetra-carboxylic acid, a triol or tetrol, or a hydroxy carboxylic acid containing in all 3 or more ester-forming groups.

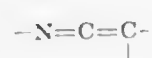
3,692,745

**METHOD FOR CHEMICALLY MODIFYING THREAD-FORMING POLYESTERS**  
Eenje Molenaar, Dieren, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.  
Filed Jan. 19, 1971, Ser. No. 107,858

Claims priority, application Netherlands, Jan. 24, 1970, 7001022

Int. Cl. C08g 17/14

U.S. Cl. 260—75 T 6 Claims  
A method for the chemical modification of a thread-forming polymeric polyester containing carboxyl end groups, which comprises treating the molten polyester with an unsaturated organic compound capable of reacting with said carboxyl end groups, the compound having one or two



structural units which react with carboxyl end groups to form imide bonds therein.

3,692,746

**INTERPOLYMERS OF VINYLIDENE CHLORIDE AND BLOCKED VINYL ISOCYANATES AND PROCESS FOR COATING ARTICLES THEREWITH**  
James T. K. Woo, and Thayer A. Brown, Jr., both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.  
Filed Nov. 30, 1970, Ser. No. 93,885

Int. Cl. C08q 22/32

U.S. Cl. 260—77.5 TB 4 Claims  
This invention relates to polymer compositions, coated articles and processes, and more particularly, to interpolymers of vinylidene chloride and vinyl isocyanates having blocked isocyanate functionalities which interpolymers provide improved coatings on a wide variety of substrate material.

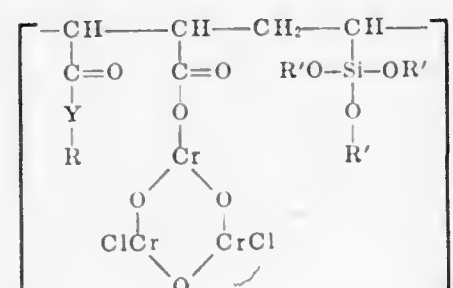
### 3,692,747 CHROMIUM COMPLEXES OF MALEIC ANHYDRIDE COPOLYMERS

Elemer Domba, Olympia Fields, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed June 9, 1971, Ser. No. 151,541

Int. Cl. C08f 27/04

U.S. Cl. 260—78.5 T 2 Claims  
This invention relates to new copolymeric compositions having the reoccurring structural formula:



In the above formula R is a C<sub>12</sub> to C<sub>22</sub> aliphatic group, R' is a C<sub>2</sub> to C<sub>6</sub> aliphatic group, n represents an integer and Y is either O or NH<sub>2</sub>.

These polymers are useful in treating a variety of surfaces, and in particular sheep skin, to impart thereto a high degree of water repellancy.

3,692,748

### SHRINKABLE FILM-FORMING COPOLYAMIDES PREPARED BY COPOLYMERIZING ω-AMINOUNDECANOIC ACID AND THE SALT OF A DICARBOXYLIC ACID AND TRIMETHYLHEXAMETHYLENE DIAMINE

Helmut Hubn, and Lutz Hoppe, both of Walsrode, Germany, assignors to Wolff & Co., Aktiengesellschaft, Walsrode, Germany

Filed Nov. 9, 1970, Ser. No. 88,123

Claims priority, application Germany, May 14, 1968, P 17 70 406.2

Int. Cl. C08g 20/04

U.S. Cl. 260—78 A 6 Claims  
Shrinkable film-forming copolyamides which are glass-clear in appearance and which are obtained by poly-condensation of 65–85 percent by weight of ω-amino-undecanoic acid and 35–15 percent by weight of a salt of a dicarboxylic acid and a diamine, between 50 and 100 mol % of the diamine being trimethylhexamethylene diamine, and films produced therefrom.

3,692,749

### POLYAMIDES OF TRIMETHYLHEXAMETHYLENEDIAMINE AND CYCLOHEXANEDICARBOXYLIC ACID

Karl Schmitt, Herne; Fritz Gude, Wanne-Eickel, and Siegfried Brandt, Herne, all of Germany, assignors to Scholven-Chemie Aktiengesellschaft, Gelsenkirchen-Buer, Germany

Filed June 26, 1969, Ser. No. 836,950

Claims priority, application Germany, July 2, 1968, P 17 70 766.3

Int. Cl. C08g 20/20

U.S. Cl. 260—78 R 3 Claims  
Polyamide of a diamine of the group 2,4,4-trimethylhexamethylenediamine, 2,2,4-trimethylhexamethylenediamine, and mixture thereof, and dicarboxylic acid comprising cycloaliphatic dicarboxylic acid. The polyamides are soluble in alcohols so that they are suitable for use in formulation of film forming compositions.

3,692,750

### PROCESS FOR PREPARING POLYAMIDES

Iri N. Dulling, West Chester; Gary L. Driscoll, Boothwyn, both of Pa., and Robert E. Moore, Wilmington, Del., assignors to Sun Oil Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 542,229, April 13, 1966, abandoned. This application Sept. 25, 1970, Ser. No. 75,743

Int. Cl. C08g 20/00

U.S. Cl. 260—78.4 N 9 Claims  
Polyamides are produced by reacting an organic dinitrile with adamantane and alkyl-adamantane compounds having two substituents selected from the group consisting of chlorine, bromine and hydroxy in the presence of a strong sulfuric acid corresponding to 99.5–118% H<sub>2</sub>SO<sub>4</sub> equivalent or polyphosphoric acid.

3,692,751

Patent Not Issued For This Number

3,692,752

### ADHESIVE COMPOSITION CONTAINING α-CYANOACRYLATE AS ITS MAIN INGREDIENT

Kisuke Setsuda, Ichikawa-shi, and Iwakichi Sugiyama, Narashino-shi, both of Japan, assignors to Matsumoto Sanyaku Kogyo Kabushiki Kaisha, Menamiyabata, Ichikawa-shi, Chiba-ken, Japan

Filed Oct. 29, 1969, Ser. No. 872,377

Claims priority, application Japan, Oct. 31, 1968, 43/19425

Int. Cl. C08f 15/16

U.S. Cl. 260—78.5 N 1 Claim  
α-cyanoacrylate adhesive compositions each of which comprises a α-cyanoacrylic ester and a diacrylic ester compound or dimethacrylic ester compound which is added to the former ester and adhesives prepared from said composition having very excellent heat-resistance.

3,692,753

### TERPOLYMERS CONTAINING THIAALKYL ACRYLATES OR THIAALKYLACRYLAMIDES

Donald A. Smith; Ernest J. Perry, both of Rochester, N.Y., and Kenneth R. Hollister, Pittsford, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 701,084, Jan. 29, 1968, Pat. No. 3,615,624. This application Feb. 16, 1970, Ser. No. 11,839

Int. Cl. C08f 15/40; G03c 1/04

U.S. Cl. 260—79.7 14 Claims  
This invention relates to interpolymers, and preferably terpolymers, containing a balanced ratio of certain monomers to facilitate easy coagulation and redispersion. Preferably, the interpolymers comprise at least one monomer which is an effective silver halide peptizer in polymerized form. Balanced polymers of this type provide a system wherein silver halide can be precipitated in the presence of the balanced polymer and can be subsequently coagulated and easily redispersed to permit fast and simple washing of the silver halide.

3,692,754

### HIGHLY LACTONIZED COPOLYMERS AND ALTERNATING COPOLYMERS USING UNSATURATED ETHERS

Masaaki Hirooka, 7-32 Funakicho, Ibaragi-shi; Kenji Takeya, 1900, Kanaoka, Saidaijicho, Okayama-shi; Yoshihiro Uno, 300-43, Minato, Okayama-shi; Akira Yamane, 1900, Kanaoka, Saidaijicho, Okayama-shi, and Kunio Maruyama, 1900, Kanaoka, Saidaijicho, Okayama-shi, all of Japan

Filed March 26, 1970, Ser. No. 22,997

Claims priority, application Japan, April 5, 1969, 44/26482; Dec. 11, 1969, 44/99961

Int. Cl. C08f 15/00, 15/40

U.S. Cl. 260—80.3 E 13 Claims  
An alternating copolymer composed of at least one monomer of group (A) consisting of unsaturated esters of car-

boxylic acids and unsaturated ethers, and at least one monomer of group (B) consisting of conjugated vinyl compounds having nitrile or carbonyl radicals, is highly lactonized by treating with an inorganic or organic acid, as produced or after saponification. A novel alternating copolymer composed of the group (A) monomer consisting of at least one unsaturated ether or a mixture of at least one unsaturated ether and at least one unsaturated ester of carboxylic acid, and at least one monomer of the group (B) is also proposed.

3,692,755

Patent Not Issued For This Number

3,692,756

### HYDROCARBON-DERIVED RESINS HAVING LOW SOFTENING POINT

David R. St. Cyr, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 2, 1970, Ser. No. 52,133

Int. Cl. C08f 15/40

U.S. Cl. 260—80.7 6 Claims  
Hydrocarbon resins suitable as tackifiers having softening points in the range of about 25° C. to about 80° C., a volatility of less than about 6 weight percent and a number average molecular weight in the range of about 1000 to about 1400 which comprises from about 5 to about 60 percent units derived from piperylene, from about 1 to about 30 percent units derived from 1,3-butadiene, from about 5 to about 60 percent units derived from isobutylene, from about 5 to about 30 percent units derived from 2-methyl-1-butene, from about 5 to about 40 percent units derived from 2-methyl-2-butene, from about 0 to about 10 percent units derived from isoprene and from about 0 to about 10 percent units derived from other hydrocarbons containing four to six carbon atoms, wherein the ratio of units derived from piperylene to units derived from 1,3-butadiene is from about 10:1 to about 1:2 and the ratio of units derived from piperylene to units derived from isobutylene is from about 6:1 to about 1:6.

3,692,757

### THERMOSETTING ACRYLICS CONTAINING OXAZOLINE GROUPS

Rostyslaw Dowbenko, Glsbornia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 665,745, Sept. 6, 1967, Pat. No.

3,609,161. This application Nov. 12, 1970, Ser. No. 89,116

Int. Cl. C08f 3/62, 15/16, 15/40

U.S. Cl. 260—86.1 N 6 Claims  
Novel polymerizable unsaturated oxazoline compounds are obtained by dehydrating a hydroxyalkyl-substituted amino-ethanol and esterifying or transesterifying the resulting alcohol with an ethylenically unsaturated monocarboxylic acid, an ester of such an acid, or an ethylenically unsaturated monocarboxylic acid halide. Preferred embodiments include 2,4-dialkyl-2-oxazoline-4-alkyl acrylates and methacrylates. Polymers of such compounds, and particularly their interpolymers with other ethylenic monomers provide thermosetting film-forming compositions, useful as protective coatings and adhesives.

3,692,758

Patent Not Issued For This Number



3,692,759

**EXTRUDABLE POLYTETRAFLUOROETHYLENE POWDER**

Luke Ralph Ocone, Wyndmoor, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Feb. 23, 1971, Ser. No. 118,158

Int. Cl. C08f 3/24, 15/06

U.S. Cl. 260—92.1

3 Claims

Polytetrafluoroethylene resin powder having improved paste extrusion properties is prepared by freeze drying aqueous PTFE latex solids.

3,692,760

**REGULATION OF MOLECULAR WEIGHT OF PRODUCTS OBTAINED BY THE RING OPENING POLYMERIZATION OF CYCLOOLEFINS**

Josef Witte, Koeln; Gottfried Pampus, Leverkusen; Nikolaus Schon, Leverkusen, and Gunter Marwede, Leverkusen, all of Germany, assignors to Farbentfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 30, 1970, Ser. No. 85,782

Claims priority, application Germany, Nov. 13, 1969, P 19 57 026.4

Int. Cl. C08f 3/02, 7/02

U.S. Cl. 260—93.1

6 Claims

A process for the production of cycloolefin polymers by the polymerization of cycloolefins in solution in inert organic solvents, using catalysts of tungsten salts and organic aluminum compounds, characterized in that an organic cycloolefin solution having a water content of 5 to 50 ppm, preferably 10 to 20 ppm, is used for the polymerization.

3,692,761

Patent Not Issued For This Number

3,692,762

Patent Not Issued For This Number

3,692,763

**HIGH PRESSURE POLYMERIZATION OF ETHYLENE AND APPARATUS THEREFORE**

Pieter Van Saane, Beatrixlaan 21, Geleen, and Robert J. M. Paumen, Rijksweg N. 296, Sittard, both of Netherlands

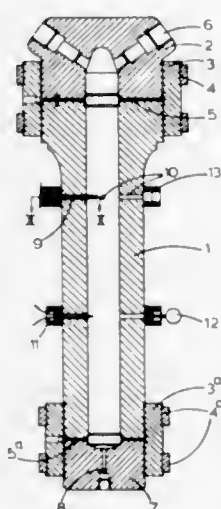
Filed Sept. 17, 1970, Ser. No. 73,170

Claims priority, application Netherlands, Sept. 19, 1969, 6914299

Int. Cl. C08f 3/04, 1/60, 1/98

U.S. Cl. 260—94.9 P

14 Claims



A process for the high pressure polymerization of ethylene in an autoclave reactor is disclosed, wherein the autoclave

contents are maintained in a thoroughly mixed condition by converting the pressure energy of the ethylene feed into kinetic energy by throttling the flow of ethylene feed into the autoclave, to create a turbulent flow wherein the Reynolds number exceeds 2100, to produce macroscopic circulations in the autoclave. Such a process has numerous advantages, primarily in the reduction of the number of explosive decompositions of ethylene. Apparatus for conducting such a process are also disclosed, wherein such apparatus includes an autoclave having at least one ethylene feed inlet which imparts a rotary motion to the autoclave contents.

3,692,764

Patent Not Issued For This Number

3,692,765

Patent Not Issued For This Number

3,692,766

**CALCIUM LACTULOSATE**

Hans Reinicke, Schwarzwaldstrasse 56; Senta Leonhauser, Kallstadter Strasse 11, both of, 6804 Iffesheim Bei Mannheim, and Rudolf Weidenhagen, Emsheimer Strasse 40, 6501 Ulversheim Uber Mainz, all of Germany

Division of Ser. No. 773,671, Nov. 5, 1968, Pat. No. 3,562,012. This application Oct. 22, 1970, Ser. No. 83,161

Claims priority, application Germany, Nov. 7, 1967, P 16 43 834.9

Int. Cl. C07c 47/18

U.S. Cl. 260—209 R

1 Claim

Calcium lactulosate prepared by introducing into a dilute aqueous solution of a crude lactulose syrup about 0.7 to 4 parts by weight of calcium oxide per part by weight of lactulose in the crude syrup at a temperature of about 0° to 15°C., allowing the resultant mixture to stand under conditions permitting maintenance of the temperature to about 0° to 15°C., and separating off the calcium lactulosate thereby formed.

3,692,767

**PROCESS FOR MAKING LINCOMYCIN AND ANALOGS THEREOF AND NOVEL COMPOUNDS OBTAINED THEREBY**

Barney J. Magerlein, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 867,362, Oct. 17, 1969, abandoned. This application May 6, 1970, Ser. No. 35,256

Int. Cl. C07c 47/18

U.S. Cl. 260—210 R

4 Claims

Lincomycin is formed by tosylating methyl 1-thio- $\alpha$ -D-galacto-octopyranoside to form methyl 6-O-(p-toluenesulfonyl)-1-thio- $\alpha$ -D-galactopyranoside, acylating the resulting compound to form the peracylate, replacing the tosyl group with iodine to form peracylated methyl 6-deoxy-6-iodo-1-thio- $\alpha$ -D-galactopyranoside, replacing the iodo group by a nitro group to form peracylated methyl 6-deoxy-6-nitro-1-thio- $\alpha$ -D-galactopyranoside, treating the latter with acetaldehyde and sodium methoxide to form methyl 6-deamino-6-nitro- $\alpha$ -D-galactopyranoside, reducing the latter with lithium aluminum hydride to form methyl  $\alpha$ -thiolincosaminide, and acylating the latter with trans-1-methyl-4-propyl-L-2-pyrrolidinecarboxylic acid. By substituting other aldehydes and/or other 1-thio- $\alpha$ -D-galactopyranosides, analogs of lincomycin are obtained.

3,692,768

**NACREOUS PIGMENTS FROM NUCLEIC ACID DERIVATIVES**

Toyoharu Takata; Keisuke Fujii, both of Tokyo; Nobumitsu Yano, Saitama-ken; Masao Fukushima; Fumio Nagayoshi, both of Tokyo, and Aiko Mizuno, Kawasaki-shi, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 13, 1969, Ser. No. 833,152

Claims priority, application Japan, June 15, 1968, 43/140981; June 15, 1968, 43/140982

Int. Cl. C07d 51/50

U.S. Cl. 260—211.5 R

10 Claims

Synthetic nacreous pigments comprise at least one thin plate-shaped crystal having a length of 3 to 100 microns, a width of 1 to 40 microns and a thickness of 0.05 to 3 microns, said individual crystal being composed of one nucleic compound selected from the group consisting of nucleic bases, nucleosides and nucleotides. The pigments are non-toxic, have a strong resistance to chemicals, and thus are applicable to cosmetics or decoration of the surfaces of toys and tablewares, or food itself or improvement in the freshness of beverages.

3,692,769

**AZO COMPOUNDS CONTAINING AN ARYLSULFONYL PHENYL DIAZO COMPONENT**

Max A. Weaver, Route 8, Kingsport, Tenn., and James M. Straley, Route 10, Kingsport, Tenn.

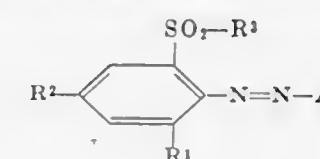
Filed Feb. 18, 1970, Ser. No. 12,438

Int. Cl. C09b 29/34, 29/36; D06p 3/52

U.S. Cl. 260—207.1

8 Claims

Azo compounds having the general formula



in which each of R<sup>1</sup> and R<sup>2</sup> is a conventional diazo component substituent or the group —SO<sub>2</sub>—R<sup>3</sup>, R<sup>3</sup> is an aryl group, and A is the residue of a disperse dye aniline or tetrahydroquinoline coupling component which bears an acylamido group on a ring carbon atom ortho to the azo group. The azo compounds produce reddish-blue to greenish-blue shades on polyester fibers and exhibit good dyeability, fastness to light and resistance to sublimation.

3,692,770

**3-CYCLOALKYLTHIO-3-AZABICYCLO (3.2.2) NONANES**

John Joseph D'Amico, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 17,970, March 9, 1970, Pat. No.

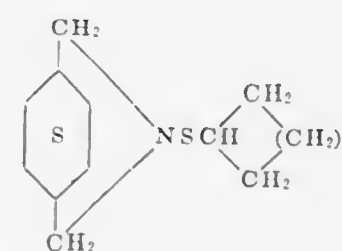
3,627,738. This application June 3, 1971, Ser. No. 149,828

Int. Cl. C07d 41/04

U.S. Cl. 260—239 BA

4 Claims

Compounds of the formula



wherein n is 2 to 9 which are stabilizers of organic compounds and inhibitors of premature vulcanization.

3,692,771

**PROCESS FOR PREPARING DIFLUORODIAZIRINE**

Robert L. Rebertus, Mendota Heights, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Oct. 16, 1964, Ser. No. 405,026

Int. Cl. C07d 45/00

U.S. Cl. 260—239 AA

4 Claims

I. A process for the production of difluorodiazirine comprising the steps of

1. reducing difluorobis(difluoramino)methane with tetra-lower alkyl quaternary ammonium iodide or anion exchange resin comprising quaternary ammonium groups and iodide anions and

II. recovering difluorodiazirine as a product of the reaction.

3,692,772

**PROCESS FOR PREPARING 1,4-BENZODIAZEPIN-2-ONES**

Kanji Meguro, Nishinomiya; Hiroyuki Tawada, Kyoto; Yutaka Kuwada, Ashiya, Hyogo, and Toru Masuda, Nishinomiya, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sept. 3, 1969, Ser. No. 855,042

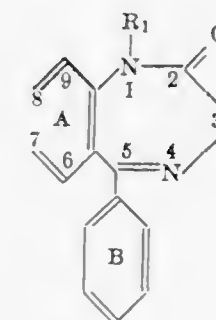
Claims priority, application Japan, Sept. 3, 1968, 43/63323; Sept. 3, 1968, 43/63324

Int. Cl. C07d 53/06

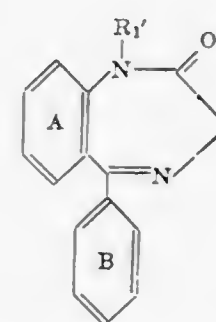
U.S. Cl. 260—239.3 D

2 Claims

The process for preparing benzodiazepin-2-one derivatives of the formula



wherein R<sub>1</sub> is hydrogen or lower alkyl, and rings A and B are either unsubstituted or substituted by one or more groups of nitro, trifluoromethyl, halogen, alkyl and alkoxy groups, which comprises subjecting a 2-amino- $\alpha$ -phenylbenzylideneaminoacetal derivative to ring-closure, hydrolyzing the resultant product to obtain the 2-hydroxybenzodiazepine derivative, and subjecting such derivative to oxidation to yield the benzodiazepin-2-one derivative. Also provided are novel 1-alkyl-2-hydroxybenzodiazepine derivatives of the formula



wherein R<sub>1</sub>' is lower alkyl and rings A and B may be either unsubstituted or substituted as defined above, such derivatives being useful as intermediates in the above process and also as tranquilizing agents.



3,692,773

ARALKYL PENTA-AND HEXAMETHYLENIMINE AND INTERMEDIATES THEREFOR  
Janis Plostnieks, Philadelphia, Pa., assignor to McNeil Laboratories, Inc.

Division of Ser. No. 799,943, Feb. 17, 1969, Pat. No. 3,637,659, which is a continuation-in-part of Ser. No. 717,363, March 29, 1968, abandoned. This application Jan. 28, 1971, Ser. No. 110,617  
Int. Cl. C07d 29/24

U.S. Cl. 260—239.3 R 9 Claims  
The compounds are of the class of aralkyl penta- and hexamethylenimines which are useful as anti-arrhythmic agents; and to certain intermediates useful in the syntheses of such methylenimines.

3,692,774

2-CARBOXAMIDO PENICILLIN DERIVATIVES

John H. Sellstedt, 266 Iven Ave., St. Davids, Pa., and Milton Wolf, 1100 Westchester Pike, West Chester, Pa.  
Filed Aug. 31, 1970, Ser. No. 68,527  
Int. Cl. C07d 99/16

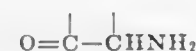
U.S. Cl. 260—239.1 7 Claims  
Phenoxymethyl,  $\alpha$ -aminobenzyl and phenylimidazolidinyl penicillin derivatives are prepared. The compounds are effective antibacterials with a substantial spectrum of activity and good duration of action.

3,692,775

RACEMIZATION OF D-OR L- $\alpha$ -AMINO-CAPROLACTAM IN THE PRESENCE OF METAL IONS

Anne-Marie Margaretha Kubanek, Basking Ridge, and Young Chul Kim, Parsippany, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.  
Continuation-in-part of Ser. No. 780,287, Nov. 29, 1969, abandoned. This application March 17, 1969, Ser. No. 808,003  
Int. Cl. C07d 41/06

U.S. Cl. 260—239.3 R 9 Claims  
This invention relates to a method of racemizing enantiomers of compounds containing the group



particularly enantiomers of  $\alpha$ -amino-E-caprolactam, by contacting said enantiomers with ions of aluminum, chromium, cobalt, copper, indium, nickel, palladium, or zinc, preferably by dissolving salts of said metals in solutions of said enantiomers.

3,692,776

PROCESS FOR PREPARING 7-CHLORO-1,3-DIHYDRO-1-METHYL-5-PHENYL-2H-1,4-BENZODIAZEPIN-2-ONE

Minoru Shindo, Tokyo; Kanji Moro, Tokyo, and Teizo Shinozaki, Chiba-ken, all of Japan, assignors to Seijaku Kabushiki Kaisha, Tokyo, Japan  
Division of Ser. No. 841,611, Oct. 27, 1970. This application Oct. 27, 1970, Ser. No. 84,549  
Int. Cl. C07d 53/06

U.S. Cl. 260—239.3 D 15 Claims  
The known 7-chloro-1,3-dihydro-1-methyl-5-phenyl-2H-1,4-benzodiazepin-2-one which was found to be pharmacologically effective in neuro-psychic disorders is prepared easily and in high yield by an improved process comprising the reaction of a novel intermediate, N-aminoacetyl-5-chloro-N-methylanthranilic acid, with phosphorus pentachloride fol-

lowed by reacting with benzene in the presence of aluminum chloride, the intermediate which is also found to have valuable pharmacological activities being, in turn, prepared by the reaction of 5-chloro-N-methyl-N-phthalimidoacetylthranilic acid with hydrazine.

3,692,777

5H-PYRROLO [2,1-C] [1,4] BENZODIAZEPIN-5-ONES  
Kei Arima; Gakuzo Tamura, both of Tokyo; Heichi Sakai, and Masanobu Kohsaka, both of Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan  
Filed Dec. 29, 1969, Ser. No. 888,991

Claims priority, application Japan, Dec. 30, 1968, 44/83  
Int. Cl. C07d 53/06

U.S. Cl. 260—239.3 T 9 Claims  
This invention contains a novel antibiotic produced by a culture of *Streptomyces achromogenes* var. *tomyamyceticus* in a nutrient medium and derivatives thereof which are active against a number of microorganisms, phages and viruses, and effective in the treatment of tumors.

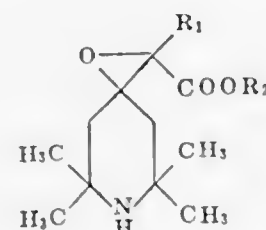
3,692,778

PIPERIDINE-SPIRO-OXIRANE DERIVATIVES

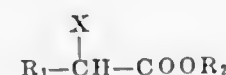
Keisuke Murayama; Syoji Morimura; Takao Yoshioka; Katsuki Matsui; Tomoyuki Kurumada; Noriyuki Ohta, and Ichiro Watanabe, all of Tokyo, Japan, assignors to Sankyo Company Limited  
Filed Aug. 26, 1970, Ser. No. 67,246

Claims priority, application Japan, Sept. 2, 1969, 44/69451; Aug. 15, 1970, 45/71092  
Int. Cl. C07d 99/04

U.S. Cl. 260—293.66 4 Claims  
New piperidine-spiro-oxirane derivatives having the formula



wherein  $R_1$  represents hydrogen atom or an alkyl group of one to four carbon atoms and  $R_2$  represents an alkyl group of one to eight carbon atoms. These piperidine-spiro-oxirane derivatives are prepared by reacting triacetoneamine with a halogenated aliphatic carboxylic acid ester having the formula



wherein  $R_1$  and  $R_2$  are as defined above and X represents a halogen atom in the presence of a base capable of producing carbanion. The present piperidine-spiro-oxirane derivatives show a superior stabilizing activity against photo- and thermodegradation of various synthetic polymers, e.g., including polyolefins, polyvinyl chlorides, polyvinylidene chlorides, polyacetals, polyesters, polyamides and polyurethanes and thus they are useful as a stabilizer for preventing said deterioration.

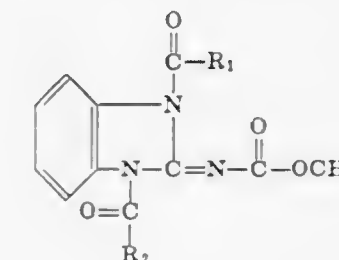
3,692,779

7-[N-(SUBSTITUTED-IMIDOYL)AMINOACETAMIDE] CEPHALOSPORANIC ACIDS AND DERIVATIVES THEREOF

Charles Truman Holdrege, Camillus, N.Y., assignor to Bristol-Myers Company, 02, New York, N.Y.  
Filed Aug. 12, 1970, Ser. No. 63,314

Int. Cl. C07d 99/24 21 Claims  
U.S. Cl. 260—243 C

7-[N-(substituted-imidoyl)aminoacetamido]cephalosporanic acids and their salts and the corresponding betaines and desacetoxy derivatives are valuable as antibacterial agents, nutritional supplements in animal feeds, therapeutic agents in poultry and animals, including man, and are especially useful in the treatment of infectious diseases caused by Gram-positive and Gram-negative bacteria. 7-[N-(Phenylacetimidoyl)aminoacetamido]cephalosporanic acid, a preferred embodiment of the invention, is prepared for example, by Raney nickel hydrogenation (50 p.s.i., R.T.) of an aqueous solution of sodium 7-(3-benzyl-1,2,4-oxadiazole-5-one-4-acetamido)cephalosporanate which is prepared in turn by reaction of 7-aminocephalosporanic acid with 3-benzyl-1,2,4-oxadiazole-5-one-4-acetyl chloride.



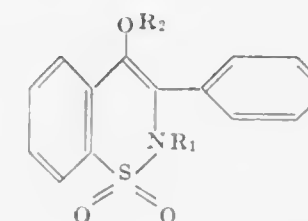
wherein  $R_1$  and  $R_2$  can be the same or different and are selected from alkyl, aryl, haloalkyl, cycloalkyl, alkenylaryl, and furanyl. The compositions described herein are useful as fungicides and biocides.

3,692,780

4-SUBSTITUTED-2-ALKYL-3-PHENYL-2H-1,2-BENZOTHAIAZINE-1,1-DIOXIDES AND PROCESSES FOR THEIR PRODUCTION

Harold Zinnes, Rockaway, and John Shavel, Jr., Mendham, both of N.J., assignors to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.  
Filed Oct. 14, 1970, Ser. No. 80,788

Int. Cl. C07d 93/02 7 Claims  
U.S. Cl. 260—243 R  
4-substituted-2-alkyl-3-phenyl-2H-1,2-benzothiazine-1,1-dioxides having the following structural formula are disclosed



wherein  $R_1$  is alkyl or aralkyl and  $R_2$  is hydrogen or acyl. These compounds are useful as anti-inflammatory agents.

3,692,781

RECOVERY OF PURE CEPHALEXIN FROM ACIDIC REACTION MIXTURES

John Francis Oughton, Gerrards Cross, England, assignor to Glaxo Laboratories Limited, Middlesex, England  
Filed Feb. 26, 1971, Ser. No. 119,398

Claims priority, application Great Britain, March 11, 1970, Int. Cl. C07d 99/24

U.S. Cl. 260—243 C 5 Claims  
Cephalexin is obtained in a high state of purity and in an advantageous crystalline form from impure solutions by contacting such solutions with acetonitrile, adjusting the pH to near the isoelectric point to cause an acetonitrile solvate of cephalexin to crystallize and suspending said solvate in warm water.

3,692,782

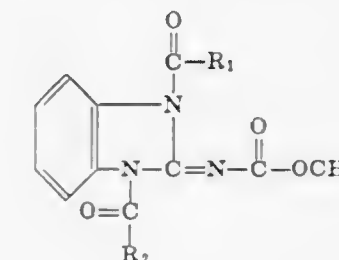
Patent Not Issued For This Number

3,692,783

CERTAIN 2-BENZIMIDAZOLE CARBAMATES AND THEIR UTILITY

Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.  
Filed Sept. 25, 1970, Ser. No. 75,753  
Int. Cl. C07d 49/38

U.S. Cl. 260—240 J 3 Claims  
New compounds corresponding to the formula



wherein  $R_1$  and  $R_2$  can be the same or different and are selected from alkyl, aryl, haloalkyl, cycloalkyl, alkenylaryl, and furanyl. The compositions described herein are useful as fungicides and biocides.

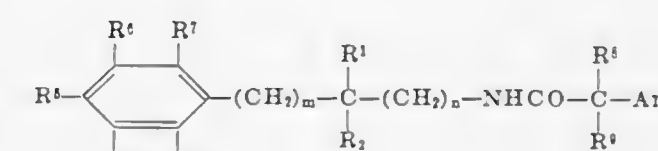
3,692,784

N-(PHENYLALKYL)-ACYLAMIDE DERIVATIVES

Ulf Henrik Anders Lindberg, Sodertalje, Sweden, assignor to Aktiebolaget Astra, Sodertalje, Sweden  
Filed July 1, 1969, Ser. No. 838,313

Claims priority, application Great Britain, July 16, 1968, 33,867/68

Int. Cl. C07c 103/50 12 Claims  
U.S. Cl. 260—247.2  
Compounds of the formula



wherein  $R^1$  and  $R^2$  may be the same or different and selected from the class consisting of alkyl groups of one to three carbon atoms, including isopropyl,  $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  may be the same or different and each selected from the class consisting of a hydrogen atom, straight and branched alkyl groups of one to three carbon atoms, straight and branched alkoxy groups of one to three carbon atoms and halogen atoms, at least two of  $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  being hydrogen and at least one of  $R^3$  and  $R^6$  being hydrogen when  $m$  is 0;  $R^5$  and  $R^6$  may be the same or different and each selected from the class consisting of a hydrogen atom and straight and branched alkyl groups of one to three carbon atoms, or when  $R^5$  is hydrogen  $R^6$  may together with Am form a heterocyclic ring containing a nitrogen atom; Am is an amino group selected from the class consisting of pyrrolidino, piperidino, morpholino and monoalkylamino and dialkylamino groups in which the alkyl radicals are straight or branched and contain one to four carbon atoms;  $m$  and  $n$  is 0 or 1, at least one of  $m$  and  $n$  being 0; and therapeutically acceptable salts thereof, processes for their preparation, pharmaceutical preparations containing such compounds and their use as local anesthetics.

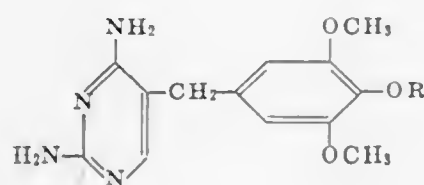
3,692,785

Patent Not Issued For This Number



3,692,786  
Patent Not Issued For This Number

3,692,787  
**SUBSTITUTED 2,4-DIAMINO-5-BENZYL PYRIMIDINES**  
Barbara Roth, Scarsdale, and Justina Strelitz, Dobbs Ferry, both of N.Y., assignors to Burroughs Wellcome & Co. (U.S.A.) Inc., Tuckahoe, N.Y.  
Division of Ser. No. 613,450, Feb. 2, 1967, abandoned. This application Feb. 16, 1970, Ser. No. 14,852  
Int. Cl. C07d 51/42  
U.S. Cl. 260—256.4 N  
Compounds of the formula



where R is benzyl, alkoxy substituted benzyl, allyl, or halogenalkyl. The compounds are useful as antibacterial agents.

3,692,788  
**PIPERAZINO HENZOXYCLOHEPTA 1,2 D THIAZOLES AND OXAZOLES**  
Eugene E. Galantay, Route 18, Morristown, N.J.  
Continuation-in-part of Ser. No. 795,048, Jan. 29, 1969, abandoned. This application Jan. 18, 1971, Ser. No. 107,521  
Int. Cl. C07d 51/70  
U.S. Cl. 260—268 TR  
7 Claims

The compounds are 2-alkyl-4-(4'-substituted-1'-piperazinyl)-9,10-dihydro-4H-benzo[5,6]cyclohepta[1,2-d]oxazoles and thiazoles; the substituents being methyl, ethyl or 2-hydroxyethyl, e.g., 2-methyl-4-(4'-methyl-1'-piperazinyl)-9,10-dihydro-4H-benzo[5,6]cyclohepta[1,2-d]oxazole. The compounds are useful therapeutically as anti depressants and tranquilizers.

3,692,789  
**METHOD FOR PREPARATION OF AMINOETHYLPIPERAZINE**  
Myrl Lichtenwalter, and Ernest Leon Yeakey, both of Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.  
Filed Oct. 24, 1969, Ser. No. 869,345  
Int. Cl. C07d 51/64  
U.S. Cl. 260—268 SY  
4 Claims

This invention relates to a method for the preparation of an amine, namely, 1-(2-aminoethyl)piperazine from a mixture of N-(hydroxyethyl)diethylene triamine isomers formed by the reaction of ethylene oxide with diethylenetriamine. Aminoethylpiperazine is a useful curing agent for epoxy resins and may also be used as a chemical intermediate (e.g., for the preparation of triethylenediamine).

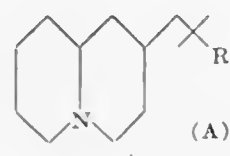
3,692,790  
**5-(AMINOALKYLAMINO)-6(OR)-HALO-8-QUINOLINEMETHANOLS, THEIR ALKYL ETHERS AND ALKANOYL ESTERS**

Sydney Archer, Bethlehem, and Denis M. Bailey, East Greenbush, both of N.Y., assignors to Sterling Drug, Inc., New York, N.Y.  
Continuation-in-part of Ser. No. 690,795, Dec. 15, 1967, abandoned. This application Dec. 5, 1969, Ser. No. 882,723  
Claims priority, application Great Britain, Dec. 9, 1968, 58,462/68  
Int. Cl. C07d 33/54  
U.S. Cl. 260—287 R  
5 Claims

5-(Aminoalkylamino)-6(or 7)-halo-8-quinolinemethanols, their lower-alkyl ethers and lower-alkanoil esters, having schistosomacidal activity, are prepared by reducing the corresponding lower-alkyl 5-(aminoalkylamino)-6(or 7)-halo-8-quinolinecarboxylates to prepare said 8-quinolinemethanols, and then reacting the latter with a lower-alkanol in the presence of an acid to obtain the lower-alkyl ethers and reacting the 8-quinolinemethanols with a lower-alkanoilating agent, e.g., acid chloride or anhydride, to form their lower-alkanoate esters.

3,692,791  
**SUBSTITUTED 2-T-BUTYL-OCTAHYDRO-2H-QUINOLIZINES**  
John R. Potoski, Rosemont, and Meier E. Freed, Philadelphia, both of Pa., assignors to American Home Products Corporation, New York, N.Y.  
Filed May 18, 1970, Ser. No. 38,508  
Int. Cl. C07d 39/12  
U.S. Cl. 260—293.53  
6 Claims

The disclosure is directed to 2-t-butyl-octahydro-2H quinolizines substituted in the two position and having the following formula:



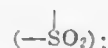
Where R is as defined below. The disclosure is further directed to a process for the preparation of such compounds and to novel intermediates in their preparation. The compounds have pharmacological activity as central nervous system depressants and some are useful as hypotensives.

3,692,792  
**HALOPYRIDINE SULFENYL-AND SULFONYLHALIDES**  
Penelope B. Domenico, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.  
Division of Ser. No. 861,463, Sept. 26, 1969, Pat. No. 3,635,994. This application May 20, 1971, Ser. No. 145,507  
Int. Cl. C07d 31/50  
U.S. Cl. 260—294.8 G  
2 Claims

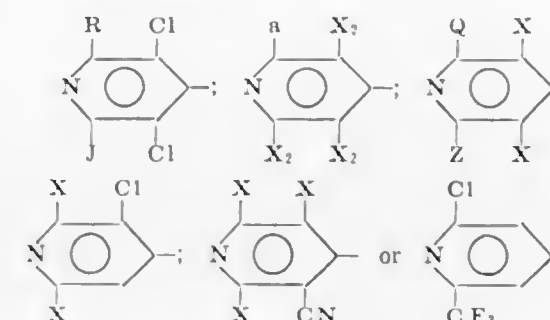
This disclosure is directed to sulfur containing substituted pyridine compounds corresponding to the formula



wherein D represents chlorine, bromine or fluorine; M represents sulfonyl ( $-\text{SO}_2-$ ) or sulfonyl



and Py represents one of the substituted pyridyl radicals



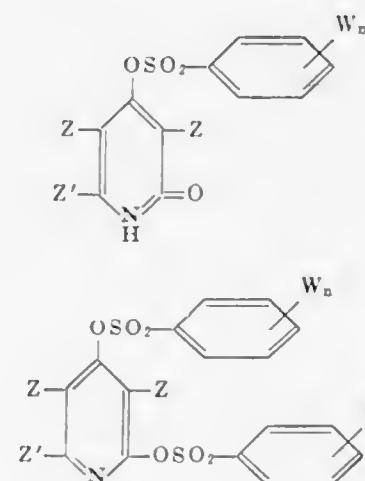
in which  $X_1$  represents bromine or fluorine; X represents chlorine or  $X_2$ ; a represents hydrogen or  $X_2$ ; R represents hydrogen or X; J represents trichloromethyl, trifluoromethyl or R; Q represents methyl sulfonyl



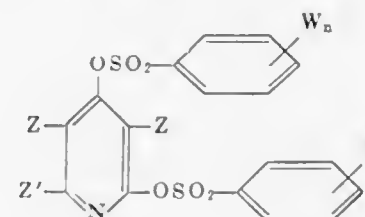
or R and Z represents cyano ( $-\text{CN}$ ) or methyl sulfonyl, with the proviso that D is fluorine only when M is sulfonyl. The preparation and use of these compounds as pesticides is also disclosed.

3,692,793  
**2,4-PYRIDINEDIYL BENZENESULFONATES**  
Chun-Shan Wang, 1906 Burlington, and Thomas W. McGee, 615 Columbia, both of Midland, Mich.  
Division of Ser. No. 807,961, March 17, 1969, Pat. No. 3,591,596. This application Nov. 19, 1970, Ser. No. 91,142  
Int. Cl. C07d 31/48  
U.S. Cl. 260—294.8 F  
4 Claims

The invention relates to halogenated 6-methyl-4-pyridyl and 6-methyl-2,4-pyridinediyl esters of benzenesulfonic acid of the formulas



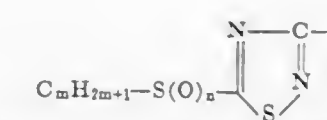
and



wherein each Z is hydrogen or X; X is chlorine, bromine or iodine; Z' is  $-\text{CH}_3$ ,  $-\text{CH}_2\text{X}$ ,  $-\text{CHX}_2$  or  $-\text{CX}_3$ ; W is a member selected from the group consisting of halogen, nitro and cyano and n is an integer of from 0 to 5, inclusive. The compounds of the invention are particularly useful as fungicides.

3,692,794  
**1,2,4-THIADIAZOLES**  
Melvin Harris Rosen, Florham Park, N.J., and Herbert Morton Blatter, Summit, N.J., assignors to Ciba-Geigy Corporation  
Filed Sept. 3, 1970, Ser. No. 69,469  
Int. Cl. C07d 91/60  
U.S. Cl. 260—302 SD  
6 Claims

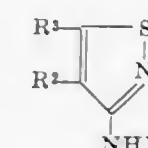
New 5-sulfinyl- or sulfonyl-1,2,4-thiadiazoles, e.g. those of the formula



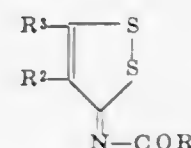
R = H or an aliphatic or araliphatic radical  
 $n = 1$  or  $2$   
 $m = 1-7$   
and salts thereof are antifungal agents.

3,692,795  
**3-AMINO-ISOTHIAZOLES, DERIVATIVES THEREOF AND PROCESSES FOR THE PRODUCTION THEREOF**  
Horst Boshagen, Haan, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany  
Filed Sept. 12, 1969, Ser. No. 857,580  
Claims priority, application Germany, Sept. 17, 1968, P 17 95 344.5  
Int. Cl. C07d 91/46  
U.S. Cl. 260—305  
6 Claims

3-Amino-isothiazoles and derivatives thereof of the formula:



or a salt thereof, wherein  $R^2$  and  $R^3$  are the same or different and are hydrogen, unsubstituted or substituted aralkyl, unsubstituted or substituted aryl or an unsubstituted or substituted aliphatic moiety, or  $R^2$  and  $R^3$  are both alkyl linked together to form an anellated five- to seven-membered unsaturated or saturated, unsubstituted or substituted ring system, X is hydrogen or  $-\text{CO}-R^1$ , and  $R^1$  is unsubstituted or substituted aralkyl, unsubstituted or substituted aryl or an unsubstituted or substituted aliphatic moiety, are produced by reacting a compound of the formula:



wherein  $R^1$ ,  $R^2$ , and  $R^3$  are as above defined, or a salt thereof, with at least a twice-molar quantity of hydroxylamine in the presence of a water-miscible organic solvent at an elevated temperature, and the N-acylamines thus formed are optionally hydrolyzed, optionally without intermediate isolation.

The 3-amino-isothiazoles and derivatives so produced are useful for their fungicidal activity and may be used in treating humans, animals and plants against various fungal infections.

3,692,796  
**4H[1]BENZOPYRANO[3,4-D]ISOXAZOLE DERIVATIVES**  
Jules Freedman, 419 Susan Lane, Thiensville, Wis., assignor to Colgate-Palmolive Company New York, N.Y.  
Continuation-in-part of Ser. No. 670,772, Sept. 26, 1967, Pat. No. 3,553,228. This application Aug. 27, 1970, Ser. No. 67,603  
Int. Cl. C07d 85/22  
U.S. Cl. 260—307 H  
6 Claims

4H[1]benzopyrano[3,4-d]isoxazole derivatives substituted in the 3-position which are useful as pharmaceutical agents, especially anti-inflammatory agents. They are also useful in preparing structurally related pharmaceutical compounds of known utility. In addition, they are useful as intermediates in the preparation of wood preservatives, mothproofing agents and pickling inhibitors. Representative of the compounds disclosed are 4H[1]benzopyrano [3,4-d]isoxazole-3-carboxa-



mide, ethyl 4H[1]benzopyrano[3,4-d]isoxazole-3-carboxylate and N-methyl-4H[1]benzopyrano[3,4-d]isoxazole-3-thiocarboxamide.

3,692,797

### 3-(5-NITRO-2-THIENYL)-1-OXA-2,4-DIAZASPIRO(4,5)-DEC-2-ENE

Rudolf Ruegg, Bottmingen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed March 26, 1971, Ser. No. 128,571

Claims priority, application Switzerland, April 24, 1970, 6171/70

Int. Cl. C07d 85/52

U.S. Cl. 260—307 F

1 Claim

3-(5-Nitro-2-thienyl)-1-oxa-2,4-diazaspiro[4,5]-dec-2-ene and a process for its preparation are described. The subject compound is therapeutically active against filariasis schistosomiasis and similar diseases.

3,692,798

### SUBSTITUTED Silylmethyl IMIDAZOLES

Sandor Barcza, 1480 Pleasant Valley Way, West Orange, N.J.

Filed May 7, 1971, Ser. No. 141,383

Int. Cl. C07d 49/36; C07f 7/10

U.S. Cl. 260—309

5 Claims

Substituted silylmethyl imidazoles, e.g., 1-(phenyldimethyl-silylmethyl)-imidazole, are prepared by reacting substituted silylmethyl halides with imidazole or N-metalated imidazole, and are useful as antimicrobials.

3,692,799

### 5-PHENYL-1-SULFONAMIDOPYRROLE-2-PROPIONIC ACIDS AND CONGENERS

William K. Sprenger, 8860 Root St. Apt. 1, Niles, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed July 8, 1970, Ser. No. 53,335

Int. Cl. C07d 27/26

U.S. Cl. 260—326.3

21 Claims

Disclosed herein are anti-ulcerogenic, pepsin-inhibiting, anti-bacterial, and anti-protozoal 5-phenyl-1-sulfonamidopyrrole-2-propionic acids and congeners; analgesic, anti-ulcerogenic, and anti-protozoal 2,3,4,5-tetra-hydro-3-hydroxy-6-phenyl-2-sulfonylpyridazine-3-propionic acid  $\gamma$ -lactones and congeners; and the preparation of these compounds from corresponding 4,7-dioxoheptanoic acids and sulfonic acid hydrazides.

3,692,800

### PHOTOCHROMIC COMPOUND

Hisatake Ono, and Chiaki Osada, both of Asaka-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigaro-Kamigun, Kanagawa, Japan

Filed Oct. 30, 1969, Ser. No. 872,604

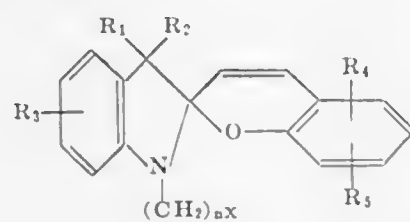
Claims priority, application Japan, Oct. 30, 1968, 43/79152

Int. Cl. C07d 27/38

U.S. Cl. 260—326.11

6 Claims

The present invention relates to a photochromic compound represented by the formula



wherein  $R_1$  and  $R_2$  each is an alkyl group having one to five carbon atoms or a phenyl group,  $R_3$  is a hydrogen atom, an alkyl group having one to five carbon atoms, a halogen atom, a nitro group, a cyano group, a carboxyl group substituted by an alkyl group having one to five carbon atoms, or an alkoxy group,  $R_4$  and  $R_5$  each is a hydrogen atom, a nitro group, a halogen atom, a formyl group or an alkoxy group,  $X$  is a cyano group or a carboxyl group substituted by an alkyl group having one to five carbon atoms, and  $n$  is 1 to 4.

3,692,801

### 2-ALKYLIDENE OXETANE COMPOUNDS

Alfred G. Robinson, III, 501 W. Terrace Dr., and Anthony W. McCollum, 404 Hillmont, both of Longview, Tex.

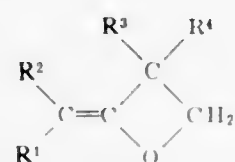
Filed Sept. 16, 1970, Ser. No. 72,839

Int. Cl. C07d 3/00

U.S. Cl. 260—333

11 Claims

Polymerizable unsaturated oxetane compounds having the structure:



wherein  $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  are selected from the group consisting of methyl or ethyl have been discovered. They may be prepared in high yield by reacting a suitable base, preferably potassium *t*-butoxide with a substituted 3-oxobutylene or 3-oxopentylene compound such as, for example, 2,2,4-trialkyl-3-oxopentyl tosylate or 2,2,4-trialkyl-3-oxopentyl isobutyrate in an inert organic solvent, preferably benzene. Polymers and copolymers are prepared from the oxetane compounds.

3,692,802

### PATENT NOT ISSUED FOR THIS NUMBER

3,692,803

### STEREOSPECIFIC TOTAL STEROIDAL SYNTHESIS VIA SUBSTITUTED C/D-TRANS INDANONES

Zoltan George Hajos, Upper Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

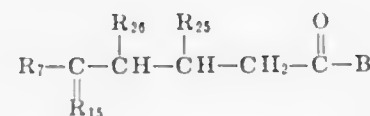
Continuation-in-part of Ser. No. 765,023, Oct. 4, 1968. This application July 28, 1969, Ser. No. 845,546

Int. Cl. C07d 13/10

U.S. Cl. 260—340.5

5 Claims

Progestationally active steroids may be prepared by first reacting 4-active group substituted C/D trans indanones with substituted  $\beta$ -keto esters followed by cyclization to B,C,D-tricyclics having an A ring precursor group and then finally forming the desired steroid. Preferred  $\beta$ -keto esters for this purpose have the formula



where  $R_7$  is lower alkyl;  $R_{15}$  is oxo, lower alkylene-dioxy, arylendioxy or (hydrogen and lower alkoxy);  $B$  is lower alkoxy-carbonyl-methylene, aryloxy-carbonyl-methylene, cyano-methylene, lower alkyl sulfinyl-methylene, and lower alkyl sulfonyl-methylene; and  $R_{24}$  and  $R_{25}$  are independently selected from the group consisting of hydrogen, hydroxyl and lower alkyl.

3,692,804

### PATENT NOT ISSUED FOR THIS NUMBER

3,692,805

### AROMATIC SULFONYL AZIDES

Kurt H. G. Pilgram, Modesto, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Jan. 25, 1971, Ser. No. 109,681

Int. Cl. C07d 109/00

U.S. Cl. 260—349

6 Claims

Certain novel 4-amino-3,5-dinitrobenzenesulfonyl azides are described, with their preparation and use as herbicides.

3,692,806

### PATENT NOT ISSUED FOR THIS NUMBER

3,692,807

### PATENT NOT ISSUED FOR THIS NUMBER

3,692,808

### PATENT NOT ISSUED FOR THIS NUMBER

3,692,809

### CATALYST SYSTEM FOR USE IN NITRIC ACID OXIDATION OF OLEFINS

Paul H. Washecheck, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Feb. 22, 1971, Ser. No. 117,793

Int. Cl. C07c 51/32

U.S. Cl. 260—413

11 Claims

Olefins are oxidized to carboxylic acids by contacting the olefins in the liquid phase with nitric acid in the presence of a catalyst consisting of vanadium and silver ions.

3,692,810

### CATALYTIC OXIDATION OF OLEFINS TO YIELD CARBOXYLIC ACIDS

Paul H. Washecheck, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Feb. 22, 1971, Ser. No. 117,794

Int. Cl. C07c 51/32

U.S. Cl. 260—413

11 Claims

Olefins are oxidized with a mineral acid to carboxylic acids by dissolving the olefin in a hydrophobic solvent, and contacting the olefin solution with an oxidation system which comprises a mineral acid, an aqueous solution of a hexavalent chromium compound and a ruthenium compound. The reaction mixture is heated to a temperature of from about 45° C to about 100° C.

3,692,811

### ALCOHOLATED BASIC ALUMINUM HALIDE COMPOUNDS AND METHOD OF MAKING SAME

William S. Gilman, South Plainfield; John L. Jones, North Plainfield, and Andrew M. Rubino, New Providence, all of N.J., assignors to Armour Pharmaceutical Company, Chicago, Ill.

Filed Oct. 26, 1970, Ser. No. 84,172

Int. Cl. C07f 5/06

U.S. Cl. 260—448 R

8 Claims

Anhydrous basic aluminum halide complexes may be formed from hydrated or partially hydrated aluminum halides

by substituting alcohol for the free and coordinated water in the hydrated compound. The anhydrous alcoholated complexes are produced by dissolving the hydrated compound in alcohol, adding dimethoxypropane (DMP) or diethoxypropane (DEP) to the solution, heating and concentrating the solution, adding additional DMP, DEP or other precipitating agent to precipitate out the alcoholated complex, and drying the precipitate. The products may be useful in antiperspirant compositions and as intermediates in non-aqueous solvents.

3,692,812

### METHOD OF PRODUCING ALKOXY-SUBSTITUTED MERCAPTOALKYL SILANES

Abe Berger, Schenectady, N.Y., assignor to General Electric Company

Continuation-in-part of Ser. No. 789,401, Jan. 6, 1969, abandoned. This application April 21, 1971, Ser. No. 136,259

Int. Cl. C07f 7/08, 7/10, 7/18

U.S. Cl. 260—448.2 E

10 Claims

Alkoxy-substituted mercaptoalkyl silanes are prepared by reacting an olefinically substituted silane with a thioacid and treating the reaction product with an alcohol so as to form or maintain an alkoxy substituent, while forming a mercaptoalkyl substituent of the original olefinic portion. The process is also applicable to the production of polymeric organosilicon materials with mercaptoalkyl substituents.

3,692,813

### STABILIZATION OF ORGANIC ISOCYANATES

Hermann Hagemann, Cologne-Flittard; Erwin Muller, Leverkusen, and Peter Fischer, Odenthal-Osenau, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 2, 1970, Ser. No. 402

Claims priority, application Germany, Jan. 7, 1969, P 19 00 513.1

Int. Cl. C07c 119/04

U.S. Cl. 260—453 SP

3 Claims

Organic isocyanates are stabilized against decomposition, which results in precipitate formation and discoloration, by the addition of a small amount of an organic isocyanate compound, preferably an oxycarbonyl isocyanate containing at least one  $-O-CO-NCO$  group in the molecule. Polyurethane elastomers prepared from isocyanates stabilized in this manner also exhibit a very high resistance to hydrolysis.

3,692,814

### PREPARATION OF DIPERCHLORATES FROM DIENES AND DIOLS

David M. Hoffman, Chester, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 24,390, March 31, 1970. This application Aug. 21, 1970, Ser. No. 66,051

Int. Cl. C07c 71/00

U.S. Cl. 260—453 R

18 Claims

Hydrocarbon diperchlorates are prepared by contacting certain kinds of feed reactants with perchloric acid in an emulsion comprising a strong sulfuric acid phase and an organic phase comprising an inert organic solvent. The feed reactants can be alkadienes, cycloalkadienes, diols of alkanes or cycloalkanes, and monools of alkenes or cycloalkenes, with certain restrictions on the proximity of the reactive positions. The perchloric acid can be generated in situ in the mixture by

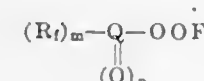


reaction of a perchlorate metal salt with the sulfuric acid. The hydrocarbon dperchlorate products have utility as detonatable sensitizers for explosives and as alkylating agents.

### 3,692,815 FLUOROXIDANTS

Phillip G. Thompson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.  
Filed Jan. 20, 1964, Ser. No. 339,026  
Int. Cl. C07c 71/00, 73/00

U.S. Cl. 260—453 R 3 Claims  
1. A compound of the formula



wherein Q is an atom in its highest oxidation state, said atom being selected from the class consisting of carbon and phosphorus, R<sub>i</sub> is selected from the class consisting of fluorine and perfluoroalkyl radicals, m is 1-5 and n is zero to 2; and when Q is carbon and n is zero, R<sub>i</sub> is perfluoroalkyl and includes Q.

2. Trifluoromethyl peroxyfluoride having the formula



### 3,692,816

ORGANOMINERAL POLYMERIC MATERIAL  
Marc della Faille, 27 Rue Baron De Castro, Bruxelles 1040; Jose Fripiat, 42 De Croylaen, Heverlee, Louvain, and Jean Mercier, Trolleberg 31, Kessel-Lo, all of Belgium  
Filed Oct. 26, 1970, Ser. No. 84,120  
Claims priority, application France, Nov. 6, 1969, 6932816  
Int. Cl. C08f 11/04

U.S. Cl. 260—46.5 R 9 Claims  
The material comprises a siliceous mineral framework constituted by the two-dimensional framework of a phyllosilicate and organic radicals having a reactable group which is capable of polymerization, the radicals being linked by Si-O-Si siloxane bonds to the tetrahedral layer of the phyllosilicate from which a fraction of the octahedral layer has been removed. The method of preparation of the material comprises acid hydrolysis of a phyllosilicate for the partial removal of the octahedral layer followed by reaction of the phyllosilicate with an organosilane having at least one reactable organic group which is capable of subsequent polymerization.

### 3,692,817

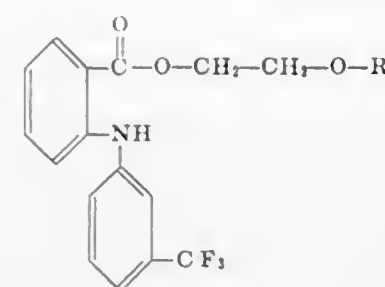
Patent Not Issued For This Number

### 3,692,818

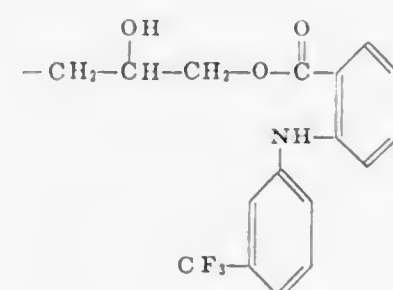
NEW PHARMACOLOGICALLY ACTIVE ESTERS OF N-(3-TRIFLUOROMETHYLPHENYL)-ANTHRANILIC ACID  
Karl-Heinz Boltze, Bensberg-Klippekausen; Otfried Brendler, Cologne, Mulheim, and Dietrich Lorenz, Bensberg, all of Germany, assignors to Troponwerke Dinklage & Co., Cologne-Mulheim, Germany  
Filed July 16, 1970, Ser. No. 55,563  
Claims priority, application Germany, Aug. 1, 1969, P 19 39 112.9

Int. Cl. C07c 101/54

U.S. Cl. 260—471 R 7 Claims  
Compounds of the general formula:



in which R represents the radical



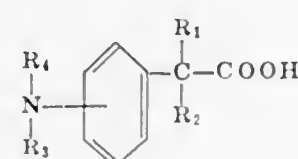
or a lower alkyl group having up to three carbon atoms in which one or two hydrogen atoms are replaced by hydroxyl groups, acyloxy groups having up to four carbon atoms, or lower hydroxyalkoxy groups, having an antinflammatory action.

### 3,692,819

#### TERTIARY AMINOACIDS

Richard William James Carney, New Providence, N.J., and George De Stevens, Summit, N.J., assignors to Ciba-Geigy Corporation  
Continuation-in-part of Ser. No. 808,331, March 18, 1969, which is a continuation-in-part of Ser. No. 792,807, Jan. 21, 1969, abandoned, which is a continuation-in-part of Ser. No. 757,136, July 3, 1968, Pat. No. 3,657,230, which is a continuation-in-part of Ser. No. 716,347, March 27, 1968, abandoned. This application Sept. 29, 1969, Ser. No. 861,984  
Int. Cl. C07c 101/44

U.S. Cl. 260—471 R 8 Claims  
New α-(acyclic tert. aminophenyl)-aliphatic acids, e.g., those of the formula



R<sub>1</sub>=H or alkyl  
R<sub>2</sub>=H, alk(en)yl, cycloalk(en)yl or cycloalk(en)yl-alkyl  
R<sub>3</sub>=alk(en)yl, hydroxyalkyl, alkoxyalkyl or amino-alkyl  
R<sub>4</sub>=alk(en)yl, hydroxyalkyl, alkoxyalkyl, cycloalk(en)yl, cycloalk(en)yl-alkyl or aralkyl

and functional derivatives thereof, are anti-inflammatory agents.

### 3,692,820

#### METHYL AND ETHYL-N-[3-(3'-METHYLPHENYL-CARBAMYLOXY)-PHENYL]CARBAMATES

Gerhard Boroschewski; Friedrich Arndt, and Reinhart Rusch, all of Berlin, Germany, assignors to Schering A.G., Berlin and Bergkamen, Germany  
Continuation of Ser. No. 536,283, March 22, 1966, abandoned. This application Sept. 25, 1969, Ser. No. 861,198  
Claims priority, application Germany, April 9, 1965, Sch 36854  
Int. Cl. C07c 79/46, 101/00

U.S. Cl. 260—472 2 Claims  
New phenyl carbamates are provided as herbicides, broadly effective against many types of weeds, particularly of the dicotyledonous type.

### 3,692,821

#### DERIVATIVES OF 2-ALKANOYLOXY AND 2-HYDROXY-3-PHENYLBENZOIC ACID

Lewis H. Sarett, Rolling Hill Road, Skillman, N.J., and William V. Ruyle, 1481 Rahway Road, Scotch Plains, N.J.  
Continuation-in-part of Ser. No. 674,702, June 10, 1967, abandoned. This application Sept. 9, 1970, Ser. No. 70,893  
Int. Cl. C07c 65/14

U.S. Cl. 260—473 R 3 Claims  
New phenyl benzoic acid and ester compounds particularly substituted 5-(substituted phenyl)benzoic acid and ester derivatives and processes for their preparation are claimed. The new phenyl benzoic acid and ester compounds described have anti-inflammatory, anti-pyretic and analgesic activity.

### 3,692,822

#### PROCESS FOR PREPARING ESTERS

Russell G. Hay, Gibsonia; John G. McNulty, and William L. Walsh, both of Glenshaw, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.  
Filed April 20, 1970, Ser. No. 30,235  
Int. Cl. C07c 69/02, 69/34, 69/38 0

U.S. Cl. 260—475 R 13 Claims  
A process for preparing an ester wherein a water soluble organic acid is contacted with a water insoluble alkanol in added water containing a sulfonic acid having from 12 to 20 carbon atoms.

### 3,692,823

#### METHOD FOR PREVENTING EXPLOSIONS

William E. Gordon, Pittsburgh, Pa., assignor to Celanese Corporation of America, New York, N.Y.  
Division of Ser. No. 514,653, Dec. 17, 1965, abandoned. This application Feb. 16, 1970, Ser. No. 14,855  
Int. Cl. C07c 67/04

U.S. Cl. 260—497 A 2 Claims  
In a process in which a gas comprising oxygen is bubbled through a liquid reaction medium contained in a reaction vessel, with a flammable or potentially flammable vapor being contained in the ullage space of the vessel with a resultant explosion hazard, the explosion hazard is minimized by continuously spraying a liquid comprising predominantly at least one component of the reaction medium into the ullage space so as to maintain a suspension of liquid droplets throughout the ullage space.

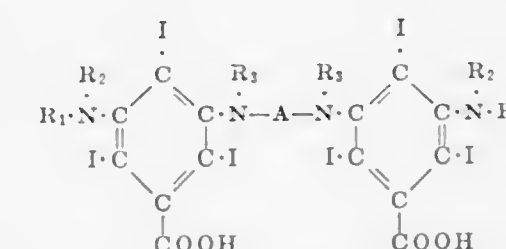
### 3,692,824

#### NOVEL 3,5-SUBSTITUTED 2,4,6-TRIODOBENZOIC ACIDS AND SALTS THEREOF

Lars Bjork, Uno E. Erikson, and Bjorn G.-A. Ingelman, all of Uppsala, Sweden, assignors to Pharmacia Aktiebolag, Uppsala, Sweden  
Continuation-in-part of Ser. No. 689,724, Dec. 11, 1967, abandoned. This application April 10, 1970, Ser. No. 27,437  
Claims priority, application Sweden, Dec. 13, 1966, 17053/1966

Int. Cl. C07c 103/32

U.S. Cl. 260—501.11 12 Claims  
Iodo compounds useful in the X-ray visualization of body cavities, of the formula:



wherein R<sub>1</sub> is methyl or ethyl and R<sub>2</sub> and R<sub>3</sub> are each acetyl or propionyl and wherein A is an alkylene group substituted by at least one hydroxy group, said alkylene containing from three to 15 carbon atoms and being optionally broken by one or more oxygen bridges; or physiologically acceptable salts of said compounds.

### 3,692,825

#### INDANYL ACETIC ACIDS

John B. Conn, 2417 Allwood Road, Westfield, N.J., assignor to Merch & Co., Inc., Rahway, N.J.  
Filed May 1, 1970, Ser. No. 33,893  
Int. Cl. C07c 147/00

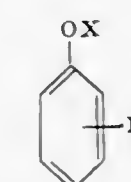
U.S. Cl. 260—515 A 2 Claims  
Process for preparing 1-benzylidene-5-fluoro-3-indenyl acetic acids by 2,3-dehydrogenating a 1-benzylidene-3-indenyl acetic acid. Also included are novel 1-benzylidene-3-indenyl acetic acid intermediates.

### 3,692,826

#### CARBOXYLATION OF FLUORENE

Edwin L. Patmore; William R. Siegart, and Harry Chafetz, all of Texaco Inc. P.O. Box 509, Beacon, N.Y.  
Division of Ser. No. 784,901, Dec. 18, 1968, Pat. No. 3,595,907. This application Feb. 3, 1971, Ser. No. 119,430  
Int. Cl. C07c 51/00

U.S. Cl. 260—515 R 4 Claims  
Method of carboxylating a compound of the group of R-C≡CH, RCH<sub>2</sub>CN, indene, cyclopentadiene or fluorene, where R is hydrocarbyl, comprising contacting said compound with carbon dioxide under substantially anhydrous conditions in the presence of a base of the formula:



where X is sodium or potassium, R<sup>1</sup> is hydrogen or alkyl and subsequently acidifying the resultant reaction product to form the carboxylated product.



3,692,827

## DERIVATIVES OF AMINOALKANOIC ACIDS

Aldo Garzia, Lodi, Italy, assignor to Instituto Chemioterapico Italiano S.P.A., Milan, Italy

Filed June 26, 1970, Ser. No. 50,329

Int. Cl. C07c 103/22

U.S. Cl. 260—519

7 Claims

(3,4,5-trialkoxy benzoyl) amino alkanic acids and their pharmaceutically-acceptable salts for prophylaxis and treatment of cardiac disorders.

3,692,828

## PROCESS FOR PREPARING PHENYL SULFONE CARBOXYLIC ACIDS

Antoli Onopchenko, Monroeville, and Johann G. D. Schulz, Pittsburgh, both of Pa., assignors to Gulf Research &amp; Development Company, Pittsburgh, Pa.

Filed May 1, 1970, Ser. No. 33,945

Int. Cl. C07c 63/02

U.S. Cl. 260—524 R

8 Claims

A process for preparing phenyl sulfone carboxylic acids which involves contacting an alkyl phenyl sulfone with molecular oxygen while the same is dissolved in a lower carboxylic acid containing cobaltic ions.

3,692,829

PROCESS FOR ISOLATING ACRYLIC ACID FROM AQUEOUS CRUDE ACRYLIC ACID BY EXTRACTION WITH A KETONE AND PLURAL STAGE DISTILLATION

Kurt Sennewald, Hermulheim near Cologne; Heinz Erpenbach, Surth near Cologne; Heinz Handte, Cologne, and Winfried Lork, Friesheim, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

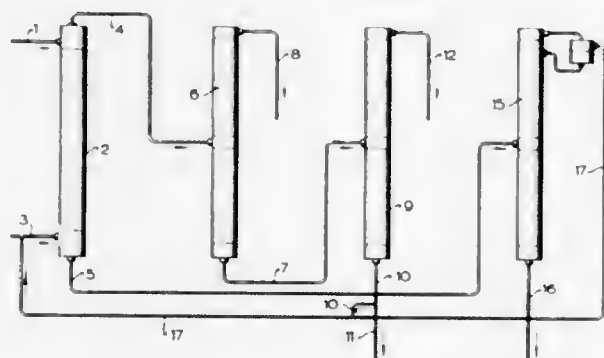
Filed Dec. 15, 1970, Ser. No. 98,336

Claims priority, application Germany, Dec. 27, 1969, P 19 65 014.7

Int. Cl. C07c 57/04, 51/48

U.S. Cl. 260—526 N

6 Claims



Pure acrylic acid is isolated from an aqueous crude acid containing acrylic acid together with minor proportions of acetic acid, formaldehyde and high boilers boiling at a temperature higher than 220°C by liquid-liquid extraction with the use of 3,3,5-trimethylcyclohexanone and/or isophorone as the extractant(s). To this end, the aqueous acrylic acid-containing crude acid is subjected in an extraction zone to counterflow extraction with the use of the extractant(s) and with the resultant formation of an organic extract containing acrylic acid, acetic acid, high boilers and minor proportions of water, which are dissolved in the extractant; the extract is introduced approximately into the midsection of a first distilling column; acetic acid and water are removed overhead under reduced pressure; the base product of the first distilling column, containing extractant(s), acrylic acid and high boilers, is delivered approximately to the midsection of a second distilling column; pure acrylic acid is distilled off overhead under reduced pressure; and the base product of the second distilling column, consisting of high boilers and extractant(s), is recycled to the extraction zone.

3,692,830

## PROCESS FOR THE PRODUCTION OF OXALIC ACID

Andre Charamel; Jacques Marius Duroux, both of Lyon; Serge Siquet, Chaponost (Rhône), all of France, and Jaques Descroix, deceased, Thiais, France (by Daniel Gras, Legal Representative), assignors to Rhone-Poulenc S.A., Paris, France

Continuation of Ser. No. 624,973, March 14, 1967. This application Dec. 9, 1970, Ser. No. 96,646

Int. Cl. C07c 51/32

U.S. Cl. 260—533 R

7 Claims

Oxalic acid is produced by absorbing propylene in strong nitric acid and then heating the solution while removing the oxides of nitrogen formed, preferably after introducing oxygen into the solution.

3,692,831

## COUNTER-CURRENT CYCLING EXTRACTION

Chandrasekhara Rao Darsi, John Edwin Feick, both of Edmonton, Alberta, and Isa Christopher Mustaklem, St. Albert, Alberta, all of Canada, assignors to Chemcell Limited, Montreal, Quebec, Canada

Filed Oct. 6, 1969, Ser. No. 863,879

Int. Cl. C07c 51/48

U.S. Cl. 260—541

4 Claims

A counter-current cycling extraction method wherein a light solvent upward stream extracts a solute from a heavy solvent downward stream, the improvement which comprises during the circulation of said light solvent upward stream simultaneously circulating an upward stream of the heavy solvent whose solute has been removed at least in part by extraction, the amount of said heavy solvent thus circulated corresponding substantially to the volume increase of the light solvent stream due to the solute transfer, thereby maintaining during the cycling extraction the volume of heavy solvent stream constant and generally enabling a constant volume flow of the light solvent stream and apparatus therefore, comprising a cycling extraction column provided with compensating means for feeding a controlled amount of solvent having reduced solute concentration into the base of said extraction column during the flow of the light solvent.

3,692,832

## METHOD FOR THE PRODUCTION OF SUBSTITUTED CYANAMIDES

Harold D. Rider, 26 South Cherman, Denver, Colo.

Filed Aug. 4, 1967, Ser. No. 663,186

Int. Cl. C07c 125/08

U.S. Cl. 260—551 C

9 Claims

The present invention comprises a process for the production of mono- and disubstituted cyanamides comprising contacting cyanamide with an organic mono-halide in a dipolar aprotic solvent at a temperature of about 0° to 200°C.

3,692,833

## PHOTOGRAPHIC COLOR COUPLERS

Alberto Guzzi, Viale Della Libertà, and Remo Magagnoli, Via Gramsci, both of Ferrania, Italy

Division of Ser. No. 701,995, Jan. 31, 1968, Pat. No.

3,591,384. This application Aug. 27, 1970, Ser. No. 67,569

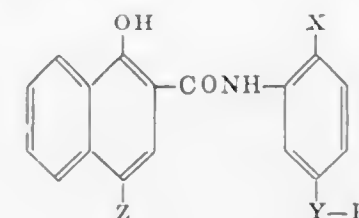
Claims priority, application Italy, Feb. 15, 1967, 34846 A/67

Int. Cl. C07c 103/30

U.S. Cl. 260—559 S

5 Claims

This invention relates to compounds useful as photographic couplers having the general formula:



wherein X is alkyl, Y is either carbonyl or sulfonyl, R is alkyl having from five to 20 carbon atoms and Z is hydrogen or halogen. The invention also relates to the use of the above-mentioned compounds in photographic emulsions.

3,692,834

## INTERMEDIATES FOR PREPARING ACRIDINES

Elvin L. Anderson, Moorestown, N.J., and Harold Graboyes, Philadelphia, Pa., assignors to Smith Kline &amp; French Laboratories, Philadelphia, Pa.

Continuation-in-part of Ser. No. 732,869, May 29, 1968, Pat. No. 3,625,945. This application Feb. 25, 1971, Ser. No.

118,976

Int. Cl. C07c 119/00

U.S. Cl. 260—566 B

4 Claims

Diphenyl-2-carboxaldehyde derivatives, prepared by reacting a diphenylamine-2-carboxylic acid benzenesulfonyl-hydrazide with a base and hydrazine, semicarbazide, thiosemicarbazide or phenylhydrazine, are reacted with a mineral acid to produce acridines. The acridines are useful as intermediates for preparing 9-aminoalkylacridans having pharmacodynamic activity.

3,692,835

## PHARMACOLOGICALLY ACTIVE AMINO-ETHYL OXIMES

Jan Van Dijk, and Jenkin Eric Davies, both of van Houtenlaan, Weesp, Netherlands

Filed March 25, 1968, Ser. No. 715,571

Claims priority, application Netherlands, April 5, 1967, 6704810; Dec. 4, 1967, 6717001

Int. Cl. C07c 131/00

U.S. Cl. 260—566 AE

5 Claims

Certain substituted amino-ethyl oximes such as 0-(2-amino-ethyl)-4'-methoxy acetophenone oxime and 0-(2-amino-ethyl)-2'-chlorohexano-phenone oxime have been found to exhibit antidepressive activity.

3,692,836

## 1-(2-HYDROXY-3-AMINO-PROPOXY-9-FLUORENONES AND THE SALTS THEREOF

Franz Troxler, 39 Drosselstrasse, 4103, Bottmingen, and Fritz Seemann, 52 Spalenring, 4000, Basel, both of Switzerland

Filed May 27, 1970, Ser. No. 41,057

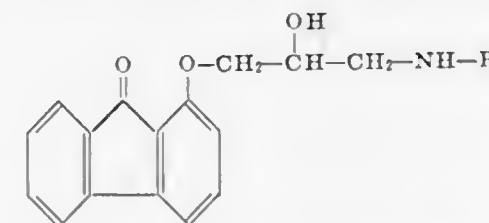
Claims priority, application Switzerland, June 3, 1969, 8402/69

Int. Cl. C07c 93/06

U.S. Cl. 260—570.7

5 Claims

The invention concerns novel compounds of the formula:



wherein R is methyl, ethyl, isopropyl, sec.butyl, tert.butyl, tert.pentyl, 3-pentyl, cyclopropyl, cyclobutyl, 3-cyanopropyl, 3-phenyl propyl, or adamantyl. The compounds are useful  $\beta$ -blocking agents and furthermore inhibit platelet aggregation.

3,692,837  
1-TRIS(DIFLUOR-AMINO)METHOXY-2,2,2-TRINITROETHANE

Lawrence J. Engel, Denellen; Michael H. Gianni, Roselle, and Charles Wiener, Linden, all of N.J., assignors to Esso Research and Engineering Company

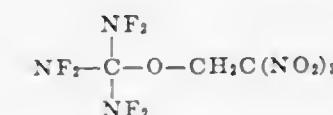
Filed Sept. 19, 1963, Ser. No. 310,972

Int. Cl. C07c 93/12

U.S. Cl. 260—584 C

3 Claims

1. The compound 1-tris(difluoramino)methoxy-2,2,2-trinitroethane having the formula:



2. Method of preparing 1-tris(difluoramino)methoxy-2,2,2-trinitroethane which comprises reacting trinitroethanol with perfluoroguanidine at a temperature in the range of 0° to 150° C. for a period to form a resulting adduct thereof, separating excess perfluoroguanidine from the said adduct, then fluorinating the adduct with fluorine and recovering resulting 1-tris(difluoramino) methoxy-2,2,2-trinitroethane product.

3,692,838

PROCESS FOR PREPARING SALTS OF TRIS(DIFLUORAMINO)METHOXY ALKYL AMINES

Robert L. Rebertus, Mendota Heights, and Richard P. Fields, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 19, 1965, Ser. No. 426,692

Int. Cl. C07c 93/02

U.S. Cl. 260—584 C

5 Claims

1. A process for the preparation of salt or water-soluble and alkyl amine substituted 0, 1,5 least one tris(difluoramino) methoxy group comprising the steps of

I. distributing said amine from polar solvent into fluorinated solvent, and, thereafter,

II. redistributing said amine into a further portion of polar solvent while incrementally adding said water-soluble acid in total at least equalling the stoichiometric amount.

5. A process according to Claim 1 wherein the amine is  $\omega$ -[tris(difluoramino)methoxy]undecyl amine and the water-soluble acid is hydrochloric acid.

3,692,839

CONDENSATION PRODUCTS OF  $\alpha,\beta$ -UNSATURATED ALDEHYDES WITH LOWER ALKYL KETONES

Pius Anton Wehrli, 9 Runnymede Gardens, Linn Drive, Verona, N.J.

Filed March 7, 1969, Ser. No. 805,365

Int. Cl. C07c 49/30, 37/06, 49/48

U.S. Cl. 260—586 R

2 Claims

Condensation products of  $\alpha,\beta$ -unsaturated aldehydes with di-lower alkyl ketones and the preparation of 2,3,6-tri-lower alkyl phenols therefrom.

3,692,840

## PROCESS FOR PRODUCING ALDEHYDES AND KETONES

Gerassimos Frangatos, c/o Mobil Research and Development Corporation, Paulsboro, N.J.

Continuation-in-part of Ser. No. 476,176, July 30, 1965,

abandoned. This application July 16, 1969, Ser. No. 842,366

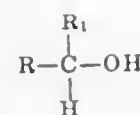
Int. Cl. C07c 45/16

U.S. Cl. 260—586 B

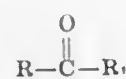
7 Claims

The process for converting alcohols of the formula





to organic compounds of the formula



wherein R and R<sub>1</sub> are selected from the group consisting of hydrogen and a hydrocarbon radical which comprises contacting the alcohol at a temperature of from 150° C. to 400° C. in the presence of a free oxygen-containing gas with a crystalline aluminosilicate catalyst having a uniform pore structure and a pore size between about 4 and about 15 Angstrom units containing a metallic cation of a transition metal having more than one valence.

3,692,841

## NONHAZARDOUS POLYMERIZATION INITIATORS

Chester M. McCloskey, Altadena, Calif.; Donald E. Rees, Pomona, Calif., and George L. Hoff, Covina, Calif., assignors to The Norar Company, Inc., Azusa, Calif.

Continuation-in-part of Ser. No. 610,208, Dec. 27, 1966, abandoned. This application June 9, 1969, Ser. No. 831,729

Int. Cl. C07c 73/00

U.S. Cl. 260—610 R

12 Claims

A nonhazardous ketone peroxide composition is disclosed comprising a ketone peroxide, trischloroethyl phosphate and a glycol.

3,692,842

## HYDROXYLATION OF AROMATIC COMPOUNDS

Stephen N. Massie, 30 Algonquin Road, Des Plaines, Ill.

Continuation-in-part of Ser. No. 789,383, Jan. 6, 1969, abandoned. This application Feb. 12, 1971, Ser. No. 115,127

Int. Cl. C07c 37/00

U.S. Cl. 260—613 D

11 Claims

Nuclear hydroxylation of aromatic compounds is effected by treating an aromatic compound with hydrogen peroxide in the presence of a catalyst comprising a metal derivative of a phthalocyanine at hydroxylation conditions.

3,692,843

## PERFLUOROVINYL ETHERS

Paul Raphael Resnick, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed March 29, 1971, Ser. No. 129,176

Int. Cl. C07c 43/00

U.S. Cl. 260—615 A

3 Claims

Compounds of the formula CF<sub>3</sub>O(CF<sub>2</sub>O)<sub>n</sub>CF<sub>2</sub>CF<sub>2</sub>OCF=CF<sub>2</sub>, wherein n is 1 to 5, are provided by reacting compounds of the formula CF<sub>3</sub>O(CF<sub>2</sub>O)<sub>n</sub>CF<sub>2</sub>COF with hexafluoropropylene epoxide, followed by dehalocarbonylation. The compounds of this invention are polymerizable to polymers which are useful as thermally stable oils and greases.

3,692,844

## PROCESS FOR PREPARING A TERPENE PHENOLIC CONDENSATION PRODUCT

Samuel D. Hollis, Pleasant Hills, Pa., and Phillip E. Winston, Jr., Union, N.J., assignors to Pennsylvania Industrial Chemical Corporation

Filed June 24, 1968, Ser. No. 739,179

Int. Cl. C07c 37/14, 39/16, 31/18

U.S. Cl. 260—619 D

2 Claims

A continuous process for preparing a terpene phenolic compound by alkylating phenol with a cyclic terpene in the presence of boron trifluoride, withdrawing a resinous product characterized by its high phenol reactivity and recycling the distilled boron trifluoride and excess phenol.

3,692,845

## PURIFICATION OF PHENOL

Zafarullah K. Cheema, Morristown; Pasquale J. Apice, Cresskill, and Edwin D. Little, Convent Station, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 734,219, June 4, 1968,

abandoned. This application March 12, 1969, Ser. No.

806,693

Int. Cl. C07c 37/24, 37/08

U.S. Cl. 260—621 A

8 Claims

This invention relates to the purification of phenol produced by the decomposition of cumene hydroperoxide by heating the phenol with a polyamine compound to remove carbonyl-bearing impurities and then acidifying the phenol to give a product which remains color stable on aging. After the addition of the polyamine compound, the phenol is distilled free of the polyamine compound and the carbonyl-bearing impurities. This distillation can be carried out either before or after the acid is added.

3,692,846

## REARRANGEMENT AND DISPROPORTIONATION OF LOWER ALKYL PHENOLS

Gary W. Dalman, and Fred W. Neumann, both of Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 4, 1969, Ser. No. 855,383

Int. Cl. C07c 37/12

U.S. Cl. 260—621 D

9 Claims

Ortho and para lower alkyl phenols are rearranged and disproportionated by heating the alkyl phenol in the presence of caustic to a temperature of 350° to 420° C. at a pressure of 2000 to 5000 psig, e.g., when heated under the conditions defined ortho cresol yields a mixture of phenol, ortho cresol, para cresol, 2,6-xyleneol and 2,4-xyleneol.

3,692,847

## BRANCHED CHAIN ALKENOLS

Gottfried J. Brendel, Baton Rouge, La., and Lawrence H. Shepherd, Jr., Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

Division of Ser. No. 771,651, Oct. 29, 1968, Pat. No.

3,631,065. This application Oct. 5, 1970, Ser. No. 78,213

Int. Cl. C07c 31/34

U.S. Cl. 260—633

2 Claims

Nonionic compounds in which an aluminum atom is part of an olefinically unsaturated ring system are prepared by causing interaction among aluminum, a conjugated diene and a hydrocarbon aluminum hydride in the presence of a suitable Lewis base such as 1,4-dioxane or N-methyl pyrrolidine. The resulting cyclic organoaluminum compound is useful in the synthesis of olefins and branched chain alkenols. Thus by subjecting the cyclic organoaluminum compound to hydrolysis, one or more olefins may be produced. To prepare branched chain alkenols, the cyclic organoaluminum compound is reacted with a cleavable cycloparaffinic monoether having a 3, 4 or 5 membered ring. Thereupon the reaction mixture is subjected to hydrolysis. The following novel compounds were prepared by this procedure:

SEPTEMBER 19, 1972

CHEMICAL

1085

1-chloromethyl-3,4-dimethyl-4-penten-1-ol  
1-chloromethyl-3,3-dimethyl-4-penten-1-ol  
2,2-bis(chloromethyl)-4,5-dimethyl-5-hexen-1-ol  
2,2-bis(chloromethyl)-4,4-dimethyl-5-hexen-1-ol  
1,5,5-trimethyl-6-hepten-1-ol  
1,5,6-trimethyl-6-hepten-1-ol  
4,5,6-trimethyl-6-hepten-1-ol  
2,2,3-trimethyl-5,5-bis(chloromethyl)tetrahydropyran

3,692,848

## PRODUCTION OF ALKENEDIOLS

Herbert Mueller, Frankenthal; Hermann Overwien, and Horst Pommer, both of Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed June 6, 1969, Ser. No. 831,218. The portion of the term of this patent subsequent to April 13, 1988, has been disclaimed.

Int. Cl. C07c 33/02, 31/20

U.S. Cl. 260—635 R

6 Claims

Production of alkenediols from alkenols in which the hydroxyl group is in the β-position to, or is farther removed from, the double bond and which bear at least one hydrogen atom on at least one carbon atom adjacent to the carbon atoms of the double bond, by reaction with an aldehyde at from 235° to 400°C.

3,692,849

## PREPARATION OF ALLYL ALCOHOL FROM BUTYROLACTONE

Donald M. Fenton, 2861 Alden Place, Anaheim, Calif.

Filed Oct. 10, 1969, Ser. No. 865,488

Int. Cl. C07c 33/02; C08f 3/36

U.S. Cl. 260—638 R

12 Claims

Allyl alcohol is prepared by contacting butyrolactone with a liquid reaction medium comprising a minor amount of a Group VIII noble metal. The lactone decomposes releasing carbon monoxide and forming allyl alcohol, a useful polymerization monomer.

3,692,850

## PROCESS FOR THE PRODUCTION OF 2,4,5-TRICHLOROTOLUENE

Eugene P. Di Bella, Rochelle Park, N.J., assignor to Tenneco Chemicals, Inc.

Filed July 31, 1970, Ser. No. 60,083

Int. Cl. C07c 25/00, 25/04

U.S. Cl. 260—650 R

2 Claims

Trichlorotoluene that contains at least 75 percent of 2,4,5-trichlorotoluene is prepared by contacting para-chlorotoluene with chlorine in the presence of a chlorination catalyst that is either a metal sulfide or a mixture of a ring-chlorination catalyst and, as co-catalyst, a sulfur compound to form a reaction mixture containing an average of about 3 gram atoms of chlorine per mole and then separating the trichlorotoluene fraction from the reaction mixture.

3,692,851

1-HALO-3,7,7,11,11-PENTAMETHYLDI-AND TRI-ENES  
Clive A. Henrick, and John B. Siddall, both of Palo Alto, Calif., assignors to Zeecon Corporation, Palo Alto, Calif.

Filed Oct. 14, 1970, Ser. No. 80,764

Int. Cl. C07c 21/02

U.S. Cl. 260—654 R

3 Claims

Aliphatic quaternary alkyl compounds having unsaturation at C-2,3, C-4,5, and/or C-8,9 and intermediates therefor useful as insect control agents, lubricants, plasticizers and odorants.

3,692,852

## SEMI-HOMOGENEOUS LIQUID SUSPENSION CATALYST COMPLEX FOR SELECTIVE HYDROGENATION

Donald C. Tabler, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed May 21, 1970, Ser. No. 39,542

Int. Cl. C07c 5/24, 5/02, 5/14

U.S. Cl. 260—666 A

4 Claims

A method for preparing a semi-homogeneous liquid suspension catalyst complex containing (1) an organometal compound, (2) at least one of nickel, iron, and cobalt, and (3) at least one of antimony, arsenic, or bismuth; and a process for the double bond isomerization, selective hydrogenation of a feedstock containing olefinic hydrocarbons having more than one double bond per molecule as well as trienes and acetylenes wherein said catalyst complex is utilized.

3,692,853

## ZINC ARSENIDE ISOMERIZATION CATALYST AND PROCESS

Gerhard P. Nowack, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 28, 1970, Ser. No. 102,106

Int. Cl. C07c 5/22

U.S. Cl. 260—666 A

6 Claims

A method for isomerizing olefinic hydrocarbons which employs a zinc arsenide catalyst, the arsenide being present in relation to the zinc in a molal ratio between about 0.33 and 3.0.

3,692,854

## CYCLODIMERIZATION PROCESS

Lawrence G. Cannell, Berkeley, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed March 22, 1971, Ser. No. 126,984

Int. Cl. C07c 13/28, 13/06

U.S. Cl. 260—666 A

7 Claims

Vinylcyclobutanes are prepared by cyclocodimerizing a diene and a monoolefin, in liquid phase solution, in the presence of a catalyst system containing an organo-titanium compound.

3,692,855

Patent Not Issued For This Number

3,692,856

Patent Not Issued For This Number

3,692,857

Patent Not Issued For This Number



3,692,858

**CATALYTIC HYDROCRACKING PROCESS FOR DISTILLATION RESIDUES**

Charles C. Brewer, Baton Rouge, La., and Charles R. Killian, Baton Rouge, La., assignors to Foster Grant Co. Inc., Leominster, Mass.

Continuation-in-part of Ser. No. 17,901, March 9, 1970, Pat. No. 3,639,495, which is a continuation-in-part of Ser. No. 706,806, Feb. 20, 1968, Pat. No. 3,505,209. This application April 21, 1971, Ser. No. 136,200

Int. Cl. C07c 3/58; C10g 13/02, 23/02

U.S. Cl. 260—672 R

20 Claims

A feed stock composed of one or more members of the group consisting of polyalkylbenzenes, indenenes, naphthalenes, diphenyls, acenaphthenes, phenanthrenes and aromatic polymeric materials is subjected to hydrocracking by the use of a catalyst which may be a mixture of oxide of molybdenum and cobalt, molybdenum and nickel, or molybdenum, cobalt and nickel, and a carrier, such as alumina.

3,692,859

**HYDROGENATION OF OXIDATIVE DEHYDROGENATION BY-PRODUCT**

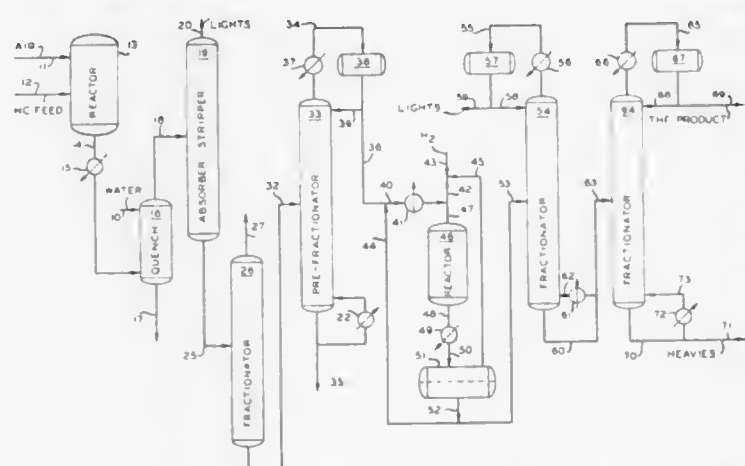
John E. Cottle, c/o Phillips Petroleum Company, Bartlesville, Okla.

Filed March 13, 1970, Ser. No. 19,265

Int. Cl. C07c 5/18; C07d 5/02

U.S. Cl. 260—680 E

5 Claims



A by-product stream containing oxygenated hydrocarbons including furan resulting from hydrocarbon oxidative dehydrogenation processes is upgraded in value and rendered readily separable from residual close-boiling hydrocarbons remaining in the by-product stream by subjecting the by-product stream to hydrogenation to convert furan to tetrahydrofuran and then separating the resulting tetrahydrofuran by fractionation from the hydrogenation effluent.

3,692,860

**CYCLICAL PROCESS FOR THE DEHYDROGENATION OF SATURATED HYDROCARBONS**

Pierre Boutry, Port Marly; Jean Claude Daumas, Marly Le Roi, and Roger Montarnal, Mareil Marly, all of France, assignors to Institut Français du Pétrole des Carburants et Lubrifiants, Rueil Malmaison (Hauts de Seine), France

Filed Oct. 21, 1969, Ser. No. 868,205

Claims priority, application France, Oct. 28, 1968, 68171682

Int. Cl. C07c 5/18

U.S. Cl. 260—680 R

12 Claims

A cyclical process is used to produce an olefinic hydrocarbon from paraffinic hydrocarbons. In the first step, the feed is contacted with a molybdenum-containing metal compound, e.g., iron, cobalt, or nickel molybdate, the step being conducted for a sufficient time to dehydrogenate the paraffinic hydrocarbon and at least partially reduce the molybdate to molybdate. In the second step, the molybdenum compound (at least partially reduced to the state of molybdate) is reoxidized to the

molybdate form before it is contacted with additional paraffinic hydrocarbon, this reoxidation step being conducted by contacting the molybdate-containing compound with an oxygen-containing gas, essentially in the absence of paraffinic hydrocarbon. The first and second steps are repeated sequentially.

3,692,861

**PROCESS FOR PRODUCING HIGHLY PURE ISOPRENE**

Tatsusuke Chikatsu; Shinichi Shmokawa; Yoshinori Yoshida; Masatugu Imamura; Ituo Nishiwaki; Toshio Akimoto, and Tatsuji Fujiwara, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

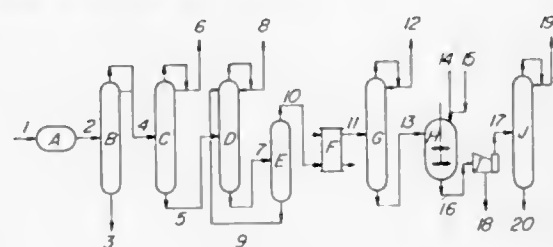
Filed Feb. 2, 1971, Ser. No. 111,871

Claims priority, application Japan, Dec. 23, 1970, 45/115731; Feb. 6, 1970, 45/10026

Int. Cl. C07c 7/00

U.S. Cl. 260—681.5 R

13 Claims



Highly pure isoprene is separated from a C<sub>3</sub> hydrocarbon fraction divided from cracking of petroleum, particularly naphtha, containing C<sub>3</sub> paraffin, C<sub>3</sub> monoolefines, C<sub>3</sub> diolefines, C<sub>3</sub> acetylenes, a small amount of C<sub>4</sub> and C<sub>5</sub> hydrocarbons and sulfur compounds by removing a major portion of cyclopentadiene and acetylenes contained in said fraction as polymerization retarding impurities according to dimerization by heat soaking and distillation, and distillation, respectively, and treating the fraction with sodium containing aliphatic monohydric alcohol having one to 18 carbon atoms in amount of not more than that of sodium by equivalent to remove the remaining cyclopentadiene, acetylenes and sulfur compounds.

3,692,862

**METHOD FOR PYROLYZING HYDROCARBONS**

Miloslav Staud, and Anatolij Lazarev, both of Brno, Czechoslovakia, assignors to Chepos, Zavody Chemického a potra-vinarskeho strojirenstvi, generalni, Brno, Czechoslovakia

Division of Ser. No. 760,240, Sept. 17, 1968, Pat. No.

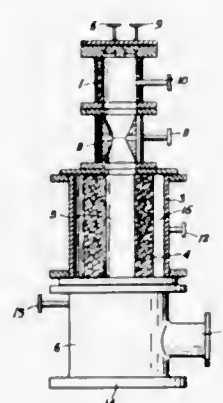
3,563,709, and a continuation-in-part of Ser. No. 674,570, Oct. 11, 1967, abandoned. This application Aug. 5, 1970, Ser. No. 61,144

Claims priority, application Czechoslovakia, Oct. 14, 1966, 6535-66

Int. Cl. C07c 3/30

U.S. Cl. 260—683 R

6 Claims



A hydrocarbon raw material is pyrolyzed to lower unsaturated aliphatic hydrocarbons by mixing the raw material with

3,692,866

Patent Not Issued For This Number

3,692,867

**FILAMENT COMPRISING A POLYMER BLEND OF POLYESTER AND POLYANIDE CONTAINING AN ORGANIC PHOSPHORUS COMPOUND**

Richard E. Mayer; Amnon Blenzvige, and Gene C. Weedon, all of Richmond, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 752,789, Aug. 15, 1968, abandoned.

This application March 10, 1971, Ser. No. 123,008

Int. Cl. C08g 41/04

U.S. Cl. 260—857 PE

27 Claims

A process for increasing the whiteness of a filament extruded from a polymer blend comprised of polyester and polyamide which comprises incorporating in the polymer blend prior to extrusion thereof a small amount of an organic phosphorus compound which can be an organic phosphite, phosphinate, phosphate, polymeric phosphite, polymeric phosphate, the corresponding acid, or mixtures thereof.

3,692,868

Patent Not Issued For This Number

3,692,869

Patent Not Issued For This Number

3,692,870

**NEW POLYMERIC THERMOPLASTIC COMPOUNDS DERIVED FROM SUBSTANTIALLY LINEAR POLYCARBONATES AND PROCESS FOR THE PRODUCTION THEREOF**

Hermann Schnell, Krefeld-Uerdingen, Germany; Manfred Czesla, Washington, D.C., and Ludwig Bottenbruch, Krefeld-Bockum, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 688,688, filed Dec. 7, 1967, Filed Nov. 17, 1970, Ser. No. 90,475

Claims priority, application Germany, Dec. 10, 1966, F 50 901

Int. Cl. C08f 21/00, 21/02

U.S. Cl. 260—861

22 Claims

New polymeric thermoplastic compounds having favorable properties are obtained by reacting substantially linear polycarbonates containing polymerizable unsaturated groups dissolved in inert solvents or dispersed in nonsolvents with radical-polymerizable olefins or derivatives thereof or mixtures thereof under polymerization conditions.

3,692,871

**GRAFTING OF VINYL HALIDE AND LONG CHAIN ALIPHATIC VINYL MONOMERS ONTO A RUBBER-MODIFIED VINYL HALIDE GRAFT COPOLYMER**

Massimo Baer, 49 Eunice Drive, Longmeadow, Mass.

Continuation-in-part of Ser. No. 669,386, Sept. 21, 1967, abandoned. This application May 15, 1970, Ser. No. 37,881

Int. Cl. C08f 15/40, 45/68

U.S. Cl. 260—878 R

10 Claims

There is disclosed a process for the preparation of graft copolymers of a vinyl halide and a long-chain aliphatic vinyl monomer. In accordance with the process, an aqueous dispersion is formed of a preformed rubber-modified vinyl halide graft copolymer, a vinyl halide monomer and a long-chain aliphatic monomer capable of copolymerizing with the vinyl halide monomer. Copolymerization of said monomers is the

3,692,863

**DEHYDROGENATION AND DEHYDROCYCLIZATION METHOD**

Ronald A. Kmecak, and Stephen M. Kovach, both of Ashland, Ky., assignors to Ashland Oil & Refining Company, Houston, Tex.

Filed Oct. 22, 1968, Ser. No. 769,723

Int. Cl. C07c 5/18, 11/04; C10g 31/14

U.S. Cl. 260—683.3

10 Claims

A process for effecting a hydrogen transfer reaction involving the dehydrogenation of at least a part of the feed material, such as the dehydrocyclization of paraffinic hydrocarbons to produce aromatics, and the dehydrogenation of low molecular weight paraffins to produce hydrogen and monoolefins, including contracting the feed material with a catalyst comprising a metal of Group VIB of the Periodic System, in an amount between about 5 to 15 percent by weight of the finished catalyst, and a promoter of a metal of Group IV of the Periodic System, such as tin and lead in an amount of between about 1.0 and 10 percent by weight of the finished catalyst, both deposited on an inert oxide support such as gamma aluminas, silica-alumina, silica-magnesia, alumina-magnesia, etc., at a temperature between about 550° F. and 1,250° F., a pressure between about 0.01 and 2,600 mm. mercury absolute, and a liquid hourly space velocity between about 0.1 and 10. Where lower paraffins are dehydrogenated to olefins and hydrogen, the hydrogen is separated from the olefins and contacted with coal liquids in the presence of a hydrogenation catalyst, preferably of the same character as the dehydrogenation catalyst, and under conditions sufficient to a hydrogenate at least a part of the coal liquids. An additional promoter selected from the group of alkali metals, alkaline earth metals and rare earth metals may also be added.

3,692,864

**HYDROGENATION PROCESS UTILIZING HOMOGENEOUS METAL CATALYSTS**

Rudolph C. White, Midlothian, and Judith G. Thatcher, Richmond, both of Va., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 30, 1970, Ser. No. 76,991

Int. Cl. C07c 5/02

U.S. Cl. 260—683.9

11 Claims

This invention relates to processes for hydrogenating unsaturated organic molecules such as olefins and dienes to their saturated derivatives utilizing homogeneous metal complexes of the iron triad type as catalytic agent.

3,692,865

**ROOM TEMPERATURE CURABLE ORGANOPOLYSILOXANES AND PROCESS FOR PREPARING SAME**

Guenther Fritz Lengick, 16 Maumee Court, Adrian, Mich.

Filed Dec. 30, 1970, Ser. No. 103,008

Int. Cl. C08g 47/10

U.S. Cl. 260—827

6 Claims

The invention relates to siloxane cross-linking agents and to curable one-component modified organopolysiloxanes obtained from the reaction of the siloxane cross-linking agents and a hydroxyl-terminated modified organopolysiloxane to form a composition which is curable by ambient moisture.



presence of the aqueous dispersion of the preformed graft polymer leads to a polymeric particle whose shell contains a major proportion of the polymeric long-chain aliphatic monomer and whose core is essentially devoid of this monomer. This preferential concentration of a lubricating monomer on the outer shell of the product particle leads to greatly improved toughness under conditions of high shear.

3,692,872

# PREPARATION OF GRAFT, BLOCK AND CROSSLINKED UNSATURATED POLYMERS AND COPOLYMERS BY OLEFIN METATHESIS

Nissim Calderon, Akron, Ohio, and Kenneth W. Scott, Cuyahoga Falls, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 4, 1969, Ser. No. 882,270

Int. Cl. C08f 15/04

U.S. Cl. 260—878 B

6 Claims

A method is disclosed for preparing graft, block and cross-linked unsaturated polymers and interpolymers by subjecting polymers to catalysts capable of inducing the olefin metathesis reaction.

3,692,873

Patent Not Issued For This Number

3,692,874

# PROCESS OF COUPLING ALKALI METAL-TERMINATED POLYMERS WITH SILICIC COMPOUND IN PRESENCE OF CONJUGATED DIENES

Ralph C. Farrar, and Clinton F. Wofford, both of c/o Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 2, 1970, Ser. No. 69,189

Int. Cl. C08f 19/08, 27/04; C08d 5/02

U.S. Cl. 260—880 B

12 Claims

The coupling of alkali metal-terminated polymers with silicic coupling agents is significantly improved, both as to the rate of coupling and the efficiency of coupling, by the inclusion of a conjugated diene in a coupling procedure with the silicic coupling compound.

3,692,875

# ELASTOMERIC MIXTURE OF A BENZENE-SOLUBLE POLYCHLOROPRENE AND A CROSSLINKED CHLOROPRENE POLYMER

Gert Jennes, Cologne-Flittard; Edmund Huther, Opladen, and Willi Wolff, Schildgen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 10, 1968, Ser. No. 728,350

Claims priority, application Germany, June 6, 1967, F 52 611

Int. Cl. C08f 29/22

U.S. Cl. 260—890

5 Claims

A composition comprising a) a crosslinked copolymer of chloroprene and a diester of an unsaturated carboxylic acid and b) a benzene-solution chloroprene and a process for producing this composition.

3,692,876

# STABILIZED FORMALDEHYDE POLYMERS

Jacob Ackermann, Gorla Minore; Pierino Radici, Turate, and Franco Ferre, Gorla Minore, all of Italy, assignors to Societa Italiana Resine S.D.R.S.P.A., Milan, Italy

Continuation-in-part of Ser. No. 807,925, March 17, 1969, abandoned. This application Feb. 24, 1971, Ser. No. 118,492

Claims priority, application Italy, April 11, 1968, 15088 A/68; Sept. 14, 1968, 21237 A/68

Int. Cl. C08g 37/04, 51/60

U.S. Cl. 260—895

16 Claims

Formaldehyde polymers and copolymers are stabilized by incorporating 0.05 to 10 percent by weight of a complex ob-

tained in the form of a precipitate by contacting, in a solvent or solvent mixture, an antioxidant of the phenolic type which has an acidic character and polyvinyl pyrrolidone. A composition of matter comprising said formaldehyde and said stabilizer is also claimed.

3,692,877

# EMULSIFIABLE OXIDIZED POLYOLEFINS

Yasuo Shibahara, Kyoto; Yasohachi Shimoyama, Kawasaki, and Makoto Otaki, Kyoto, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed June 22, 1970, Ser. No. 48,469

Claims priority, application Japan, Dec. 25, 1969, 45/252

Int. Cl. C08f 29/12, 3/04, 27/22

U.S. Cl. 260—897 B

12 Claims

An emulsifiable polyolefin having a combination of improved emulsifiability and thermal stability is produced by oxidizing a thermally decomposed polyolefin with a gaseous mixture containing oxygen and ozone in the presence of a low molecular weight oxidized polyolefin.

3,692,878

# NOVEL INTERPOLYMER BLENDS

Robert B. Blance, 26 Colony Dr., East Longmeadow, Mass.; David R. Cahill, 52 Oakland St., Wilbraham, Mass., and Peter Nachtel, 1234 Wilbraham, Springfield, Mass.

Division of Ser. No. 783,700, Dec. 13, 1968, Pat. No.

3,607,376. This application April 21, 1971, Ser. No. 136,207

Int. Cl. C08f 41/12

U.S. Cl. 260—901

4 Claims

Disclosed herein are polymer blends comprising a first interpolymer of a vinyl alcohol ester and at least one ethylenically unsaturated acid ester and a second interpolymer comprising a vinyl aromatic compound, at least one ethylenically unsaturated acid ester and at least one compound containing one or more acid groups. These blends are particularly useful as binders and adhesives.

3,692,879

# POLYPHOSPHITES

Kenneth H. Rattenbury, and Millard S. Larrison, both of Morgantown, W. Va., assignors to Watson Chemical Corporation, New York, N.Y., by said Rattenbury

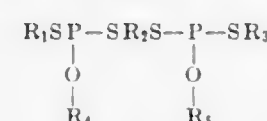
Filed Jan. 15, 1970, Ser. No. 3,247

Int. Cl. C07f 9/06; C10m 1/48; C08f 45/58

U.S. Cl. 260—928

7 Claims

Compounds are prepared having the formula



where  $R_1$  and  $R_2$  are alkyl, haloalkyl, aryl, haloaryl, alkenyl, aralkyl, haloalkenyl, cycloalkyl,  $R_3$  is a divalent aromatic, aliphatic or cycloaliphatic group and  $R_4$  and  $R_5$  are aryl or haloaryl.

The compounds are useful as antioxidants.

3,692,880

# PHOSPHATED POLYOLS AND PROCESS FOR MAKING SAME

Richard L. Doerr, Orange, and Stephen Fuzesi, Hamden, both of Conn., assignors to Olin Corporation

Filed May 4, 1970, Ser. No. 34,606

Int. Cl. C07f 9/08; D06m 1/100

U.S. Cl. 260—929

4 Claims

A novel phosphated polyol is provided which is used in conjunction with aminoplast resins to provide improved soil release particles to cellulosic fibers and blends of cellulosic fibers with polyester fibers having durable press or wash and wear characteristics.

3,692,881

# PHOSPHATED SURFACE ACTIVE HYDROXY AMINES

James R. Stanford, and Paul G. Vogelsang, Jr., both of Houston, Tex., assignors to Nalco Chemical Company, Chicago, Ill.

Division of Ser. No. 680,028, Nov. 2, 1967, Pat. No. 3,597,352.

This application Dec. 9, 1969, Ser. No. 883,599

Int. Cl. C07f 9/08

U.S. Cl. 260—928

3 Claims

Phosphated surface active hydroxy amines obtained by reacting polyphosphoric acid and/or phosphorus pentoxide with surface active hydroxyamines, e.g.,  $C_8$  to  $C_{18}$  amines, with or without one or more hydroxy hydrocarbons, with or without neutralization, are used as scale inhibitors in brines, especially in oil wells, where calcium and barium salts are present.

3,692,882

# CYANODITHIOIMIDOCARBONATE PHOSPHATES

Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed March 9, 1970, Ser. No. 17,954

Int. Cl. C07f 9/08; A01n 9/36

U.S. Cl. 260—940

5 Claims

Novel cyanodithioimidocarbonates are disclosed. The compounds are useful as herbicides.

3,692,883

# PROCESS

Gary L. Sommers, 63 Brittain Rd., Akron, Ohio, and Adel F. Halasa, 5040 Everett Rd., P.O. Box 244, Bath, Ohio

Continuation-in-part of Ser. No. 854,267, Aug. 29, 1969, abandoned. This application June 7, 1971, Ser. No. 150,837

Int. Cl. C08d 3/04, 3/06

U.S. Cl. 260—94.2 T

13 Claims

Conjugated dienes are polymerized by a new catalyst system which permits control of the molecular weight and gives a more easily processed product. This catalyst system comprises (1) a sodium hydrocarbon compound having one to 10 carbon atoms in which the hydrocarbon portion is a primary, secondary or tertiary alkyl or an aryl radical, and (2) potassium hydroxide or preferably lithium hydroxide. The diene polymers produced by this process have controllable molecular weights in the range of 5,000 to 1,000,000, preferably 100,000 to 500,000, broad molecular weight distribution, high glass transition temperatures, high degree of branching and are more easily processed in the production of rubber and other compositions for commercial use.

3,692,884

# PHOSPHATE ESTERS

Edwin R. Gaskell, 956 Bransten Rd., San Carlos, Calif.

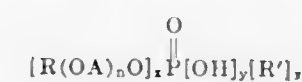
Filed Feb. 7, 1969, Ser. No. 797,691

Int. Cl. C07f 9/08, 9/22

U.S. Cl. 260—944

11 Claims

A novel group of compounds, the reaction product of an amine and a phosphate ester that are useful as dispersing agents for the finely divided metal oxides used in preparing magnetic tape coatings. The compound having the formula:



where R is a hydrocarbon radical; A is an alkylene radical; R' is an amine; and the sum of x, y and z is 3.

3,692,885

# POLYHALOISOALKOXYALKYL PHOSPHATE ESTERS

Louis G. Anello, Basking Ridge; Richard F. Sweeney, Dover; Edward S. Jones, Whippany; John T. Walsh, Lake Hiawatha, and John J. Thompson, Jr., Chatham, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

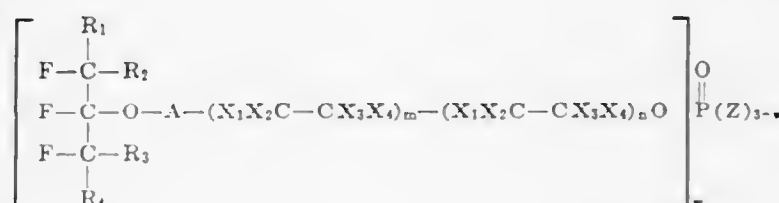
Filed Aug. 14, 1969, Ser. No. 850,235

Int. Cl. C07f 9/08; D21b 1/38

U.S. Cl. 260—950

43 Claims

This invention relates to novel phosphate esters of the formula



wherein

- $R_1$ – $R_4$  are independently fluorine, chlorine or alkyl or haloalkyl groups of one to 10 carbon atoms;
  - A is a radical of the formula  $-(CFR_5-CR_6R_7)-$  in which  $R_5$  and  $R_6$  are independently fluorine or hydrogen, and  $R_7$  is hydrogen, fluorine, chlorine, bromine or perfluoroalkyl;
  - $X_1$ – $X_4$  are independently hydrogen, fluorine, chlorine or bromine, provided that  $X_1$ – $X_4$  do not include more than two chlorine atoms or one bromine atom;
  - Z is selected from the group consisting of chlorine, hydroxy, amino, substituted amino and OY wherein Y is a hydrocarbyl or hydroxy-substituted hydrocarbyl, or a water solubilizing cationic ion.
  - m is an integer from 1 to 10, n is an integer from 0 to 10 and w is an integer from 1 to 3.
- Said phosphate esters are useful for imparting oil and stain repellent properties to various materials, especially to paper.

3,692,886

Patent Not Issued For This Number

3,692,887

# CONTROLLED CALCINATION OF AGGLOMERATED NUCLEAR FUEL PRIOR TO PELLETIZING AND SINTERING

Alfred J. P. Flipot, Geel, Belgium, assignor to Belgonucleaire S.A., Bruxelles, Belgium

Filed Dec. 23, 1968, Ser. No. 786,434

Claims priority, application Belgium, Dec. 21, 1967, 52.429; Sept. 12, 1968, 63.310

Int. Cl. G21c 3/62; C04b 35/64

U.S. Cl. 264—0.5

3 Claims

Manufacturing method for sintered nuclear reactor fuel pellets exhibiting improved density reproducibility in which the fabrication procedure includes thermal deactivation at 600° to 1,000° C. for a controlled time of the fuel after an initial agglomeration step but prior to pelletizing, followed by an optional addition of a pressing lubricant, pelletizing, and sintering to about 1,600° C or above. The thermal deactivation step reduces the amount of shrinkage encountered in the sintering step as compared with conventional techniques resulting in good dimensional characteristics and density uniformity.



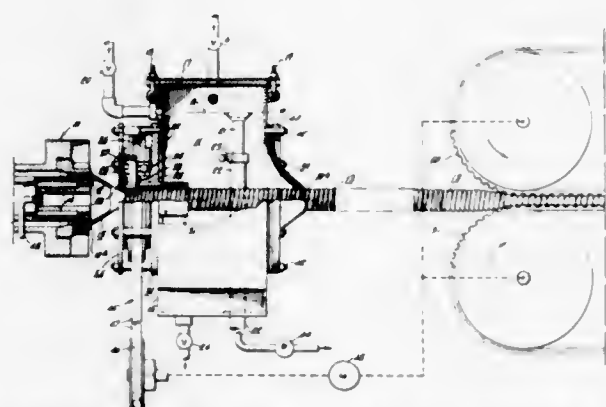
### 3,692,888 CASTING HYDRIDES

Ernest C. Phillips, Jr., 2533 Albeworle Court, Richland, Wash.  
Filed July 2, 1969, Ser. No. 838,717  
Int. Cl. G21c 21/00

U.S. Cl. 264—5 R 6 Claims  
A method of casting lithium hydride, lithium deuteride or lithium tritide, or mixtures of these with zirconium hydride in a titanium or titanium-coated mold under a hydrogen atmosphere exceeding the dissociation pressure of titanium hydride, whereby, on cooling, the cast material can be readily removed from the mold without damage thereto.

### 3,692,889 METHOD AND APPARATUS FOR FORMING CORRUGATED PLASTIC TUBING

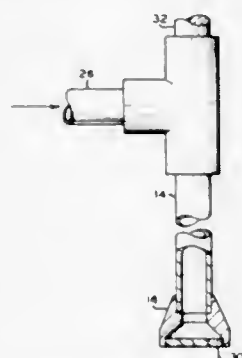
Arthur Ronald Hetrich, Manheim, Pa., assignor to Raybestos-Manhattan, Inc., Manheim, Pa.  
Continuation-in-part of Ser. No. 749,736, Aug. 2, 1968, abandoned. This application March 17, 1970, Ser. No. 20,174  
Int. Cl. B29c 17/07; B29d 23/18  
U.S. Cl. 264—92 2 Claims



Corrugated plastic tubing is formed by producing a plastic tube in a softened condition, passing the softened tube through a rotatable disc having an axial bore with a helical groove for corrugating the wall of the tubular body and then cooling the tube to set the corrugations formed in the wall of the tube. Means is provided for rotating the die, and means synchronized with the rotating means is also provided for drawing the tubular body through the die and cooling chamber to form a helical corrugation in the tubing wall. A pressure differential is applied in the die across the wall of the tubular body to force the wall of the tube into the die groove. Means is provided for engaging the softened tubular body adjacent the entrance to the die to restrain the tubular body against rotation with the die and prevent the softened tubular body from becoming twisted or kinked before entering the die.

### 3,692,890 STOMP FOOT HAVING POROUS FACE

Martin R. Cines, Bartlesville, Okla., assignor to Phillips Petroleum Company  
Filed Nov. 13, 1969, Ser. No. 876,495  
Int. Cl. B29c 17/07  
U.S. Cl. 264—98 10 Claims

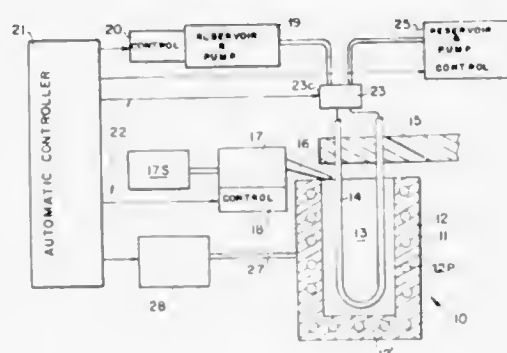


A closed off end of a tubular thermoplastic parison is

pressed against a back-up surface by means of a stomp foot having a porous face through which gaseous fluid is passed.

### 3,692,891 Patent Not Issued For This Number

3,692,892  
CASTING AND MOLDING METHOD  
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.  
Continuation-in-part of Ser. No. 304,165, Aug. 23, 1963, Pat. No. 3,427,714. This application Feb. 24, 1969, Ser. No. 801,430  
Int. Cl. B29c 1/08 4 Claims



A casting and molding method is provided employing one or more hollow members disposed in a mold to provide a core for hollow molding. In one form, heat transfer liquid is predeterminedly circulated through the hollow core member during the molding process and serves a number of functions including reduction in the time for the molding to set, prevention of destruction of the core member by heat and, in certain instances, internal support for the core member during molding. Automatic control means are provided for controlling both the molding procedure and the flow of heat transfer fluid through the core member. The method, with minor variations, is applicable to both casting and injection molding of various materials such as metals which are molded at high temperature and require the transfer of heat therefrom or thermosetting materials which require heat to be transferred to the molding material during the molding and setting procedure.

The instant invention is also concerned with certain post molding procedures associated with moldings containing hollow core members such as means for removing the core members by dissolving or eroding the material thereof.

### ERRATA

For Classes 423—328 thru 423—239 see:  
Patents Nos. 3,692,470 thru 3,692,480

3,692,893  
HAIR SPRAY CONTAINING A TETRAPOLYMER  
COMPRISING N-T-BUTYL ACRYLAMIDE OR -N-ISOPROPYL ACRYLAMIDE  
Lucille Elma Palmer, Darien, Conn., assignor to American Cyanamid Company, Stamford, Conn.  
Division of Ser. No. 862,044, Sept. 29, 1969, Pat. No. 3,634,368. This application May 7, 1971, Ser. No. 141,441  
Int. Cl. A61k 7/10 5 Claims

U.S. Cl. 424—47  
An aerosol spray containing a tetrapolymer of (A) N-t-butyl acrylamide or N-isopropyl acrylamide, (B) acrylamide or methacrylamide, (C) N-vinyl pyrrolidone and (D) acrylic or methacrylic acid, is disclosed.

3,692,894  
DENTIFRICE COMPOSITION  
Tadashi Amo, Funabashi, and Tuneso Nagasawa, Tokyo, both of Japan, assignors to Kao Soap Company, Ltd., Tokyo, Japan  
Filed Nov. 18, 1970, Ser. No. 90,720  
Claims priority, application Japan, March 31, 1970, 45/26505  
Int. Cl. A61r 7/16 3 Claims

U.S. Cl. 424—56  
The invention relates to a surfactant-containing dentifrice powder or paste having improved after-taste characteristics containing a polishing agent and from 0.7 to 2.8 percent by weight of a combination of alkyl sulfates constituting 0.2 to 1.0 percent decyl sulfate, 0 to 0.3 percent dodecyl sulfate, 0.2 to 0.5 percent tetradecyl sulfate and 0.1 to 1.0 percent of hexadecyl sulfate, said alkyl sulfates being present as alkali metal salts or alkanolamine salts.

3,692,895  
METHOD OF REDUCING HYPERCHOLESTEREMIA IN HUMANS EMPLOYING A COPOLYMER OF POLYETHYLENEPOLYAMINE AND A BIFUNCTIONAL SUBSTANCE, SUCH AS EPICHLOROHYDRIA  
Norman A. Nelson, 1643 South 36th St., Galesburg, Mich., and Gary E. Vandenberg, 2304 Robin Dr., Plant City, Fla.  
Continuation-in-part of Ser. No. 737,365, June 17, 1968, abandoned. This application Sept. 8, 1970, Ser. No. 70,567  
Int. Cl. A61k 27/00 8 Claims

U.S. Cl. 424—78  
Compositions and processes are provided for lowering hypercholesteremia in mammals and birds. Oral administration to affected mammals and birds supplies an effective amount of a cholesterol-lowering substance. The cholesterol-lowering substance is a nontoxic cross-linked copolymer of a polyethylenepolyamine and a bifunctional substance containing halogen atoms and/or epoxy groups.

### 3,692,896 PROCESS FOR THE PREPARATION OF WATER-SOLUBLE TABLETS

Jusha Tsumura, No. 51, Nanpeldai, Shibuya-ku, Tokyo; Isumi Imaseki, No. 2-31-11, Naritahigashi, Suginami-ku, Tokyo, and Michio Nagasawa, No. 335, Kori, Fujieda-shi, Shizuoka-ken, all of Japan, assignors to Tsumura Juntendo Co., Ltd., Tokyo, Japan  
Continuation-in-part of Ser. No. 783,716, Dec. 13, 1968, abandoned. This application March 3, 1971, Ser. No. 120,709  
Claims priority, application Japan, June 14, 1968, 43/40601  
Int. Cl. A61j 3/10 8 Claims

U.S. Cl. 424—78  
There is provided, a process for the preparation of quickly dissolving water-soluble, clear, aqueous solution forming tablets, which comprises:

(a) directly compressing by means of a single punching tablet machine, having an upper punch and a lower punch, a mixture obtained by mixing powder or powders of water-soluble main ingredients with supermicro particle powdered polyethylene glycol 4,000, 6,000, and mixtures thereof, as the essential direct compression tablet lubricant, with required water-soluble conventional tablet diluents, binders, and disintegrants, and

(b) subsequently, ejecting the tablets thus produced from said machine,

the improvement which comprises compressing with the upper punch with an upper punch pressure of 2,000 Kg., while maintaining said upper punch and said lower punch at a pressure sufficient to create a transmission value to the fixed lower punch of greater than 85, which value is derived from the following formula:

Transmission value = (pressure of lower punch/pressure of upper punch) × 100

when supermicro particle powdered polyethylene glycol having a particle size ranging from 1.0 to 5.0 microns, is provided as the essential direct compression tablet lubricant, said improvement enhancing lubricity during direct compression at an upper punch pressure of 2,000 Kg., and thus reducing the 70 Kg. ejection force required for ejecting such tablets from said machine to below 70 Kg.

3,692,897  
IMMUNOLOGICAL METHOD AND COMPOSITION FOR CONTROLLING THE SEX OF MAMMALIAN OFFSPRING  
Bhairab Chandra Bhattacharya, Omaha, Nebr., and Gustaaf J. van den Bovenkamp, Mill Valley, Calif., assignors to Bio-Controls, Inc., by said van den Bovenkamp  
Filed Nov. 4, 1969, Ser. No. 873,795  
Int. Cl. A61k 27/00 3 Claims

U.S. Cl. 424—85  
An immunological method for controlling the sex of mammalian offspring, making use of spermatozoa which has been previously separated into fractions having the desired sex characteristics an antigens. A substantially pure sperm fraction containing the sex chromosomes of a single type (i.e., X chromosomes or Y chromosomes) is introduced into the body of a mammal in sufficient quantity to produce antibodies in the blood stream. A blood sample is then taken from the mammal, the blood coagulated and the blood serum containing the antibodies isolated. Fresh mammalian sperm is inoculated with the blood serum to inactivate and destroy sperm reactive with the antibodies in the blood serum and the treated sperm used to artificially inseminate the female, thereby inducing conception and offspring of desired sex as determined by the remaining unreacted sperm.

In one application of the invention, antibodies reactive with either the X or Y chromosomes may be added to a dose of semen to cause death to sperm containing that type of chromosome before insemination. Alternatively, the antibodies may be introduced into the female either prior or subsequent to copulation (e.g., in a vaginal jelly or as a vaccine) to provide the possibility of sex selection at conception or possible embryonic death to a fetus of undesired sex.

3,692,898  
AQUEOUS MAGNESIUM HYDROXIDE SUSPENSIONS  
William G. Gorman, East Greenbush, and Erich Katz, Troy, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.  
Filed Nov. 5, 1970, Ser. No. 87,330  
Int. Cl. A61k 27/00 3 Claims

U.S. Cl. 424—158  
Improved milk of magnesia containing small quantities of a combination of agents, namely, xanthan gum and sodium carboxymethylcellulose.

3,692,899  
INHIBITION OF TRANSPLANTED TUMOR GROWTH BY POLYINOSINIC-POLYCYTIDYLIC ACID IN MICE  
Hilton B. Levy, Bethesda, Md., assignor to The United States of America as represented by the Secretary, Department of Health, Education and Welfare  
Filed Dec. 17, 1969, Ser. No. 885,817  
Int. Cl. A61k 27/00 1 Claim

U.S. Cl. 424—180  
Process for retarding or inhibiting the growth of transplanted malignant tumors by administering to a tumor-bearing mouse an effective dose of polyinosinic-polycytidylic acid.



3,692,900

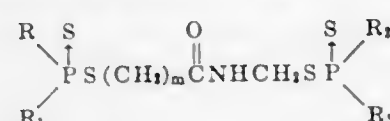
## BIS-PHOSPHOROAMIDES, BIS-PHOSPHONOAMIDES, AND PHOSPHONO-PHOSPHOROAMIDES USEFUL AS INSECTICIDES AND MITICIDES

Arnold D. Gutman, Pinole, and Ashley H. Freiberg, Santa Clara, both of Calif., assignors to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 654,692, July 20, 1967, Pat. No. 3,577,088, which is a continuation-in-part of Ser. No. 390,280, Aug. 17, 1964, abandoned. This application Dec. 22, 1969, Ser. No. 889,821

Int. Cl. A01n 9/36

U.S. Cl. 424-205  
Bis-phosphoroamides, Bis-phosphonoamides  
phosphono-phosphoroamides of the general formula



in which  $m$  is the integer 1 or 2, R and  $R_1$  are independently selected from the group consisting of lower alkyl and lower alkoxy,  $R_2$  and  $R_3$  are independently selected lower alkoxy groups. The sum of the carbon atoms in R,  $R_1$ ,  $R_2$ , and  $R_3$  being a maximum of 12. Included in this invention is a method of preparing, using and applying said compositions. The compounds are particularly valuable for their insecticidal and miticidal properties. Representative compounds are 3-(0,0-diethylphosphorodithioyl)-N-(0,0-diethylphosphorodithioylmethyl)propionamide, 3-(0,0-diethylphosphorodithioyl)-N-(0,0-dimethylphosphorodithioylmethyl)propionamide, and 2-(0-ethyl-ethylphosphonodithioyl)-N-(0,0-diethylphosphorodithioylmethyl)acetamide.

3,692,901

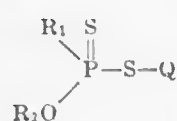
## CERTAIN SUBSTITUTED PHOSPHORUS CONTAINING ALKYL THIO METHYL CARBOXYLATES AND THEIR USES AS INSECTICIDES AND ACARICIDES

Charles Kezerian, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 681,576, Nov. 8, 1967, Pat. No. 3,562,362. This application Sept. 2, 1970, Ser. No. 69,095

Int. Cl. A01n 9/36

U.S. Cl. 424-212  
Certain substituted phosphorus containing alkyl thio methyl carboxylates of the formula

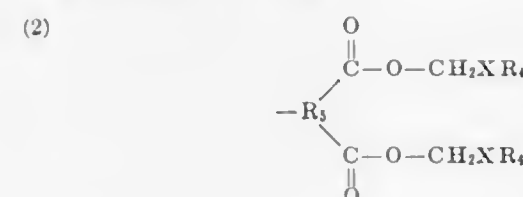


in which  $R_1$  is alkyl or alkoxy and  $R_2$  is alkyl, Q is:



in which

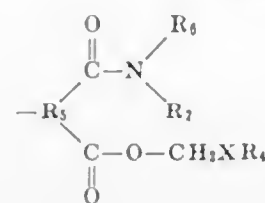
$R_3$  is alkylene,  $C_1 \text{---} C_4$ ;  
X is sulfinyl or thio and  
 $R_4$  is alkyl,  $C_1 \text{---} C_4$ ; or



in which

X and  $R_4$  are as defined and  $R_3$  is a trivalent saturated hydrocarbon,  $C_1 \text{---} C_5$ ; or

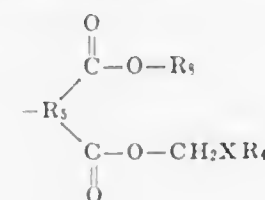
(3)



in which

X,  $R_4$  and  $R_8$  are as defined and  $R_6$  and  $R_7$  are hydrogen, alkyl  $C_1 \text{---} C_8$ , aryl, halo or cyano substituted alkyl or aryl, or tetrahydro furfuryl or when  $R_6$  and  $R_7$  are taken together, an alkylene,  $C_2 \text{---} C_6$ , ethyleneoxyethylene or ethylenethioethylene groups; or

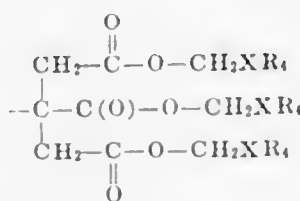
(4)



in which

X,  $R_4$  and  $R_2$  are as defined and  $R_1$  is alkyl  $C_1$  or  $C_2$  or halogen, aryl, haloaryl substituted derivatives thereof; or

(5)



in which

X and  $R_4$  are as defined are used as insecticides and acaricides.

3,692,902

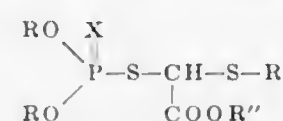
## CERTAIN PHOSPHOROUS COMPOUNDS USED AS INSECTICIDES, MITICIDES AND FUNGICIDES

Tatsumi Nishimura; Sumio Nagasawa; Hiroshi Shinohara, all of Shimizu City, and Masaru Kado, Yokohama City, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 680,970, Nov. 6, 1967, abandoned. This application Oct. 14, 1969, Ser. No. 866,381  
Claims priority, application Japan, Dec. 19, 1966, 41/82689; July 31, 1967, 43/48778

Int. Cl. A01n 9/36

U.S. Cl. 424-212  
An insecticidal, miticidal and fungicidal composition comprising as an active ingredient an insecticidally, miticidally and fungicidally effective amount of a compound of the formula:



in which R and R'' are lower alkyl, R' is selected from the group consisting of phenyl, lower alkyl-substituted phenyl, chlorine-substituted phenyl and nitro substituted phenyl, and X is selected from the group consisting of oxygen and sulfur, in the presence of an inert diluent.

3,692,903

Patent Not Issued For This Number

3,692,904

## METHOD FOR TREATING SCOURS IN DOMESTIC LIVESTOCK

Yoshio Tsutsumi, Tokyo, Japan, assignor to Daiichi Selyaku Co., Ltd., Tokyo, Japan

Filed May 25, 1970, Ser. No. 40,351

Int. Cl. A61k 27/00, 21/00

U.S. Cl. 424-227

4 Claims

Scours has been effectively treated and prevented by administering to domestic animals at least one compound selected from the group consisting of trans-4-aminomethyl-cyclohexanecarboxylic acid, 4-aminomethylbenzoic acid,  $\Sigma$ -aminocaproic acid, and the pharmaceutically acceptable salts thereof.

3,692,905

Patent Not Issued For This Number

3,692,906

## METHOD OF TREATING HYPERTENSION WITH MORPHANTHRIDINES

Richard Dage, Brown Deer, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed June 24, 1970, Ser. No. 49,502

Int. Cl. A61k 27/00

U.S. Cl. 424-244

6 Claims

The inventive method comprises administering a safe and effective amount of a selected morphanthridine to a hypertensive animal to effect a lowering of blood pressure. Representative of the compounds that can be used in the method are 2-chloro-11-(3-dimethylaminopropylidene)-morphanthridine, 11-(3-dimethylaminopropyl)-morphanthridine and 11-(1-methyl-4-piperidylidene)-morphanthridine.

3,692,907

## TREATING VIRAL INFECTIONS WITH BIS-BASIC ETHERS AND THIOETHERS OF FLUORENONE AND FLUORENE AND PHARMACEUTICAL COMPOSITIONS OF THE SAME

Robert W. Fleming, Cincinnati, Ohio; David L. Wenstrup, Covington, Ky., and Edwin R. Andrews, Cincinnati, Ohio, assignors to Richardson-Merrell Inc.

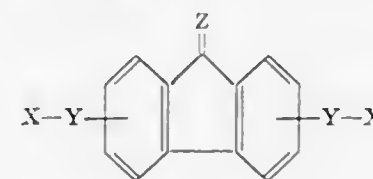
Continuation-in-part of Ser. No. 788,038, Dec. 30, 1968, Pat. No. 3,592,819. This application Oct. 27, 1970, Ser. No. 84,493

Int. Cl. A61k 27/00

U.S. Cl. 424-248

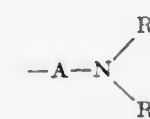
32 Claims

Novel pharmaceutical compositions containing bis-basic ethers and thioethers of fluorenone and fluorene selected from a base of the formula



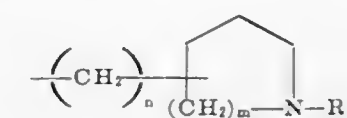
wherein: Z is oxygen or  $\text{H}_2$ ; each Y is oxygen or sulfur; and each X is

A. the group



wherein A is alkylene of two to about eight carbon atoms and separates the amino nitrogen thereof and Y by an alkylene chain of at least two carbon atoms, each R and  $\text{R}^1$  is hydrogen, (lower)alkyl, cycloalkyl of three to six ring carbon atoms, alkenyl of three to six carbon atoms having the vinyl unsaturation in other than the 1-position of the alkenyl group, or each set of R and  $\text{R}^1$  taken together with the nitrogen to which they

are attached is pyrrolidino, piperidino, N-(lower)alkyl-piperazino, or morpholino; or  
B. the group



wherein  $n$  is an integer of 0 to 2,  $m$  is 1 or 2 and  $\text{R}^2$  is hydrogen, (lower)alkyl, or alkenyl of three to six carbon atoms having the vinyl unsaturation in other than the 1-position of the alkenyl group; or a pharmaceutically acceptable acid addition salt of said base.

These compositions can be used as pharmaceuticals for preventing or inhibiting a viral infection.

3,692,908

## METHOD OF COMBATING NEMATODES EMPLOYING N,N'-DISUBSTITUTED-2,5-DIKETOPIPERAZINES

Marvin T. Tetenbaum, and Edward R. Degginger, both of Convent, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed March 25, 1970, Ser. No. 22,667

Int. Cl. A01n 9/22

U.S. Cl. 424-250

2 Claims

Materials, such as plants, are protected from attack by fungi and nematodes by applying to the material an N,N'-disubstituted-2,5-diketopiperazine wherein the substituents are halogen, halometallo, or acyloxymetallo.

3,692,909

## METHODS OF COMBATING FUNGI USING 6-ALKYLTHIO AND 6-PHENYLTHIO PYRIMIDINE DERIVATIVES

Kurt Gubler, Riehen; Raphael Menasse, and Karl Gatzl, both of Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 749,598, Aug. 2, 1968, abandoned. This application Feb. 25, 1970, Ser. No. 14,233  
Claims priority, application Switzerland, Aug. 16, 1967, 11515/67

Int. Cl. A01n 9/12, 9/22

U.S. Cl. 424-251

4 Claims

Antifungal compositions are disclosed which contain as active ingredients 6-alkylthio- and 6-phenylthio-pyrimidines substituted in 2- and 5-position by halogen and in 4-position by halogen or lower alkyl. Methods for controlling fungi with the acid of the aforesaid pyrimidine derivatives are also described.

3,692,910

## BENZYLISOQUINOLINIC SOLUTIONS AND METHOD OF MAKING THE SAME

Umberto Laguzzi, Via Cadore 52, Milan, Italy

Filed Sept. 5, 1968, Ser. No. 757,800

Claims priority, application Italy, Sept. 7, 1967, 20249 A/67  
Int. Cl. A61k 27/00

U.S. Cl. 424-258

12 Claims

Benzylisoquinolinic solutions and particularly injectable solutions are produced by forming an intimate mixture of appropriate proportions of benzylisoquinolinic compounds, aliphatic alkanol amines which serve as solubilizing agent, a buffer selected from salts of organic acids with alkanol amines or N-methylglucamine, and the proportion of water required to obtain the final solution of the desired concentration of the benzylisoquinolinic compound.



### 3,692,911 METHOD FOR SELECTIVELY COMBATING FUNGI AND WEEDS

Henry Martin, Basel; Hans Aebi, Riehen, and Ludwig Ebner, Stein/AG, all of Switzerland, assignors to Ciba-Geigy AG. Continuation of Ser. No. 766,308, Oct. 9, 1968, abandoned, which is a continuation-in-part of Ser. No. 592,747, Nov. 8, 1966, which is a continuation-in-part of Ser. Nos. 433,154, Feb. 16, 1965, abandoned, Ser. No. 433,152, Feb. 16, 1965, abandoned, Ser. No. 433,183, Feb. 16, 1965, abandoned, Ser. No. 433,204, Feb. 16, 1965, abandoned, Ser. No. 433,203, Feb. 16, 1965, abandoned, Ser. No. 433,192, Feb. 16, 1965, abandoned, Ser. No. 433,198, Feb. 16, 1965, abandoned, Ser. No. 433,153, Feb. 16, 1965, abandoned, each is a continuation-in-part of Ser. No. 191,442, May 1, 1962, Pat. No. 3,288,851. This application June 22, 1970, Ser. No. 48,955.

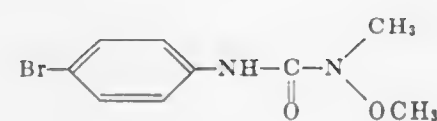
Claims priority, application Switzerland, May 6, 1961, 5336/61

Int. Cl. A01n 9/20

U.S. Cl. 424—322

1 Claim

A method is provided for selectively and simultaneously controlling undesirable plant life in crop area wherein a culture of rice, potatoes, corn, beans, peas, soybeans, cotton, peanuts, carrots or tomatoes are growing. According to the method of this invention an effective amount of the compound of the formula



is applied to the crop area.

### 3,692,912 BIS (3,4,4-TRIFLUORO-3-BUTENYL) SULFIDE AS A NEMATOCIDE

Mervin E. Brokke, Richmond, Calif., assignor to Stauffer Chemical Company, New York, N.Y. Division of Ser. No. 490,664, Sept. 27, 1965, Pat. No. 3,513,172. This application Nov. 20, 1969, Ser. No. 877,540

Int. Cl. A01n 9/12

U.S. Cl. 424—335

2 Claims

Certain trifluorobutenyl compounds of the formula



wherein R is a member selected from the group consisting of chlorothiophenyl, thio 3,4,4-trifluoro-3-butenyl, 2-thio-4,4,6-trimethyldihydropyrimidyl, 2-thiobenzoxazolyl, 2-thiobenzothiazolyl, 2-thio-4-alkylthiazolyl, S-(3,4,4-trifluoro-3-butenyl)-ethylene-bis (dithiocarbamoyl), thiobenzyl, thionaphthyl, phthalimido, dithio-3,4,4-trifluoro-3-butenyl, thiopyridyl, N-thiazolidyl dione and 5-thio-3-phenyl-1,2,4-thiadiazolyl, useful as nematocides.

### 3,692,913 CYCLOHEXENYL AMINES IN THE TREATMENT OF PAIN

William Taub, 39 Stockerstrasse, 8002 Zurich; Rolf Denss, 43 Schutzenmattstrasse, Basel, 43 Schutzenmattstrasse, and Franz Ostermayer, 5 Am Hang, Riehen, all of Switzerland. Division of Ser. No. 702,552, Feb. 2, 1968, Pat. No. 3,518,307. This application Oct. 13, 1969, Ser. No. 871,228

Claims priority, application Switzerland, Feb. 6, 1967, 1820/67

Int. Cl. A61k 27/00

U.S. Cl. 424—325

6 Claims

Alkyl and alkenyl substituted cyclohexenyl amines are

prepared which compounds as well as pharmaceutically acceptable acid addition salts thereof have analgesic and anorexic activities; therapeutic compositions containing said compounds and methods of producing analgesic and anorexic effects in mammals; an illustrative embodiment is 1-methyl-3-cyclohexen-1-ylamine.

### 3,692,914 4,4',4''-TRIHIDROXYTRIPHENYLMETHANEMETHANE AS A LAXATIVE

Ronald J. Meyer; Orville E. Horsley, and Herman J. Eichel, all of Cincinnati, Ohio, assignors to American Hoechst Corporation, New York, N.Y.

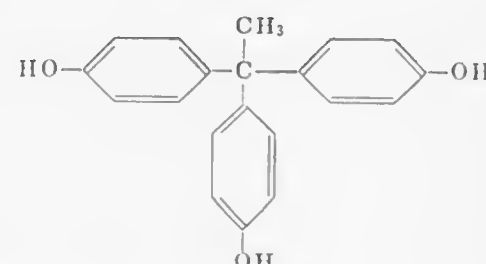
Division of Ser. No. 740,066, June 26, 1968, Pat. No. 3,579,542. This application June 22, 1970, Ser. No. 59,810

Int. Cl. A61k 27/00

U.S. Cl. 424—346

2 Claims

4,4',4''-Trihydroxytriphenylmethane having laxative (cathartic) properties of the formula:



### 3,692,915 COMPOSITIONS AND METHODS FOR COMBATING INSECTS OF THE GENUS HELIOTHIS

George F. Ludvik, Kirkwood, Mo., and Walter A. Darlington, Brentwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed May 13, 1970, Ser. No. 37,026

Int. Cl. A01n 9/30, 9/34

U.S. Cl. 424—352

5 Claims

Mixtures for combating insect species of the genus *Heliothis* comprising 1,1-dichloro-2,2-bis(4'-chlorophenyl) cyclopropane and a polychloro bicyclic terpene characterized by a combined chlorine content of from about 60 percent to about 72 percent by weight.

### 3,692,916 COMPOSITION AND METHOD FOR INHIBITING GROWTH OF PLANT PATHOGENS

Robert R. La Barbera, Valladolid, Spain, assignor to Wm. T. Thompson Co., Wilmington, Calif.

Filed July 6, 1970, Ser. No. 52,746

Int. Cl. A01n 9/26

U.S. Cl. 424—346

11 Claims

The disclosure describes a composition and method for inhibiting the growth of plant fungi by treating such plant fungi with a fungus-inhibiting amount of a composition including both thymol and chlorothymol.

## ELECTRICAL

### 3,692,917 CURRENT SUPPLY DEVICE FOR USE IN ELECTRIC FURNACES

Helmut Selfert, 8 Sternmarderweg, Hermulheim; Hans Werner Stephan, 77 Olbergstrasse, Cologne, and Friedrich Wilhelm Dorn, 3 Giselherweg, Hermulheim, all of Germany, assignors to Knapsack Aktiengesellschaft Knapsack bei Cologne, Germany

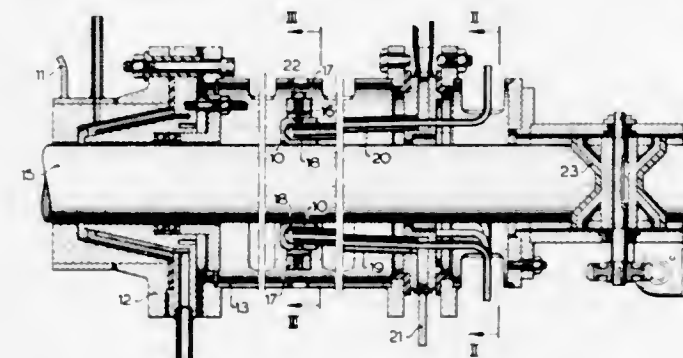
Filed March 23, 1971, Ser. No. 127,186

Claims priority, application Germany, March 24, 1970, P 20 14 019.6

Int. Cl. H05b 7/10

U.S. Cl. 13—15

2 Claims



Device for supplying current to self-consuming electrodes which are required to be advanced or lowered during operation, for example in an electrothermal reduction furnace. A plurality of current supply means encircling the electrode and spaced apart from each other by small slits is arranged above the furnace head. The individual current supply means are concentrically surrounded by a ring which forces them into elastic contact with the electrode, and are cooled separately.

### 3,692,918 AUTOMATIC REGISTRATION OF COLOR TELEVISION CAMERAS

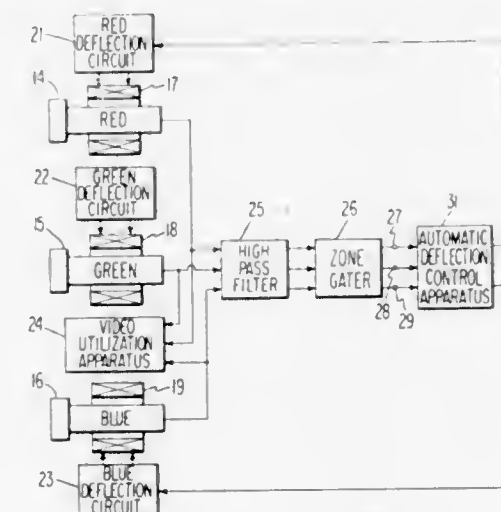
Charles Langdon Olson, Oaklyn, and Robert Adams Dischert, Burlington, both of N.J., assignors to RCA Corporation

Filed May 17, 1971, Ser. No. 143,794

Int. Cl. H04n 9/08

U.S. Cl. 178—5.4 M

14 Claims



Predominantly positive and negative polarity waves formed from edge video signals, representing sharp transitions between light and dark areas of a subject and derived from two of a plurality of pickup tubes respectively responsive to different component colors of the subject, are peak detected to produce a signal having such polarity and amplitude as to so control the beam deflection in one of the tubes that the edge video signals are made to coincide in time.

### 3,692,919 VIBRATION DAMPING DEVICE FOR TRANSMISSION LINES

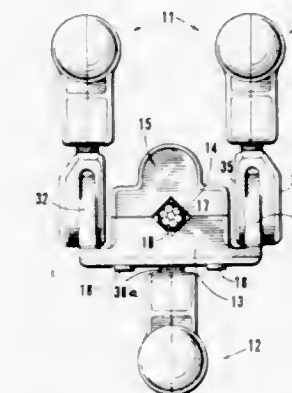
Louis Rostoker, Toronto, Ontario, Canada, assignor to Pep Professional and Engineered Patents Limited

Filed July 8, 1971, Ser. No. 160,789

Int. Cl. H02g 7/14

U.S. Cl. 174—42

7 Claims



The following disclosure concerns a vibration damping device for transmission lines which embodies a combination of upstanding suppressor heads and a base adapted to be clamped to the transmission lines or cable for the suppression of galloping wave type vibrations with a suspended suppressor head of similar construction and adapted to suppress high frequency aeolian vibrations, the galloping wave suppressor heads being adapted to rock on pivotal mountings and the high frequency suspended suppressor head being fixed relative to the clamping base.

### 3,692,920 RACEWAY FOR BEDS OF HOSPITALS AND THE LIKE

Sandro Santarelli, V.le Borri 92, Varese, Italy

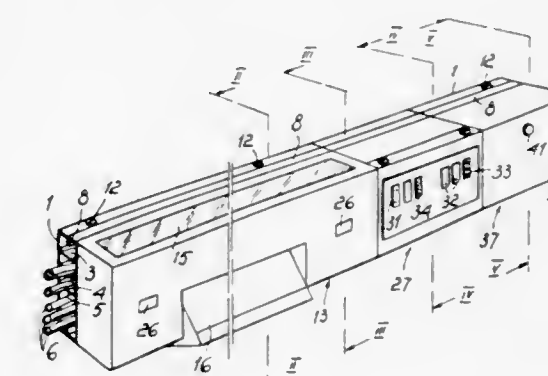
Filed April 9, 1971, Ser. No. 132,647

Claims priority, application Italy, April 13, 1970, 23235 A/70

Int. Cl. H02g 3/18

U.S. Cl. 174—48

13 Claims



An elongated base plate is mounted on a wall. Support means forwardly of the base plate support electrical conductors and pipes in a suspended manner along the base plate. A first cover plate forms a first compartment which houses the conductors and pipes, the latter being readily accessible by moving the first cover plate. A second cover plate forms, with the first cover plate, a second compartment which houses utility output devices which are connected to the conductors and pipes and which are readily accessible by moving the second cover plate.



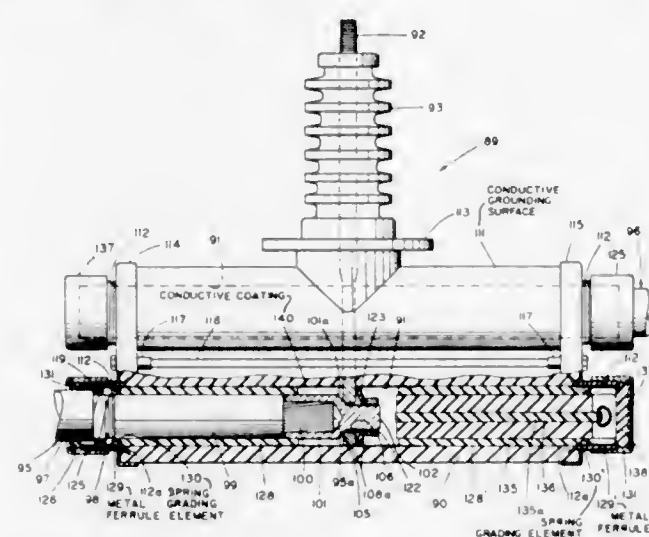
### 3,692,921 CABLE COUPLER

Edward H. Yonkers, Wilmette, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.

Filed April 12, 1971, Ser. No. 133,005  
Int. Cl. H01r 13/00; H02q 15/00

U.S. Cl. 174—72 R

5 Claims



There is provided an improved high voltage cable coupler having a body of integrally cast dielectric polymer chemically formed in situ and having at least one cable receiving channel therethrough. An internal conductor is cast within the body extending within the cable receiving channel to receive the end of a cable. The cable receiving channel is symmetrical, and a cable may be inserted in one end, secured through the other, and the other end then plugged. A soft polymer sealing sleeve advantageously provides air-free interfaces between the cable and the walls of the cable channel, and between the plug and the wall of the cable channel. In a desired embodiment, the soft polymer sealing sleeve is thicker in wall section than the space between the cable and channel so as to form an interference fit between the cable and channel, and between the plug and cable channel wall, so as to resiliently load the soft polymer. At all times, the inner end of the soft polymer is free to move axially into a shielded space, thus permitting a limited range of cable diameters to be used with a given sealing sleeve, and a wide range of cable diameters can be accommodated by employing sealing sleeves of various appropriate wall thickness.

### 3,692,922

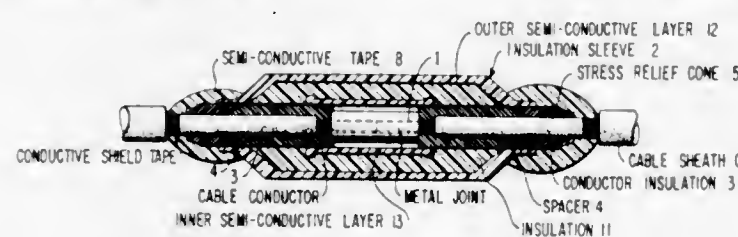
**CABLE JOINT WITH HIGH VOLTAGE STRESS RELIEF**  
Yoichi Sugimoto, 625, Domyoji, Fujidera; Shizuhiko Nakata, No. 1043-34, Kiyo-cho, Yamatokoriyama; Atsuo Nakashima, No. 924-2 Oza Shimobosumi, Ibaraki, and Souzo Idomoto, No. 13-1, Takakura-cho 2-chome, Miyakojima-ku, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan; Yoichi Sugimoto, Shizuhiko Nakata and Atsuo Nakashima by said Idomoto

Continuation-in-part of Ser. No. 846,517, July 31, 1969, abandoned. This application April 6, 1971, Ser. No. 131,612

Int. Cl. H02g 3/00, 15/08

U.S. Cl. 174—73 R

6 Claims



A cable joint employs premolded insulation in the form of a sleeve which is applicable irrespective of the size of the cable by making the inner diameter of the end portion of the pre-

molded insulation sleeve equal to or larger than the diameter of the outer sheath of the cable and inserting a cylindrical spacer into a gap which is present between the inner circumference of the insulation sleeve and the outer circumference of the cable. The sleeve includes inner and outer concentric tubular portions, the inner portion being formed of electrically insulative material and the outer tubular portion of semi-conductive material, the end faces of the inner tubular portion being frustoconical and tapering away from the conductor joint. A stress cone formed on the end of each spacer acts as frustoconical extension to the outer tubular portion of the sleeve providing high voltage stress relief to the cable joint.

### 3,692,923

**FLEXIBLE SEALED HOUSING FOR ISOLATED PHASE BUS**

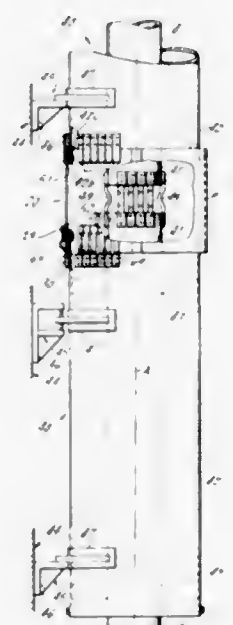
Joseph A. Kerti, Toronto, Ontario, Canada, assignor to I-T-E Circuit Breaker (Canada) Limited, Port Credit, Ontario, Canada

Filed June 22, 1971, Ser. No. 155,428

Int. Cl. H02g 5/06

U.S. Cl. 174—84 S

6 Claims



Two housing sections of isolated phase bus are joined together, end-to-end, and air-tightly sealed by a cover assembly comprising two cover halves engaging one another along their straight mating edges by suitable flexible gasket means. Annular shaped rolling gasket means provides an air-tight closure between the end of one housing section and the associated ends of the cover halves to provide for rolling engagement therebetween. Second annular gasket means is positioned between the end of the remaining housing section and the ends of the cover halves associated therewith and it is designed so as to prevent no moving or sliding engagement therebetween. One cover half is provided with rigid connectors welded to one end of the cover half and adapted to be bolted to the end of the adjacent housing section. Flexible connectors are welded to the opposite end of the same cover half and are adapted to be bolted to the adjacent housing. The connector provide a continuous electrical path between the adjacent housing sections which are joined and sealed by the cover halves. The cover half not provided with the above mentioned connectors allows for subsequent disassembly for maintenance or repair without unbolting the connectors. The apparatus provides the necessary continuous electrical path while eliminating the need for any welding operations in the field to facilitate both assembly and disassembly thereof.

### 3,692,924

**NONFLAMMABLE ELECTRICAL CABLE**

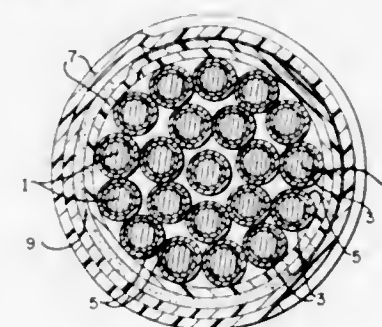
Eugene A. Nye, Yorba Linda, Calif., assignor to La Barge, Inc., St. Louis, Mo.

Filed March 10, 1971, Ser. No. 122,940

Int. Cl. H01b 7/02

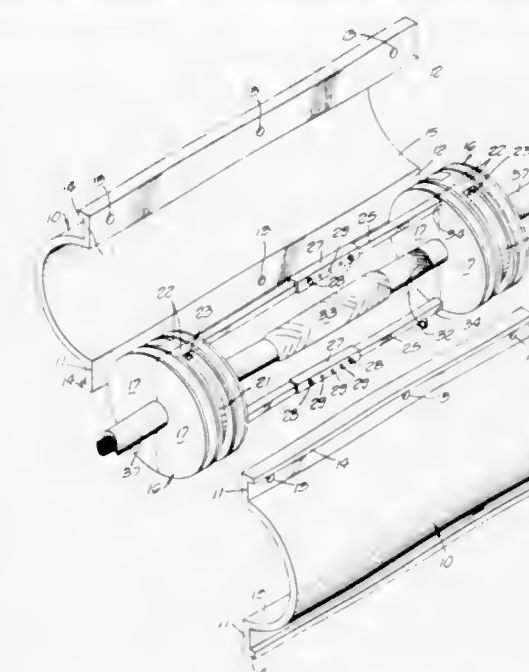
U.S. Cl. 174—120 SR

10 Claims



Nonflammable electrical cable resistant to combustion under current overload conditions. The cable conductor is constituted by one or more composite metal strands. Each strand has an aluminum base core clad with copper and has an outer layer of silver, nickel or tin. The conductor is wrapped with flexible fire-resistant insulating material and the facing areas of the wrapping are sealed with an adhesive which is kept out of contact with the conductor. When subjected to a current overload in an oxygen atmosphere the strand fuses, thereby interrupting the current, before either the insulating material or the adhesive can ignite.

which are tightly clamped together about the cables by mechanical means. The connecting members provide align-



ment of the end seals during and after assembly of the splice case and provide a conducting path for the cable shields to bridge the splice.

### 3,692,927

**COVER FOR INSULATOR ASSEMBLY**

Edwin Ivan Ellaschuk, 10 MacDonald Crescent, Saskatoon, Saskatchewan, Canada

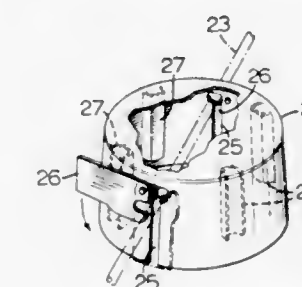
Filed June 1, 1971, Ser. No. 148,415

Claims priority, application Canada, June 1, 1970, 084214

Int. Cl. H01b 17/50

U.S. Cl. 174—139

2 Claims



An improved cover for protecting insulators used with high voltage transmission lines from contamination. The cover is generally bell shaped and has a lower end fitted over the insulator assembly; when in position, the cover is coaxial with the insulator assembly, and the coaxial relationship is maintained by means of ribs formed on the inner wall of the cover which engage the outer edge of the insulator assembly. The lower end of the cover is dimensioned so that there is adequate clearance between the cover and the lower portion of the insulator assembly, to prevent current for arcing over to the outer surface of the cover.

### 3,692,928

**ELECTRICAL BUSHING HAVING A CAPACITOR CHAIN FORMED BY OVERLAPPING CAPACITOR ELEMENTS**

Kevin F. Friedrich, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 24, 1971, Ser. No. 146,236

Int. Cl. H01b 17/28

U.S. Cl. 174—143

12 Claims

An electrical bushing having electrical insulation disposed about an axially extending conductor, and a plurality of stress grading elements disposed in the insulation to grade radial and

**ALIGNABLE END SEALS FOR A SPLICE CASE**

Donald J. Smith, Canoga Park, Calif., assignor to Smith-Schreyer & Assoc., Inc.

Filed July 6, 1971, Ser. No. 159,956

Int. Cl. F16k 41/00

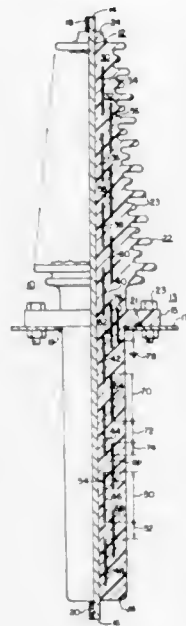
U.S. Cl. 174—92

15 Claims

A device for sealing the ends of a splice case. The device comprises two end seals rigidly fixed to each other by connecting members. Each end seal is made of two mating end pieces



longitudinal stresses in the bushing. These stress grading elements includes at least two groups of substantially tubular elements, with the elements of each group being axially spaced



and dimensioned such that the wall portions of each group are substantially aligned. The aligned space between two elements of one group is bridged by an element of an adjacent group.

3,692,929

#### COLOR TELEVISION RECEIVER WITH COLOR SIGNAL CORRECTION FOR VARIOUS TRANSMISSION CHANNELS

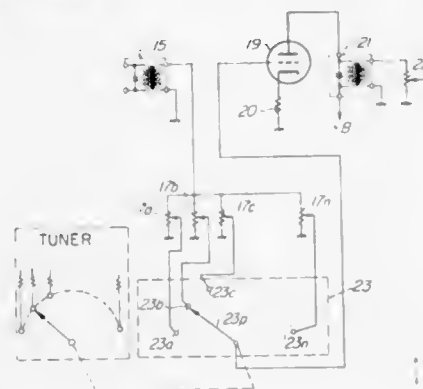
Masayoshi Hirashima, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan  
Filed Dec. 10, 1970, Ser. No. 96,759

Claims priority, application Japan, Dec. 16, 1969, 44/102198; Dec. 16, 1969, 44/102199; Dec. 16, 1969, 44/102201; Dec. 23, 1969, 45/581; Dec. 29, 1969, 45/757; Feb. 3, 1970, 45/9747

Int. Cl. H04n 9/48

U.S. Cl. 178-5.4 R

8 Claims



A color television receiver provided with a plurality of color signal regulator variable resistors having respective slide terminals connected to corresponding fixed contacts of a switch interlocked to the tuning mechanism of a receiver. The color signal regulators may be preset such that substantially the same color saturation or hue of the chrominance signal output may be obtained irrespective of the channel to which it is tuned in.

3,692,930

Patent Not Issued For This Number

#### 3,692,931 TELEVISION IMAGE CONTROL CIRCUIT

John Kenneth Allen, and Marvin Neil Norman, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed June 30, 1971, Ser. No. 158,451  
Int. Cl. H04n 5/14

U.S. Cl. 178-7.3 R

6 Claims



A voltage dependent resistor is coupled to sense the line voltage applied to a television receiver, and to respond to its variations in a manner to maintain substantially constant brightness and vertical height in the reproduced image when such changes occur.

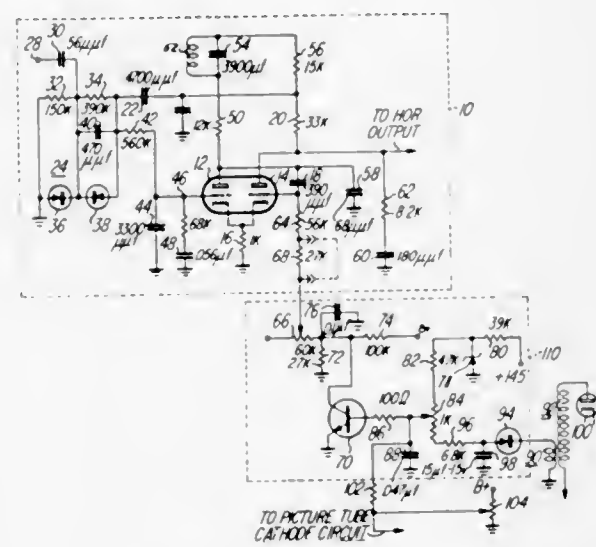
#### 3,692,932 HORIZONTAL OSCILLATOR DISABLING CIRCUIT CONTROL APPARATUS

Paul Carleton Wilmarth, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 18, 1971, Ser. No. 144,464  
Int. Cl. H04n 5/44

U.S. Cl. 178-7.5 R

4 Claims



Concurrently filed United States Patent application Ser. No. 144,457, entitled "HORIZONTAL OSCILLATOR DISABLING CIRCUIT" describes a means of shifting the frequency of the horizontal oscillator of a television receiver in the presence of high voltage increases which could cause X-radiation problems. As therein described, a negative direct voltage indicative of the developed ultor potential for its cathode-ray tube is combined with a relatively stable positive direct voltage to change the bias on a control transistor and the effective resistance in the time constant network determining the oscillator frequency. The present invention provides a further positive direct voltage to the transistor from the brightness control network of the receiver, so as to control the point at which the oscillator goes off frequency as a function of picture tube beam current. Such further voltage will be seen

to reduce the criticality in determining the point at which the frequency shifting is to occur and the point at which the reproduced picture becomes unviewable.

means for moving the image on the cathode ray tube to move the projected scene on the display screen and thus simulate roll and pitch movements of the simulated craft.

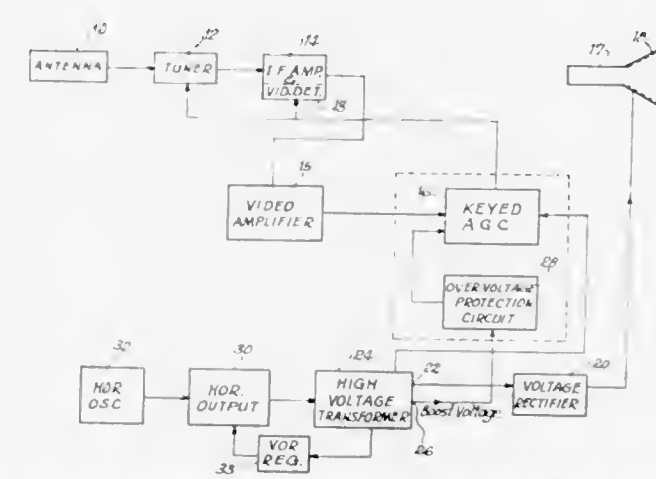
#### 3,692,933 X-RADIATION PROTECTION CIRCUIT

Ronald S. Knoll, Chicago, Ill., assignor to Admiral Corporation, Chicago, Ill.

Filed Oct. 28, 1970, Ser. No. 84,841  
Int. Cl. H04n 5/68

U.S. Cl. 178-7.5 R

10 Claims U.S. Cl. 178-15



A protective circuit is disclosed which is adapted to detect and indicate an overvoltage condition in a television receiver by blanking both sound and picture information. The circuit is coupled between an output of the receiver's high voltage transformer and an input of the receiver's automatic gain control (AGC) system. The normal input signal to the AGC circuit is a video information component of a broadcast television signal selected by the tuner and amplified. The AGC system normally responds to the varying signal strength of the synchronizing signal information of the video signal to control the gain of the receiver's tuner and IF amplifier sections. Should the output of the receiver's high voltage transformer rise above a predetermined level, the protective circuit generates a failure signal which causes the AGC system to cut off signal flow through the tuner and IF sections, thus terminating both audio and video reproduction by the receiver.

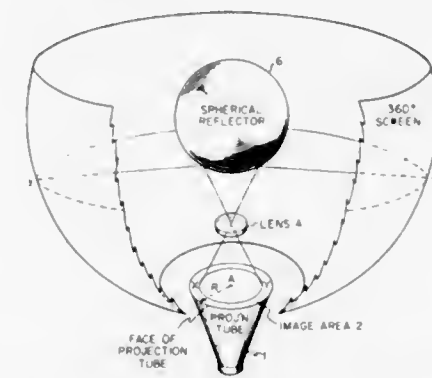
#### 3,692,934 ROLL AND PITCH SIMULATOR UTILIZING 360° DISPLAY

John W. Herndon, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 11, 1971, Ser. No. 114,433  
Int. Cl. H04n 5/68, 5/74

U.S. Cl. 178-7.5 D

1 Claim



In a training device having a television system for projecting a scene such as, for example, an outdoor view, the scene may be viewed by a trainee from a simulated craft which experiences roll, pitch and other movements. The scene is optically projected onto a display screen from an image on the face of a cathode ray tube. The invention provides electronic

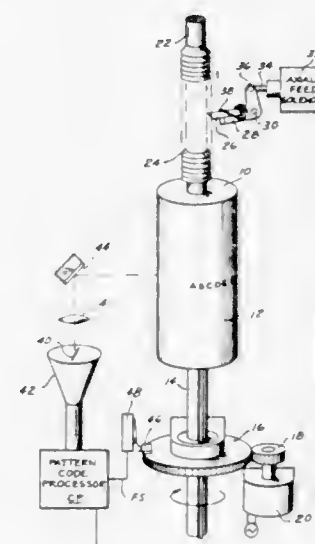
#### 3,692,935 SINGLE LINE SCAN PATTERN GENERATOR

Solomon Manber, Sands Point, N.Y., assignor to Alphanumeric, Incorporated, Lake Success, N.Y.

Filed Feb. 17, 1971, Ser. No. 116,132  
Int. Cl. H04l 15/34

U.S. Cl. 178-15

3 Claims



A pattern generator includes a rotating record-medium-carrying drum which is scanned by an intensity-modulated beam of electromagnetic radiation. The beam sequentially scans adjacent linear regions in a peripheral band of the record medium. The beam is turned on and off during the scans to write characters.

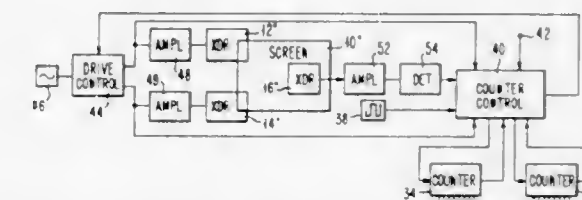
#### 3,692,936 ACOUSTIC COORDINATE DATA DETERMINATION SYSTEM

John Stuart Moffitt, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 18, 1970, Ser. No. 47,397  
Int. Cl. G08c 21/00

U.S. Cl. 178-18

13 Claims



The use of graphical display devices in conjunction with digital computer and data processing systems is enhanced by an acoustic coordinate determining system providing a completely unobstructed view of the display. A transparent sheet of suitable material, such as glass, arranged in front of the display and acoustic waves are propagated in the material from a spaced pair of acoustic wave radiating elements radiating acoustic energy in the sheet at a frequency of the order of 185 kHz. An acoustic probe tuned to the frequency of the radiation is touched to the material for developing currents on arrival of the radiated waves. These currents control counting circuitry advanced by pulses derived from a 2.5 MHz oscillator under control of circuitry comprising conventional gating circuits and latches for manifesting values proportional to the distances of the probe at any given point in the display with respect to the two transducers. The conversion of counting circuitry values to  $r, \theta$  or X-Y coordinates is done under programmed computer control if desired.



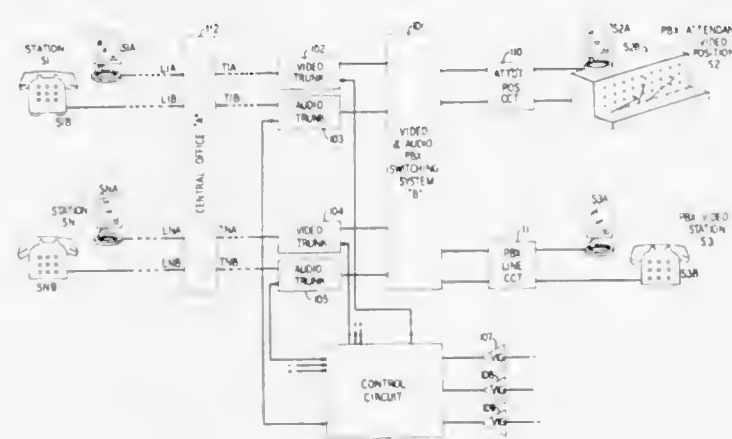
3,692,937  
Patent Not Issued For This Number

ERRATUM  
For Class 179—2 DP see:  
Patent No. 3,691,593

3,692,938  
ARRANGEMENT FOR VISUALLY INFORMING  
STATIONS OF CONDITIONS ENCOUNTERED DURING  
ESTABLISHMENT OF A CALL  
Eric John Addeo, Long Valley, N.J., assignor to Bell Telephone  
Laboratories, Incorporated, Murray Hill, N.J.  
Filed Oct. 15, 1970, Ser. No. 81,003  
Int. Cl. H04m 11/08

U.S. Cl. 179—2 TV

7 Claims



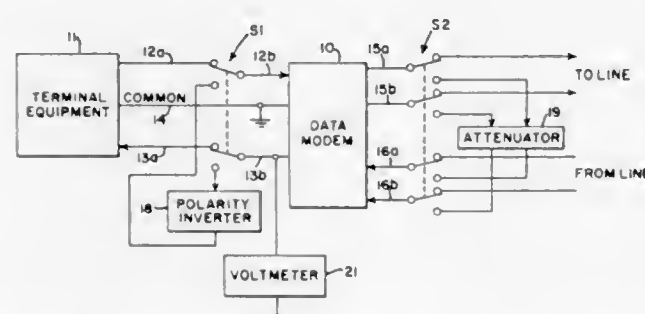
An audio-video switching system is provided with a control circuit operable to detect the various conditions encountered during the establishment of calling connections through the system and in response to each such condition to select a corresponding one of a plurality of video image generators and to associate such generator with the communication path extending to the corresponding calling station so as to visually inform the calling station of the status of the call.

3,692,939  
TEST ARRANGEMENT FOR DATA MODEM  
Patrick E. Knight, Lynchburg, and Raymond D. Stapleton,  
Forest, both of Va., assignors to General Electric Company

Filed April 5, 1971, Ser. No. 130,929  
Int. Cl. H04m 11/00

U.S. Cl. 179—2 DP

5 Claims



A data modem is provided with loop-back circuits between the modem transmitter and receiver. If the modem is operating, the loop-back circuits cause oscillations. In addition, the oscillations can also indicate the operating condition of the modem so that adjustments can be made if needed.

3,692,940  
TIMER OF AN AUTOMATIC TELEPHONE ANSWERING  
APPARATUS

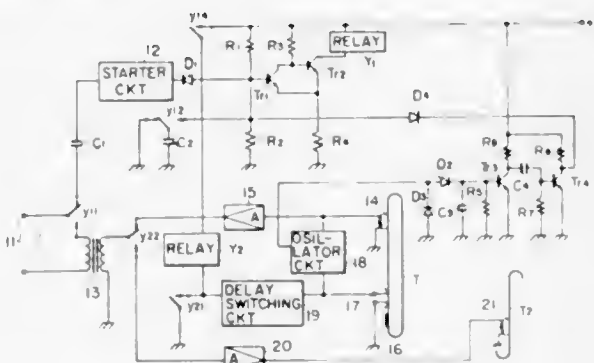
Akira Konno, Tokyo, and Tomoaki Kosaka, Yachiyo-shi,  
Chiba, both of Japan, assignors to Pioneer Electronic  
Corporation, Tokyo, Japan

Filed May 19, 1970, Ser. No. 38,855

Claims priority, application Japan, May 19, 1969, 44/38087  
Int. Cl. H04m 11/10

U.S. Cl. 179—6

2 Claims



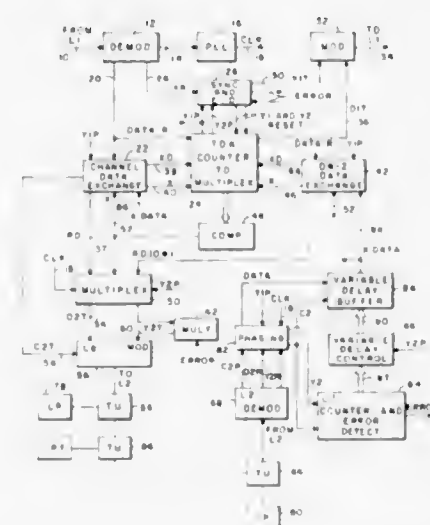
A timer for controlling the operation of an automatic telephone answering apparatus, which begins its controlling operation when a telephone is called and makes its timer period return to the starting point after the outgoing message is completely read out.

3,692,941  
DATA EXCHANGE AND COUPLING APPARATUS  
Arthur A. Collins, and John Dan Hill, III, both of Dallas, Tex.,  
assignors to Collins Radio Company, Dallas, Tex.

Filed Sept. 23, 1970, Ser. No. 74,669  
Int. Cl. H04j 3/08

U.S. Cl. 179—15 AL

7 Claims



A coupling device for coupling a low speed multiplexed data exchange loop with a higher speed multiplexed data exchange loop.

3,692,942  
MULTIPLEXED INFORMATION TRANSMISSION  
SYSTEM

Hiroshi Inose, Tadao Salto, Takehisa Tokunaga, and Kenji  
Tomizawa, all of Tokyo, Japan, assignors to Bell Telephone  
Laboratories, Incorporated, Murray Hill, N.J.

Filed June 7, 1971, Ser. No. 150,352  
Int. Cl. H04j 3/16

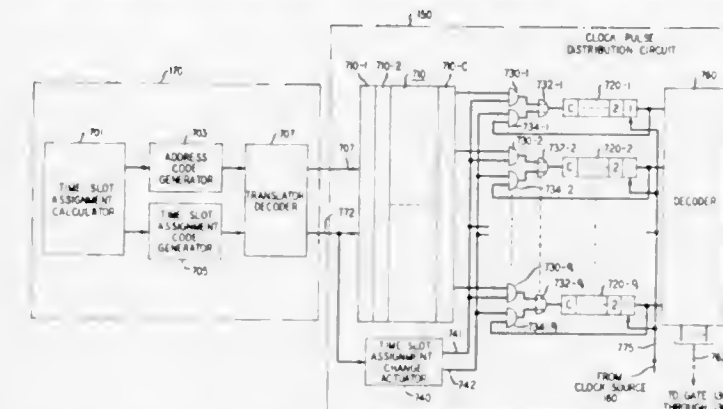
U.S. Cl. 179—15 BV

11 Claims

A time division multiplex communication system operates to combine the transmissions from the plurality of low speed multiplex paths onto a single high speed path having a transmission rate of C. The incoming information from each low

speed path is stored in a buffer memory. A gating circuit selectively applies the stored information from the buffer memory to the high speed path in assigned time slots of said high speed path. A control unit connected to each gating circuit selective-

ly enables one of said gating circuits in each time slot of said outgoing path in accordance with an algorithm which applies said stored information to said outgoing path in a quasi-uniform manner.



3,692,943  
MULTIPLE MARK DETECTORS FOR END MARKED  
SWITCHING NETWORKS

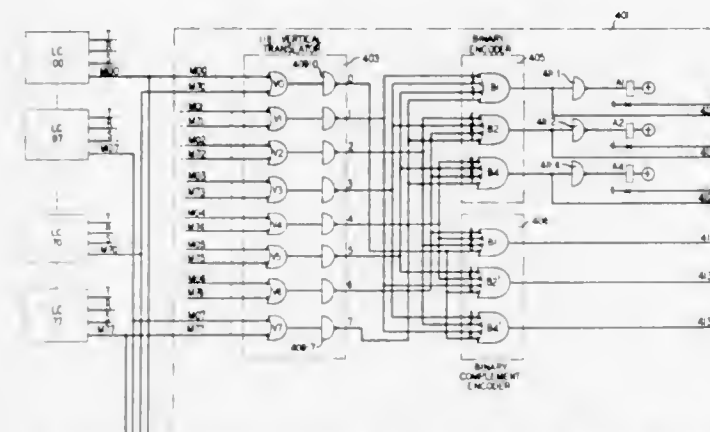
Louis Emanuel Thelemaque, Longmont, Colo., assignor to Bell  
Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 21, 1971, Ser. No. 145,734

Int. Cl. H04q 3/42

U.S. Cl. 179—18 E

21 Claims



A switching system utilizing an end marked network has circuitry for detecting the presence of double marks on either side of the network. The network functions in the conventional manner to complete a connection between a line side and a trunk side circuit in response to the application of a single mark on each side. In response to the simultaneous application of two or more marks to either side, the detection circuitry recognizes this as a trouble condition, generates an alarm signal, and prevents the network from attempting to respond to the simultaneously applied marks.

3,692,944  
SCANNING CIRCUITS

Bernard Pierre Durteste, Sevres; Michel Andre Robert Hen-  
rion, Boulogne, both of France, and Jean-Pierre Le Corre,  
deceased, late of Sainte-Genevieve-Des-Bois, France (by  
Yvette Marie Laurence Le Corre, administratrix), assignors  
to International Standard Electric Corporation, New  
York, N.Y., by said Durteste and Henrion

Filed March 31, 1970, Ser. No. 24,114

Claims priority, application France, March 31, 1969,  
6909623

Int. Cl. H04m 3/30

U.S. Cl. 179—18 FF

5 Claims

Scanning circuits are provided in a time multiplex central switching exchange. Scanning involves detecting new calls, to

which high priority is given, and also changes of state in previously received information. Two memories are used to store the results of scanning and each memory is divided into two

parts, one for each priority level. The messages giving new calls and other changes are sent to the processor when requested by the processor.

3,692,945  
CIRCUIT ARRANGEMENT FOR  
TELECOMMUNICATION SWITCHING SYSTEMS  
EMPLOYING TIME-DIVISION MULTIPLEX OPERATION

Karl Maier, Stuttgart, Germany, assignor to International  
Standard Electric Corporation, New York, N.Y.

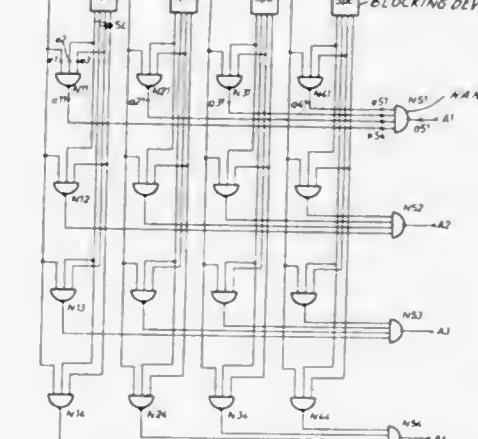
Filed Nov. 27, 1970, Ser. No. 93,230

Claims priority, application Germany, Dec. 2, 1969, P 19 60  
486.5

Int. Cl. H04q 3/50

U.S. Cl. 179—18 GF

9 Claims



Each inlet of a TDM switching matrix and a plurality of associated control lines are connected to equivalent inputs of first NAND-circuits whose outputs are combined into the outlets of the switching matrix via second NAND-circuits. Decoders and matching circuits are not needed. If the control inlets are not wired, a simulation of a selection by special block circuits is prevented.

3,692,946  
SPECIAL SERVICE ROUTING

Ignas Budrys, and Ernest O. Lee, Jr., both of Fairport, N.Y.,  
assignors to Stromberg-Carlson Corporation, Rochester,  
N.Y.

Filed Dec. 10, 1970, Ser. No. 96,930

Int. Cl. H04m 3/44

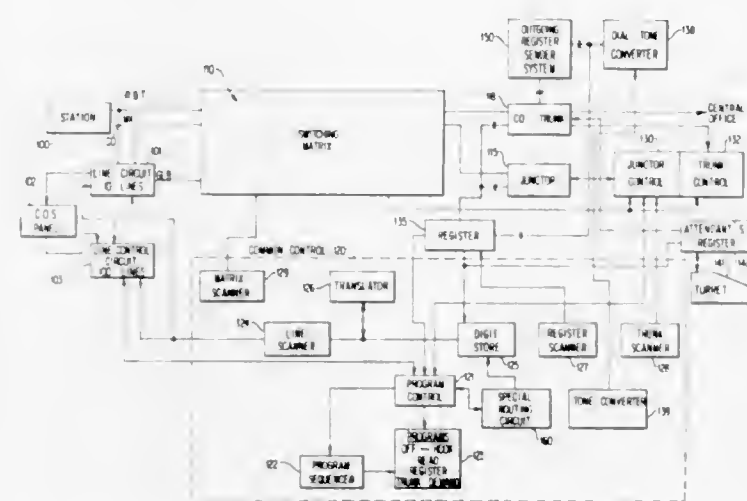
U.S. Cl. 179—18 BA

10 Claims

A special service routing circuit provides for single digit access to service centers in a complex of buildings or a large multi-storied building, such as a motel or hotel, in such a way



that particular centers can be accessed only by particular lines in accordance with their location. The routing circuit



generates three digits to accompany the single dialed digit, which three digits will have a value depending on the location of the calling party for access to certain service lines.

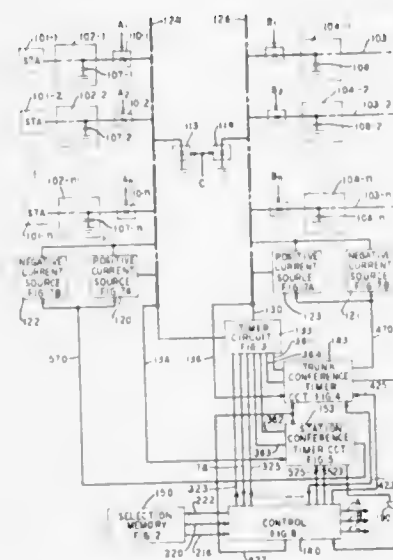
3,692,947

## TIME DIVISION SWITCHING SYSTEM CONFERENCE CIRCUIT

Theras Gordon Lewis, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed Dec. 21, 1970, Ser. No. 100,308  
Int. Cl. H04m 3/56

U.S. Cl. 179-18 BC

12 Claims

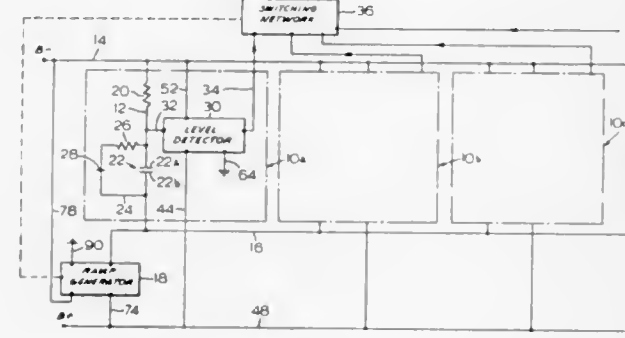


In a time division switching system having first and second groups of storage devices, a plurality of first and second group storage devices, are conferenced by first detecting the difference between the signals on selected pairs of first and second group conference storage devices in a first plurality of successive time slots in a cycle. The detected signal differences are summed and stored; and in a second group of successive time slots, a signal is applied to each first group conference storage device for a time corresponding to the difference between the first group conference storage device and the sum signal. A signal is also applied to each second group conference storage device in said second group of successive time slots for a time corresponding to the difference between the signal on the second group conference storage device and the sum signal.

3,692,948  
TELEPHONE QUEUING CIRCUIT  
Wesley John Warner, Westmount, Quebec, Canada, assignor to Western Electric Company Limited, Montreal, Quebec, Canada  
Filed Dec. 24, 1970, Ser. No. 101,273  
Int. Cl. H04q 3/64

U.S. Cl. 179-18 FA

8 Claims

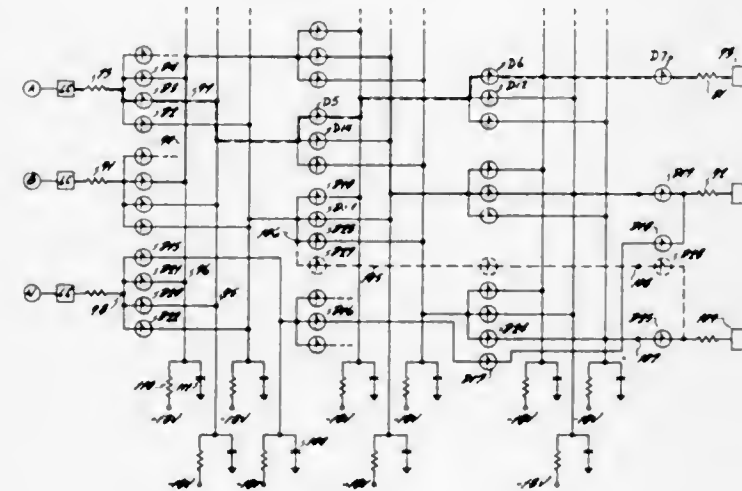


An analog method and circuit for queuing incoming telephone calls and releasing the calls in order of age. A timing station is provided for each call circuit, in which a voltage varies as the time, relative to calls at other stations, a call has been waiting at that particular station. When an operator is ready to service a call, all the station voltages are changed equally and in the same sense as the voltage variations, and the first station to reach a predetermined voltage level is detected.

3,692,949  
MULTI-STAGE ELECTRONIC SWITCHING NETWORK  
Nikola L. Jovic, Chicago, Ill., assignor to International Telephone and Telegraph Corporation, New York, N.Y.  
Continuation of Ser. No. 7,413, Feb. 6, 1970, abandoned, which is a continuation of Ser. No. 584,140, Oct. 4, 1966, abandoned. This application May 3, 1971, Ser. No. 139,891  
Int. Cl. H04q 3/42

U.S. Cl. 179-18 GF

7 Claims

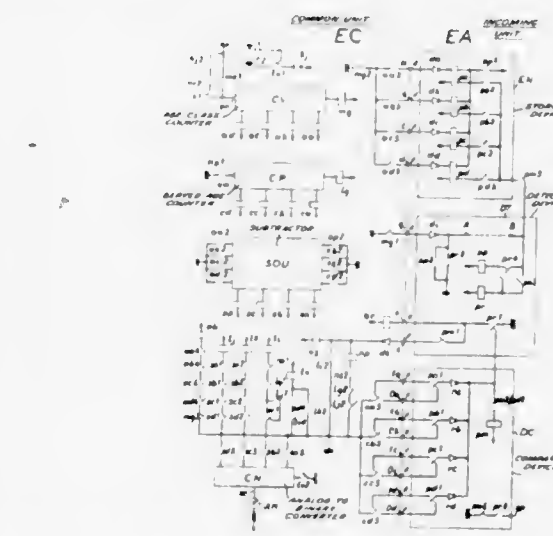


A self-seeking current controlled electronic switching network comprised of a plurality of cascaded stages of switching matrices. Each vertical multiple has an associate RC network for controlling the duration of the turned-on time period of the crosspoints during a route search. The RC circuit controlled time periods are selected to make each stage of the network run at an independent frequency, the frequencies being selected as a function of (a) the dynamic biasing changes which occur in the crosspoints responsive to the turning on and off, (b) the dynamic tapering which occurs in the network responsive to busy vertical conditions, and (c) the frequency of preceding stages.

3,692,950  
SYSTEM FOR RECORDING AND CONNECTING WAITING CALLS ON A CHRONOLOGICAL BASIS  
Roland S. Lecoanet, Saint-Germain-les-Arpaion, and Jean A. H. Lepagnol, Chatillon, both of France, assignors to International Standard Electric Corporation, New York, N.Y.  
Filed Sept. 15, 1970, Ser. No. 72,271  
Int. Cl. H04q 3/66

U.S. Cl. 179-27 D

4 Claims

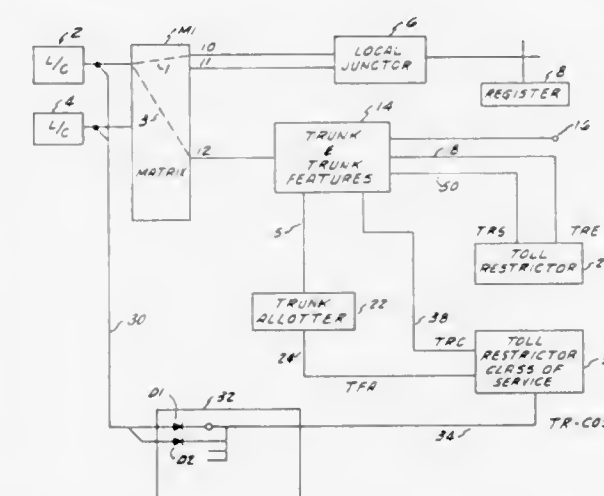


A circuit is provided for connecting calls in chronological order so that those which have been waiting longest are connected first. A first counter determines and indicates waiting calls according to classes of waiting time and current waiting time for incoming calls. A second counter provides information on waiting time classes being afforded service. The second counter steps once when all calls of a class have been served. New calls are stored in a class by the first counter and the two counters are interconnected so that when the signals from the counters coincide a call stored in the first counter can be connected.

3,692,951  
TOLL RESTRICTOR CIRCUIT  
Alfred M. Hestad, Chicago, Ill., and Max A. Bouknecht, Boca Raton, Fla., assignors to International Telephone and Telegraph Corporation, New York, N.Y.  
Filed June 5, 1970, Ser. No. 43,890  
Int. Cl. H04m 3/38

U.S. Cl. 179-27 CB

11 Claims



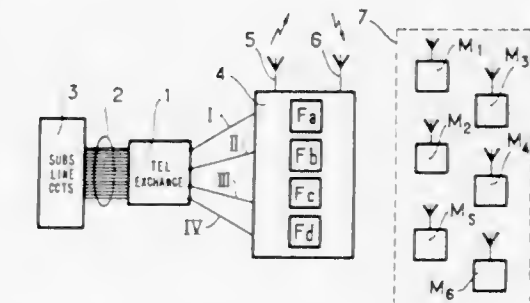
Logic circuits which function as toll restrictors are disclosed for use in an Electronic PABX. These circuits are responsive to a dialed code demanding that a particular connection be made. The circuits include means responsive to either dial pulses or multi-frequency signals to generate a coded signal of use in further processing. The circuits determine from the coded

signal whether the particular caller is entitled to that service and provide a signal indicating whether a connection is authorized or not.

3,692,952  
APPARATUS FOR ESTABLISHING A TELEPHONE TO RADIO-TELEPHONE COMMUNICATION  
Didier Leonard, Boulogne, France, assignor to C.I.T. - Compagnie Industrielle des Telecommunications, Paris, France  
Filed Feb. 19, 1970, Ser. No. 12,576  
Claims priority, application France, Feb. 19, 1969, 6904070  
Int. Cl. H04q 7/04

U.S. Cl. 179-41 A

20 Claims



The invention concerns duplex radiocommunications at variably-selected carrier frequencies.

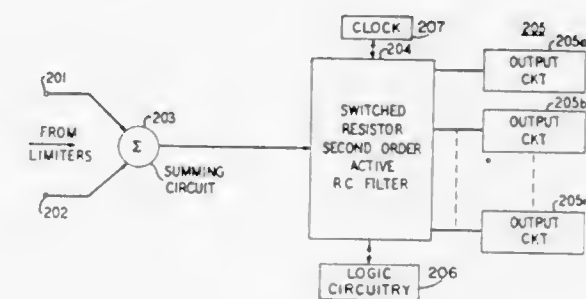
It describes a concentrator ensuring the duplex connection at variably-selected carrier frequencies between a system of mobile transmitters and a telephone exchange comprising several unattended transmitter-receiver sets, in which the transmitter contains an individual call coder and a general call coder, the latter being used to establish the connection with a mobile set wanting to call up a telephone set.

The invention is applied to connecting an ordinary telephone system and a group of mobile radio electric transmitter receivers.

3,692,953  
MULTIPLEX MULTIFREQUENCY SIGNAL RECEIVER  
Ralph William Wyndrum, Jr., Fair Haven, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.  
Filed Dec. 18, 1970, Ser. No. 99,421  
Int. Cl. H04m 1/50; H04q 9/12

U.S. Cl. 179-84 VF

7 Claims



In a multifrequency signal receiver the presence of each of  $n$  possible input signal frequencies is tested, sequentially, for a time proportional to the period associated with the frequency. Testing is effected by sequentially changing the resistive magnitude  $n$  times in the feedback path of an active R-C filter. The signal filter thus performs the function of  $n$  conventional filters.



3,692,954

**APPARATUS FOR MANUALLY OPERATING PLATES OR DISCS PROVIDED WITH APERTURES**

Frans Van Moorsel, Hilversum, Netherlands, assignor to Gozen Spijlenburg, Hilversum, Netherlands

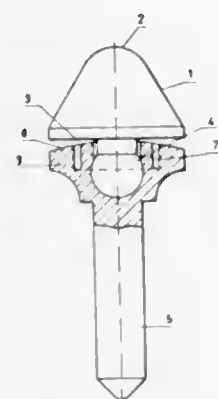
Filed May 27, 1970, Ser. No. 41,010

Claims priority, application Germany, June 2, 1969, P 19 28 075.2

Int. Cl. H04m 1/23

U.S. Cl. 179—90 AT

3 Claims



Apparatus for manually operating plates provided with apertures such as telephone dials and the like, comprising two parts, one of which is provided with a handle and the other one being substantially conical, said two parts being interconnected via coupling means such that the conical part is movable relative to the first-mentioned part.

3,692,955

Patent Not Issued For This Number

3,692,956

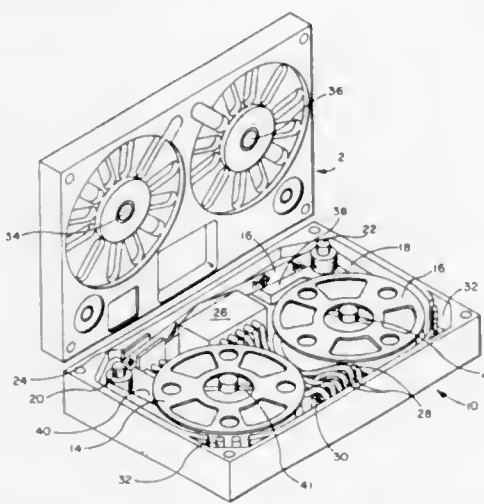
**SEALED MAGNETIC TAPE CASSETTE APPARATUS**  
Malcolm B. Northrup, Richardson, Tex., assignor to Collins Radio Company, Dallas, Tex.

Filed Nov. 20, 1970, Ser. No. 91,337

Int. Cl. G11b 23/08, 15/12

U.S. Cl. 179—100.2 Z

4 Claims



A magnetic tape cassette including a tape recording head wherein the cassette is environmentally sealed. The cassette includes a reel brake for preventing accidental movement of the reels when the cassette is not attached to a tape drive unit. The cassette further includes means for detecting end of tape and middle of tape conditions and for preventing accidental recording.

3,692,957

Patent Not Issued For This Number

3,692,958

**MICROPHONE HEADSETS**

Leslie E. Basil Dymoke, Bradshaw, Edgware, England, assignor to International Standard Electric Corporation, New York, N.Y.

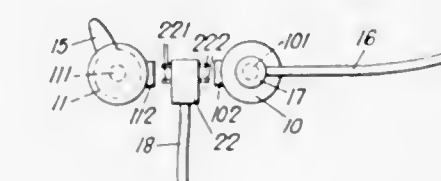
Filed March 2, 1971, Ser. No. 120,207

Claims priority, application Great Britain, March 2, 1970, 9,880/70

Int. Cl. H04m 1/05

U.S. Cl. 179—156 A

1 Claim



A microphone headset worn on the ear without a headband. The receiver and microphone are in a housing suspended from an earmould carried in the outer ear and a speech tube extends from the microphone to near the lips.

3,692,959

**DIGITAL HEARING AID GAIN ANALYZER**

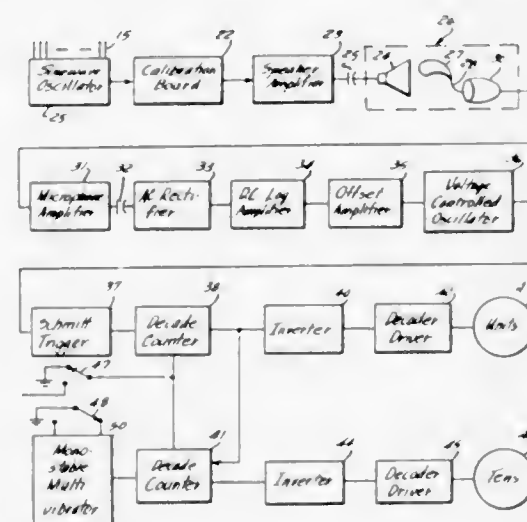
Paul F. Lamp, Casselberry, Fla., assignor to Electone, Inc., Orange County, Fla.

Filed Oct. 28, 1970, Ser. No. 84,823

Int. Cl. H04r 29/00

U.S. Cl. 179—175.1 A

9 Claims



A digital display hearing aid gain analyzer is provided for measuring the gain of hearing aids over a predetermined frequency range. A sine wave oscillator generates a predetermined sine wave frequency in an anechoic chamber. The hearing aid to be tested is then connected in the chamber to a microphone pickup housed in a 2 cubic centimeter coupler and picks up and amplifies the sine wave signal in the chamber which is then converted from a linear sine wave signal to a logarithmic signal to a digital type signal indicative of the gain of the hearing aid which is then displayed on Nixie tubes.

3,692,960

Patent Not Issued For This Number

3,692,961

**TELEPHONE CALL SIMULATOR**

Guy Jean Le Strat, Issy-Les-Moulineaux; Rene Francois, Lannion, and Pierre-Louis Joseph Satie, Perros Guirec, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

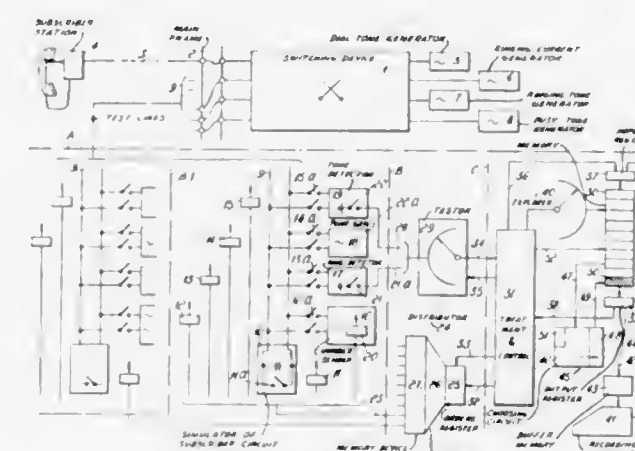
Filed Oct. 23, 1970, Ser. No. 83,404

Claims priority, application France, Nov. 26, 1969, 6940720

Int. Cl. H04m 3/24

U.S. Cl. 179—175.2 R

12 Claims



Equipment is provided for the simulation of telephone calls on special test lines connected to a telephone exchange in order to check the proper routing of calls by the exchange under test. Operations are simulated and checked by connecting special test circuits to the test lines. Working characteristics of each test line are stored in a memory unit. A small computer processes all these memory units through fast exploration cycles and simultaneously a distributor-device controls operations of each test circuit on its associated test line and a testing device records corresponding signals in the exchange.

3,692,962

**SIMULTANEOUS CALL TELEPHONE EQUIPMENT TEST SYSTEM**

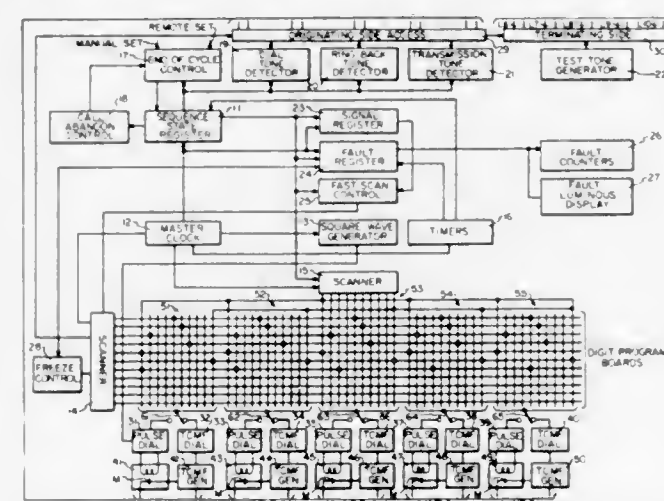
John R. Raczyński, and Mitch Silkaitis, both of Chicago, Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jan. 11, 1971, Ser. No. 105,506

Int. Cl. H04m 3/26, 1/42

U.S. Cl. 179—175.2 R

10 Claims



An automatic dialing test system is disclosed wherein electrical signals such as pulses or tones representing each of the digits of a call number are applied to a selected group of communication lines of a telephone system. The digits to be applied to each line are selected on a diode plug board program field. The manner of signaling, dial pulse or multi-frequency tone is selected by an enabling switch that connects the multi-frequency applying relays and a diode decoder or, a dial pulse

3,692,963

Patent Not Issued For This Number

3,692,964

**REMOTE-TESTING ARRANGEMENT FOR TWO-WAY TRANSMISSION CHANNEL OF PCM TELECOMMUNICATION SYSTEM**

Roberto Camiciottoli, and Maurizio Palombi, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni S.p.A., Milan, Italy

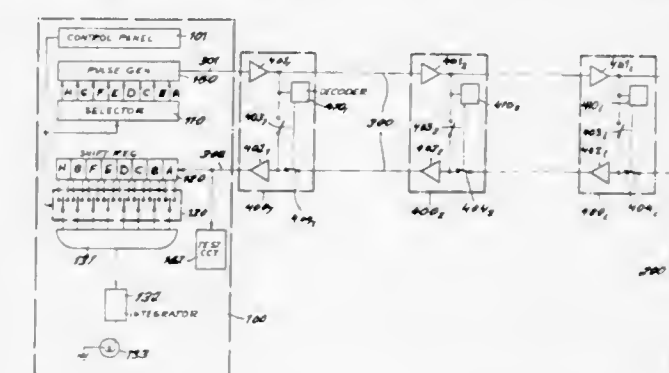
Filed Dec. 21, 1970, Ser. No. 99,855

Claims priority, application Italy, Dec. 24, 1969, 26303 A/69

Int. Cl. H04b 3/46

U.S. Cl. 179—175.31 R

9 Claims



To test several repeaters in a two-way transmission channel designed for pulse-code-modulation message signals, an identification code individual to a given repeater is sent out from a terminal station over one signal path and is picked up by a decoder at that repeater which, in response to several recurrences of the same code, closes a loop through the other signal path for feeding the code back to the originating station. The identification code is inserted four times in a binary sequence, sandwiched between guard codes of first-order and second-order periodicity to limit the possibility of accidental formation within the sequence of a code assigned to a different repeater.

3,692,965

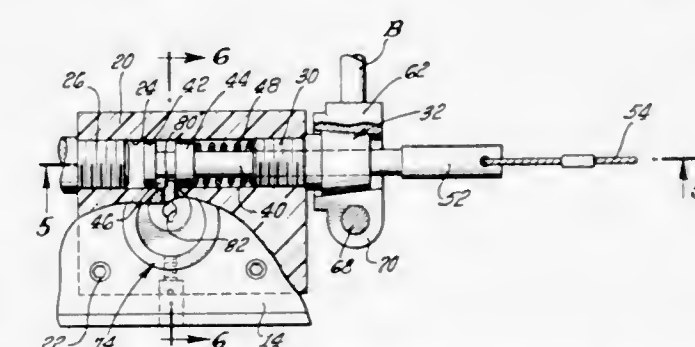
**ANTI-THEFT BATTERY DISCONNECT APPARATUS**  
Newell John Gardner, Brentwood Square, 11661 Vincente Blvd., Los Angeles, Calif.

Filed April 21, 1971, Ser. No. 135,881

Int. Cl. H01h 9/28

U.S. Cl. 200—44

10 Claims



An anti-theft battery disconnect apparatus for vehicles (e.g., automobiles, boats, and the like) permits quick and effective deenergization of the vehicle's electrical system. A conductor shaft which is electrically connected to one of the battery cables in the vehicle is normally spring-biased into



contact with a clamp on one of the battery terminal posts, thereby maintaining a continuous conductive path between the cable and the battery. Manually operable means are provided for selectively moving the conductor shaft out of contact with the battery clamp, against the spring bias, to interrupt the conductive path and de-energize the electrical system of the vehicle. A lock for preventing an unauthorized individual from reconnecting the cable to the battery and re-energizing the vehicle's electrical system includes a spring biased bolt which is automatically operable upon retraction of the conductor shaft to engage the shaft and maintain it out of contact with the battery clamp.

3,692,966

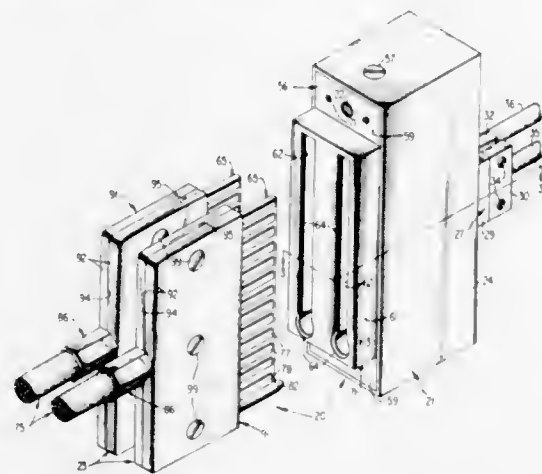
**MULTI-CIRCUIT PATCH PLUG AND JACK**

Jesse F. Lancaster, Great Fall, Va., assignor to The Cooke Engineering Company, Alexandria, Va.

Filed July 22, 1970, Ser. No. 57,050

Int. Cl. H01r 33/30

U.S. Cl. 200—51.1



A shielded multi-circuit, self normalizing, patch plug and jack for developing test boards or patch fields for testing, re-routing, and maintaining multi-circuit electrical systems and substituting equipment in circuits in event of circuit or equipment failure by connecting various multi-lead electrical components of the system, particularly television and like communication systems by circuit patching. Substitution of components can be effected by connection in series with the system or in other commonly known circuitry patterns such as double series, double parallel, normal through, looping, holding loop, or set jack arrangements. The jack provides multiple paired movable contacts spanning respective slot-like plug sockets to engage stationary intermediate stationary contacts and provide a normal through connection of the multiple circuits between a transmitter and receiver. Respective plugs are provided for each socket and comprise multi-circuit cables terminated within the plug in a printed circuit board composed of an elongated generally rectangular body of insulating material the opposite faces of which are provided with respective paired and interconnected strip-like contacts.

3,692,967

**HIGH-FREQUENCY HEATING APPARATUS HAVING ELECTROMAGNETIC WAVE AGITATING DEVICE**

Tetsuo Hashimura, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, a. k. a. Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Kanagawa-ken, Japan

Filed Oct. 6, 1970, Ser. No. 78,357

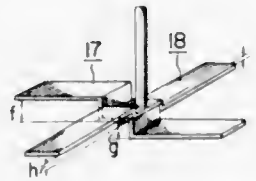
Int. Cl. H05b 9/06

U.S. Cl. 219—10.55

7 Claims

An agitation device for high-frequency electromagnetic waves in a high-frequency oven has at least one pair of planar rotary blades of metal extending in radially opposite directions from a hub part and fabricated, together with the hub part, from a single strip of sheet metal into a staggered or stepped

shape in which the blades respectively lie in mutually different offset planes and present minimum profiles with respect to air resistance during rotation, the blades thereby rotating through



mutually different paths and imparting effective field agitation to prevent occurrence of a high-frequency standing wave and to render uniform the distributive state of the high-frequency waves applied to the oven interior.

3,692,968

**ELECTRONIC OVEN**

Yoshio Yasuoka, Moriguchi, Japan, assignor to Sanyo Electric Co., Ltd.

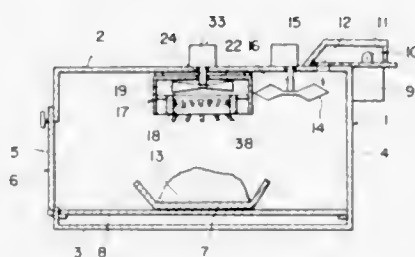
Filed Feb. 22, 1971, Ser. No. 117,304

Claims priority, application Japan, April 6, 1970, 45/20685; April 6, 1970, 45/20686

Int. Cl. H05b 9/06

U.S. Cl. 219—10.55

15 Claims



An electronic oven comprising an oven-defining structure equipped with means for effecting the browning action on an object to be heated, said browning means including means for creating a forced circulation of air and a heating assembly, whereby hot air of relatively high temperature can advantageously be directed toward the object so that the browning or scorching action can be performed in a short time as rapidly as the object can be heated solely by the application of high frequency energy.

3,692,969

**PIVOTALLY MOVABLE SLAB HEATING UNIT**

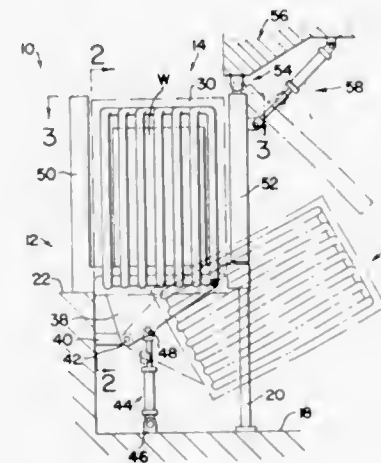
Robert Jerry Kasper, Seven Hills, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed May 5, 1971, Ser. No. 140,546

Int. Cl. H05b 5/00, 9/06

U.S. Cl. 219—10.57

14 Claims



Apparatus is disclosed for inductively heating a large metal ingot having a length dimension which is greater than the

greatest cross-sectional dimension thereof. The apparatus includes support means for an ingot to be heated, and induction heating coil means which surrounds an ingot on the support means. The coil means is pivotally supported relative to the support means for movement between first and second positions relative to the support means. In one of the coil positions the support means is exposed for the removal or placement of an ingot thereon, and in the other of the coil positions the support means and ingot are surrounded by the coil means. Wall means may be provided at opposite ends of the coil means to define therewith and with the support means an enclosure for heating an ingot.

3,692,970

**ELECTRIC RESISTANCE WELDING MACHINES**

Hans Gott; Klaus Ritter, and Josef Ritter, all of Graz, Austria, assignors to Evg. Entwicklungen U. Verwertungsgesellschaft m.b.H., Graz, Austria

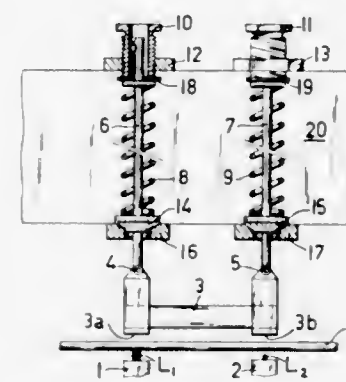
Filed March 22, 1971, Ser. No. 126,828

Claims priority, application Austria, March 25, 1970, 2801

Int. Cl. B23k 11/00

U.S. Cl. 219—56

5 Claims



An electric resistance welding machine has several pairs of active electrodes below the work piece, such as mesh, being welded. Above the work piece a current bridge is provided for each pair of active electrodes, the current bridge being lowered in use so that the work piece is gripped at welding points between the active electrodes and the bridge, the welding current flowing from one active electrode, through the work piece at one welding point, across the current bridge, through the work piece of the other welding point, and back to the other of the pair of active electrodes.

The current bridge is pivoted near its two ends on the ends of guided thrust rods which are spring loaded with independent adjustment of the two spring loads, each thrust rod having fixed near one end a spring support which seats in a seating and is accurately located when in contact therewith, the other end of each thrust rod being loosely guided so that the bridge during its work piece engaging movement can perform a limited deflection having both rotary and translational components.

3,692,971

**METHOD AND APPARATUS FOR OVERLAYING WELD METAL WHICH PREVENTS THE EMISSION OF NOXIOUS GASES THEREFROM**

Glenn E. Kniepkamp, Allegheny, Pa., assignor to United States Steel Corporation

Filed March 25, 1971, Ser. No. 127,903

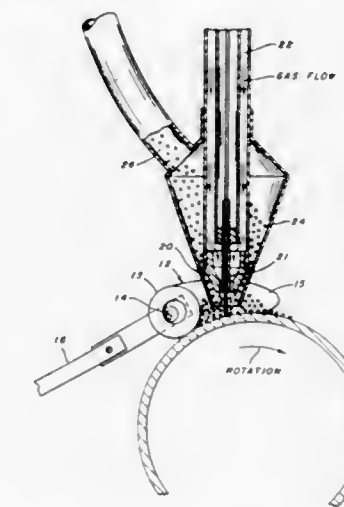
Int. Cl. B23k

U.S. Cl. 219—73

10 Claims

An inert-gas-shielded submerged arc welding process which

prevents emission of noxious gases when overlaying aluminum bronze on a steel base.



Apparatus is also disclosed for confining granular flux in the proximity of a welding torch when making an overlay on a cylindrical surface.

3,692,972

**AUTOMATIC ROTARY WELDING UNIT**

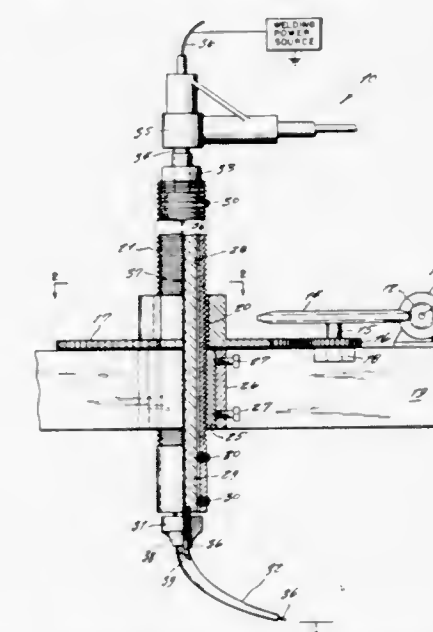
Lloyd D. Morton, 241 W. Anoyo, Ajo, Ariz.

Filed March 10, 1971, Ser. No. 122,945

Int. Cl. B23k 9/04

U.S. Cl. 219—76

1 Claim



A welding unit for building up the inside of vertical holes that must be subsequently reamed, the device comprising a mechanism utilizing a semi automatic welding machine and which includes means to fasten the end of a feeder cable and nozzle to the top of a rotary ground clamp having a one eighth inch hole drilled through the center thereof for a wire to feed therethrough and which passes through the feeder cable mounted on a inside of a threaded shaft and then out of a nozzle.

3,692,973

**ARC WELDING**

Takeshi Oku, Suita; Kazushige Hirasawa, Ikeda, and Yoshimitsu Matsumoto, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 1, 1970, Ser. No. 68,747

Claims priority, application Japan, Sept. 4, 1969, 44/71519

Int. Cl. B23k 9/00

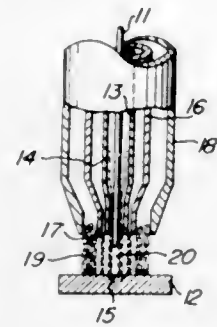
U.S. Cl. 219—121 P

14 Claims

According to the invention, there is provided a method for arc welding, wherein a plasma arch having a high arc energy



density may be obtained without using any solid member directly restraining the flaring of the arc but by effectively



utilizing two or more concentric gas streams ejected from the torch nozzle for focusing the arc.

3,692,974

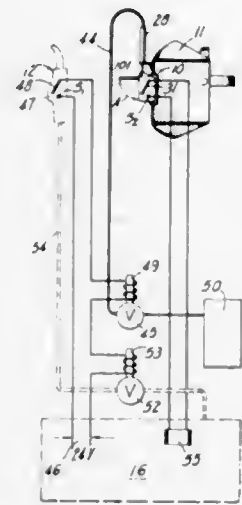
### AUTOMATIC WELDING HOOD WITH AUTOMATICALLY POSITIONED EYE SHIELD

James P. Thomason, Jasper, Ga., and Thomas Harold Jennings, 2640 Whitehurst Dr., Marietta, Ga.  
Filed Oct. 26, 1970, Ser. No. 83,758

Int. Cl. B23k 9/10, 9/32

U.S. Cl. 219-147

1 Claim



A welding hood having an electromechanical system for automatically opening and closing a hinged eye shield located thereon and for controlling energization of the welding gun at the beginning or end of a welding operation. On starting the welding process, a manually operated switch actuates a first solenoid valve which stops the flow of fluid to a piston connected to the eye shield, thereby allowing a spring providing an opposing force to move the eye shield to its protective position in front of the welding operator's eyes. The switch also actuates a second solenoid valve which allows an inert gas to flow through the welding gun. As the eye shield assumes its protective closed position, a microswitch is actuated along with a relay coil, completing a circuit allowing the welding gun to energize. Upon completion of the welding process, the eye shield automatically retracts so that the operator may view his work.

3,692,975

### FOOD PREPARING SYSTEM FOR PASSENGER CARRYING CONVEYANCES

Joseph Markus, 51 Ash Lane, Hicksville, N.Y.; James H. Rowe, 129 Greenway West, New Hyde Park, N.Y.; Kenneth L. Dew, 30-26 Grunstra Place, Fairlawn, N.J., and Edward J. Mystowski, 363 Howard St., Westwood, N.J.  
Filed March 26, 1971, Ser. No. 128,317

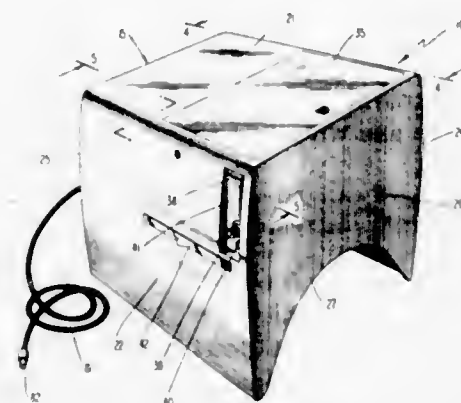
Int. Cl. B60 1/08

U.S. Cl. 219-202

6 Claims

A food preparing system incorporated into an automobile for use in connection with food products of the type designed

to be prepared by heating in a conventional household toaster. The system includes a console which containing a toaster and a food storage unit and is positioned adjacent the instrument



panel of the automobile over its transmission and drive shaft hump, and a regulated electrical generating system driven by the automobile's engine and integrated into the conventional electrical system thereof.

3,692,976

### ELECTRICAL DEVICE FOR LIGHTING CIGARS AND CIGARETTES

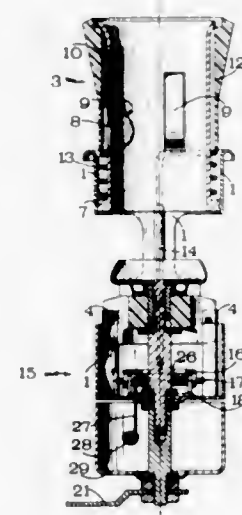
Luigi Pramaggiore, Corso Battaglione, Aosta 14, Italy  
Filed Feb. 3, 1971, Ser. No. 112,176

Claims priority, application Italy, Nov. 13, 1970, 70783 A/70

Int. Cl. F23g 7/00

U.S. Cl. 219-264

12 Claims



An electrical device for lighting cigars and cigarettes, particularly for mounting on the dashboard of motor vehicles, comprising a cylindrical casing, an electrical heating resistance mounted within the casing so as to be engaged by a cigarette or cigar when the latter is introduced into the casing to light it, switch means permitting the feeding of electric current to the heating resistance to make it red-hot, means for mounting the switch means within the casing, said switch means ensuring the automatic interruption of the feed circuit of the electric heating resistance when the cigarette or cigar has been lit, means for giving an audible indication of such interruption of the feed circuit, and an exchangeable holder at one end of the cylindrical casing for holding the cigar or cigarette to be lit.

3,692,977

### COMPACT COMBINATION INFRA-RED HEATING AND VENTILATING UNIT

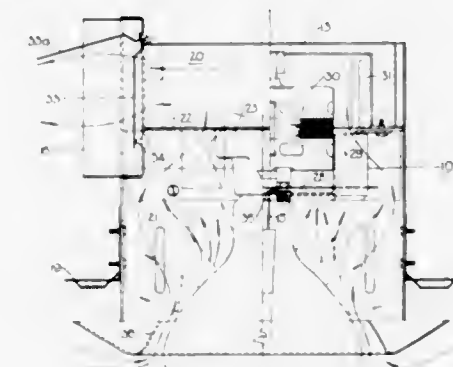
Ronald E. Duhamel, Middletown, and James E. Hutten, Mason, both of Ohio, assignors to Panacorn Corporation, Cincinnati, Ohio

Filed Dec. 23, 1970, Ser. No. 100,868

Int. Cl. F24h 9/02; H05b

U.S. Cl. 219-343

6 Claims



A compact, combination infra-red heating and ventilating unit for bathrooms and the like. The unit is divided into an upper compartment containing all the electrical components, and a lower compartment containing the infra-red lamps. The bulk-head dividing the said compartments is provided with an aperture for the flow of air to the ventilating fan in the upper compartment, and the aperture is shielded from back radiation from the infra-red lamps. The interior of the lower compartment and the shields are provided with heat reflective surfaces. A cover plate is provided which has apertures larger than the outside diameter of the lamps to provide for air flow, and the apertures in the cover plate have contoured edges to reflect peripheral radiation into the room. The upper compartment contains a motor and fan and all the electrical wiring, and is adapted to be connected to a duct for venting to atmosphere. A gravity actuated damper is arranged in the vent opening such that when the fan is not operating, it still permits passage of hot air by convection.

3,692,978

Patent Not Issued For This Number

3,692,979

### ELECTRIC COOKER CONTROL

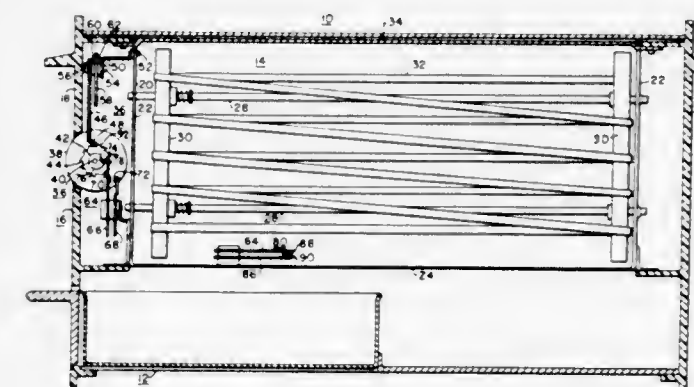
Robert A. Wise, Edison, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 24, 1970, Ser. No. 92,383

Int. Cl. H05b 1/02

U.S. Cl. 219-493

2 Claims



The invention defines a control mechanism for a cooking device that is capable of turning the cooking device off after a

selectively variable time has elapsed. The control mechanism utilizes a ratchet wheel operated by a bimetal element which heats up and cools down as the cooking device cycles as determined by a main heater thermostat. The variable cooking time is arrived at by manual manipulation of a dial which presets the ratchet wheel for a desirable number of cycles of operation by the bimetallic element.

3,692,980

### COUNTER FOR VARIABLE SIZE AND SHAPE OBJECTS

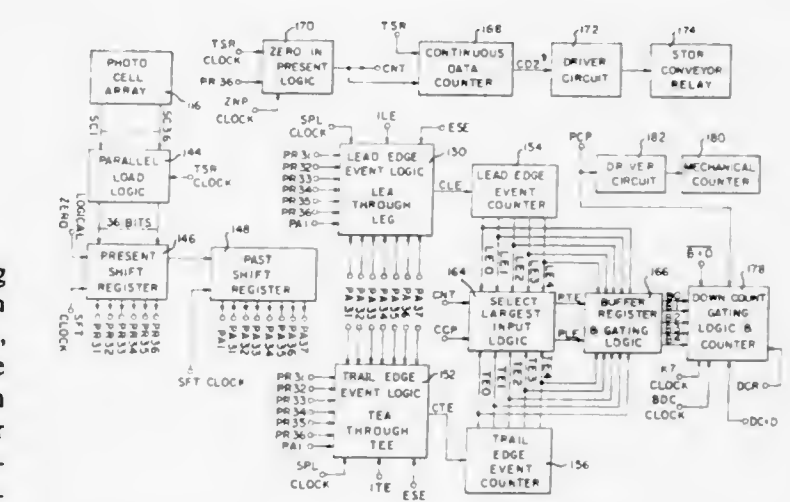
James A. Getker, Kettering, and Horace W. Weeks, Bellbrook, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Feb. 25, 1971, Ser. No. 118,817

Int. Cl. G06m 7/00

U.S. Cl. 235-92 PK

5 Claims



A counter for counting objects (like parcels) passing over a conveyor belt. A plurality of belt-type conveyors is used to spread the parcels and to deliver them to a sampling line which includes a plurality of photoelectric cells over which the parcels are moved by a conveyor belt. As the parcels pass over the cells, light directed at the cells is blocked by the parcels to provide a sampling pattern of blocked and unblocked cells. Logic circuits successively compare each periodic sampling pattern with prior sampling pattern according to a predetermined set of logic equations so as to detect the "lead edges" of the parcels and their "trail edges" as they pass over the sampling line. Each periodic sampling pattern is loaded into a Present Shift Register, from which it is transferred to a Past Shift Register to become the "prior sampling pattern", which is compared with the "current" sampling pattern present in the Present Shift Register. Counters are used to count the "Lead Edge Events" and the "Trail Edge Events" defined by the logic equations, and the larger of the two counts (if the counts are not equal) is selected as the more accurate count of the parcels on the conveyor. A parcel may cross the sampling line at any position thereon to be counted, and parcels in contacting juxtaposition may also be counted.

3,692,981

### CARD READER

Michael C. Poylo, New York, N.Y., and Karel J. Stalker, Rutherford, N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Nov. 12, 1970, Ser. No. 88,898

Int. Cl. G051 7/08

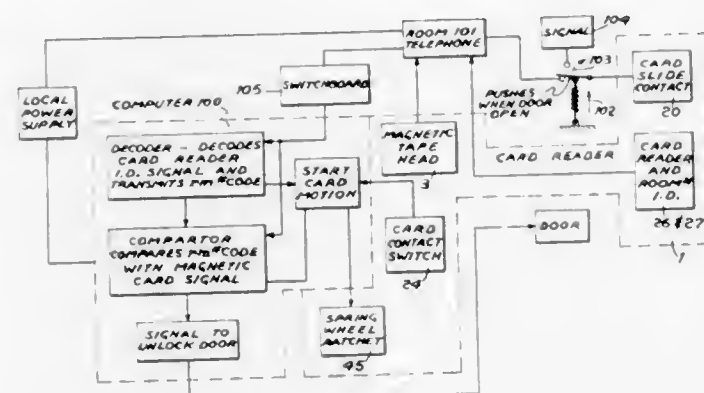
U.S. Cl. 235-61.11 D

6 Claims

A magnetic card reader including a frame having a pair of channels formed therein, and a slide extending partially across the width of the frame mounted in said channels, said slide being connected by wires at its extreme ends to a spring driven rotary unidirectional clutch which urges said slide means in a direction away from said unidirectional clutch. A magnetically controlled ratchet, contacting gears on said rotary clutch con-



controls the rotation thereof, thereby controlling the movement of said slide away from said clutch. The reader includes a card



threshold level in accordance with the quality of the signal levels employed for recognition.

3,692,984

Patent Not Issued For This Number

receiving tray which is mounted adjacent said slide and is moved thereby, thereby providing movement of a card past a magnetic tape head.

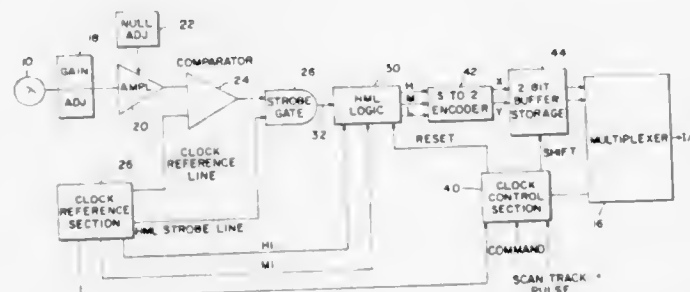
3,692,982

## DIGITALLY CONVERTED ANALOG DISCRIMINATION SYSTEM

John V. McMillin, P.O. Box 30, Iowa City, Iowa  
Filed Jan. 4, 1971, Ser. No. 103,417  
Int. Cl. G06k 7/14

U.S. Cl. 235-61.11 E

3 Claims



A system for converting an analog light intensity signal from a photo sensor into a four level digital code. The system is used in connection with document scanners which have multiple response channels, each channel providing an analog signal which is then compared to various predetermined reference levels. The digital response produced from each such comparison is stored and the highest level produced during a predetermined cycle is gated out in a digital code. The outputs thus produced from all the channels are then multiplexed onto computer interface lines. The system thus provides for discrimination and selection of predetermined signal levels produced by the multiple channels.

3,692,983

## AUTOMATIC THRESHOLD CONTROL CIRCUIT FOR OPTICAL CARD READERS AND SORTERS

Carlo Cuccati, and Pietro Buttafava, both of Milan, Italy, assignors to Honeywell Information Systems Italia, Milan, Italy

Filed July 12, 1971, Ser. No. 161,582

Claims priority, application Italy, July 14, 1970, 27389 A/70

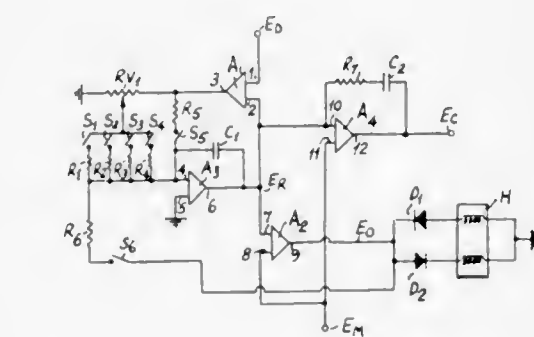
Int. Cl. G06k 7/14

U.S. Cl. 235-61.11 E

7 Claims

A punched card optical reader wherein the presence of a hole is determined by the recognition of a signal level greater than a threshold level and the absence of a hole is determined

A process control method comprises the steps of generating a first electrical signal representing a measured value of a



The rapid and accurate counting of articles positioned in closely spaced relationship on a support is disclosed. The technique is implemented with the use of a movable detector head employing a linear array of optical fibers, the detector head being designed to provide a low friction sliding contact with the articles to be counted.

3,692,986

## PROCESS CONTROL METHOD AND APPARATUS FOR REGULATING TEMPERATURE

Robert Nienstaedt, Skensved, Denmark, and James William Bunting, Leamington Spa, England, assignors to Courtauld's Engineering Limited

Filed Jan. 5, 1971, Ser. No. 104,112

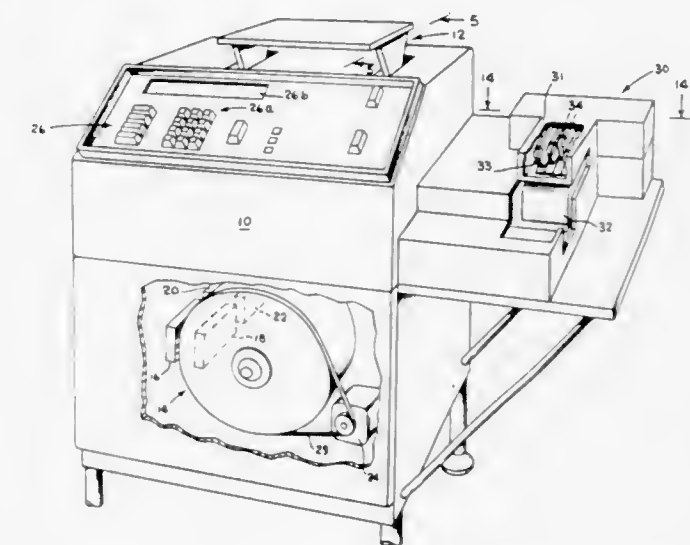
Int. Cl. G05d 23/00

U.S. Cl. 235-151.1

15 Claims

process variable, generating a second electrical signal representing a desired value of said process variable, generating a third electrical signal, which changes at a prechosen rate corresponding to a desired rate of change of said measured value of said process variable, comparing said second electrical signal with said third electrical signal to generate a fourth electrical signal, applying said fourth electrical signal to cause said third electrical signal to tend towards equality with said second electrical signal, and comparing said first electrical signal with said third electrical signal to produce a process control signal therefrom. Apparatus for carrying out the method is also described as well as the application of the method to the control of the temperature of dye bath liquor.

to issue a stamp imprinted with the appropriate parcel postage. A zip code to zone conversion memory is incor-



3,692,987

## METHODS AND APPARATUS FOR ALLOCATING THE MEASURED NOISE AND RESISTANCE OF A THIN-FILM RESISTOR BETWEEN THE RESISTOR PROPER AND THE CONTACT PADS THEREFOR

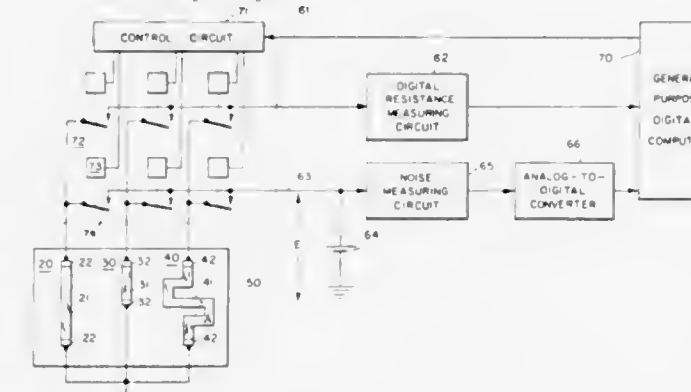
Laurence William Bos, West Windsor Township, Mercer County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed July 6, 1970, Ser. No. 52,568

Int. Cl. G06f 15/20; G01r 27/00

U.S. Cl. 235-151.31

9 Claims



Three similar thin-film devices are fabricated in proximate relation on an insulating substrate. Each resistor has conductive contact pads fabricated thereon. The three devices may have different electrical resistances, but congruent areas underlying the contact pads are maintained for all three devices. Noise measurements and computer calculations on all three devices permit allocation of these parameters between the thin-film proper and the interfaces between the thin films and the conductive contact pads.

porated to provide the appropriate zone entry into the postage rate memory, given the zip code of the parcel destination.

3,692,989

## COMPUTER DIAGNOSTIC WITH INHERENT FAIL-SAFETY

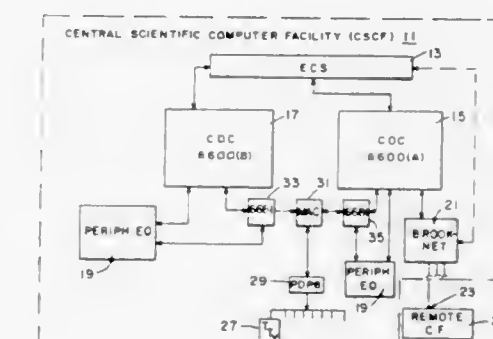
Anatoly I. Kandiew, Wantagh, N.Y., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 14, 1970, Ser. No. 80,651

Int. Cl. G06f 11/00

U.S. Cl. 235-153

10 Claims



Time-saving, effective and efficient diagnostic means and method for the Brooknet shared time computer system for fail-safe operation on a regular job priority basis while the computer system is operating to handle other jobs and without dedicating the entire computer system to the diagnostic function.

3,692,988

## PARCEL POSTAGE METERING SYSTEM

Daniel F. Dlugos, Huntington; Gerald C. Freeman, Norwalk, and Peter N. Plotroski, Stamford, all of Conn., assignors to Pitney-Bowes Inc., Stamford, Conn.

Filed Jan. 18, 1971, Ser. No. 107,223

Int. Cl. G06f 15/20; G01g 19/413

U.S. Cl. 235-151.33

23 Claims

A parcel postage metering system comprises a scale for providing a parcel weight reading which is used in conjunction with the parcel destination (postal zone) to enter a postage memory and obtain the appropriate postage. The thus obtained postage controls apparatus for setting a postage meter

3,692,990

## DECIMAL POINT PROCESSING SYSTEM DEALING WITH OVERFLOW

Noriyuki Kurokawa, and Hiroshi Minami, both of Funabashi, Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed May 21, 1970, Ser. No. 39,244

Claims priority, application Japan, May 23, 1969, 44/39594

Int. Cl. G06f 7/38

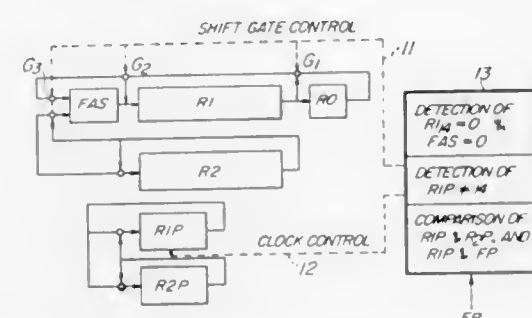
U.S. Cl. 235-159

10 Claims

A decimal point processing system in a calculator capable of arbitrarily setting the decimal point position for the result of



an operation within the range of digit indication positions given, and also of indicating, with priority, figures of the above



$n$  positions ( $n$  being the number of indication positions) being indicated.

3,692,991

**FLASH UNIT WITH INDEXIBLE SOCKET**

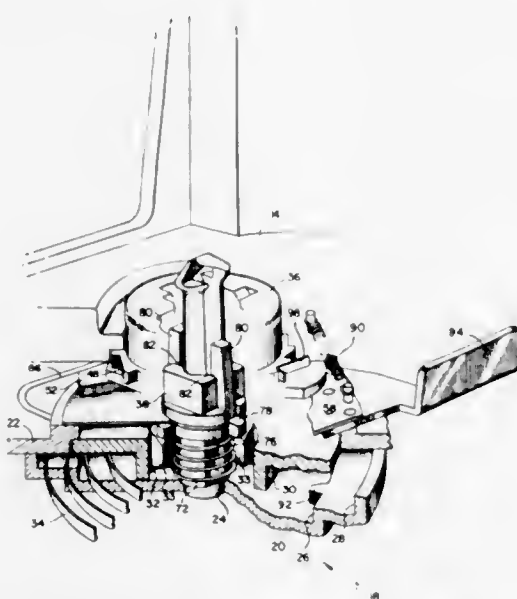
John B. Morse, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 24, 1970, Ser. No. 101,337

Int. Cl. G03b 15/03

U.S. Cl. 240—1.3

37 Claims



The subject invention provides a flash unit whose housing accommodates an indexable socket for releasably receiving and retaining a Flashcube or the like. The socket is indexable within the housing to place the individual flash lamps into an optimum position for the illumination of a subject. The indexing mechanism is manually actuated and is so designed that an indication will be provided after the first fired flash lamp has been placed at its initial index position and means are provided for preventing further indexing of the Flashcube. Additionally, the flash unit is self-contained and incorporates its own power supply.

3,692,992

**LAMP AND SWITCH ASSEMBLY FOR THE REAR COMPARTMENT OF A MOTOR VEHICLE**

Douglas G. Bain, Rochester, and James J. Hartmeyer, St. Clair Shores, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 19, 1970, Ser. No. 81,807

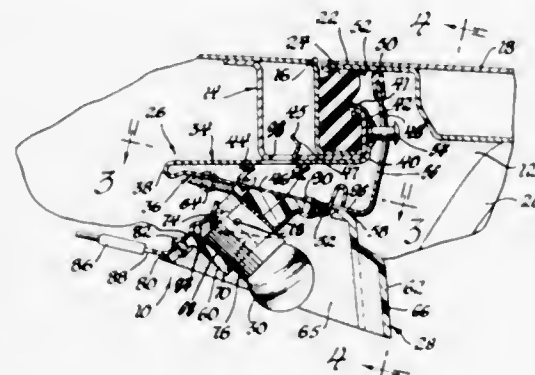
Int. Cl. F21v 33/00

U.S. Cl. 240—2

3 Claims

A lamp and switch assembly for the rear compartment of a motor vehicle wherein a one piece electrically conductive mounting and switching bracket includes a pair of juxtaposed L-shaped sections interconnected by an integral stress loop, one of the sections being snapped onto the compartment

periphery in grounding relationship therewith and the other section engaging the compartment lid and being pivotable with respect to the fixed section by elastic yielding and stressing of the loop. A lamp housing including a lamp bulb is mounted on the pivoting section and carries a grounding con-



3,692,993

**LIGHTING FIXTURE UNIT**

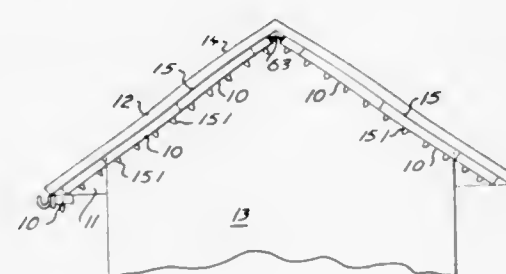
Samuel H. Robinson, Edmonton, Alberta, Canada, assignor to Samro Holdings Ltd., Edmonton, Alberta, Canada

Filed Oct. 12, 1970, Ser. No. 79,814

Int. Cl. F21p 1/02

U.S. Cl. 240—10

7 Claims



A lighting fixture unit having a housing adapted to be mounted on a building or similar structure, the housing having an opening in a wall on which a door is mounted for movement between open and closed positions. Electric lights are carried in a holder which is swingable in the housing for moving the lights between a hidden portion in the housing and an exposed position extending through the opening.

3,692,994

**FLASH TUBE HOLDER ASSEMBLY**

Howard I. Hirschman, and James C. Evers, Maplewood, both of N.J., assignors to Pitney Bowes-Sage, Inc., Hawthorne, N.J.

Filed April 14, 1971, Ser. No. 134,006

Int. Cl. H01r 33/08

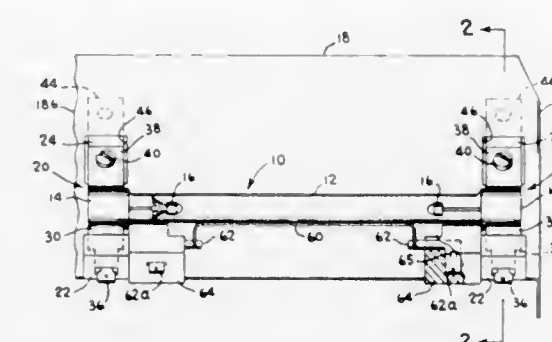
U.S. Cl. 240—11.4 R

11 Claims

A flash tube holder assembly includes a reflector for mounting two sets of spaced terminal blocks; one set mounts resilient contact strips to electrically engage and physically hold the terminal ends of a flash tube, while the other set mounts the ends of a trigger wire in longitudinally extending, contiguous

relation to the tube. Each tube terminal block is formed of two sections interconnected by its resilient contact strip, which

has its own firing mechanism associated therein in the form of a wire torsional spring.



3,692,995

**ARRANGEMENT FOR PROVIDING A SERIES OF ILLUMINATIONS**

Karl Wagner, Ottobrunn, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

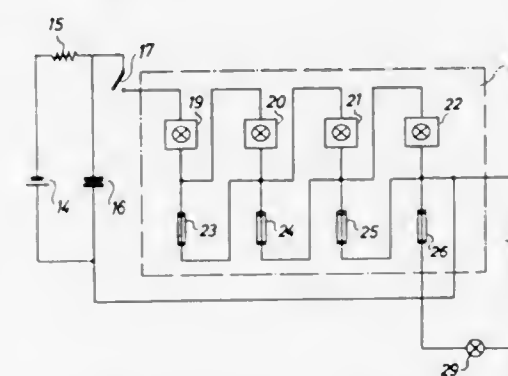
Filed Oct. 12, 1970, Ser. No. 79,813

Claims priority, application Germany, Oct. 16, 1969, P 19 52 049.1

Int. Cl. G03b 15/02

U.S. Cl. 240—1.3

10 Claims



Each photoflash bulb, having a high internal resistance before use and a low internal resistance after use, is connected in series with a respective fuse, succeeding photoflash bulbs being connected in parallel with the fuse of the preceding photoflash bulb, or succeeding photoflash bulbs and fuse being connected in parallel with the fuse of the preceding photoflash bulb.

A darkfield type illumination apparatus for performing slide agglutination tests or the like. The apparatus comprises an elongated casing having an opening therein over which a transparent slide carrying the material to be illuminated is positioned. In the preferred form of the apparatus, a non-reflective surface is provided in the casing below the opening. An elongated light source is positioned below such surface. A pair of angularly bent elongated light conducting members are positioned on opposite sides of the casing with one end of the members located adjacent to the light source and the other end extending upwardly at an angle toward the opening so that rays of light transmitted through the members intersect near the opening to obliquely illuminate the material on the slide. Other configurations of the apparatus are also disclosed.

3,692,998

**VEHICLE MARKER LIGHT**

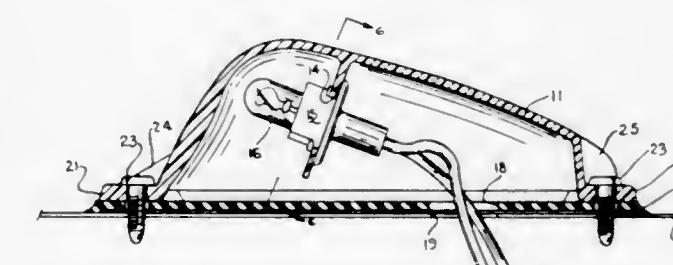
John F. Adams, 310 Audubon Rd., Fayetteville, N.Y., and Ernest R. Steltzer, Pendergast Rd., Lysander, N.Y.

Filed Jan. 6, 1971, Ser. No. 104,254

Int. Cl. B60q 1/32

U.S. Cl. 240—8.2

1 Claim



A baseless vehicle marker light comprises a cupped, molded, transparent lens having an integral, transversely-extending flange to which a conventional bayonet-type lamp socket is secured and resilient mounting pad, the lens being adapted to be secured directly to the vehicle body.

3,692,996

**PHOTOGRAPHIC FLASHLAMP UNIT**

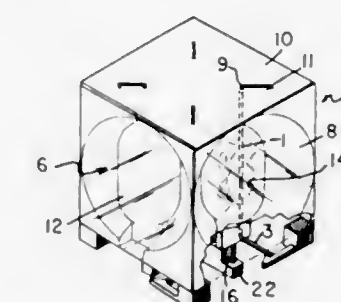
John W. Shaffer, and Sedgwick R. Bennett, both of Williamsport, Pa., assignors to Sylvania Electric Products Inc.

Filed Nov. 4, 1968, Ser. No. 773,178

Int. Cl. G03b 15/02

U.S. Cl. 240—1.3

4 Claims



A flashcube with self-contained members for firing percussive-type lamps disposed therein. Each lamp in the flashcube



3,692,999

## POCKET FLASH LIGHT

Reinhard Napierski, Oberursel, and Claus Christian Cobarg, Steinbach, both of Germany, assignors to A.G. Braun, Frankfurt am Main, Germany

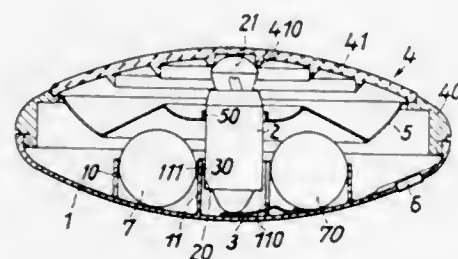
Filed Dec. 10, 1970, Ser. No. 96,764

Claims priority, application Luxembourg, Dec. 19, 1969, 60,055

Int. Cl. F21H 7/00

U.S. Cl. 240—10.65

10 Claims



A pocket flash light having a movable casing, a cover glass forming a part thereof and a bulb. Two part receiving means including a socket, one part secured to the casing so as to secure the bulb base, while the other part forms a collar to engage the head of the bulb and is second to the cover.

3,693,000

## LIGHT PROJECTORS

Claude Andre Picard, Paris, France, assignor to Tissmetal, Lyon, Rhone, France

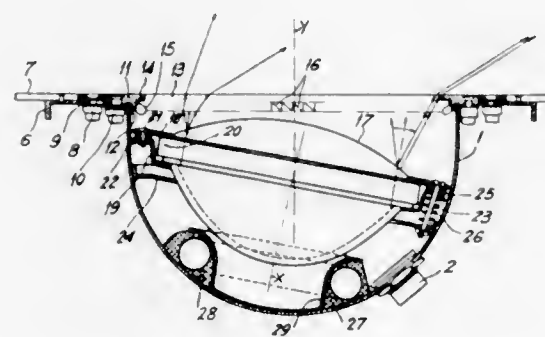
Filed Dec. 3, 1971, Ser. No. 204,561

Claims priority, application France, Dec. 7, 1970, 7043859

Int. Cl. F21V 7/00

U.S. Cl. 240—41.6

6 Claims



A light projector which projects a beam of light inclined to the projector axis, comprising a hemispherical base containing an angularly adjustable lamp unit, and a glass with prismatic ridges which further deflects the inclined beam from the lamp unit.

3,693,001

## APPARATUS FOR MOUNTING LAMP SHADES ON HANGING LAMPS

John B. Rogers, The Lamp Shop, Brookfield Center, Conn.

Filed April 1, 1971, Ser. No. 130,347

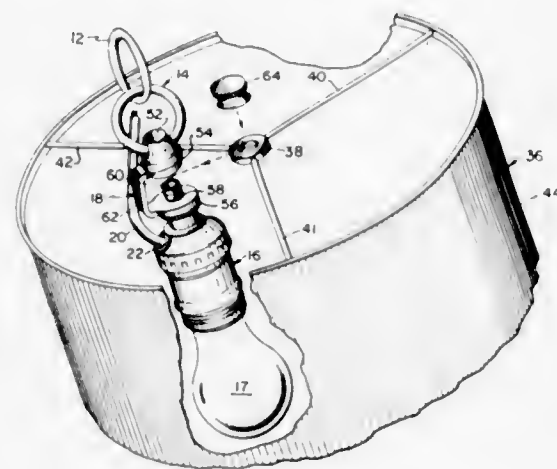
Int. Cl. F21V 17/06

U.S. Cl. 240—128

5 Claims

A C-shaped member interposed between the terminal link

of a chain in a hanging lamp and an electric socket embraces a hub mounting zone. The threaded mounting stud of the socket



protrudes into the zone to receive the apertured mounting hub of a standard lamp shade.

3,693,002

## COAXIAL HIGH DENSITY, HYPERVELOCITY PLASMA GENERATOR AND ACCELERATOR WITH IONIZABLE METAL DISC

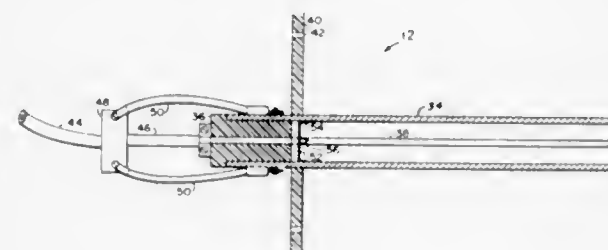
Patrick N. Espy, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 31, 1970, Ser. No. 103,077

Int. Cl. H05H 1/100

U.S. Cl. 313—231

2 Claims



A coaxial, high density, hypervelocity plasma generating and accelerating device having a tubular outer electrode and a rod-like central electrode. A foil disc mounted over the central electrode extends radially outward to the outer electrode so as to bridge the electrode gap and form a shorting path therebetween. A capacitor bank is connected across the electrodes and it discharges through and ionizes the foil disc to produce a dense plasma or ionized particles. The plasma is accelerated by the electrical and magnetic fields set up when a potential is applied to the electrodes of the device.

3,693,003

## STORAGE TARGET FOR AN ELECTRON-BEAM ADDRESSED READ, WRITE AND ERASE MEMORY

Raymond A. Sigbee, and Ronald H. Wilson, both of Schenectady, N.Y., assignors to General Electric Company

Filed Nov. 19, 1970, Ser. No. 91,053

Int. Cl. G11C 7/00, 11/36; H01J 1/78

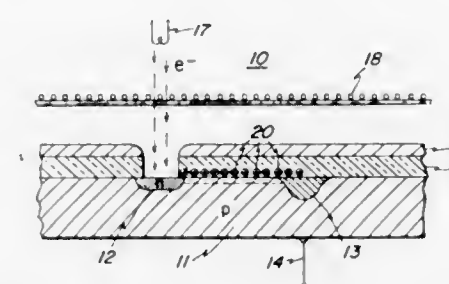
U.S. Cl. 313—68 R

10 Claims

A storage target for a read, write and erase memory is disclosed utilizing a semiconductor memory storage element.

The storage of information relies on charge storage to create or pinch off a conductive channel between an internal con-

ductively filled with a material which can be etched away by an acid. Those channels in the regions of the periphery are



ductive electrode and isolated diode junctions. An electron beam, irradiating each storage area, is used for reading, writing and erasing.

3,693,004

## REFLEX TYPE ELECTRON MULTIPLIER

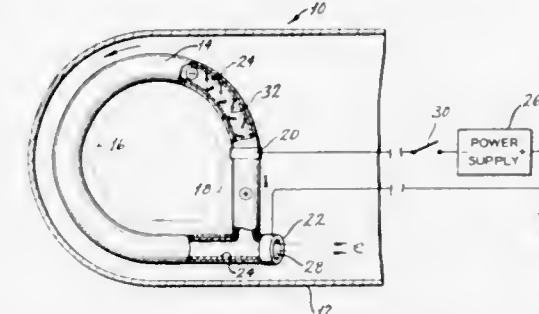
Emil E. Sanford, Montclair, N.J., assignor to Monsanto Company, St. Louis, Mo.

Filed July 1, 1970, Ser. No. 51,476

Int. Cl. H01J 43/00, 43/16

U.S. Cl. 313—103

1 Claim



Described herein is an electron generating device comprising a tubular member whose inner walls are covered with a resistive, secondary-electron emissive coating. One section of the tubular member is curved and extends between electrical contacts provided on the secondary-electron emissive coating. Another section of the tubular member is substantially straight. It too, extends between the electrical contacts, and forms, together with the curved section, a continuous, reflex-type particle path around the tubular member. An electron exit aperture is provided near one of the contacts and a D.C. power supply is connected to the contacts. Electrons are multiplied or amplified along the curved section of the tubular member and resulting positive ions are fed back along the straight section to liberate further electrons for amplification. Electrons egress through the exit aperture in a defined path. For enhanced electron beam generation, a tubular, toroidal-shaped embodiment of the invention is also described.

3,693,005

## SECONDARY-EMISSIVE ELECTRODE

Gerard Clement, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 16, 1971, Ser. No. 115,637

Claims priority, application France, April 6, 1970, 7012321

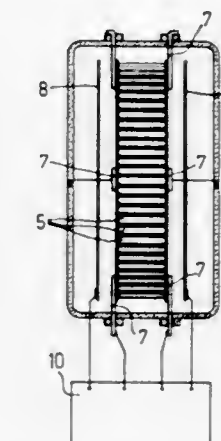
Int. Cl. H01J 43/02

U.S. Cl. 313—103

3 Claims

A secondary emissive electrode for image intensifiers, cathode-ray tubes and the like which comprises a plate of insulating material having two substantially parallel boundary surfaces on opposite sides thereof pierced by channels, the walls of which are secondary emissive, forming a high-density network of channels between two surfaces. The periphery of this plate has at least two regions one opposite the other relative to the center of the body with channels which are filled with a core material.

In the manufacture of such an electrode, all channels are in-



covered with a coating which is etch resistant, and the core material in the remaining channels etched away after which the coating is removed.

3,693,006

## LAMP EMPLOYING LUMINESCENT MANGANESE-ACTIVATED STRONTIUM BARIUM CHLORO-ALUMINATE PHOSPHOR COMPOSITIONS

Charles F. Chenot, Towanda, Pa., assignor to Sylvania Electric Products Inc.

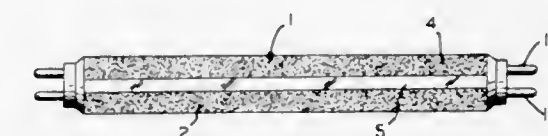
Division of Ser. No. 58,241, July 27, 1970, Pat. No. 3,649,550.

This application June 22, 1971, Ser. No. 155,508

Int. Cl. H01J 61/44

U.S. Cl. 313—109

5 Claims



Cerium sensitized, manganese-activated strontium barium chloro-aluminate phosphor compositions are disclosed wherein the formula for the phosphor can be characterized as follows:



wherein the sum of x and y is between 0.87 to about 0.95, z is between about 1.03 to about 1.16, u and w are each from about 0.005 to 0.05. A process for producing the phosphor composition is also disclosed wherein sources of strontium, barium, chloride, aluminate, manganese and cerous ions are uniformly admixed by blending and heated under controlled temperature conditions for a time sufficient to produce the luminescent phosphor composition. Additionally, an improved lamp utilizing a cerium-sensitized, manganese-activated strontium barium chloro-aluminate phosphor is disclosed.

3,693,007

## OXIDE CATHODE FOR AN ELECTRIC DISCHARGE DEVICE

Bela Kerekes, Budapest, Hungary, assignor to Egyesult Iz-zolampa es Villamosagi Reszveny-Tarsasag, Budapest, Hungary

Filed May 25, 1970, Ser. No. 39,991

Int. Cl. H01J 5/48

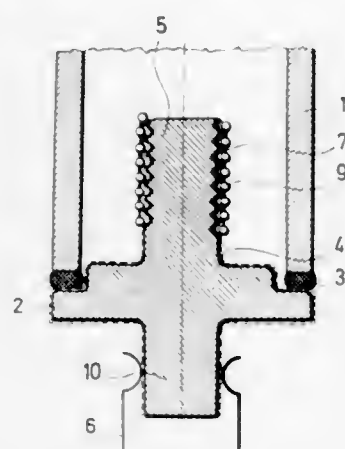
U.S. Cl. 313—318

3 Claims

Gas discharge device having a ceramic bulb or body at least one end of which carries a cathode comprising a closure member made of ceramic material, silica or glass, which is at least partly covered by at least one metallic layer, an electron emitting layer, formed by at least one alkaline earth metal oxide, being provided on the surface of at least a portion of the



metallic layer. The closure member is united with the bulb or body in a vacuum-tight manner so that a part thereof is inside the bulb or body, the metallic layer extending to that part of



the closure member which is inside the device, to that which is outside the body, the electron emitting layer being provided on at least a part of the metallic layer within the bulb or body.

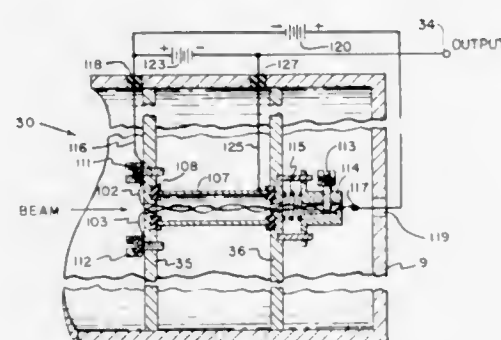
3,693,008

**MOLECULAR FREQUENCY STANDARD**

Helmut W. Hellwig, Oakhurst, N.J., assignor to The United States of America as represented by the Secretary of the Army

Division of Ser. No. 721,776, April 16, 1968, Pat. No. 3,578,968. This application March 17, 1970, Ser. No. 24,966  
Int. Cl. G01n 27/78; H01s 1/00  
U.S. Cl. 250—41.3

2 Claims



A molecular beam detector for a molecular beam tube frequency standard using a barium oxide molecule of the form  $Ba^{138}O^{16}$  having spinless atoms and using electrostatic state selection, which detector comprises a heated elongated member stretched along the axis of the beam tube and arranged to intercept beam particles over a focal region extending along the length of the said member. Ions are formed in the vicinity of the elongated member and are collected by electrode means maintained negative with respect to said member.

3,693,009

**IONIZATION SMOKE DETECTING DEVICE**

Koju Sasaki, Tokyo, Japan, assignor to Nittan Company Limited, Tokyo, Japan

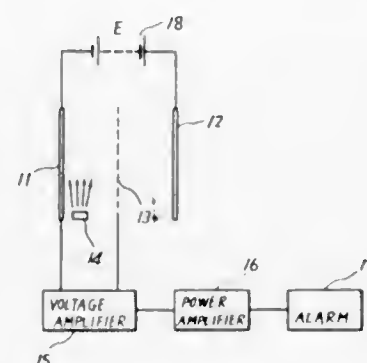
Continuation of Ser. No. 880,023, Nov. 26, 1969. This application April 13, 1971, Ser. No. 133,767  
Claims priority, application Japan, Dec. 24, 1968, 43/94181  
Int. Cl. G01n 23/12

U.S. Cl. 250—43.5 D

1 Claim

An ionization smoke detector having a single ionization chamber, a pair of spaced electrodes in said chamber, a grid

electrode between said spaced electrodes and a radioactive source within the chamber. A potential is applied between the



spaced electrodes and means are connected between one of the spaced electrodes and the grid electrode to detect potential changes in the grid produced by the presence of smoke.

3,693,010

Patent Not Issued For This Number

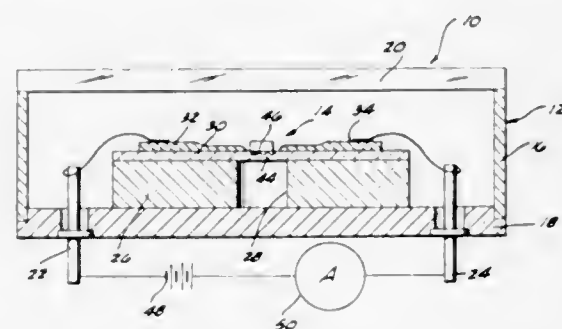
3,693,011

**ION IMPLANTED BOLOMETER**

Lloyd H. De Vaux, Malibu, and Stephen L. Kurtin, Pasadena, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 2, 1971, Ser. No. 111,917  
Int. Cl. G01j 5/10  
U.S. Cl. 250—83.3 H

11 Claims



The bolometer comprises an insulator material having sufficient metal ions implanted therein to provide a zone of electrical resistivity. Resistance of the implanted zone is a function of temperature, which temperature is a function of the intensity of incident electromagnetic radiation. Electrical connections are made thereto and a bias voltage can be applied so that current therethrough indicates temperature. The implanted bolometer can be a thin device for low thermal capacity, or can be part of or attached to a lens in an optical system.

3,693,012

**PASSIVE SOURCE OF SECONDARY RADIATION WITH A SOURCE-SHIELD GRID**

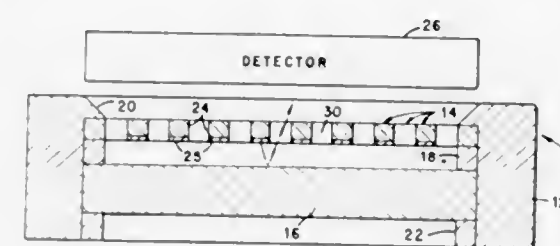
Robert W. Schmieder, Walnut Creek, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 22, 1971, Ser. No. 108,827  
Int. Cl. G21h 5/00; G21f 5/02  
U.S. Cl. 250—106 S

6 Claims

A secondary radiation source including a source-shield grid comprised of a thin layer of radioactive source material coated on one side of a grid of radioactivity shielding material, and a sample positioned facing the radioactive material. A radiation detector is positioned facing the shielding material. Radiation from the source material is unimpeded in the direction of the sample but is blocked from the detector by the

shielding material. Radiation from the source material strikes the sample and excites it to emit secondary radiation charac-



teristic of the sample. Open spaces in the grid provide a relatively unimpeded path from the sample to the detector.

3,693,013

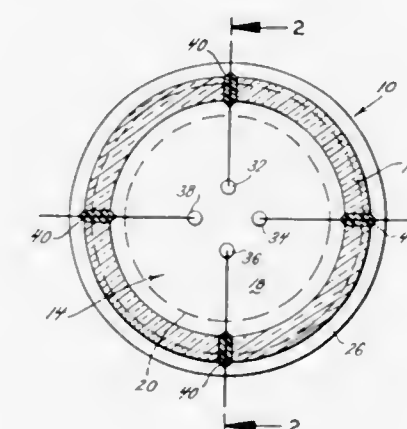
**VIDEO TRACKING, LATERAL PHOTOEFFECT SEEKING ELECTRO-OPTIC DETECTOR**

James E. Dueker, St. Louis County, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed May 18, 1970, Ser. No. 38,383  
Int. Cl. G01j 1/20

U.S. Cl. 250—203 R

5 Claims



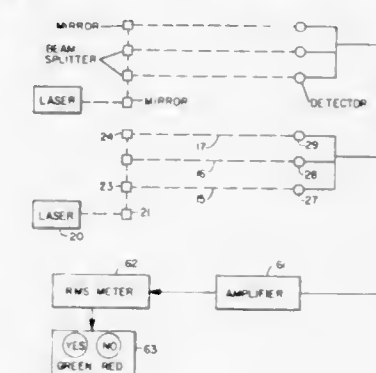
Detector means for use in imaging tubes such as a vidicon imaging tubes, said detector means being constructed as a layered element including a layer of semi-conductor material having a transparent or semi-transparent conducting barrier forming layer in intimate contact with one of the surfaces thereof, a plurality of spaced ohmic contacts on the opposite surface of the semi-conductor layer from the barrier layer, respective output connections to said spaced contacts in which signal responses are produced when incident light impinges on the barrier forming layer, a peripheral connection extending around the conducting layer and in contact with the conducting and semi-conductor layers, and a load circuit connected to said peripheral connection in which video output signals generated in the peripheral connection are produced. The subject detector means are particularly suitable for use with image forming optical systems or devices and with other means which scan the surface of the semi-conductor layer opposite from the surface on which incident light impinges to produce a video output for some purpose.

3,693,014

Patent Not Issued For This Number

3,693,015  
**SYSTEM FOR MONITORING AIR VORTICES COMPRISING PLURAL SCHLIEREN DETECTORS WITH OUTPUT SIGNALS ADDED AND RMS VALUE OF SUM PRODUCED FOR INDICATION OF TURBULENCE**  
Buford H. Funk, Jr., 213 Wingate Ave. S.W., Huntsville, Ala.  
Filed Jan. 8, 1971, Ser. No. 104,882  
Int. Cl. G01n 21/26, 21/46; G08g 5/00  
U.S. Cl. 250—209

5 Claims



A laser schlieren system provides a means for monitoring the strength of air disturbances such as vortex wakes near aircraft runways. A plurality of lasers and a plurality of photodetectors are located on opposite sides of a runway or its approach flight path whereby each laser directs a laser beam perpendicular to the path of the aircraft into a photodetector. The photodetector has a knife edge placed in front of it whereby the schlieren deflections of the beam by air disturbances causes a definite change in the electrical signal from the photodetector which change indicates the degree of disturbance.

3,693,016

**SEMI-CONDUCTIVE APPARATUS FOR DETECTING LIGHT OF GIVEN FLUX DENSITY LEVELS**

Paul E. Weber, Libertyville, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Continuation of Ser. No. 817,749, April 21, 1969, abandoned.  
This application May 24, 1971, Ser. No. 146,563  
Int. Cl. H01l 15/00

U.S. Cl. 250—211 J

7 Claims



Apparatus for detecting light having at least a given flux density level and for discriminating between light of said given level and all other low levels of light regardless of their total illumination flux value. The apparatus comprises a PNP silicon conductor sandwich having a front side consisting of a photodiode and a back side consisting of a conventional diode. A battery and resistor are serially connected to the integrated circuit combination, and a signalling current flows through the resistor only when light having at least said given flux density level impinges a target surface of the photodiode.



3,693,017

**POWER SUPPLY FOR IMAGE CONVERTER**

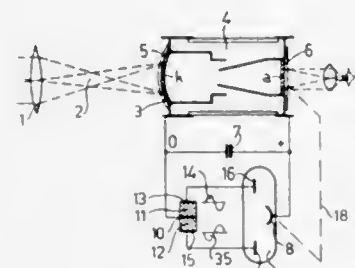
Franz Fick, Kiefernberg 19, 21 Hamburg-Harburg, and Otto Kobelentz, 63, Schmickshöhe 4c, 2 Hamburg, both of Germany

Filed Feb. 22, 1971, Ser. No. 117,637

Int. Cl. H01j 31/50

U.S. Cl. 250—213 VT

6 Claims



A viewing apparatus which includes an image converter tube having a cathode and a phosphorous screen for visual observation is powered by a pair of piezoelectric converters circuitly arranged with a common connection to the cathode of the image converter tube and with each having a second connection to the anodes of a high-vacuum rectifier; the high-vacuum rectifier also includes a photo-cathode which is disposed in light receiving arrangement with the phosphorous screen of the image converter tube; a capacitor is disposed in parallel connection with said piezoelectric converters and said high-vacuum rectifier across the cathode and phosphorous screen of the image converter tube so that the piezoelectric converters and the high-vacuum rectifier when activated build up a charge across the capacitor for powering the image converter tube.

3,693,018

**X-RAY IMAGE INTENSIFIER TUBES HAVING THE PHOTO-CATHODE FORMED DIRECTLY ON THE PICK-UP SCREEN**

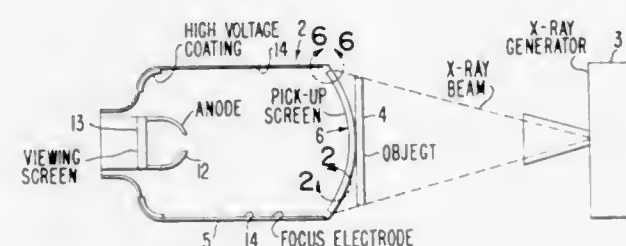
William E. Spicer, Portola Valley, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Dec. 27, 1966, Ser. No. 606,513

Int. Cl. H01j 31/50

U.S. Cl. 250—213

4 Claims



The present invention relates in general to x-ray image intensifier tubes and, more particularly, to an improved intensifier tube wherein the photo-cathode is formed directly on the x-ray sensitive phosphor pick-up screen without provision of an intermediate buffer, whereby the sensitivity of the x-ray intensifier tube is increased. Such improved x-ray image intensifier tubes are especially useful for, but not limited in use to, x-ray systems and for intensifying gamma ray images obtained in applications of nuclear medicine.

3,693,019

**FIBER OPTIC MARK SENSE READ HEAD, MECHANICALLY FREE FROM ELECTRICAL CONNECTIONS**

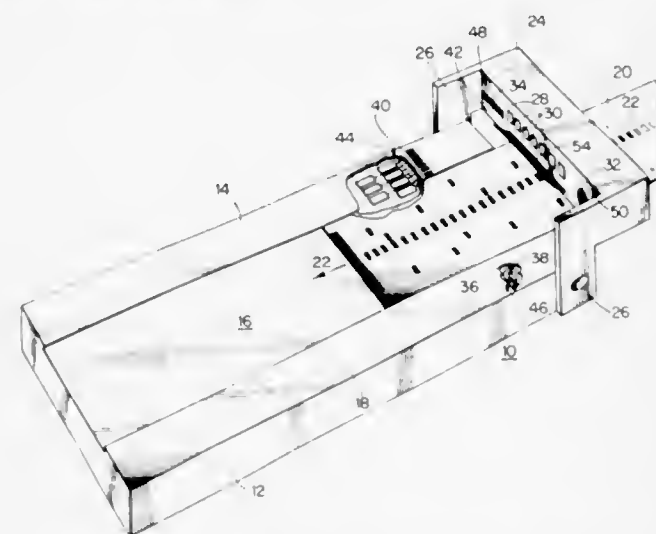
Edward P. Grenda, Boston; Jacques Guiguizian, Haverhill, and Harold M. Shneider, Weston, all of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed June 16, 1970, Ser. No. 46,716

Int. Cl. G01n 21/30

U.S. Cl. 250—219 D

9 Claims



In a mark sense card reader having a read head with light sensitive elements therein, a novel construction is provided whereby the head may be pivotable away from the reading station for easy access for cleaning or repair. The head is free from electrical connections to the card holding tray and reading station to prevent problems arising from bending or twisting electrical connections.

3,693,020

**PHOTODEGRADOMETER**

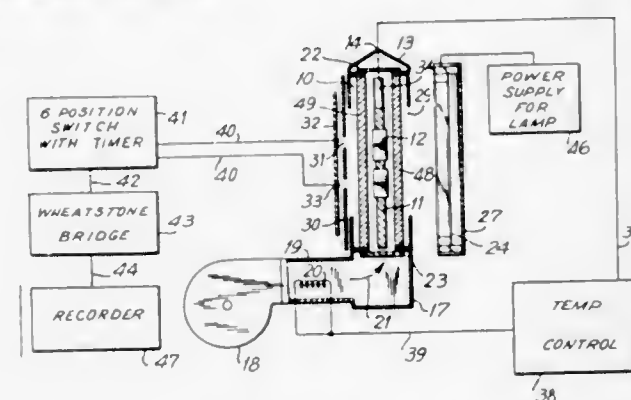
Hervey W. Ackerman, Jr., Westfield, N.J., assignor to M & T Chemicals Inc., New York, N.Y.

Filed Nov. 4, 1969, Ser. No. 873,827

Int. Cl. G01n 21/30

U.S. Cl. 250—219 FR

10 Claims



Methods and apparatus are provided for the simultaneous impartation and measurement of photoinitiated degradation of a plurality of resin samples by the application thereto of actinic radiation while continuously measuring the radiation passing through the resins so as to determine constantly the effectiveness quantitatively of different stabilizer components contained in the resins from initial exposure through the maximum rate of discoloration, and during a period of time substantially reduced from corresponding conditions produced under natural weather conditions. In addition, single means are provided for producing the radiation and the photodegradation, as well as means for constantly monitoring and measuring the radiation intensity alone and the degrading effects thereof on the resin samples, and under constantly maintained temperature conditions.

3,693,021

**WEB INSPECTION SYSTEM USING INTERLACED PHOTOCELLS**

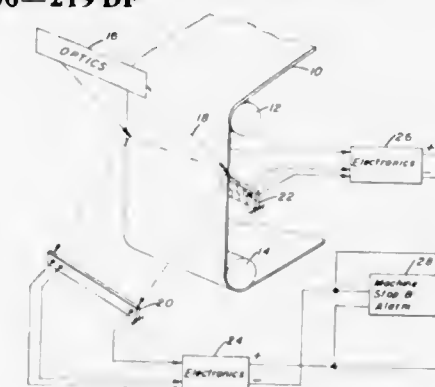
Alvin E. Lake, Jr., 45 Imperial Circle, Rochester, N.Y., and Allen C. Mercer, 6993 Fourth Section Rd., Brockport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 29, 1970, Ser. No. 50,499

Int. Cl. G01h 21/32

U.S. Cl. 250—219 DF

7 Claims



A movable web which is both specular and transparent is checked for defects by beaming a sheet of radiation at the web; and such radiation has an angle of incidence, with respect to the web, which is sufficient to permit some radiation to be mirrored off the web, and some to be transmitted through the web. Respective arrays of photocells cooperate with the reflected and transmitted radiation, and the photocells of such arrays, are jigsawed and interlaced together by means of photocell fingers having edges which are orthogonal to the direction of travel for the web. Pairs of photocells cooperate with respective differential devices to cancel the effect of web vibration to give false alarms; and non-adjacent photocells cooperate with the respective differential devices to prevent system blind spots.

3,693,022

**REGULATOR-METER UTILIZING A BEAM OF LIGHT FOR INDICATION AND REGULATION**

Michel Dumast, Pantin; Guy Rouzaud, Fontenay-aux-Roses, and Luc Thevenin, Corneilles-en-Parisis, all of France, assignors to Societe D'Instrumentation Schlumberger, Paris, France

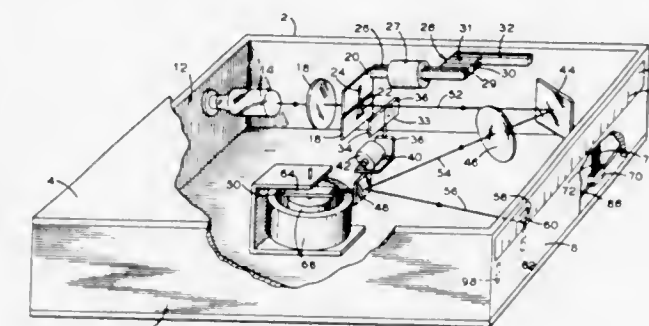
Division of Ser. No. 841,695, July 14, 1969, Pat. No.

3,606,151. This application Sept. 3, 1970, Ser. No. 69,294

Int. Cl. G01d 5/30

U.S. Cl. 250—230

3 Claims



Regulator-meter apparatus includes signal-responsive meter mechanism for projecting a light spot onto a transparent screen such that the spot traverses the screen during signal-caused movement of the mechanism. The position of the spot on the screen is detected by two photosensitive elements which define one set point for the regulator portion of the apparatus, the elements being spaced apart a distance slightly greater than the corresponding cross-sectional dimensions of the spot and having the outputs thereof connected to different ones of the set and reset inputs of a bistable multivibrator. The bistable assumes either its set or reset state depending upon

3,693,023

**ELECTRO-OPTICAL TACHOMETER**

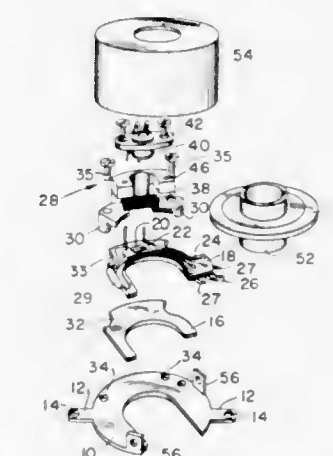
Seymour N. Wasserman, Natick, Mass., assignor to Dynamics Research Corporation, Wilmington, Mass.

Filed Dec. 29, 1970, Ser. No. 102,326

Int. Cl. G01p 3/36, 13/00; G01d 5/38

U.S. Cl. 250—231 SE

5 Claims



An electro-optical tachometer easily connected to apparatus the rotatable shaft of which is to be monitored and capable of providing an accurate output signal representative of shaft speed. A rotatable disc attached to the shaft to be monitored is cooperative with a stationary reticle to provide an interference pattern which is sensed by a plurality of photosensors which produce one or more output signals representative of the speed of the shaft and the rotational sense thereof.

3,693,024

**ROTATIONAL SHAFT ENCODER HAVING A BEARING TUBE HAVING A SLOT THEREIN**

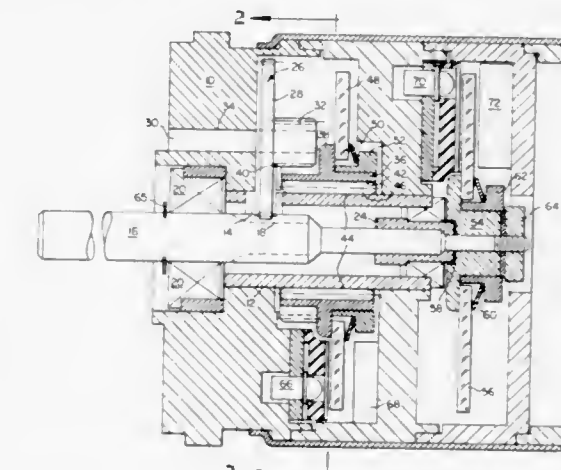
Robert M. Hulle, Calabasas; Jerry L. Steward, Simi, and Merle D. Borman, Tarzana, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 17, 1971, Ser. No. 144,073

Int. Cl. G01d 5/34, 5/36

U.S. Cl. 250—231 SE

12 Claims



A rotational shaft encoder having two encoder discs mounted to rotate at different speeds in a preselected ratio determined by a gear train where the transmission of motion from an input shaft, carrying the high-speed encoder disc, to a



low-speed encoder disc. The low-speed encoder disc is mounted on a bearing tube which houses the input shaft and is driven by a gear train which extends through a slot in the bearing tube to mesh with a gear integrally mounted on the input shaft.

3,693,025

**APPARATUS AND METHOD FOR ELIMINATING INTERFERENCE ERRORS IN DUAL-BEAM INFRARED REFLECTION MEASUREMENTS ON A DIFFUSELY REFLECTING SURFACE BY GEOMETRICAL ELIMINATION OF INTERFERENCE-PRODUCING SPECULARLY-REFLECTED RADIATION COMPONENTS**

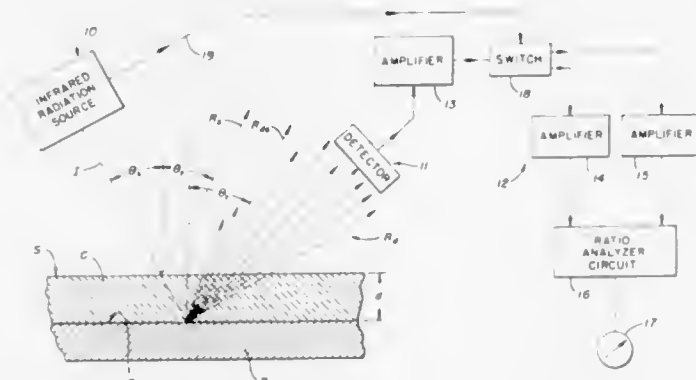
Donald C. Brunton, Columbus, Ohio, assignor to Brun Sensor Systems, Inc., Columbus, Ohio

Filed Nov. 28, 1969, Ser. No. 880,543

Int. Cl. G01n 21/32

U.S. Cl. 250—83.3 H

10 Claims



Interference error elimination is provided for infrared reflection measurement of a film having a diffusely reflecting surface by apparatus and method which utilizes geometrical arrangement of apparatus components for geometrical selection of only diffusely reflected radiation components and elimination of specularly reflected radiation components that would produce interference error. A specific application of this measurement technique is in connection with a two-layer, sheet-form product having a film of infrared-radiation-transmissive material formed on a substrate or base layer with the interface surface being diffuse. A radiation source forms and directs two beams of infrared radiation of discrete wavelengths in angularly incident relationship toward an exposed, specular surface of the film producing reflective-components at both the specular surface and the diffuse interface surface. Only diffusely reflected components of incident beams of radiation are detected by a radiation-responsive sensor which is disposed in a particular geometrical arrangement such that only the diffusely reflected beam components are incident to a radiation receptor surface of the sensor. Thus, interference errors are eliminated as the specularly reflected beam components will not be incident to the radiation sensors receptor-surface.

3,693,026

**SAFETY EDGE CONSTRUCTION FOR A POWERED DOOR**

Norman K. Miller, Concordville, Pa., assignor to Miller Brothers, Concordville, Pa.

Filed April 16, 1971, Ser. No. 134,809

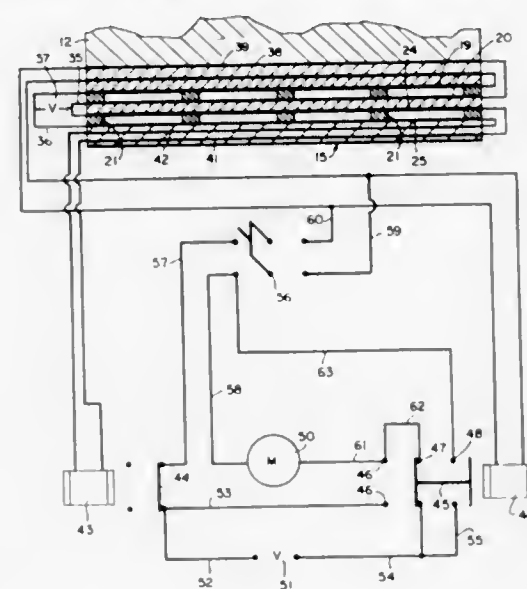
Int. Cl. H01h 3/16

U.S. Cl. 307—119

6 Claims

For a door electrically powered by a reversible motor, a pair of elongate resiliently compressible edge assemblies having respective pairs of contacts, the contacts of each pair being

engageable with each other upon compression of the assemblies, as by encountering an obstruction, and the contact pairs



3,693,027

**ZERO CROSSING DETECTOR**

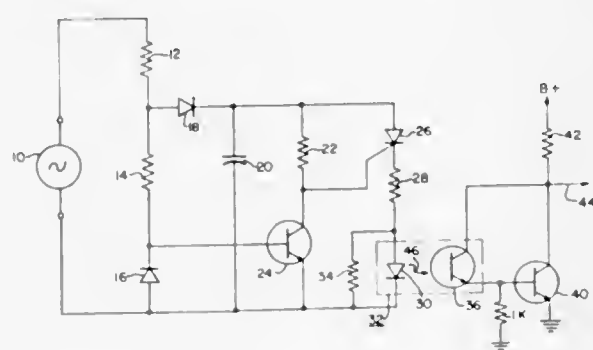
Mark W. Garaway, Allison Park, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 30, 1971, Ser. No. 185,200

Int. Cl. H03k 17/60, 17/72

U.S. Cl. 307—133

8 Claims



A zero crossing detector for generating a pulse at every other zero crossing of a high voltage alternating current source, incorporating isolation between the high voltage alternating current source and a low voltage logic input with the use of an optically coupled diode-transistor pair.

3,693,028

**SYSTEM FOR THE DETECTION AND VALIDATION OF SIGNAL PEAKS**

Richard L. Fussell, Chester Springs, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 30, 1970, Ser. No. 76,905

Int. Cl. H03k 5/08, 5/153, 17/30

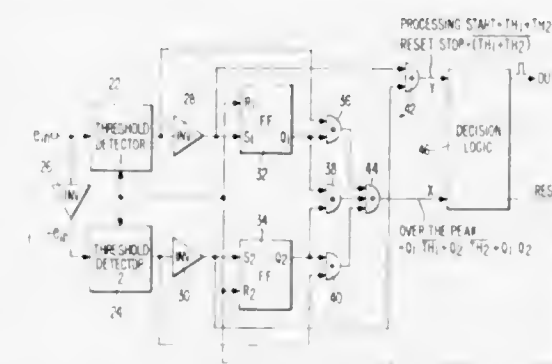
U.S. Cl. 307—235

8 Claims

A signal peak detection system is disclosed which in a preferred embodiment utilizes the initial actuation of one of a pair of regenerative threshold detectors by an input analog signal, the actuated detector providing threshold information to decision logic for initiating signal analysis processing at a suitable time prior to the occurrence of the signal peak. The system also includes storage units responsive to the respective states of the detectors, and gating circuits for providing an indication of the occurrence of an over-the-peak condition. Depending upon the nature of the input signal, such indication

results either from the recovery of the detector initially actuated, or by the concurrent actuation of both detectors as reflected by the presence of output signals from the associated

trigger input to assume its conductive or low impedance state, remains in that state causing the operational amplifier to



3,693,029

**ELECTRICAL COMPENSATION CIRCUIT UTILIZING TWO TRANSISTORS CONNECTED IN PARALLEL**

Francis J. Niven, Jr., 7807 Meadowcroft, Houston, Tex.

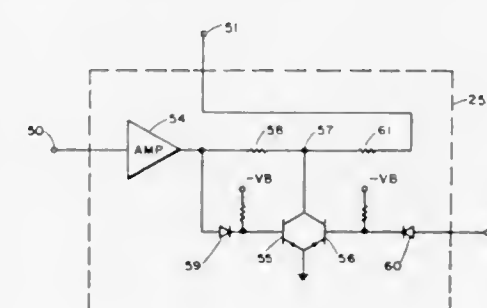
Division of Ser. No. 684,849, Nov. 21, 1967, Pat. No.

3,538,329. This application June 26, 1970, Ser. No. 59,861

Int. Cl. G01t 1/17

U.S. Cl. 307—237

1 Claim



A pair of transistors are connected in parallel with the emitters of the transistors connected to ground and the collectors connected together and to a common junction which in turn is connected through a resistor to an output terminal. A first input terminal is connected through an amplifier and a resistor to the common junction. The output of the amplifier is also connected through a diode to the base of the first transistor. The base of the second transistor is connected through a resistor to a negative biasing voltage. The base of the second transistor is also connected through a diode to a second input terminal. The transistors are biased such that a signal appearing on the first input terminal is determinative of the amount of signal compensation appearing at the output terminal and a signal appearing at the second input terminal is determinative of the existence of the compensation.

3,693,030

**TIME DELAY CIRCUITS**

William R. Walters, Medford, N.J., assignor to Radio Corporation of America

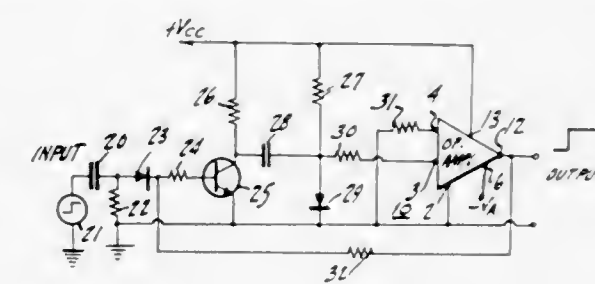
Filed May 17, 1967, Ser. No. 639,186

Int. Cl. H03k 3/10

U.S. Cl. 307—273

7 Claims

A time delay circuit is described which uses an operational amplifier as a main active element. A switching transistor and a timing circuit are coupled to the amplifier such that the transistor is normally in a non-conductive or high impedance state. The transistor is operated by the combination of the timing circuit and amplifier so that the transistor, when made by a



3,693,031

**TIMING CIRCUIT FOR PROVIDING LINEAR TIMING PERIODS**

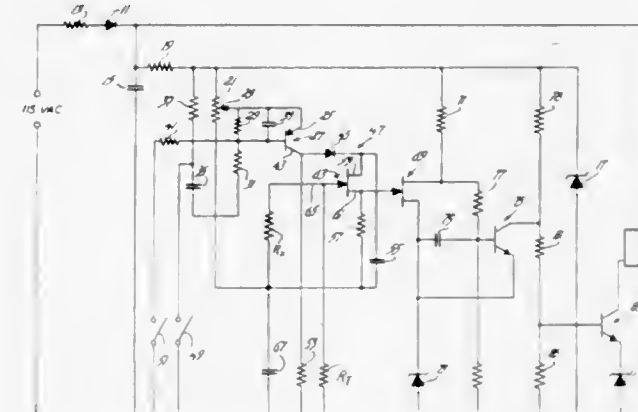
Favre E. Eaton, Winsted, Conn., assignor to General Time Corporation, Phoenix, Ariz.

Filed April 21, 1971, Ser. No. 135,837

Int. Cl. H03k 17/26

U.S. Cl. 307—293

8 Claims



An electronic timing circuit for generating linear timing periods by providing a constant current discharge path from a storage capacitor. A storage capacitor is charged through a gating transistor to a preset level. The gating transistor is then turned off, and the capacitor discharges through the serial arrangement of a field-effect transistor and a resistor. The field-effect transistor is self-biased such that the current flow from the capacitor through the transistor to the resistor is constant with respect to time. This is accomplished by varying the impedance of the transistor proportionately to the charge on the storage capacitor. The potential at the junction of the field-effect transistor and the resistor is detected by a high input impedance device which drives an output circuit.

A delay on deenergization mode of operation is provided wherein a steady state current is continuously passed through the serial arrangement of the field-effect transistor and the resistor. When the output circuit is to be deenergized, the steady state current is turned off allowing the storage capacitor to discharge for a linear period of time at the end of which the output is deenergized. The duration of the discharge or timing interval may be adjusted by varying the bias at the gate of the FET.

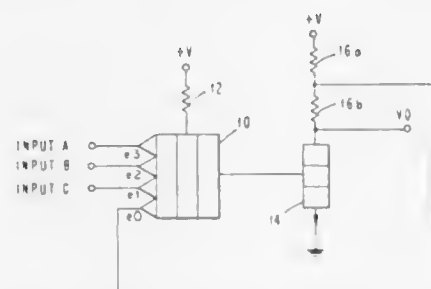


3,693,032

**ANTISATURATION TECHNIQUE FOR TTL CIRCUITS**  
James R. Winnard, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.  
Filed April 23, 1971, Ser. No. 136,699  
Int. Cl. H03k 3/26

U.S. Cl. 307—299

2 Claims



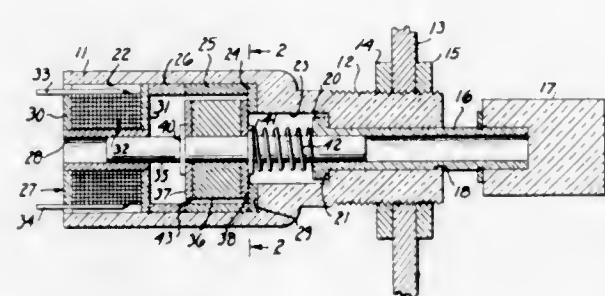
This specification discloses a technique of saturation control for a transistor transistor logic (TTL) circuit. The saturation control device includes an additional emitter of the input transistor which is connected to the collector of the output transistor.

3,693,033

**KEY OPERATED PULSE GENERATING DEVICE**  
Donald L. Troesh, Ontario, Calif., assignor to Electromechanisms, Inc., Azusa, Calif.  
Filed June 24, 1971, Ser. No. 156,318  
Int. Cl. H02k 35/00

U.S. Cl. 310—14

4 Claims



A key operated electric pulse generator comprising a housing of non-magnetic material supporting depressible key at one end, a coil at the other end, and a body of magnetic material spaced from the coil. A permanent magnet is supported in the housing for movement between the magnetic body and the coil and is normally magnetically attracted to the magnetic body. A spring is interposed between the permanent magnet and the depressible key so that upon depression of the key the spring will yield a certain amount and then cause the magnet to abruptly release from the magnetic body and be impelled toward the coil to generate an electric signal.

3,693,034

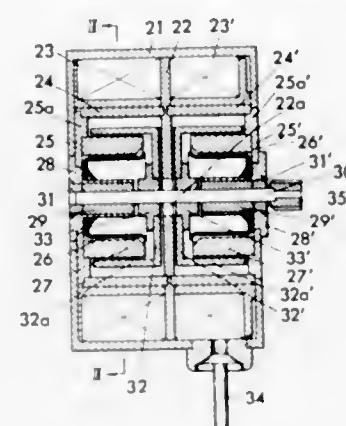
**PULSE MOTOR ASSEMBLY**  
Tokuzo Inariba, Tokyo, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishibiwajima-cho, Nishikasugai-gun, Aichi Prefecture, Japan  
Filed April 6, 1971, Ser. No. 131,760  
Claims priority, application Japan, April 7, 1970, 45/29214  
Int. Cl. H02k 37/00

U.S. Cl. 310—49

5 Claims

A pulse motor assembly comprising a plurality of synchronous motors connected in tandem. Each of the synchronous motors includes a rotor having pole teeth each tapering towards its free end which is formed as a sharp

pointed end. The north and south poles of permanent magnet stator included in the respective synchronous motors are staggered from each other by a distance equivalent to one pole pitch divided by the number of the synchronous motors connected.



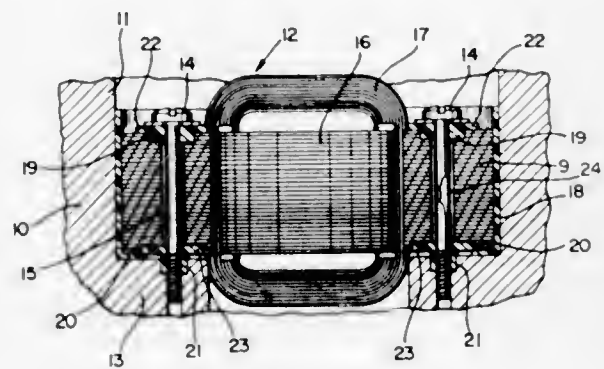
3,693,035

**DOUBLE INSULATED FIELD MOUNTING FOR UNIVERSAL MOTOR**

Erich Ostwald, Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.  
Filed Sept. 15, 1970, Ser. No. 72,372  
Int. Cl. H02k 5/08, 3/30

U.S. Cl. 310—51

8 Claims



A double insulated heavy duty electric power tool having a metal housing for resisting shock impacts and vibration, and a universal electric motor mounted in the housing. The motor includes a field mounted in the housing with an insulating barrier between the field and the housing. A plurality of insulated bolts secure the field to the housing and a pair of insulating washers associated with each of the bolts maintain a space between the field and the bolts during the after assembly.

3,693,036

**LIQUID COOLED SERIES LOOP CONNECTOR**  
Nikolas Schmitt, Scotia, N.Y., assignor to General Electric Company

Filed June 14, 1971, Ser. No. 152,680

Int. Cl. H02k 9/00

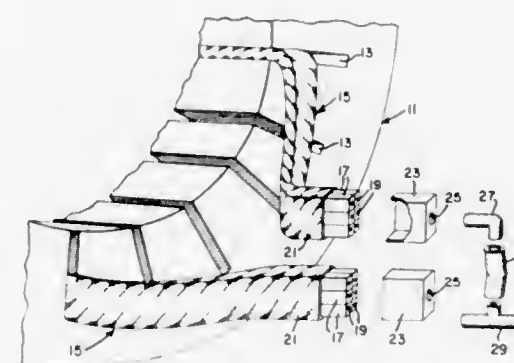
U.S. Cl. 310—52

8 Claims

A connector for forming a fluid tight, electrically conductive joint between two juxtaposed, fluid-cooled stator bar ends or between a bar end and a connection ring of a dynamoelectric machine which may be misaligned during stator assembly. The connector is comprised of two movable and rotatable fittings with a sleeve member therebetween which are so formed as to correct slight bar or connection ring misalignment. The sleeve member has an interior brazing surface at each end defined by a counterbored hole. In one embodiment,

the sleeve is bent so that the centerlines of the counterbored holes are noncoincident. In other embodiments, the sleeve is

wave tube. The solid side walls have a series of resonant slots which are structurally coupled to one another through the wall



straight but the counterbored holes are formed so that the centerlines of one or both counterbored holes do not coincide with the centerline of the sleeve.

and lossy load along the entire length of the traveling wave tube. The slots are resonant at a frequency above the operating band of the tube, but below the lower edge of its stop band.

3,693,037

**DYNAMO ELECTRIC MACHINES**

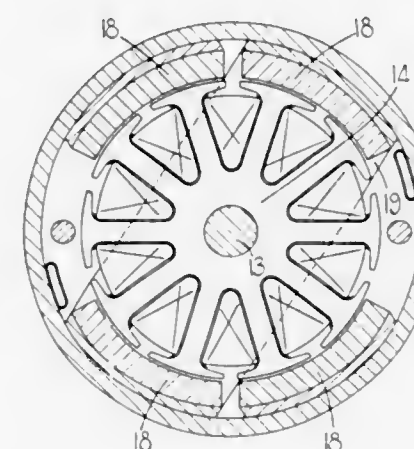
John Godfrey Wilson West, Sutton Coldfield, Warwickshire, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed April 29, 1971, Ser. No. 138,662

Int. Cl. H02k 21/76

U.S. Cl. 310—154

9 Claims



A dynamo electric machine including at least a pair of pole pieces. Each pole piece is divided into two parts and yoke member are provided to connect one part of one pole piece with one part of the other pole piece. The yoke members are magnetically isolated from each other and the arrangement is such that the armature action flux which would tend to demagnetize one part of each pole piece is minimized.

3,693,038

**TRAVELING WAVE TUBE (TWT) OSCILLATION PREVENTION DEVICE**

Allan W. Scott, and Yukio Hiramatsu, both of Los Altos, Calif., assignors to The United States of America as represented by the Secretary of the Navy

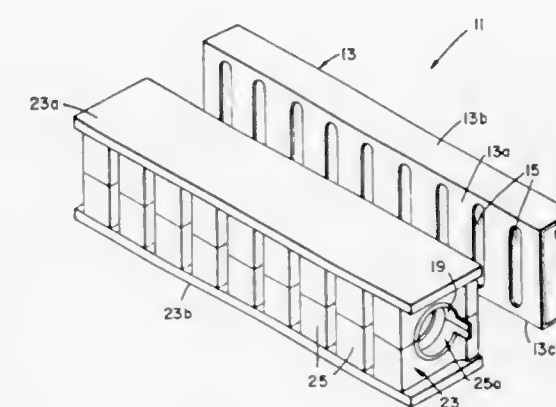
Filed May 3, 1971, Ser. No. 139,332

Int. Cl. H01J 25/34

U.S. Cl. 315—35

10 Claims

A traveling wave tube amplifier device which suppresses random oscillations through the entire length of the traveling



3,693,039

Patent Not Issued For This Number

3,693,040

**METHOD OF READING BISTABLE STORAGE TUBES BY INCREASING LUMINESCENCE WHERE INFORMATION IS STORED**

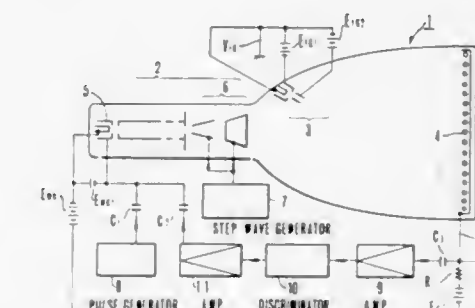
Hajime Takita, Tokyo, Japan, assignor to Iwatsu Electric Company Limited, Tokyo, Japan

Filed Dec. 16, 1970, Ser. No. 98,562

Int. Cl. G11c 7/00; H01J 29/52

U.S. Cl. 315—12

3 Claims



In a method of providing a stable bright direct view of information stored in a bistable storage tube the storage surface of the tube is swept with an electron beam of an intensity not sufficient to write for producing electrical signals corresponding to the information that has been stored in the storage surface, an electron beam from a read out electron gun of the storage tube is controlled with the electrical signals to supply a large current to the read out portions in the storage surface having information to cause them to luminesce brightly and above described cycle is repeated until the entire area of the storage surface is read out.

3,693,041

Patent Not Issued For This Number



3,693,042

**RAPID FILM READER/RECORDER UTILIZING MOVABLE CYLINDRICAL LENS**

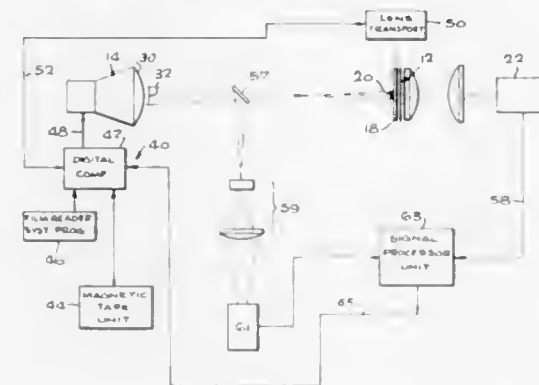
Edward Fredkin, Natick, Mass., and Walter Renold, Los Angeles, Calif., assignors to Information International, Inc., Cambridge, Mass.

Filed Aug. 21, 1969, Ser. No. 851,839

Int. Cl. H01j 29/70

U.S. Cl. 315—18

19 Claims



Apparatus for high speed reading and recording on film and the like comprising a cathode ray tube for generating a scanning spot which can move within a raster area on the tube face, and a pair of small perpendicular cylindrical lenses that focus an image of the raster area on a small region of a film frame where the lenses cross. Each of the cylindrical lenses can be moved, to shift the scanning spot to any region on the film frame, the scanning spot being movable within the raster area on the tube face to compensate for lag in lens movement. A transducer for indicating the position of each lens comprises a stationary pattern of illuminated lines which is focused by an end portion of that lens onto a stationary transparent plate with opaque stripes, and a photodetector behind the plate.

3,693,043

**PULSE REGULATOR CONTROLLED FROM VOLTAGE MULTIPLIER**

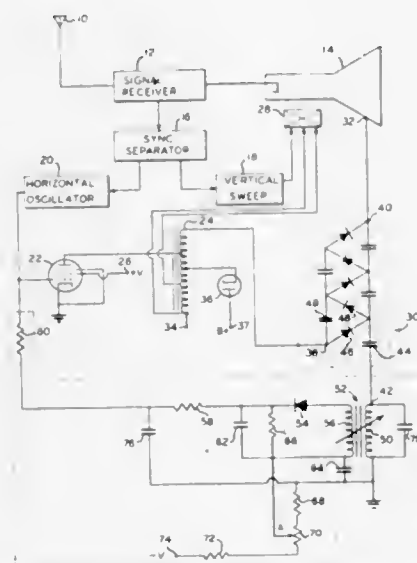
Werner Franz Wedam, Batavia, N.Y., assignor to Sylvania Electric Products Inc.

Filed Oct. 13, 1969, Ser. No. 865,773

Int. Cl. H01j 29/70

U.S. Cl. 315—29

9 Claims



In a television receiver in which the high voltage power supply for the picture tube includes a voltage multiplier coupled between the retrace pulse output of the horizontal sweep circuit and the second anode of the picture tube, a circuit for automatically regulating the pulse output of said sweep circuit comprising a pulse transformer having a primary winding connected between the multiplier reference terminal and ground, and a rectifier and time delay filter coupled between the pulse

transformer secondary winding and the grid bias circuit of the horizontal output amplifier. The pulse transformer develops voltage pulses from the multiplier which, when rectified, provide a control voltage which is a function of picture tube beam current. Application of this control voltage via the filter to the bias circuit is operative to provide the desired pulse regulation by controlling the grid bias of the horizontal output amplifier.

3,693,044

**FIRING MEANS FOR DISCHARGE TUBES**

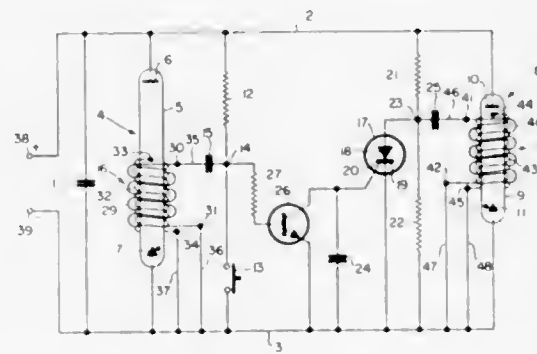
Gareld I. Gilman, and Robert H. Wallace, both of Littleton, Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 24, 1970, Ser. No. 101,334

Int. Cl. H01j 17/34; H05b 41/30

U.S. Cl. 315—57

12 Claims



A triggering transformer having windings surrounding a photographic flash tube fires the latter when the transformer primary winding is energized by the closure of a switch. This switch closure also turns off a transistor which then unblocks a light sensitive integrator including an LASCR which receives the flash tube light by reflection. When the integrator has received a predetermined quantity of light, the LASCR turns on and energizes the primary winding of a second triggering transformer having windings surrounding a quench tube connected in parallel with the flash tube. This fires the quench tube which in turn extinguishes the flash tube.

3,693,045

**ILLUMINATION**

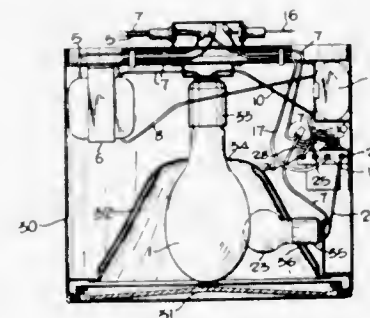
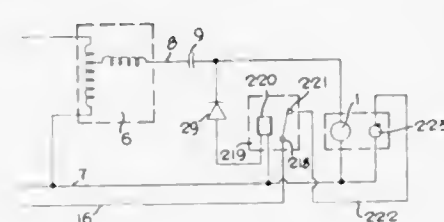
Lorenzo S. Price, Creve Coeur, Mo., assignor to The Edwin F. Guth Company, St. Louis, Mo.

Filed Feb. 13, 1970, Ser. No. 11,202

Int. Cl. H05b 39/10

U.S. Cl. 315—91

1 Claim



illumination system utilizing H.I.D. (high intensity discharge) lamps, and having a subordinate lamp automatically activated to establish immediate illumination when the

H.I.D. lamp circuit is turned on, i.e., without awaiting the usual warm-up period, and to maintain illumination during periods of voltage dip (which normally extinguishes H.I.D. lamps) in the circuit supplying them, as well as during subsequent recovery and restarting the H.I.D. lamps after extinguishment as a result of voltage dip or other outage condition.

3,693,046

**CATHODES WITH TREATED APERTURES FOR INTERCONNECTING GAS CELLS OF A DISPLAY PANEL**

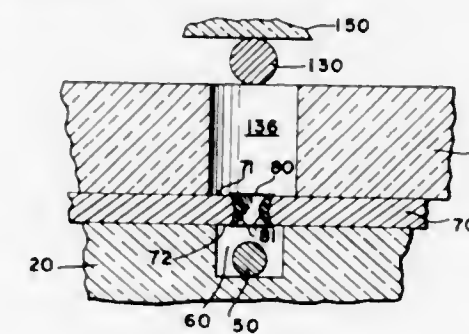
David Glaser, Bound Brook, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 26, 1970, Ser. No. 14,368

Int. Cl. H05b 37/00

U.S. Cl. 315—169 TV

4 Claims



A display panel including a lower layer and an upper layer of gas-filled cells with cathodes in common between the layers and with separate anodes associated with each layer of cells, tiny apertures in the cathodes interconnecting upper and lower cells, having improved cathodes wherein the surfaces in the apertures of the cathodes are treated to increase their work function so that these surfaces do not support cathode glow in the operating conditions of the panel, thus preventing spurious transfer of cathode glow from the lower scanning to the upper visible layer of cells.

3,693,047

**APPARATUS FOR PROTECTING ELECTRICAL DEVICES**

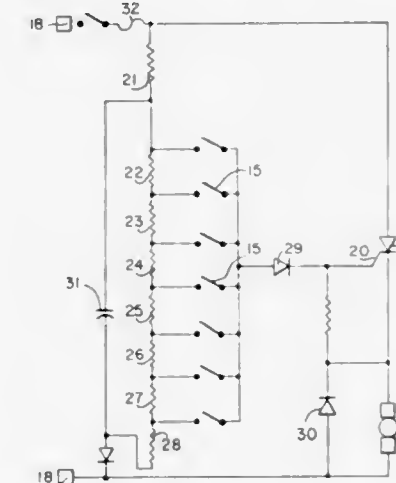
David C. Hamstra, Clinton, Iowa, assignor to General Electric Company

Filed Sept. 28, 1971, Ser. No. 184,564

Int. Cl. H02h 5/04

U.S. Cl. 317—13 B

8 Claims



Apparatus for protecting electrical devices, particularly permanent magnet motors and components for controlling the speed of such motors, such as solid state elements, against excessive current and excessive temperature. A permanent magnet motor utilized for driving an electric appliance, such as a blender, is controlled by a circuit which includes a silicon-controlled rectifier in series with the motor. The SCR is mounted in heat transfer relationship with one side of a heat sink composed of a material having good heat conductivity. A ther-

mally-actuated switch, connected in series circuit with the motor and the SCR, is positioned in heat transfer relationship with the opposite side of the heat sink. The heat sink is constructed so that its thermal mass may be easily modified to make the temperature of the heat sink correspond generally to the temperature of the motor, at least in the range of temperatures where protection is to be provided. The thermally-actuated switch is responsive to the heat sink temperature to protect the electrical devices against excessive temperature of the motor or of the SCR, and also is responsive to current through the resistance of the switch to protect against excessive current surge.

3,693,048

**FAIL OPEN SEMICONDUCTORS**

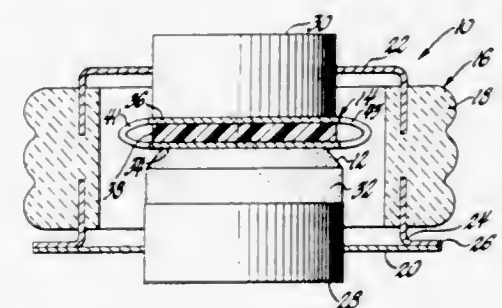
Kenneth W. Doversberger, Kokomo, and Thomas J. Furnival, Logansport, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 19, 1970, Ser. No. 81,889

Int. Cl. H02h 5/04

U.S. Cl. 317—33 R

1 Claim



A circuit element which includes a fusible device and a semiconductor device series-connected in an integral casing. When a power supply passes a current larger than a predetermined value through the fusible device, fusion takes place in the fusible device so as to prevent the current from changing the semiconductor device into a short circuit across the power supply.

In a second embodiment the circuit element also includes a switch that is opened in response to heating of the semiconductor device above a certain temperature. The switch is series-connected with the fusible device and the semiconductor device so as to disable the circuit element until the semiconductor device temperature is below the certain temperature. The circuit element of the second embodiment also includes a lamp for indicating when the fusible device has fused and the semiconductor device has become a short circuit.

3,693,049

Patent Not Issued For This Number

3,693,050

**SINGLE MODULE POWER SUPPLY**

James P. Ettinger, and Christian S. Otteson, both of Ridgefield, Conn., assignors to Electric Regulator Corporation, Norwalk, Conn.

Filed Jan. 21, 1971, Ser. No. 108,309

Int. Cl. H02b 1/02

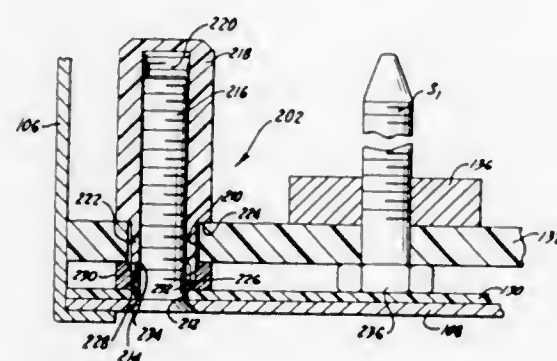
U.S. Cl. 317—99

8 Claims

A power supply unit for converting an alternating current input to a controlled direct current output, comprises a rectifier module having a plurality of rectifiers serially arranged in substantial alignment with appropriate electrically conductive spacers therebetween. Heat dissipating fins or plates are interleaved between the rectifiers and spacers and serve as electrically and thermally conductive means. A pair of electrically conductive jumper plates are provided operatively connecting selected terminals of said rectifiers to complete the operative circuit. The module is slidably mounted in a housing having a



relatively massive bus bar network secured on an insulating member disposed on the back wall of said housing by novel fastening means. Said fastening means includes a screw extending from the back wall of the housing through apertures in said insulating member and an insulative nut member adapted



to engage said screw and to seal said aperture to prevent any arcing or leakage from the bus bar network to the housing. The external leads extend through an aperture in the back wall of the housing and may be conveniently connected to the appropriate module terminals, there being considerable space between the back wall and the module for this purpose.

3,693,051

Patent Not Issued For This Number

3,693,052

## ELECTRICAL COMPONENT MOUNTING

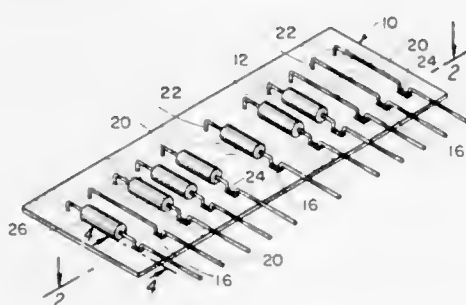
Frank Galanti, Reseda, Calif., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed April 15, 1971, Ser. No. 134,168

Int. Cl. H05k 1/18

U.S. Cl. 317-101 CC

1 Claim



The connection of an electrical component to a printed circuit board wherein a lead to the component includes an offset being in frictional engagement with the walls of an opening within the circuit board, the apex of the offset being soldered to be able to electrically connect the lead to the printed circuit path on the underside of the board, the free end of the lead extending exteriorly of the board on the upper surface thereof.

3,693,053

## METAL OXIDE VARISTOR POLYPHASE TRANSIENT VOLTAGE SUPPRESSION

Thomas E. Anderson, Schenectady, N.Y., assignor to General Electric Company

Filed Oct. 29, 1971, Ser. No. 193,963

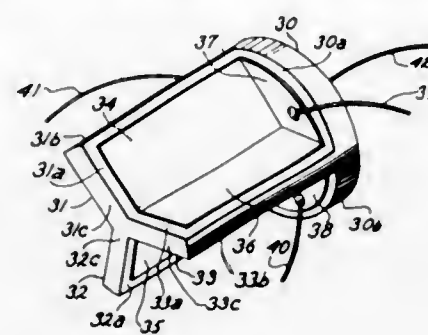
Int. Cl. H01c 7/12; H02h 3/26

U.S. Cl. 317-231

27 Claims

A body of sintered metal oxide material exhibiting highly nonlinear resistance characteristics includes a base and plurality of members projecting therefrom. Electrodes in the form of electrically conductive material are plated on some or all of the major surfaces of the projecting members and base. The electrodes provide connections to electrical conductors

connected to the power input or output terminals of a single or polyphase electrical apparatus and the nonlinear resistance



characteristics of the metal oxide material provides desired line-to-line and line-to-neutral transient voltage suppression in accordance with the connections of the electrical conductors.

3,693,054

## SEMICONDUCTOR HAVING A TRANSISTOR, A THYRISTOR AND A DIODE IN ONE BODY

Thomas A. Anderson, London, England, assignor to Westinghouse Brake and Signal Company Limited, London, England

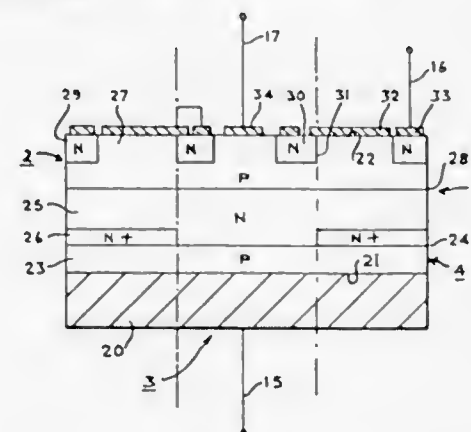
Filed Sept. 15, 1971, Ser. No. 180,821

Claims priority, application Great Britain, Oct. 6, 1970, 47,430/70

Int. Cl. H01l 9/12

U.S. Cl. 317-235

5 Claims



This disclosure is directed to a semiconductor device contained within an integral body of semiconductor material consisting of a first portion which constitutes effectively, a transistor, a second portion which constitutes effectively a thyristor and a third portion which constitutes effectively a diode. The thyristor portion of the device being disposed in the central portion of the body and the transistor and diode portions of the device being disposed in the peripheral portion of the body.

3,693,055

## FIELD EFFECT TRANSISTOR

Heinz Beneking, 51 Aachen, Germany, assignor to Licenta Patent Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

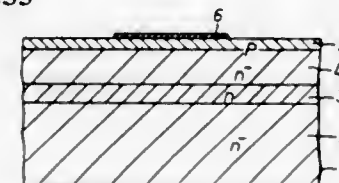
Filed Jan. 13, 1971, Ser. No. 106,199

Claims priority, application Germany, Jan. 15, 1970, P 20 01 584.3

Int. Cl. H01l 13/04

U.S. Cl. 317-235

6 Claims



A field effect transistor comprises a semiconductor body having a channel region of a first type of conductivity, a con-

trol region of a second type of conductivity situated between two main electrodes with which the channel region is provided and an intermediate region of the first type of conductivity situated between the channel and control regions and being less doped than the channel region.

3,693,056

## METHOD FOR AMPLIFICATION OF HIGH-FREQUENCY ELECTRICAL SIGNALS IN A TRANSISTOR

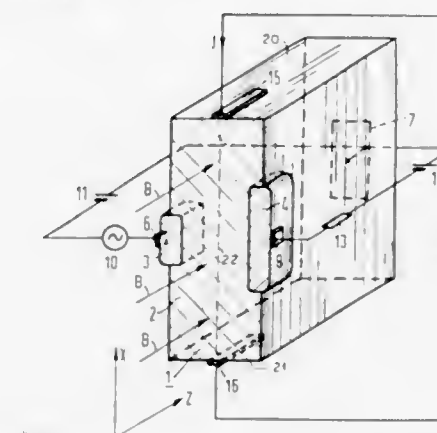
Fritz Paschke, Kahlenbergerstrasse 35, 1190 Vienna, Austria, assignor Siemens Aktiengesellschaft, Berlin, Germany

Filed Jan. 29, 1971, Ser. No. 110,924

Int. Cl. H01l 1/106

U.S. Cl. 317-235 R

14 Claims



A method for the amplification of high-frequency electrical signals in a transistor having a base region, an emitter region and a collector region with the collector and emitter regions secured to the opposite surfaces of the base region, comprises applying an electrical field to the base region in a direction normal to a mid-line formed between the emitter and collector, the base region including charge carriers and charge carrier pairs; producing an impact ionization condition in the base region under the condition that the lifetime of the charge carrier in the base is greater than the ionization time; and applying a magnetic field to the base region in a direction normal to the applied electric field and normal to the mid-line between the emitter and collector, said magnetic field urging the charge carrier pairs of the base region toward the collector.

3,693,057

## MONOLITHIC CIRCUITS WITH PINCH RESISTORS

Siegfried K. Wiedmann, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 801,387, Feb. 24, 1969, abandoned.

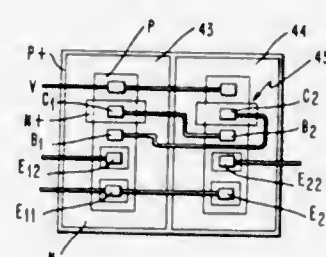
This application March 24, 1971, Ser. No. 127,751

Claims priority, application Germany, March 1, 1968, P 15 74 651.7

Int. Cl. H01l 19/00

U.S. Cl. 317-235 R

4 Claims



A monolithic power switching flip flop circuit comprising a pair of cross-coupled transistors, each having a "pinch" resistor formed in one common substrate. Each pinch resistor comprises a resistor and a diode connected to each other at one terminal, the second terminal of the resistor being connected to the base of a respective transistor and the other terminal of the diode being connected to the collector of said transistor through the bulk semiconductor material of the

common substrate. By suitable external electrical connections, the resistor portion of each pinch resistor is connected in parallel with the diode portion of the other pinch resistor. Thus, each resistor is shunted by a diode and placed in the collector circuit of a respective transistor to form the electrical circuit equivalent of a conventional power switching flip flop utilizing minimum bulk semiconductor material.

3,693,058

## VARIABLE CAPACITOR INCLUDING A ROTATABLE DIELECTRIC DISC

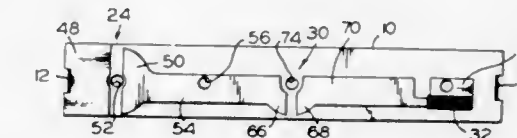
Darrel I. Wilhoit, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 830,071, June 6, 1969, Pat. No. 3,622,919. This application Jan. 25, 1971, Ser. No. 109,334

Int. Cl. H01g 5/06; H03h 7/24

U.S. Cl. 317-249 R

5 Claims



A variable capacitor forming part of an attenuator section includes a rotatable ceramic disc having a metalized configuration on its upper side which may be mutually juxtaposed with respect to a pair of metalized portions on a ceramic substrate therebelow. The metalized ceramic disc is superimposed by a rotatable plastic body engageable for rotating the disc and having an extension depending through an aperture in the substrate to provide an axis portion for the combined rotatable member. A spring is interposed between a grounded metal cover and a portion of the plastic body, urging the ceramic disc toward the substrate.

3,693,059

## CAPACITIVE COUPLING SWITCH AND ACTUATOR

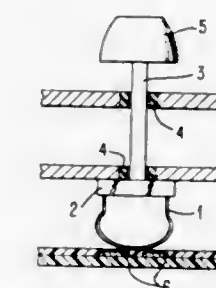
Richard H. Harris, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 17, 1971, Ser. No. 154,112

Int. Cl. H01g 5/01

U.S. Cl. 317-249 R

3 Claims



A variable capacitance switch element is disclosed in which varying capacitance is effected by increasing the active surface area of a capacitive coupling member in proximity to a second capacitive plate. The structure of the variable capacitive element is such that the capacitance of the device varies in nearly linear fashion with the depression of an actuator member.



3,693,060

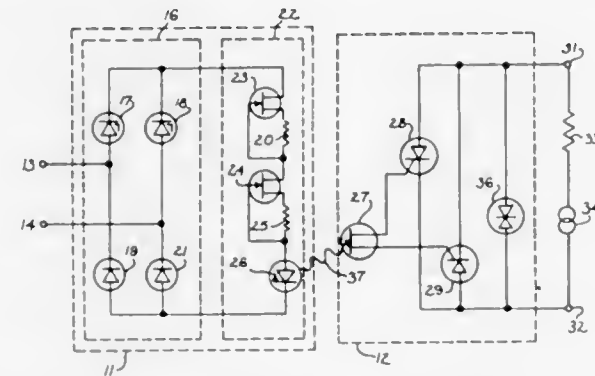
**SOLID-STATE RELAY USING LIGHT-EMITTING DIODES**  
 Michael F. Joyce, Chicago, Ill., assignor to North American Philips Corporation, New York, N.Y.

Filed April 13, 1971, Ser. No. 133,516

Int. Cl. H011 15/06

U.S. Cl. 317—262 R

1 Claim



A solid-state relay utilizing a light-emitting diode to transmit optical energy steadily to a photo-sensitive solid-state device to control the conductivity of solid-state elements. A relatively low power source of AC or DC can be used to operate photo-sensitive uni-junction transistor or a pair of light-activated silicon-controlled rectifiers.

3,693,061

**MOTOR CONTROLLED MAGNETIC TAPE PLAYBACK MACHINES**

Wilhelm Manfred Kahle, Lucerne, Quebec, Canada, assignor to Her Majesty the Queen in right of Canada as represented by the Secretary of State

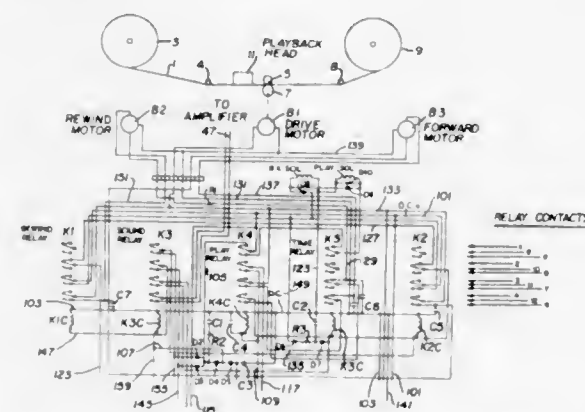
Filed Dec. 16, 1970, Ser. No. 98,836

Claims priority, application Canada, Dec. 17, 1969, 070,136

Int. Cl. H02p 7/00

U.S. Cl. 318—7

1 Claim



The application discloses an improved three-motor tape playback machine intended primarily for the teaching of languages. The machine is provided with relays which act to render the amplifier circuits of the machine inoperative when the operating push buttons are operated, so reducing at least to a very low level switching and other noises from the sound output. The arrangement also reduces mechanical noise from the machine.

3,693,062

**TRIMMER POTENTIOMETER WITH RESISTIVE OVERLAY**

George Von Vick, Atlanta, Ga., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Jan. 18, 1971, Ser. No. 107,168

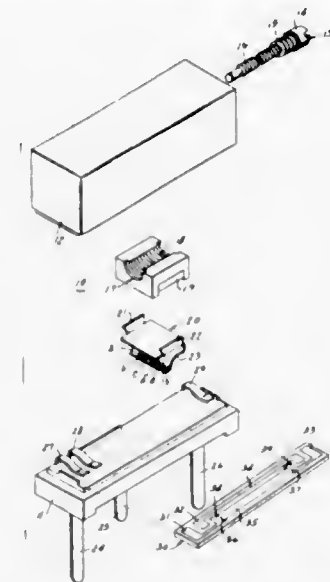
Int. Cl. H01c 9/02

U.S. Cl. 338—92

4 Claims

A trimmer potentiometer includes an elongate resistive element which is screened over a portion of each end terminal

pad. Each end terminal pad extends laterally from the overlay and wiper means is disposed for engagement with the lateral extensions of the end terminal pads to short out the resistive



overlay portion and prevent the potentiometer from exhibiting a resistance through the thickness of the resistive element at an overlay portion.

3,693,063

**SPEED CONTROL DEVICE FOR SEWING MACHINES**  
 Pietro Sillano, Pavia, Italy, assignor to Necchi S.p.A., Pavia, Italy

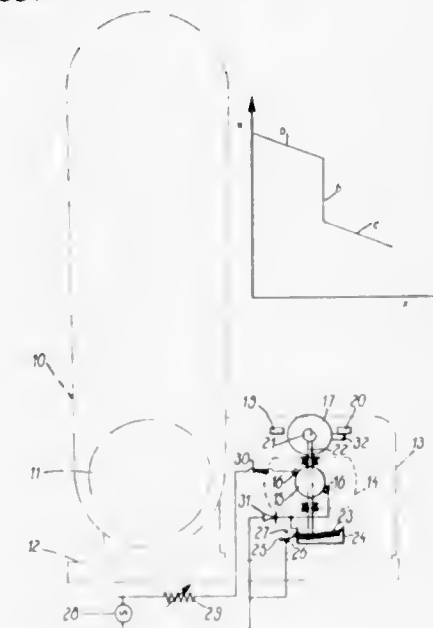
Filed April 6, 1971, Ser. No. 131,606

Claims priority, application Italy, Apr. 23, 1970, 42906-A/70

Int. Cl. H02p 5/44

U.S. Cl. 318—337

1 Claim



A speed control means for a motor of the commutator type and is particularly intended for such motors as applied to sewing machines. The speed control means is arranged to rotate the brush axis while simultaneously cutting in or cutting out a diode from the motor circuit.

3,693,064

**NUMERICAL CONTROL SYSTEM DEPENDENT ON VECTOR MAGNITUDE**

William B. Kiwi, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 66,979, Aug. 26, 1970. This application March 5, 1971, Ser. No. 121,316

Int. Cl. G05b 19/24

U.S. Cl. 318—571

15 Claims

A numerical control system for operating a machine tool or the like receives successive coordinate movement instructions

3,693,067

**ADJUSTABLE PROPORTIONAL RESPONSE FOR BALANCEABLE SYSTEM**

Thomas J. Walsh, Hatboro, Pa., assignor to Leeds & Northrup Company, Philadelphia, Pa.

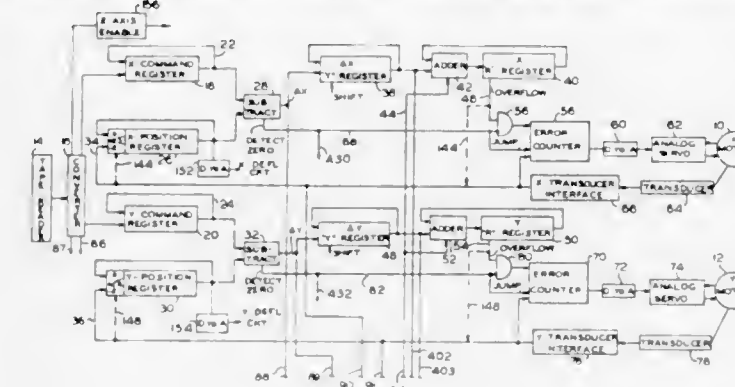
Continuation of Ser. No. 758,457, Sept. 9, 1968, abandoned.

This application Aug. 7, 1970, Ser. No. 62,064

Int. Cl. G05b 11/36

U.S. Cl. 318—609

3 Claims



different coordinate axes to bring about an optimized vector feedrate. Acceleration and deceleration are digitally directed for adapting the numerical control system to the particular device operated thereby.

3,693,065

Patent Not Issued For This Number

3,693,066

**NATURAL FEELING COMMON DRIVE PLOTTER-DIGITIZER**

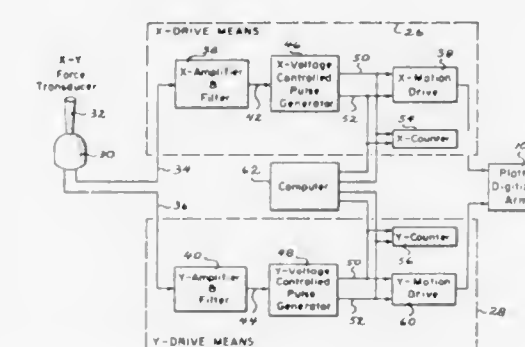
David Friedman, and Kenneth Levy, both of Framingham, Mass., assignors to Computervision Corporation, Burlington, Mass.

Filed Aug. 24, 1970, Ser. No. 66,343

Int. Cl. G05b 11/36, 11/01

U.S. Cl. 318—576

17 Claims



A power assisted positioning device which provides a natural feeling common drive for a plotter-digitizer. The plotter-digitizer comprises a movable arm positioned over a drawing surface and driven by servo motors under the control of a transducer mounted on the arm. The arm holds an engageable drawing tool and a measuring reticle. Control circuitry translates force on the transducer into rate-of-arm motion in the direction of the force. The moving force for the arm is normally supplied by the operator through his hand. Additional features of this invention include a deadband around the zero force point and a high mechanical resonant frequency characteristic in the transducer. These characteristics result in a "natural feel" to the hand controlled arm and provide high stability to the system. Motion of the arm can be in tiny steps of accurately known size and a record of the steps can be stored to indicate the direction and amount of arm travel. Likewise, on command from a control such as a computer, the arm can be moved a selected number of steps representative of a desired travel, using some of the same control circuitry.

3,693,068

**ELECTRICAL POWER SUPPLY COMPRISING SEQUENTIALLY ACTIVATED BATTERIES**

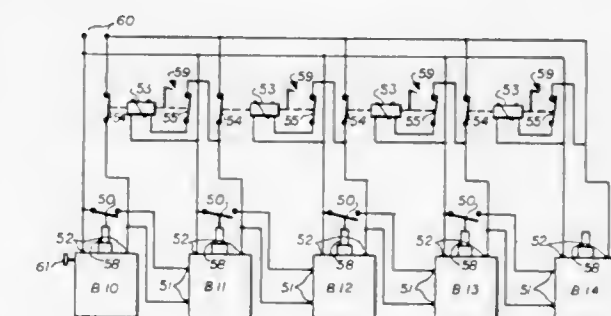
John C. Bogue, 101 Ocean Avenue, and Robert I. Sarbacher, 708 4th St., both of Santa Monica, Calif., assignors to said Bogue, by said Sarbacher

Filed July 8, 1970, Ser. No. 53,097

Int. Cl. H01m 45/00

U.S. Cl. 320—13

13 Claims



An electrical power supply, particularly adapted for intermittent use, has an extremely long standby life. A series of squib actuated electrochemical batteries are controlled by a selective activation circuit, so that each reserve or secondary battery of the series is activated only after the preceding battery has substantially spent its useful life. The circuit responds to an increase in pressure within the battery encapsulation signaling the end of the battery's useable life, to substitute the next battery in the series, and to activate it by firing its squib.

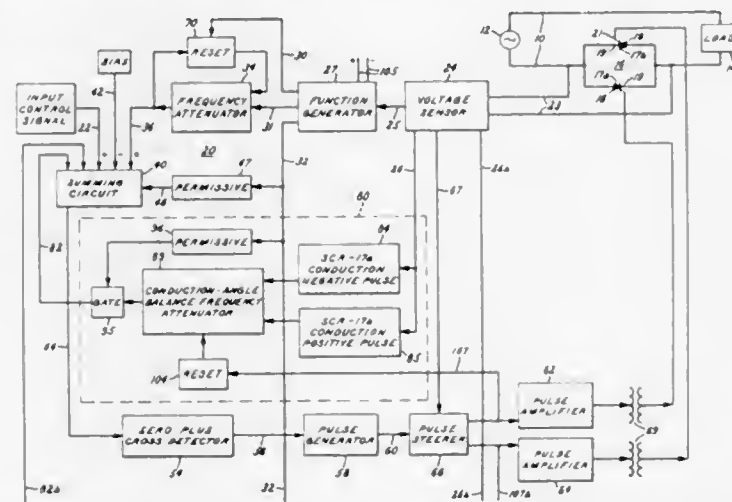


3,693,069

GATING CONTROL FOR A STATIC SWITCHING  
ARRANGEMENT WITH IMPROVED CONDUCTION  
ANGLE BALANCING MEANSFred W. Kelley, Jr., Media, Pa., and Georges R. E. Lezan,  
Cherry Hill, N.J., assignors to General Electric Company  
Filed Nov. 9, 1971, Ser. No. 196,885  
Int. Cl. G05t 1/44

U.S. Cl. 323-24

6 Claims

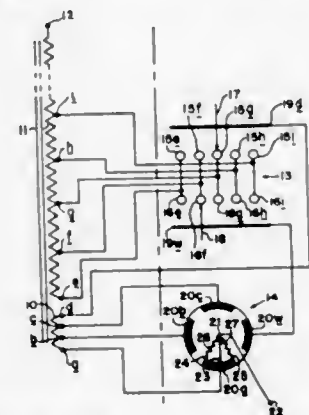


A gating control for a switching arrangement comprising a pair of thyristors which are alternately gated into conduction by gating pulses for predetermined conduction angles. First balancing means compares the conduction angles of alternate thyristors on those pairs of successive conducting periods during which a first one of the thyristors conducts preceding a second one of the thyristors and derives a first balance indicating signal indicative of the difference between the conduction angles compared by the first balancing means. Second balancing means compares the conduction angles of alternate thyristors on those pairs of successive conducting periods during which the second thyristor conducts preceding said first thyristor and derives a second balance-indicating signal indicative of the difference between the conduction angles compared by this second balancing means. For forcing the conduction angles of the alternate thyristors toward equality, means sensitive to the first balance-indicating signal varies the gating angles at which gating pulses are delivered to the first thyristor; and means sensitive to the second balance-indicating signal varies the gating angles at which gating pulses are delivered to the second thyristor.

3,693,070

TAP CHANGING APPARATUS FOR TRANSFORMERS  
John Douglas Shorrock, 49 Cavendish Road, Heaton Mersey,  
Stockport, EnglandFiled April 2, 1971, Ser. No. 130,711  
Claims priority, application Great Britain, Feb. 27, 1970,  
9,494/70Int. Cl. H02p 13/06; H02m 5/12  
U.S. Cl. 323-43.5 R

4 Claims



Tap changing apparatus for a transformer includes an off-load tapping selector switch having its contacts connected to

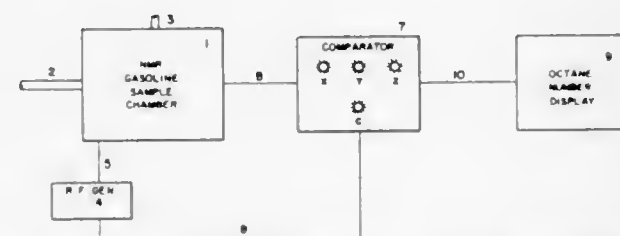
tappings on a coarse tapping winding, and a rotary diverter switch connected to the tapping selector switch and toappings on a fine tapping winding. The arrangement enables any required part of the fine tapping winding to be connected in series with any required part of the coarse tapping winding.

3,693,071

METHOD FOR DETERMINING OCTANE RATINGS FOR  
GASOLINESGeoffrey Emerson Dolbear, Columbia, Md., assignors to  
W. R. Grace & Co., New York, N.Y.Filed Oct. 15, 1970, Ser. No. 80,830  
Int. Cl. G01n 27/78

U.S. Cl. 324-0.5 R

12 Claims



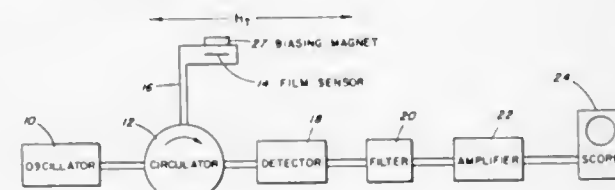
The octane number of a gasoline can be accurately determined using nuclear magnetic resonance analysis. The octane numbers, research octane number and motor octane number, can be determined by a linear correlation of allylic or olefinic and aromatic hydrogen concentrations. The gasoline which is to be analyzed is usually flowed through an NMR cell containing a magnet, R.F. source and antenna, with an output indicating the quantitative presence of the differing types of hydrogens. By the linear correlation of the degree of presence of the specific hydrogens, the octane numbers are determined. These octane rating devices can be used to control plant streams where varying grades of gasoline are formulated.

3,693,072

FERROMAGNETIC RESONANCE MAGNETOMETER  
Henry R. Irons, Adelphi, and Leonard J. Schweg, Silver  
Spring, both of Md., assignors to The United States of America  
as represented by the Secretary of the NavyFiled Aug. 25, 1967, Ser. No. 663,454  
Int. Cl. G01r 33/08

U.S. Cl. 324-0.5 R

7 Claims



A magnetometer having a thin-film sensor positioned near or at the end of a transmission line and biased near its ferromagnetic resonance. An electromagnetic signal is applied to the thin-film sensor. The reflected portion of this signal is amplitude modulated by the influence of an external magnetic field on the thin-film sensor, and then detected to provide a measure of the external magnetic field.

3,693,073

MULTIPLE FUNCTION TESTING DEVICE FOR  
INTERNAL COMBUSTION ENGINEMichael Colette, Saint Clair Shores, Mich., assignor to  
Orbit Laboratories, Inc., Chicago, Ill.Filed Oct. 23, 1970, Ser. No. 83,357  
Int. Cl. F02p 17/00

U.S. Cl. 324-16 R

10 Claims

A multiple function device has three circuits with a common control. One circuit is an oscillator which charges a con-

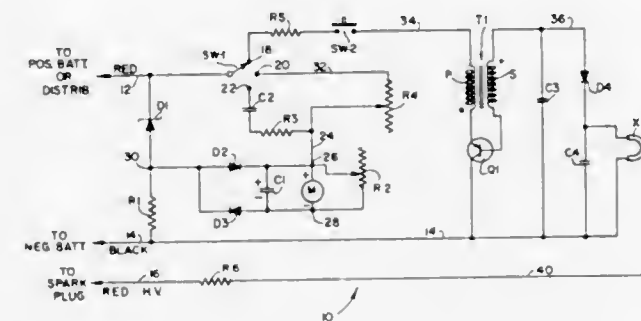
3,693,075

EDDY CURRENT SYSTEM FOR TESTING TUBES FOR  
DEFECTS, ECCENTRICITY, AND WALL THICKNESS  
Friedrich M. O. Forster, Grathwohlstrasse 4, Reutlingen, Ger-  
manyFiled Oct. 16, 1970, Ser. No. 81,320  
Claims priority, application Germany, Nov. 15, 1969, P 19  
57 489.1

U.S. Cl. 324-40

Int. Cl. G01r 33/12

6 Claims



cam dwell; and another circuit is an averaging meter which provides a voltage that is proportional to the number of times that the breaker points open. In the latter two instances the meter is calibrated with scales that read dwell time and R.P.M., directly.

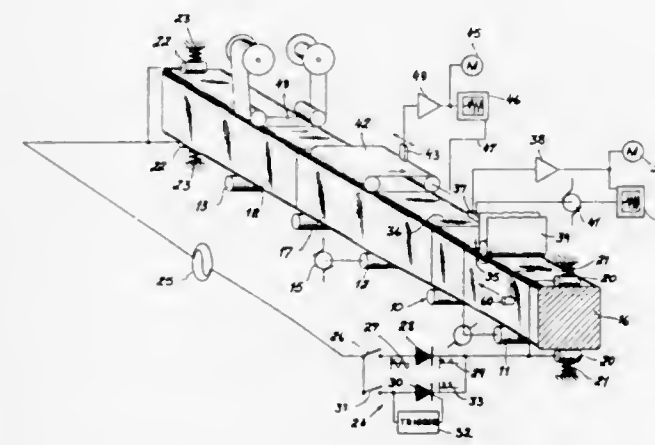
3,693,074

MAGNETIC DETECTION OF SURFACE FAULTS IN AN  
ELONGATED METAL BODY BY PASSING ELECTRIC  
CURRENT PULSES THERE THROUGH WHILE A  
MAGNETIC TAPE IS DISPLACED ALONG THE SURFACE  
OF THE BODYPaul Holler, Oberhauser, and Paul Scholten, Essen-Frintrop,  
both of Germany, assignors to Huttenwerk Oberhausen  
A.G., Oberhausen, GermanyContinuation-in-part of Ser. No. 775,665, Nov. 14, 1968,  
abandoned. This application Dec. 31, 1970, Ser. No. 103,328  
Claims priority, application Germany, Nov. 15, 1967, P 16  
48 517.9

Int. Cl. G01r 33/12

U.S. Cl. 324-37

7 Claims



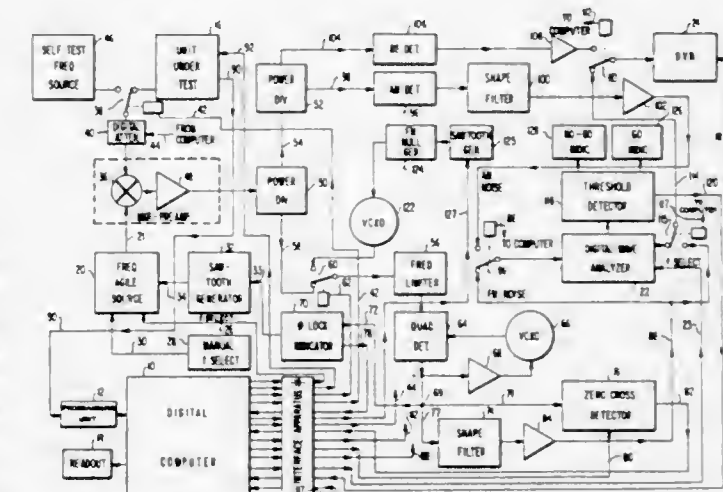
A method of detecting the location and extent of superficial faults, especially cracks, and for measuring the depths of such cracks in bars, billets, blooms, ingots, rods and tubes, especially of noncircular cross section. An electric current is passed axially through the elongated metallic body, and the magnetic flux of field (crossflux) generated by the passage of the electric current through the body is detected along the surface thereof. To avoid or reduce the effects of the edges of the noncircular body upon the detected magnetic field strength or flux and, therefore, to reduce the possibility that cracks in the region of these edges will be undetected or poorly evaluated, the electric current passed axially through the bar is pulsed with the pulse shape being selected such that, in relation to the geometry of the bar, cracks in the surface in the region of the edges are detected.

3,693,076

COMPUTER CONTROLLED RF NOISE AND  
MODULATION ANALYZERJohn L. Nugent, Baltimore, and Harvey M. Masters, Ellicott  
City, both of Md., assignors to Westinghouse Electric Corporation,  
Pittsburgh, Pa.Filed June 22, 1971, Ser. No. 155,556  
Int. Cl. G01r 27/00

U.S. Cl. 324-57 N

13 Claims



A computer controlled test set capable of measuring FM and AM noise of an RF signal as well as the index of modulation, RF power level and the linearity of a ramped FM signal output from a microwave signal oscillator included in a unit under test.



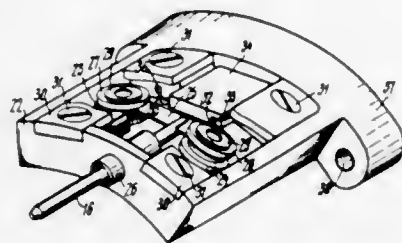
### 3,693,077 ELECTRIC DRILL

Nikolai Nikolaevich Grinchenko, ulitsa Tonkopia, 24a, kv. 26; Vadim Vyacheslavovich Abakanovich, ulitsa Lermontovskaya, 37, kv. 38; Jury Moiseevich Goldstein, ulitsa Olminkogo, 17, kv. 1; Grigory Zakharovich Gurevich, ulitsa Karelskaya, 14, kv. 39; Viktor Gavrilovich Chepelev, Moskovsky prospekt, 232a, kv. 10, all of Kharkov, and Vladimir Zakharovich Kuvshinov, ulitsa Gastello, 8, kv. 33, Moscow, all of U.S.S.R.

Filed June 4, 1971, Ser. No. 150,121  
Int. Cl. G01r 31/12

U.S. Cl. 324—54

2 Claims



An electrical drill for drilling oil and gas wells is disclosed. The electrical drill comprises a housing which accommodates a three-winding-phase electric motor with a cable lead-in powered through a supply line consisting of a two-wire cable line connected through said lead-in to said motor and a drill pipe string as the third wire of said supply. A device for testing insulation resistance of the circuit between the cable line and the motor winding is connected between one of the winding phases and said housing and mounted in the inner circular space thereof. The device for testing insulation resistance comprises a thyristor and a diode mounted in one frame having the form of a circular section for dissipating heat from said thyristor and diode and, simultaneously, providing electrical connection to said housing. This arrangement increases the rigidity of the lower end of the drill pipe string, increases the reliability of the entire installation and improves the dependability of the telemetering data obtained in the course of well boring.

### 3,693,078

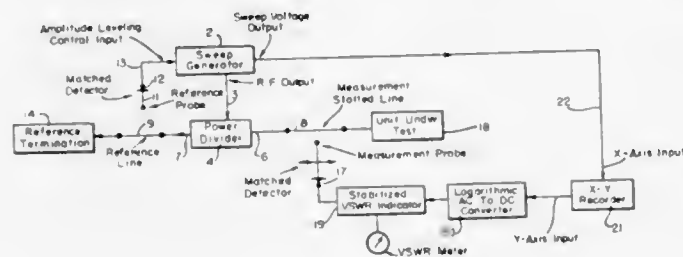
#### SWEPT FREQUENCY VSWR MEASUREMENT WITH SLOTTED LINE

Gunther U. Sorger, Bethesda, Md., assignor to Weinschel Engineering Co., Inc., Gaithersburg, Md.

Filed Feb. 15, 1967, Ser. No. 616,283  
Int. Cl. G01r 27/04

U.S. Cl. 324—58 B

9 Claims



A system is disclosed for measuring VSWR of microwave components through a continuous range of frequencies in a very short time (approximately 1 minute), with a very high accuracy, the result being displayable on a memory oscilloscope as a broad band of signals, with the difference between the top and bottom of the band, at any frequency, giving an indication of the VSWR. A slotted line probe is moved one-half wavelength of the lowest frequency being measured, and the output of a reference probe is used to provide a feedback signal to balance out the rising frequency characteristics which would otherwise exist.

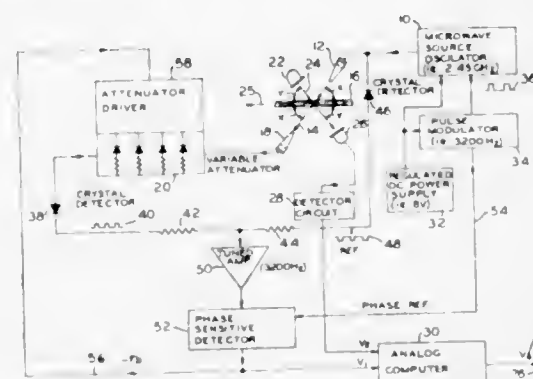
### 3,693,079 APPARATUS FOR MEASURING PERCENT MOISTURE CONTENT OF PARTICULATE MATERIAL USING MICROWAVES AND PENETRATING RADIATION

Charles W. E. Walker, 855 McBride Blvd. Apt. 307, New Westminster, British Columbia, Canada  
Continuation-in-part of Ser. No. 633,940, Aug. 26, 1967, Pat. No. 3,534,260. This application April 14, 1970, Ser. No. 28,411

Int. Cl. G01n 27/04

U.S. Cl. 324—58.5 A

20 Claims



Apparatus for measuring the percent moisture content of particulate materials, such as wood chips and grain, is described in which a beam of microwaves and a beam of penetrating radiation, such as gamma rays, X-rays, beta rays or high-velocity electrons, are transmitted through the same portion of a layer of such material. The beam of microwaves is directed at an acute angle to the particulate layer so that any microwave reflections do not strike the transmitting antenna and produce standing wave patterns. The microwaves are of a frequency that the microwave beam is partially absorbed by the water in the moist particulate material to produce a moisture signal, but has a wavelength greater than the dimensions of the particles to prevent diffraction effects. The beam of penetrating radiation is also partially absorbed by the total mass of the moist particulate material to produce a density signal. The moisture and density signals are then fed to an analog computer to determine the percent of moisture with an accuracy of within  $\pm 0.25$  percent of the reading over a moisture range of about 25 to 65 percent, and within  $\pm 0.5$  percent of the reading outside of this range and above 5 percent moisture.

### 3,693,080

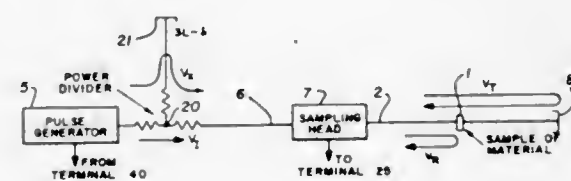
#### TIME DOMAIN MEASUREMENT OF HIGH FREQUENCY COMPLEX PERMITTIVITY AND PERMEABILITY OF TRANSMISSION LINE ENCLOSED MATERIAL SAMPLE

Gerald F. Ross, Lexington, and Alexander M. Nicolson, Concord, both of Mass., assignors to Sperry Rand Corporation  
Filed Dec. 21, 1970, Ser. No. 99,948

Int. Cl. G01r 27/04

U.S. Cl. 324—58.5 A

7 Claims



The forward and back scattered energy of a sample exposed to an incident impulse of electromagnetic energy in a transmission line is sampled by a drift compensated sampling system and the incident wave and reflected and transmitted responses are employed in performing discrete Fourier transformations in a computation process yielding complex permittivity and complex permeability of the material of the sample.

### 3,693,081

#### FREQUENCY RELAY

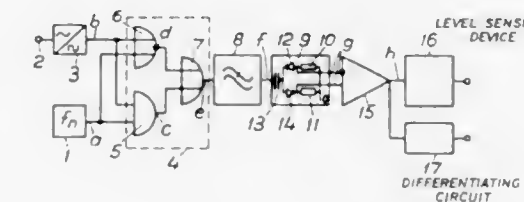
Stig Aviander, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden  
Filed July 23, 1970, Ser. No. 57,644

Claims priority, application Sweden, July 29, 1969, 10629/69

Int. Cl. G01r 23/14, 23/02

U.S. Cl. 324—79 R

3 Claims



A frequency relay for determining the deviation of a supervised frequency from a normal frequency has means for generating a signal with the supervised frequency and a second signal with a normal frequency and means for transferring said two signals into square voltages with high amplitude during one half period and low amplitude during the other half period. A logic circuit has two inputs to which said two signals are supplied and an output on which a third signal appears which has a certain amplitude when the two input signals are the same and another amplitude if the two input signals are different. A differentiating circuit has its input connected to the output of the logic circuit over a low-pass filter, the output signal of the differentiating circuit being a gauge of the deviation of the supervised frequency from the normal frequency.

### 3,693,082

#### APPARATUS FOR ELECTRONICALLY MEASURING THE ANGLE OF ROTATION OF THE POLARIZATION PLANE OF A LINEARLY POLARIZED LIGHT BEAM PRODUCED BY PASSAGE OF THE BEAM THROUGH A MAGNETO-OPTICAL ELEMENT SUBJECT TO A MAGNETIC FIELD TO BE MEASURED

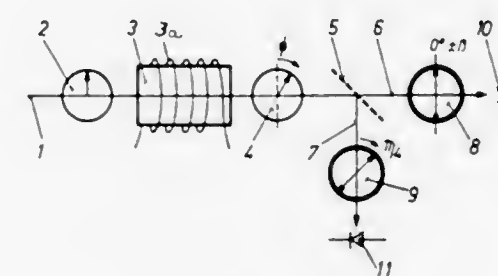
Andre Jaecklin, Ennetbaden, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland  
Filed Dec. 11, 1970, Ser. No. 97,181

Claims priority, application Switzerland, Dec. 23, 1969, 19071/69

Int. Cl. G01r 19/00

U.S. Cl. 324—96

5 Claims



An arrangement for measuring the current flow through a conductor includes a magneto-optical element provided with a coil through which the current to be measured is passed. A beam of linearly polarized light passed through the magneto-optical element has its plane of polarization rotated by an amount proportional to the magnetic field produced by the coil, and the light beam after issuing from the magneto-optical

element is split by an optical divider into two partial beams having different directions. One of the partial beams is passed through a polarizing filter to a photo-detector and the other beam is also passed through a polarizing filter but which has a pass-through direction rotated by an angle of about  $45^\circ$  relative to that of the other polarizing filter. The respective electrical outputs from the photo-detectors are then fed to multipliers to which sinusoidal signals from a local oscillator are also fed, the outputs from the multipliers are then added and the output from the adding member is then applied to a frequency demodulator.

### 3,693,083

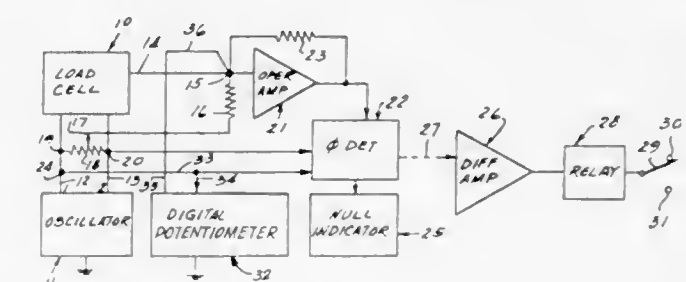
#### MANUAL DIGITAL SCALE

Martin W. Hamilton, Arlington Heights, and William H. Jones, Villa Park, both of Ill., assignors to Eaton Yale & Towne, Inc., Cleveland, Ohio

Filed Sept. 9, 1969, Ser. No. 856,436  
Int. Cl. G01r 17/02, 27/02

U.S. Cl. 324—98

5 Claims



A manual digital scale system having a load cell for sensing the instantaneous mechanical load applied to a system and circuit means for coupling the load cell signal to a current summation point. A digital potentiometer arrangement is provided to produce current in digital steps, and means are provided to couple that current to the current summation point. An oscillator which may operate in the order of 2,500 Hz supplies power to the load cell at first and second phases. The output of the load cell is at a first phase, and the oscillator supplies power to the digital potentiometer at the second phase. The first and second phases are substantially  $180^\circ$  apart, and therefore current supplied by the digital potentiometer to the current summation point will subtract from current supplied thereto by the load cell. The output of the current summation point is coupled through an operational amplifier and a phase detector to a null indicator. Accordingly, the load being sustained by the load cell can be measured by gradually increasing the digital potentiometer setting until the current therefrom cancels the current output of the load cell. This condition is indicated by the null indicator. In the alternative, the output of the phase detector may be coupled to a differential amplifier and to a relay. By this latter arrangement, the value of the desired loading on the load cell can be preset into the digital potentiometer and loads such as grain or other similar goods can be gradually added to the load cell until the load is increased to the point where a null condition is obtained at the current summation point. When this occurs, the differential amplifier will reverse its position and operate the relay to trigger a signal indicating that the desired weight has been obtained. The digital potentiometer employed consists of a series of equal value resistors with a plurality of switch contacts being capable of connection to any one of the series connected resistors. Each one of the contacts has a scaling resistor connected in series therewith, and all of the contacts are connected in parallel to provide a common output. Each of the scaling resistors in sequence are one-tenth of the magnitude of the adjacent scaling resistor thereby providing an output which is digital in form.



3,693,084

## METHOD AND APPARATUS FOR DETECTING MICROWAVE FIELDS

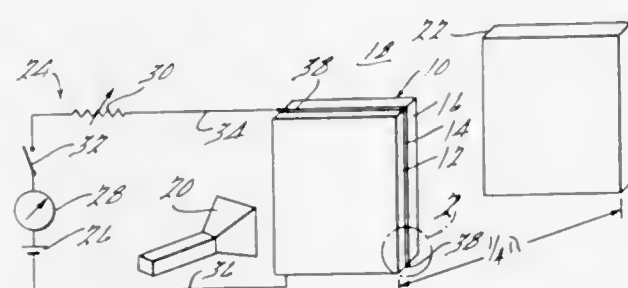
Carl F. Augustine, Farmington, Mich., assignor to The Bendix Corporation

Filed June 17, 1969, Ser. No. 833,958

Int. Cl. G01r 5/26, 21/04

U.S. Cl. 324—106

14 Claims



A detector for providing a substantially real time display of the intensity distribution of a microwave field having a layer of liquid crystals adjacent a thin continuous resistive film. The microwave field detector of this invention is disclosed in an apparatus for non-destructive internal examination of an object, a microwave power density meter, an impedance matching instrument and an apparatus for forming holograms using microwaves.

3,693,086

## METER WITH SMALL TILT ERROR

Henry W. Redecker, Rt. 6, and Eugene G. Bezgela, 351 Forsyth St., both of Raleigh, N.C.

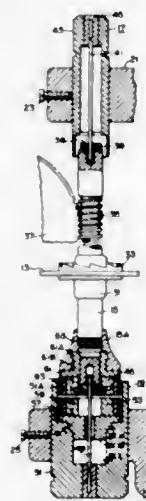
Continuation of Ser. No. 746,641, July 22, 1968, abandoned.

Filed March 15, 1971, Ser. No. 124,425

Int. Cl. G01r 1/00

U.S. Cl. 324—155

5 Claims



An induction type meter has a rotor mounted for rotation about a vertical axis and supported vertically by a magnetic mounting. The rotor is restrained against lateral motion by ring bearings made of an aromatic polyimide resin and a filler.

3,693,087

## DUAL ACTING PROBE WITH EXTRACTOR/GUIDE

Joseph E. Adams, Millbrook; Edmund J. Di Stefano, and Arthur E. Enderley, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1970, Ser. No. 99,204

Int. Cl. G01r 1/06; H01r 13/62

U.S. Cl. 324—158 P

3 Claims



An electrical probe is designed to test printed circuit boards having contact elements and connectors mounted thereon. The probe has an insulating body carrying two parallel contact blades. A member of insulating material is slideably mounted on the blades and is connected to a plunger assembly. The plunger assembly is used to move the member between two positions. In one position, the ends of the blades are exposed for insertion into a connector for engagement with the contact elements therein. Upon movement of the member from this position, the member engages the connector assembly and facilitates extracting the blades from the assembly. In the other position, the member covers the ends of the blades and is shaped to guide the blades into engagement with the contact elements on the board.

3,693,085

## SYSTEM FOR CALIBRATED HIGH LEVEL CURRENT MEASUREMENT USING A MAGNETIC FIELD RESPONSIVE TRANSISTOR

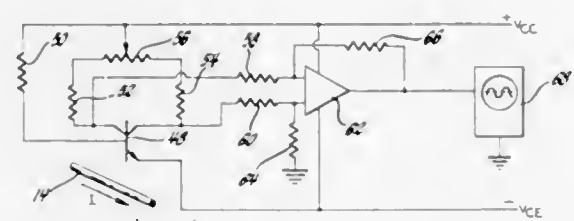
Jack H. Beard, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 15, 1971, Ser. No. 162,826

Int. Cl. G01r 33/00, 33/02

U.S. Cl. 324—117 H

2 Claims



A transistor having terminal characteristics dependent on the magnetic field incident on the transistor is used in a current sensing arrangement to measure the level of current in a conductor. A differential output voltage is provided by the transistor proportionate to the magnetic field created by the current in the conductor. Calibration of the current sensor is effected by intensifying or shunting the magnetic field to permit measurement of low and high current levels respectively. The field incident on the transistor is intensified by use of magnetic material to direct the magnetic flux on the transistor to sense low current levels. High current levels are sensed by shunting the magnetic field in a calibrated fashion such that the field impinging on the transistor is maintained within the operational limits of the device; magnetic material is interposed between the transistor and the conductor to afford the requisite shunt path.

3,693,088

## DIVERSITY SYSTEM FOR MOBILE RADIO USING FADE RATE SWITCHING

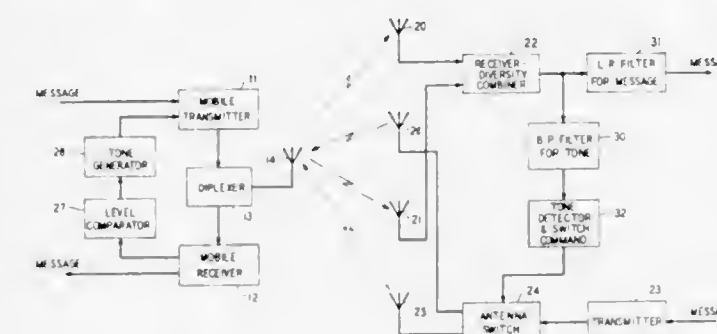
Anthony Joseph Rustako, Jr., Colts Neck, and Yu Shuan Yeh, Spotswood, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 29, 1970, Ser. No. 102,422

Int. Cl. H04b 7/08

U.S. Cl. 325—56

12 Claims



A mobile radio system having a plurality of base station transmitting antennas for each channel. When the mobile receiver encounters a fading signal level from the antenna then in use, it transmits an out of message band signal back to the base station which commands the base to switch to a different antenna thus providing diversity on the base to mobile link. Particular circuits are provided to discriminate between rapid Rayleigh fades and slow shadowing fades and to transmit a command for an antenna switch based on the Rayleigh fades.

3,693,089

## HOUSING ASSEMBLY FOR MINIATURE RADIO APPARATUS WITH SELF CONTAINED BATTERY

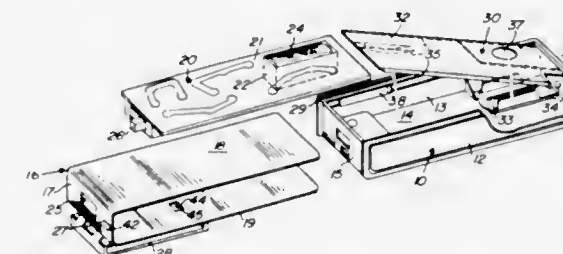
Thomas R. Hutchinson, Sunrise Golf Village, and Marco Hans Lombard, Miami, both of Fla., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 20, 1971, Ser. No. 145,165

Int. Cl. H04b 1/08

U.S. Cl. 325—119

12 Claims



Housing assembly for miniature radio apparatus, such as a radio pager, having a molded frame member which houses the chassis and forms one end and two opposite outer sides of the housing. Space for a battery is provided adjacent the end of the housing formed by the frame member. A flexible plastic insulating member has a central part secured to the end of the frame member with flaps covering the chassis and the battery. A U-shaped cover member slides in grooves in the frame member to form the other end and the other two outer sides of the housing, thereby providing a completely enclosed housing. The cover bears against the flaps to hold the chassis and battery in the proper positions within the housing. The cover can slide with respect to the frame member to open the housing at one end to afford access to the battery. A spring biased detent is secured to the frame member, which cooperates with an opening in the cover member to hold the cover completely closed. This detent can be overridden to permit the cover to slide part way open for access to the battery. The detent engages a tongue at a further opening in the cover to prevent further movement of the cover with respect to the housing.

3,693,090

## WIRED BROADCASTING SYSTEMS

Ralph Parton Gabriel, Woking, England, assignor to Communications Patents Limited

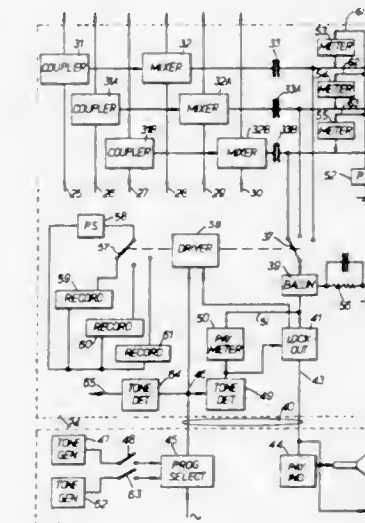
Filed Aug. 8, 1969, Ser. No. 848,567

Claims priority, application Great Britain, Aug. 9, 1968, 38,108/68

Int. Cl. H04b 3/28, 3/50; H04n 7/10

U.S. Cl. 325—308

14 Claims



A wired broadcasting system for television transmission from a plurality of sources to individual subscriber stations has switching apparatus at a central station actuated by signals at the subscriber station. A four wire cable arrangement to each subscriber provides two control wires and two signal wires. Provision for station selection, audience response and numbers of subscribers is made through use of time signals passed through the control wires. Provisions for accepting charges and recording the time in use are made at the central station.

3,693,091

## AGC SWITCHING NETWORK FOR DUAL TUNERS OF A TV RECEIVER

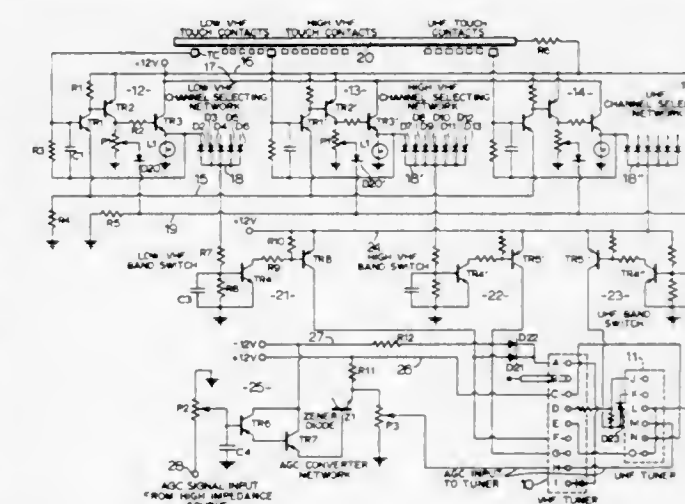
William G. Russell, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Ontario, Canada

Filed Oct. 2, 1970, Ser. No. 77,414

Int. Cl. H04b 1/16

U.S. Cl. 325—319

6 Claims



A signal receiver of a type that includes an AGC signal and also of a type that employs two different tuners has an AGC switching network for supplying the AGC signal to either one of the tuners provided that







signals exist during each of a plurality of repetition intervals. Each repetition interval is divided into a plurality of discrete time intervals called bins. The average signal level in each bin is determined and the estimated mean background noise level for each bin is derived by summing and averaging the signal level in a selected number of bins adjoining the bins next to the test bin. The estimated mean background noise level for each bin is subtracted from the average signal level for the associated bin to derive a residual signal which is then stored. This procedure is repeated for a selected number of repetition intervals with the derived residual signals for each bin being added to the previously derived residual signal for that bin. Since the signal level of a bin containing the information pulse is statistically greater than the estimated mean background noise for that bin, the residual signals accumulate to a relatively high signal level as the repetitive information pulses are accumulated over a selected number of repetition intervals. The residual signal in bins not containing the repetitive information signal will not accumulate to a high residual signal over successive repetition intervals since the difference between the estimated mean background noise level for such bins and the average signal level thereof will tend to zero.

If the information signal is shifting timewise with respect to the repetition interval, a plurality of the aforementioned signal processors are connected in parallel with the discrete time intervals or bins generated by each processor being shifted with respect to time at varying rates. Thus, a high accumulation signal will occur in only the processor having its bins shifted at the same rate that the information signal is shifting with respect to the repetition interval. The output of the processor having the highest peak accumulated signal is detected and displayed by an output device.

3,693,101

## TIME DELAY CIRCUIT

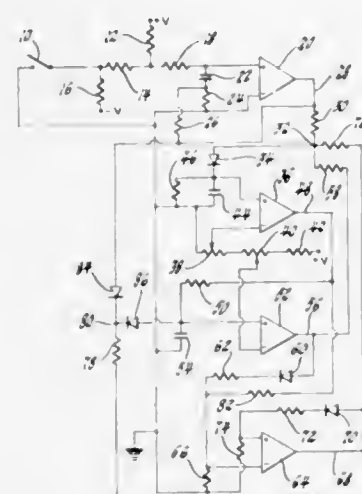
Philip K. Trimble, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 7, 1971, Ser. No. 178,344

Int. Cl. H03k 3/53, 5/153

U.S. Cl. 328—177

3 Claims



A train of variable width pulses is time delayed by a circuit comprising an array of operational amplifiers arranged as comparators. One comparator includes a time delay and filter circuit for discriminating against very short pulses and reproducing all other pulses after a time delay. Two other comparators have time delays of equal length responsive to the leading and trailing ends of each pulse and control a final comparator which reproduces the original pulse train except for the very short pulses.

### 3,693,102 DIGITAL OSCILLATOR HAVING A FAST RESPONSE USING TWO ONE-SHOT MULTIVIBRATORS AND A PAIR OF NAND GATES

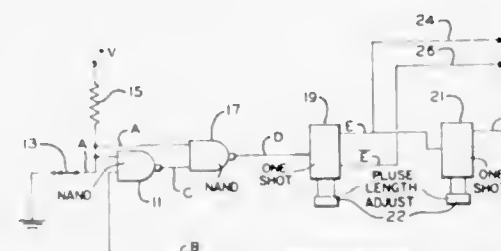
Kenneth G. Harf, Binghamton, N.Y., assignor to Singer-General Precision, Inc., Binghamton, N.Y.

Filed May 27, 1971, Ser. No. 147,425

Int. Cl. H03k 3/02

U.S. Cl. 328—188

9 Claims



A digital oscillator which provides fast response and permits variable frequencies and pulse widths is shown. By combining two gates and two one-shot multivibrators a circuit is provided which will begin to have outputs as soon as the input gate is enabled. Pulse width and repetition rate is adjusted by varying the time constants of the one shots. In addition a crosshatch of dot generator useful in television display adjustment which uses two of the oscillators to obtain its output is shown.

3,693,103

### WIDEBAND DETECTOR FOR USE IN COAXIAL TRANSMISSION LINES

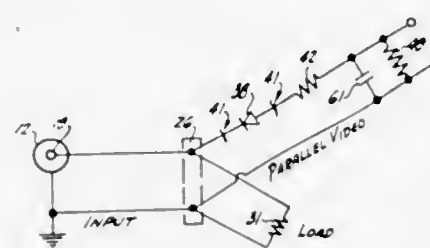
Robert B. Mouw, Menlo Park, Calif., assignor to Aertech, Sunnyvale, Calif.

Filed Aug. 6, 1971, Ser. No. 169,648

Int. Cl. H03d 9/02

U.S. Cl. 329—162

15 Claims



Coaxial line apparatus forming a termination and detector for high frequency signals. An input coaxial transmission line has an inner conductor and an outer conductor. The input coaxial transmission line is branched into a load transmission line and a parallel video transmission line. The load transmission line has inner and outer conductors and a matching impedance connected between the inner and outer conductors for terminating the load transmission line. The parallel transmission line has a separate outer conductor and inner conductive means. The inner conductive means include a crystal diode mounted at an angle with respect to the axis of the parallel transmission line outer conductor. The parallel transmission line outer conductor has an apertured portion substantially aligned with the crystal diode so that the crystal diode can be inserted or removed through the apertured portion. The parallel transmission line also includes additional impedances for attenuating relatively high frequency signals.

3,693,104

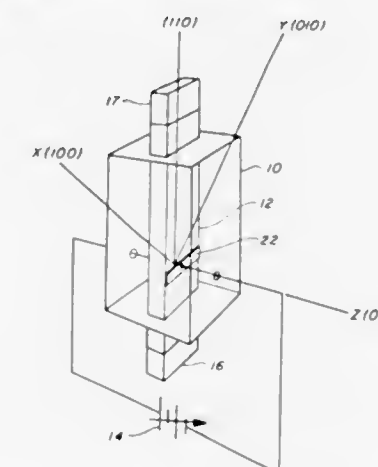
### PHONON GENERATION HANDLING AND DETECTION Isaac F. Silveira, Thousand Oaks, and Lawrence A. Vredevoe, Santa Monica, both of Calif., assignors to North American Rockwell Corporation

Filed June 5, 1970, Ser. No. 43,731

Int. Cl. H01s 1/00

U.S. Cl. 330—5.5

14 Claims



Microwave pumping of an alkali halide crystal doped with hydroxyl electric dipole impurity ions and subjected to a (001) dc electric field, will increase the population of the  $3A_1$  dipolar energy level (the energy level notation applies to the usual case of preferred alignment of the hydroxyl dipoles along the (100) axes, such as in KCl) of the impurity ion when the microwave frequency is in resonance with the  $1A_1$   $3A_1$  transition. Relaxation rates between various dipolar energy levels are shown to produce a population inversion between the  $3A_1$  and  $1B_1$  states and also between  $2A_1$  and  $1A_1$  states. Either spontaneous relaxation or stimulated relaxation from  $3A_1$   $1B_1$  produces phonons having a preferred transverse polarization and a direction of propagation along the (110) axes of the crystal system. Tuning of the output beam of phonons over a phonon frequency range of about  $10^9$  to  $10^{11}$  Hz is achieved by a variation of the dc field. Variation of phonon absorption of an unpumped crystal in accordance with applied dc electric field and the depolarization induced by such absorption are employed to achieve modulation and detection, respectively, of a transmitted phonon beam.

3,693,105

## ACTIVE TUNED CIRCUIT

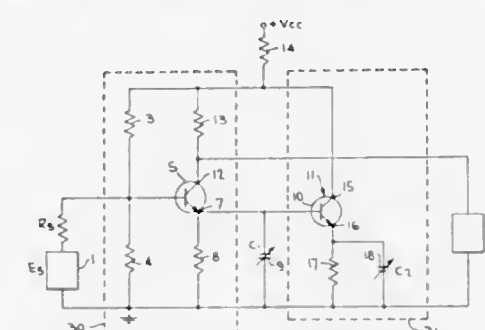
Leonard L. Kleinberg, Greenbelt, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Jan. 18, 1971, Ser. No. 107,379

Int. Cl. H03f 3/04

U.S. Cl. 330—12

9 Claims



Active tuned circuit configurations particularly suitable for microelectronic construction as filters, amplifiers, and oscillators for operation near the  $F_i$  of the transistors employed. A high Q, tunable network at a frequency near  $F_i$  is provided by coupling a second bipolar transistor configuration to the emitter of a first bipolar transistor in order to provide negative resistance and capacitive reactance as necessary to tune the low Q inductive value of the first bipolar transistor.

3,693,106

## STABLE POWER AMPLIFIER CIRCUIT

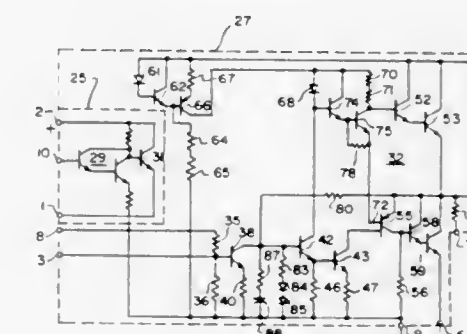
Ernest L. Long, 33 E. Erie, Tempe, Ariz., and Charles M. Ring, 817 Melody Lane, Tempe, Ariz.

Filed Nov. 2, 1970, Ser. No. 79,003

Int. Cl. H03f 3/18

U.S. Cl. 330—17

9 Claims



An integrated circuit power amplifier utilizes a quasi-complementary power output stage incorporating an NPN Darlington amplifier for one section and a field-aided lateral PNP transistor cascaded to an NPN Darlington amplifier for the other section. Feedback from the amplifier output terminal to an intermediate stage coupled to the input of the power output stage is separated into DC and AC feedback paths. The biasing of the power output stage includes an epitaxial resistance matched to the field-aided transistor bulk resistance to cancel the effect of the bulk resistance for improved output stage thermal stability.

3,693,107

## STABLE POWER AMPLIFIER CIRCUIT

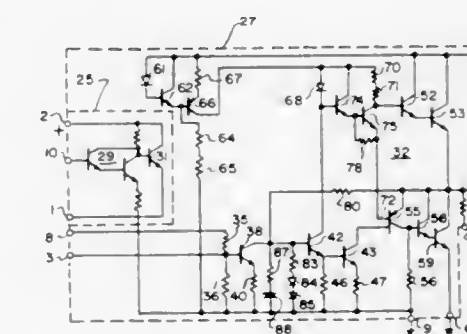
Ernest L. Long, Tempe, Ariz., assignor to Motorola Inc., Franklin Park, Ill.

Filed Nov. 2, 1970, Ser. No. 79,004

Int. Cl. H03f 3/18

U.S. Cl. 330—17

7 Claims



An integrated circuit power amplifier utilizes a quasi-complementary power output stage incorporating an NPN Darlington amplifier for one section and a field-aided lateral PNP transistor cascaded to an NPN Darlington amplifier for the other section. Feedback from the amplifier output terminal to an intermediate stage coupled to the input of the power output stage is separated into DC and AC feedback paths. The biasing of the power output stage includes an epitaxial resistance matched to the field-aided transistor bulk resistance to cancel the effect of the bulk resistance for improved output stage thermal stability.



3,693,108

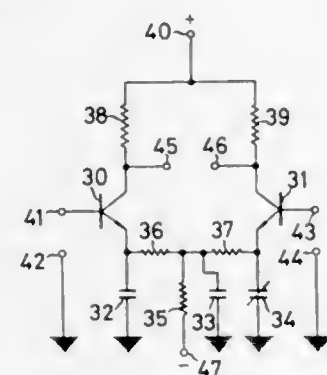
## SEMI-BALANCED AMPLIFIER

Nobuaki Iijima, and Tooru Takahashi, both of Tokyo, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan  
Continuation-in-part of Ser. No. 790,751, Jan. 13, 1969, abandoned. This application Dec. 10, 1970, Ser. No. 96,841  
Claims priority, application Japan, Jan. 26, 1968, 43/4259

Int. Cl. H03f 3/68

U.S. Cl. 330—21

29 Claims



This invention relates to a semi-balanced amplifier which is able to reduce drift by the parallel connection of two amplifying elements such as transistors, vacuum tubes, etc. to a power source and thus amplifying, by means of said amplifying elements, a pair of input signals applied to each of input terminals of the respective amplifying elements.

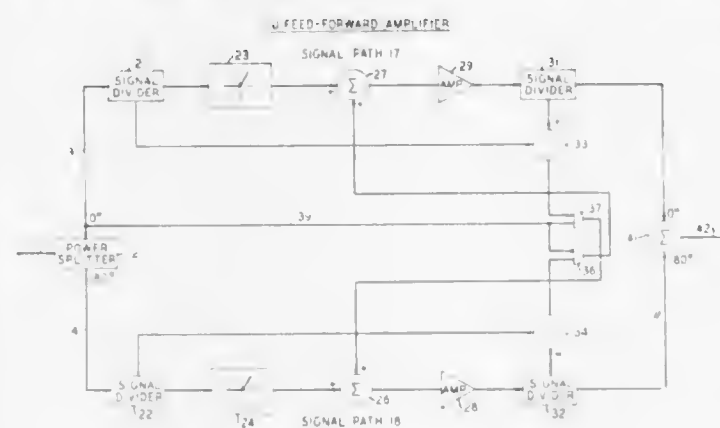
3,693,109

## PUSH-PULL FEED-FORWARD AMPLIFIER

Richard Barry Swerdlow, Haverhill, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed Dec. 13, 1971, Ser. No. 207,085  
Int. Cl. H03f 1/28

U.S. Cl. 330—81

5 Claims



A feed-forward amplifier is connected in a push-pull arrangement which includes rectifying means and cross-coupling means. The rectifying means and the cross-coupling arrangement eliminate the necessity for additional error-correction amplifiers to provide feed-forward compensation while the amplifier operates in a push-pull manner.

3,693,110

## AUDIBLE SIGNAL OR ALARM DEVICE INCLUDING TWO VARIABLE FREQUENCY UNIJUNCTION TRANSISTOR OSCILLATORS

Charles A. Briggs, Jr., Glenside, and Walter H. Vogelsberg, Carversville, both of Pa., assignors to C. A. Briggs Company, Glenside, Pa.

Filed Feb. 23, 1971, Ser. No. 118,049

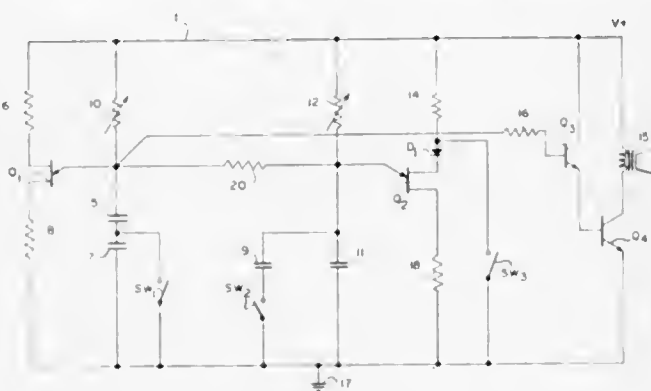
Int. Cl. G08b 3/10, 19/00; H03b 3/04

U.S. Cl. 331—47

8 Claims

An audible signal or alarm circuit capable of selectively providing different output signals is disclosed. The circuit is

capable of providing a steady output signal, a varying frequency output signal, different rates at which the frequency of the output signal is varied and different basic varying frequency signals. The alarm circuit may be used alone or in connection with any sensing or measuring circuitry, such as fire detectors, intrusion detection systems or the like. In addition, the dif-



ferent output signals can be selectively programmed using simple devices such as timing circuits, condition responsive circuits or the like. The alarm circuit comprises a pair of unijunction transistors, an amplifier circuit, a speaker and switching means used to obtain the various different output signals.

3,693,111

## SAWTOOTH OSCILLATOR CIRCUIT

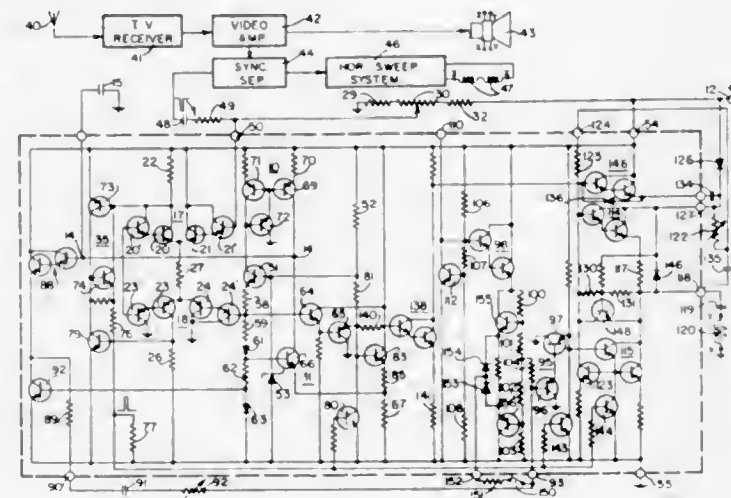
Milton E. Wilcox, Mesa, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 4, 1971, Ser. No. 112,708

Int. Cl. H03k 3/08

U.S. Cl. 331—111

11 Claims



A monolithic integrated sawtooth oscillator and vertical deflection coil driver circuit for a television receiver is disclosed. The oscillator circuit includes a static latching switch and a pair of differential switching amplifiers for controlling the operation of the latching switch in response to the charge on a saw-forming capacitor. The charge on the capacitor is controlled by a pair of current sources, one of which supplies charge to the capacitor to form the ramp for the scan portion of each cycle operation of the circuit and the other of which removes charge from the capacitor for the retrace portion of the cycle of operation of the circuit. The second current source is normally nonconductive and is switched into conduction by the operation of the switching amplifiers and static latching switch when a predetermined charge is attained by the capacitor. Also disclosed are a vertical deflection drive circuit in which the output transistors are part of the integrated circuit. The drive circuit has a provision for providing increased potential to the vertical deflection coil during the retrace portion of the cycle of operation without necessitating the handling of high voltages by the output transistors of the circuit.

3,693,112

## SIGNAL CONTROLLED WIDE RANGE RELAXATION OSCILLATOR APPARATUS

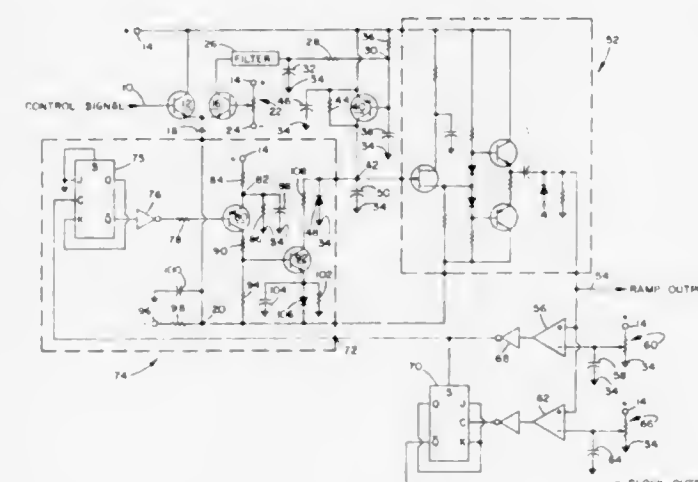
Barry D. Briggs, Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed March 12, 1971, Ser. No. 123,499

Int. Cl. H03b 3/04; H03k 3/28

U.S. Cl. 331—111

7 Claims



A wide range oscillator which can operate over approximately a  $10^4$  frequency range. The oscillator uses a current controlled ramp generator which varies the charging rate of an integrating capacitor. The wide range of charging current plus a low discharge time of the integrating capacitor combines to enable a very wide frequency range oscillator.

## ERRATUM

For Class 331—107 G see:  
Patent No. 3,693,118

3,693,113

## SERRASOID PHASE MODULATOR

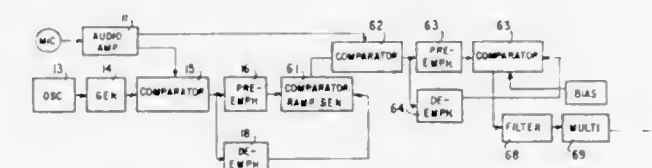
James R. Glasser, R.R. 4, Box 173A, c/o Crusoe Ranch, Cheboygan, Mich., and Stanley J. Tomsa, 1130 Ontario St., Oak Park, Ill.

Continuation-in-part of Ser. No. 805,711, March 10, 1969, abandoned. This application Sept. 10, 1970, Ser. No. 71,174

Int. Cl. H03k 7/00, 5/20

U.S. Cl. 332—9 R

10 Claims



The desired output from a serrasoid phase modulator, a narrow variable position pulse, is obtained from a variable width pulse by means of a differential amplifier. The high frequency components of the variable width pulse are both pre-emphasized and de-emphasized with the pre-emphasized pulse being coupled to one input of the differential amplifier and the de-emphasized pulse being coupled to the other input of differential amplifier. By varying the bias on the differential amplifier a pulse as narrow as desired can be obtained without loss of pulse amplitude.

3,693,114

## CABLE SECTIONS WITH NONMECHANICAL MEANS TO EFFECT COUPLING

Raymond Andrew Kempf, Towson, Md., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

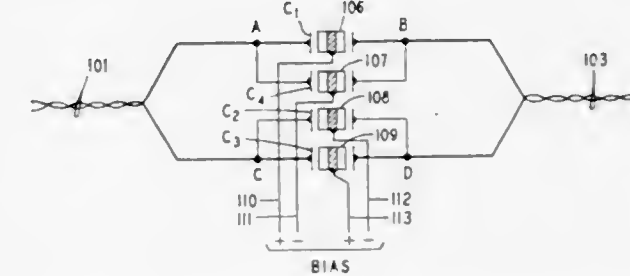
Division of Ser. No. 881,976, Dec. 4, 1969. This application

June 7, 1971, Ser. No. 150,591

Int. Cl. H01p 5/14

U.S. Cl. 333—7

1 Claim



This disclosure describes a scheme for interconnecting telephone cable pairs at a cable junction using remotely controlled devices.

A material with a dielectric constant that can be varied by applied electrical bias is employed as the dielectric of capacitors connected in a lattice. The lattice permits transmission of an ac signal between two pairs when the bias is adjusted to provide an unbalanced condition; or alternatively, blocks transmission when the bias balances the lattice.

3,693,115

## MECHANICAL TUNABLE BANDPASS FILTER

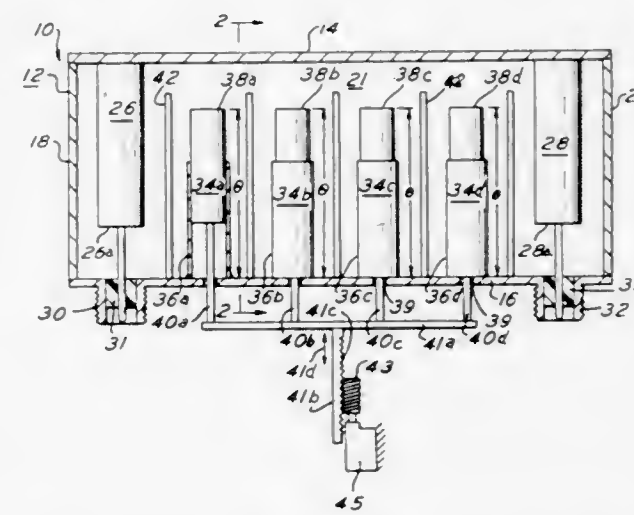
William A. Edson, Los Altos Hills, Calif., assignor to American Electronic Laboratories, Inc., Colmar, Pa.

Filed Dec. 28, 1970, Ser. No. 101,988

Int. Cl. H03j 3/26

U.S. Cl. 333—73 R

7 Claims



A filter including a closed conducting housing having a pair of side walls which are the ground planes of the filter. Input and output rods of fixed length are mounted in spaced relation between the side walls. A plurality of resonator bars are between the side walls and in spaced relation between the input and output rods. The electric and magnetic coupling between each pair of adjacent bars is controlled by fixed septa or partitions having a special shape. The resonator bars are movable and are adapted to be varied in length in unison so as to tune the filter. The various fixed dimensions and especially those of the partitions between adjacent resonators are chosen so as to maintain the width of the transmission passband substantially constant or variable in a desired manner, while the passband frequencies are shifted by tuning.

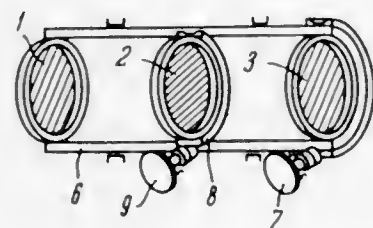


### 3,693,116 ATTENUATOR FOR MILLIMETER AND SUBMILLIMETER WAVEBANDS OF ELECTROMAGNETIC RADIATION

Evgeny Alexandrovich Vinogradov, Kozhevnikovskaya ulitsa, 1b, kv. 33, and Nataliya Alexandrovna Irisova, ulitsa Vavilova, 44, korpus 4, kv. 74, both of Moscow, U.S.S.R.  
Filed June 29, 1970, Ser. No. 50,432  
Int. Cl. H01p 1/22

U.S. Cl. 333—81 R

4 Claims



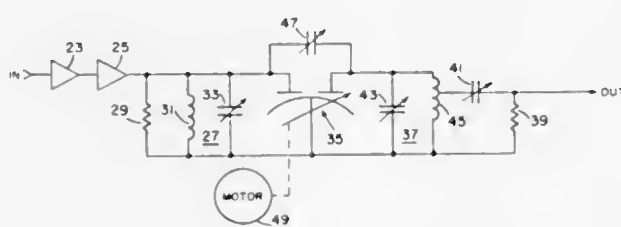
An attenuator for millimeter and submillimeter wavebands of electromagnetic radiation, comprising at least three reflectors each of which is made as a series of parallel conductors the shortest distance between which is less than the wavelength of the selected electromagnetic radiation and which are secured on a common frame, the reflectors being positioned in non-parallel planes and provided with means allowing them to rotate about the attenuator axis, while the attenuation factor is determined by the angle between the respective conductors of adjacent reflectors.

### 3,693,117 PHASE STABLE VARIABLE ATTENUATOR

Robert E. Byrns, 107 Shoreview Dr., Liverpool, N.Y.; Hugh W. Gouldthorpe, Nelson Rd., R.D. 3, Cazenovia, N.Y., and Vernon L. Lamison, 13 Hucklebury Lane, Liverpool, N.Y.  
Filed March 25, 1971, Ser. No. 127,904  
Int. Cl. H03h 7/10

U.S. Cl. 333—81 R

1 Claim



Attenuation with minimal phase shift of a given frequency is provided by primary and secondary tank stages having a common differential capacitor which provides the tuning. At zero setting of capacitor both tank stages have a resonant frequency equal to the given frequency. Upon adjustment of the capacitor, the resonant frequency of one tank stage increases by an amount equal to the decrease of the other tank stage.

### 3,693,118 VARIABLE TUNING ARRANGEMENT FOR A STRIP TRANSMISSION LINE CIRCUIT

Adolph Presser, Kendall Park, N.J., assignor to RCA Corporation

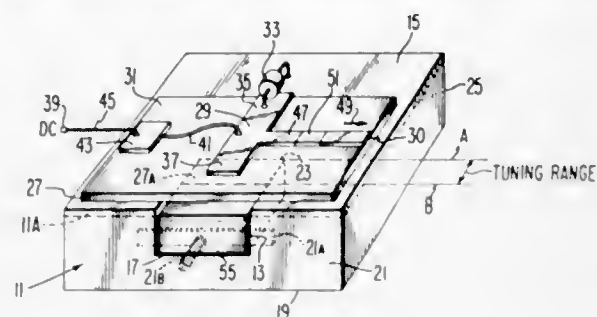
Filed Dec. 9, 1971, Ser. No. 206,390  
Int. Cl. H03b 7/14

U.S. Cl. 331—107 G

5 Claims

A tuning arrangement is provided for a strip transmission line circuit of the type including a ground plane or conductor and a narrow conductor spaced from the ground plane by a dielectric substrate. A portion of the ground plane immediately below and spaced from the narrow conductor by the substrate is removed, leaving a portion of the dielectric substrate

surface opposite that which supports the narrow conductor exposed. An element having a conductive surface tunes the



circuit by providing selected amounts of the conductive material at the exposed, opposite surface of the substrate.

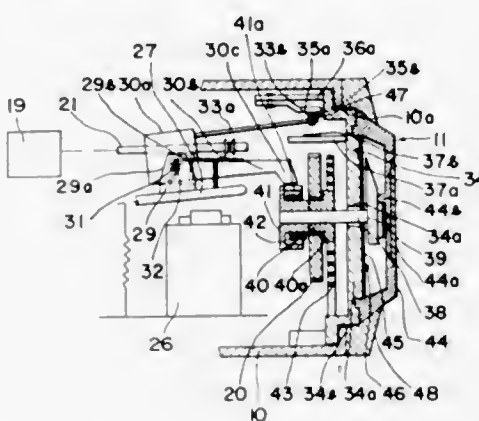
### 3,693,119 ELECTRICAL TIMING DEVICE

Katuhiko Nakama, 5-92, Koaza-Kumonmlya, Oaza-Kautari, Nagasaka-cho, and Shunichi Agatahama, 20-9, Kaidenuencho, Nagasaka-cho, both of Otokuni-gun, Kyoto-fu, Japan

Filed Sept. 16, 1971, Ser. No. 180,995  
Claims priority, application Japan, Sept. 25, 1970, 45/95041  
Int. Cl. H01h 7/14

U.S. Cl. 335—59

7 Claims



An electrical timing device having at least one pair of time-limit switching contacts to be operated in response to respective first and second states of operation of an electromagnet device. This timing device is provided with a spring clutch assembly capable of permitting the rotation of a cam disc together with a driven gear driven by the motor unless otherwise the cam disc is obstructed and also for permitting the rotation of the driven gear independent of the rotation of cam disc, whereby change of the interval of a desired preset time during which the timing device is operated can be varied as desired.

### 3,693,120 ELECTROMAGNETIC RELAY

John A. Quaal, Wauwatosa, and Gordon Barr Spellman, Milwaukee, both of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

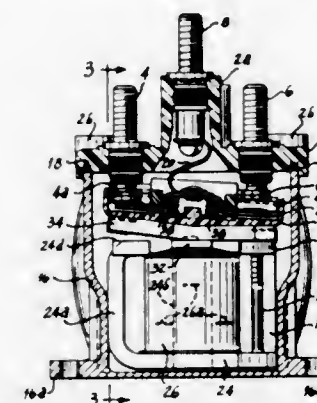
Filed June 23, 1971, Ser. No. 155,793  
Int. Cl. H01h 51/06

U.S. Cl. 335—128

10 Claims

Improved contact structure for a relay. In a double-throw version, two spaced helical springs for each pole are partially compressed between a spring support and the movable contact to provide initial contact pressure. A contact support overlies the movable contact and screws secure all of these parts on top of a rockable armature. In a single-throw version, normally open or normally closed, only one helical compression spring per pole nearest the closing end of the contact may be used to provide initial contact pressure; and a dummy load is provided at the non-closing end of the movable contact to

afford the same operating characteristics in the single-throw relay as in the double-throw relay since the operating



mechanism uses an electromagnet and a permanent magnet to give equal contact forces at both ends of the throw.

### 3,693,121 MOULDED-CASE CIRCUIT BREAKER WITH IMPROVED DOUBLE-LATCH MECHANISM

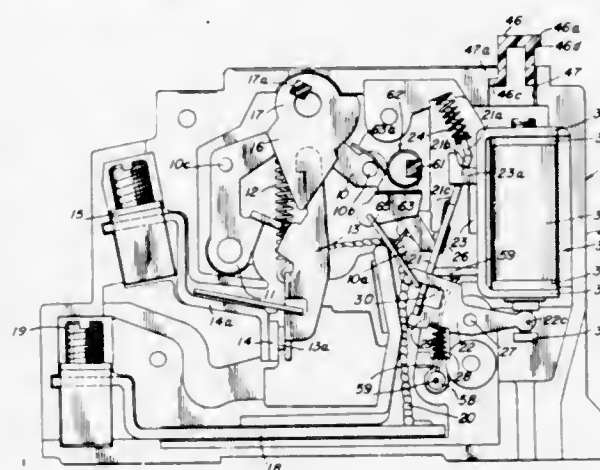
Peter E. G. Carpenter, Newbury, and David L. Cook, Swindon, both of England, assignors to Square D Company, Park Ridge, Ill.

Filed May 13, 1971, Ser. No. 142,975  
Claims priority, application Great Britain, Jan. 26, 1971, 03,236/71

U.S. Cl. 335—169

Int. Cl. H01h 9/24

4 Claims



A double latch mechanism for a molded-case circuit breaker suitable for earth-leakage protection, including a centrally pivoted secondary latch lever having one end connected to the plunger of a tripping solenoid. The other end of the secondary latch lever is bifurcated, one projecting portion serving as a latch surface for a pivotable primary latch lever which also has a latch surface engaging a trip lever, and the other projecting portion being coupled to a common trip mechanism. Upon resetting of the circuit breaker, the trip lever drives the common trip mechanism coupled to the secondary latch lever to overcome possible sticking of the solenoid plunger after a severe earth fault.

### 3,693,122 FLUX TRANSFER TRIP DEVICE FOR ELECTRIC CIRCUIT BREAKERS

Henry G. Willard, Wethersfield, Conn., assignor to General Electric Company

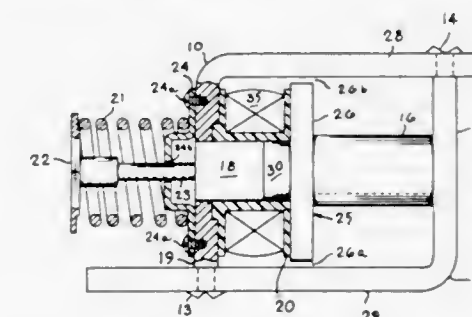
Filed May 13, 1971, Ser. No. 142,942  
Int. Cl. H01f 3/12

U.S. Cl. 335—174

11 Claims

A sensitive magnetic trip device, adapted especially for use with an electric circuit breaker for operation by a relatively low power trip signal pulse, such as that developed by a zero-

sequence or differential transformer indicating presence of a ground fault condition. The device is also highly suitable for use with "static" or solid-state trip circuits operating in response to signals generated by current transformers associated with phase conductors of a multi-phase system. The trip device includes a magnetic armature normally held in a retracted position against the bias of a tripping spring by flux generated by a permanent magnet. The trip device includes a magnetic frame member and a "flux-diverter" interposed between the armature and the permanent magnet, providing an alternate path for flux from the permanent magnet. The permanent magnet flux is diverted from the armature path through the diverter path by magnetomotive force (MMF) generated by a signal coil. The diverter path includes an air gap normally causing the diverter path to be of higher



reluctance than the path through the armature. Upon the occurrence of a trip signal of predetermined magnitude through the trip coil, magnetomotive force (MMF) generated by the trip coil opposes the flow of permanent magnet flux through the armature and diverts it through the diverter path, including the air gap, causing release of the armature. The armature is dimensioned with respect to the diverter so that the armature is driven to saturation by extra high current through the trip coil. This limits the flow of flux from the trip coil, thereby preventing demagnetization of the permanent magnet upon occurrence of such high trip signal currents. The "flux-diverter" is formed and dimensioned so that in combination with the permanent magnet, the frame, and the trip coil, it minimizes stray flux and maximizes sensitivity and effectiveness of the device.

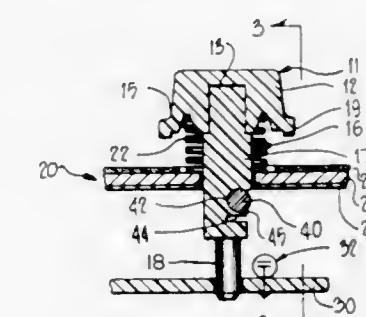
### 3,693,123 KEYBOARD HAVING MAGNETIC LATCHING AND IMPROVED OPERATOR TOUCH

Egon A. Pedersen, Pleasanton, Calif., assignor to The Singer Company, New York, N.Y.

Filed Nov. 4, 1970, Ser. No. 86,678  
Int. Cl. H01h 9/00; G06c 7/02

U.S. Cl. 335—206

12 Claims



A keyboard comprising a plurality of key assemblies mounted in a mounting member and a base member. Each key assembly is provided with a magnet which provides both a magnetic latching and an electrical switching action. The mounting member is constructed from a magnetic material having low magnetic remanence and is provided with an upper layer of resilient, foam material to provide key cushioning and a lower layer of resilient material to space the magnet from the



mounting member. Each key assembly is also provided with a means for preventing formation of a vacuum between the bottom of an actuated key and the upper resilient layer of the mounting member.

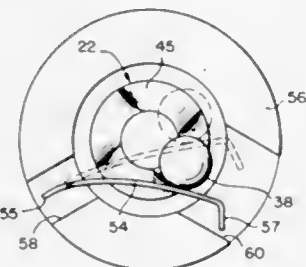
3,693,124

## ROTARY STEPPING SOLENOID

Raymond J. Ganowsky, Clifton Springs, N.Y., assignor to Clifton Springs, Inc., Clifton Springs, N.Y.  
Filed Nov. 27, 1970, Ser. No. 93,360  
Int. Cl. H01f 7/08

U.S. Cl. 335—228

19 Claims



A rotary stepping solenoid having a hinged armature and converter means between the armature and the solenoid output shaft for converting arcuate moment of the armature to rotary movement of the output shaft. This rotary stepping solenoid is similar in operation and construction to known rotary solenoids of the hinged armature type except for the additional structure of:

- 1 a plurality of ball race cams in an upper surface of the output shaft,
- 2 the armature being spring biased into its upper de-energized position,
- 3 detent means for holding the output shaft in the position to which it has been moved, and
- 4 a spring arm for moving the converter ball up into the armature cam and out of contact with the shaft cam but in operative position with respect to the next succeeding cam in the upper surface of the output shaft.

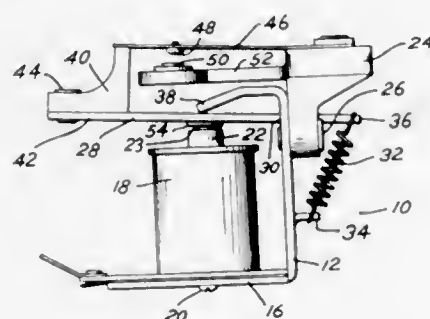
3,693,125

## RELAY ACTUATOR UTILIZING A RESILIENT, IRON IMPREGNATED PAD

Robert E. Prouty, Logansport, Ind., assignor to Essex International, Inc., Fort Wayne, Ind.  
Filed Sept. 24, 1970, Ser. No. 75,078  
Int. Cl. H01f 7/08

U.S. Cl. 335—271

8 Claims



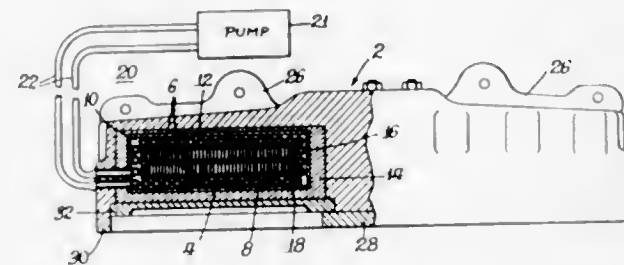
An improvement to an electromagnetic actuator having a coil designed for use with DC current or rectified AC current is provided. The actuator includes an armature mounted for movement in relation to the coil in response to the energization of the coil. A resilient pad impregnated with soft iron particles is provided for directly contacting the pole face of the coil and the armature simultaneously when the armature is actuated by the coil.

3,693,126  
COOLING MEANS FOR LIFTING MAGNET

James P. Rybak, 2996 Mount Holyoke Rd., Columbus, Ohio  
Filed Feb. 1, 1971, Ser. No. 111,563  
Int. Cl. H01f 7/20

U.S. Cl. 335—291

4 Claims



A magnet for lifting high temperature materials is disclosed as having a metal case, an electrical winding enclosed within the metal case for producing a magnetic field and thermal insulation surrounding the winding and separating it from the metal case. A cooling medium is circulated about the winding within the thermal insulation by a cooling means which may include a pump and hose carrying the cooling medium and connecting the pump to the metal case. The thermal insulation serves to prevent the cooling medium from attempting to cool the metal case.

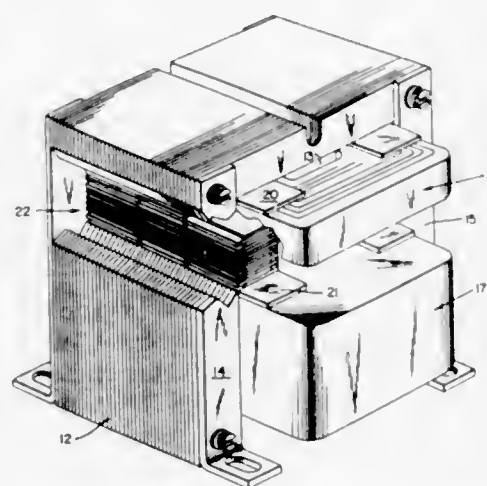
3,693,127

## MAGNETIC SHUNT

Harold J. Smith, Fort Wayne, Ind., assignor to General Electric Company  
Filed Jan. 28, 1972, Ser. No. 221,732  
Int. Cl. H01f 21/08

U.S. Cl. 336—160

5 Claims



A transformer having an improved magnetic shunt is disclosed. The transformer has a magnetic core which comprises at least a pair of legs defining walls of a window into which the assembled shunt is placed.

The shunt comprises a plurality of laminations and includes at least a group of rectangular laminations having a pair of parallel, elongate edges with projections and cutout sections respectively disposed in that pair of edges. The laminations of the group are dimensioned so that the parallel elongate edges simultaneously abut both legs of core window.

The laminations are assembled in a stacked relation. The laminations in the group may be oriented so that when the shunt is disposed in the core window, the similar edges of some of those laminations will abut one of the core legs and the similar edges of the remainder of the laminations in the group will abut the other of the core legs.

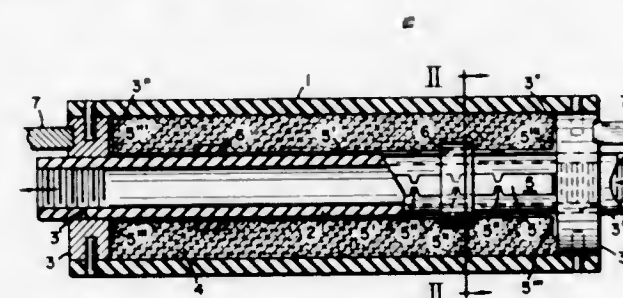
3,693,128

## CONVECTION COOLED FUSE

Phillip C. Jacobs, Jr., Newtonville, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.  
Filed Dec. 28, 1970, Ser. No. 102,255  
Int. Cl. H01h 85/04, 85/10, 85/14

U.S. Cl. 337—166

3 Claims



An electric fuse adapted to be cooled by a flow of cooling medium in axial direction flowing through the center of the fuse, the ribbon fuse links being arranged in close proximity to the radially outer surface of the passageway means for the cooling fluid to maximize the heat exchange between the cooling medium and the ribbon fuse link.

## ERRATUM

For Class 338—92 see:  
Patent No. 3,693,062

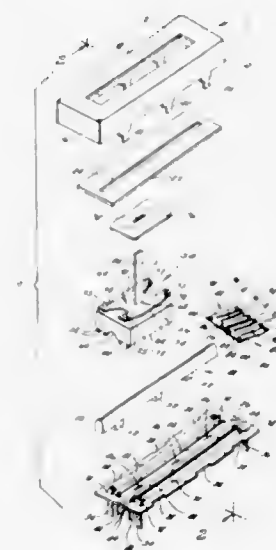
3,693,129

## VARIABLE RESISTOR

Yutaka Shimizu, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan  
Filed April 12, 1971, Ser. No. 133,211  
Claims priority, application Japan, July 31, 1970, 45/76556; Oct. 29, 1970, 45/107597

U.S. Cl. 338—183

10 Claims



A variable resistor includes an elongated housing, a dielectric base which supports elongated resistive and conductive strips, and a cover member. An elongated guide rail is mounted on the dielectric base and extends parallel to the resistive and conductive strips. A slider or carrier is provided with a groove at the lower surface thereof for slidably engaging the upper surface of the guide rail of the base. A control member is connected to the upper end of the slider and projects through an elongated slot in the cover member. A resilient member is so positioned between an upper surface of the slider and the inner surface of the top wall of the cover member that the slider is pushed evenly onto the guide rail. Thus, when the position of the slider is altered by the control

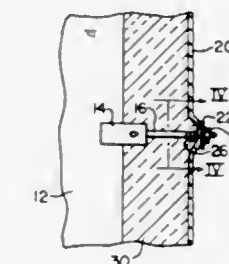
3,693,130

## OVEN LINER GROUND CONNECTION

Edmund G. Pankow, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.  
Filed May 11, 1971, Ser. No. 142,306  
Int. Cl. H01r 13/34

U.S. Cl. 339—14 R

4 Claims



An electrical grounding arrangement for an oven liner in which a ground connection washer is provided having a tapering tab projecting generally perpendicular of the plane of the remainder of the washer and which is sized so that as the anchor bolt for the oven liner is pulled tight, the edges of the root of the tab are driven into interfering engagement with the hole in the range body back liner through which the anchor bolt projects, so that the edges of the tab break through oxides and enamel at the edge of the hole to provide positive ground contact.

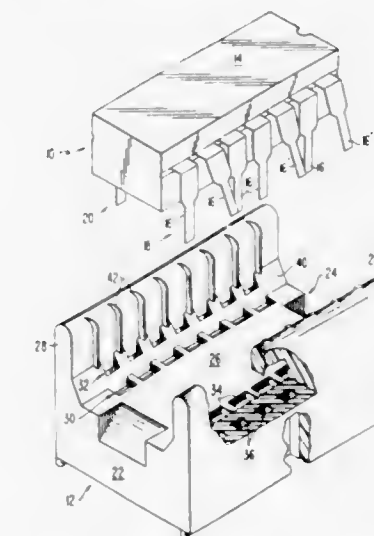
3,693,131

## PROGRAMMABLE DUAL-IN-LINE PIN CONNECTOR FOR INTEGRATED CIRCUIT UNITS

William G. Klehm, Jr., Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.  
Filed Nov. 1, 1971, Ser. No. 194,396  
Int. Cl. H05r 1/16; H01r 23/02

U.S. Cl. 339—17 CF

12 Claims



A dual-in-line electrical pin connector is so designed that when combined with an integrated circuit unit or package it is capable of modifying the connections performed by the leads of the latter. A body of electrically insulating material is provided with a channel so dimensioned as to substantially wholly receive an integrated circuit unit therewithin and is provided with two pairs of rows of correspondingly positioned lead receiving recesses which open into the channel and which are so distributed with respect to the channel that one pair of rows is adjacent to one side wall of the channel and the other pair of such rows is similarly adjacent to the other side wall of the channel. One row of each such pair of rows may have its



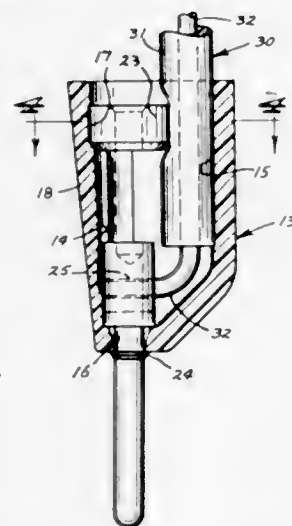
recesses fitted with an electrical contact while the other row may be devoid of such contacts and thereby enable each lead of the integrated unit received within the channel to have its leads selectively insertable into the correspondingly positioned recessed of one or the other of such pair of recess rows.

### 3,693,132 CONNECTOR

Jack L. Bowen, and James H. Ryan, both of Waseca, Minn., assignors to E. F. Johnson Company, Waseca, Minn.  
Filed Feb. 8, 1971, Ser. No. 113,573  
Int. Cl. H01r 31/02

U.S. Cl. 339-47 R

11 Claims



An electrical connector having a hollow dielectric body and a removable contact and conductor. The body is so dimensioned and shaped so as to removably receive and hold a contact and the end of a conductor so that when the contact is engaged within the body, the conductor is conductively, securely retained therein. Provisions are made for in-line stacking to allow multiple connections to a single terminal or jack.

### 3,693,133

#### FLUID TIGHT ELECTRIC CONNECTOR

Jacques Harboun, Jours Ponchartrain, and Jacques Garnier, Le Chesnay, both of France, assignors to Institut Francais du Pétrole des Carburants et Lubrifiants, Rueil Malmaison Hauts de Seine, France

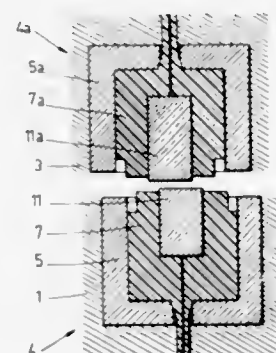
Filed Oct. 2, 1970, Ser. No. 77,522

Claims priority, application France, Oct. 8, 1969, 6934485

Int. Cl. H01r 13/22

U.S. Cl. 339-48

17 Claims



Tight electric connector formed of two connection members having each an insulating plug housed in a casing and projecting beyond the casing end surface, a stud embedded into said plug and projecting beyond the end surface of said plug, and an annular recess between said plug and said casing forming a space for the flow of the plug insulating material, occurring when the two connection members are pressed against each other.

### 3,693,134 ELECTRICAL CONNECTOR FOR A PRINTED CIRCUIT BOARD

Franco Trevisiol, Turin, Italy, assignor to AMP Incorporated, Harrisburg, Pa.

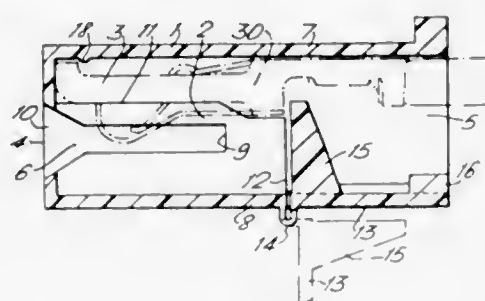
Filed March 26, 1971, Ser. No. 128,292

Claims priority, application Italy, April 14, 1970, 23299 A/70

Int. Cl. H05k 1/07; H01r 13/64

U.S. Cl. 339-59 M

3 Claims



Contacts are normally secured in housings by resilient latches formed on the contacts or on the housings. The invention provides a housing with an integral hinged flap having a shoulder for engagement behind a contact in the housing. The flap is movable to withdraw the shoulder for release of the contact and is releasably engageable with the housing to secure the contact against withdrawal.

### 3,693,135

#### PRINTED CIRCUIT BOARD SOCKET AND HOLDING FRAME

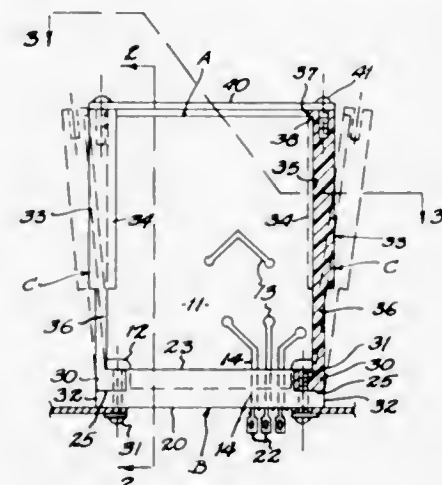
James E. Vavrick, Mill Creek, Calif., and Fred Barthold, 2461 Oak St., Santa Monica, Calif.

Filed Dec. 21, 1970, Ser. No. 100,086

Int. Cl. H01r 13/54

U.S. Cl. 339-75 MP

2 Claims



A socket base for plug-in reception of multiple connector tails of a printed circuit board, is formed with holder arms extending in parallel spaced relation from respective sides of the base, to collectively provide a holding frame, the arms being of channel section to receive the respective ends of the board, and being connected to the base by narrowed flexible webs to provide a hinge action in which the arms may spring apart to receive and release the circuit board from their grasp.

### 3,693,136

#### ELECTRICAL PLUG CONTACT

Arthur I. Appleton, 1713 W. Wellington Ave., Northbrook, Ill.

Continuation-in-part of Ser. No. 770,518, Oct. 25, 1968,

abandoned. This application Feb. 9, 1970, Ser. No. 9,636

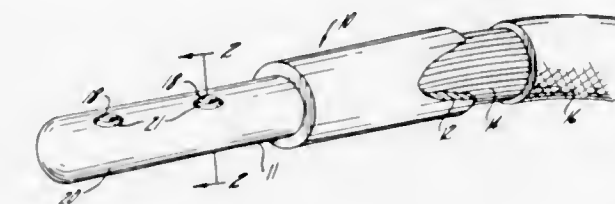
Int. Cl. H01r 13/54

U.S. Cl. 339-91 B

1 Claim

Electrical plug connectors of the male type, which are adapted to be mately inserted into a female portion, wherein

the male includes spring-biased, captive ball shaped members, preferably made of an insulating material such as a borosilicate glass for urging the male member against the corresponding arcuate contact surface of the female socket to



which it is inserted with a relatively even distributed pressure, so that a substantial area of current contacting interface results. The male portion includes two different radii of curvature, at least one forming an arcuate contact surface in cross-section which subtends an arc of less than 180°.

### 3,693,137

#### CONNECTOR KIT ATTACHABLE TO EXISTING NEUTRAL BAR ASSEMBLY

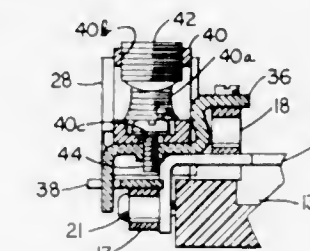
Walter T. Brumfield, Nicholasville, Ky., assignor to Square D Company, Park Ridge, Mich.

Filed March 18, 1971, Ser. No. 125,717

Int. Cl. H01r 9/00

U.S. Cl. 339-198 N

5 Claims



A connector kit attachable in the field to an existing neutral bar assembly to enable larger wires to be connected thereto than it was originally designed to accept.

### 3,693,138

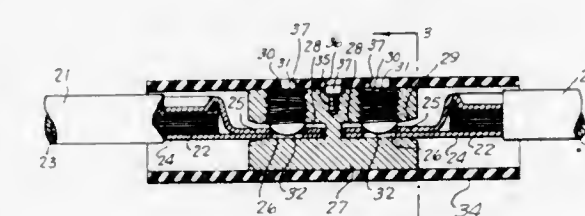
#### ELECTRIC CABLE CONNECTOR

John R. Peritt, Luling, La.

Filed Feb. 19, 1971, Ser. No. 116,761

Int. Cl. H01r 13/50

U.S. Cl. 339-213 R



An electric cable connector which will accept cable ends of the type having a connector lug secured thereto. The connector lugs are clamped into a conducting body portion which is covered by a cylindrical insulating cover detachably secured thereon. In one form of the invention the body is solid and has opposed slots for receiving the lugs. In the other form of the invention the body is split and is forced together by rotating the insulator sleeve with respect to the body. In another form of the invention the body is split and is clamped together by a transverse bolt to clamp the lugs therebetween.

### 3,693,139

#### PIGGY BANK CONNECTOR

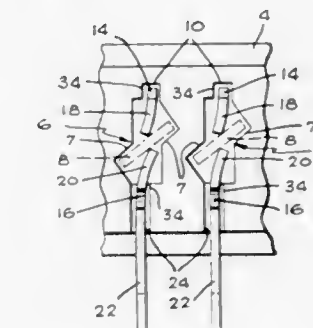
Fritjof Hans Assmus, and Heinz Knitter, both of Heilbronn, Germany, assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Oct. 28, 1970, Ser. No. 84,787

Int. Cl. H01r 9/08

U.S. Cl. 339-217 R

6 Claims



A connector of a type which receives a mating knife contact between the prongs of a forked contact member of the connector in such a manner that a twisting of the prongs of the connector exerts resilient electrical contact pressure upon the knife contact. The present invention achieves a more reliable electrical contact by the twisting action of the prongs of the receptacle upon insertion of the knife contact. The connector of the present invention comprises a body of insulating material having bearing surfaces which support a knife contact at an angle with respect to a pair of contact forks, such that upon insertion of the knife contact between the fork prongs a twisting of the prongs, rather than a spreading thereof, produces the contact engagement with the knife. The connector is designed such that it contains a forked receptacle at one end, a knife contact at the other, and a soldering lug protruding laterally thereof, all three portions of the contact member being of single-piece stamped construction. In a preferred embodiment of the invention, the knife portion of the connector is designed to mately engage the receptacle portion of a like connector.

### 3,693,140

#### MINIATURE ELECTRICAL CONNECTOR CONTACTS

John P. Nijman, Scarborough, Ontario, Canada, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

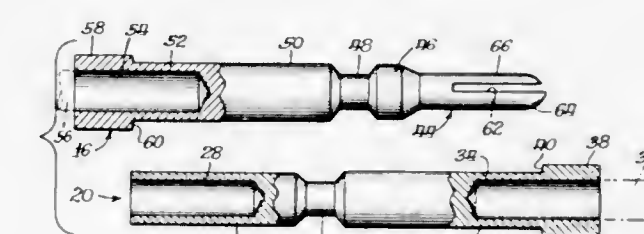
Filed Jan. 19, 1971, Ser. No. 107,651

Claims priority, application Canada, Jan. 20, 1970, 072,580

Int. Cl. H01r 13/06

U.S. Cl. 339-252 P

7 Claims

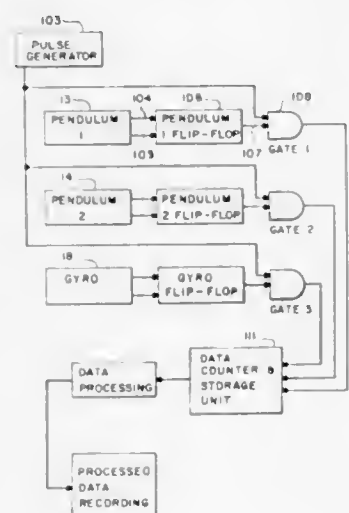


A miniature connector in which the pin contact, or male contact member, has separate tines extending generally longitudinally but with their central portions bowed relatively laterally outwardly, their extended ends interengaging, and their outer surfaces curved in both directions; in one form, the tines may be of similar gauge and bowed similarly, while in another form the tines are of different gauge with the heavier one bowed and the lighter one relatively straight; each the male and female contact member has a rear section of generally thin wall but having an enlargement at the rear end to increase crimping effect on a conductor.



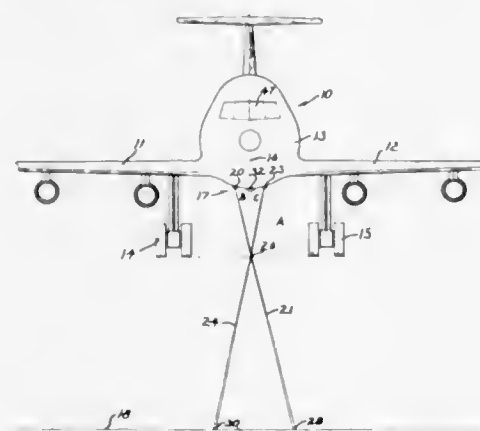
3,693,141  
Patent Not Issued For This Number

3,693,142  
**BOREHOLE ORIENTATION TOOL**  
Jack W. Jones, 503 N. Central Expressway, Richardson, Tex.  
Filed Nov. 21, 1969, Ser. No. 879,010  
Int. Cl. G01v 1/40  
U.S. Cl. 340—18 R



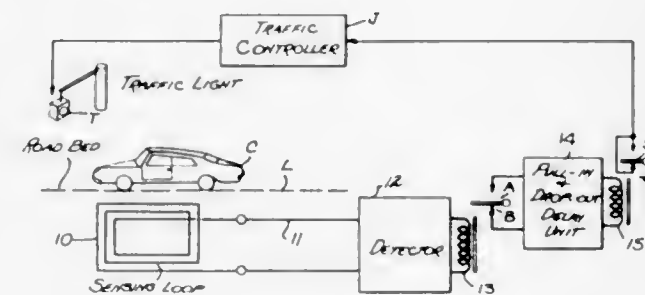
The particular embodiment described herein as illustrative of one form of the invention utilizes a device for detecting the angular position and directional orientation of a housing within a wellbore and for generating a signal indicative of such information for transmission to the earth's surface.

3,693,143  
**PROCESS AND APPARATUS FOR FACILITATING THE LANDING OF A VEHICLE ON A LANDING SURFACE**  
Francis V. Kennedy, 9007-B Bong Loop, Moses Lake, Wash.  
Filed June 22, 1970, Ser. No. 48,284  
Int. Cl. G08g 5/02  
U.S. Cl. 340—27 NA



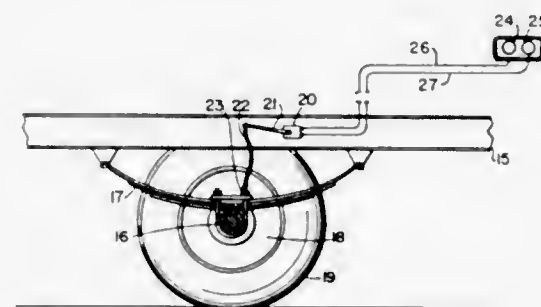
A process and apparatus for facilitating the landing of a vehicle such as an aircraft on a landing surface by projecting two radiation beams downward from the aircraft at fixed angles criss-crossing the beams below the aircraft coincident with the elevation of the landing gear and producing spots on the landing surface that move together in relation to the rate of descent of the aircraft. The spots come together when the landing gear touches down. Display means is provided to present representations of the spots before the pilot. Movement of the aircraft controls by the pilot to gently bring the spots together will then result in a smooth, safe and well-controlled landing.

3,693,144  
**PULL-IN AND DROP-OUT DELAY UNIT FOR VEHICLE DETECTOR IN TRAFFIC-CONTROL SYSTEM**  
Milton Friedman, Roslyn, Pa., assignor to Fischer & Porter Company, Warminster, Pa.  
Filed Oct. 21, 1970, Ser. No. 82,634  
Int. Cl. G08g 1/07  
U.S. Cl. 340—37



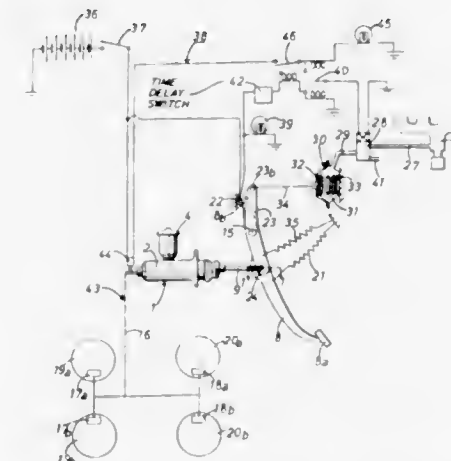
A pull-in and drop-out delay unit for a vehicle detector acting in conjunction with a traffic-light controller installed at a traffic intersection. The detector serves to sense the presence or absence of a vehicle in a zone adjacent the traffic intersection. When the detector senses the presence of a vehicle, the delay unit serves to defer the transfer of the presence signal to the traffic controller for an adjustable period to permit right-turn on "red." When the detector senses the absence of a vehicle, the delay unit defers the transfer of the absence signal to the controller for an adjustable period whereby "tailgating" is minimized and slow-reacting vehicles are more easily passed.

3,693,145  
**ANTI-CAPSIZING WARNING SYSTEM FOR VEHICLES**  
Lawrence A. Mize, 161 Minorca Way, Millbrae, Calif.  
Filed July 23, 1970, Ser. No. 57,650  
Int. Cl. H01h 35/02  
U.S. Cl. 340—52 R



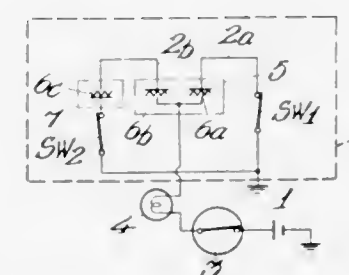
An anti-capsizing warning system for vehicles comprising a sending unit mounted to the frame of the vehicle adjacent an axle thereof for completing an electrical circuit to energize a warning device disposed near the operator of the vehicle in response to an increase in the spacing between the axle and the frame of the vehicle beyond a predetermined level. The sending unit may preferably comprise one or more lever actuated microswitches and a flexible member or cable interconnecting the actuating lever of the microswitches and the axle. A second sending unit may be placed at the other end of the axle, and may be wired in parallel with the first sending unit, so that the warning device will be suitably actuated in response to the tipping of the vehicle in either direction.

3,693,146  
**VEHICLE BRAKE FLUID PRESSURE MONITORING SYSTEM**  
Tsuneo Kawabe, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi-ken, Japan  
Filed Oct. 30, 1970, Ser. No. 85,406  
Claims priority, application Japan, Nov. 1, 1969, 44/87808  
Int. Cl. B60q 1/00; G08b 21/00  
U.S. Cl. 340—52 C



A braking fluid pressure sensing system capable of sensing and giving an alarm when damage or breakage occurs in the brake fluid pressure circuit during non-braking operation, comprising pressure means to operate the master cylinder regardless of operation of the brake pedal, and means for signaling an alarm when the value of the fluid pressure produced by the pressure means in the fluid pressure circuit falls below a predetermined value, thereby the driver of the vehicle may take precautions to prevent possible disastrous results due to the damage or breakage of the brake system.

3,693,147  
**DEVICE FOR DETECTING AND WARNING THE UNUSED STATE OF A VEHICLE SEAT BELT**  
Kiyokazu Seo, Toyota, and Yoshihiro Hayashi, Kasugai, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Wishikasukai-gun, Aichi Prefecture, Japan  
Filed Jan. 20, 1971, Ser. No. 107,935  
Claims priority, application Japan, Jan. 21, 1970, 45/6234  
Int. Cl. B60q 1/00  
U.S. Cl. 340—52 E

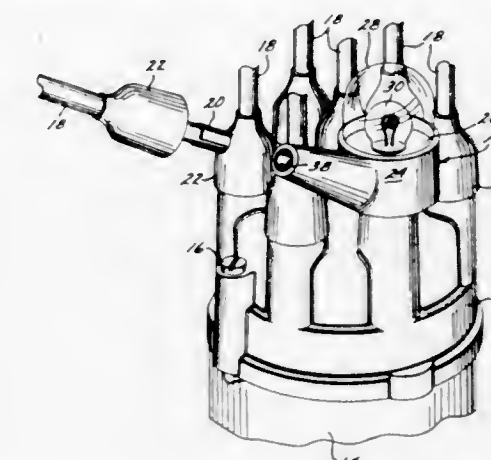


A device for detecting and warning the unused state of a vehicle seat belt, comprising a detecting circuit having seat switches adapted to be closed on sensing the occupation of the seats and belt switches adapted to be opened by drawing out a given length of seat belt to wear.

3,693,148  
**ENGINE TIMING LIGHT**  
James E. Pittman, 2761 Adriatic Ave., Long Beach, Calif.  
Filed Feb. 11, 1971, Ser. No. 114,563  
Int. Cl. F02p 17/00  
U.S. Cl. 340—52 R

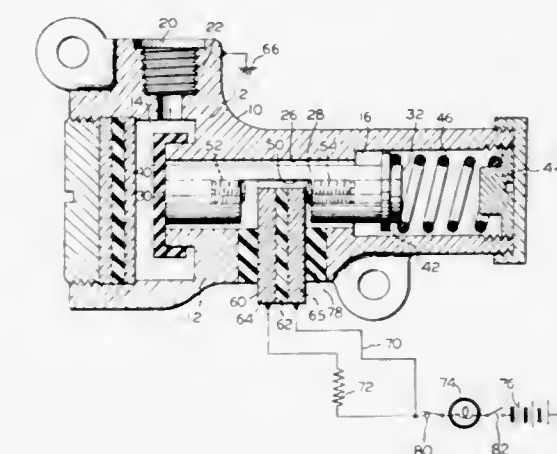
An engine timing light adapted to be detachably inserted in the distributor cap opening for a spark plug wire, and also adapted to detachably receive the spark plug wire which nor-

mally fits within the distributor cap opening. The timing light flashes on when the distributor points open, indicating when



the spark plug would have been fired. The light enables setting of the time at which the points open in relation to travel of the associated piston, without having to open the distributor.

3,693,149  
**COMPREHENSIVE TIRE PRESSURE DIFFERENTIAL SENSING AND INDICATING DEVICE**  
Carey W. Johnston, 172 Reldyes Ave., Leonia, N.J.  
Filed July 20, 1971, Ser. No. 164,366  
Int. Cl. B60c 23/02  
U.S. Cl. 340—58



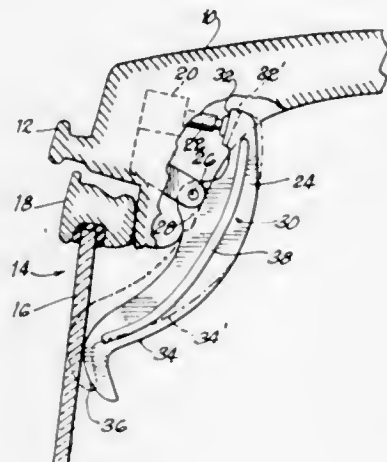
An improved comprehensive tire pressure differential sensing device for furnishing selectively warnings for either excessive or insufficient normal tire pressure having in a housing a sliding piston positioned in a passageway, a spring urging said piston in a given axial direction, an air chamber formed in part by a diaphragm for receiving air under pressure urging the piston in an axial direction overcoming the force of the spring, a slot in the piston receiving a split contact pin, the pin having an insulation layer throughout its medial plane for forming two distinct electrical circuits, and circuit means for selectively indicating that an excess or inadequate pressure condition exists in a given tire.

3,693,150  
**VEHICLE WINDOW ACTUATED ALARM DEVICE**  
Edward N. Daniels, 1961 Delaware St., Gary, Ind.  
Filed June 3, 1971, Ser. No. 149,550  
Int. Cl. B60r 25/10  
U.S. Cl. 340—63

An alarm device for mounting on vehicles comprising a switch and a plunger biased away from the switch, and an arm having the configuration of a backward S with the arm being pivotally mounted adjacent to the window of the vehicle, and the upper portion of the arm operatively engaged with the plunger and a lower portion being in abutting relationship with



the window whereby the arm maintains the plunger in a depressed position when the window is closed and which is



caused to pivot toward the window to release the plunger when the window is displaced from a closed position.

3,693,151

### INITIALLY INTERMITTENTLY FLASHING BRAKE LAMP CIRCUIT

Tatsuo Hasegawa, Okazaki, and Ikuya Kobayashi, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Aichi Prefecture, Japan

Continuation of Ser. No. 796,791, Feb. 5, 1969, abandoned.

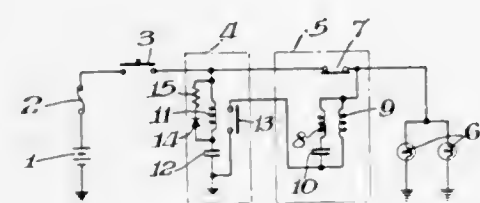
This application April 14, 1971, Ser. No. 134,061

Claims priority, application Japan, Feb. 7, 1968, 43/7634

Int. Cl. B60q 1/44

U.S. Cl. 340—72

2 Claims



Brake lamp circuit in automobile or other vehicle comprises brake lamps and brake lamp switch operated by depressing brake pedal. Both are connected in series to power source. Time relay is connected between brake lamp switch and brake lamps. Time relay and flasher function to cause brake lamps to flash intermittently for a predetermined period of time after and while the brake pedal of vehicle is depressed.

3,693,152

### ERROR DETECTION CIRCUIT FOR DECODERS

Se J. Hong, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1970, Ser. No. 99,877

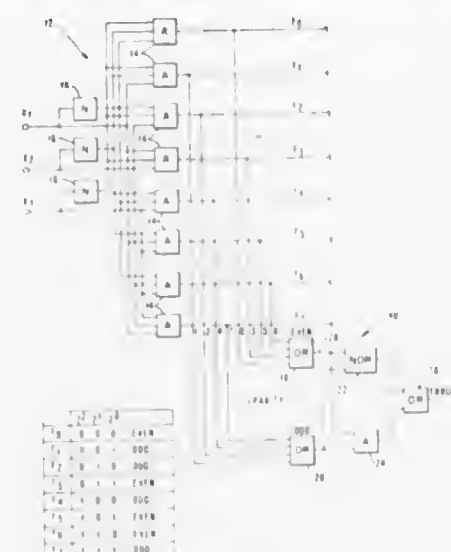
Int. Cl. H03k 13/34

U.S. Cl. 340—146.1 AG

4 Claims

A decoder error detection circuit having a first and second OR circuit. The first OR circuit having as inputs thereto the half of the outputs from the decoder which represent binary numbers having the same parity. The inputs to the second OR circuit are obtained from the other half of the decoder outputs which represent binary numbers of the opposite parity of those in the first half. The output of the first and second OR circuits is connected to a logic circuit consisting of a NOR cir-

cuit and an AND circuit connected to each of said first and second OR circuits in parallel. The outputs of the NOR and



AND circuits are OR'ed together to provide an error indication for any single hardware failure in the decoder being checked.

3,693,153

### PARITY CHECK APPARATUS AND METHOD FOR MINICOMPUTERS

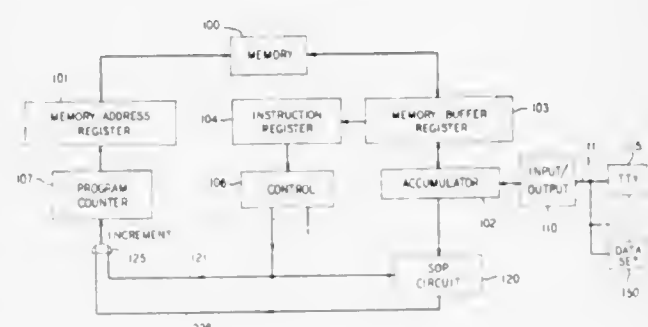
Peter Ernest Rosenfeld, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed July 9, 1971, Ser. No. 161,174

Int. Cl. G06f 11/10

U.S. Cl. 340—146.1 AG

6 Claims



Apparatus for facilitating the detection and correction of errors in data stored in and communicated to (and from) a small data processor is disclosed. A simple parity checking circuit facilitates a program-controlled error detection process.

3,693,154

### METHOD FOR DETECTING THE POSITION AND DIRECTION OF A FINE OBJECT

Moritada Kubo, and Yoshiaki Arimura, both of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 11, 1970, Ser. No. 97,390

Claims priority, application Japan, Dec. 15, 1969, 44/100421

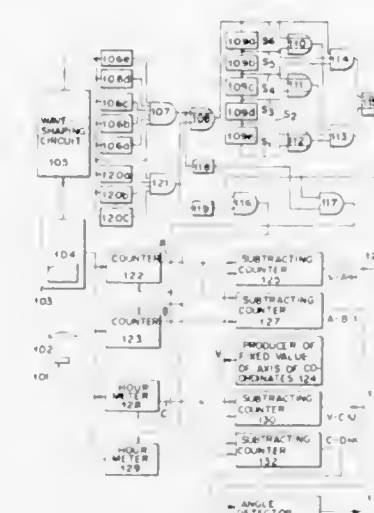
Int. Cl. G06k 7/14

U.S. Cl. 340—146.3 H

10 Claims

A method for detecting the position of a semiconductor pellet which comprises the steps of affixing to the surface of the semiconductor pellet a position detecting pattern generating upon scanning pulses of prescribed width, interval and number, picking up the image of said pellet, scanning the pattern image with six scanning lines  $L_1$  to  $L_6$  to obtain signals  $L_1'$  to  $L_6'$  using a first group of delay circuits, treating said signals

in a logical circuit including a second group of delay circuits to obtain logical output expression as



$$(L_1' + L_4')(L_2' + L_4')(L_3' + L_4') + (L_1' L_2' L_3') = 1$$

and calculating the position of the semiconductor pellet using said logical outputs.

3,693,155

### COMMUNICATION SYSTEM

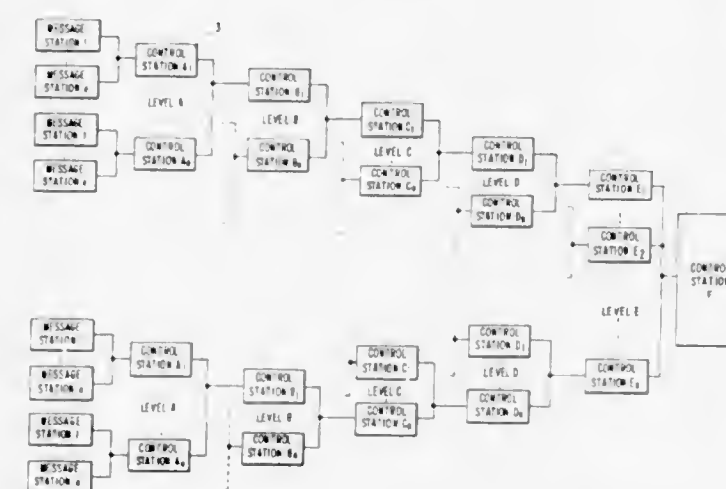
Paul A. Crafton, Potomac, Md., and Ingmar Mittmeyer, Falls Church, Va., assignors to National Telecommunications System, Inc., Oxon Hill, Md.

Filed March 23, 1971, Ser. No. 127,294

Int. Cl. H04q 9/00

U.S. Cl. 340—147 R

20 Claims



A communication system featuring a pyramid structured interconnecting network, adjacent levels of the interconnecting network being coupled together with single channel links. The system permits lateral signal routing once a common or linking level is reached. The base level of the pyramid structure contains message stations, with each higher level comprised of control stations. Each control station is controlled by the next higher level control station to which it is coupled while simultaneously controlling stations at the next lower level.

3,693,156

### MEANS FOR INTERFACING AN EXISTING MANUAL IMPRINTER WITH A REMOTELY OPERATED, CREDIT CHECK CONTROL SYSTEM

John Di Lello, Warminster, Pa., assignor to Credit Systems, Inc., Colmar, Pa.

Filed May 11, 1970, Ser. No. 36,068

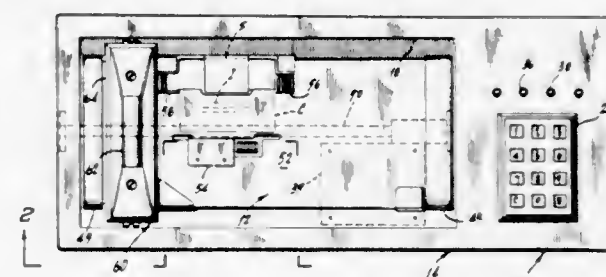
Int. Cl. G08b 5/00; H04q 9/00

U.S. Cl. 340—149 R

3 Claims

A conventional manual imprinter, of the kind used to imprint sales slips with credit card information by manual opera-

tion of a printing roller, is linked to a remotely located computerized central memory in which credit information is stored. A supporting structure receiving the imprinter includes a latch that normally prevents operation of the roller. A keyboard on the structure is operable by the user to transmit to a central



memory the account identification as shown on the credit card. If the response from the central memory is affirmative the latch is tripped electrically and disengages the roller to allow manual operation thereof. If the response is negative, the latch remains engaged and imprinting of the sales slip is thus prevented.

3,693,157

Patent Not Issued For This Number

3,693,158

### METHOD AND APPARATUS FOR ULTRASONIC WELD QUALITY ANALYSIS EMPLOYING PLURAL ANALYSIS SIGNALS

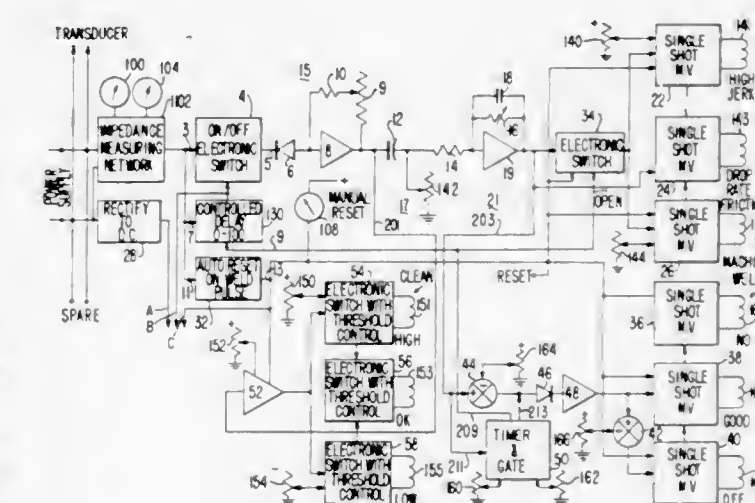
Paul M. Uthe, Livermore, Calif., assignor to Uthe Technology, Inc., Mountain View, Calif.

Filed April 1, 1970, Ser. No. 24,547

Int. Cl. H04q 1/20

U.S. Cl. 340—172 R

16 Claims



A method and apparatus for monitoring parameters indicating the quality of an ultrasonic weld process. A signal that is the function of the transducer and load impedance is first operated on by taking its logarithm. That signal is differentiated to provide a signal indicative of the smoothness of the machine movement; the negative portion of the machine signal is looked at during a selected time frame to detect the weld. The logarithm of the impedance signal is also integrated to provide a signal indicating the cleanliness of the weld. The transducer voltage or current can also be monitored to assure that the desired amplitude is applied over an optimum time period.



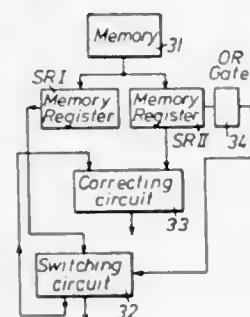
3,693,159

**DATA STORAGE SYSTEM WITH MEANS FOR ELIMINATING DEFECTIVE STORAGE LOCATIONS**  
Wolfgang Hilberg, Neu-Ulm, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany  
Filed June 22, 1970, Ser. No. 48,300

Claims priority, application Germany, June 21, 1969, P 19 31 524.3; Feb. 17, 1970, P 20 07 050.2; Feb. 20, 1970, P 20 07 787.6; Feb. 25, 1970, P 20 08 663.9  
Int. Cl. G06F 11/00; G11c 19/00

U.S. Cl. 340—172.5

27 Claims



A data storage system containing an integrated memory for the storage of words of a given number of bits wherein the memory is constructed so that each word address in the memory is provided with a number of memory elements in excess of the given number of bits of the words to be stored and any unusable memory elements in the matrix are modified so that when interrogated they cause a distinctive signal to be produced. In response to these distinctive signals circuitry is provided for directing the data bits into those bit locations or columns of a word address containing only usable memory elements during the writing operation and for compacting or eliminating the gaps between the data bits as the result of unusable memory elements in certain bit locations of a word address during read out. A number of techniques for identifying the unusable memory elements upon interrogation, as well as additional features and schemes for improving the operation of such data systems are also disclosed.

3,693,160

**APPARATUS FOR CONTROLLING THE CYCLE STEALS REQUIRED BY A CHAIN PRINTER UNDER CPU CONTROL**

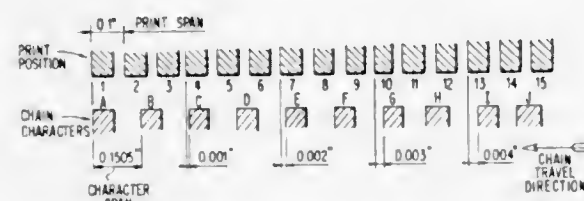
Kent W. Swearingen, Rochester, Minn., assignor to International Business Machines Corporation

Filed June 26, 1970, Ser. No. 50,271

Int. Cl. G05b 15/02; G06c 11/06

U.S. Cl. 340—172.5

7 Claims



A printer attachment, which provides an interface between a CPU and a chain printer, contains a means which requests either one, two, or three cycle steals each time a character on the character chain is in line with an optional print position, depending upon the correspondence between the chain character and the character to be printed. If the data to be contained in a print position is a blank, then only one cycle steal is required before another print position is optional. After a character has been printed in a particular print position, only one cycle steal is then required each time that this print position is again optional during the printing of a line.

3,693,161

**APPARATUS FOR INTERROGATING THE AVAILABILITY OF A COMMUNICATION PATH TO A PERIPHERAL DEVICE**

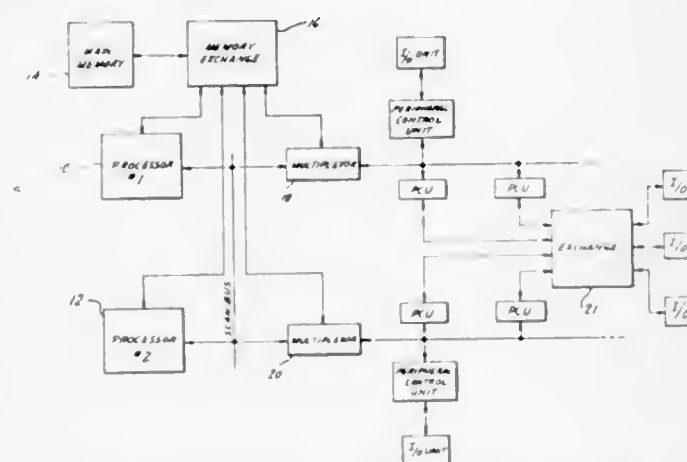
William Chandler Price, Pasadena; Erwin A. Hauck, and Jacob F. Vigil, both of Arcadia, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 846,393, July 9, 1969, abandoned. This application July 9, 1970, Ser. No. 53,441

Int. Cl. H04J 3/12; G06f 13/00

U.S. Cl. 340—172.5

5 Claims



There is described a computer system in which one or more processors can interrogate, on command, the input/output system to determine whether communication paths are available to the respective peripheral units. The input/output system has one or more multiplexors which service a number of input/output channels, each channel having a peripheral control unit that controls one or more peripheral devices. Some peripheral devices are operated by more than one peripheral control unit and associated channel through a switching exchange. The input/output system, in response to an interrogation command executed by any of the processors and identifying a selected peripheral device, returns information to the processor indicating whether or not a communication path is available to the designated peripheral device and, if more than one channel is available, which multiplexor has a channel available to that device. The processor then can initiate an input/output operation between the particular unit and memory.

3,693,162

**SUBROUTINE CALL AND RETURN MEANS FOR AN ELECTRONIC CALCULATOR**

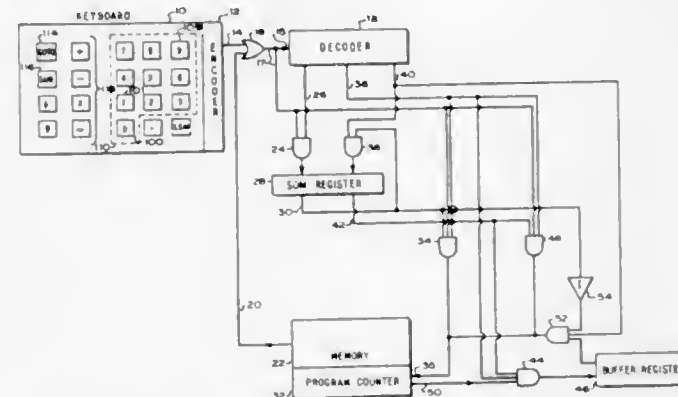
Richard M. Spangler, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 14, 1970, Ser. No. 80,532

Int. Cl. G06f 3/00

U.S. Cl. 340—172.5

1 Claim



Two electronic calculator keys provide unconditional GO TO and subroutine call/return and return functions. A GO TO instruction followed by an alpha-numerical address causes the calculator to unconditionally branch to the address indicated.

The GO TO instruction followed by a SUB instruction and an alpha-numerical address causes the calculator to unconditionally branch to a subroutine at the address indicated, and the SUB instruction alone causes the calculator to unconditionally branch (return) to the address it was at when it branched to the subroutine.

3,693,163

**COMPUTER SET POINT STATION**

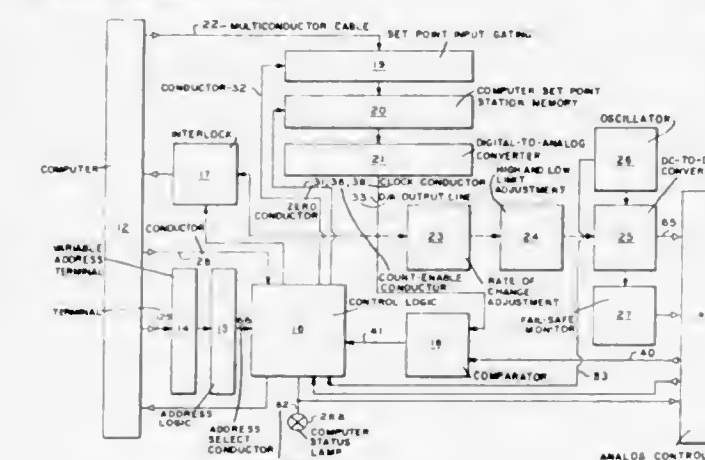
Irvin D. Johnson, Englewood, Colo.; Mauro G. Togneri, Houston, Tex., and Eduard P. Kaufmann, Burghausen, Germany, assignors to Marathon Oil Company, Findlay, Ohio

Filed Oct. 2, 1970, Ser. No. 77,510

Int. Cl. G05b 15/00; G06f 3/00

U.S. Cl. 340—172.5

17 Claims



A device for interfacing a computer with an analog control system to control processes. The controlling computer changes the digital set point values in various control stations by addressing the individual station, zeroing the set point value and inserting the new value.

3,693,164

Patent Not Issued For This Number

3,693,165

**PARALLEL ADDRESSING OF A STORAGE HIERARCHY IN A DATA PROCESSING SYSTEM USING VIRTUAL ADDRESSING**

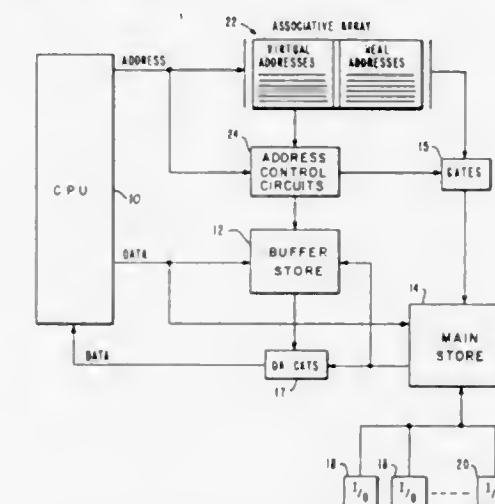
Forrest A. Reley, and James T. Richcreek, both of Hyde Park, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1971, Ser. No. 157,918

Int. Cl. G11c 9/00; G06f 13/00

U.S. Cl. 340—172.5

20 Claims



A data processing system includes a central processing unit which uses virtual addressing in address control words to access a high speed buffer store of limited storage capacity and simultaneously to access a high capacity main store of slower operating speed, whereby no time is lost in accessing the main store in the event the buffer store cannot be accessed. If the buffer store can be accessed, then a sector address register and a particular associative register in an array must compare with address control information in the address control word. Each sector address register has a link register the content of which identifies the particular associative register which must compare simultaneously with the address control information. Any sector address register may be linked to any associative register in the array by changing the content of the associated link register accordingly. Thus information from any part of the main store may be stored in any part of the buffer store by using this virtual addressing arrangement.

3,693,166

**DATA INTERPRETATION TERMINAL**

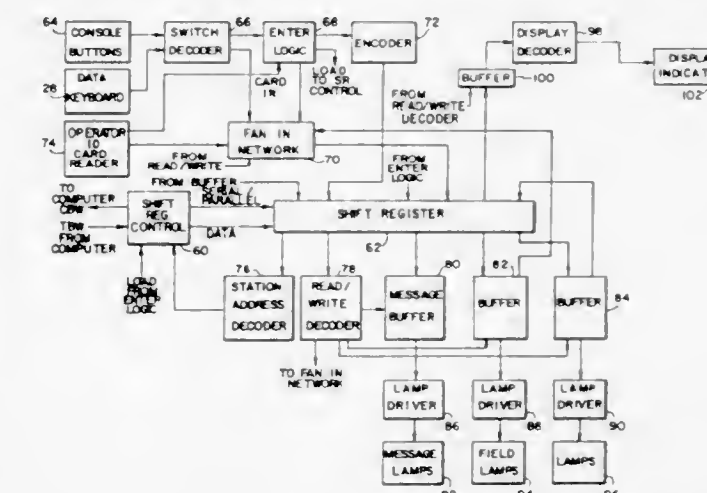
Edward B. Rawson, Lincoln, and John B. Dowling, Stow, both of Mass., assignors to Searle Medidata Inc., Waltham, Mass.

Filed Sept. 21, 1970, Ser. No. 73,954

Int. Cl. G06f 3/00, 15/42

U.S. Cl. 340—172.5

8 Claims



A data terminal for use in a computer-based medical screening system for the entry of interpretive data concerning X-ray pictures, ECG displays and the like. Data is visually verified before entry into a patient record in computer memory, and terminal operation is permitted only by an operator having a verified identification code.

3,693,167

**DEVICE FOR EVALUATING THE DIFFERENCE BETWEEN TWO VARIABLE INPUTS**

Roger Teurnier, 92 Rueil-Malmaison, France, assignor to C.I.T.-Compagnie Industrielle Des Telecommunications

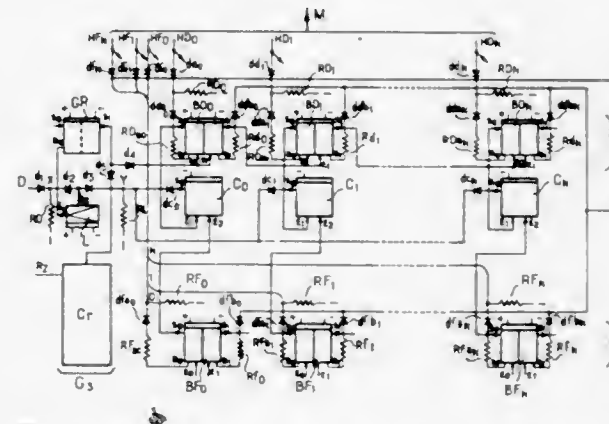
Filed Oct. 14, 1970, Ser. No. 80,722

Claims priority, application France, Oct. 14, 1969, 6935120

Int. Cl. G06f 3/04; H03k 5/20

U.S. Cl. 340—172.5

12 Claims



A device for evaluating the difference between two inputs. The first input is applied to a counter and the second is applied



to a memory device. A pulse generator then pulses the counter and a storage device until the count in the counter corresponds to the second input signal in the storage device. At this point the pulse generator is stopped. The count in the storage is therefore indicative of the difference between the first and second inputs since it received a pulse for each pulse required to raise the value of the input of the counter to the value of the input of the memory device.

3,693,168

# MACHINE FOR PRODUCING SQUARED-OFF PLOTS FOR USE IN PROGRAMMING KNITTING AND OTHER TEXTILE MACHINES

Harold Lees Halkyard, Bushby; Herbert Brian Bliss-Hill, Evington, and Eric William Tewsley, Kirby Muxloe, all of England, assignors to Stibbe Machinery Limited, Leicester, England

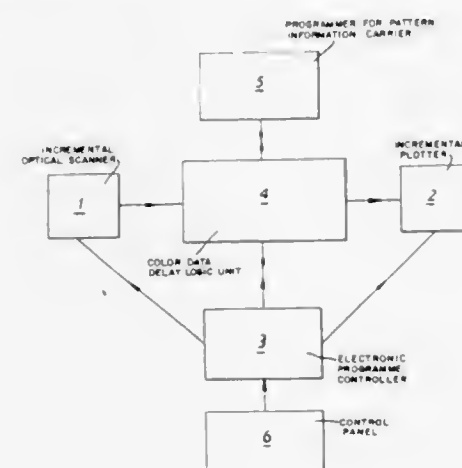
Filed Nov. 2, 1970, Ser. No. 86,081

Claims priority, application Great Britain, Nov. 8, 1969, 54785/69

Int. Cl. G06F 3/00

U.S. Cl. 340—172.5

15 Claims



Machine producing squared-off plots has an incremental scanner to scan an artist's picture of a design and to produce signals appropriate to each point scanned, an incremental plotter, and a program controller to program movements of scanner and plotter. Plotter has pens each for marking on a plot a bit of information appropriate to one of the signals. The scanner incorporates tone or color differentiating means. The program controller includes sequence timing means to move scanner at predetermined intervals of time; control means for controlling movements of plotter; means for selecting a pen corresponding to a point scanned by the scanner thereby to position the pen in the appropriate position relatively to plot; and feed back means to halt scanner while a pen is being selected and operated.

3,693,169

# THREE-DIMENSIONAL STORAGE SYSTEM

Walter Kroy; Sigmund Manhart, both of Munich, and Walter Erich Mehnert, Ottobrunn, all of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed Nov. 2, 1970, Ser. No. 86,230

Claims priority, application Germany, Nov. 4, 1969, P 19 55 364.1

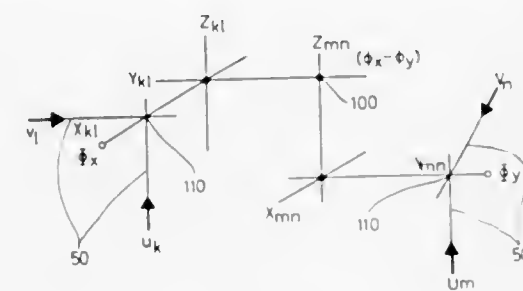
Int. Cl. G11c 13/00

U.S. Cl. 340—173 R

4 Claims

Three-dimensional storage system wherein all storage positions are selectively accessible. An information storage system is provided having conductor paths arranged in three spatial directions. The electrically conductive junctions formed at each intersection of three mutually perpendicular conductor paths provide the respective storage positions. All conductor

path systems which terminate in a common column at one exterior surface of the system and all conductor paths terminating in a common row each have a single common selecting line and two of these mutually perpendicular selecting lines



respectively form an electronic gate which acts as a switch between the conductor path ends and the storage system. All ends of the conductor paths in the same plane lie at a one constant potential and the ends of the conductor paths in other planes lie at a different constant potential.

3,693,170

# MEMORY CELLS

Alfred Brian Edwin Ellis, Chelmsford, and Colin James Shead, Witham, both of England, assignors to The Marconi Company Limited, London, England

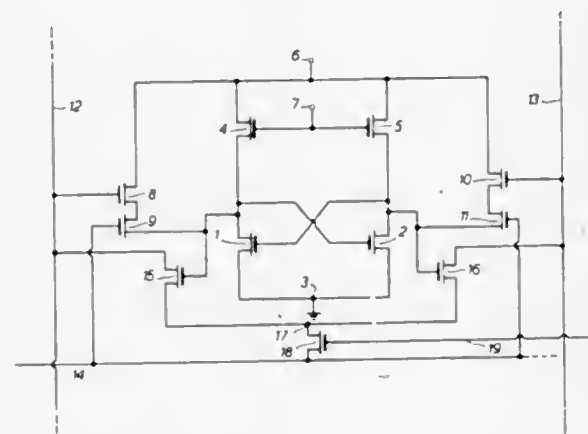
Filed Nov. 13, 1970, Ser. No. 89,204

Claims priority, application Great Britain, Aug. 5, 1970, 37,782/70

Int. Cl. G11c 11/40

U.S. Cl. 340—173 FF

10 Claims



An electronic memory cell consists of a bistable and three access paths. Two of the access paths control the state of the bistable. Connected between the two access paths controlling the state of the bistable and the third access path is a M.O.S. transistor whose impedance varies in dependence upon the state of the bistable.

3,693,171

# FERROELECTRIC-PHOTOELECTRIC STORAGE UNIT

Adolf R. Asam, Northridge, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,638

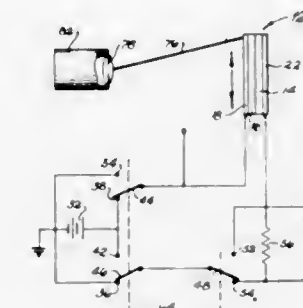
Int. Cl. G11c 13/04, 11/22

U.S. Cl. 340—173 LS

4 Claims

A solid state image storage unit comprising a layer of ferroelectric material having a first electrode formed on one side of the layer and second electrode formed on the other side of said layer. A photoconductive array is formed of a plurality of

channels having a coating of photoconductive material, one end of the channels having a first conductive coating thereon defining a third electrode and the other end of the channels having a conductive coating thereon defining a fourth electrode with the second electrode being conductively connected



to the third electrode. A unidirectional voltage is applied to the first and fourth electrodes, and light is projected onto the surface of the photoconductive channels, with the layer of ferroelectric material being polarized as a function of the light projecting onto the surface of said photoconductive channels.

3,693,172

# ARRANGEMENT FOR READING AN ELECTRO-OPTICAL MEMORY

Ernst Feldtkeller, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

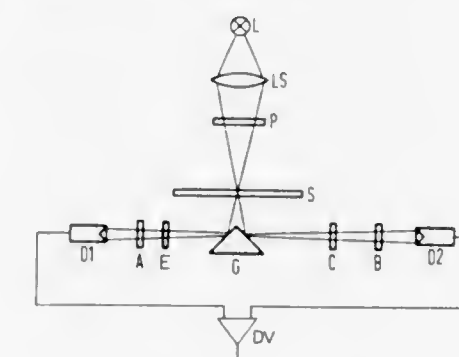
Filed Feb. 9, 1971, Ser. No. 114,004

Claims priority, application Germany, Feb. 11, 1970, P 20 06 167.0

Int. Cl. G11c 11/22, 11/42

U.S. Cl. 340—173 LS

8 Claims



Arrangement for reading an electro-optical memory, in which for the storage of information there is employed the double refraction characteristic dependent on the material state of a storage material and in which for reading linearly polarized light is conducted through the storage material, comprising a beam divider which subdivides the light coming from storer into two partial beams, a first double refracting correction plate whose optical path-length difference is such that in the reading of a binary "0" the light behind the correction plate is polarized approximately linearly, a first analyzer whose plane of polarization is oriented in such a way that in the case of a binary "0" it absorbs linearly polarized light coming from the first correction plate as completely as possible, a first light detector which receives the light coming from beam divider through the first correction plate and the first analyzer, a second double-refracting correction plate whose optical path-length difference is such that in the reading of a binary "1" it absorbs as completely as possible linearly polarized light coming from the second correction plate, a second light detector which receives the light coming from the beam divider through the second correction plate and the second analyzer, and an evaluating circuit to which the output signals of the two light detectors are conducted and which further processes the sign of the difference of the output signals.

3,693,173

# TWO-TERMINAL DUAL PNP TRANSISTOR SEMICONDUCTOR MEMORY

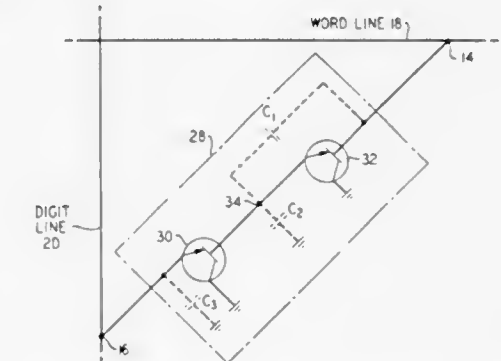
John Donnell Heightley, Basking Ridge, and Sigurd Gunther Waaben, Princeton, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 24, 1971, Ser. No. 156,339

Int. Cl. G11c 11/36

U.S. Cl. 340—173 R

8 Claims



A semiconductor memory contains memory cells that each have only two terminals and each comprise two serially connected semiconductor transistors or diodes. Bit information is written into the cell by raising the potential of one or both of the terminals so as to cause the common node between the semiconductor devices to be increased in potential to one of two levels which represent respectively a "1" and a "0". The reading out of and detection of stored information is accomplished by increasing the potential of one of the two terminals such that current flows into the cell only if the cell contains a stored "0".

3,693,174

# ASSOCIATIVE MEMORY DEVICE AND SYSTEM

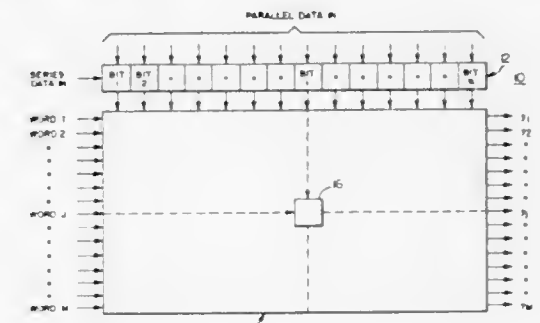
Merritt L. MacKnight, Los Angeles, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed July 6, 1971, Ser. No. 159,867

Int. Cl. G11c 11/40

U.S. Cl. 340—173 AM

24 Claims



An associative memory is disclosed which includes a memory cell having first and second semiconductor memory devices each having electrically controllable first and second threshold voltage levels and each having an input electrode, an output electrode and a control electrode. The threshold voltage of the semiconductor memory devices are set to complementary ones of the threshold voltage levels indicative of the state of the binary bit to be stored in that particular memory cell. Complementary signals are applied to the input electrodes of the semiconductor memory devices indicative of the state of the applied binary bit to be compared to the bit stored in the memory cell. The output electrodes of the two semiconductor memory devices in the cell are connected to an output node. An interrogation signal is applied to the control electrodes of the semiconductor memory devices, and an output signal is obtained from the output node indicative of the correlation of the stored bit and the applied bit at the time of the application of the interrogation signal.



3,693,175

Patent Not Issued For This Number

3,693,176

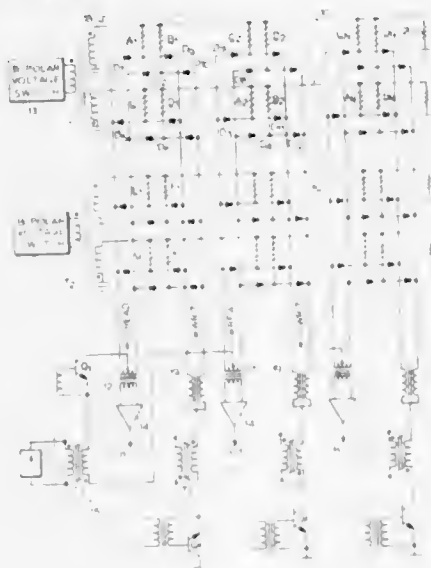
## READ AND WRITE SYSTEMS FOR 2 1/2D CORE MEMORY

Bernard A. Kenner, Palos Verdes Peninsula, Calif., assignor to Electronic Memories and Magnetics Corporation, Los Angeles, Calif.

Filed April 6, 1970, Ser. No. 25,624  
Int. Cl. G11c 11/06, 5/02

U.S. Cl. 340—174 LA

15 Claims



An organization is disclosed for driving bit lines of 2-wire or 3-wire, 2 1/2D coincident current core memory systems using paired rails for a plurality of bit drive lines, and a separate transformer to energize each pair of rails with opposite polarities for each read or write operation. In a 2-wire system, two conjugate lines connected to one rail of a pair and associated with a given bit position of separate word groups are connected to two conjugate lines connected to the other rail of a pair and associated with an adjacent bit position of the same word groups through a selection switch connecting single output terminals of baluns at the ends of the conjugate lines so that current through two conjugate lines is returned through the other two conjugate lines. In a 3-wire system, a single bit line connected to one rail is connected to a single line connected to the other of a pair of rails by a selection switch for the same purpose.

3,693,177

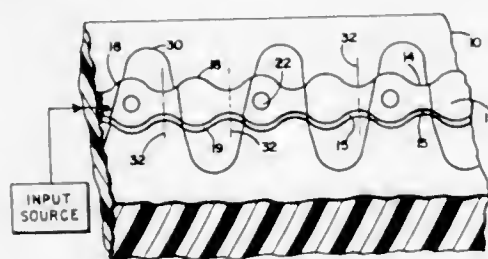
## CONDUCTOR ARRANGEMENT FOR PROPAGATION IN MAGNETIC BUBBLE DOMAIN SYSTEMS

John M. Owens, Newport Beach, Calif., assignor to North American Rockwell Corporation

Filed March 12, 1971, Ser. No. 123,639  
Int. Cl. G11c 11/14, 19/00

U.S. Cl. 340—174 TF

5 Claims



A conductor arrangement for the propagation of single wall domains in a magnetic bubble domain system is disclosed. An elongated conductor on a restricted portion of a strip of film

of a magnetic bubble domain material provides a field gradient which causes the magnetic bubble domain to be moved from a nonrestricted portion through the restricted portion to a second nonrestricted portion of the strip.

## ERRATUM

For Class 340—174 R see:  
Patent No. 3,693,188

3,693,178

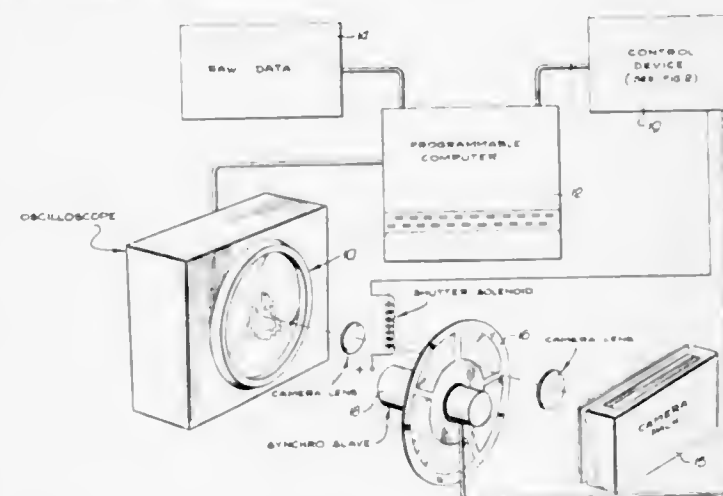
## COLORSCANNER

Ernest J. Braun, Downey, and Ralph M. Adams, San Gabriel, both of Calif., assignors to White Memorial Medical Center, Los Angeles, Calif.

Filed April 29, 1970, Ser. No. 32,854  
Int. Cl. G01d 9/42; A61b 6/00

U.S. Cl. 346—1

12 Claims



In order to produce a colorscan of an internal organ or the like, isocount sections are successively displayed on an oscilloscope screen. The oscilloscope screen is photographed through color and neutral density filters. A computer determines the progression of isocount sections, the color and neutral density filters operative as each isocount display is photographed as well as the times of exposure thereof. Any combination of hue, saturation and brilliance can be provided as a color code for each isocount.

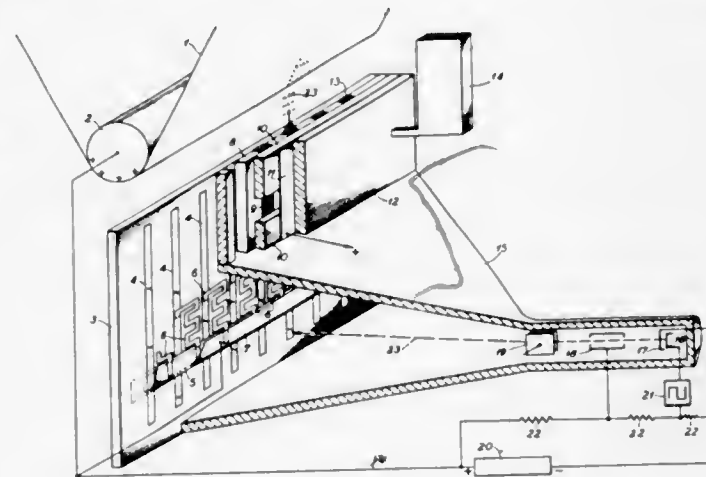
3,693,179

## PRINTING BY SELECTIVE INK EJECTION FROM CAPILLARIES

Stephen F. Skala, 3839 S. Wenonah Ave., Berwyn, Ill.  
Continuation-in-part of Ser. No. 801,647, Feb. 24, 1969, Pat. No. 3,582,954. This application Sept. 3, 1970, Ser. No. 69,248  
Int. Cl. G01d 15/16

U.S. Cl. 346—1

2 Claims



A printing method and apparatus in which a plurality of capillaries eject ink selectively. Ink is moved to the capillary

surface and is further acted upon by a force external to the capillaries, the combination of forces being sufficient to remove ink from said capillary and to deposit it upon an ink receiving surface.

3,693,180

## INTERMITTENT RECORDERS

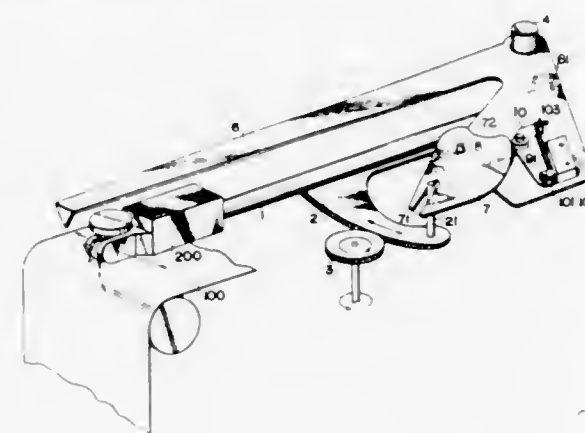
Takefumi Hasebe, and Kazuo Yamada, both of Tokyo, Japan, assignors to Yokogawa Electric Works, Ltd., Musashino City, Tokyo, Japan

Filed Aug. 26, 1970, Ser. No. 67,002

Claims priority, application Japan, April 1, 1970, 45/31215  
Int. Cl. G01d 9/34

U.S. Cl. 346—17

7 Claims



In an intermittent recorder for recording a plurality of measured quantities by dots of different colors, there is provided an ink holder containing a plurality of pens supplied with inks of different colors and a Geneva gear mechanism for intermittently transferring the pens in accordance with the type of measured quantities. There is also provided an alarm point set mechanism for setting a predetermined limit of deflection of the pointer arm of the recorder.

the backup electrode. The fuzz fabric is impregnated with silver and has a volume conductance of approximately one ohm centimeters. In another embodiment a silver impregnated nylon woven fabric was employed as the backup electrode. A soft sponge backing pad was placed behind the woven fabric to provide resilience. The sponge pad may also be employed with the fuzz fabric to provide increased resilience.

3,693,182

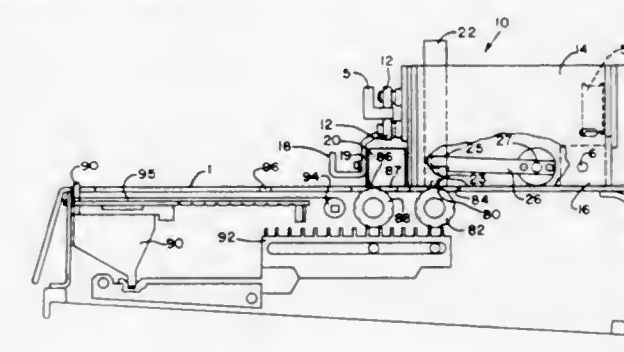
## CARD RECORDER FOR TRANSCRIBING MAGNETIC INFORMATION

Kenneth B. Smith, St. Petersburg, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 31, 1970, Ser. No. 68,296  
Int. Cl. G11b 5/86

U.S. Cl. 346—74 M

4 Claims



A recording apparatus transcribes data from an information carrier, which is coded with variations in soft magnetic material, to magnetic tape. A carriage, supporting a magnet, to magnetic tape. A carriage, supporting a magnet, to magnetic tape. A carriage, supporting a magnet, to magnetic tape.

3,693,181

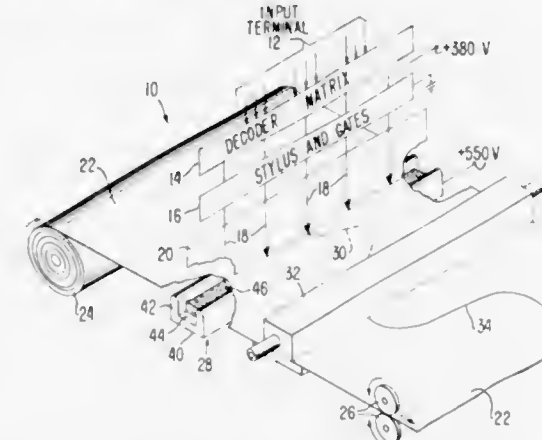
## ELECTROSTATIC RECORDER WITH RESILIENT CONDUCTIVE FABRIC BACKUP ELECTRODE

Edward W. Marshall, Saratoga, and John D. Sloan, San Jose, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed June 26, 1970, Ser. No. 50,215  
Int. Cl. G03g 15/04

U.S. Cl. 346—74 ES

6 Claims



A matted nylon pile fuzz fabric is provided on a support plate for retaining the recording web in electrical engagement with the styli writing electrodes on a recording head. The fuzz fabric is conductive and functions as a backup electrode. The resilient nature of the fabric pile insures good mechanical and electrical contact with the recording web. The support plate and conductive fabric are located directly adjacent to the styli electrodes to minimize the portion of the recording web included in the charging path between each styli electrode and

3,693,183

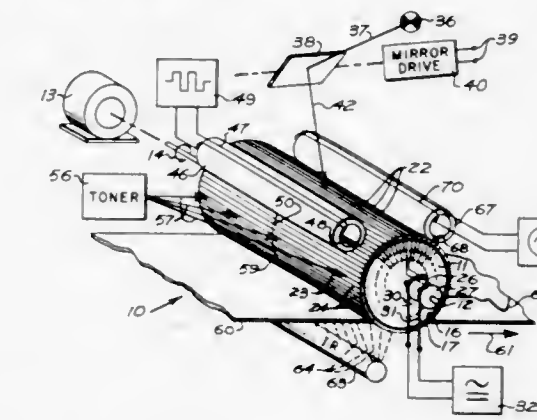
## MAGNETIC PRINTING UTILIZING THERMAL GRADIENTS

James U. Lemke, Del Mar, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Continuation of Ser. No. 757,063, Sept. 3, 1968, abandoned.  
This application July 19, 1971, Ser. No. 164,110  
Int. Cl. H01v 3/04

U.S. Cl. 346—74 MT

9 Claims



Apparatus for producing optically and magnetically discernible prints of information has an endless magnetic recording medium for providing an erasable magnetic record of the information in response to thermal gradients and an endless transducer medium for providing electrical gradients representative of the information. An electrical energy supply enables the electrical gradients to provide thermal gradients producing the erasable magnetic record. This magnetic record is printed out with a magnetic toning agent and is thereafter erased.



**3,693,184**  
**DATA PROCESSING EQUIPMENT INCLUDING**  
**IMPROVED KEYBOARD**

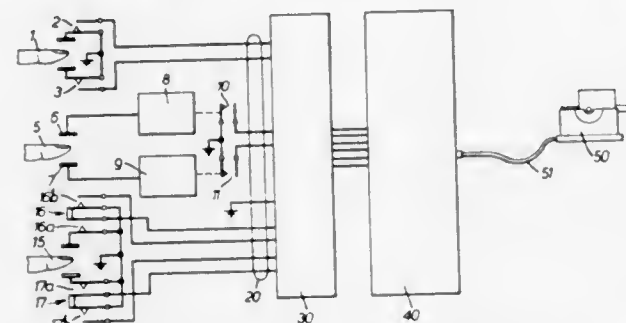
Reginald G. Maling, 63 Mandeville Road, Aylesbury, England  
 Filed Oct. 1, 1969, Ser. No. 862,780

Claims priority, application Great Britain, Oct. 4, 1968,  
 47,270/68

Int. Cl. G11b 5/02

U.S. Cl. 346—74 M

9 Claims



A typewriter is operated rapidly by providing a keyboard which is operated by finger or thumb movement only, storing coded signals from the keyboard and de-coding the signals to operate the typewriter, the signals being supplied to the typewriter at the optimum speed for operation of the typewriter.

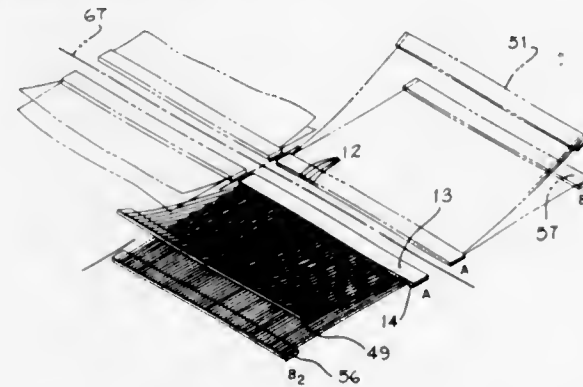
**3,693,185**  
**ELECTROSTATIC RECORDING HEAD**

William A. Lloyd, San Jose, Calif., assignor to Versatec, Inc.,  
 Cupertino, Calif.

Filed Oct. 15, 1970, Ser. No. 81,073  
 Int. Cl. G01d 15/06

U.S. Cl. 346—139 C

1 Claim



Electrostatic recording head constructions comprise a first and second series of conductors disposed in spaced, parallel

relation and having a pair of elongated, insulative head members secured together in confronting relation sandwiching one end of each of the conductors therebetween. The tips of the conductor ends are exposed in a line lying substantially in a plane between said members. Finally, first and second elongated handling elements are readily releasably secured respectively to the other ends of the first and second series of conductors.

**3,693,186**

Patent Not Issued For This Number

**3,693,187**

Patent Not Issued For This Number

**3,693,188**

**READ-OUT AND RESET CONTROL FOR A MEMORY**  
**CORE**

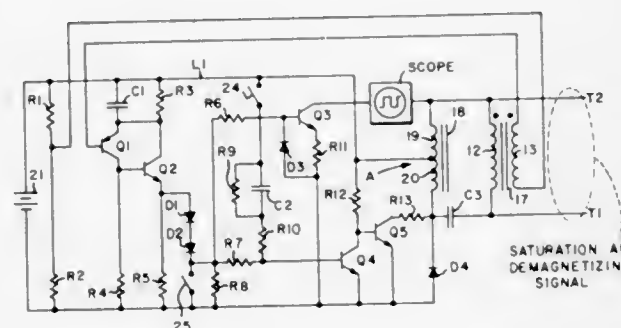
James L. Jensen, deceased, later of 4505 Andover Rd., Edina,  
 Minn. (Gillian C. Jensen, administratrix)

Filed May 7, 1971, Ser. No. 141,329

Int. Cl. G11c 7/00

U.S. Cl. 340—174 R

9 Claims



A flux to period generator for reading out a preset predetermined flux level stored in a core and for resetting said core to said predetermined flux level embodying a first means to determine the length of time necessary to saturate said core from the predetermined level to thereby indicate the level of flux which was preset into the core and a second means to reset said core to its predetermined flux level.

## DESIGNS

SEPTEMBER 19, 1972

**224,763**

**SANDAL FOR CHILDREN**

Tatsuo Fukuoka, 3, 3-ban, 2-chome, Shin-Minami-  
 Fukushima, Tokushima, Japan

Filed Jan. 28, 1971, Ser. No. 110,800

Term of patent 14 years

Int. Cl. D2—04

U.S. Cl. D2—283



**224,765**

**CHAIR**

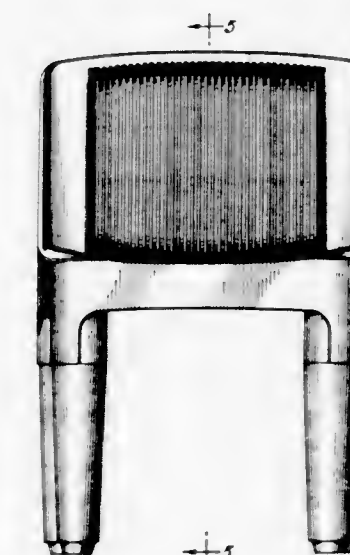
James P. Manning, Deerfield, Ill., assignor to Republic  
 Molding Corporation, Niles, Ill.

Filed Oct. 12, 1970, Ser. No. 25,460

Term of patent 14 years

Int. Cl. D6—02

U.S. Cl. D6—66



**224,764**

**COUCH OR SIMILAR ARTICLE**

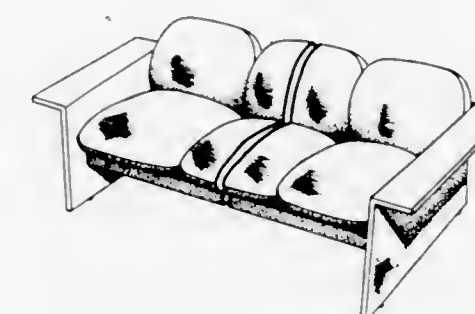
David L. Rowland, 49 W. 55th St.,  
 New York, N.Y. 10019

Filed Dec. 30, 1969, Ser. No. 20,710

Term of patent 14 years

Int. Cl. D6—02

U.S. Cl. D6—63



**224,766**

**CHAIR OR SIMILAR ARTICLE**

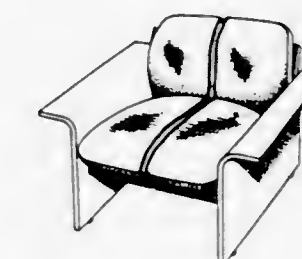
David L. Rowland, 49 W. 55th St.,  
 New York, N.Y. 10019

Filed Dec. 30, 1969, Ser. No. 20,709

Term of patent 14 years

Int. Cl. D6—02

U.S. Cl. D6—69

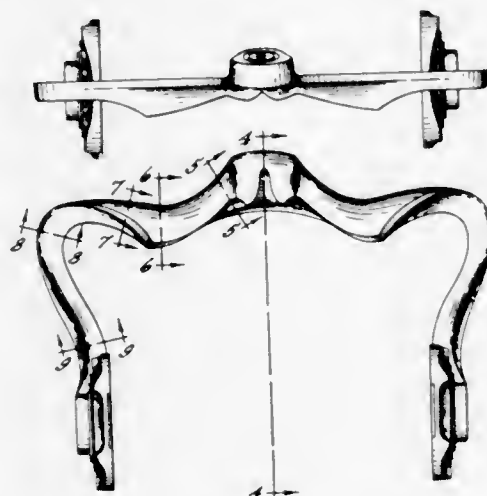




**224,767**  
**TISSUE HOLDER**

Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.  
Filed June 1, 1971, Ser. No. 149,116  
Term of patent 14 years  
Int. Cl. D6—06

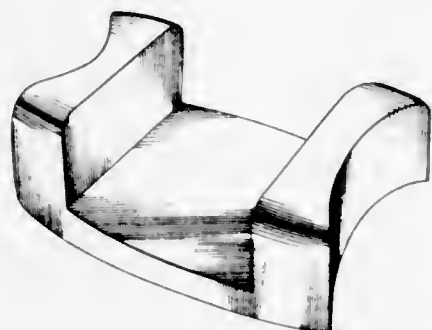
U.S. Cl. D6—97



**224,768**  
**ARTICLE SUPPORT RACK**

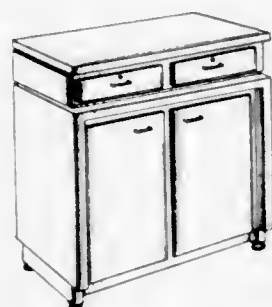
Donald Watamura, West Hempstead, N.Y., and Everett L. Duester, Holland, Mich., assignors to Herman Miller, Inc., Zeeland, Mich.  
Filed Sept. 17, 1970, Ser. No. 25,041  
Term of patent 14 years  
Int. Cl. D6—99

U.S. Cl. D6—177



**224,769**  
**COMBINED COUNTER AND CABINET UNIT**  
Daniel E. Richardson, Bel-Ridge, Mo., assignor to Shure Manufacturing Corporation, St. Louis, Mo.  
Filed July 9, 1970, Ser. No. 23,871  
Term of patent 14 years  
Int. Cl. D6—04

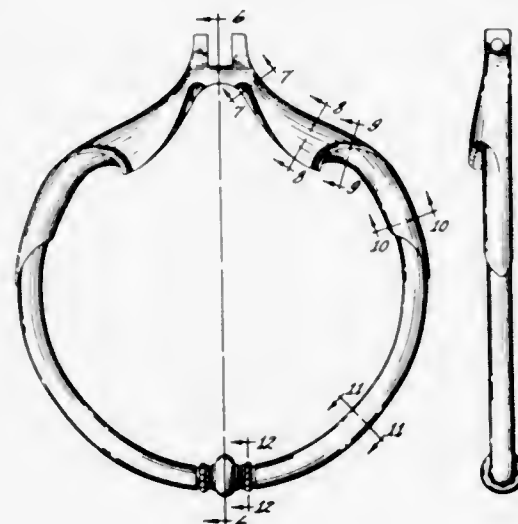
U.S. Cl. D6—159



**224,770**  
**TOWEL RING**

Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.  
Filed June 1, 1971, Ser. No. 149,110  
Term of patent 14 years  
Int. Cl. D6—06

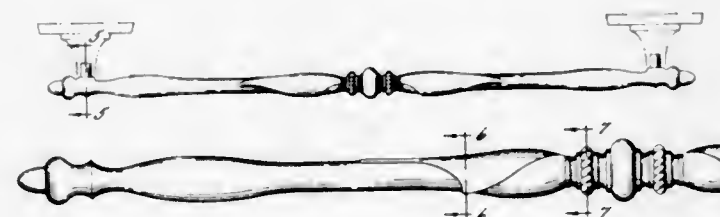
U.S. Cl. D33—32



**224,771**  
**TOWEL BAR**

Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.  
Filed June 1, 1971, Ser. No. 149,126  
Term of patent 14 years  
Int. Cl. D6—06

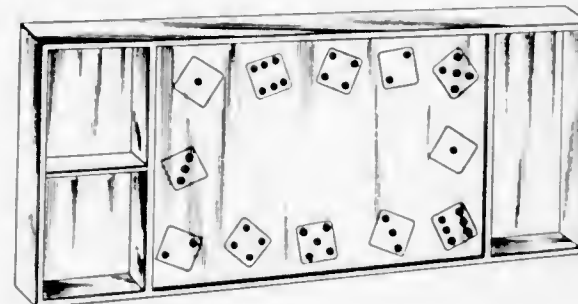
U.S. Cl. D6—99



**224,772**  
**COMBINED SHELF UNIT AND GAME DISPLAY PANEL**

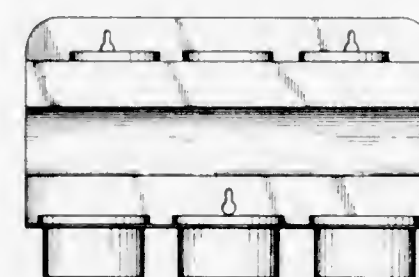
Frederick A. Hurley, 1204 Ali Baba Ave., Opa Locka, Fla. 33054  
Filed Aug. 4, 1970, Ser. No. 24,301  
Term of patent 14 years  
Int. Cl. D6—04

U.S. Cl. D6—130



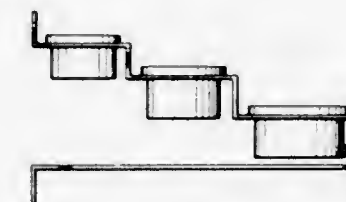
**224,773**  
**WALL RACK FOR NAILS OR THE LIKE**  
Joseph J. Langworthy, 1818 Bissell Ave., Richmond, Calif. 94801  
Filed Feb. 1, 1971, Ser. No. 111,786  
Term of patent 14 years  
Int. Cl. D6—99

U.S. Cl. D6—130



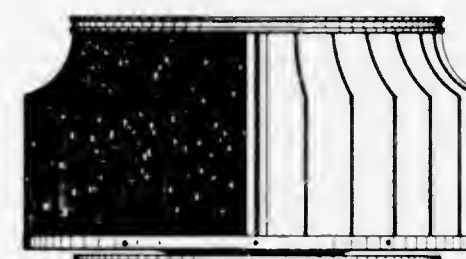
**224,774**  
**WALL RACK FOR NAILS OR THE LIKE**  
Joseph J. Langworthy, 1818 Bissell Ave., Richmond, Calif. 94801  
Filed Feb. 2, 1971, Ser. No. 112,102  
Term of patent 14 years  
Int. Cl. D6—99

U.S. Cl. D6—130



**224,775**  
**ROTARY CHART HOLDER**  
Karl B. Brother, 32 Arnold Ave., Cranston, R.I. 02905  
Filed Dec. 7, 1970, Ser. No. 26,307  
Term of patent 14 years  
Int. Cl. D6—04

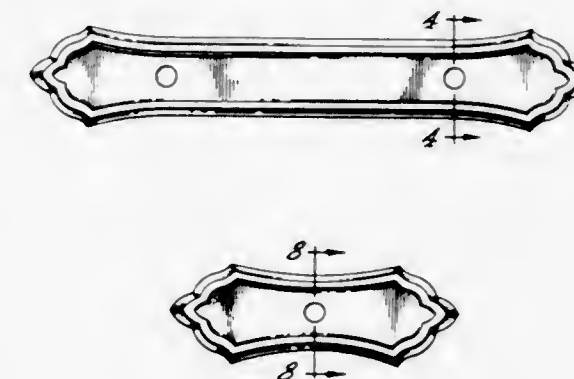
U.S. Cl. D6—20



**224,776**  
**ESCUTCHEON**

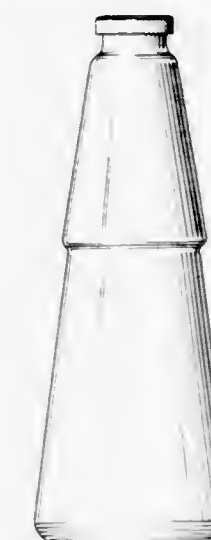
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.  
Filed Dec. 7, 1970, Ser. No. 26,331  
Term of patent 14 years  
Int. Cl. D8—09

U.S. Cl. D8—179



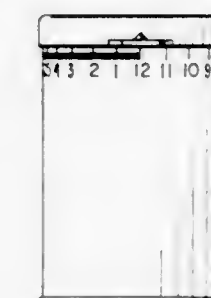
**224,777**  
**BOTTLE OR SIMILAR ARTICLE**  
Floyd E. Pettengill, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio  
Filed Oct. 29, 1970, Ser. No. 25,718  
Term of patent 14 years  
Int. Cl. D9—01

U.S. Cl. D9—119



**224,778**  
**COVERED CONTAINER FOR FOOD OR THE LIKE**  
Alfred J. Cocci, 120 Colburn St., Leominster, Mass. 01453  
Filed Sept. 28, 1970, Ser. No. 25,233  
Term of patent 14 years  
Int. Cl. D9—03

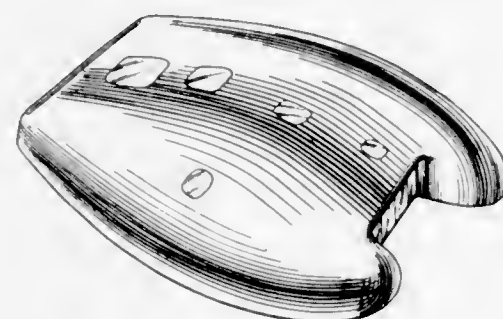
U.S. Cl. D9—216





**224,779**  
**DWELLING**  
Curt H. Grob, Jr., 974 Pines Terrace,  
Franklin Lakes, N.J. 07417  
Filed Oct. 29, 1970, Ser. No. 25,720  
Term of patent 14 years  
Int. Cl. D25—03

U.S. Cl. D13—1



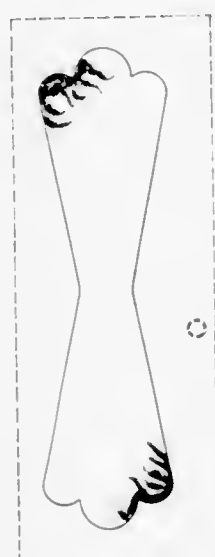
**224,782**  
**RIGID MOLDED COVER FOR A SNOWMOBILE**  
Donald D. Kerr, P.O. Box 338, Hartland, Wis. 53029  
Filed Feb. 3, 1971, Ser. No. 112,514  
Term of patent 14 years  
Int. Cl. D12—16  
U.S. Cl. D14—27



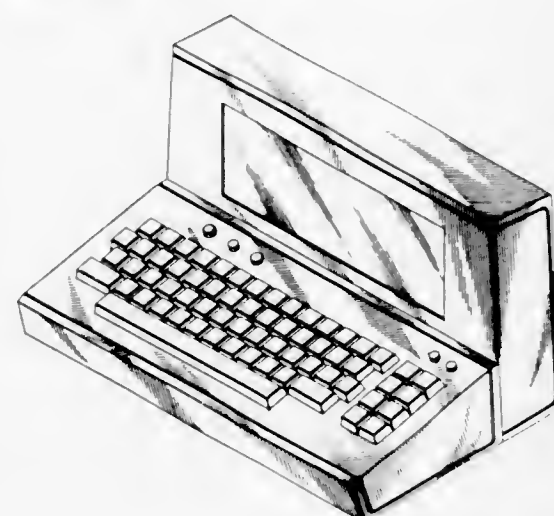
**224,783**  
**AIR FRESHENER CONTAINER**  
David A. Jones, Bellbrook, Ohio, assignor to The  
Drackett Company, Cincinnati, Ohio  
Filed Oct. 27, 1971, Ser. No. 193,233  
Term of patent 7 years  
Int. Cl. D23—99; D7—07; D9—01  
U.S. Cl. D23—150



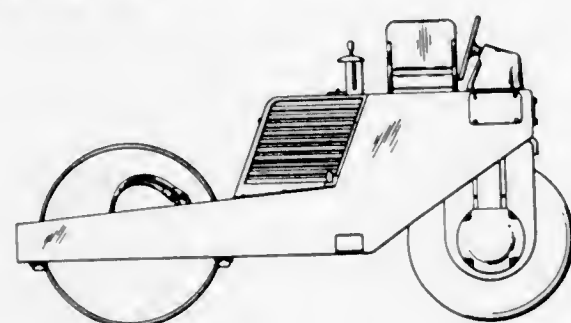
**224,780**  
**DOOR COVERING**  
Mary J. Schildknecht, 6202 Upper Hunter Trace Road,  
Jefferson, Ky. 40216  
Filed Feb. 2, 1971, Ser. No. 112,103  
Term of patent 14 years  
Int. Cl. D25—02  
U.S. Cl. D13—1



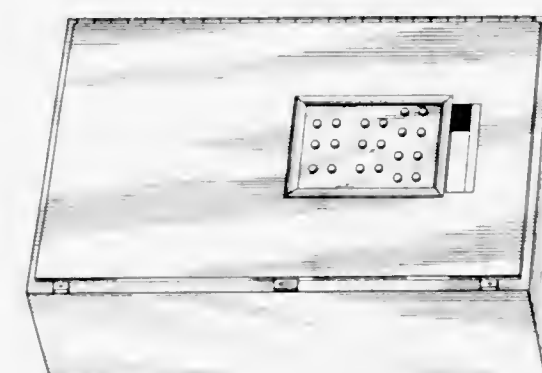
**224,784**  
**COMBINED SELF-SCAN DISPLAY AND  
KEYBOARD CONTROLS**  
Jay Sucre, Exton, Pa., and William A. Hoffman, Collings-  
wood, N.J., assignors to Burroughs Corporation,  
Detroit, Mich.  
Filed Sept. 21, 1970, Ser. No. 25,125  
Term of patent 14 years  
Int. Cl. D14—02  
U.S. Cl. D26—5



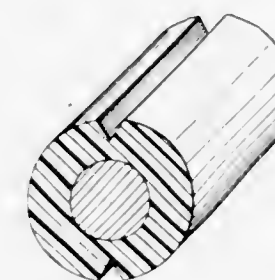
**224,781**  
**SELF-PROPELLED VIBRATORY COMPACTOR**  
George D. Herbst, Milwaukie, Oreg., assignor to Hyster  
Company, Portland, Oreg.  
Filed Nov. 19, 1971, Ser. No. 200,666  
Term of patent 14 years  
Int. Cl. D12—09  
U.S. Cl. D14—3



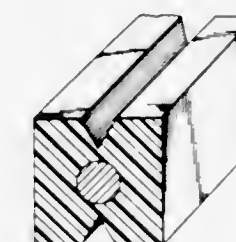
**224,785**  
**ELECTRONIC CONTROL CABINET**  
George J. Dean, Jr., Arvada, Colo., assignor to Wads-  
worth Control Systems, Inc., Arvada, Colo.  
Filed Oct. 2, 1970, Ser. No. 25,305  
Term of patent 14 years  
Int. Cl. D13—03  
U.S. Cl. D26—13



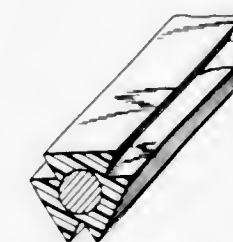
**224,786**  
**ELECTRIC CABLE**  
Bernard Edward Shlesinger, Jr., 9411 Macklin Court,  
Alexandria, Va. 22309  
Filed Feb. 3, 1971, Ser. No. 112,498  
Term of patent 14 years  
Int. Cl. D13—03  
U.S. Cl. D26—1



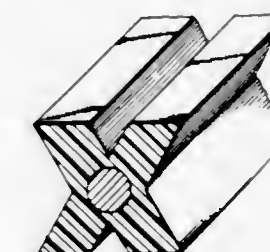
**224,787**  
**ELECTRIC CABLE**  
Bernard Edward Shlesinger, Jr., 9411 Macklin Court,  
Alexandria, Va. 22309  
Filed Feb. 3, 1971, Ser. No. 112,499  
Term of patent 14 years  
Int. Cl. D13—03  
U.S. Cl. D26—1



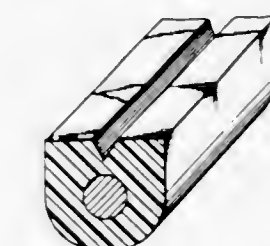
**224,788**  
**ELECTRIC CABLE**  
Bernard Edward Shlesinger, Jr., 9411 Macklin Court,  
Alexandria, Va. 22309  
Filed Feb. 3, 1971, Ser. No. 112,500  
Term of patent 14 years  
Int. Cl. D13—03  
U.S. Cl. D26—1



**224,789**  
**ELECTRIC CABLE**  
Bernard Edward Shlesinger, Jr., 9411 Macklin Court,  
Alexandria, Va. 22309  
Filed Feb. 3, 1971, Ser. No. 112,501  
Term of patent 14 years  
Int. Cl. D13—03  
U.S. Cl. D26—1

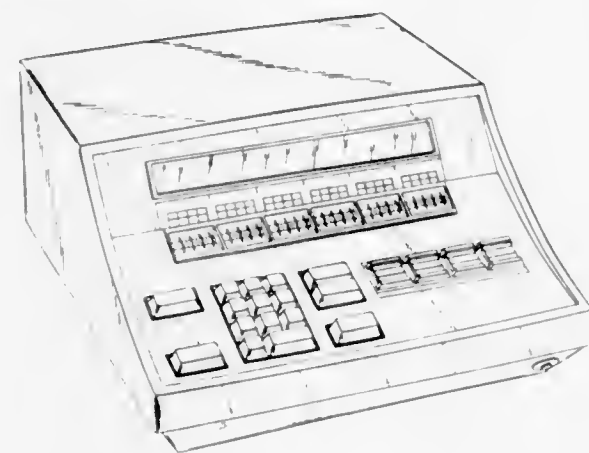


**224,790**  
**ELECTRIC CABLE**  
Bernard Edward Shlesinger, Jr., 9411 Macklin Court,  
Alexandria, Va. 22309  
Filed Feb. 3, 1971, Ser. No. 112,502  
Term of patent 14 years  
Int. Cl. D13—03  
U.S. Cl. D26—1

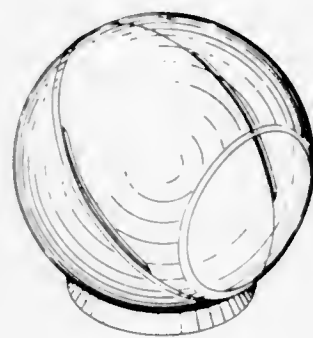




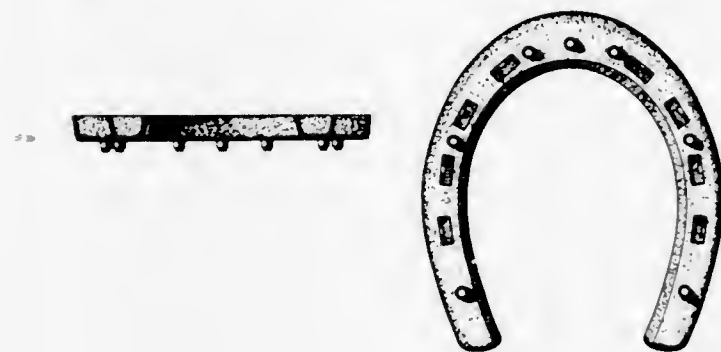
**224,791**  
**KEYBOARD FOR A MICROFILM RETRIEVAL**  
**SYSTEM OR THE LIKE**  
 Frederick G. Knowles, Rochester, N.Y., assignor to  
 Eastman Kodak Company, Rochester, N.Y.  
 Filed July 28, 1971, Ser. No. 167,077  
 Term of patent 14 years  
 Int. Cl. D14—02  
 U.S. Cl. D26—5



**224,792**  
**ANIMAL BED**  
 William C. Knox, Jr., Seattle, Wash., assignor to  
 Kenneth R. Jacobson, Seattle, Wash.  
 Filed Jan. 26, 1971, Ser. No. 109,994  
 Term of patent 14 years  
 Int. Cl. D30—06  
 U.S. Cl. D30—41



**224,793**  
**CALKED HORSESHOE**  
 Norman C. Jeckel, P.O. Box 22,  
 Steamboat Springs, Colo. 80477  
 Filed Feb. 11, 1971, Ser. No. 114,747  
 Term of patent 14 years  
 Int. Cl. D30—99  
 U.S. Cl. D30—35



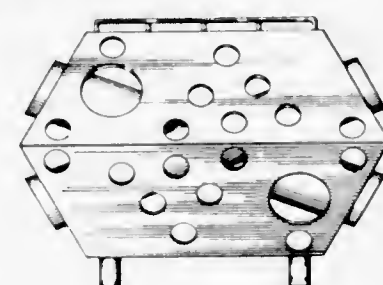
**224,794**  
**DICE TABLE**  
 Frederick A. Hurley, 1204 All Baba Ave.,  
 Opa Locka, Fla. 33054  
 Filed Aug. 4, 1970, Ser. No. 24,302  
 Term of patent 14 years  
 Int. Cl. D21—01  
 U.S. Cl. D34—5



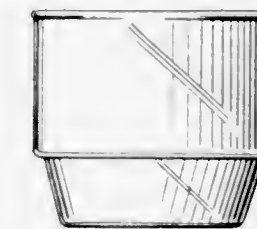
**224,795**  
**SPARKLER TOY**  
 Perry Feuer, Roslyn, N.Y., assignor to Creative  
 Creations, Inc., New York, N.Y.  
 Filed Jan. 8, 1971, Ser. No. 105,145  
 Term of patent 14 years  
 Int. Cl. D21—01  
 U.S. Cl. D34—15



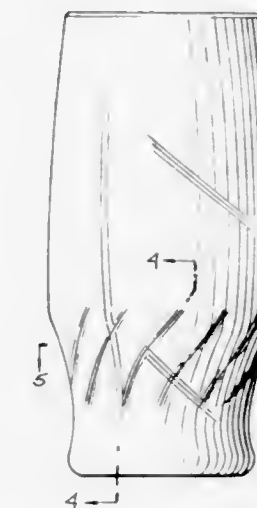
**224,796**  
**PLAYGROUND CLIMBER OR THE LIKE**  
 John F. Price, Delafield, and Larry L. Johnson, Milwau-  
 kee, Wis., assignors to Everwear Park & Playground  
 Equipment, Inc., Oconomowoc, Wis.  
 Filed Mar. 3, 1971, Ser. No. 120,798  
 Term of patent 14 years  
 Int. Cl. D21—03  
 U.S. Cl. D34—5



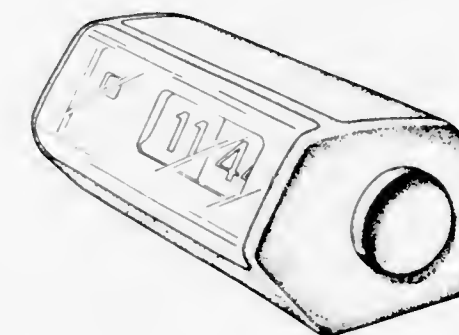
**224,797**  
**TUMBLER OR SIMILAR ARTICLE**  
 James Lloyd Thrush, Lancaster, Ohio, assignor to  
 Anchor Hocking Corporation, Lancaster, Ohio  
 Filed Apr. 21, 1971, Ser. No. 136,300  
 Term of patent 14 years  
 Int. Cl. D7—01  
 U.S. Cl. D36—8



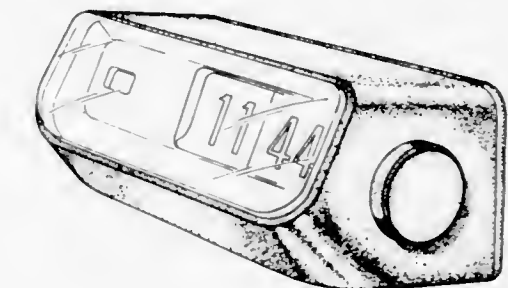
**224,798**  
**TUMBLER OR SIMILAR ARTICLE**  
 Frank J. Benes, Lancaster, Ohio, assignor to Anchor  
 Hocking Corporation, Lancaster, Ohio  
 Filed Apr. 21, 1971, Ser. No. 136,306  
 Term of patent 14 years  
 Int. Cl. D7—01  
 U.S. Cl. D36—8



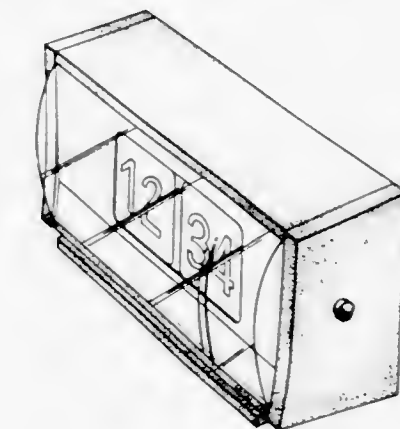
**224,799**  
**CLOCK**  
 Hideaki Nagata, Tokyo, Japan, assignor to Kabushiki  
 Kaisha Koparu, Tokyo-to, Japan  
 Filed Jan. 5, 1971, Ser. No. 104,186  
 Claims priority, application Japan July 13, 1970  
 Term of patent 14 years  
 Int. Cl. D10—01  
 U.S. Cl. D42—7



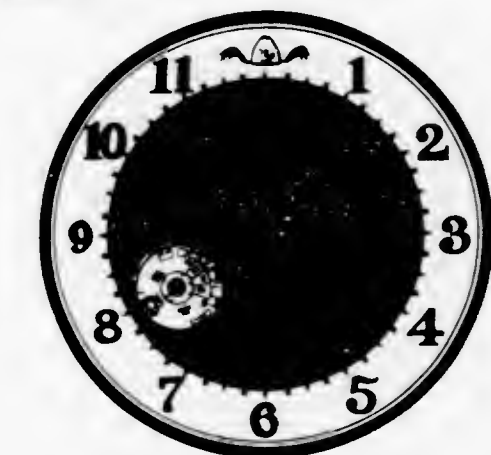
**224,800**  
**CLOCK**  
 Hideaki Nagata, Tokyo, Japan, assignor to Kabushiki  
 Kaisha Koparu, Tokyo-to, Japan  
 Filed Jan. 5, 1971, Ser. No. 104,188  
 Claims priority, application Japan July 13, 1970  
 Term of patent 14 years  
 Int. Cl. D10—01  
 U.S. Cl. D42—7



**224,801**  
**CLOCK**  
 Hideaki Nagata, Tokyo, Japan, assignor to Kabushiki  
 Kaisha Koparu, Tokyo-to, Japan  
 Filed Jan. 5, 1971, Ser. No. 104,190  
 Claims priority, application Japan July 15, 1970  
 Term of patent 14 years  
 Int. Cl. D10—01  
 U.S. Cl. D42—7



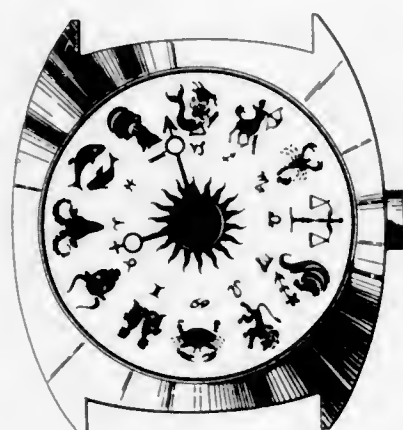
**224,802**  
**CLOCK**  
 Jack Gabel Conner, 6013 Tulip Hill Road,  
 Worthington, Ohio 43085  
 Filed May 5, 1971, Ser. No. 140,635  
 Term of patent 14 years  
 Int. Cl. D10—01  
 U.S. Cl. D42—7





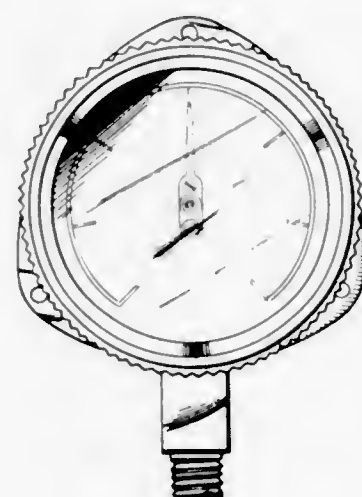
224,803  
**WRISTWATCH**  
 Charles P. Knauff, 13824 Oxnard St.,  
 Van Nuys, Calif. 91406  
 Filed Apr. 22, 1971, Ser. No. 136,646  
 Term of patent 7 years  
 Int. Cl. D10—02

U.S. Cl. D42—8



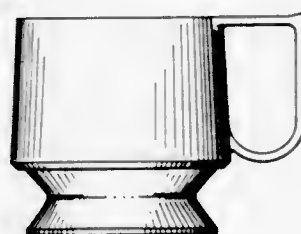
224,806  
**PRESSURE GAUGE**  
 Earl Donald Zuck, Quakertown, Pa., assignor to  
 Ametek, Inc., New York, N.Y.  
 Filed Feb. 18, 1971, Ser. No. 116,738  
 Term of patent 14 years  
 Int. Cl. D10—04

U.S. Cl. D52—6



224,804  
**CUP HOLDER**  
 William Harvey Dennerlein, Plainview, and John Duncan  
 Wark, Freeport, N.Y., assignors to American Can  
 Company, Greenwich, Conn.  
 Filed Feb. 9, 1971, Ser. No. 114,106  
 Term of patent 14 years  
 Int. Cl. D7—01

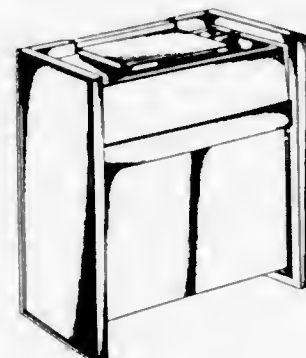
U.S. Cl. D44—9



224,807  
**FILM DUPLICATOR**  
 Timothy P. Fitzgerald, Playa Del Rey, William O. Nix,  
 Newport Beach, and Hubert D. Sandeffer, Anaheim,  
 Calif., assignors to Image Systems, Inc., Culver City,  
 Calif.

Filed June 3, 1971, Ser. No. 149,890  
 Term of patent 14 years  
 Int. Cl. D16—03

U.S. Cl. D61—1



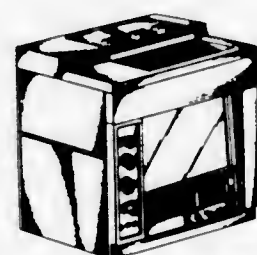
224,805  
**HEAD FOR A TIKI TORCH**  
 James D. Reese, 11937 Avenue 274,  
 Visalia, Calif. 93277  
 Filed Apr. 28, 1971, Ser. No. 138,399  
 Term of patent 14 years  
 Int. Cl. D26—02, 05

U.S. Cl. D48—24



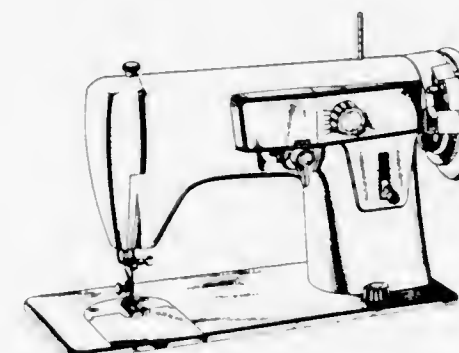
224,808  
**FILM READER/PRINTER**  
 Timothy P. Fitzgerald, Playa Del Rey, Calif., assignor  
 to Image Systems, Inc., Culver City, Calif.  
 Filed June 15, 1971, Ser. No. 153,482  
 Term of patent 14 years  
 Int. Cl. D16—03

U.S. Cl. D61—1



224,809  
**SEWING MACHINE OR SIMILAR ARTICLE**  
 Donald M. Genaro, Haworth, N.J., assignor to The  
 Singer Company, New York, N.Y.  
 Filed June 29, 1971, Ser. No. 158,149  
 Term of patent 14 years  
 Int. Cl. D15—06

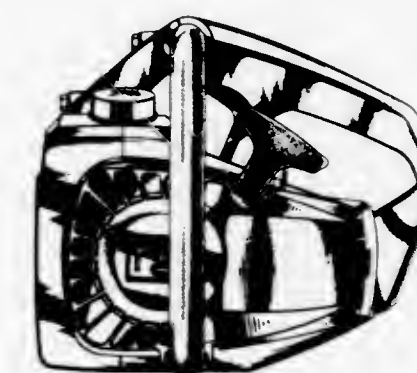
U.S. Cl. D70—1



224,811  
**INTERNAL COMBUSTION ENGINE CASING**  
 Wilford B. Burkett, Pacific Palisades, Anthony J. Carsello,  
 Rolling Hills, and Harry I. Hazzard, Culver City, Calif.,  
 assignors to McCulloch Corporation, Los Angeles,  
 Calif.

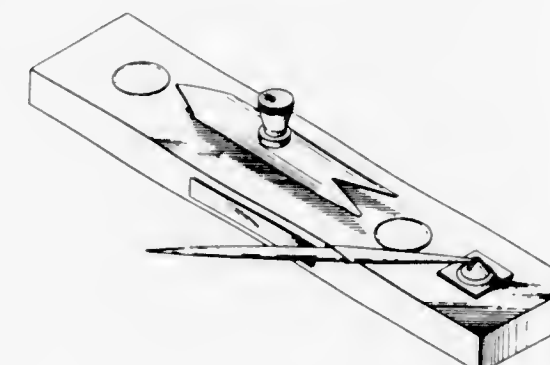
Filed Aug. 10, 1970, Ser. No. 24,392  
 Term of patent 14 years  
 Int. Cl. D15—01

U.S. Cl. D77—1



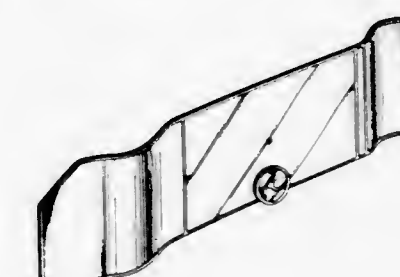
224,810  
**DESK SET**  
 John N. Millner, 11625 SE. 88th St.,  
 Renton, Wash. 98055  
 Filed Oct. 19, 1970, Ser. No. 25,544  
 Term of patent 14 years  
 Int. Cl. D19—06

U.S. Cl. D74—5



224,812  
**DISPOSABLE BLOOD PRESSURE CUFF  
 AND TRANSDUCER**  
 Sydney Hudspeth, San Diego, Calif., assignor to Ivac  
 Corporation, San Diego, Calif.  
 Filed Nov. 1, 1971, Ser. No. 194,776  
 Term of patent 14 years  
 Int. Cl. D24—02

U.S. Cl. D83—12





224,813

**OXYGEN MONITOR**

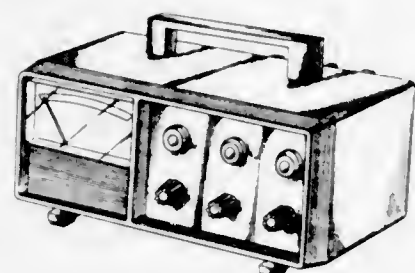
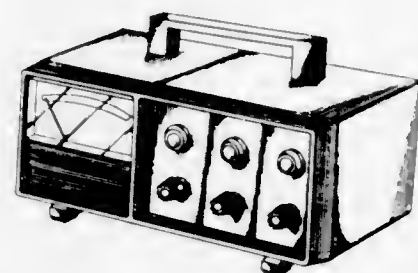
Stephens N. Sato, San Diego, Calif., assignor to Ivac Corporation, San Diego, Calif.

Filed Nov. 1, 1971, Ser. No. 194,785

Term of patent 14 years

Int. Cl. D24—01; D10—04

U.S. Cl. D83—1



224,814

**OXYGEN MONITOR**

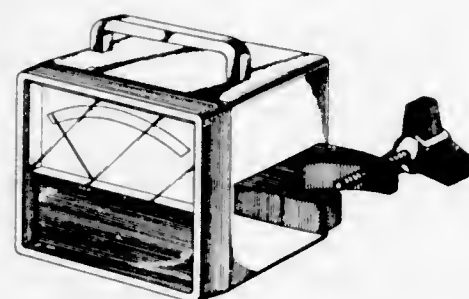
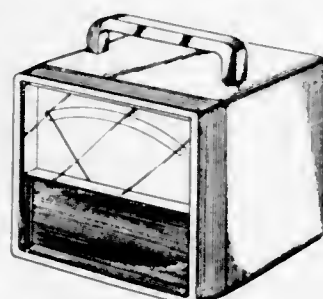
Stephens N. Sato, San Diego, Calif., assignor to Ivac Corporation, San Diego, Calif.

Filed Nov. 1, 1971, Ser. No. 194,786

Term of patent 14 years

Int. Cl. D24—01; D10—04

U.S. Cl. D83—1



224,815

**SEWING MACHINE CARRYING CASE**

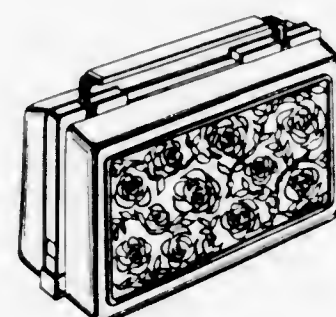
Teiichi Nishigami, Osaka, Japan, and Charles A. Harrison, Chicago, Ill., assignors to Sears, Roebuck and Co., Chicago, Ill.

Filed Jan. 25, 1971, Ser. No. 109,723

Term of patent 14 years

Int. Cl. D3—02

U.S. Cl. D87—1



224,816

**TOTE RACK FOR NAILS OR THE LIKE**

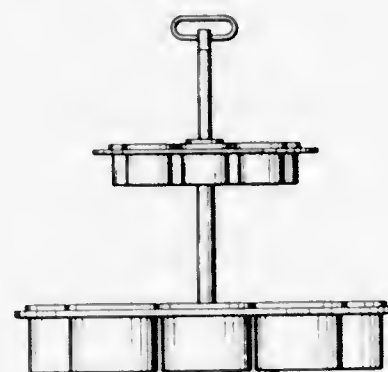
Joseph J. Langworthy, 1818 Bissell Ave., Richmond, Calif. 94801

Filed Feb. 1, 1971, Ser. No. 111,784

Term of patent 14 years

Int. Cl. D3—99

U.S. Cl. D87—1



224,817

**COMBINED FRAME AND BASKET FOR JOINING TWO BICYCLES**

Lester G. Popp, 12111 W. Good Hope Road, Milwaukee, Wis. 53217

Filed Aug. 18, 1971, Ser. No. 172,956

Term of patent 14 years

Int. Cl. D12—16

U.S. Cl. D90—8



224,818

**VEHICLE TIRE**

Shiro Takahashi, Tokyo, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

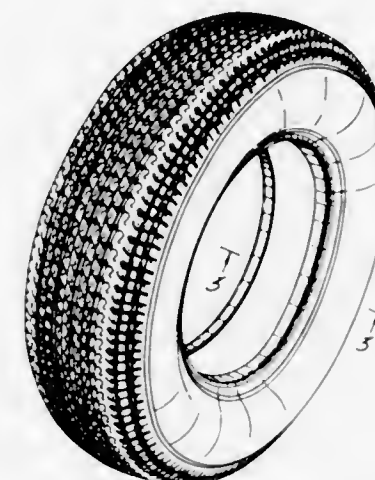
Filed July 23, 1971, Ser. No. 165,887

Claims priority, application Japan Feb. 2, 1971

Term of patent 7 years

Int. Cl. D12—15

U.S. Cl. D90—20



224,819

**REAR AXLE KICK STAND**

Robert F. Humlong, 46 Bryant Circle, Maysville, Ky. 41056

Continuation-in-part of design application Ser. No. 20,046, Nov. 12, 1969. This application Sept. 10, 1970, Ser. No. 24,911

Term of patent 14 years

Int. Cl. D12—16

U.S. Cl. D90—18





# LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF SEPTEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- ACF Industries, Incorporated: *See—*  
Dugge, Richard H.; and Carney, John L., Jr., 3,691,611.
- Achterberg, Raymond C.; and Bunker, Charles L., to Giddings & Lewis, Inc. Automatic insert assembly machine and method employing deformation and linear transfer of workpieces. 3,691,618, Cl. 29-430,000.
- Ackerman, Hervey W., Jr., to M & T Chemicals Inc. Photodegradometer. 3,693,020, Cl. 250-219,0fr.
- Ackermann, Jacob; Radici, Pierino; and Ferre, Franco, to Societa Italiana Resine S.I.R., S.p.A. Stabilized formaldehyde polymers. 3,692,876, Cl. 260-895,000.
- Adair, Edwin Lloyd. Retention catheter and suprapubic shunt. 3,692,029, Cl. 128-349,00r.
- Adams, Chester F., Jr.: *See—*  
Neitzke, Nicholas R.; and Adams, Chester F., Jr., 3,692,231.
- Adams, John F.; and Steltzer, Ernest R. Vehicle marker light. 3,692,998, Cl. 240-8,200.
- Adams, Joseph E.; Di Stefano, Edmund J.; and Enderley, Arthur E., to International Business Machines Corporation. Dual acting probe with extractor/guide. 3,693,087, Cl. 324-158,00p.
- Adams, Ralph D.; and Lopez, Efrain D., to Omark-Winslow Aerospace Tool Co. Apparatus for machining cutter teeth. 3,691,696, Cl. 51-95,0t.
- Adams, Ralph M.: *See—*  
Braun, Ernest J.; and Adams, Ralph M., 3,693,178.
- Addeo, Eric John, to Bell Telephone Laboratories, Incorporated. Arrangement for visually informing stations of conditions encountered during establishment of a call. 3,692,938, Cl. 179-2,0tv.
- Admiral Corporation: *See—*  
Knoll, Ronald S., 3,692,933.
- Aebi, Hans: *See—*  
Martin, Henry; Aebi, Hans; and Ebner, Ludwig, 3,692,911.
- Aertech: *See—*  
Mouw, Robert B., 3,693,103.
- AGA Aktiebolag: *See—*  
Ljung, Bo Hans Gunnar, 3,691,852.
- Agatahama, Shunichi: *See—*  
Nakama, Katuhiko; and Agatahama, Shunichi, 3,693,119.
- Agfa Aktiengesellschaft: *See—*  
Winkler, Alfred; and Zanner, Johann, Jr., 3,692,391.
- Agfa-Gevaert Aktiengesellschaft: *See—*  
Kwiatkowski, Wolfgang, 3,691,926.
- Sauer, Theo; Posse, Rolf-Fred; and Schulz, Gunter, 3,692,283.
- Von Konig, Anita; Kabbe, Hans-Joachim; Mader, Helmut; Otto, Rigobert; and Reuss, Helmut, 3,692,527.
- Wagner, Karl, 3,692,995.
- Aiki, Shiego: *See—*  
Kobayashi, Toyooki; Mori, Yoshinori; and Aiki, Shiego, 3,692,151.
- Air Cargo Equipment Corporation: *See—*  
Byrd, Chester L.; and Blackwell, Randal L., 3,692,203.
- Air Products and Chemicals, Inc.: *See—*  
Holland, Dewey George, 3,692,643.
- Hornbeck, Clarence J., 3,692,206.
- Aihin Seiki Kabushiki Kaisha: *See—*  
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- Aisin Seiki Kabushiki Kaisha: *See—*  
Kawabe, Tsuneo, 3,693,146.
- Aisin Seiki Kabushiki Kaishi: *See—*  
Kuromitsu, Hiromu, 3,692,367.
- Akeley, Lloyd T., to Beckman Instruments, Inc. Differential pressure transducer. 3,691,842, Cl. 73-398,00c.
- Akimoto, Toshio: *See—*  
Chikatsu, Tatsusuke; Shimokawa, Shinichi; Yoshida, Yoshinori; Imamura, Masatugu; Nishiwaki, Ituo; Akimoto, Toshio; and Fujiwara, Tatsuji, 3,692,861.
- Akiyama, Naoki: *See—*  
Takayanagi, Kenjiro; Matsuyama, Kihachiro; Fujiwara, Tadashi; Mizuno, Hideaki; and Akiyama, Naoki, 3,692,576.
- Aktiebolaget Astra: *See—*  
Lindberg, Ulf Henrik Anders, 3,692,784.
- Aktiebolaget Motola Verksad: *See—*  
Carlsson, Bengt; and Sundberg, Mauritz R. G., 3,692,612.
- Aktiengesellschaft Brown, Boveri & Cie: *See—*  
Jaacklin, Andre, 3,693,083.
- Akzona Incorporated: *See—*  
Molenaar, Eenje, 3,692,745.
- Aleks, Vytant: *See—*  
Provi, Mike A.; and Aleks, Vytant, 3,692,204.
- Alessio, Ralph D., to Tele-Conn Enterprises, Inc. Metronome. 3,691,896, Cl. 84-484,000.
- Alexander, George F., to Caterpillar Tractor Company. Accumulator recoil cylinder with oil film applicator. 3,692,368, Cl. 305-10,000.
- Alexander, Richard L.: *See—*  
Shattuck, Chauncey H., 3,692,321.
- Alfa-Laval AB: *See—*  
Stenstrom, Lennart Arvid, 3,692,616.
- Allen, Charles F., 10% to Booth, Frank H. Powered swing. 3,692,305, Cl. 272-86,000.
- Allen, John Kenneth; and Norman, Marvin Neil, to RCA Corporation. Television image control circuit. 3,692,931, Cl. 178-7,30r.
- Allied Chemical Corporation: *See—*  
Anello, Louis G.; Sweeney, Richard F.; Jones, Edward S.; Walsh, John T.; and Thompson, John J., Jr., 3,692,885.
- Barton, Oliver A.; and Murphy, Kevin F., 3,692,686.
- Cheema, Zafarullah K.; Apice, Pawquale J.; and Little, Edwin D., 3,692,845.
- Kubane, Anne-Marie Margaretha; and Kim, Young Chul, 3,692,775.
- Mayer, Richard E.; Birenzve, Ammon; and Weedon, Gene C., 3,692,867.
- Tetenbaum, Marvin T.; and Degginger, Edward R., 3,692,908.
- Allis-Chalmers Manufacturing Company: *See—*  
Evans, John H., 3,692,149.
- Kohl, Robert F.; and Heian, Glenn A., 3,692,287.
- Allmanna Svenska Elektriska Aktiebolaget: *See—*  
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- Alphanumeric, Incorporated: *See—*  
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- Alps Electric Co., Ltd.: *See—*  
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- Alpura AG: *See—*  
Loliger, Willi; and Schmied, Rudolf, 3,692,468.
- Alsthom-Savoisienne: *See—*  
Vayson De Pradenne, Henri, 3,692,207.
- Alta, Dirk; and Doornbos, Derk Dille. Container of the throw-away type provided with a draining device. 3,692,213, Cl. 222-105,000.
- Altieri, Vincent F.; and Tillotson, James E., to Ocean Spray Cranberries, Inc. Canned apple gel and method of preparing same. 3,692,541, Cl. 99-132,000.
- America Velcro Inc.: *See—*  
Erb, George H., 3,692,459.
- American Cyanamid Company: *See—*  
Blank, Werner Josef; and Koral, Jerry Norman, 3,692,717.
- Castellion, George Augustus; and Habermann, Joseph Peter, 3,692,688.
- Palmer, Lucille Elma, 3,692,893.
- American Electronic Laboratories, Inc.: *See—*  
Edson, William A., 3,693,115.
- American Hoechst Corporation: *See—*  
Meyer, Ronald J.; Horsley, Orville E.; and Eichel, Herman J., 3,692,914.
- American Home Products Corporation: *See—*  
Potoski, John R.; and Freed, Meier E., 3,692,791.
- American Hospital Supply Corporation: *See—*  
Trentelman, Elmer F., 3,692,491.
- American Optical Corporation: *See—*  
Grolman, Bernard, 3,692,604.
- La Marre, David A.; Schauweker, George H.; and Stickney, Herbert F., 3,691,564.
- American Standard Inc.: *See—*  
Proctor, Robert H., 3,691,783.
- American Technical Industries, Inc.: *See—*  
Marks, Theodore; and Spiegel, Si, 3,692,617.
- Ameron, Inc., mesne: *See—*  
Beemer, Paul K., 3,691,992.
- Amidon, Alan B.: *See—*  
Mammino, Joseph; and Amidon, Alan B., 3,692,520.
- Ammeo Tools, Inc.: *See—*  
Mitchell, Wallace F., 3,691,878.
- Amo, Tadashi; and Nagasawa, Tuneo, to Kao Soap Company, Ltd. Dentifrice composition. 3,692,894, Cl. 424-56,000.
- Amosov, Pavel Evgenievich; Smekhov, Vitaly Konstantinovich; Trofimov, Valery Leonidovich; Shvarts, Aveli Isaich; Shnepp, Vladimir Borisovich; and Razumovsky, Alexandr Petrovich. Screw rotor machine for compressible media. 3,692,441, Cl. 418-191,000.
- AMP Incorporated, mesne: *See—*  
Trevisiol, Franco, 3,693,134.
- Ampex Corporation: *See—*  
Kember, Bryan F., 3,692,256.
- Anaconda American Brass Company: *See—*  
Laigle, Roger E.; and Rakich, Antone F., 3,692,223.
- Anaconda Wire and Cable Company: *See—*



- Menasoff, George N., 3,692,448.
- Andert, Peter, to Niezoldi & Kramer GmbH. Movie camera with delayed release and scene limiting circuits. 3,692,393, Cl. 352-175.000.
- Anderson, Albin R.; and Jennings, John D., to Western Electric Company, Incorporated. Apparatus for frequency adjusting and assembling monolithic crystal filters. 3,691,720, Cl. 53-91.000.
- Anderson, Elvin L.; and Graboyes, Harold, to Smith Kline & French Laboratories. Intermediates for preparing acridines. 3,692,834, Cl. 260-566.00b.
- Anderson, Richard M.; Parrish, Hushel L., Jr.; and Spade, Kenneth L., to Heil-Quaker Corporation. Air condition apparatus with refrigerant super cooler. 3,691,786, Cl. 62-279.000.
- Anderson, Thomas A., to Westinghouse Brake and Signal Company Limited. Semiconductor having a transistor, a thristor and a diode in one body. 3,693,054, Cl. 317-235.000.
- Anderson, Thomas E., to General Electric Company. Metal oxide varistor polyphase transient voltage suppressor. 3,693,053, Cl. 317-231.000.
- Ando, Shigeo. High-speed automatic hydraulic pressing system. 3,691,946, Cl. 100-269.00b.
- Andoniev, Sergei Mikhaevich; Kutsykovich, Dorina Borisovna; Gerber, Leonid Moiseevich; Kudinov, Gennady Alexandrovich; Kasyanov, Grigory Ivanovich; Nissenbaum, Tamara Izovna; Raikovskiy, Jury Borisovich; Somchenko, Mikhail Semenovich; and Filipiev, Oleg Vadimirovich, to Vsesojuzny Nauchno-Issledovatel'skiy i Proektny Institut po Ochistke Tekhnologicheskikh gazov i stochnykh vod i isopolzovaniyu Vtorichnykh Onorgorosursov Predpriyaty Chernoi Metallurgii. Device for evaporative cooling of metallurgical furnaces. 3,692,103, Cl. 165-105.000.
- Andrews, Edwin R.; See—  
Fleming, Robert W.; Wenstrup, David L.; and Andrews, Edwin R., 3,692,907.
- Andrychuk, Dmetro, to Texas Instruments, Incorporated. Crystal pulling system. 3,692,499, Cl. 23-301.000.
- Anello, Louis G.; Sweeney, Richard F.; Jones, Edward S.; Walsh, John T.; and Thompson, John J., Jr., to Allied Chemical Corporation. Polyhaloalkoxyalkyl phosphate esters. 3,692,885, Cl. 260-950.000.
- Antonietto, Bruno; and Pagella, Elio, to Olivetti, Ing., C. & C., S.p.A. Tool change device for a machine tool. 3,691,899, Cl. 90-1.00a.
- Aoki, Toshikazu; See—  
Okada, Hiroshi; Osakada, Atsushi; Minami, Satoyuki; Aoki, Toshikazu; Hisamori, Tetsuo; Koyanagi, Hironobu; and Otsuka, Hiromi, 3,692,602.
- Aono, Masazumi; and Fuutagawa, Ikuo, to Fuji Photo Film Co., Ltd. Photographic film support having an antihalation layer. 3,692,555, Cl. 117-33.300.
- Apice, Pawquale J.; See—  
Cheema, Zafarullah K.; Apice, Pawquale J.; and Little, Edwin D., 3,692,845.
- Apollo Chemical Corporation; See—  
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- Appleton, Arthur I. Electrical plug contact. 3,693,136, Cl. 339-91.00b.
- Aqua-Genetics Inc.; See—  
McPherson, Bill N., 3,691,994.
- Arber, Scott Gordon; and Young, Oswald William John, to United States Borax & Chemical Corporation. Preparation of metal nitrides. 3,692,474, Cl. 23-191.000.
- Archer, Sydney; and Bailey, Denis M., to Sterling Drug Inc. 5-(Aminoalkylamino)-6 (or)-halo-8-quinolinemethanol their alkyl ethers and alkanoyl esters. 3,692,790, Cl. 260-287.00r.
- Arctec, Incorporated; See—  
Edwards, Roderick Y., Jr.; and Benze, David L., 3,691,781.
- Arima, Kei; Tamura, Gakuzo; Sakai, Heichi; and Kohsaka, Masanobu, to Fujisawa Pharmaceutical Co., Ltd. 5H-pyrrolo [2,1-c] [1,4] benzodiazepin-5-ones. 3,692,777, Cl. 260-239.300.
- Arimura, Yoshiaki; See—  
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- Arlauskas, Alfonsas; and Rogers, Lloyd W., Jr., to General Motors Corporation. Control means for occupant restraint belt retractor. 3,692,328, Cl. 280-150.0sb.
- Armour Pharmaceutical Company; See—  
Gilman, William S.; Jones, John L.; and Rubino, Andrew M., 3,692,811.
- Armstrong Cork Company; See—  
McCabe, Howard R., 3,691,990.
- Arndt, Friedrich; See—  
Boroscowski, Gerhard; Arndt, Friedrich; and Rusch, Reinhart, 3,692,820.
- Arnold, Bruce C.; Auman, John T., Jr.; Kinnison, Charles G.; and Lantz, James E., to Twin Disc, Incorporated. Electrical control apparatus for an engine and variable transmission apparatus. 3,692,157, Cl. 192-98.000.
- Arnold, Floyd L.; and Patmore, James R., to Electronic Associates, Inc. Audio/visual teaching device. 3,691,650, Cl. 35-8.00a.
- Asahi Kasei Kogyo Kabushiki Kaisha; See—  
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- Asam, Adolf R., to International Telephone and Telegraph Corporation. Ferroelectric-photoelectric storage unit. 3,693,171, Cl. 340-173.0ls.
- Ashida, Keiichi; See—  
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- Ashland Oil & Refining Company; See—  
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- Ashland Oil, Inc.; See—  
Schmidt, Robert L.; and Beckman, Hubert J., 3,692,620.
- Assmus, Fritjof Hans; and Knitter, Heinz, to Bunker-Ramo Corporation. The Piggy back connector. 3,693,139, Cl. 339-217.00r.
- Astafiev, Georgy Vasilievich; Korolkov, Ivan Alexandrovich; and Ozhigikhin, Anatoly Nikolaevich. Surgical apparatus for suturing tissue with staples. 3,692,224, Cl. 227-19.000.
- Aston, Bruno D. Applicator assembly for fluent materials. 3,692,417, Cl. 401-122.000.
- Atherton, David L., to Ferranti-Packard Limited. Cryogenic magnet force application means and method. 3,691,960, Cl. 104-148.0ss.
- Atlas Copco Aktiebolag; See—  
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- Luderer, Manfred H.; and Eitenhofer, Anton, 3,691,991.
- Audi NSU Auto Union Aktiengesellschaft; See—  
Lechler, Rolf; and Steinwart, Johannes, 3,691,999.
- Auer, Ulrich W.; and Nicole, Andre, to Interbrev S.A. Method of and a loom for producing a tape having a list with laterally protruding loops. 3,692,068, Cl. 139-116.000.
- Augustin, Gustav, to Kupfer-Asbest-Co. Gustav Bach. Slide ring seal. 3,692,317, Cl. 277-81.000.
- Augustine, Carl F., to Bendix Corporation. The Method and apparatus for detecting microwave fields. 3,693,084, Cl. 324-106.000.
- Auman, John T., Jr.; See—  
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- Automobiles Peugeot; See—  
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- Lombard, Claude; and Perrin, Jean-Louis, 3,691,873.
- Avco Corporation; See—  
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- Avery, Hazelton H. Multi-stage calciner. 3,692,285, Cl. 263-30.000.
- Aviander, Stig, to Allmanna Svenska Elektriska Aktiebolaget. Frequency relay. 3,693,081, Cl. 324-78.00r.
- Avions Marcel Dassault; See—  
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- AVRCA Corporation; See—  
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- Axelsson Fishing Tackle Mfg. Co.; See—  
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- Babcock & Wilcox, Limited; See—  
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- Bach, Lloyd G.; See—  
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- Bachmann, George. Pipe cutting apparatus. 3,691,881, Cl. 82-4.00c.
- Back, Gerhard; Abel, Heinz; Buehler, Arthur; and Litzler, Alfred, to Ciba-Geigy AG. Dyeing silk and wool with chromable fiber-reactive azo dyestuffs and polyglycol-ether amines. 3,692,462, Cl. 8-43.000.
- Back, Gerhard; Abel, Heinz; Buehler, Arthur; and Litzler, Alfred, to Ciba-Geigy AG. Dyeing silk and wool fibers in aqueous bath of metallizable fiber-reactive azo dyes and nitrogen-containing polyglycols with after-treatment using metal releasing agent. 3,692,463, Cl. 8-43.000.
- Backteman, Hans Ulrich; and Taylor, Richard John, to AB Backtemans Patenter. Lashing fitting. 3,691,595, Cl. 24-81.00e.
- Badische Anilin- & Soda-Fabrik Aktiengesellschaft; See—  
Mueller, Herbert; Overwien, Hermann; and Pommer, Horst, 3,692,848.
- Baer, Massimo. Grafting of vinyl halide aliphatic vinyl monomers onto a rubber-modified vinyl halide graft copolymer. 3,692,871, Cl. 260-878.00r.
- Baigel, Hyman S.; See—  
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- Bailey, Denis M.; See—  
Archer, Sydney; and Bailey, Denis M., 3,692,790.
- Bain, Douglas G.; and Hartmeyer, James J., to General Motors Corporation. Lamp and switch assembly for the rear compartment of a motor vehicle. 3,692,992, Cl. 240-2.000.
- Baker, Don R., to Stauffer Chemical Company. Certain 2-benzimidazole carbamates and their utility. 3,692,783, Cl. 260-240.00j.
- Baker, Donald H.; Brickner, David R.; and Manning, Kenzel P., to Sperry Rand Corporation. Gyromagnetic compass system. 3,691,643, Cl. 33-222.000.
- Baker Oil Tools, Inc.; See—  
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- Baker, Richard William; See—  
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- Baker, William H. Expandable drive rivet. 3,691,924, Cl. 85-68.000.
- Baldur, Roman, to Borg-Warner (Canada) Limited, mesne. Air cushion lift pad arrangement. 3,692,192, Cl. 214-1.0be.
- Balleis, Peter. Toy tops. 3,691,673, Cl. 46-68.000.
- Band, Ian T., to Hewlett Packard Company. Gate control apparatus for setting the input signal counting interval. 3,693,097, Cl. 328-39.000.
- Bangor Punta Operations, Inc.; See—  
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- Banikiotes, Gregory C.; See—  
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- Banner, Philip M. Emergency fire escape means. 3,692,145, Cl. 182-70.000.
- Barbeau, Thomas; See—  
Di Perno, Nicholas; Stiefenhofer, Paul; and Barbeau, Thomas, 3,691,658.
- Barber, Ivan. Car washing apparatus. 3,691,578, Cl. 15-21.00d.
- Barber-Greene Company; See—  
Martenson, Earl D.; and Ingham, Ray E., 3,691,916.
- Barcza, Sandor. Substituted silylmethylimidazoles. 3,692,798, Cl. 260-309.000.
- Barder Corporation, The; See—  
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- Barker, James F.; See—  
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- Barnard, Mark Cary Sedgwick, to Leyland Gas Turbines Limited. Thermal regenerators. 3,692,098, Cl. 165-9.000.
- Barnd, John W. Solenoid valve. 3,692,057, Cl. 137-625.440.
- Barnes Anchor, Incorporated; See—  
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- Barnes, Ray A., to Barnes Anchor, Incorporated. Anchor device for trailers. 3,691,703, Cl. 52-173.000.
- Barnett, Charles B.; See—  
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- Baronnet, Pierre; and Katzer, Ernst, to Knorr-Bremse KG. Line coupling connector for railway vehicles. 3,692,275, Cl. 251-149.200.
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- Barrick, Thomas W., Sr.; and Barrick, Billie L. Passenger embracing safety nets for use with automotive vehicles. 3,692,327, Cl. 280-150.00b.
- Barriger, Forrest C. Corner mountable brackets. 3,692,265, Cl. 248-222.000.
- Barthold, Fred O.; See—  
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- Barthuruff, Otto; and Ruhle, Walter, to Bosch, Robert, G.m.b.H. Starter drive for combustion engines. 3,691,854, Cl. 74-6.000.
- Barton, Oliver A.; and Murphy, Kevin P., to Allied Chemical Corporation. Novel non-flammable azeotrope solvent composition. 3,692,686, Cl. 253-171.000.
- Basham, Edward R.; and Smith, William D. Apparatus for ejecting fluid in a borehole. 3,692,106, Cl. 166-53.000.
- Bathellier, Andre; and Faudot, Gerard. Bank of mixer settlers. 3,692,494, Cl. 23-270.500.
- Bauer, Anton, Inc.; See—  
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- Bauer, George W., II, to Bauer, Anton, Inc. Motion picture camera motor control. 3,692,394, Cl. 352-176.000.
- Baulieu, William H.; See—  
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- Bauman, Albert J., to California Institute of Technology. Method and apparatus for micro dry column chromatography. 3,692,669, Cl. 210-31.000.
- Baxter Laboratories, Inc.; See—  
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- Baxter, Michael David, to Hoburn Eaton Manufacturing Company Limited. Fluid motors. 3,691,905, Cl. 91-216.00a.
- Bayne, Jimmy O. Clothes hanger storing and display device. 3,692,188, Cl. 211-49.00d.
- Beakes, Benjamin L., to General Motors Corporation. Tilt steering wheel mechanism. 3,691,866, Cl. 74-493.000.
- Beard, Jack H., to General Motors Corporation. System for calibrated high level current measurement using a magnetic field responsive transistor. 3,693,085, Cl. 324-117.00h.
- Beard, James D.; See—  
Stephens, Frederick N.; Rowlett, Glenford; and Beard, James D., 3,691,726.
- Becca, Dante. Garment hanger. 3,692,216, Cl. 223-91.000.
- Beckman, Hubert J.; See—  
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- Beckman Instruments, Inc.; See—  
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- Miller, Curtis E., 3,692,997.
- Neti, Radhakrishna M.; and Bing, Colin C., 3,692,485.
- Sternberg, James C., 3,692,483.
- Beemer, Paul K., to Ameron, Inc., mesne. Apparatus for truing mortar coating. 3,691,992, Cl. 118-107.000.
- Begleiter, Manny, to Miner Industries, Inc. Nozzle for inflating balloons. 3,692,071, Cl. 141-313.000.
- Belgonucleaire S. A.; See—  
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- Bell & Howell Company; See—  
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- Weber, Paul E., 3,693,016.
- Bell, John M.; and Mooney, Robert A., to Ford Motor Company. Tool for establishing ignition timing of a reciprocating internal combustion engine. 3,691,641, Cl. 33-181.0at.
- Bell Telephone Laboratories, Incorporated; See—  
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- Wyndrum, Ralph William, Jr., 3,692,953.
- Beloit Corporation; See—  
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- Bender, David L., to Hamco Machines & Electronics Corpoted. Pressure control for lapping device. 3,691,697, Cl. 51-134.000.
- Bendix Corporation; See—  
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- Bendix Corporation, The; See—  
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- Ruppe, Joseph P., Jr., 3,692,150.
- Beneking, Heinz, to Licentia Patent-Verwaltungs-G.m.b.H. Field effect transistor. 3,693,055, Cl. 317-235.000.
- Benner Floyd E., Jr.; and Loehr, Clifford E., to PPG Industries, Inc. Method for uniform distribution of gases in an annulus and apparatus therefor. 3,692,055, Cl. 137-604.000.
- Bennett, Sedgwick R.; See—  
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- Berg, Vernon R., Sr.; and Berg, Vernon R., Jr. Barn ventilator. 3,691,928, Cl. 98-33.000.
- Berge, Jacques Marie Albert Charles. Device for continuous filtering of cheese curd, in particular curdled milk. 3,691,633, Cl. 31-46.000.
- Berger, Abe, to General Electric Company. Method of producing alkoxy-substituted mercaptoalkyl silanes. 3,692,812, Cl. 260-448.20e.
- Berglund, Neil C.; and Petricka, Gerald H., to International Business Machines Corporation. Hammer control for chain printer. 3,691,947, Cl. 101-93.00c.
- Bernard, Jean Andre; and Faraoni, Adamo Renato, to European Atomic Energy Community (Euratom). Method of producing a sealing-tight joint between two tubes on different materials. 3,691,614, Cl. 29-470.500.
- Bernhardt, Gunther; Buning, Robert; and Trautvetter, Werner, to Dynamit Nobel Aktiengesellschaft. Metal-coated thermoplastic article. 3,692,502, Cl. 29-195.000.
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- Besnard, Jean-Claude; and Pasteur, Lylan M. L., to Resines et Dispersions "Redis". Polyester resin granulates and process for preparation of same. 3,692,736, Cl. 260-40.00r.
- Bethlehem Steel Corporation; See—  
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- Hiller, Carl Duane; and Karge, Harold W., 3,691,751.
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- Bhattacharya, Bhairab Chandra; and van den Bovenkamp, Gustaaf J., said van den Bovenkamp assor. to Bio-Controls, Inc., mesne. Immunological method and composition for controlling the sex mammalian offspring. 3,692,897, Cl. 424-85.000.
- Bhola, Siri R., to Conductron Corporation. Method of making a voltage actuable switch. 3,691,631, Cl. 29-622.000.
- Bianchi, Nereo, to Necchi S.p.A. Stitch controller. 3,691,969, Cl. 112-70.000.
- Bideau, Max A.; Chauveton, Charles E.; Fruchard, Alain; and Laurens, Marc, to Eastman Kodak Company. Printing from color transparencies. 3,692,524, Cl. 96-6.000.
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- Bishop, Thomas R.; and Peil, Archie W., to Bowen Tools, Inc. Wireline blowout preventer. 3,692,316, Cl. 277-73.000.
- Bixler, George F. Pickup tongs. 3,692,347, Cl. 294-99.saj.
- Bjork, Lars; Erikson, Uno E.; and Ingelman, Bjorn G. A., to Pharmacia Aktiebolag. Novel 3,5-substituted 2,4,6-triodobenzoic acids and salts thereof. 3,692,824, Cl. 260-501.110.



- Blachut, Theodore J.; Smialowski, Antoni J.; Schut, Gerhardus H.; and Carman, Philip D., to Canadian Patents and Development Limited. Orthocartograph. 3,692,405, Cl. 355-22.000.
- Blachut, Theodore J.; Marsik, Zbynek; and Makow, David M. Relief shading apparatus. 3,692,406, Cl. 355-22.000.
- Black and Decker Manufacturing Company, The: See—  
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- Blackwell, Randal L.: See—  
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- Blaising, Walklett. Overhead sign mounting. 3,691,677, Cl. 40-128.000.
- Blake, Charles T., to Warner & Swasey Company. Machine tool. 3,691,879, Cl. 82-2.500.
- Blance, Robert B.; Cahill, David R.; and Nachtel, Peter. Novel interpolymer blends. 3,692,878, Cl. 260-901.000.
- Blank, Werner Josef; and Koral, Jerry Norman, to American Cyanamid Company. Modified non-gelled alkyl resin composition and process for its preparation. 3,692,717, Cl. 260-21.000.
- Blatter, Herbert Morton: See—  
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- Bliss, William W. Water pressure fingernail cleaning unit. 3,691,577, Cl. 15-21.00r.
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- Bocking, Albert: See—  
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- Bogue, John C.: See—  
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- Bogue, John C.; and Sarbacher, Robert I., said Sarbacher assor. to Bogue, John C. Electrical power supply comprising sequentially activated batteries. 3,693,068, Cl. 320-13.000.
- Boileau, Jacques, to Compagnie Generale des Etablissements Michelin, raison Sociale Michel & Cie. Reinforced tire. 3,692,080, Cl. 152-359.000.
- Boltze, Karl-Heinz; Brendler, Otfried; and Lorenz, Dietrich, to Tropenwerke Dinklage & Co. Pharmacologically active esters of N-(3-trifluoromethylphenyl)-anthranilic acid. 3,692,818, Cl. 260-471.00r.
- Bond, Donald Spencer, to RCA Corporation. Apparatus for the automatic navigation of a sailing vessel. 3,691,978, Cl. 114-144.000.
- Bondi, Pasquale Colombo, to General Electric Company. Variable flow distributor. 3,692,041, Cl. 137-238.000.
- Bondley, Ralph J., to General Electric Company. High temperature brazing alloy system. 3,691,607, Cl. 29-194.000.
- Boneck, Roger L. Window power actuating device. 3,691,684, Cl. 49-21.000.
- Bonnell, Bernard, to Progil. Hydraulic binders and compositions including these binders. 3,692,728, Cl. 260-29.4ua.
- Booth, Frank H.: See—  
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- Borden, Inc.: See—  
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- Columbus, Peter Spiros; and Mason, Ronald Thomas, 3,692,713.
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- Boroschewski, Gerhard; Arndt, Friedrich; and Rusch, Reinhart, to Schering A.G. Methyl and ethyl-N-[3-(3'-methylphenyl-carbamoyloxy)-phenyl] carbamates. 3,692,820, Cl. 260-472.000.
- Borreill, Andre B., to Societe Anonyme: Ciments Lafarge. Apparatus for the manufacture of super-white cements. 3,692,286, Cl. 263-32.00r.
- Bos, Laurence William, to Western Electric Company, Incorporated. Methods and apparatus for allocating the measured noise and resistance of a thin-film resistor between the resistor proper and the contact pads therefor. 3,692,987, Cl. 235-151.310.
- Bosch, Robert, G.m.b.H.: See—  
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- Issler, Jorg; Roth, Helmut; and Sohner, Gerhard, 3,692,009.
- Reichel, Eckehard; and Zellbeck, Gustav, 3,691,910.
- Sturmer, Hans, 3,691,861.
- Boshagen, Horst, to Farbenfabriken Bayer Aktiengesellschaft. 3-Amino-isothiazoles, derivatives thereof and processes for the production thereof. 3,692,795, Cl. 260-305.000.
- Bottenbruch, Ludwig: See—  
Schnell, Hermann; Czesla, Manfred; and Bottenbruch, Ludwig, 3,692,870.
- Bottoms, Harry Simister, to Lucas, Joseph, (Industries) Limited. Couplings. 3,691,790, Cl. 64-23.000.
- Boucher, James D.; and Hopkins, Jesse L., to General Electric Company. Pilot and main fuel gas supply means for pressurized gas-fired space heater. 3,692,014, Cl. 126-110.00r.
- Boucher, Raymond, to Hedstrom Company. Playseat with stabilizer. 3,692,359, Cl. 297-258.000.
- Bouknecht, Max A.: See—  
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- Boutry, Pierre; Dumas, Jean Claude; and Montarnal, Roger, to Institut Francais du Petrole des Carburants et Lubrifiants. Cyclical process for the dehydrogenation of saturated hydrocarbons. 3,692,860, Cl. 260-680.00r.
- Bouygues, Jean: See—  
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- Bowell, James P., to Little, Miller, Giant Co., Inc. Poultry brooder burner housing. 3,691,996, Cl. 119-32.000.
- Bowen, Jack L.; and Ryan, James H., to Johnson, E. F., Company. Connector. 3,693,132, Cl. 339-47.00r.
- Bowen Tools, Inc.: See—  
Bishop, Thomas R.; and Peil, Archie W., 3,692,316.
- Slator, Damon T.; and Peil, Archie W., 3,692,107.
- Bowling, George W.; Conlisk, Peter J.; and Lenzen, Kenneth H., to Monsanto Company. Damping system. 3,691,712, Cl. 52-393.000.
- Bowman, Bobby R.: See—  
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- Bowman, Karl R.; Jemison, Lawrence L., Jr.; and Parker, Orval H., to General Motors Corporation. Anti-glare rear view mirror with housing molded of plastic material. 3,692,387, Cl. 350-281.000.
- Box, E. O., Jr., to Phillips Petroleum Company. Dehydrogenation catalyst Group VIII metals on tin-containing supports dehydrogenation catalysts. 3,692,701, Cl. 252-466.00b.
- Box Innards, Inc.: See—  
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- Boyd, George M. Navigation aid. 3,692,238, Cl. 235-88.000.
- Boyd, John A. Trash compaction shelter incorporating a removable container. 3,691,943, Cl. 100-215.000.
- Boyd, John A. Kitchen compactor. 3,691,944, Cl. 100-229.00a.
- Bradshaw, Norman Francis, to International Harvester Company. Control devices. 3,691,867, Cl. 74-491.000.
- Brandon, Kenneth F., to Eastman Kodak Company. Apparatus for setting up a rapidly moving web for removal of a side portion therefrom. 3,691,888, Cl. 83-302.000.
- Brandt, Siegfried: See—  
Schmitt, Karl; Gude, Fritz; and Brandt, Siegfried, 3,692,749.
- Branovich, Louis E.; Fitzpatrick, William B. P.; and Long, Martin L., Jr., to United States of America, Army. Method of depositing isotropic boron nitride. 3,692,566, Cl. 117-106.00r.
- Brassner, Joseph L.: See—  
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- Braun Aktiengesellschaft: See—  
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- Brearily Company, The: See—  
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- Breithaupt, John T.; and Garcia, Raymond T., to Shell Oil Company. Stair-step thermal recovery of oil. 3,692,111, Cl. 166-252.000.
- Brendel, Gottfried J.; and Shepherd, Lawrence H., Jr., to Ethyl Corporation. Branched chain alkenols. 3,692,847, Cl. 260-633.000.
- Brendler, Otfried: See—  
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- Breunbach, Maurice C., to Spirolet Corporation. Nozzle. 3,692,243, Cl. 239-401.000.
- Brewer, Charles C.; and Killian, Charles R., to Foster Grant Co., Inc. Catalytic hydrocracking process for distillation residues. 3,692,858, Cl. 260-672.00r.
- Brewster, Don. Hay harvesting machine. 3,691,742, Cl. 56-346.000.
- Brickner, David R.: See—  
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- Briggs, Charles A., Jr.; and Vogelsberg, Walter H., to Briggs, C. A., Company. Audible signal or alarm device including two variable frequency unijunction transistor oscillators. 3,693,110, Cl. 331-47.000.
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- Brobeck, Von H.; and Zulick, Mike, to Goodyear Tire & Rubber Company, The. Method of making a vented tire mold. 3,692,090, Cl. 164-71.000.

- Brockway, Charles E.; Schollenberger, Charles S.; and Sachara, Eugene F., to Goodrich, B. F., Company, The. Polyurethane propellant compositions and their preparation. 3,692,597, Cl. 149-19.000.
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- Brown, Kenneth G. Wynne; and Day, Keith Julian. Bolted-up friction joints in structural steel-work. 3,692,341, Cl. 287-189.36f.
- Brown, Lloyd H.; and Stephens, Larry C. Process for producing cores microwave heating. 3,692,085, Cl. 164-15.000.
- Brown, Robert J.: See—  
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- Browning, Espey T. Scraping blade attachment for a rake. 3,691,743, Cl. 56-400.050.
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- Brunton, Donald C., to Brun Sensor Systems, Inc. Apparatus and method for eliminating interference errors in dual-beam infrared reflection measurements on a diffusely reflecting surface by geometrical elimination of interference-producing specularly-reflected radiation components. 3,693,025, Cl. 250-83.30h.
- Bubb, Daniel F.; and Callihan, James M., to General Industries Company, The. Centrifugal blower. 3,692,428, Cl. 416-187.000.
- Buchner, Werner: See—  
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- Buchtel, Dean H.; Lappin, Kenneth R.; and Maurer, John A., to Dental Unit Construction. Dental unit construction. 3,691,634, Cl. 32-22.000.
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- Buehler, Arthur: See—  
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- Back, Gerhard; Abel, Heinz; Buehler, Arthur; and Litzler, Alfred, 3,692,463.
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- Bungardt, Karl; Lehnert, Gunter; and Meinhardt, Helmut, to Deutsche Edelstahlwerke Aktiengesellschaft. Production of protective layers on cobalt-based alloys. 3,692,554, Cl. 117-22.000.
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- Burgess, James E.; Falce, Louis R.; Graham, Robert L.; and Scott, Allan W. Method for supporting a slow wave circuit via an array of dielectric posts. 3,691,630, Cl. 29-600.000.
- Burkhard, Mahlon D.; and Maxwell, Russell J., to Industrial Research Products, Inc. Shock isolation mounts for fragile devices. 3,692,264, Cl. 248-15.000.
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- Camp, Alfred L., to Wilkins Regulator Co. Automatically regulated fire valve. 3,692,047, Cl. 137-95.000.
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- Carlsson, Bengt; and Sundberg, Mauritz R. G., to Aktiebolaget Motola Verkstad. System for manufacturing particle board or the like. 3,692,612, Cl. 156-375.000.
- Carlton, Gilbert A.; and Parsons, John K. Building panels. 3,691,710, Cl. 52-251.000.
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- Carney, Richard William James; and De Stevens, George, to Ciba-Geigy Corporation. Tertiary aminoacids. 3,692,819, Cl. 260-471.00r.



- Carpenter, Peter E. G.; and Cook, David L., to Square D Company. Moulded-case circuit breaker with improved double-latch mechanism. 3,693,121, Cl. 335-169.000.
- Carr, James P., to FMC Corporation. Control mechanism for irrigation system. 3,692,045, Cl. 137-344.000.
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- Chambers, Wayne L.; and Chambers, Ronald W., 21% to Chamber's Process, Ltd., mesne and 1/4% of 1% to Zurich, Philip. Copper producing process. 3,692,647, Cl. 204-105.000.
- Chamodou, Pierre, to Societe des Accumulateurs Fixes et d: Traction (Societe Anonyme) Pont de la Folie. Arrangement for assembling storage cells in batteries. 3,692,588, Cl. 136-171.000.
- Champagne, Edwin B., to GCO, Inc. Holography with specular objects. 3,692,381, Cl. 350-3.500.
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- Charamel, Andre; Duroux, Jacques Marius; Siquet, Serge; and Desroix, Jacques; deceased (by Gras, Daniel; legal representative), to Rhone-Poulenc S. A. Process for the production of oxalic acid. 3,692,830, Cl. 260-533.00r.
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- Chase, William B.; Jendrisak, Joseph E.; and Kelvey, Harold E., to Shatterproof Glass Corporation. Windowed doors for self-cleaning ovens. 3,692,015, Cl. 126-200.000.
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- Chikatsu, Tatsusuke; Shimokawa, Shinichi; Yoshida, Yoshinori; Imamura, Masatugu; Nishiwaki, Ito; Akimoto, Toshio; and Fujiwara, Tatuji, to Japan Synthetic Rubber Co., Ltd. Process for producing highly pure isoprene. 3,692,861, Cl. 260-681.50r.
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- Clark, Wilbur R.; and Mann, Freeman W., to Landis Tool Company, mesne. Work rest for a machine tool. 3,691,701, Cl. 51-238.000.
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- Clarke, Edgar W. Polymeric compositions and methods of treating. 3,692,722, Cl. 260-28.000.
- Clarke, Robert W. Multiple ply moire textile. 3,691,971, Cl. 112-440.000.
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- Hartigan, James J.; and Clementi, Robert J., 3,692,525.
- Clendenin, Norbert T.; and Corum, Tillman L., to Metal Forming and Coining Corporation. Cold extruded article and method of making the same. 3,691,804, Cl. 72-42.000.

- Clendenen, Leo; and Smith, Charlie P., to LTV ElectroSystems, Inc. Component lead forming tool and method. 3,692,069, Cl. 140-106.000.
- Cliftronic, Inc.: *See—*
- Ganowsky, Raymond J., 3,693,124.
- Cline, Ted L. Tilling apparatus. 3,692,120, Cl. 172-151.000.
- Cloutier, Roy L. Picture device and method of making pictures utilizing the same. 3,692,382, Cl. 350-5.000.
- Cloyd, Harold S., to Nosco Plastics Incorporated. Pallet. 3,691,965, Cl. 108-58.000.
- Clynes, Manfred E. Programmed system for evoking emotional responses. 3,691,652, Cl. 35-22.00r.
- Coakley, James L., to Abex Corporation. Reversible fluid power transfer apparatus. 3,691,767, Cl. 60-53.00r.
- Cobarg, Claus Christian: *See—*
- Napierski, Peinhard; and Cobarg, Claus Christian, 3,692,999.
- Cochran, Thomas J.; Hazel, Herbert K.; and Rance, William G., Jr., to International Business Machines Corporation. X-Y rotational positioning system. 3,691,864, Cl. 74-479.000.
- Cockerill-Ougree-Providence et Esperance-Longdoz en abrege "Cockerill": *See—*
- Laval, Paul Marie Georges, 3,691,793.
- Cohn, Eugene; and Frezza, Robert, to Samco Holding Corporation. Three roll processing apparatus, and method for utilization thereof. 3,692,465, Cl. 8-151.000.
- Colette, Michael, to Orbit Laboratories, Inc. Multiple function testing device for internal combustion engine. 3,693,073, Cl. 324-16.00r.
- Colgate-Palmolive Company: *See—*
- Dage, Richard, 3,692,906.
- Freedman, Jules, 3,692,796.
- Colley, Rowan Herbert, to Rolls Royce Limited. Gas turbine engine thrust deflectors. 3,691,771, Cl. 60-226.00a.
- Collins, Arthur A.; and Hill, John Dan, III, to Collins Radio Company. Data exchange and coupling apparatus. 3,692,941, Cl. 179-15.0al.
- Collins Radio Company: *See—*
- Briggs, Barry D., 3,693,112.
- Collins, Arthur A.; and Hill, John Dan, III, 3,692,941.
- Northrup, Malcolm B., 3,692,956.
- Colortex S.A.: *See—*
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- Colton, Douglas Roy; and Rudolph John Krieger, to Northern Electric Company Limited. Method of reducing the mobile ion contamination in thermally grown silicon dioxide. 3,692,571, Cl. 117-201.000.
- Columbia Gas System Service Corporation, mesne: *See—*
- Hughes, George C., 3,691,831.
- Columbus, Peter S.; and Erikson, Carl R., to Borden, Inc. Filter paper. 3,692,185, Cl. 210-493.000.
- Columbus, Peter Spiros; and Mason, Ronald Thomas, to Borden, Inc. Labeling adhesive composition. 3,692,713, Cl. 260-17.4st.
- Comet Industries, Inc.: *See—*
- Kostur, Robert E., 3,692,288.
- Commercial Solvents Corporation: *See—*
- Kern, Forrest L., 3,691,954.
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- Communications Patents Limited: *See—*
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- Compagnie des Freins et Signaux Westinghouse: *See—*
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- Conn, John B., to Merck & Co., Inc. Indanyl acetic acids. 3,692,825, Cl. 260-515.00a.
- Conner, Tom E. Stabilizing units for parked vehicles. 3,692,329, Cl. 280-150.500.
- Connors, John A.; Liepelt, Donald W.; and Baulieu, William H., to Jenkins Bros. Butterfly valve. 3,692,276, Cl. 251-306.000.
- Connor, Donald H.; and Olson, George E., to Caterpillar Tractor Company. Thermal compensating support for turbocharger shafts. 3,692,436, Cl. 417-406.000.
- Conrad, Earl O.: *See—*
- Re, Carlo; Conrad, Earl O.; and Conrad, Jack R., 3,692,682.
- Conrad, Jack R.: *See—*
- Re, Carlo; Conrad, Earl O.; and Conrad, Jack R., 3,692,682.
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- Corwin, Howard R.; Hermes, Walter L.; and Jones, Charles, to Curtiss-Wright Corporation. Torsionally resilient drive mechanism. 3,691,792, Cl. 64-31.000.
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- Coult, John H. Friction-driven rotary cleaning apparatus with coaxial transmission. 3,691,581, Cl. 15-49.00c.
- Coupat, Bernard; and Musikas, Claude, to Commissariat a l'Energie Atomique. Process for the separation of elements of the lanthanide group and elements of the transplutonium group which are present in an aqueous solution. 3,692,500, Cl. 23-338.000.
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- Courtauld Limited: *See—*
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- Crompton & Knowles Corporation: *See—*
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- Cromwell, Douglas E., to United States of America, Air Force. Jointed door assembly. 3,692,082, Cl. 160-87.000.
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- Croyle, Jack V.; and Swett, James B., to Dart Industries Inc. Closure for open-mouthed containers or tubular vessels. 3,692,208, Cl. 220-24.500.
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- Culter, John C.; and McClaffin, Gifford G., to Continental Oil Company. Method of friction loss reduction in oleaginous fluids flowing through conduits. 3,692,676, Cl. 252-8.55r.
- Cunningham, Walter F., to Superior Tabbies Incorporated. Laminated index tab construction. 3,691,662, Cl. 40-23.00a.
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- Dalman, Gary W.; and Neumann, Fred W., to Dow Chemical Company. The Rearrangement and disproportionation of lower alkyl phenols. 3,692,846, Cl. 260-621.004.
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- Delu, Ion, to Complexul Pentru Prelucrarea Lemnului Reghon. Musical instrument with cords and bow. 3,691,891, Cl. 84-275.000.
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- Doerr, Richard L.; and Fuzesi, Stephen, to Olin Corporation. Phosphated polyols and process for making same. 3,692,880, Cl. 260-929.000.
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- Dueker, James E., to McDonnell Douglas Corporation. Video tracking, lateral photoeffect seeking electro-optic detector. 3,693,013, Cl. 250-203.00r.
- Dufour, Jacques; Perroud, Paul H.; Petres, Jacques; and Rebiere, Jean. Temperature-measuring device. 3,691,840, Cl. 73-349.000.
- Dugge, Richard H.; and Carney, John L., Jr., to ACF Industries, Incorporated. Device for removing an outer sleeve from a rotatable tube. 3,691,611, Cl. 29-261.000.
- Duhamel, Ronald E.; and Hutten, James E., to Panacore Corporation. Compact combination infra-red heating and ventilating unit. 3,692,977, Cl. 219-343.000.
- Dulaney, Thomas J. Panel mounting apparatus. 3,691,713, Cl. 52-397.000.
- Duling, Irl N.; Driscoll, Gary L.; and Moore, Robert E., to Sun Oil Company. Process for preparing polyamides. 3,692,750, Cl. 260-78.40n.
- Dumast, Michel; Rouzaud, Guy; and Thevenin, Luc, to Societe d'Instrumentation Schlumberger. Regulator-meter utilizing a beam of light for indication and regulation. 3,693,022, Cl. 250-230.000.
- Dumontier, Jean-Michel, to Regie Nationale des Usines Renault and Automobiles Peugeot. Composite bumpers. 3,692,345, Cl. 293-71.00r.
- Duncan, Lewis C.: See—  
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- Dunlop Company Limited, The: See—  
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- Dunmire, Paul G., to Christy Metal Products, Inc. Pipe repair clamp. 3,692,062, Cl. 13099.000.
- Dunning, Charles E., to Kimberly-Clark Corporation. Air formed webs of bonded pulp fibers. 3,692,622, Cl. 161-124.000.
- Duroux, Jacques Marius: See—  
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- Durr, Larry L.; and Clay, Byron Jan, to Textile Technology, Inc. Textile treating processing and apparatus involving both water and an immiscible solvent. 3,692,467, Cl. 8-158.000.
- Durteste, Bernard Pierre; Henrion, Michel Andre Robert; and Le Corre, Jean-Pierre; deceased (by Le Corre, Yvette Marie Laurence; administrator), said Durteste and said Henrion assors. to International Standard Electric Corporation. Scanning circuits. 3,692,944, Cl. 179-18.00f.
- Dussel, Paul E., to Falls Machine Company. Longitudinally divided tube and method of making the same. 3,692,060, Cl. 138-89.000.
- Duswalt, Allen A., to Hercules Incorporated. Process for stabilizing hydrox compositions containing magnesium oxides. 3,692,687, Cl. 252-184.000.
- Dworski, Michael. Cyclonic turbine engines. 3,692,421, Cl. 415-76.000.
- Dyer, Norman D. Rotary torque indicator for well drilling apparatus. 3,691,825, Cl. 73-136.00a.
- Dymoke-Bradshaw, Leslie E. Basil, to International Standard Electric Corporation. Microphone headsets. 3,692,958, Cl. 179-156.00a.
- Dyna-Shield, Inc., mesne: See—  
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- Dynamic Precision Controls Corporation: See—  
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- Dynamit Nobel Aktiengesellschaft: See—  
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- Eastcott, Peter de Hertel; and Jackson, William Herbert, to Canadian General Electric Company, Limited. Pneumatic brake actuator. 3,692,153, Cl. 188-170.000.
- Eastcott, Peter de Hertel; and Jackson, William Herbert, to Canadian General Electric Company Limited. Fastening of treads to drive wheel of friction mine hoist. 3,692,280, Cl. 254-190.000.
- Easterwood, Carl W. Drag saw. 3,692,073, Cl. 143-133.00d.
- Eastman Kodak Company: See—  
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- Brandon, Kenneth F., 3,691,888.
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- Smith, Donald A.; Perry, Ernest J.; and Hollister, Kenneth R., 3,692,753.
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- Eaton, David Crawford; and Leyland, Boris Nicholas, to Imperial Chemical Industries Limited. Rubber-polyester compositions. 3,692,711, Cl. 260-3.000.
- Eaton, Favre E., to General Time Corporation. Timing circuit for providing linear timing period. 3,693,031, Cl. 307-293.000.
- Ebert, Robert J.; and Paxton, William H., to Bethlehem Steel Corporation. Strand guiding apparatus. 3,692,254, Cl. 242-129.620.
- Eberts, Robert E., to Norton Company. Metallic porous plates. 3,692,087, Cl. 164-46.000.
- Ebner, Ludwig: See—  
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- Eckes, Hubert G. Method of producing billiard cue. 3,692,609, Cl. 156-242.000.
- Ecodyne Corporation: See—



- Wood, Marvin E., 3,692,674.  
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- Frisch, Hans Otto; and Payrhammer, Bernd, to Marker, Hannes. Toe-heel-holding device for safety ski bindings. 3,692,322, Cl. 280-11,351.
- Fruchard, Alain: *See*—  
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- Fujikake, Kenji; Mutoh, Norio; and Yagi, Yuji, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Device for detecting velocity of gas thermoelectrically. 3,691,833, Cl. 73-204,000.
- Fujisawa Pharmaceutical Co., Ltd.: *See*—  
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- Fujitsu Limited: *See*—  
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- Funk, Buford H., Jr. System for monitoring air vortices comprising plural Schlieren detectors with output signals added and RMS value of sum produced for indication of turbulence. 3,693,015, Cl. 250-209,000.
- Furness, Will, to Pegg, Samuel, & Son, Limited. Solvent treatments of textiles. 3,692,464, Cl. 8-149,100.
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- Fuutagawa, Ikuo: *See*—  
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- GAF Corporation: *See*—  
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- Gagnon, Robert A. Remotely operated earth moving toy. 3,691,681, Cl. 46-244,000.
- Gaines, Erwin B.; and Baigel, Hyman S. Bed pad and method of use to support an invalid. 3,691,570, Cl. 5-347,000.
- Galantay, Eugene E. Piperazine benzocyclohepta [1,2-d] thiazoles and oxazoles. 3,692,788, Cl. 260-268,000.
- Galanti, Frank, to Warwick Electronics Inc. Electrical component mounting. 3,693,052, Cl. 317-101,000.
- Gallagher, George F. X., Jr., to United Brands Company. Mobile refrigerator shipping container unit. 3,692,100, Cl. 165-29,000.
- Gallo, Mario, to Gallo Wirth & Co. Electrical mass meter. 3,692,128, Cl. 177-210,000.
- Gallo Wirth & Co.: *See*—  
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- Gancher, Elias. Gauge and light signal. 3,691,986, Cl. 116-129,000.
- Ganowsky, Raymond J., to Cliftonics, Inc. Rotary stepping solenoid. 3,693,124, Cl. 335-228,000.
- Garaway, Mark W., to Westinghouse Electric Corporation. Zero crossing detector. 3,693,027, Cl. 307-133,000.
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- Gardner, Newell John. Anti-theft battery disconnecter apparatus. 3,692,965, Cl. 200-44,000.
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- Gassino, Teresio, to Olivetti, Ing., C., & C., S.p.A. Key for the keyboards of electric-input office machines. 3,692,167, Cl. 197-98,000.
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- Genbauffe, Francis S., to Robertshaw Controls Company. Control system for a double burner oven or the like and improved parts and method for the same or the like. 3,692,239, Cl. 236-15,000.
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- Girard, Pierre, to Manufacture des Montres Rolex S.A. Clock with digital display. 3,691,755, Cl. 58-50,000.
- Girardier, Jean-Pierre, to Etablissements Pierre Mengin. Shearing pump. 3,692,422, Cl. 415-121,000.
- Glachant, Luc Clement Dominique; and Guillet, Remi Pierre Leon Alain, to Gaz de France. Submerged combustion heat-generator, in particular for the production of very hot water. 3,692,017, Cl. 126-360,000.
- Gladney, Kurt P.; and Rao, Famesh P., to Fiberglass Canada Limited. Production of alkali metal silicate fibers. 3,692,507, Cl. 65-2,000.
- Gladow, Dean E.; and Wilkes, Donald F., to Rolamite Incorporated. Rotary motion transmitting apparatus. 3,691,871, Cl. 74-798,000.
- Glaser, David, to Burroughs Corporation. Cathodes with treated apertures for interconnecting gas cells of a display panel and method for making same. 3,693,046, Cl. 315-169,000.
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- Glass, Marvin I.; Katzman, Allison W.; and Meyer, Burton C., to Glass, Marvin, & Associates. Illuminated figure toy. 3,691,680, Cl. 46-228,000.
- Glaser, James R.; and Tomsa, Stanley J. Serrasoid phase modulator. 3,693,113, Cl. 332-9,000.
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- Gonta, Stewart J.; and Hallis, Thomas, Jr., to Union Oil Company of California. Wax coating process for corrugated paperboard. 3,692,564, Cl. 117-102,000.
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- Green, Norman; and Vergara, William C. Rapid acting abrasive trimmer for micro-electronic devices. 3,691,695, Cl. 51-8.000.
- Greenberg, Samuel. Mouthguard with lip protector. 3,692,025, Cl. 128-136.000.
- Greenwood, Arthur R.; and Vesely, Kenneth D., to Universal Oil Products Company. Apparatus for continuous reforming-regeneration process. 3,692,496, Cl. 23-288.00g.
- Greenwood, Edward L. Identification system for water pollution detection. 3,691,983, Cl. 116-114.00r.
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- Gresham, Clifford L.; and Robinson, Lorin A., to Caterpillar Tractor Company. Ball sizing machine with gravity return. 3,691,805, Cl. 72-75.000.
- Grichenko, Nikolai Nikolaevich; Abakanovich, Vadim Vyacheslavovich; Goldstein, Yuri Moiseevich; Gurevich, Grigory Zakharovich; Chepelev, Viktor Gavrilovich; and Kuvshinov, Vladimir Zakharovich. Electric drill. 3,693,077, Cl. 324-54.000.
- Groff, Gaylord L.; and Williams, Ronald H., to Minnesota Mining and Manufacturing Company. Metal salt catalysts for epoxy-anhydride resin systems. 3,692,715, Cl. 260-18.0ep.
- Grolman, Bernard, to American Optical Corporation. Method of making near-point cards for binocular refraction. 3,692,604, Cl. 156-108.000.
- Gronwick, Jerry P.; Illian, Douglas F.; and Westphal, Donald J., to Sunbeam Corporation. Electric pressing iron. 3,691,660, Cl. 38-77.830.
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- Gruschka, Bernhard; and Herrmann, Berthold, to Voith Getriebe KG. Method of and system for changing the transmission ratio of a hydrodynamic vehicle transmission. 3,691,768, Cl. 60-54.000.
- Grutseh, James F.; and Mallatt, Russell C., to Standard Oil Company. Method and apparatus for regenerating spent caustic cresylate solutions. 3,692,473, Cl. 423-183.000.
- GTE Automatic Electric Laboratories Incorporated: *See—*  
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- Guest, Robert J., to Halliburton Company. Leak detector and method. 3,691,819, Cl. 73-40.50a.
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- Gurwood, Alexander G. Electro-conductive and heat barrier coatings for ceramic bodies. 3,692,573, Cl. 117-211.000.
- Guth, Edwin F., Company, The: *See—*  
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- Gutman, Arnold D., to Stauffer Chemical Company. Cyanodithiaimidocarbonate phosphates. 3,692,882, Cl. 260-940.000.
- Gutman, Arnold D.; and Freiberg, Ashley H., to Stauffer Chemical Company. Bis-phosphoramides, bis-phosphonamides, and phosphono-phosphoramides useful as insecticides and miticides. 3,692,900, Cl. 424-205.000.
- Guzzi, Alberto; and Magagnoli, Remo. Photographic color couplers. 3,692,833, Cl. 260-559.00s.
- Gyongyosi, Laszlo, to Ingersoll-Rand Company. Drilling machine. 3,692,123, Cl. 173-147.000.
- Habermann, Joseph Peter: *See—*  
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- Hackmann, Larry G.; and Schmitt, James L., to Caterpillar Tractor Company. Combined hydraulic and mechanical detent disengaging means. 3,691,908, Cl. 91-412.000.
- Hagemann, Hermann; Muller, Erwin; and Fischer, Peter, to Farbenfabriken Bayer Aktiengesellschaft. Stabilization of organic isocyanates. 3,692,813, Cl. 260-453.0sp.
- Hager, Alois, to Vereinigte Österreichische Eisen- und Stahlwerke Aktiengesellschaft. Plant for continuously refining pig iron. 3,692,290, Cl. 266-13.000.
- Hager, Frederick M., to Uniroyal Ltd. Method of treating pentachlorophenol. 3,692,561, Cl. 117-100.00a.
- Hajos, Zoltan George, to Hoffmann-La Roche Inc. and Shell Oil Company. Stereospecific total steroidal synthesis via substituted c/d-trans indanones. 3,692,803, Cl. 260-340.500.
- Halasa, Adel F.: *See—*  
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- Hales, Paul N. Shirt display hanger. 3,692,269, Cl. 248-360.000.
- Halibrand, Henry T. Transmission. 3,691,862, Cl. 74-379.000.
- Halkyard, Harold Lees; Bliss-Hill, Herbert Brian; and Tewsley, William, to Stibbe Machinery Limited. Machine for producing squared-off plots for use in programming knitting and other textile machines. 3,693,168, Cl. 340-172.500.
- Hall, Crayton G., to Ethyl Corporation. Process for producing foamed metal. 3,692,513, Cl. 75-20.00f.
- Hall, John A., Jr.; and Mc Cann, John J., to Polaroid Corporation. Electrically responsive light filter. 3,692,388, Cl. 350-312.000.
- Hall, Thomas, A. Water tester for pools. 3,692,490, Cl. 23-253.00r.
- Halliburton Company: *See—*  
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- Lorenzino, Paul; and Love, Robert G., 3,691,841.
- Hallis, Thomas, Jr.: *See—*  
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- Hamabe, Takeshi; and Suzuki, Takashi, to Matsushita Electric Industrial Co., Ltd. Continuous anodic oxidation method for aluminum and alloys thereof. 3,692,640, Cl. 204-28.000.
- Hamco Machines & Electronics Corpoted: *See—*  
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- Hampe, Walter R.; Simon, Albert B.; Hampton, William H.; and Decker, William E., 1/2% each to Westinghouse Electric Corporation and Hoffman Diamond Products, Inc. Rotary diamond core bit. 3,692,127, Cl. 175-330.000.
- Hampton, William H.: *See—*  
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- Hamstra, David C., to General Electric Company. Apparatus for protecting electrical devices. 3,693,047, Cl. 317-13.00b.
- Hancock, Charlie L., to Westinghouse Electric Corporation. Electrical connection box arrangement for appliance. 3,692,377, Cl. 312-223.000.
- Handte, Heinz: *See—*  
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- Hannon, Charles N.: *See—*  
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- Hannon, Warren W.: *See—*  
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- Hannon, Warren W.; and Hannon, Charles N., to Hannon, Warren W. Folding mechanism for multiple section stacked newspapers. 3,691,721, Cl. 53-120.000.
- Hansen, Gunnar Lyshoj; and Petersen, Jorgen Hartvig, to Danfoss A/S. Device for venting oil pumps. 3,692,038, Cl. 137-116.000.
- Hanzawa, Yasuo, to Okabe Company Limited. Thread rolling machine for manufacturing a particular type of rolled thread. 3,691,806, Cl. 72-92.000.
- Hara, Yoshiaki; Masagaki, Akio; and Iguchi, Masaaki, to Nippon Steel Corporation. Apparatus for blowing high-temperature reducing gas into blast furnace. 3,692,293, Cl. 266-29.000.
- Harasta, Clarence John: *See—*  
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- Harboun, Jacques; and Garnier, Jacques, to Institut Francais du Petrole des Carburants et Lubrifiants. Fluid tight electric connector. 3,693,133, Cl. 339-48.000.
- Hard, Carl G. Transportable breakwater. 3,691,774, Cl. 61-5.000.
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- Harding, Hollis J. Die puller. 3,691,610, Cl. 29-255.000.
- Harf, Kenneth G., to Singer-General Precision, Inc. Digital oscillator having a fast response using two one-shot multivibrators and a pair of NAND gates. 3,693,102, Cl. 328-188.000.
- Harmetz, Ronald: *See—*  
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- Harper, Willard J., to Carborundum Company. The. Abrasive blast cleaning arrangement. 3,691,690, Cl. 51-13.000.
- Harr, George B. Process of providing a fuel tank in a vehicle. 3,691,620, Cl. 29-451.000.
- Harris, Joseph Warren, to C. R. Industries. Long handled wrench. 3,691,877, Cl. 81-177.00a.
- Harris, Richard H., to International Business Machines Corporation. Capacitive coupling switch and actuator. 3,693,059, Cl. 317-249.00r.
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- Hartigan, James J.; and Clementi, Robert J., to General Aniline & Film Corporation. Ultraviolet protection of photographic-material. 3,692,525, Cl. 96-84.00r.
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- Harvey, Donald M., to Eastman Kodak Company. Film transporting mechanism. 3,691,920, Cl. 95-13.000.
- Hasebe, Takefumi; and Yamada, Kazuo, to Yokogawa Electric Works, Ltd. Intermittent recorders. 3,693,180, Cl. 346-17.000.
- Hasegawa, Tatsuo, and Kobayashi, Ikuya, to Toyota Jidosha Kogyo Kabushiki Kaisha. Initially intermittently flashing brake lamp circuit. 3,693,151, Cl. 340-72.000.
- Hashimura, Tetsuo, to Tokyo Shibaura Denki Kabushiki Kaisha; a/k/a Tokyo Shibaura Electric Co., Ltd. High-frequency heating apparatus having electromagnetic wave agitating device. 3,692,967, Cl. 219-10.550.
- Haslehurst, Arthur Kinder. Edge control apparatus for sheet material. 3,692,221, Cl. 226-23.000.
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- Hasz, John R. Damping means for increasing the minimum dynamic stiffness of a shaft. 3,692,370, Cl. 308-1.000.
- Hatch, Clifford V. Temperature controlled water dispensing device for animals. 3,691,997, Cl. 119-71.000.
- Hauck, Erwin A.: *See—*  
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- Hause, James R.: *See—*  
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- Hauth, Jean-Marie, to Societe des Fonderies de Pont-A-Mousson, Nancy. Disc brake and support means therefore. 3,692,148, Cl. 188-18.00a.
- Hawrylo, Frank Zygmunt; and Kressel, Henry, to RCA Corporation. Method of forming semiconductor device with smooth flat surface. 3,692,593, Cl. 148-172.000.
- Hawthorne, Vaughn T. Railroad car air brake failure indicator. 3,691,982, Cl. 116-70.000.
- Hay, Russell G.; McNulty, John G.; and Walsh, William L., to Gulf Research and Development Company. Process for preparing esters. 3,692,822, Cl. 260-475.00r.
- Hayashi, Yoshihiro: *See—*  
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- Hayes, Robert M. Knife sharpener. 3,691,700, Cl. 57-210.000.
- Hays, Willard C.; and Smith, James D., to Industrial Nucleonics Corporation, messe. Cross-axis control for three or four roll calendars. 3,691,940, Cl. 100-41.000.
- Hazel, Herbert K.: *See—*  
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- Heian, Glenn A.: *See—*  
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- Heighley, John Donnell; and Waaben, Sigurd Gunther, to Bell Telephone Laboratories, Incorporated. Two-Terminal dual PNP transistor semiconductor memory. 3,693,173, Cl. 340-173.00r.
- Heil-Quaker Corporation: *See—*  
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- Heitman, George H.; Strom, Eric T.; and Cerrone, Anthony G., to Wyman-Gordon Company. Extrusion die. 3,691,811, Cl. 72-272.000.
- Heji, Erwin, to Fried-Krupp Gesellschaft met beschränkter Haftung. Circular piston internal combustion engine. 3,692,001, Cl. 123-8.090.
- Held, Kurt. Edge burr removal apparatus. 3,691,898, Cl. 90-11.00r.
- Hellwig, Helmut W., to United States of America, Army. Molecular frequency standard. 3,693,008, Cl. 250-41.300.
- Helms, Charles Robert, to Container Corporation of America. Finger hole arrangement for article carriers. 3,692,232, Cl. 229-52.00b.
- Henkel & Cie G.m.b.H.: *See—*  
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- Hennig, Arnold; and Hennig, Kurt. Stripper device. 3,691,588, Cl. 15-256.500.
- Hennig, Kurt: *See—*  
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- Henrick, Clive A.; and Siddall, John B., to Zocoen Corporation. 1-Halo-3,7,7,11,11-pentamethyl-di-and tri-enes. 3,692,851, Cl. 260-654.00r.
- Henriksson, Sune Torsten; and Muotka, Ragnar Ludvig. Method of open-pit mining. 3,692,364, Cl. 299-18.000.
- Henrion, Michel Andre Robert: *See—*  
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- Henry, Francis B. Live action backboard. 3,692,307, Cl. 273-29.00a.
- Hentschel, Gerhard Oskar, to Hentschel, Valter Sven Erwin. Detergent. 3,692,684, Cl. 252-89.000.
- Hentschel, Valter Sven Erwin: *See—*  
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- Herndon, John W., to United States of America, Navy. Roll and pitch simulator utilizing 360° display. 3,692,934, Cl. 178-7.50d.
- Herod, Donald M.; Engelman, John C.; and Johnston, William J., to General Motors Corporation. Optical analog display device. 3,692,383, Cl. 350-69.00r.
- Herrmann, Berthold: *See—*  
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- Hetrich, Arthur Ronald, to Raybestos-Manhattan, Inc. Method and apparatus for forming corrugated plastic tubing. 3,692,889, Cl. 264-92.000.
- Hetzel, Max, to Omega Louis Brandt & Frere S.A. Vibratory drive systems. 3,691,754, Cl. 58-23.00d.
- Heusdens, Wilhelmus; and Guevara, Balagtas F., to Ralston Purina Company. Method of preparing protein fortified vegetable product. 3,692,531, Cl. 99-17.000.
- Hewlett Packard Company: *See—*  
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- Hewlett-Packard Company: *See—*  
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- Hickey, William G.; and Kenyon, Richard L., to Parker-Hannifin Corporation. Fuel tank inerting system. 3,691,730, Cl. 55-166.000.
- Hickman, Albert F., to Hickman Developments, Inc. Full axle shear rubber spring suspension for vehicles. 3,692,326, Cl. 280-124.00r.
- Hickman Developments, Inc.: *See—*  
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- Hilberg, Wolfgang, to Licentia Patent-Verwaltungs-G.m.b.H. Data storage system with means for eliminating defective storage locations. 3,693,159, Cl. 340-172.500.
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- Hiller, Carl Duane; and Karge, Harold W., to Bethlehem Steel Corporation. Interlocked type wire strand. 3,691,751, Cl. 57-145.000.
- Hilpert, Conrad R., to Twin Disc, Incorporated. Fluid power control system for vehicles. 3,692,160, Cl. 192-4.00c.
- Hinkley, Clyde E.; and Lusk, William A. Pace setter. 3,691,984, Cl. 116-116.000.
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- Hirao, Mamoru; and Mitsuhashi, Masakazu, to Hayashibara Company. Process for the production of starch syrups. 3,692,580, Cl. 127-29.000.
- Hirashima, Masayoshi, to Matsushita Electric Industrial Co., Ltd. Color television receiver with color signal correction for various transmission channels. 3,692,929, Cl. 178-5.40r.
- Hirooka, Masaaki; Takeya, Kenji; Uno, Yoshihiro; Yamane, Akira; and Maruyama, Kunio. Highly lactonized copolymers and alternating copolymers using unsaturated ethers. 3,692,754, Cl. 260-80.30c.
- Hirschman, Howard I.; and Evers, James C., to Pitney Bowes-Sage, Inc. Flash tube holder assembly. 3,692,994, Cl. 240-11.40r.
- Hirsch Company, The: See—  
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- Hisamori, Tetsuo: See—  
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- Hoerner Waldorf Corporation: See—  
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- Hoffman Diamond Products, Inc.: See—  
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- Hoffman, Mary V., to General Electric Company. Phosphor comprising lanthanum cerium thorium phosphate. 3,692,689, Cl. 252-301.101.
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- Hoffmann-La Roche Inc.: See—  
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- Hojo, Shiro; and Komiya, Kuniko, to Japan Gas-Chemical Company, Inc.  $V_2O_5/TiO_2/K_2SO_4$  catalyst suitable for preparation of phthalic anhydride. 3,692,699, Cl. 252-440.000.
- Hoke, Donald Irvin, to Lubrizol Corporation, The. Water-soluble sulfonate polymers as flocculants. 3,692,673, Cl. 210-52.000.
- Holdrege, Charles Truman, to Bristol-Myers Company. 7-[N-(substituted-imidoyl)aminoacetamido] cephalosporanic acids and derivatives thereof. 3,692,779, Cl. 260-243.00c.
- Holland, Dewey George, to Air Products and Chemicals, Inc. Electrofluorination process using thioesters. 3,692,643, Cl. 204-59.00r.
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- Hollis, Samuel D.; and Winston, Philip E., Jr., to Pennsylvania Industrial Chemical Corporation. Process for preparing a terpene phenolic condensation product. 3,692,844, Cl. 260-619.00d.
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- Holzmann, Paul. Self-propelled pipe cart. 3,692,135, Cl. 180-19.00r.
- Homier, Robert I.; and Posh, Raymond C., to Lear Siegler Incorporated. Adjustable seat assembly. 3,692,271, Cl. 248-394.000.
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- Hong, Soon Pil. Automotive visor. 3,692,355, Cl. 296-97.00g.
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- Hordler, Gisbert. Hinged container. 3,692,175, Cl. 206-45.340.
- Horger, Georg, to National Cash Register Company, The. Encapsulation process by complex coacervation using polymers and capsule product therefrom. 3,692,690, Cl. 252-316.000.
- Horn, Cornelis Jacob; Kats, Mindert; Marcelinus, Sigibertus; and Van Uffelen, Catherinus. Apparatus for making coffee, tea and similar beverages. 3,691,934, Cl. 99-290.000.
- Hornbeck, Clarence J., to Air Products and Chemicals, Inc. Suspension system for multi-walled containers. 3,692,206, Cl. 220-15.000.
- Horsley, Orville E.: See—  
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- Houston, Jack W. Foldable umbrella. 3,692,035, Cl. 135-25.000.
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- Hudson, Edward C., Jr., to Hudson Corporation. Method of fabricating a semiconductor magnetic transducer. 3,692,595, Cl. 148-187.000.
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- Hughes, Geoffrey W.: See—  
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- Hughes, Harry E., Jr.; Morton, Jack A.; and Wachs, Meyer H., to Bell Telephone Laboratories, Incorporated. Manipulation of semiconductor elements by magnetic means. 3,692,168, Cl. 198-41.000.
- Huguet, Juan L., to Celanese Corporation. Separation of a mixture comprising vinyl acetate, ethyl acetate, and acetic acid by distillation. 3,692,636, Cl. 203-71.000.
- Huhn, Helmut; and Hoppe, Lutz, to Wolff & Co., Aktiengesellschaft. Shrinkable film-forming copolyamides prepared by copolymerizing  $\omega$ -aminoundecanoic acid and the salt of a dicarboxylic acid and trimethylhexamethylene diamine. 3,692,748, Cl. 260-78.00a.
- Huling, Fred W., Jr., to Laminated Wood Products Co. Air control system. 3,691,929, Cl. 98-33.000.
- Hull, Judd R., to Raymond International, Inc. Expansive base pile construction. 3,691,776, Cl. 61-53.000.
- Hulle, Robert M.; Steward, Jerry L.; and Borman, Merle D., to Litton Systems Inc. Rotational shaft encoder having a bearing tube having a slot therein. 3,693,024, Cl. 250-231.00c.
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- Hutchinson, Thomas R.; and Lombard, Marco Hans, to Motorola, Inc. Housing assembly for miniature radio apparatus with self contained battery. 3,693,089, Cl. 325-119.000.
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- Huttenwerk Oberhausen AG: See—  
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- Hydro-Vel Services, Inc.: See—  
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- Iannucci, Vincent A.; and Scharrel, Ronald S., to North American Rockwell Corporation. Yarn feeding means for circular knitting machines. 3,691,795, Cl. 66-132.00r.
- Iarossi, Frank J.: See—  
Cowles, Walter C.; and Iarossi, Frank J., 3,692,205.
- Ice, Charles O. Jr.; Ice, Lanny G.; and Frazer, Walter S., to Hydro-Vel Services, Inc. Tube plugging tool. 3,691,609, Cl. 29-252.000.
- Ice, Charles O. Jr., to Hydro-Vel Services, Inc. Tube plugging tool positioner. 3,692,059, Cl. 138-89.000.
- Ice, Lanny G.: See—  
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- Ickes-Braun Glasshouses, Inc.: See—  
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- Iida, Toshikatsu; and Sato, Bunzi, to Tokyo Shibaura Electric Co., Ltd. Hermetically sealed electric compressor. 3,692,435, Cl. 417-372.000.
- Iida, Yozo, to Nippon Kogaku K.K. Motion picture camera capable of automatic overlap photographing. 3,692,395, Cl. 352-217.000.
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- Jaacklin, Andre, to Aktiengesellschaft Brown, Boveri & Cie. Apparatus for electronically measuring the angle of rotation of the polarization plane of a linearly polarized light beam produced by passage of the beam through a magneto-optical element subjected to a magnetic field to be measured. 3,693,083, Cl. 324-96.000.
- Jager, Heinz, to Wedag Westfalia Dinnendahl Groppe Aktiengesellschaft. System and method of controlling a high-discharge comminuting or pulverizing mill, such as a tube mill. 3,692,247, Cl. 241-30.000.
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- Jordan, Frank W.; and Webb, Leonard D., to North American Rockwell Corporation. Stress relieved grains. 3,691,955, Cl. 102-99.000.
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- Jovic, Nikola L., to International Telephone and Telegraph Corporation. Multi-stage electronic switching network. 3,692,949, Cl. 179-18.00f.
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- Kahle, Wilhelm Manfred, to Canada, Her Majesty the Queen in the right of, as represented by the Secretary of State. Motor controlled magnetic tape playback machine. 3,693,061, Cl. 318-7.000.
- Kahn, Edward J., to Togs, Inc. Two-part-snap-on fastening device. 3,691,597, Cl. 24-108.000.
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- Kalman, Gabor U. Optical counting method and apparatus. 3,692,985, Cl. 235-92.00p.
- Kalopissis, Gregoire; Bertrand, Jack; and Bugaut, Andree, to Societe Anonyme dite: L'Oreal. Hair dye composition and method of dyeing human hair therewith. 3,692,461, Cl. 8-10.000.
- Kalotay, Paul Zoltan, to International Telephone and Telegraph Corporation. Pulse system and components thereof. 3,691,838, Cl. 73-231.00m.
- Kamalian, Neubar, to United States of America, Navy. Method and apparatus for controlling buoyancy. 3,691,953, Cl. 102-14.000.
- Kamborian, Jacob S.: See—
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- Kandiew, Anatoly I., to United States of America, Atomic Energy Commission. Computer diagnostic with inherent fail-safety. 3,692,989, Cl. 235-153.000.
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- Kasper, Robert Jerry, to Park-Ohio Industries, Inc. Pivotal movable slab heating unit. 3,692,969, Cl. 219-10.570.
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- Katagiri, Shigenobu; and Yokota, Mitsuhsa, to Tokyo Shibaura Electric Co., Ltd. Elastic fluid turbine system. 3,692,419, Cl. 415.000.
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- Katserswerth, Hans-Peter, to Siemens Aktiengesellschaft. Door assembly for an enclosure having a tight shielding for high frequency emissions. 3,691,688, Cl. 49-394.000.
- Katsuren, Roy L.; and Salisbury, Lloyd L., to United States of America, Army. Self-locking clutch. 3,692,161, Cl. 192-8.00r.
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- Katzer, Ernst: See—
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- Kaufmann, Alfred W. Beverage fountain. 3,691,787, Cl. 62-400.000.
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- Kawata, Ryuichi; Kawada, Hirotsu; Ohmura, Tadayoshi; and Uematsu, Sumio. Coated tablets having plastic particles dispersed in the coating. 3,692,562, Cl. 117-100.00a.
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- Keilbach, Joseph R.; and Sarli, Vito J., to United Aircraft Corporation. Multi-component propellant jet propulsion. 3,691,769, Cl. 60-217.000.
- Keith, Carl D.; Mooney, John J.; and Vanmansart, Louis J., to Engelhard Minerals & Chemicals Corporation. Catalytic exhaust gas treatment apparatus. 3,692,497, Cl. 23-288.00r.
- Keller & Knappich GmbH: See—
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- Kelley, Fred W., Jr.; and Lezan, Georges R. E., to General Electric Company. Gating control for a static switching arrangement with improved conduction angle balancing means. 3,693,069, Cl. 323-24.000.
- Kelly, Robert G.; Legg, Louis L.; and Ruf, Walter, to St. Regis Paper Company. Valve bag applicator machine. 3,691,715, Cl. 53-3.000.
- Kelvey, Harold E.: See—
- Chase, William B.; Jendrisak, Joseph E.; and Kelvey, Harold E., 3,692,015.
- Kember, Bryan F., to Ampex Corporation. Tape positioning apparatus. 3,692,256, Cl. 242-198.000.
- Kempf, Raymond Andrew, to Bell Telephone Laboratories, Incorporated. Cable sections with nonmechanical means to effect coupling. 3,693,114, Cl. 333-7.000.
- Kendall, Ray E. Vertically adjustable tow bar assembly. 3,692,330, Cl. 280-402.000.
- Kennecott Copper Corporation: See—
- Martin, Richard G.; Tuddenham, William M.; and Lebrizz, Joseph M., 3,691,832.
- Kennedy, Francis V. Process and apparatus for facilitating the landing of a vehicle on a landing surface. 3,693,143, Cl. 340-27.00a.
- Kennedy Valve Mfg. Co., Inc.: See—
- Dashner, James William, 3,692,042.
- Kenner, Bernard A., to Electronic Memories and Magnetics Corporation. Read and write systems for 2 1/2D core memory. 3,693,176, Cl. 340-174.00a.
- Kenney, William D., to Midland Manufacturing Company, Inc. Hinge locking means for a foldable auxiliary tool frame. 3,692,121, Cl. 172-456.000.
- Kenyon, Richard L.: See—
- Hickey, William G.; and Kenyon, Richard L., 3,691,730.
- Kerekes, Bela, to Egyesult Izzolampa Es Villamosagi Reszveny-Tarsasag. Oxide cathode for an electric discharge device. 3,693,007, Cl. 313-318.000.
- Kern, Forrest L., to Commercial Solvents Corporation. Explosive cartridge. 3,691,954, Cl. 102-24.000.
- Kerr, Edwin R.: See—
- Mather, William B., Jr.; and Kerr, Edwin R., 3,692,646.
- Kerst, Herman: See—
- Stamm, James K.; Loder, Edwin R.; Brungs, Charles A.; and Kerst, Herman, 3,692,704.
- Kersten, Daniel D. Growing doll fingernails. 3,691,679, Cl. 46-163.000.
- Kersten, Samuel D., Jr.; Sautter, Alton F.; and Simon, John M., to Water Saver Faucet Co. Vandal proof valve control assembly. 3,692,046, Cl. 137-382.000.
- Kerti, Joseph A., to I-T-E Circuit Breaker(Canada) Limited. Flexible sealed housing for isolated phase bus. 3,692,923, Cl. 174-84.00s.
- Keyman, Jacobus M.; and Maschke, Arnold E., to Mobil Oil Corporation, mesne. Aqueous dispersion of a compatibilized reaction product formed by heat reacting a fatty acid ester adduct with a polyamide. 3,692,714, Cl. 260-18.00p.
- Kezerian, Charles, to Stauffer Chemical Company. Certain substituted phosphorus containing alkyl thio methyl carboxylates and their uses as insecticides and acaricides. 3,692,901, Cl. 424-212.000.
- Kichline, Thomas P.; and Scharpf, Lewis G., to Monsanto Company. Composition for preparing process cheese. 3,692,630, Cl. 195-63.000.
- Kiela, Gene F.; and Radzins, Edmund, to Joa, Curt G., Inc. Stacking machine with mechanism for displacing stacked workpieces at spaced intervals. 3,691,915, Cl. 93-93.00k.
- Kienders, Henricus A. A.: See—
- DeRooy, Michael A.; Logemann, Johan D.; and Kienders, Henricus A. A., 3,691,729.
- Killian, Charles R.: See—
- Brewer, Charles C.; and Killian, Charles R., 3,692,858.
- Kim, Chang Soo; and Palmer, Gerald G., to General Electric Company. Method of fabricating composite integrated circuits. 3,691,628, Cl. 29-577.000.
- Kim, Young Chul: See—
- Kubanek, Anne-Marie Margaretha; and Kim, Young Chul, 3,692,775.
- Kimber, Erich Voldemar; and Lewkowicz, Josef. Feed device for a rock drill. 3,692,124, Cl. 173-160.000.
- Kimberly-Clark Corporation: See—
- Duchane, David V., 3,692,725.
- Dunning, Charles E., 3,692,622.
- Kimoto, Jitsumi: See—
- Ueda, Koza; Kimoto, Jitsumi; and Moritake, Mitsuru, 3,692,663.
- Kimura, Hiroshi; Nambu, Takeshi; Inoue, Kiyoshi; Imahori, Yoshiyuki; Yamaguchi, Kenjo; and Umeno, Kyojo. Curved projection screens. 3,692,384, Cl. 350-119.000.
- Kimura, Yasuo, to Kanegafuchi Boseki Kabushiki Kaisha. Lining for shoes. 3,692,623, Cl. 161-159.000.
- Kindis, Eugen, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. High voltage electrical cable. 3,692,925, Cl. 174-120.000.
- Kinesonic Industries Ltd.: See—
- Siegel, Morton A., 3,692,390.
- King, Randall N., to General Electric Company. Sealed electrochemical cell with an electrolytic solution containing an electrolyte and a dissolved fuel. 3,692,584, Cl. 136-83.00r.
- Kinley, John C. Method of expanding a liner. 3,691,624, Cl. 29-523.000.
- Kinnison, Charles G.: See—
- Arnold, Bruce C.; Auman, John T., Jr.; Kinnison, Charles G.; and Lantz, James E., 3,692,157.
- Kipps, Harry J.; and Doniguan, Thaddeus M., to Signal Oil and Gas Company. Cathodic protection system. 3,692,650, Cl. 204-147.000.
- Kirkegard, Neil Jr.: See—
- Lania, Anthony R.; and Kirkegard, Neil Jr., 3,692,702.
- Kirkwood, Creal E. Multi-port valve having improved seal retaining means. 3,692,056, Cl. 137-625.430.
- Kirsch, Albert, to Instant Brick Enterprises, Inc., mesne. Wall surfacing die for simulating building blocks. 3,692,458, Cl. 425-459.000.
- Kirsch, Werner: See—
- Wedekind, Benno; and Kirsch, Werner, 3,692,619.
- Kitai, Kiyoshi, to Kabushiki Kaisha Hattori Tokaiten. Exposure time changeover device for cameras or shutters. 3,691,923, Cl. 95-53.00b.
- Kiwiet, William B., to Tektronix, Inc. Numerical control system dependent on vector magnitude. 3,693,064, Cl. 318-571.000.
- Klaue, Hermann. Variable speed hydraulic transmission. 3,691,869, Cl. 74-740.000.
- Klebert, Wolfgang: See—
- Meisert, Ernst; Striegler, Hellmut; Koch, Hans-Joachim; and Klebert, Wolfgang, 3,692,708.
- Klehm, William G., Jr., to Burroughs Corporation. Programmable dual-in-line pin connector for integrated circuit units. 3,693,131, Cl. 339-17.00f.
- Klein, Harold L. Meat ball forming machine. 3,691,594, Cl. 17-32.000.
- Kleinberg, Leonard L., to United States of America, National Aeronautics and Space Administration. Active tuned circuit. 3,693,105, Cl. 330-12.000.



- Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*  
Decker, Hanns; Hurlmanns, Heinz; and Stockmann, Helmut, 3,692,249.
- Klotzer, Erhard; and Clas, Willi, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process of making a rubber composition for adhering rubbers and textiles. 3,692,734, Cl. 260-38.000.
- Kmecak, Ronald A.; and Kovach, Stephen M., to Ashland Oil & Refining Company. Dehydrogenation and dehydrocyclization method. 3,692,863, Cl. 260-683.300.
- Knapsack Aktiengesellschaft: *See—*  
Seifert, Helmut; Stephan, Hans Werner; and Dorn, Friedrich Wilhelm, 3,692,917.
- Sennwald, Kurt; Erpenbach, Heinz; Handte, Heinz; and Lork, Winfried, 3,692,829.
- Knavish, Leonard A.: *See—*  
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- Kniege, Wilfried: *See—*  
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- Kniepkamp, Glenn E., to U.S. Steel Corporation. Method and apparatus for overlaying weld metal which prevents the emission of noxious gases therefrom. 3,692,971, Cl. 219-73.000.
- Knierim, Vincent L. Mini-micron particle separation system. 3,691,735, Cl. 55-391.000.
- Knight, Patrick E.; and Stapleton, Raymond D., to General Electric Company. Test arrangement for data modem. 3,692,939, Cl. 179-2.00p.
- Knippenberg, Wilhelmus Franciscus; and Verspui, Gerrit. Method of manufacturing silicon carbide whisker. 3,692,478, Cl. 23-208.00a.
- Knitter, Heinz: *See—*  
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- Knoll, Ronald S., to Admiral Corporation. X-Radiation protection circuit. 3,692,933, Cl. 178-7.50r.
- Knorr-Bremse KG: *See—*  
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- Kobayashi, Ikuya: *See—*  
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- Kobayashi, Isamu, to Sony Corporation. Method of forming seeding sites on a semiconductor substrate. 3,692,574, Cl. 117-212.000.
- Kobayashi, Toyooki; Mori, Yoshinori; and Aiki, Shiego, to Aishin Seiki Kabushiki Kaisha. Spot-type disk brake. 3,692,151, Cl. 188-72.500.
- Kobe Steel, Ltd.: *See—*  
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- Kobelentz, Otto: *See—*  
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- Koch, H., & Sons, Inc.: *See—*  
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- Koch, Hans-Joachim: *See—*  
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- Kockum-Soderhamn Aktiebolag: *See—*  
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- Kohl, Robert F.; and Heian, Glenn A., to Allis-Chalmers Manufacturing Company. Method and apparatus for removing alkali from cement system. 3,692,287, Cl. 263-32.00r.
- Kohlenberger, Inc.: *See—*  
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- Kohls, James L. Litter collector and receptacle. 3,692,072, Cl. 141-391.000.
- Kohsaka, Masanobu: *See—*  
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- Kolbel, Herbert; Manecke, Georg; and El-Ghatta, Hussain Kashif, to Reichhold-Albert-Chemie Aktiengesellschaft. Process for the manufacture of insoluble synthetic products on the basis of epoxy compounds containing urethane groups. 3,692,729, Cl. 260-30.4c.
- Koleske, Joseph Victor: *See—*  
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- Koman, Andras: *See—*  
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- Komiya, Kuniko: *See—*  
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- Konig, Gottfried; and Schornstadt, Peter, to VEB Pentacon Dresden Kamera- und Kinowerke. Method and apparatus of contrast-dependent sharp focussing. 3,691,922, Cl. 95-44.00r.
- Konig, Klaus: *See—*  
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- Konishioku Photo Industry Co., Ltd.: *See—*  
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- Konno, Akira; and Kosaka, Tomoaki, to Pioneer Electronic Corporation. Timer of an automatic telephone answering apparatus. 3,692,940, Cl. 179-6.000.
- Konort, Mark D.: *See—*  
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- Kopelev, Fridrikh Lvovich. Precision boring machine. 3,692,418, Cl. 408-8.000.
- Koral, Jerry Norman: *See—*  
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- Kornstein, Irving. Method and apparatus for making a metalized indicium. 3,692,610, Cl. 156-249.000.
- Korolkov, Ivan Alexandrovich: *See—*  
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- Kosaka, Tomoaki: *See—*  
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- Kostur, Robert E., to Comet Industries, Inc. Gas-fired thermoforming machine. 3,692,288, Cl. 263-40.00r.
- Kovach, Stephen M.: *See—*  
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- Koyama, Tadataka: *See—*  
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- Koyanagi, Hironobu: *See—*  
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- Kraftco Corporation: *See—*  
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- Krause, Konrad A.; and Moradzadeh, Yaqub, to International Business Machines Corporation. Apparatus for transferring developed image. 3,691,993, Cl. 118-637.000.
- Kravitz, Stanley: *See—*  
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- Kravitz, Stanley; Estes, John H.; and Suggitt, Robert M., to Texaco Inc. Catalyst for hydrocarbon conversion. 3,692,694, Cl. 252-439.000.
- Kravitz, Stanley; Estes, John H.; and Suggitt, Robert M., to Texaco Inc. Catalyst for hydrocarbon conversion. 3,692,696, Cl. 252-439.000.
- Kravitz, Stanley; Estes, John H.; and Suggitt, Robert M., to Texaco Inc. Fluorinated metal-alumina catalysts. 3,692,697, Cl. 252-439.000.
- Kressel, Henry: *See—*  
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- Kreuder, Hans-Joachim: *See—*  
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- Kreuter, Kenneth G., to Robertshaw Controls Company. Pneumatically operated actuator. 3,691,906, Cl. 91-222.000.
- Krohn, Ivar T.; and Page, Geoffrey A., to Xerox Corporation. Manifold imaging method. 3,692,516, Cl. 96-1.00r.
- Krokos, Raymond M.; and MacCurdy, William K., to Evans Products Company. Method and apparatus for shipping motor vehicle. 3,691,963, Cl. 105-368.00r.
- Kroll, Frederick H. Expandable doll house. 3,691,671, Cl. 46-12.000.
- Kronas, Nicholas T.; and Ehrlich, Robert W., to Estad Products, Inc. Positional adjustment device for casket beds. 3,692,267, Cl. 248-288.000.
- Kroy, Walter; Manhart, Sigmund; and Mehnert, Walter Erich, to Messerschmitt-Bolkow-Blohm GmbH. Three-dimensional storage system. 3,693,169, Cl. 340-173.00r.
- Kruger, Erwin, to Ludwig Verpackungen Zach. Apparatus for making hollow plastic articles. 3,692,454, Cl. 425-355.000.
- Krusche, Kurt R. Two-sided handle brush. 3,691,586, Cl. 15-106.000.
- Krutsinger, Ralph W., Jr.: *See—*  
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- Kubaneck, Anne-Marie Margaretha; and Kim, Young Chul, to Allied Chemical Corporation. Racemization of D- or L-amino-caprolactam in the presence of metal ions. 3,692,775, Cl. 260-239.30r.
- Kubitzek, Konrad. Progressive form apparatus for concrete construction. 3,692,445, Cl. 425-63.000.
- Kubo, Moritada; and Arimura, Yoshiaki, to Tokyo Shibaura Electric Co., Ltd. Method for detecting the position and direction of a fine object. 3,693,154, Cl. 340-146.30h.
- Kuchyt, Charles, to Hercules Manufacturing Company, Inc. Shearing machine. 3,691,890, Cl. 83-624.000.
- Kudinov, Gennady Alexandrovich: *See—*  
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- Kuhlmann, Josef H. Egg gathering mechanism. 3,692,169, Cl. 198-43.000.
- Kuhnle, Paul, to Fr. Hesser Maschinenfabrik AG. Heat seal tool. 3,692,611, Cl. 156-358.000.
- Kukin, Ira, to Apollo Chemical Corporation. Activated manganese containing additive for fuels. 3,692,503, Cl. 44-4.000.
- Kulbersh, Irwin R.: *See—*  
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- Kulig, Frank M., to Ney, J. M., Company. Method and apparatus for investment casting. 3,692,088, Cl. 164-62.000.
- Kumiai Chemical Industry Co., Ltd.: *See—*  
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- Kummer, Charles K., to Ralston Purina Company. Sample cartridge filling and closing apparatus. 3,691,723, Cl. 53-271.000.
- Kummerlin, Nikolaus Adalbert: *See—*  
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- Kummerlin, Walter; and Kummerlin, Nikolaus Adalbert. Extensible ladder. 3,692,143, Cl. 182-24.000.
- Kundert, Robert L., to Drain-Away, Inc. Roof draining systems. 3,692,040, Cl. 137-142.000.
- Kupfer-Asbest-Co. Gustav Bach: *See—*  
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- Kurimoto, Mikishi; Ochiai, Yoshiki; Munekata, Keniti; and Nomura, Kenji, to Toyota Kōki Kabushiki Kaisha. Machine tool with tool change device. 3,691,655, Cl. 29-568.000.

- Kurita, Masahiro, to Kabushiki Kaisha Suwa Seikoshi. Electric or electronic timepiece. 3,691,753, Cl. 58-23.00r.
- Kurita, Yoshio: *See—*  
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- Kurokawa, Ikuji: *See—*  
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- Kurokawa, Noriyuki; and Minami, Hiroshi, to Hitachi, Ltd. Decimal point processing system dealing with overflow. 3,692,990, Cl. 235-159.000.
- Kuromitsu, Hiromu, to Aisin Seiki Kabushiki Kaishi. Braking force control valve assembly. 3,692,367, Cl. 303-52.000.
- Kuroyanagi, Yoshitaka: *See—*  
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- Kurtin, Stephen L.: *See—*  
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- Kurumada, Tomoyuki: *See—*  
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- Kuwada, Yutaka: *See—*  
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- Kuzmenko, Ivan Emelyanovich: *See—*  
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- Kwiatkowski, Wolfgang, to Agfa-Gevaert Aktiengesellschaft. Apparatus for treating roll film or the like in liquid baths. 3,691,926, Cl. 95-94.00r.
- Kyowa Hakko Kogyo Co., Ltd.: *See—*  
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- Terada, Osamu, 3,692,632.
- La Barbera, Robert R., to Thompson, Wm. T., Co. Composition and method for inhibiting growth of plant pathogens. 3,692,916, Cl. 424-346.000.
- La Barge, Inc.: *See—*  
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- La Cellophane: *See—*  
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- La Marre, David A.; Schauweker, George H.; and Stickney, Herbert F., to American Optical Corporation. Protective garment. 3,691,564, Cl. 2-2.000.
- La Raus, Sadye R.: *See—*  
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- Laabs, Johannes: *See—*  
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- Labussiere, Andre Julien; and Leon, Joseph Henri, to Avions Marcel Dassault. Method of and means for noise attenuation. 3,692,141, Cl. 181-33.00c.
- Lacombat, Michel: *See—*  
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- Ladine, Duane A. Data monitoring servo. 3,691,845, Cl. 73-432.000.
- Laguzzi, Umberto. Benzylisoquinolinic solutions and method of making the same. 3,692,910, Cl. 424-258.000.
- Laigle, Roger E.; and Rakich, Antone F., to Anaconda American Brass Company. Adjustable guide for a moving sheet. 3,692,223, Cl. 226-199.000.
- Lake, Alvin E., Jr.; and Mercer, Allen C., to Eastman Kodak Company. Web inspection system using interlaced photocells. 3,693,021, Cl. 250-219.00f.
- Lake, Edward E., to Clark Equipment Company. Hydraulic lift truck with small number of fluid lines. 3,692,198, Cl. 214-653.000.
- Lamberti, Vincent; Konort, Mark D.; and Weil, Ira, to Lever Brothers Company. Detergent compositions. 3,692,685, Cl. 252-89.000.
- Laminated Wood Products Co.: *See—*  
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- Lamp, Paul F., to Electone, Inc. Digital hearing aid gain analyzer. 3,692,959, Cl. 179-175.10a.
- Lancaster, Jesse F., to Cooke Engineering Company, The. Multi-circuit patch plug and jack. 3,692,966, Cl. 200-51.100.
- Landen, Ernest W.: *See—*  
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- Landers, Don B., to Oil States Ruther Co. Disc supported cup. 3,691,584, Cl. 15-104.06r.
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- Lania, Anthony R.; and Kirkegard, Neil Jr., to Chase Corporation. Semiconductive contact adhesive. 3,692,702, Cl. 252-511.000.
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- Lantz, James E.: *See—*  
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- Lappin, Kenneth R.: *See—*  
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- LaRaus, Julius, to La Raus, Sadye R. Countertop water purifier. 3,692,180, Cl. 210-139.000.
- Lark Luggage Corporation: *See—*  
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- Larrison, Millard S.: *See—*  
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- Larsen, Charles A.: *See—*  
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- Larsen, John, to Fyens Saekkekom-pagni A/S. Method of and apparatus for filling a tube or a hose with a solid material, preferably sand. 3,692,070, Cl. 141-1.000.
- Larson, Alworth D.; Braymer, Hugh D.; and Broussard, Evest A., III, to Research Corporation. Method for bacterial proteinase. 3,692,631, Cl. 195-66.00r.
- Larson, Louis P.; Repking, Edward F.; and Wagner, Gary L., to Crown Zellerbach Corporation. Pallet. 3,691,964, Cl. 108-51.000.
- Larsson, Karl Bertil, to Svenska Aktiebolaget Bromsregulator Malmö. Slack adjuster connection arrangement. 3,692,152, Cl. 188-79.50k.
- Laser Products & Development Corporation, Inc.: *See—*  
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- Lasher, George D. Portable fluid gauge. 3,691,839, Cl. 73-322.000.
- Latrobe Steel Company: *See—*  
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- Laudato, Gaetano J., Jr. Self-powered signal buoy. 3,691,573, Cl. 9-8.30c.
- Lauer, Karl; and Stephan, Peter. Process and apparatus for the continuous production of solutions. 3,692,579, Cl. 127-22.000.
- Laughlin, Gerald J., to Singer Company, The, mesne. Positioning mechanism. 3,692,268, Cl. 248-346.000.
- Laur, Thomas L., to Dow Corning Corporation. Stable polydior-ganoxilane gums. 3,692,737, Cl. 260-45.75r.
- Laurens, Marc: *See—*  
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- Laurita, Joseph N., to Lark Luggage Corporation. Handle assembly. 3,692,155, Cl. 190-57.000.
- Laval, Paul Marie Georges, to Cockerill-Ougree-Providence et Esperance-Longdoz en abregé "Cockerill". Plant for recovering energy from exhaust gases from a back-pressure blast furnace. 3,691,793, Cl. 60-39.500.
- Law, John E.; and Cheesman, Donald C., to Williams Patent Crusher & Pulverizer Company, Inc. Fluff preparation system and apparatus. 3,692,246, Cl. 241-28.000.
- Layne, Arnold B., to Sweeney, B. K., Manufacturing Co. Cylinder-liner pulling tools. 3,691,612, Cl. 29-266.000.
- Lazarev, Anatolij: *See—*  
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- Le Corre, Jean-Pierre: *See—*  
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- Le Corre, Yvette Marie Laurence: *See—*  
Durteste, Bernard Pierre; Henrion, Michel Andre Robert; and Le Corre, Jean-Pierre, 3,692,944.
- Le Strat, Guy Jean; Lannion, Rene Francois; and Satie, Pierre-Louis Joseph, to International Standard Electric Corporation. Telephone call simulator. 3,692,961, Cl. 179-175.20r.
- Lear Siegler Incorporated: *See—*  
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- Lebrizz, Joseph M.: *See—*  
Martin, Richard G.; Tuddenham, William M.; and Lebrizz, Joseph M., 3,691,832.
- Lebzelter, Joseph, to United States of America, Army. Monitoring system for pneumatic cylinder. 3,691,902, Cl. 91-1.000.
- Lechler, Rolf; and Steinwart, Johannes, to Audi NSU Auto Union Aktiengesellschaft and Wankel GmbH. Liquid cooled housing for rotary piston engines. 3,691,999, Cl. 123-8.01.
- Lecoanet, Roland S.; and Lepagnol, Jean A. H., to International Standard Electric Corporation. System for recording and connecting waiting calls on a chronological basis. 3,692,950, Cl. 179-27.00d.
- Lee, Donald S.; and Settanni, Richard, to Leeson Corporation. Coil winding machine. 3,692,250, Cl. 242-7.080.
- Lee, Ernest O., Jr.: *See—*  
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- Lee, James F. Tool holding device. 3,691,574, Cl. 10-89.00h.
- Leeds & Northrup Company: *See—*  
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- Lees, Harold D.; Evans, Paul F.; Maltz, Martin S.; and Vipond, Edward W., to Xerox Corporation. Electrolytic reversible color display device. 3,692,659, Cl. 204-224.000.
- Leeson Corporation: *See—*  
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- Legg, Louis L.: *See—*



- Kelly, Robert G.; Legg, Louis L.; and Ruf, Walter, 3,691,715.  
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 Lemelson, Jerome H. Toy vehicle and track. 3,691,670, Cl. 46-1.00j.  
 Lemelson, Jerome H. Casting and molding method. 3,692,892, Cl. 264-317.000.  
 Lemke, James U., to Bell & Howell Company. Magnetic printing utilizing thermal gradients. 3,693,183, Cl. 346-74.0mt.  
 Lemmons, Willie Paul. Scholastic averaging devices. 3,691,651, Cl. 35-48.00r.  
 Lemoine, Jacques: See—  
 Vidal, Jean; Parisot, Jean; and Lemoine, Jacques, 3,691,760.  
 Lengick, Guenther Fritz. Room temperature curable organopolysiloxanes and process for preparing same. 3,692,865, Cl. 260-826.000.  
 Lense, Robert F.; and Zimmer, Richard C., to Riegel Paper Corporation. Continuous motion packaging machine for cartons with sealing tapes. 3,691,724, Cl. 53-284.000.  
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 Leon, Joseph Henri: See—  
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 Leonard, Didier, to C.I.T.-Compagnie Industrielle des Telecommunications. Apparatus for establishing a telephone to radio-telephone communication. 3,692,952, Cl. 179-41.00a.  
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 Lersmacher, Bernd; Lydtin, Hans Jürgen; and Wilden, Rolf Josef. Method of depositing substances from the gas phase. 3,692,565, Cl. 117-106.00r.  
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McAuliffe, Gerald N., to Outboard Marine Corporation. Seat latch mechanism. 3,692,270, Cl. 248-384,000.  
McCabe, Howard R., to Armstrong Cork Company. Apparatus for applying adhesive to the edges of a slit tube. 3,691,990, Cl. 118-35,000.  
McCahon, John O.; and Byrne, William J., to Smyth Manufacturing Company, mesne. Apparatus for conveying and treating folded book signatures and the like. 3,692,299, Cl. 270-54,000.  
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McKay, Jerry Bruce, to Du Pont de Nemours, E. I., and Company. Multilobal multifilament yarn. 3,691,749, Cl. 57-140,000.  
McKinney, Joel D.; and Ondish, George F., to Gulf Research & Development Company. Catalytic cracking plant and method. 3,692,667, Cl. 208-120,000.  
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Ruffolo, Hector Michael. Hair dryer. 3,691,646, Cl. 34-90.000.  
Ruggeberg, Hans, to Henkel & Cie G.m.b.H. Liquid laundry starch. 3,692,552, Cl. 106-208.000.  
Ruhle, James L. Method of drilling oil wells. 3,692,125, Cl. 175-65.000.  
Ruhle, Walter: See—  
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Rusch, Reinhart: See—  
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Russell, William G., to Electrohome Limited. Switching network for dual tuners of a TV receiver. 3,693,091, Cl. 325-319.000.  
Russell, William G., to Electrohome Limited. AGC impedance converter for varactor diode tuner. 3,693,092, Cl. 325-319.000.  
Russell, William G., to Electrohome Limited. AGC impedance converter and voltage level shifter for high impedance source. 3,693,093, Cl. 325-319.000.  
Rustako, Anthony Joseph, Jr.; and Yeh, Yu Shuan, to Bell Telephone Laboratories, Incorporated. Diversity system for mobile radio using fade rate switching. 3,693,088, Cl. 325-56.000.  
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Ryberg, John G.; and Landen, Ernest W., to Caterpillar Tractor Company. Carbureted reactor combustion system for gas turbine engine. 3,691,762, Cl. 60-39.51r.  
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Saito, Tadao: See—



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- Sayles, David C., to United States of America, Army. High temperature-resistant propellants, 3,692,600, Cl. 149-19.000.
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- Smith, Donald A.; Perry, Ernest J.; and Hollister, Kenneth R., to Eastman Kodak Company. Terpolymers containing thioalkyl acrylates or thioalkylacrylamides. 3,692,753, Cl. 260-79.700.
- Smith, Donald J., to Smith-Schreyer & Assoc, Inc. Alignable end seals for a splice case. 3,692,926, Cl. 174-92.000.
- Smith, Edward I. Stocking appliance. 3,692,217, Cl. 223-111.000.
- Smith, Harold J., to General Electric Company. Magnetic shunt. 3,693,127, Cl. 336-160.000.
- Smith, Howard J.; and Smith, Byron F. Jig for sharpening jointer blades and the like. 3,691,702, Cl. 51-249.000.
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- Smith, Kenneth B., to Honeywell, Inc. Card recorder for transcribing magnetic information. 3,693,182, Cl. 346-74.00m.
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- Smith, Phillip W. Abrasive blasting apparatus. 3,691,691, Cl. 51-15.000.
- Smith, Raymond P. Adjustable pedal. 3,691,868, Cl. 74-512.000.
- Smith, Richard L.; and Ura-neck, Carl A., to Phillips Petroleum Company. Carbon black containing organometal compounds of the allylic or benzylic type. 3,692,553, Cl. 106-307.000.
- Smith, Thomas R., to Maytag Company, The. Liquid control system for washing machine. 3,691,797, Cl. 68-23.400.
- Smith, William D.: *See—*  
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- Smith-Schreyer & Assoc, Inc.: *See—*  
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- Snoek, Jacobus; and Naber, Jaap E., to Shell Oil Company. Method for controlling a sulfur recovery process. 3,692,480, Cl. 423-239.000.
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- Snyder, Marshall D.; and Snyder, Betty A. Wig dryer. 3,691,647, Cl. 34-104.000.
- Soares, Silvio: *See—*  
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- Sollich oHG Industriestrasse: *See—*  
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- Soulie, Guy; and Lozach, Gerard. Propelling devices for tools to lower or raise safety appliances in oil wells. 3,692,108, Cl. 166-153.000.
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- Staud, Miloslav; and Lazarev, Anatolij, to Chepos, Zavody chemickohe a potravinarskeho strojirenstvi oborovy podnik. Method for pyrolyzing hydrocarbons. 3,692,862, Cl. 260-683.00r.
- Staudhammer, Karl P.; and Reineking, Vernon H., to TRW Inc. Process for increasing the whisker and fiber content in a matrix. 3,691,623, Cl. 29-472.300.
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- Von Behren, Robert A., to Minnesota Mining and Manufacturing Company. Belt driven tape cartridge. 3,692,255, Cl. 242-192.000.
- Von Grabe, Walther, to Zimmerman, A. M., & Co. Panchromatic raster plate for electrophotographic use. 3,692,521, Cl. 96-1.500.
- Von Konig, Anita; Kabbe, Hans-Joachim; Mader, Helmut; Otto, Rigobert; and Reuss, Helmut, to Agfa-Gevaert Aktiengesellschaft. Silver halide emulsion containing a mercapto pyrimidine derivative antifoggant. 3,692,527, Cl. 96-109.000.
- Von Minden, Wolfgang: See—  
Josten, Friedrich; Luckert, Wilhelm; Meyer-Stoll, Hans Albrecht; and Von Minden, Wolfgang, 3,692,721.
- Von Otto, Robert E., 1/2 to Nichols, Henry E. Surgical appliance. 3,692,024, Cl. 128-132.000.
- Von Vick, George, to Bunker-Ramo Corporation. The. Trimmer potentiometer with resistive overlay. 3,693,062, Cl. 338-92.000.
- Vornberger, Walter, to Kamborian, Jacob S., Toe wiping with insole unsecured to last bottom. 3,691,575, Cl. 12-145.000.
- Vossien, John Louis, Jr., to RCA Corporation. Method of radio frequency sputter etching. 3,692,655, Cl. 204-192.000.
- Vredevoe, Lawrence A.: See—  
Silvera, Isaac F.; and Vredevoe, Lawrence A., 3,693,104.
- Vsesojuzny Nauchno-Issledovatel'skiy i Proektny Institut po Ochestke Tekhnologicheskikh gazov i stochnykh vod i isopolzovaniju Vtonichnykh Onorgorosurov Predpriyati Chernoi Metallurgii: See—  
Andoniev, Sergei Mikhailovich; Kutsykovich, Dorina Borisovna; Gerber, Leonid Moiseevich; Kudinov, Gennady Alexandrovich; Kasyanov, Grigory Ivanovich; Nissenbaum, Tamara Izovna; Raikovskiy, Jury Borisovich; Somchenko, Mikhail Semenovich; and Filipiev, Oleg Vadimirovich, 3,692,103.
- Waaben, Sigurd Gunther: See—  
Heighthley, John Donnell; and Waaben, Sigurd Gunther, 3,693,173.
- Wachs, Meyer H.: See—  
Hughes, Harry E., Jr.; Morton, Jack A.; and Wachs, Meyer H., 3,692,168.
- Wagele, Rolf, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Flexiblwaveguide and method of producing. 3,692,063, Cl. 138-139.000.
- Wagley, Allen. Crusher. 3,691,942, Cl. 100-151.000.
- Wagner, Gary L.: See—  
Larson, Louis P.; Repking, Edward F.; and Wagner, Gary L., 3,691,964.
- Wagner, George J., to United States Steel Corporation. Apparatus for receiving and storing a flexible starter bar. 3,692,094, Cl. 164-274.000.
- Wagner, Karl, to Agfa-Gevaert Aktiengesellschaft. Arrangement for providing a series of illuminations. 3,692,995, Cl. 240-1.300.
- Wakamatsu, Hisato; and Endo, Kinio, to Nippondenso Kabushiki Kaisha. Fuel control system for internal combustion engines. 3,692,003, Cl. 123-32.0ea.
- Waki, Misao: See—  
Suzuki, Munehiko; Hosokawa, Etsuo; Waki, Misao; and Fukushima, Masatada, 3,692,740.
- Walberg, Arvid C., to Gouridine Coating Systems, Inc. Spray apparatus with atomization device. 3,692,241, Cl. 239-15.000.
- Walk, Georg. Machine tool with pivotable tool carriage. 3,691,613, Cl. 29-27.00c.
- Walker, Charles W. E. Apparatus for measuring percent moisture content of particulate material using microwaves and penetrating radiation. 3,693,079, Cl. 324-58.50a.
- Wallace, Robert H.: See—  
Gilman, Gareld I.; and Wallace, Robert H., 3,693,044.
- Wallshein, Melvin. Orthodontic system for turning a tooth. 3,691,635, Cl. 32-42.000.
- Wallskog, Alan G., to Edelman, E., & Co. Hydrometer. 3,691,847, Cl. 73-441.000.
- Walon, Raoul Guillaume Philippe, to CPC International Inc., mesne. Soft candy containing confectionery syrup. 3,692,542, Cl. 99-134.00r.
- Walowski, Raymond J.: See—  
Sormani, Luigi Oscar, 3,692,557.
- Walsh, John T.: See—  
Anello, Louis G.; Sweeney, Richard F.; Jones, Edward S.; Walsh, John T.; and Thompson, John J., Jr., 3,692,885.
- Walsh, Thomas J., to Leeds & Northrup Company. Adjustable proportional response for balanceable system. 3,693,067, Cl. 318-609.000.
- Walsh, William L.: See—  
Hay, Russell G.; McNulty, John G.; and Walsh, William L., 3,692,822.
- Walters, William R., to Radio Corporation of America. Time delay circuits. 3,693,030, Cl. 307-273.000.
- Wang, Chun-Shaw; and Mc Gee, Thomas W. 2,4-Pyridinediyl benzenesulfonates. 3,692,793, Cl. 260-294.80f.
- Wankel GmbH: See—  
Lechler, Rolf; and Steinwart, Johannes, 3,691,999.
- Ward, Hubert. Shrimp deheader. 3,691,592, Cl. 17-71.000.
- Ward, John W.; and Clark, Danford E., to Union Oil Company. Rejuvenation of damaged zeolite-supported metal catalysts. 3,692,692, Cl. 252-412.000.
- Ware, Peter G., to Dunlop Company Limited, The. Fuel supply systems. 3,691,764, Cl. 60-39.74r.
- Warner & Swasey Company: See—  
Blake, Charles T., 3,691,879.
- Warner, Wesley John, to Western Electric Company Limited. Telephone queuing circuit. 3,692,948, Cl. 179-18.0fa.
- Warner-Lambert Pharmaceutical Company: See—  
Zinnes, Harold; and Shavel, John, Jr., 3,692,780.
- Warwick Electronics Inc.: See—  
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- Wasecheck, Paul H., to Continental Oil Company. Catalyst system for use in nitric acid oxidation of olefins. 3,692,809, Cl. 260-413.000.
- Washchynsky, Bohdan: See—  
James, Cyril P.; and Washchynsky, Bohdan, 3,691,956.
- Wasecheck, Paul H., to Continental Oil Company. Catalytic oxidation of olefins to yield carboxylic acids. 3,692,810, Cl. 260-413.000.
- Waskowsky, Carl A. H. M., to Patinvest Patent- und Investment A.G. Safety appliance. 3,692,043, Cl. 137-315.000.
- Wasserman, Seymour N., to Dynamics Research Corporation. Electro-optical tachometer. 3,693,023, Cl. 250-231.0se.
- Watanabe, Ichiro: See—  
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Watanabe, Ichiro, 3,692,778.
- Watanabe, Koji: See—  
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- Water Saver Faucet Co.: See—  
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- Water Treatment Corporation: See—  
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- Waters, Graham Thomas, to Imperial Chemical Industries Limited. Textured core yarns. 3,691,750, Cl. 57-144.000.
- Watson Chemical Corporation: See—  
Rattenbury, Kenneth H.; and Larrison, Millard S. (said Rattenbury assor. to), 3,692,879.
- Watson, William H.: See—  
Young, Chauncey; and Watson, William H., 3,692,226.
- Waxler, Burton S.: See—  
Woodruff, George M.; Schoonmaker, Donald; Daniels, David; and Waxler, Burton S., 3,691,718.
- Wayfield, David John. Fluid diverting housings and auxiliary devices. 3,692,242, Cl. 239-265.190.
- Weaver, Max A.; and Straley, James M. Azo compounds containing an arylsulfonyl phenyl diazo component. 3,692,769, Cl. 260-207.100.
- Weaver, William R., to Libbey-Owens-Ford Company. Core for use in pressure molding. 3,692,551, Cl. 106-38.300.
- Webb, Leonard D.: See—  
Jordan, Frank W.; and Webb, Leonard D., 3,691,955.



- Weber, Edwin J., to Black and Decker Manufacturing Company, The. Grass catcher for reel type mower. 3,691,740, Cl. 56-198,000.
- Weber, Guy Paul, to La Cellophane. Apparatus for reading and electrophotographically reproducing microphotographs of varying sizes. 3,692,409, Cl. 355-45,000.
- Weber, Paul E., to Bell & Howell Company. Semi-conductive apparatus for detecting light of given flux density levels. 3,693,016, Cl. 250-211,00j.
- Wedag Westfalia Dinnendahl Groppe Aktiengesellschaft: See—Jager, Heinz, 3,692,247.
- Wedam, Werner Franz, to Sylvania Electric Products Inc. Pulse regulator controlled from voltage multiplier. 3,693,043, Cl. 315-29,000.
- Wedekind, Benno; and Kirsch, Werner. Protective bandage for pipelines to be protected against corrosion. 3,692,619, Cl. 161-88,000.
- Weedon, Gene C.: See—Mayer, Richard E.; Birenzve, Ammon; and Weedon, Gene C., 3,692,867.
- Week, Nils Peder, to General Motors Corporation. Parking brake released by transmission control pressures. 3,692,156, Cl. 192-4,00a.
- Weeks, Horace W.: See—Getker, James A.; and Weeks, Horace W., 3,692,980.
- Wehrli, Pius Anton. Condensation products of  $\alpha$ - $\beta$ -unsaturated aldehydes with lower alkyl ketones. 3,692,839, Cl. 260-586,00r.
- Weidenhagen, Rudolf: See—Reinicke, Hans; Leonhauser, Senta; and Weidenhagen, Rudolf, 3,692,766.
- Weigl, William: See—Southam, Donald L.; Weigl, William; and Kacmarcik, Thomas J., 3,691,948.
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- Weinschel Engineering Co., Inc.: See—Sorgor, Gunther U., 3,693,078.
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- Wenstrup, David L.: See—Fleming, Robert W.; Wenstrup, David L.; and Andrews, Edwin R., 3,692,907.
- Wenz, Herbert, to Pfaff, G. M., AG, Firma. Device on sewing machines for trimming material. 3,691,970, Cl. 112-127,000.
- Werner, Ervin R., Jr., to Du Pont de Nemours & Co., and Company. Article coated with fluorocarbon polymer primer and fluorocarbon polymer topcoat. 3,692,558, Cl. 117-72,000.
- West, John Godfrey Wilson, to Lucas, Joseph, (Industries) Limited. Dynamo electric machines. 3,693,037, Cl. 310-154,000.
- Western Electric Company, Incorporated: See—Anderson, Albin R.; and Jennings, John D., 3,691,720.
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- Westinghouse Electric Corporation: See—Friedrich, Kevin F., 3,692,928.
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- Westinghouse Learning Corporation: See—McMillin, John V., 3,692,982.
- Weston, Edward C. Assembling a flexible tube within a handle. 3,691,621, Cl. 29-455,000.
- Westphal, Donald J.: See—Gronwick, Jerry P.; Illian, Douglas F.; and Westphal, Donald J., 3,691,660.
- Wetter, Jakob, to Ferag, Fehr & Reist AG. Method of, and apparatus for, opening folded multi-sheet paper products. 3,692,301, Cl. 270-55,000.
- Weyerhaeuser Company: See—Neitzke, Nicholas R.; and Adams, Chester F., Jr., 3,692,231.
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- Wheeler, Phillip R.: See—Ruff, John D.; and Wheeler, Phillip R., 3,691,785.
- White, Allen A.; Garrison, Harold Keith; and Brooks, Dean P., to Hession Corporation. Machine for loading, stacking and unloading crops. 3,691,741, Cl. 56-344,000.
- White, Charles E.: See—Hoffmann, Donald R.; and White, Charles E., 3,691,799.
- White, Herschel T.: See—Gardiner, John B.; and White, Herschel T., 3,692,599.
- White, Kenneth N., 1/2% to Meyer, Harold and 1/2% to White-Meyer Products, Inc. Routing device with movable routing tool. 3,692,075, Cl. 144-136,000.
- White Memorial Medical Center: See—Braun, Ernest J.; and Adams, Ralph M., 3,693,178.
- White, Randall F.: See—Summer, James R.; and White, Randall F., 3,692,144.
- White, Rudolph C.; and Thatcher, Judith G., to Texaco Inc. Hydrogenation process utilizing homogeneous metal catalysts. 3,692,864, Cl. 260-683,900.
- White-Meyer Products, Inc.: See—White, Kenneth N., 3,692,075.
- Whitehead Brothers Company: See—Melcher, Ronald E.; and Somers, Robert W., 3,692,550.
- Whittier, Lawrence E. Alarm clock. 3,691,752, Cl. 58-16,000.
- Wiedmann, Siegfried K., to International Business Machines Corporation. Monolithic circuits with pinch resistors. 3,693,057, Cl. 317-235,00r.
- Wiener, Charles: See—Engel, Lawrence J.; Gianni, Michael H.; and Wiener, Charles, 3,692,837.
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- Wilcox, Doyle E.: See—Slater, John M.; and Wilcox, Doyle E., 3,691,850.
- Wilcox, Milton E., to Motorola, Inc. Sawtooth oscillator circuit. 3,693,111, Cl. 331-111,000.
- Wilden, Rolf Josef: See—Lersmacher, Bernd; Lydtin, Hans Jurgen; and Wilden, Rolf Josef, 3,692,565.
- Wilhoit, Darrel L., to Tektronix, Inc. Variable capacitor including a rotatable dielectric disc. 3,693,058, Cl. 317-249,00r.
- Wilke, Richard. Electromotive adjusting device. 3,691,858, Cl. 74-89,150.
- Wilkes, Donald F.: See—Gladow, Dean E.; and Wilkes, Donald F., 3,691,871.
- Wilkins, Glenn E.: See—Grafton, Jim R.; Wilkins, Glenn E.; and Murphy, Joseph F., 3,692,013.
- Wilkins Regulator Co.: See—Camp, Alfred L., 3,692,047.
- Willard, Henry G., to General Electric Company. Flux transfer trip device for electric circuit breakers. 3,693,122, Cl. 335-174,000.
- Willems, Jozef Frans: See—Noe, Robert Joseph; Willems, Jozef Frans; and Poot, Albert Lucien, 3,692,522.
- Williams Patent Crusher & Pulverizer Company, Inc.: See—Law, John E.; and Cheesman, Donald C., 3,692,246.
- Williams, Robert H. Rotary internal combustion engine. 3,692,002, Cl. 123-8,110.
- Williams, Roland H., to Sparton Corporation. Method of battery plate manufacture utilizing ultrasonic vibrations. 3,692,586, Cl. 136-67,000.
- Williams, Ronald H.: See—Groff, Gaylord L.; and Williams, Ronald H., 3,692,715.
- Wilmarth, Paul Carleton, to RCA Corporation. Horizontal oscillator disabling circuit control apparatus. 3,692,932, Cl. 178-7,50rE.
- Wilms, Carl Alfred: See—Geczy, Bela; and Wilms, Carl Alfred, 3,691,875.
- Wilson, Donald J. M. Sailing craft. 3,691,976, Cl. 114-39,000.
- Wilson, Edward L.; and Pennington, Robert E., to Esso Research and Engineering Company. Coal liquefaction at staged temperatures. 3,692,662, Cl. 208-8,000.
- Wilson, Joseph F.; and Southworth, Wallace E., to Phillips Petroleum Company. Limestone granulation. 3,692,511, Cl. 71-29,000.
- Wilson, Ronald H.: See—Sigsbee, Raymond A.; and Wilson, Ronald H., 3,693,003.
- Wilt, Robert E., to Sperry Rand Corporation. Radiometer gain control reference. 3,693,095, Cl. 325-363,000.
- Winkler, Alfred; and Zanner, Johann, Jr., to Agfa Aktiengesellschaft. Projector for use with containers for motion picture film. 3,692,391, Cl. 352-123,000.
- Winnard, James R., to International Business Machines Corporation. Antisaturation technique for TTL circuits. 3,693,032, Cl. 307-299,000.
- Winsche, Warren E.; Wirsing, Edward, Jr.; and Wiswall, Richard H., Jr., to United States of America, Atomic Energy Commission. Recovery of sulfur dioxide. 3,692,472, Cl. 423-244,00r.
- Winston, Philip E., Jr.: See—Hollis, Samuel D.; and Winston, Philip E., Jr., 3,692,844.
- Wirsing, Edward, Jr.: See—Winsche, Warren E.; Wirsing, Edward, Jr.; and Wiswall, Richard H., Jr., 3,692,472.
- Wise, Eugene H., to Sloane, R & G., Manufacturing Company. Tapping tee. 3,692,044, Cl. 137-318,000.
- Wise, Robert A., to Westinghouse Electric Corporation. Electric cooker control. 3,692,979, Cl. 219-493,000.
- Wiswall, Richard H., Jr.: See—Winsche, Warren E.; Wirsing, Edward, Jr.; and Wiswall, Richard H., Jr., 3,692,472.
- Witt, Kenneth C., to Clark Equipment Company. Dual steering system. 3,692,138, Cl. 180-79,20r.
- Witte, Charles E.: See—Witte, Charles E.; and Gebel, Dingerkus. Apparatus for mounting handles to pots and the like. 3,691,605, Cl. 29-200,00j.

- Witte, Josef; Pampus, Gottfried; Schon, Nikolaus; and Marwede, Gunter, to Farbenfabriken Bayer Aktiengesellschaft. Regulation of molecular weight of products obtained by the ring opening polymerisation of cycloolefines. 3,692,760, Cl. 260-93,100.
- Wofford, Clinton F.: See—Farrar, Ralph C.; and Wofford, Clinton F., 3,692,874.
- Wolf, Frank J.: See—Stapley, Edward O.; Mata, Justo M.; Wolf, Frank J.; and Miller, Thomas W., 3,692,633.
- Wolf, Milton: See—Sellstedt, John H.; and Wolf, Milton, 3,692,774.
- Wolf, Richard. Balancing device. 3,691,870, Cl. 74-573,000.
- Wolff & Co., Aktiengesellschaft: See—Huhn, Helmut; and Hoppe, Lutz, 3,692,748.
- Wolff, Willi: See—Jennes, Gert; Huther, Edmund; and Wolff, Willi, 3,692,875.
- Woo, James T.; and Brown, Thayer A., Jr., to Dow Chemical Company, The. Interpolymers of vinylidene chloride and blocked vinyl isocyanates and process for coating articles therewith. 3,692,746, Cl. 260-77,5tb.
- Wood, Marvin E., to Ecodyne Corporation. Filter screen training mechanism. 3,692,674, Cl. 210-401,000.
- Woodling, George V. Fluid pressure responsive mechanism in a fluid pressure device. 3,692,439, Cl. 418-61,000.
- Woodling, George V. Eccentrically disposed male and female spline teeth. 3,692,440, Cl. 418-61,000.
- Woodruff, George M.; Schoonmaker, Donald; Daniels, David; and Waxler, Burton S., to General Foods Corporation. Pouch forming apparatus and method. 3,691,718, Cl. 53-29,000.
- Woods Research and Development Corporation: See—Van Dyk, John C., 3,692,724.
- Woodward, Henry L., Jr. Holder for sheet material. 3,692,170, Cl. 206-1,00a.
- Woolman, Myron. Standing easel for classroom use. 3,692,273, Cl. 248-460,000.
- Wright, Arthur G., to Stroth, Donald G. Method of imparting high pressure to material for extinguishing fires and other purposes. 3,692,117, Cl. 169-2,00r.
- Wyle Laboratories: See—Deckard, Charles E., 3,691,822.
- Wyman-Gordon Company: See—Heitman, George H.; Strom, Eric T.; and Cerrone, Anthony G., 3,691,811.
- Wyndrum, Ralph William, Jr., to Bell Telephone Laboratories, Incorporated. Multiplex multifrequency signal receiver. 3,692,953, Cl. 179-84,0vf.
- Xerox Corporation: See—Jelfo, Raymond L., 3,692,517.
- Krohn, Ivar T.; and Page, Geoffrey A., 3,692,516.
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- Mammino, Joseph; and Amidon, Alan B., 3,692,520.
- Reinis, Gedeminas J.; and Tulagin, Vsevolod, 3,692,518.
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- Yagi, Yuji: See—Fujikake, Kenji; Mutoh, Norio; and Yagi, Yuji, 3,691,833.
- Yamada, Kazuo: See—Hasebe, Takefumi; and Yamada, Kazuo, 3,693,180.
- Yamaguchi, Kenjo: See—Kimura, Hiroshi; Nambu, Takeshi; Inoue, Kiyoshi; Imahori, Yoshiyuki; Yamaguchi, Kenjo; and Umeno, Kyozo, 3,692,384.
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- Yamasaki, Hiroo: See—Tomota, Miyaji; Ishikawa, Yutaka; Yamasaki, Hiroo; and Kurita, Yoshio, 3,691,830.
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- Yannes, Peter A., Jr. Canoe construction. 3,691,572, Cl. 9-3,000.
- Yano, Nobumitsu: See—Takata, Toyoharu; Fujii, Keisuke; Yano, Nobumitsu; Fukushima, Masao; Nagayoshi, Fumio; and Mizuno, Aiko, 3,692,768.
- Yao, Cheng, to Factory Mutual Research Corporation. Fixed fire extinguishing system utilizing recirculation of combustion products. 3,692,118, Cl. 169-1,00a.
- Yasuoka, Yoshio, to Sanyo Electric Co., Ltd. Electronic oven. 3,692,968, Cl. 219-10,550.
- Yates, Paul C.: See—Meadows, Geoffrey W.; and Yates, Paul C., 3,692,479.
- Yeakey, Ernest Leon: See—Lichtenwalter, Myrl; and Yeakey, Ernest Leon, 3,692,789.
- Yeh, Chin-Jung; and Yang, Yu-Chi. Brake system using vehicle's own kinetic energy to control the brake and the device thereof. 3,692,147, Cl. 188-2,00r.
- Yeh, Yu Shuan: See—Rustako, Anthony Joseph, Jr.; and Yeh, Yu Shuan, 3,693,088.
- Yokico Yuki Ltd.: See—Irie, Yoshihiko; Yamawaki, Shunro; and Ogawa, Yukio, 3,692,212.
- Yokogawa Electric Works, Ltd.: See—Hasebe, Takefumi; and Yamada, Kazuo, 3,693,180.
- Yokota, Mitsuhisa: See—Katagiri, Shigenobu; and Yokota, Mitsuhisa, 3,692,419.
- Yonkers, Edward H., to Joslyn Mfg. and Supply Co. Cable coupler. 3,692,921, Cl. 174-72,00r.
- Yoshida, Yoshinori: See—Chikatsu, Tatsusuke; Shimokawa, Shinichi; Yoshida, Yoshinori; Imamura, Masatogu; Nishiwaki, Ituo; Akimoto, Toshio; and Fujiwara, Tatsuji, 3,692,861.
- Yoshii, Tetsuji, to Matsushita Electric Industrial Co., Ltd. Slip-clutch. 3,691,791, Cl. 64-30,00e.
- Yoshimitsu, Matsumoto: See—Oku, Takeshi; Kazushige, Hirasawa; and Yoshimitsu, Matsumoto, 3,692,973.
- Yoshioka, Takao: See—Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Matsui, Katsuki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Watanabe, Ichiro, 3,692,778.
- Young, Chauncey; and Watson, William H., to Riegel Paper Corporation. Removable side wall for tightly sealed drumhead cartons. 3,692,226, Cl. 229-17,00r.
- Young, Oswald William John: See—Arber, Scott Gordon; and Young, Oswald William John, 3,692,474.
- Yount, Reed E.: See—Hoppin, George S., III; Yount, Reed E.; Berry, Thomas F.; and Barker, James F., 3,692,501.
- Yrjala, Ilmo. Measuring and regulation method, for water soluble, oxidizing or reducing compound particularly in pulp bleaching. 3,692,624, Cl. 162-49,000.
- Yuan, Shao Wen. Wing-tip vortices control. 3,692,259, Cl. 244-40,000.
- Zanner, Johann, Jr.: See—Winkler, Alfred; and Zanner, Johann, Jr., 3,692,291.
- Zeldman, Maurice I.; and Schechter, Edward G., to North American Rockwell Corporation. Fluid pressure device. 3,691,961, Cl. 104-155,000.
- Zellbeck, Gustav: See—Reichel, Eckehard; and Zellbeck, Gustav, 3,691,910.
- Zillich, Pal: See—Jurany, Gyorgy; Koman, Andras; and Zillich, Pal, 3,692,410.
- Zimmer, Clarence L.: See—Vanderbilt, Vern C., Jr.; Zimmer, Clarence L.; and Van Ostrand, William F., 3,691,824.
- Zimmer, Richard C.: See—Lense, Robert F.; and Zimmer, Richard C., 3,691,724.
- Zimmerman, A. M., & Co.: See—Von Grabe, Walther, 3,692,521.
- Zinnes, Harold; and Shavel, John, Jr., to Warner-Lambert Pharmaceutical Company. 4-Substituted-2-alkyl-3-phenyl-2H-1,2-benzothiazine-1,1-dioxides and processes for their production. 3,692,780, Cl. 260-243,00r.
- Zoecon Corporation: See—Henrick, Clive A.; and Siddall, John B., 3,692,851.
- Zon, Cornelis Van, to Industriële Onderneming Wavin N.V. Pipe construction. 3,692,336, Cl. 285-175,000.
- Zueger, Karl J.: See—von Arx, Henry R.; and Zueger, Karl J., 3,691,707.
- Zulick, Mike: See—Brobeck, Von H.; and Zulick, Mike, 3,692,090.
- Zurich, Philip: See—Chambers, Wayne L.; and Chambers, Ronald W., 3,692,647.



## LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF SEPTEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Alford, Andrew : *See*—  
Banning, Harmon W. Re. 27,483.  
Banning, Harmon W., to Andrew Alford. Precision miniature sexless coaxial connector. Re. 27,483, 9-19-72, Cl. 339-48.  
Battail, Gerard P., and P. C. Brossard, to Communications Satellite Corp. Communication system having a multiple access man-made satellite. Re. 27,478, 9-19-72, Cl. 325-304.  
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Jayne, Murray L. Impact tool. Re. 27,479, 9-19-72, Cl. 173-13.  
Kamola, Roman C., to Xerox Corp. Automatic development controller. Re. 27,480, 9-19-72, Cl. 118-7.  
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Piteo, Michael J., to R. E. Phelon Co., Inc. Breakerless ignition system with automatic spark advance using triggering coil. Re. 27,477, 9-19-72, Cl. 123-148.  
Reed, Thomas S., and E. S. Stanuch, to Borg-Warner Corp. Adjustable steering mechanism employing memory unit. Re. 27,481, 9-19-72, Cl. 74-493.  
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Carsello, Anthony J. : *See*—  
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Dean, George J., Jr., to Wadsworth Control Systems, Inc. Electronic control cabinet. 224,785, 9-19-72, Cl. D26-13.  
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Fukuoka, Tatsuo. Sandals for children. 224,763, 9-19-72, Cl. D2-283.  
Genaro, Donald M., to The Singer Co. Sewing machine or similar article. 224,809, 9-19-72, Cl. D70-1.  
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Langworthy, Joseph J. Wall rack for nails or the like. 224,774, 9-19-72, Cl. D6-130.  
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Nagata, Hideaki, Kabushiki Kaisha Kōpōru. Clock. 224,800, 9-19-72, Cl. D42-7.  
Nagata, Hideaki, to Kabushiki Kaisha Kōpōru. Clock. 224,801, 9-19-72, Cl. D42-7.  
Nishigami, Tetschi, and C. A. Harrison, to Sears, Roebuck and Co. Sewing machine carrying case. 224,815, 9-19-72, Cl. D87-1.  
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Popp, Lester G. Combined frame and basket for joining two bicycles. 224,817, 9-19-72, Cl. D90-8.  
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Shlesinger, Bernard E., Jr. Electric cable. 224,788, 9-19-72, Cl. D26-1.  
Shlesinger, Bernard E., Jr. Electric cable. 224,789, 9-19-72, Cl. D26-1.  
Shlesinger, Bernard E., Jr. Electric cable. 224,790, 9-19-72, Cl. D26-1.  
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# CLASSIFICATION OF PATENTS

ISSUED SEPTEMBER 19, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

2	CLASS 2	84R	3,691,596	192	3,691,668	198	3,691,740	146	3,691,807	75	3,691,885
14H	3,691,564	108	3,691,597	54.5R	3,691,666	344	3,691,741	190	3,691,808	CLASS 83	
319	3,691,565	204	3,691,598	65	3,691,667	346	3,691,742	199	3,691,809	1	3,691,886
	3,691,566	205.13C	3,691,599			400.05	3,691,743	242	3,691,810	277	3,691,887
1	CLASS 3	CLASS 26		4	3,692,503	CLASS 57		272	3,691,811	302	3,691,888
	3,691,567	18.6	3,691,600	7E	3,692,504	34R	3,691,744	308	3,691,812	401	3,691,889
213	CLASS 4	CLASS 29		1H	3,691,669	77.4	3,691,745	342	3,691,813	624	3,691,890
	3,691,568	25.18	3,691,654	1J	3,691,670	100	3,691,746	409	3,691,814	CLASS 84	
345	CLASS 5	25.19	3,691,653	16	3,691,672	135	3,691,747	458	3,691,815	275	3,691,891
347	3,691,569	27C	3,691,613	21	3,691,671	140J	3,691,748	467	3,691,816	380	3,691,892
	3,691,570	95.1	3,691,657	68	3,691,673	144	3,691,749	705	3,691,817	453	3,691,893
2	CLASS 6	150	3,691,601	74R	3,691,674	145	3,691,751	23	3,691,818	454	3,691,894
	3,691,571	159R	3,691,602	118	3,691,675	210	3,691,750	40.5A	3,691,819	471	3,691,895
	CLASS 8	182.3	3,691,603	126	3,691,676	CLASS 58		40.7	3,691,820	484	3,691,896
	3,692,465	194	3,691,607	136	3,691,678	16	3,691,752	49.2	3,691,821	CLASS 85	
10	3,692,461	195	3,692,502	163	3,691,679	23D	3,691,754	71.6	3,691,822	62	3,691,897
43	3,692,462	200B	3,691,604	228	3,691,680	23R	3,691,753	81	3,691,823	68	3,691,924
	3,692,463	200J	3,691,605	244A	3,691,681	50R	3,691,755	118	3,691,824	CLASS 90	
149.1	3,692,464	205D	3,691,606	34.11	3,691,682	58	3,691,756	136A	3,691,825	11A	3,691,899
151.2	3,692,466	211D	3,691,608	57.5	3,691,683	76	3,691,757	139	3,691,826		3,691,900
158	3,692,467	252	3,691,609	CLASS 47		88M	3,691,758	141R	3,691,827	11R	3,691,898
	CLASS 9	255	3,691,610	39.09	3,691,759	CLASS 60		188	3,691,828	13.1	3,691,901
3	3,691,572	261	3,691,611	CLASS 48		39.18B	3,691,760	189	3,691,829	CLASS 91	
8.3E	3,691,573	266	3,691,612	206	3,692,505	39.23	3,691,761	194B	3,691,830	1	3,691,902
	CLASS 10	417	3,691,615	210	3,692,506	39.5	3,691,763	203	3,691,831	49	3,691,903
89H	3,691,574	423	3,691,617	CLASS 49		39.51R	3,691,762	204	3,691,832	169	3,691,904
	CLASS 12	430	3,691,618	21	3,691,684	39.55	3,691,763	208	3,691,833	216A	3,691,905
145	3,691,575	434	3,691,616	35	3,691,685	39.74R	3,691,764	209	3,691,834	222	3,691,906
	CLASS 13	451	3,691,619	56	3,691,686		3,691,765	213	3,691,835	321	3,691,907
15	3,692,917	455	3,691,621	74	3,691,687	39.82P	3,691,766		3,691,836	412	3,691,908
	CLASS 14	470.3	3,691,622	394	3,691,688	53R	3,691,767	231M	3,691,837		3,691,911
72	3,691,576	470.5	3,691,614	8	3,691,695	54	3,691,768	322	3,691,838	449	3,691,912
	CLASS 15	472.3	3,691,623	9	3,691,689	217	3,691,769	349	3,691,839	487	3,691,909
21D	3,691,578	523	3,691,624	13	3,691,690	226A	3,691,771	362R	3,691,841	499	3,691,910
21R	3,691,577	557	3,691,625	15	3,691,691	254	3,691,770	398C	3,691,842	CLASS 92	
49C	3,691,581	568	3,691,626	20	3,691,692	320	3,691,772	411	3,691,843	76	3,691,913
77	3,691,582	571	3,691,627	35	3,691,693	CLASS 61		425.6	3,691,844	169	3,691,914
83	3,691,579	577	3,691,628	80	3,691,694	1	3,691,773	432A	3,691,845	CLASS 93	
97	3,691,580	600	3,691,629	95TG	3,691,696	5	3,691,774	432R	3,691,846	93K	3,691,915
104.06R	3,691,584	622	3,691,630	134	3,691,697	45D	3,691,775	441	3,691,847	CLASS 94	
104.35N	3,691,583	625	3,691,631	165.88	3,691,698	53	3,691,776	502	3,691,848	46AC	3,691,916
104.94	3,691,585	628	3,691,632	165.92	3,691,699	69	3,691,777	515	3,691,849	CLASS 95	
106	3,691,586	628	3,691,656	206	3,691,707	72.3	3,691,778	516R	3,691,850	10CT	3,691,919
167R	3,691,587	CLASS 31		238S	3,691,701	CLASS 62		3.52	3,691,851	10PO	3,691,917
256.5	3,691,588	46	3,691,633	249	3,691,702	23	3,691,779	5	3,691,852	10C	3,691,918
302	3,691,589	CLASS 32		80	3,691,704	55	3,691,780	5.34	3,691,853	13	3,691,920
18	CLASS 16	14A	3,691,635	108	3,691,705	66	3,691,781	6	3,691,854	31	3,691,921
	3,691,590	22	3,691,634	125	3,691,706	209	3,691,782	55	3,691,855	44R	3,691,922
32	CLASS 17	58	3,691,636	228	3,691,708	212	3,691,783	56	3,691,856	53EB	3,691,923
	3,691,594	CLASS 33		239	3,691,709	218	3,691,784	89	3,691,857	86	3,691,925
71	3,691,592	27L	3,691,637	251	3,691,710	230	3,691,785	89.15	3,691,858	94R	3,691,926
73	3,691,591	50A	3,691,638	282	3,691,711	279	3,691,786	120	3,691,859	CLASS 96	
	CLASS 18	87	3,691,639	393	3,691,712	400	3,691,787	124.1R	3,691,860	1R	3,692,516
19P	3,692,454	147F	3,691,640	743	3,691,713	7	3,691,788	330	3,691,861		3,692,517
	CLASS 21	181AT	3,691,641	CLASS 53		11R	3,691,789	379	3,691,862	1.2	3,692,519
58	3,692,468	193	3,691,642	3	3,691,715	23	3,691,790	478	3,691,863		3,692,520
63	3,692,469	222	3,691,643	23	3,691,703	30E	3,691,791	479	3,691,864	1.4	3,692,523
	CLASS 23	CLASS 34		29	3,691,718	31	3,691,792	491	3,691,867	1.5	3,692,521
113	3,692,470	10	3,691,644	33	3,691,728	CLASS 64		492	3,691,865	1.8	3,692,522
134	3,692,471	58	3,691,645	35	3,691,717	7	3,691,788	493	3,691,866	6	3,692,524
191	3,692,474	90	3,691,646	59W	3,691,716	2	3,692,507	512	3,691,868	84R	3,692,525
208A	3,692,478	104	3,691,647	77	3,691,719	91	3,692,508	573	3,691,870	108	3,692,526
230PC	3,692,481	227	3,691,648	91	3,691,720	118	3,692,509	740	3,691,869	109	3,692,527
230B	3,692,486	243	3,691,649	120	3,691,721	203	3,692,510	798	3,691,871	140	3,692,528
230R	3,692,482	CLASS 35		183	3,691,722	CLASS 66		864	3,691,872	CLASS 98	
	3,692,483	8A	3,691,650	271	3,691,723	126R	3,691,794	866	3,691,873	10	3,691,927
232R	3,692,484	22R	3,691,652	284	3,691,724	132R	3,691,795	CLASS 75		33	3,691,928
253R	3,692,485	48R	3,691,651	328	3,691,725	193	3,691,796	20F	3,692,513	62	3,691,929
	3,692,487	CLASS 36		381	3,691,726	CLASS 68		124	3,692,514	115K	3,691,930
	3,692,488	4	3,691,658	390	3,691,727	23.4	3,691,797	126A	3,692,515	CLASS 99	
	3,692,489	7.6	3,691,659	CLASS 55		CLASS 70		CLASS 76		2	3,692,529
	3,692,490	CLASS 38		33	3,691,728	84	3,691,799	41	3,691,874	10	3,692,530
254E	3,692,492	77.83	3,691,660	70	3,691,729	373	3,691,800	CLASS 81		17	3,692,531
259	3,692,493	140	3,691,661	166	3,691,730	456R	3,691,798	57.14	3,691,875	28	3,692,532
270.5	3,692,494	CLASS 40		223	3,691,731	CLASS 71		58.1	3,691,876	77.1	3,692,536
281	3,692,495	23A	3,691,662	227	3,691,732	29	3,692,511	177A	3,691,877	80PS	3,692,533
288F	3,692,497	124.4	3,691,664	257	3,691,733	65	3,692,512	CLASS 82		90P	3,692,534
288G	3,692,496	125	3,691,663	275	3,691,734	9	3,691,801	1C	3,691,878	92	3,692,535
292	3,692,498	128	3,691,677	391	3,691,735	21	3,691,802	2.5	3,691,879	100P	3,692,537
301SP	3,692,499	CLASS 42		484	3,691,736	36	3,691,803	4A	3,691,880	107	3,692,538
338	3,692,500	240	3,692,659	CLASS 56		42	3,691,804	4C	3,691,881	109	3,692,539
	CLASS 24	CLASS 43		9	3,691,737	75	3,691,805	34R	3,691,882	116	3,692,540
81E	3,691,595	15	3,691,665	13.9	3,691,738	92	3,691,806	36R	3,691,884	134R	3,692,542



144	3,692,543	225	3,692,577	96	3,692,060	CLASS 166	3,692,106	24	3,692,143	386	3,692,182
172	3,692,544	227	3,692,578	97	3,692,061	53	3,692,106	24	3,692,143	401	3,692,674
195	3,692,545	CLASS 118		99	3,692,062	55	3,692,107	48	3,692,144	415	3,692,183
204	3,692,546	6	3,691,988	139	3,692,063	153	3,692,108	70	3,692,145	437	3,692,184
281	3,691,932	7	Re 27,480	CLASS 139		241	3,692,109	6.1	3,692,146	493	3,692,185
282	3,691,933	8	3,691,989	1C	3,692,065	245	3,692,110	2R	3,692,147	494	3,692,186
290	3,691,934	35	3,691,990	12	3,692,067	252	3,692,111	13	3,692,187	13	3,692,187
327	3,691,935	107	3,691,992	116	3,692,068	270	3,692,112	49D	3,692,188	134	3,692,189
337	3,691,936	629	3,691,991	CLASS 140		275	3,692,113	69	3,692,149	135	3,692,190
340	3,691,937	637	3,691,993	106	3,692,069	278	3,692,114	71 5	3,692,150	184	3,692,191
348	3,691,938	CLASS 119		295	3,692,115	292	3,692,116	72 5	3,692,151	184	3,692,191
CLASS 100		3	3,691,994	CLASS 141		295	3,692,116	79 5K	3,692,152	CLASS 214	
2	3,691,939	29	3,691,995	1	3,692,070	CLASS 169		170	3,692,153	1BE	3,692,192
41	3,691,940	32	3,691,996	313	3,692,071	1A	3,692,118	251A	3,692,154	IBH	3,692,193
89	3,691,941	71	3,691,997	391	3,692,072	2R	3,692,117	CLASS 190		16 4C	3,692,195
100	3,691,967	98	3,691,998	CLASS 143		23	3,692,119	57	3,692,155	152	3,692,196
151	3,691,942	CLASS 123		133D	3,692,073	116	3,692,120	CLASS 192		390	3,692,197
215	3,691,943	8.01	3,691,999	CLASS 144		151	3,692,121	098	3,692,157	653	3,692,198
229A	3,691,944	8.07	3,692,000	1	3,693,186	456	3,692,120	3 57	3,692,158	8 2	3,692,198
229R	3,691,945	8.09	3,692,001	39	3,692,075	CLASS 173		4A	3,692,156	9	3,692,199
269B	3,691,946	8.11	3,692,002	136	3,692,075	13	Re 27,479	4C	3,692,160	42	3,692,200
CLASS 101		32EA	3,692,003	29B	3,692,076	119	3,692,122	8R	3,692,161	12	3,692,201
93C	3,691,947	41 57	3,692,004	CLASS 145		147	3,692,123	13A	3,692,162	CLASS 219	
183	3,691,948	51R	3,692,005	CLASS 146		160	3,692,124	53F	3,692,163	10 55	3,692,196
216	3,691,949	55VE	3,692,006	72	3,692,077	42	3,692,125	13	3,692,165	10 57	3,692,196
247	3,691,956	98	3,692,007	CLASS 148		48	3,692,126	28R	3,692,168	56	3,692,197
415 1	3,691,950	102	3,692,008	CLASS 149		73R	3,692,127	51R	3,692,169	73	3,692,197
450	3,691,951	148E	Re 27,477	133D	3,692,073	84S	3,692,128	63	3,692,170	76	3,692,197
CLASS 102		185C	3,692,009	172	3,692,074	120SR	3,692,129	66R	3,692,171	121P	3,692,197
6	3,691,952	CLASS 125		187	3,692,075	120C	3,692,130	80R	3,692,172	147	3,692,197
14	3,691,953	11NT	3,692,011	19	3,692,076	139	3,692,131	2	3,692,166	202	3,692,197
24	3,691,954	CLASS 126		143	3,692,077	143	3,692,132	98	3,692,167	264	3,692,197
99	3,691,955	25R	3,692,012	CLASS 149		143	3,692,132	2	3,692,166	343	3,692,197
CLASS 104		41R	3,692,013	19	3,692,078	139	3,692,133	98	3,692,167	384	3,692,197
88	3,691,958	110R	3,692,014	CLASS 150		139	3,692,133	41	3,692,168	493	3,692,197
148SS	3,691,960	200	3,692,015	CLASS 151		139	3,692,133	43	3,692,169	CLASS 220	
155	3,691,961	271 2B	3,692,016	CLASS 152		139	3,692,133	44	3,692,170	1BC	3,692,202
CLASS 105		360A	3,692,017	CLASS 153		210	3,692,134	51.001	3,692,171	1 5	3,692,203
182R	3,691,962	CLASS 127		CLASS 154		211	3,692,135	CLASS 177		4R	3,692,204
368R	3,691,963	22	3,692,579	CLASS 155		211	3,692,135	CLASS 178		91G	3,692,205
CLASS 106		29	3,692,580	CLASS 156		211	3,692,135	CLASS 179		15	3,692,206
2	3,692,547	38	3,692,581	CLASS 157		211	3,692,135	CLASS 180		23 4	3,692,210
55	3,692,548	46A	3,692,582	CLASS 158		211	3,692,135	CLASS 181		24 5	3,692,209
33	3,692,549	1B	3,692,019	CLASS 159		211	3,692,135	CLASS 182		63A	3,692,212
38 25	3,692,550	1R	3,692,020	CLASS 160		211	3,692,135	CLASS 183		CLASS 221	
38 3	3,692,551	2H	3,692,021	CLASS 161		211	3,692,135	CLASS 184		9	3,692,211
208	3,692,552	13 2	3,692,022	CLASS 162		211	3,692,135	CLASS 185		15	3,692,212
307	3,692,553	69	3,692,023	CLASS 163		211	3,692,135	CLASS 186		28	3,692,213
CLASS 108		87A	3,692,024	CLASS 164		211	3,692,135	CLASS 187		300	3,692,214
51	3,691,964	90	3,692,025	CLASS 165		211	3,692,135	CLASS 188		384	3,692,215
58	3,691,965	136	3,692,026	CLASS 166		211	3,692,135	CLASS 189		429	3,692,216
144	3,691,966	142 2	3,692,027	CLASS 167		211	3,692,135	CLASS 190		460	3,692,217
CLASS 112		260	3,692,028	CLASS 168		211	3,692,135	CLASS 191		CLASS 250	
11	3,691,968	349R	3,692,029	CLASS 169		211	3,692,135	CLASS 192		41 3	3,693,008
70	3,691,969	369	3,692,030	CLASS 170		211	3,692,135	CLASS 193		43 5D	3,693,009
127	3,691,970	7	3,692,031	CLASS 171		211	3,692,135	CLASS 194		83 1H	3,693,010
440	3,691,971	CLASS 131		CLASS 172		211	3,692,135	CLASS 195		83 3H	3,693,011
CLASS 113		9	3,692,032	CLASS 173		211	3,692,135	CLASS 196		106S	3,693,012
120H	3,691,972	CLASS 132		CLASS 174		211	3,692,135	CLASS 197		203R	3,693,013
121A	3,691,973	11A	3,692,033	CLASS 175		211	3,692,135	CLASS 198		209	3,693,014
CLASS 114		5F	3,692,034	CLASS 176		211	3,692,135	CLASS 199		211J	3,693,015
16R	3,691,975	140	3,692,035	CLASS 177		211	3,692,135	CLASS 200		213V T	3,693,016
39	3,691,976	CLASS 134		CLASS 178		211	3,692,135	CLASS 201		213V T	3,693,017
51	3,691,977	3	3,692,583	CLASS 179		211	3,692,135	CLASS 202		219DF	3,693,018
143	3,691,978	CLASS 135		CLASS 180		211	3,692,135	CLASS 203		219DF	3,693,019
235R	3,691,979	25	3,692,035	CLASS 181		211	3,692,135	CLASS 204		219DF	3,693,020
CLASS 116		67	3,692,586	CLASS 182		211	3,692,135	CLASS 205		219DF	3,693,021
67R	3,691,980	83R	3,692,587	CLASS 183		211	3,692,135	CLASS 206		219DF	3,693,022
70	3,691,981	86R	3,692,588	CLASS 184		211	3,692,135	CLASS 207		219DF	3,693,023
114R	3,691,983	134R	3,692,589	CLASS 185		211	3,692,135	CLASS 208		219DF	3,693,024
116	3,691,984	171	3,692,590	CLASS 186		211	3,692,135	CLASS 209		219DF	3,693,025
124	3,691,985	CLASS 137		CLASS 187		211	3,692,135	CLASS 210		219DF	3,693,026
129R	3,691,987	81 5	3,692,036	CLASS 188		211	3,692,135	CLASS 211		219DF	3,693,027
129	3,691,988	83	3,692,037	CLASS 189		211	3,692,135	CLASS 212		219DF	3,693,028
CLASS 117		116	3,692,038	CLASS 190		211	3,692,135	CLASS 213		219DF	3,693,029
22	3,692,554	118	3,692,039	CLASS 191		211	3,692,135	CLASS 214		219DF	3,693,030
33 3	3,692,555	142	3,692,040	CLASS 192		211	3,692,135	CLASS 215		219DF	3,693,031
36 1	3,692,556	238	3,692,041	CLASS 193		211	3,692,135	CLASS 216		219DF	3,693,032
41	3,692,557	296	3,692,042	CLASS 194		211	3,692,135	CLASS 217		219DF	3,693,033
62	3,692,558	315	3,692,043	CLASS 195		211	3,692,135	CLASS 218		219DF	3,693,034
72	3,692,559	318	3,692,044	CLASS 196		211	3,692,135	CLASS 219		219DF	3,693,035
76T	3,692,560	344	3,692,045	CLASS 197		211	3,692,135	CLASS 220		219DF	3,693,036
93 31	3,692,561	382	3,692,046	CLASS 198		211	3,692,135	CLASS 221		219DF	3,693,037
100A	3,692,562	403	3,692,047	CLASS 199		211	3,692,135	CLASS 222		219DF	3,693,038
100B	3,692,563	489 5	3,692,048	CLASS 200		211	3,692,135	CLASS 223		219DF	3,693,039
102R	3,692,564	491	3,692,049	CLASS 201		211	3,692,135	CLASS 224		219DF	3,693,040
106R	3,692,565	495	3,692,050	CLASS 202		211	3,692,135	CLASS 225		219DF	3,693,041
138 8UF	3,692,566	544	3,692,051	CLASS 203		211	3,692,135	CLASS 226		219DF	3,693,042
138 8VA	3,692,567	561	3,692,052	CLASS 204		211	3,692,135	CLASS 227		219DF	3,693,043
161KP	3,692,568	562	3,692,053	CLASS 205		211	3,692,135	CLASS 228		219DF	3,693,044
201	3,692,571	596 18	3,692,054	CLASS 206		211	3,692,135	CLASS 229		219DF	3,693,045
211	3,692,572	604	3,692,055	CLASS 207		211	3,692,135	CLASS 230		219DF	3,693,046
212	3,692,573	625 43	3,692,056	CLASS 208		211	3,692,135	CLASS 231		219DF	3,693,047
213	3,692,574	625 44	3,692,057	CLASS 209		211	3,692,135	CLASS 232		219DF	3,693,048
217	3,692,575	627 5	3,692,058	CLASS 210		211	3,692,135	CLASS 233		219DF	3,693,049
217	3,692,576	82	3,692,059	CLASS 211		211	3,692,135	CLASS 234		219DF	3,693,050
		49	3,692,060	CLASS 212		211	3,692,135	CLASS 235		219DF	3,693,051

151 33	3,692,988	440	3,692,998	287R	3,692,790	45	3,692,289	CLASS 3
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174R	3,693,188	123	3,692,391	87	3,692,411	CLASS 417	47	3,692,893	346	3,692,914	
CLASS 346		128	3,692,392	103	3,692,412	26	3,692,430	56	3,692,894	352	3,692,916
I	3,693,178	175	3,692,393	106	3,692,413	183	3,692,431	78	3,692,895		3,692,915
	3,693,179	176	3,692,394	167	3,692,414	286	3,692,432		3,692,896	CLASS 425	
17	3,693,180	217	3,692,395	187	3,692,415	360	3,692,434	85	3,692,897	7	3,692,442
74ES	3,693,181	221	3,692,396	244	3,692,416	372	3,692,435	158	3,692,898	28	3,692,443
74MT	3,693,183	CLASS 353		CLASS 401		382	3,692,433	180	3,692,899	63	3,692,444
74M	3,693,182	25	3,692,397	122	3,692,417	406	3,692,436	205	3,692,900	113	3,692,445
	3,693,184	26	3,692,398	CLASS 408		533	3,692,437	212	3,692,901	119	3,692,446
139C	3,693,185	27	3,692,399	8	3,692,418	547	3,692,438		3,692,902	131	3,692,447
CLASS 350		101	3,692,400						3,692,903	139	3,692,448
3 S	3,692,380	CLASS 355		CLASS 415		61	3,692,439	222	3,692,904	183	3,692,449
	3,692,381	3	3,692,401	30	3,692,419		3,692,440	227	3,692,905	223	3,692,450
5	3,692,382		3,692,402	62	3,692,420		3,692,441	230	3,692,906	326	3,692,451
96R	3,692,383		3,692,403	76	3,692,421	191		244	3,692,907	370	3,692,452
119	3,692,384	9	3,692,404	121B	3,692,422		CLASS 423	248	3,692,908	388	3,692,453
157	3,692,385	22	3,692,405	131	3,692,424	183	3,692,473	250	3,692,909	412	3,692,454
227	3,692,386		3,692,406	181	3,692,425	239	3,692,480	251	3,692,910	435	3,692,455
281	3,692,387	45	3,692,409	207	3,692,426	244R	3,692,472	258	3,692,911	469	3,692,456
312	3,692,388	52	3,692,407	CLASS 416		329	3,692,475	322	3,692,912	11	3,692,457
		59	3,692,408	143	3,692,427	466	3,692,476	325	3,692,913	348	3,692,458
CLASS 352				187	3,692,428	580	3,692,477	335	3,692,914		3,692,459
5	3,692,389	CLASS 356		201	3,692,429	CLASS 424			3,692,915	1	3,692,460
17	3,692,390	40	3,692,410						3,692,916		3,692,461

## CLASSIFICATION OF DESIGNS

D 2—	283	224,763	D 8—	177	224,768	D23—	150	224,783	D34—	41	224,792	D77—	1	224,811
D 6—	20	224,775	D 9—	179	224,776	D26—	1	224,786		5	224,794	D83—		224,813
	63	224,764		119	224,777			224,787	D44—	8	224,802			224,814
	66	224,765	D06—	216	224,778			224,788	D48—	9	224,803			224,815
	69	224,766		99	224,779			224,789	D52—	24	224,805	D87—	12	224,816
	97	224,767	D13—	130	224,774			224,790	D56—	6	224,806			224,817
	99	224,771		1	224,779			224,791	D61—	1	224,807	D90—	8	224,818
	130	224,772	D14—		224,780			224,792	D70—		224,809		18	224,819
		224,773		3	224,781			224,793	D74—	5	224,810		20	224,820
	159	224,769		27	224,782	D30—	35	224,793						

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1	3,691,822	3,691,842	3,692,358	3,693,038	3,692,276	3,692,233
	3,692,359	3,691,845	3,692,382	3,693,049	3,692,299	3,692,457
	3,692,600	3,691,850	3,692,399	3,693,051	3,692,302	3,692,974
	3,693,002	3,691,852	3,692,417	3,693,052	3,692,334	3,693,062
	3,693,015	3,691,853	3,692,434	3,693,068	3,692,375	3,692,537
2	3,691,968	3,691,859	3,692,437	3,693,097	3,692,447	Re 27,481
	3,692,248	3,691,862	3,692,438	3,693,103	3,692,484	3,691,610
4	3,691,643	3,691,870	3,692,476	3,693,104	3,692,485	3,691,615
	3,691,710	3,691,875	3,692,483	3,693,115	3,692,661	3,691,662
	3,691,714	3,691,881	3,692,493	3,693,123	3,692,717	3,691,672
	3,691,772	3,691,921	3,692,530	3,693,135	3,692,868	3,691,680
	3,691,987	3,691,945	3,692,564	3,693,145	3,692,880	3,691,706
	3,692,225	3,691,953	3,692,568	3,693,148	3,692,893	3,691,717
	3,692,490	3,691,979	3,692,585	3,693,158	3,692,905	3,691,719
	3,692,972	3,691,992	3,692,598	3,693,161	3,692,985	3,691,722
	3,693,106	3,691,993	3,692,601	3,693,171	3,692,988	3,691,724
	3,693,107	3,692,000	3,692,626	3,693,174	3,693,001	3,691,762
	3,693,111	3,692,010	3,692,647	3,693,176	3,693,031	3,691,798
6	3,691,566	3,692,011	3,692,648	3,693,177	3,693,050	3,691,803
	3,691,568	3,692,036	3,692,650	3,693,178	3,693,122	3,691,805
	3,691,570	3,692,044	3,692,669	3,693,181	3,693,157	3,691,847
	3,691,577	3,692,047	3,692,671	3,693,183	3,691,789	3,691,878
	3,691,582	3,692,059	3,692,672	3,693,185	3,692,182	3,691,883
	3,691,609	3,692,061	3,692,677	3,691,612	3,692,477	3,691,908
	3,691,616	3,692,062	3,692,681	3,692,029	3,692,479	3,691,916
	3,691,620	3,692,109	3,692,682	3,692,113	3,692,720	3,691,932
	3,691,621	3,692,125	3,692,692	3,692,117	3,692,743	3,691,933
	3,691,623	3,692,140	3,692,705	3,692,281	3,692,804	3,691,956
	3,691,630	3,692,166	3,692,782	3,692,373	3,692,843	3,691,966
	3,691,646	3,692,170	3,692,783	3,692,424	3,692,890	3,691,973
	3,691,669	3,692,173	3,692,792	3,692,832	Re 27,478	3,692,006
	3,691,674	3,692,190	3,692,805	3,692,930	3,692,024	3,692,007
	3,691,676	3,692,201	3,692,841	3,692,943	3,692,533	3,692,016
	3,691,679	3,692,231	3,692,849	3,692,947	3,691,667	3,692,046
	3,691,686	3,692,237	3,692,851	3,693,044	3,691,687	3,692,075
	3,691,696	3,692,244	3,692,854	3,693,162	3,691,980	3,692,085
	3,691,705	3,692,256	3,692,882	3,693,163	3,692,228	3,692,085
	3,691,707	3,692,261	3,692,884	Re 27,477	3,692,446	3,692,105
	3,691,711	3,692,262	3,692,900	3,691,564	3,692,491	3,692,149
	3,691,730	3,692,265	3,692,901	3,691,718	3,692,543	3,692,160
	3,691,731	3,692,268	3,692,912	3,691,769	3,692,573	3,692,187
	3,691,767	3,692,278	3,692,924	3,691,810	3,692,934	3,692,196
	3,691,770	3,692,303	3,692,926	3,691,814	3,692,951	3,692,204
	3,691,776	3,692,311	3,692,936	3,691,828	3,692,959	3,692,211
	3,691,778	3,692,312	3,692,965	3,691,843	3,693,089	3,692,217
	3,691,807	3,692,329	3,692,997	3,691,896	3,693,095	3,692,240
	3,691,817	3,692,337	3,693,011	3,691,986	3,693,141	3,692,241
	3,691,826	3,692,339	3,693,012	3,692,088	3,693,182	3,692,253
	3,691,827	3,692,348	3,693,018	3,692,205	3,691,808	3,692,264
	3,691,838	3,692,351	3,693,024	3,692,223	3,691,880	3,692,267
	3,691,839	3,692,355	3,693,033	3,692,250	3,691,893	3,692,285



## GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

3,692,288	3,692,020	3,692,544	3,692,592	3,692,305	3,691,903
3,692,313	3,692,026	3,692,586	3,692,593	3,692,325	3,691,912
3,692,314	3,692,126	3,692,664	3,692,594	3,692,326	3,691,940
3,692,350	3,692,127	3,692,679	3,692,599	3,692,371	3,691,948
3,692,366	3,692,230	3,692,691	3,692,610	3,692,379	3,691,981
3,692,368	3,692,398	3,692,731	3,692,633	3,692,386	3,692,031
3,692,376	3,692,532	3,692,737	3,692,651	3,692,389	3,692,032
3,692,436	3,692,665	3,692,746	3,692,653	3,692,390	3,692,060
3,692,456	3,692,899	3,692,767	3,692,655	3,692,392	3,692,090
3,692,496	3,693,035	3,692,793	3,692,685	3,692,402	3,692,091
3,692,540	3,693,071	3,692,807	3,692,686	3,692,403	3,692,199
3,692,614	3,693,072	3,692,846	3,692,722	3,692,404	3,692,274
3,692,620	3,693,076	3,692,857	3,692,727	3,692,411	3,692,308
3,692,666	3,693,078	3,692,865	3,692,775	3,692,420	3,692,347
3,692,670	3,693,096	3,692,895	3,692,780	3,692,421	3,692,360
3,692,680	3,693,100	3,692,992	3,692,785	3,692,448	3,692,370
3,692,733	3,693,105	3,693,073	3,692,788	3,692,465	3,692,377
3,692,747	3,693,114	3,693,084	3,692,794	3,692,472	3,692,414
3,692,799	Re 27,483	3,693,085	3,692,798	3,692,482	3,692,425
3,692,842	25	3,693,101	3,692,803	3,692,488	3,692,428
3,692,855	3,691,565	3,693,131	3,692,811	3,692,498	3,692,439
3,692,921	3,691,575	3,691,131	3,692,819	3,692,516	3,692,440
3,692,933	3,691,581	3,691,603	3,692,821	3,692,517	3,692,471
3,692,949	3,691,593	3,691,712	3,692,825	3,692,518	3,692,501
3,692,957	3,691,699	3,691,848	3,692,834	3,692,539	3,692,539
3,692,962	3,691,700	3,691,900	3,692,837	3,692,551	3,692,551
3,693,010	3,691,708	3,691,947	3,692,839	3,692,597	3,692,597
3,693,016	3,691,720	3,691,974	3,692,840	3,692,547	3,692,605
3,693,060	3,691,737	3,691,985	3,692,845	3,692,581	3,692,673
3,693,083	3,691,774	3,691,996	3,692,850	3,692,584	3,692,719
3,693,113	3,691,777	3,692,165	3,692,885	3,692,603	3,692,735
3,693,136	3,691,811	3,692,227	3,692,908	3,692,617	3,692,742
3,693,179	3,691,829	3,692,255	3,692,918	3,692,625	3,692,756
3,691,638	3,691,884	3,692,320	3,692,938	3,692,761	3,692,761
3,691,647	3,691,976	3,692,455	3,692,953	3,692,770	3,692,770
3,691,660	3,691,994	3,692,529	3,692,979	3,692,872	3,692,872
3,691,668	3,692,041	3,692,535	3,692,987	3,692,883	3,692,883
3,691,689	3,692,077	3,692,572	3,692,987	3,692,883	3,692,883
3,691,709	3,692,087	3,692,771	3,692,994	3,692,907	3,692,907
3,691,824	3,692,100	3,692,815	3,693,004	3,692,914	3,692,914
3,691,831	3,692,104	3,692,838	3,693,008	3,692,969	3,692,969
3,691,872	3,692,118	3,692,856	3,693,020	3,692,977	3,692,977
3,691,890	3,692,193	3,693,132	3,693,030	3,692,980	3,692,980
3,691,906	3,692,215	3,693,160	3,693,032	3,692,997	3,693,025
3,692,039	3,692,218	3,693,188	3,693,046	3,693,126	3,693,126
3,692,054	3,692,288	3,692,121	3,693,088	3,693,130	3,693,130
3,692,150	3,692,341	3,692,475	3,693,099	3,692,716	3,693,165
3,692,184	3,692,541	3,691,589	3,693,118	3,692,753	3,693,175
3,692,349	3,692,545	3,691,611	3,693,149	3,692,765	3,693,173
3,692,354	3,692,604	3,691,631	3,693,153	3,692,779	3,693,189
3,692,387	3,692,652	3,691,636	3,693,173	3,692,787	3,693,184
3,692,467	3,692,702	3,691,636	3,693,173	3,692,787	3,693,184
3,692,473	3,692,730	3,691,723	3,693,173	3,692,787	3,693,184
3,692,506	3,692,871	3,691,925	3,693,173	3,692,787	3,693,184
3,692,606	3,692,878	3,691,930	3,693,173	3,692,787	3,693,184
3,692,607	3,692,984	3,691,964	3,693,173	3,692,787	3,693,184
3,692,786	3,693,091	3,692,210	3,693,173	3,692,787	3,693,184
3,692,931	3,693,104	3,692,226	3,693,173	3,692,787	3,693,184
3,692,932	3,693,119	3,692,246	3,693,173	3,692,787	3,693,184
3,693,048	3,693,123	3,692,269	3,693,173	3,692,787	3,693,184
3,693,125	3,693,139	3,692,331	3,693,173	3,692,787	3,693,184
3,693,127	3,693,150	3,692,346	3,693,173	3,692,787	3,693,184
3,693,150	3,693,166	3,692,369	3,693,173	3,692,787	3,693,184
3,691,797	3,693,172	3,692,384	3,693,173	3,692,787	3,693,184
3,691,887	3,693,188	3,692,407	3,693,173	3,692,787	3,693,184
3,691,998	3,693,204	3,692,430	3,693,173	3,692,787	3,693,184
3,692,013	3,693,220	3,692,453	3,693,173	3,692,787	3,693,184
3,692,050	3,693,236	3,692,476	3,693,173	3,692,787	3,693,184
3,692,053	3,693,252	3,692,499	3,693,173	3,692,787	3,693,184
3,692,134	3,693,268	3,692,522	3,693,173	3,692,787	3,693,184
3,692,282	3,693,284	3,692,545	3,693,173	3,692,787	3,693,184
3,692,331	3,693,300	3,692,568	3,693,173	3,692,787	3,693,184
3,692,382	3,693,316	3,692,591	3,693,173	3,692,787	3,693,184
3,692,447	3,693,332	3,692,614	3,693,173	3,692,787	3,693,184
3,693,112	3,693,348	3,692,637	3,693,173	3,692,787	3,693,184
3,691,721	3,693,364	3,692,660	3,693,173	3,692,787	3,693,184
3,691,726	3,693,380	3,692,683	3,693,173	3,692,787	3,693,184
3,691,741	3,693,396	3,692,706	3,693,173	3,692,787	3,693,184
3,692,238	3,693,412	3,692,729	3,693,173	3,692,787	3,693,184
3,692,674	3,693,428	3,692,752	3,693,173	3,692,787	3,693,184
3,691,937	3,693,444	3,692,775	3,693,173	3,692,787	3,693,184
3,692,704	3,693,460	3,692,798	3,693,173	3,692,787	3,693,184
3,692,863	3,693,476	3,692,821	3,693,173	3,692,787	3,693,184
3,693,137	3,693,492	3,692,844	3,693,173	3,692,787	3,693,184
3,691,592	3,693,508	3,692,867	3,693,173	3,692,787	3,693,184
3,691,732	3,693,524	3,692,890	3,693,173	3,692,787	3,693,184
3,691,738	3,693,540	3,692,913	3,693,173	3,692,787	3,693,184
3,692,513	3,693,556	3,692,936	3,693,173	3,692,787	3,693,184
3,692,631	3,693,572	3,692,959	3,693,173	3,692,787	3,693,184
3,692,698	3,693,588	3,692,982	3,693,173	3,692,787	3,693,184
3,692,700	3,693,604	3,693,005	3,693,173	3,692,787	3,693,184
3,692,847	3,693,620	3,693,028	3,693,173	3,692,787	3,693,184
3,692,858	3,693,636	3,693,051	3,693,173	3,692,787	3,693,184
3,693,138	3,693,652	3,693,074	3,693,173	3,692,787	3,693,184
3,691,585	3,693,668	3,693,097	3,693,173	3,692,787	3,693,184
3,691,597	3,693,684	3,693,120	3,693,173	3,692,787	3,693,184
3,691,642	3,693,700	3,693,143	3,693,173	3,692,787	3,693,184
3,691,690	3,693,716	3,693,166	3,693,173	3,692,787	3,693,184
3,691,695	3,693,732	3,693,189	3,693,173	3,692,787	3,693,184
3,691,701	3,693,748	3,693,212	3,693,173	3,692,787	3,693,184
3,691,740	3,693,764	3,693,235	3,693,173	3,692,787	3,693,184
3,691,743	3,693,780	3,693,258	3,693,173	3,692,787	3,693,184
3,691,849	3,693,796	3,693,281	3,693,173	3,692,787	3,693,184
3,691,855	3,693,812	3,693,304	3,693,173	3,692,787	3,693,184
3,691,856	3,693,828	3,693,327	3,693,173	3,692,787	3,693,184
3,691,952	3,693,844	3,693,350	3,693,173	3,692,787	3,693,184
	3,693,860	3,693,373	3,693,173	3,692,787	3,693,184
	3,693,876	3,693,396	3,693,173	3,692,787	3,693,184
	3,693,892	3,693,419	3,693,173	3,692,787	3,693,184
	3,693,908	3,693,442	3,693,173	3,692,787	3,693,184
	3,693,924	3,693,465	3,693,173	3,692,787	3,693,184
	3,693,940	3,693,488	3,693,173	3,692,787	3,693,184
	3,693,956	3,693,511	3,693,173	3,692,787	3,693,184
	3,693,972	3,693,534	3,693,173	3,692,787	3,693,184
	3,693,988	3,693,557	3,693,173	3,692,787	3,693,184
	3,694,004	3,693,580	3,693,173	3,692,787	3,693,184
	3,694,020	3,693,603	3,693,173	3,692,787	3,693,184
	3,694,036	3,693,626	3,693,173	3,692,787	3,693,184
	3,694,052	3,693,649	3,693,173	3,692,787	3,693,184
	3,694,068	3,693,672	3,693,173	3,692,787	3,693,184
	3,694,084	3,693,695	3,693,173	3,692,787	3,693,184
	3,694,100	3,693,718	3,693,173	3,692,787	3,693,184
	3,694,116	3,693,741	3,693,173	3,692,787	3,693,184
	3,694,132	3,693,764	3,693,173	3,692,787	3,693,184
	3,694,148	3,693,787	3,693,173	3,692,787	3,693,184
	3,694,164	3,693,810	3,693,173	3,692,787	3,693,184
	3,694,180	3,693,833	3,693,173	3,692,787	3,693,184
	3,694,196	3,693,856	3,693,173	3,692,787	3,693,184
	3,694,212	3,693,879	3,693,173	3,692,787	3,693,184
	3,694,228	3,693,902	3,693,173	3,692,787	3,693,184
	3,694,244	3,693,925	3,693,173	3,692,787	3,693,184
	3,694,260	3,693,948	3,693,173	3,692,787	3,693,184
	3,694,276	3,693,971	3,693,173	3,692,787	3,693,184
	3,694,292	3,693,994	3,693,173	3,692,787	3,693,184
	3,694,308	3,694,017	3,693,173	3,692,787	3,693,184
	3,694,324	3,694,040	3,693,173	3,692,787	3,693,184
	3,694,340	3,694,063	3,693,173	3,692,787	3,693,184
	3,694,356	3,694,086	3,693,173	3,692,787	3,693,184
	3,694,372	3,694,109	3,693,173	3,692,787	3,693,184
	3,694,388	3,694,132	3,693,173	3,692,787	3,693,184
	3,694,404	3,694,155	3,693,173	3,692,787	3,693,184
	3,694,420	3,694,178	3,693,173	3,692,787	3,693,184



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## PATENT OFFICE NOTICES

### Office Actions—Timely Response

The Patent Office has been receiving an excessively large volume of petitions to revive based primarily on the late filing of amendments and other responses to official actions. Many of these petitions indicate that the late filing was due to unusual mail delays; however, the records generally show that the filing was only two or three days late.

In order to alleviate, for applicants and the Office, the problems and expenditures of time and effort occasioned by abandonments and petitions to revive, it is suggested that responses to official action be mailed to the Patent Office at least one, and preferably two, week(s) prior to the expiration of the period within which a response is required. This suggestion is made in the interest of improving efficiency, thereby providing better service to the public.

WILLIAM FELDMAN,  
Deputy Assistant Commissioner  
for Patent Examining.

Aug. 25, 1972.

### Declaration and Power of Attorney Form PO-1147 (Revised) (3-72)

A revised Declaration and Power of Attorney Form, PO-1147 (Revised) (3-72), was recently issued and is supplied for use as a master copy for reproduction purposes. Experience with the revised form indicates that some confusion has been caused by the reference to "effective" filing date in item 600 of the form. The form is, therefore, being reprinted to delete the word "effective" from the descriptive language appearing in item 600. Persons who have copies of the old form may use the form by deleting the word "effective" before the form is reproduced. In this connection it is noted that the word "effective" appears three times in item 600, once on page 1 and twice on page 2.

RICHARD A. WAHL,  
Assistant Commissioner  
for Patent Examining.

Aug. 28, 1972.

### Patent Suits

Notices under 35 U.S.C. 280; Patent Act of 1952

2,588,744, I. C. McKechnie, AUTOMATIC ELECTRIC SPACE-CHARGE MATERIAL REMOVAL METHOD AND APPARATUS; 2,628,330, E. M. Williams, CONDENSER-CHARGING SYSTEM FOR SPARK-CUTTING DEVICES; 2,650,979, E. E. Teubner, METHOD AND APPARATUS FOR ELECTRICALLY DISINTEGRATING METALLIC MATERIAL; 2,654,256, I. C. McKechnie, DIAPHRAGM SPRING RECIPROCATING TOOL; 2,756,316, E. E. Teubner, APPARATUS FOR ELECTRICALLY ERODING MATERIALS; 2,769,078, V. E. Matulaitis, ARCH MACHINING; 2,773,168, E. M. Williams, HIGH-SPEED SPARK MACHINING APPARATUS; 2,783,411, V. E. Matulaitis, SERVO FEED FOR MULTIPLE ELECTRODES; 2,804,575, same, ARC MACHINING APPARATUS WITH PERIODIC POWER CONTROL; Re. 25,542, R. S. Webb, POWER FEED SYSTEM; 2,841,686, E. M. Williams, AUTOMATIC CONTROL SYSTEM FOR THE ELECTRODE OF A SPARK-CUTTING APPARATUS; 3,243,567, W. Lobur, ELECTRICAL DISCHARGE MACHINING APPARATUS; 3,257,580, R. S. Webb, FAULT DETECTION AND CUT-OFF CIRCUIT FOR ELECTRICAL DISCHARGE MACHINING APPARATUS, filed Dec. 15, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c2590, *Eloz, Inc. v. Astral Precision Equipment Co.* Consent judgment, defendant has infringed and is liable to plaintiff under the patents in suit, May 2, 1972.

2,628,330. (See 2,588,744.)

2,650,979. (See 2,588,744.)

2,654,256. (See 2,588,744.)

2,756,316. (See 2,588,744.)

2,769,078. (See 2,588,744.)

2,773,168. (See 2,588,744.)

2,783,411. (See 2,588,744.)

2,804,575. (See 2,588,744.)

2,820,188. (See 3,031,158.)

2,841,686. (See 2,588,744.)

2,909,134, J. A. Kniefel, MACHINE FOR LAYING FLEXIBLE PIPE WITH ATTACHED RISERS, filed May 9, 1972, D.C., E.D. Calif. (Sacramento), Doc. S-2451, *Joseph A. Kniefel v. Mitchell Zyletra*.

2,919,027, C. M. Blumenfeld, SWIMMING POOL CLEANING APPARATUS, filed Jan. 3, 1972, D.C., N.D. Calif. (San Francisco), Doc. C-72-3, *Arneson Products, Inc. v. Charles M. Blumenfeld*.

2,993,664. (See 3,031,158.)

3,005,140. (See 3,031,158.)

3,013,568, Gatchell and Peglow, DISHWASHER WITH DISPENSER FOR WATER CONDITIONING LIQUID, filed Mar. 21, 1972, D.C., N.D. Ohio (Cleveland), Doc. C-72-274, *The Tappan Company v. Norris Industries and Waste King Corp.*

3,031,158, W. H. Gille, AIRCRAFT CONTROL APPARATUS, Re. 25,311, R. J. Kutzler, CONTROL APPARATUS FOR AIRCRAFT; 2,820,188, same, ALTITUDE CONTROL FOR AIRCRAFT; 3,081,966, H. T. Avery, ROTATING WING AIRCRAFT; 2,993,664, Alderson, Carpenter, deceased, by Fisher, executor, AUTOMATIC INSTRUMENT LANDING SYSTEMS FOR AIRBORNE CRAFT; 3,005,140, W. H. Kliever, RADIO CONTROLLED AUTOMATIC PILOTS; 3,072,369, R. C. Alderson, ADJUSTABLE APPARATUS FOR ATTITUDE STABILIZATION OF AIRCRAFT, filed July 23, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c1534, *Honeywell, Inc. v. Sperry Rand Corporation, United Airlines, Inc. and Continental Air Lines*. On stipulation, ordered, second amended complaint shall be and is hereby dismissed with prejudice, and that defendants' counterclaim shall be and is hereby dismissed with prejudice, Mar. 29, 1972.

3,056,437, F. W. Mittins, SABER SAW, filed May 16, 1972, D.C. Mass. (Boston), Doc. C.A. 72-1605-C, *Westlund Industries, Inc. v. Rockwell Mfg. Co.*

3,072,369. (See 3,031,158.)

3,081,966. (See 3,031,158.)

3,083,965, H. A. Jewett, DIVING BOARD ASSEMBLY, filed May 24, 1972, D.C., S.D. Tex. (Houston), Doc. CA 72-H-691, *Harold A. Jewett v. Aquaslide 'n' Dive Corp. and Darbo, Inc.*

3,096,681, J. L. Burnside, KALEIDOSCOPIC VIEWER, filed Dec. 12, 1967, D.C., S.D.N.Y., Doc. 67-C-4861, *John L. Burnside III and Edwitt S. Burnside v. Miya Company, Inc.* Order dismissing action for lack of prosecution, May 5, 1970.

3,129,927, A. D. Mast, MIXING APPARATUS FOR FLUENT MATERIAL, filed May 15, 1972, D.C., E.D. Pa. (Philadelphia), Doc. C.A. 72-938, *Feedmobile, Inc. v. A.W. Stauffer & Sons, Inc.*

3,152,376, Boser and De Vito, SNAP FASTENER, filed May 17, 1972, D.C.N.J. (Newark), Doc. C-863-72, *Plasti-Hook, Inc. v. Scovill Manufacturing Co.*

3,169,247, Davis and Fernald, OPHTHALMIC ASPHERIC LENS SERIES, filed May 12, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72-1061-DWW, *American Optical Corp. v. Armortite Lens Co., Inc.*

3,172,289, S. N. Blackman, GLASS THERMOMETER, filed May 18, 1972, D.C.N.J. (Newark), Doc. C-864-72, *Seymour N. Blackman v. Shulton, Inc.*

3,200,295, Owens and Severson, MANUALLY OPERABLE PIEZOELECTRIC LIGHTERS, filed May 17, 1972, D.C., N.D. Ohio (Cleveland), Doc. C72-505, *Vernitron Corporation v. Braun A.G.*

3,218,048, Smith and Hartwell, PACKING FOR FRACTIONATING COLUMN AND THE LIKE, filed May 17, 1972, D.C.N.J. (Newark), Doc. C-862-72, *Metex Corporation v. Chem-Pro Equipment Corporation*.

3,243,567. (See 2,588,744.)

SEPTEMBER 26, 1972

U. S. PATENT OFFICE

1173

3,257,580. (See 2,588,744.)

3,282,483, K. L. Babcock, BACK PACK, filed Apr. 27, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72-929-CC, *Kenneth L. Babcock v. Newman Importing Co., Inc.*

3,312,124, Meler and Meler, STEERING-WHEEL ASSEMBLY FOR AUTOMOTIVE VEHICLES, filed May 23, 1972, D.C. Minn. (St. Paul), Doc. 3-72-145, *S. S. Kresge Company v. Superior Industries, Inc.*

3,313,443, Dial, Habegger and Kays, FLOATING COVER FOR A LIQUID STORAGE RESERVOIR, filed Apr. 17, 1972, D.C. Ore. (Portland), Doc. 72-290, *Globe Linings, Inc. and Howard D. Webb v. City of Corvallis*.

3,315,454, W. L. Carranza, SYNTHETIC BALING AND TYING TWINES, filed July 27, 1970, D.C., S.D. Fla. (Miami), Doc. 70-1107-C-JLK, *Uzmal Corporation Limited v. Wall Industries, Inc. et al.* Consent order, patent valid and infringed by defendants. Defendants permanently enjoined; this case is hereby dismissed with jurisdiction retained of this action for enforcement of this decree and for final determination of the petition of W. L. Carranza, Mar. 17, 1972.

3,352,217, Peters and Bowling, MEANS FOR FORMING LINES OF WEAKNESS IN CEMENTITIOUS FLOORS, PAVEMENTS AND THE LIKE, filed Apr. 14, 1970, D.C., S.D. Tex. (Houston), Doc. 70-H-358, *Harlan J. Peters and Lin W. Bowling v. Marshall Compton, doing business as H. Compton Co.* Final judgment, patent valid, defendants have infringed and are enjoined, Mar. 16, 1972.

3,362,829, Landfried and Moneymaker, COATED DRY GLUTEN PRODUCTS AND PROCESS FOR PREPARING SAME, filed May 9, 1972, D.C. Conn. (New Haven), Doc. 15022, *Top-Scor Products, Inc. v. Maurice R. Haney, doing business as M. R. Haney Company*.

3,384,004, Perlman and Perlman, COFFEEMAKER, filed May 15, 1972, D.C., S.D. Ill. (Springfield), Doc. S-72-90, *Hill-Shaw Company v. Bunn-O-Matic Corporation*.

3,388,574, V. Ignoffo, ATTACHMENT FOR A TUBING BENDER FOR CONTROLLING THE DEPTH OF BEND OF TUBING, filed Mar. 20, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c710, *Vincent E. Ignoffo v. Midas International Corporation*.

3,392,992, Baker and Baker, TRAILER CONSTRUCTION, filed May 3, 1972, D.C., N.D. Ind. (South Bend), Doc. 72SS7, *Classic Manufacturing, Inc. v. International Crafts, Inc., and Travel Equipment Corporation*.

3,409,916, Billig and Schleeweiss, OVAL SWIMMING POOL, filed Mar. 29, 1972, D.C.N.J. (Newark), Doc. 571-72, *Bilnor Corporation v. Home & Room Leisure Products, Inc.*

3,538,848, W. P. Barbour, LATCH MEANS FOR A TRAVELING ROLLER PLATEN ON A SWINGABLE CARRIAGE, filed Sept. 21, 1971, D.C., M.D. Fla. (Tampa), Doc. 71-426-C, *Control Data Corporation v. Florida Credit Service Center, Inc., and Rapid Data Systems and Equipment Limited*.

3,572,596, M. J. Dykmans, CABLE STRESSING AND WINDING APPARATUS, filed Apr. 19, 1972, D.C., S.D. Calif. (San Diego), Doc. 72-128-T, *Maximilian J. Dykmans and BBR Prestressed Tanks, Inc. v. Gulf Oil Corporation*.

3,584,402, J. J. Silverman, SANDAL FOR FOOT CAST, filed May 2, 1972, D.C., E.D. Mich. (Detroit), Doc. 38223, *Ortho Industries, Inc. v. S. H. Camp & Company*.

3,612,273, W. R. Pritchett, SEPARATOR, filed May 17, 1972, D.C., S.D. Fla. (Miami), Doc. 72-799-C-JLK, *American Conveyor Corporation v. Conveyor Line Products, Inc.*

3,618,895, J. J. Van Gompel, SPREADER FOR DAMAGED CORES; 3,625,046, same, APPARATUS AND METHOD FOR STRAIGHTENING DEFORMED ROLLS OF SHEET STOCK, filed Mar. 27, 1972, D.C., N.D. W. Va. (Elkins), Doc. 72-3-M, *Brammali, Inc. v. R.C.S. & S., Inc.*

3,625,046. (See 3,618,895.)

3,627,177, P. Marcus, DISPENSER COMBINED WITH HANGING CLIP FOR INVERTED SUPPORT, filed May 17, 1972, D.C., S.D.N.Y., Doc. 72-C-2100, *Knomark Inc. v. Neptune Chemical Corporation of America*.

3,636,903, Anderson and Munn, RECTANGULAR-DUCT FORMING MACHINE, filed May 16, 1972, D.C., N.D. Ind. (South Bend), Doc. 72S102, *Manufacturing Systems, Inc. v. ADM Industries, Inc. et al.*

3,649,039, Gertsch and Gertsch, LONGITUDINALLY ADJUSTABLE HEEL LOCKING DEVICE ON A SKI-BINDING, filed Mar. 22, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c735, *Gertsch AG v. Safety Systems, Inc.*

3,657,068, M. Ivanowicz, PAPERMAKING FELT, filed May 18, 1972, D.C., S.D. Ohio (Dayton), Doc. 4242, *The Orr Felt Company v. Huyck Corporation*.

Re. 25,311. (See 3,031,158.)

Re. 25,542. (See 2,588,744.)



## Certificates of Correction for the Week of Sept. 26, 1972

P.P. 3,111	3,629,848	3,648,119	3,660,097
Re. 27,168	3,629,927	3,648,306	3,660,263
Re. 27,177	3,630,191	3,648,843	3,660,316
Re. 27,277	3,630,200	3,648,950	3,660,339
3,385,787	3,630,243	3,649,051	3,660,475
3,447,132	3,630,443	3,649,249	3,660,698
3,507,706	3,630,791	3,649,310	3,660,806
3,517,816	3,630,812	3,649,358	3,660,860
3,518,042	3,631,109	3,649,441	3,660,929
3,519,617	3,631,475	3,649,617	3,661,473
3,529,741	3,635,245	3,649,627	3,661,623
3,547,733	3,635,296	3,649,748	3,661,630
3,548,193	3,635,386	3,651,224	3,661,808
3,558,269	3,635,424	3,651,414	3,662,033
3,565,039	3,635,552	3,651,982	3,662,479
3,575,234	3,636,152	3,652,208	3,663,271
3,576,017	3,636,206	3,652,295	3,663,902
3,576,880	3,636,209	3,652,546	3,665,254
3,584,966	3,636,221	3,653,102	3,665,354
3,585,004	3,636,659	3,653,289	3,665,449
3,588,882	3,636,754	3,653,671	3,665,501
3,591,384	3,636,783	3,653,848	3,666,170
3,591,814	3,637,813	3,653,965	3,666,662
3,593,375	3,637,913	3,653,992	3,666,761
3,596,920	3,637,922	3,654,266	3,667,885
3,602,706	3,638,125	3,654,734	3,667,924
3,608,463	3,638,752	3,655,143	3,668,194
3,610,935	3,639,269	3,655,269	3,668,353
3,612,381	3,639,288	3,655,644	3,668,492
3,616,787	3,639,491	3,655,737	3,668,521
3,617,509	3,639,915	3,656,754	3,669,331
3,619,303	3,641,005	3,657,266	3,669,411
3,620,757	3,641,757	3,657,303	3,669,647
3,621,031	3,642,549	3,657,432	3,669,713
3,622,316	3,642,572	3,657,710	3,669,774
3,624,578	3,642,747	3,657,810	3,669,800
3,626,159	3,642,785	3,658,096	3,670,079
3,626,705	3,644,096	3,658,402	3,670,480
3,627,424	3,644,576	3,658,879	3,671,308
3,627,858	3,644,656	3,659,195	3,672,020
3,627,877	3,645,106	3,659,630	3,693,546
3,628,970	3,646,854	3,659,649	3,693,550
3,629,408	3,647,971	3,659,768	3,693,551

## Patent Numbers For Which No Patents Exist

Issue of September 26, 1972

3,693,196	3,693,578	3,693,974	3,694,457
3,693,201	3,693,586	3,693,980	3,694,459
3,693,203	3,693,594	3,693,990	3,694,468
3,693,205	3,693,620	3,693,991	3,694,469
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3,693,208	3,693,662	3,694,005	3,694,487
3,693,211	3,693,677	3,694,026	3,694,488
3,693,214	3,693,681	3,694,031	3,694,492
3,693,215	3,693,686	3,694,034	3,694,519
3,693,217	3,693,709	3,694,035	3,694,520
3,693,234	3,693,712	3,694,036	3,694,532
3,693,259	3,693,716	3,694,063	3,694,542
3,693,263	3,693,751	3,694,066	3,694,544
3,693,284	3,693,753	3,694,075	3,694,550
3,693,284	3,693,760	3,694,077	3,694,554
3,693,294	3,693,766	3,694,098	3,694,560
3,693,299	3,693,769	3,694,125	3,694,568
3,693,300	3,693,786	3,694,130	3,694,569
3,693,366	3,693,790	3,694,139	3,694,572
3,693,372	3,693,799	3,694,155	3,694,573
3,693,404	3,693,802	3,694,159	3,694,575
3,693,429	3,693,814	3,694,213	3,694,576
3,693,434	3,693,816	3,694,223	3,694,577
3,693,442	3,693,819	3,694,225	3,694,612
3,693,450	3,693,821	3,694,248	3,694,638
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3,693,454	3,693,834	3,694,302	3,694,641
3,693,456	3,693,845	3,694,319	3,694,682
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3,693,468	3,693,876	3,694,339	3,694,688
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3,693,498	3,693,902	3,694,400	3,694,795
3,693,505	3,693,912	3,694,414	3,694,796
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3,693,539	3,693,957	3,694,429	3,694,802
3,693,546	3,693,958	3,694,438	3,694,809
3,693,550	3,693,962	3,694,445	
3,693,551	3,693,968	3,694,453	

## PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner  
WILLIAM FELDMAN, Deputy Assistant Commissioner

## CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 5, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director.....	7-19-71
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director.....	6-01-71
Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director.....	8-09-71
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director.....	7-06-71
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant).....	4-05-71
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director.....	1-12-72
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director.....	6-16-71
Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director.....	9-14-71
Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant).....	7-15-71
Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director.....	10-07-71
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGNS, GROUP 260—R. L. CAMPBELL, Director.....	3-01-71
Industrial Arts; Household, Personal and Fine Arts.	
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director.....	7-26-71
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appendances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director.....	6-24-71
Manufacturing Processes; Assembling; Combined Machines; Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding; Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director.....	8-09-71
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletary; Printing; Typewriters; Stationery; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director.....	9-02-71
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director.....	7-26-71
Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	

Expiration of patents: The patents within the range of numbers indicated below expire during October 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,719,294 to 2,721,998, inclusive  
Plant Patents..... Numbers 1,423 to 1,426, inclusive



# REISSUES

SEPTEMBER 26, 1972

Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

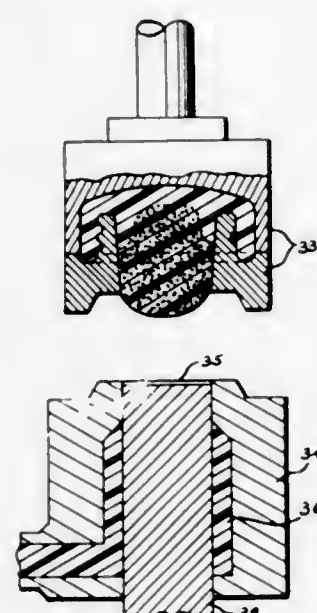
27,484

## METHOD OF FORMING PARTLY FOAMED PLASTIC ARTICLES

Thomas R. Santelli, Sylvania, Ohio, assignor to Owens-Illinois, Inc.

Original No. 3,144,493, dated Aug. 11, 1964, Ser. No. 847,144, Oct. 19, 1959. Application for reissue June 30, 1966, Ser. No. 569,764

Int. Cl. B29c 17/07; B29d 27/00  
U.S. Cl. 264—45 16 Claims



8. In a process for the production of blow molded hollow plastic articles wherein a parison of said plastic is formed and then said parison is expanded within a mold to conform to the contour of said mold by a fluid medium, the improvement comprising incorporating a foaming agent into said plastic prior to formation of said parison so that said parison is foamed before being molded, thereby forming a foamed plastic article as a product of the process.

27,485

## DATA PROCESSING SYSTEM EXECUTION RETRY CONTROL

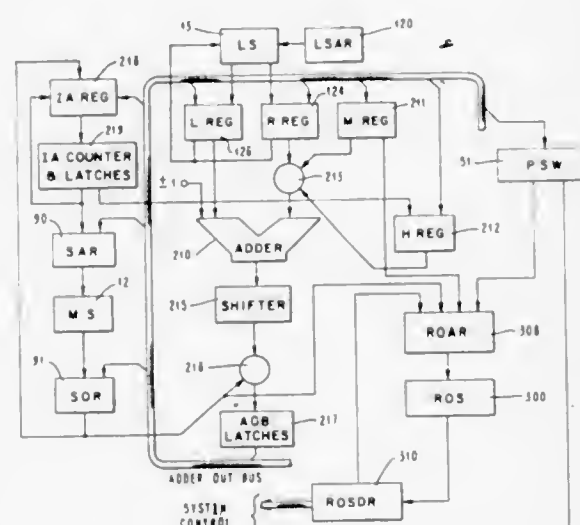
Bruce L. McGilvray, Pleasant Valley, Donald J. Lang, Wappingers Falls, William E. Bochner, Poughkeepsie, and Mark W. Bee, Hopewell Junction, N.Y., by International Business Machines Corporation, assignee, Armonk, N.Y.

Original No. 3,533,065, dated Oct. 6, 1970, Ser. No. 697,738, Jan. 15, 1968. Application for reissue Mar. 26, 1971, Ser. No. 128,432

Int. Cl. G06f 11/00  
U.S. Cl. 340—172.5 45 Claims

An electronic data processing machine including hardware controls for providing re-execution of instructions upon detection of a machine malfunction. The illustrative embodiment shows an electronic data processing machine which contains a read only control storage which controls execution of instructions contained in a stored

chine which contains a read only control storage which controls execution of instructions contained in a stored



program. Upon detection of an error, hardware controls will restore the machine to a previous correct state and attempt re-execution from said previous correct state.

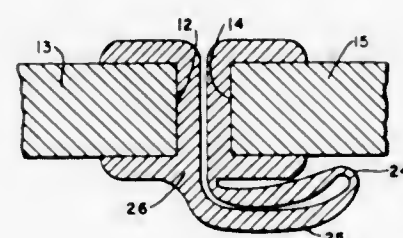
27,486

## EXPANSIBLE CARRYING CASE WITH WEB HAVING TWO STABLE STATES

Herbert Gordon Dyke, Little Silver, N.J. (206 E. 35th St., New York, N.Y. 10016)

Original No. 3,480,118, dated Nov. 25, 1969, Ser. No. 663,038, Aug. 24, 1967. Application for reissue Nov. 23, 1971, Ser. No. 201,534

Int. Cl. A45c 7/100  
U.S. Cl. 190—44 18 Claims



Expansible carrying case with a peripheral web about an expansion joint. The web holds the joint contracted or opened up, and in opened state serves as the wall for that portion of the carrying case. The web has two stable states, flat or folded, and can be flipped over from one to the other. If it folds in, it has at least one somewhat stiff strip that tends to push out flat. If it folds out, it has an elastic pull that tends to hold it in flat.

SEPTEMBER 26, 1972

U. S. PATENT OFFICE

1177

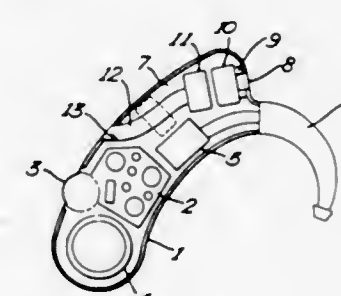
27,487

## DIRECTIONAL HEARING AID

Otto Hassler, Hamburg, Germany, assignor to Wilco-Hargerate Medizinische Apparatebau, G.m.b.H., Hamburg, Germany

Original No. 3,458,668, dated July 29, 1969, Ser. No. 559,505, Dec. 6, 1966. Application for reissue May 17, 1971, Ser. No. 143,768

Int. Cl. H04r 25/02  
U.S. Cl. 179—107 H 11 Claims



A directional hearing aid with two microphones mounted in back to back relationship. An acoustic resilient seal disposed around the aperture between one of the microphones and a forward facing opening in the housing. A flexible conduit is disposed between the other microphone and a rearward facing opening in the hearing aid.

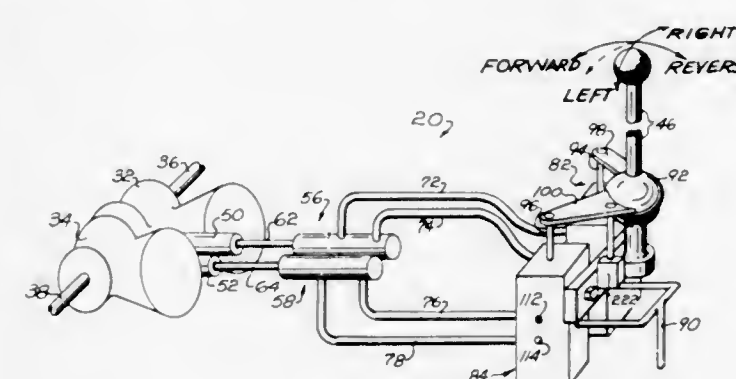
27,488

## HYDROSTATIC TRANSMISSION CONTROL SYSTEM

Robert B. Lauck, Southfield, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Original No. 3,540,220, dated Nov. 17, 1970, Ser. No. 716,204, Mar. 26, 1968. Application for reissue Dec. 20, 1971, Ser. No. 210,255

Int. Cl. F02b 41/00; F15b 11/16; B26d 11/00  
U.S. Cl. 60—19 43 Claims



Disclosed herein is a hydraulic control system for controlling the operation of a pair of hydrostatic transmissions. The hydraulic control system includes two control cylinder assemblies and two valve assemblies, one of each being associated with one of the hydrostatic transmissions. In one embodiment, a single manually operable actuator member is provided for operating the valve assemblies which in turn control the cylinder assemblies to regulate the direction of operation and the input to output speed ratio or drive ratio of the hydrostatic transmissions. An antistall means is associated with each of the hydrostatic transmissions for reducing the output speed of the associated hydrostatic transmission when a sensor assembly detects an impending stalling of an engine or source of power connected to the hydrostatic transmission.

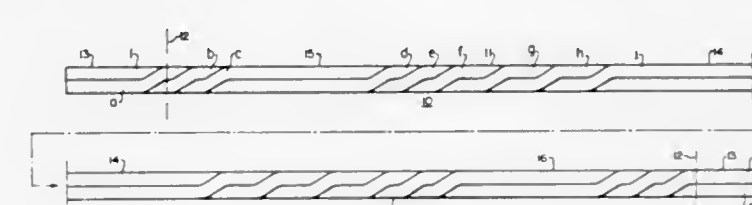
27,489

## TRANPOSED CONDUCTOR FOR DYNAMO-ELECTRIC MACHINES

William C. Brenner, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original No. 3,614,497, dated Oct. 19, 1971, Ser. No. 22,474, Mar. 25, 1970. Application for reissue Jan. 11, 1972, Ser. No. 216,971

Int. Cl. H02k 3/14  
U.S. Cl. 310—213 14 Claims



This invention is a transposed stranded conductor bar or half coil for dynamoelectric machines that is effective in canceling out induced voltages, including the voltages induced in the end portions thereby minimizing eddy current losses and circulating currents in the conductor.

27,490

## ELECTROSTATIC PRINTING

Harold G. Greig, Princeton, N.J., assignor to RCA Corporation

No Drawing. Original No. 3,053,688, dated Sept. 11, 1962, Ser. No. 805,740, Apr. 13, 1959. Application for reissue June 18, 1963, Ser. No. 289,463

Int. Cl. B44d 1/02; G03g 9/00  
U.S. Cl. 117—37 LE 18 Claims

An improved liquid developer for a xerographic image consisting essentially of finely divided pigment particles, an organic dielectric material capable of forming a resinous coating, coating said pigment particles and insuring that the particles have a charge of substantially uniform polarity and magnitude, and a carrier liquid, for example, dimethyl polysiloxane, for said pigment particles in which said material is insoluble. The improved liquid developer is used in developing an electrostatic image on an insulating surface by applying said developer to said surface, depositing the developer particles on said surface by electrostatic attraction thereto, and heating said surface to fuse said particles thereto and remove the carrier liquid.

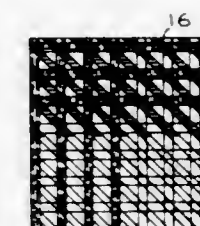
27,491

## PHOTOGRAPHY USING SPATIAL FILTERING

Albert Macovski, Palo Alto, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Original No. 3,504,606, dated Apr. 7, 1970, Ser. No. 651,077, Apr. 28, 1967, which is a continuation-in-part of Ser. No. 466,547, June 24, 1965. Application for reissue Oct. 15, 1970, Ser. No. 81,192

Int. Cl. G03b 29/00, 33/00  
U.S. Cl. 95—12.2 13 Claims



There is provided by this invention a spatial filter which has the property that when it is placed adjacent to a sensitized material, such as panchromatic film of the types used



in black and white photography or thermoplastic material, that the different colors of light passing through that filter onto the sensitized material are encoded. Thereafter, when the developed transparency, which is made from the sensitized material has light projected there-through, this light may be focused at a focal plane at which there is presented three diffracted images respectively disposed about a central or real image. By using a mask with the proper colored gelatins therein, the three diffracted images only may be permitted to pass there-through and then superimposed to form a colored image of the original scene or object which was photographed on the sensitized surface in combination with the spatial filter.

27,492

# TELEVISION DEFLECTION SYSTEM INCLUDING AFC CIRCUIT WITH REGENERATIVE PHASE DETECTOR

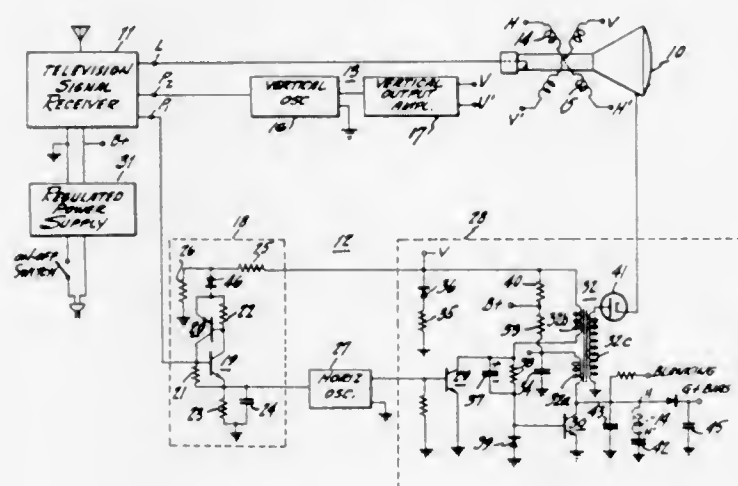
Carl Franklin Wheatley, Jr., Somerset, N.J., assignor to RCA Corporation

Original No. 3,441,673, dated Apr. 29, 1969, Ser. No. 583,609, Oct. 3, 1966. Application for reissue Dec. 8, 1970, Ser. No. 96,298

Int. Cl. H04n 3/16, 5/04

U.S. Cl. 178—69.5 TV

14 Claims



A horizontal deflection circuit for a television receiver includes an AFC circuit utilizing two transistors of opposite conductivity type coupled in a regenerative configuration. A reference signal and a sync signal are supplied to the transistors to produce the requisite oscillator control signal for AFC purposes. A deflection waveform generating circuit is also disclosed. The latter circuit utilizes an output transistor coupled to a deflection winding and a diode coupled in series with the base-collector circuit of the transistor to provide damping for reverse deflection coil current.

27,493

# METHOD AND APPARATUS FOR CENTRIFUGAL SEPARATION

William Laut, 12647 Tallow Hill Lane, St. Louis, Mo. 63141

Original No. 3,464,554, dated Sept. 2, 1969, Ser. No. 720,530, Apr. 11, 1968. Application for reissue Jan. 8, 1971, Ser. No. 105,106

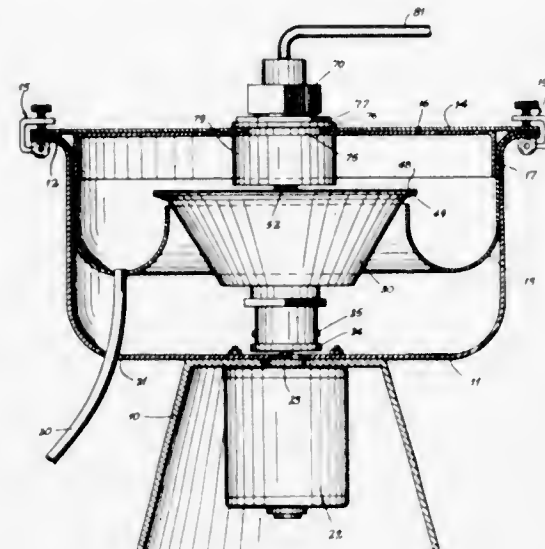
Int. Cl. B01d 33/02; B04b 3/00

U.S. Cl. 210—78

11 Claims

A centrifugal filter bowl or receptacle is rotated in a housing to expel fluid upwardly and out a peripheral filter passage formed between compressed finished peripheral surfaces of the receptacle and its top. A center post in

the receptacle is tubular, opens through the top, and connects through a union mounted in the housing, with a source of fluid. The interior of the receptacle is sealed except for the filter passage. When the receptacle rotates,



it centrifugally ejects fluid through the peripheral fluid passage, drawing new fluid by suction through the inlet to the bottom of the receptacle whence it flows with a scrubbing action up the wall of the receptacle to the filter passage.

27,494

# SEPARATION OF AROMATIC HYDROCARBONS FROM NONAROMATIC HYDROCARBONS

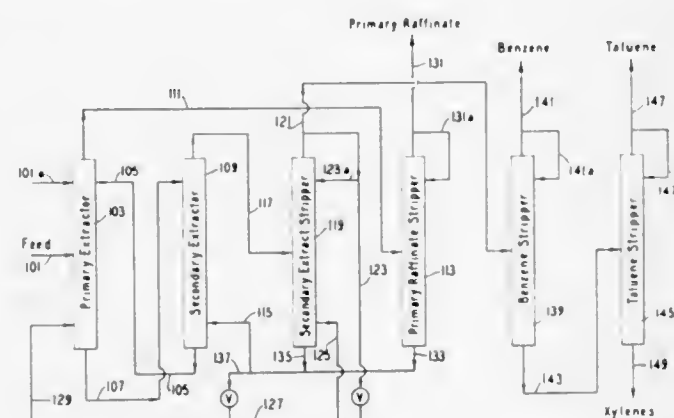
John R. Anderson, Mount Kisco, and George S. Somekh, New Rochelle, N.Y., by Union Carbide Corp., assignee

Original No. 3,492,365, dated Jan. 27, 1970, Ser. No. 553,336, May 27, 1966. Application for reissue Feb. 26, 1971, Ser. No. 119,063

Int. Cl. C07c 7/10, 7/02, 7/00

U.S. Cl. 260—674 SE

10 Claims



Aromatic hydrocarbons are separated from a mixture containing the same together with nonaromatic hydrocarbons. The mixture is first contacted with a solvent which selectively dissolves the aromatic fraction and the extract from this step which contains the aromatic hydrocarbon dissolved in the solvent is subjected to a secondary extraction step using a solvent which has a higher boiling point than and is non-azeotropic with the original feed mixture. Thereafter the aromatic hydrocarbons are recovered by a series of distillation steps.

27,495

# ROCKABLE CLOSURE DEVICE FOR MATERIAL CUTTING MACHINE

Herman J. Baldwin, Cincinnati, Ohio, and George W. Sederberg, Alexandria, Ky., assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Original No. 3,529,501, dated Sept. 22, 1970, Ser. No. 789,879, Jan. 8, 1969. Application for reissue Mar. 22, 1971, Ser. No. 126,570

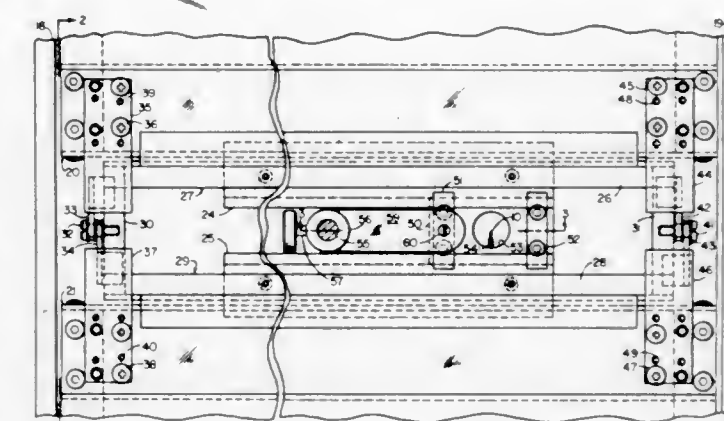
Int. Cl. B26d 7/02

U.S. Cl. 83—145

8 Claims

Closure means is disposed between a pair of rockably supported hold down housings, which exert a predetermined force on material being cut by a cutting blade of a material cutting machine. The closure means includes first and second members spaced from each other with the members being supported by the rockably supported housings to allow the members to move with the rockably supported [housing] housings when the material has a

hump therein. The closure means has a third member slidably supported between the first two members and



movable transversely with the cutting blade of the material cutting machine.



# PATENTS

GRANTED SEPTEMBER 26, 1972

## GENERAL AND MECHANICAL

3,693,189

### PROTECTIVE GARMENT

Trexie I. Mundt, Southfield, Mich., assignor to Sterling L. O'Dell, East Detroit, Mich., a part interest  
Filed Feb. 8, 1971, Ser. No. 113,177  
Int. Cl. A41d 27/12

U.S. Cl. 2-47



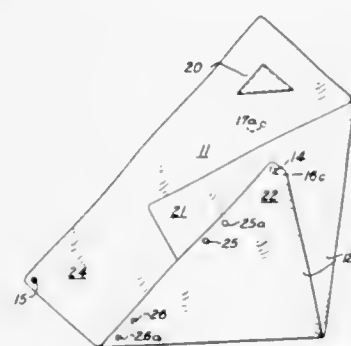
A protective garment comprising a seamless, transparent, plastic body of tubular design having gathered elastic loops at the opposite ends thereof. In one embodiment, the loops are of such size as to be worn about the waist and the length of the body is such as to extend along both the inside and the outside of a coat or other piece of feminine apparel to be protected. In another embodiment, the body is of such length as to be worn between the upper thigh and the ankle and the opposite ends thereof are provided with elastic loops of differing sizes, one end to be worn about the upper thigh and the other end to be worn about the ankle.

3,693,190

### INFANT WRAPPING BLANKET

Diane L. Hickling, Harrisville Road, Mt. Airy, Md.  
Filed Oct. 21, 1970, Ser. No. 82,569  
Int. Cl. A41b 13/06

U.S. Cl. 2-69.5



A baby's wrap having a rectangle configuration and being adapted to receive the infant's head on an identified corner with the body extending diagonally across the wrap; there being fastening means on the face of the wrap located at the corner diagonally opposite the corner for receiving the infant's head and at a further corner across from the location for receiving the infant's head. Two groups of further fastening

1 Claim

means are located on the back of the wrap between the position for receiving the infant's head and the adjacent lower corner. This lower corner is pulled over the infant and the fastening means on the opposite corner is secured to one set of the fastening means on the back of the wrap. Next the further lower corner is folded over and the fastening means thereon secured to fastening means in the other set on the back of the wrap. Fastening means on the back in adjacent sets provides for adjusting the size and shape of the space formed to receive the infant. Further securing means may be provided on the longer edge of the wrap opposite the position for receiving the infant's head; one on the wrap's face and the other on its back. Such fastening means together with others may also be utilized as a shawl for the infant. In one embodiment, the wrap is elongated and cooperating fastening means are provided on the longer edges thereof so that when the wrap is folded across its midline, the fastening means may be secured to provide a pocket for diapers and the like while the outside of the structure thus formed may function as a wrap as described above, or as a mat or carrier for the infant.

3,693,191

### SHIRT COLLAR AND METHOD OF MAKING SAME

Reg H. Dowsett, Kitchener, Ontario, Canada, assignor to John Forsyth Co., Ltd., Kitchener, Ontario, Canada  
Filed June 3, 1971, Ser. No. 149,654  
Int. Cl. A41b 3/00

U.S. Cl. 2-131

6 Claims



A shirt collar or like garment item having a seamed outer edge is made by superposing inner and outer plies on one side of an interlining, superposing a panel of one-sided fusing fabric on the other side of the interlining, and stitching the assembly by a single seam conforming to the marginal edge of the interlining. The assembly is then turned by turning the inner ply over the seam, and the collar or like item is pressed.

3,693,192

### SICKBED BARF BAGS

Darlene P. Knotts, 533 E. Maplewood Dr., Littleton, Colo.  
Filed Sept. 25, 1970, Ser. No. 75,441  
Int. Cl. A61g 7/06; A61j 19/00

U.S. Cl. 4-267

1 Claim

A single elongated sheet of waterproof flexible material is horizontally and medially folded to form both an open-topped lower container and an upper lid for the container. The container is preformed by folding the two sides of the lower portion of the sheet inwardly and adhesively securing them to each other and to the bottom of the sheet. The inwardly folded sides have overlapping accordian-like folds to permit expansion of the open top of the container. The accordian-like folds extend upwardly along the opposite sides of the lid to form a

SEPTEMBER 26, 1972

GENERAL AND MECHANICAL

1181

trough for directing material into the open top of the container. Suspension means are provided for suspending the



open container by its lid and for closing the open top when desired.

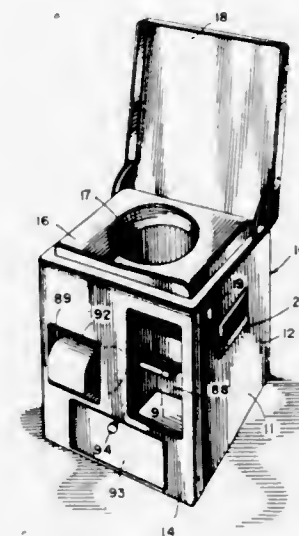
3,693,193

### PORTABLE SANITARY TOILET

Randall L. May, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.  
Filed Nov. 23, 1970, Ser. No. 92,107  
Int. Cl. A47k 11/02

U.S. Cl. 4-142

12 Claims



A portable sanitary toilet which utilizes an elongated flexible plastic tube to collect waste material is provided with an operating mechanism for advancing and sealing the tube after each use. The operating mechanism includes a pair of rotatably mounted pincher arms which are resiliently biased toward each other to seal the tube therebetween until the tube is to be advanced. A pair of roller-equipped axles are rotatably mounted below the sealing portions of the pincher arms, and the axles are resiliently biased toward each other to form a tube-advancing nip between the engaging rollers. A foot crank is secured to one of the pincher arms to impart rotation to that pincher arm, and the other pincher arm is caused to rotate by a crank follower arm which engages the crank. A gear and ratchet connection between the crank and one of the axles causes the rollers to rotate when the pincher arms are separated to advance the tube and the collected waste material. Upon release of the foot crank, the pincher arms return to seal the tube.

3,693,194

### THERAPEUTIC POOL

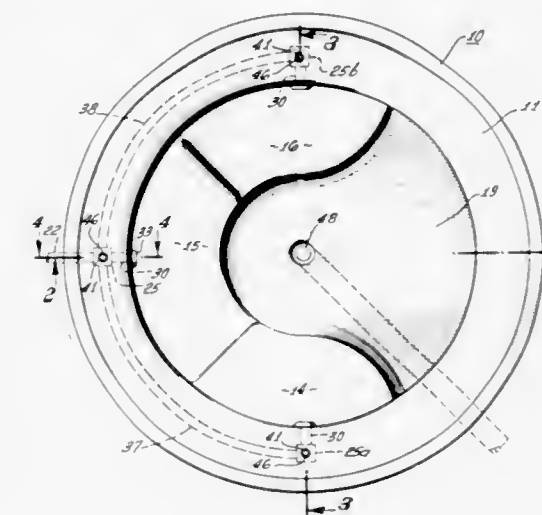
Ted Schindler, 6510 Mount Rainier Drive, Bakersfield, Calif., and Henry Dumler, 1019 S. "H" St., Bakersfield, Calif.  
Filed Oct. 23, 1970, Ser. No. 83,297  
Int. Cl. E04h 3/16, 3/18

U.S. Cl. 4-172.17

12 Claims

A therapeutic pool comprised of a one-piece fiberglass molding in the shape of a tub-like structure. Adjacent arcuate

portions of the side walls of the tub-like structure are curved horizontally inwardly at different levels to provide seats at different heights within the structure. A wide ledge which extends circumferentially about the circular upper end of the tub-like structure is provided with a filler of resilient material on the under surface thereof. The tub-like structure is capable



of being readily installed within an excavation with its ledge extending over the ground level edge surface of the excavation and seated thereagainst by the filler of resilient material. Agitation of water in the pool is accomplished either by drawing air into the inflowing stream as it is supplied in the pool or by actually forcing air under pressure into the stream.

3,693,195

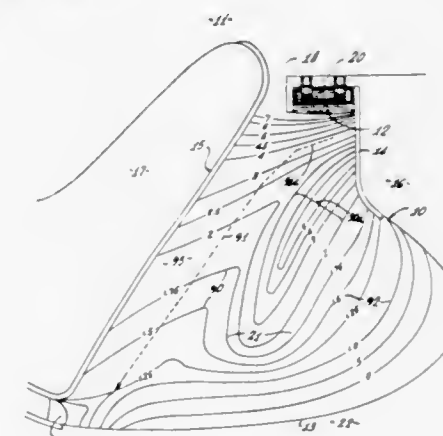
### APPARATUS FOR SURF GENERATION

George E. Richard, 6507 Seaside Walk, Long Beach, Calif., and Eugene D. Richard, 11570 Victory Blvd., Hollywood, Calif.

Filed July 20, 1970, Ser. No. 56,314  
Int. Cl. E04h 3/16, 3/18

U.S. Cl. 4-172.16

15 Claims



A tapered enclosure for a body of water has a wave generator positioned in a relatively narrow and deeper end. In one form, the wave generator is a buoyant plunger mounted for vertical reciprocation within a chamber having a shorewardly facing opening. Through a cyclic control system, the plunger is driven in phase with the forces of gravity and buoyancy acting thereon, starting from a rest position through strokes of increasing amplitude until a desired steady state is attained to sequentially produce waves of a desired energy. Provision is made for varying the mass of the plunger and varying the input from a prime mover as a means of adjusting wave energy and frequency.

3,693,196

Patent Not Issued For This Number



3,693,197

**BATH DRAIN LIFT WIRE CONNECTION**

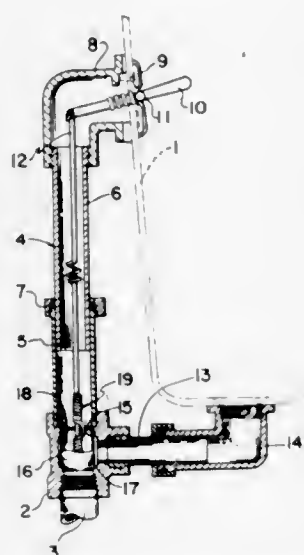
Gerald E. Christiansen, Flora, Ind., assignor to Stephen A. Young, Monticello, Ind.

Filed Oct. 30, 1970, Ser. No. 85,549

Int. Cl. E03c 1/232

U.S. Cl. 4—203

6 Claims



The disclosure herein relates to bath tub drains and particularly to that class known as trip lever bath tub drains, wherein a single drain may be supplied for tubs of various sizes in which the overflow opening is at varying heights from one tub to the other, and it is desired to mount the bath tub drain thereon without preliminary setting of the stopper means therein, but relying upon adjustment of the connection of the stopper means with the operating means after assembly and upon insertion of the respective parts, it being desired to establish the adjustment and once established, to maintain the same without subsequent attention. The bath tub drain hereof is therefore provided with means to effect the adjustment of the plunger in the trip lever upon manipulation of the control means therefor initially in view of the connection of the lift means with the plunger, the aspect of maintaining the position by reason of the connection of the parts being important.

3,693,198

**CLOSET SEAT**

Gerardus M. Tromp, Pretoriusstraat 22, Hague, Netherlands

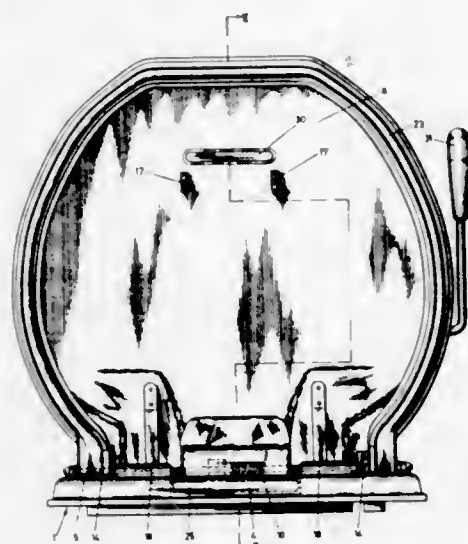
Filed Nov. 12, 1970, Ser. No. 88,549

Claims priority, application Netherlands, Nov. 13, 1969, 6917097

Int. Cl. A47k 13/16

U.S. Cl. 4—246

13 Claims



A closet seat for a lavatory bowl is pivotally mounted on a supporting back plate for movement between approximately vertical and approximately horizontal positions and a supply

of sanitary paper sheets carried by the back plate; when the closet seat is moved to its vertical position, an automatically operated clamping strip attaches one of the paper sheets to the closet seat for movement therewith when the closet seat is moved to its horizontal position.

3,693,199

**DOUBLEDECK-BED ARRANGEMENT**

Hans Fickler, Ursulaweg 20, Winterthur, Switzerland

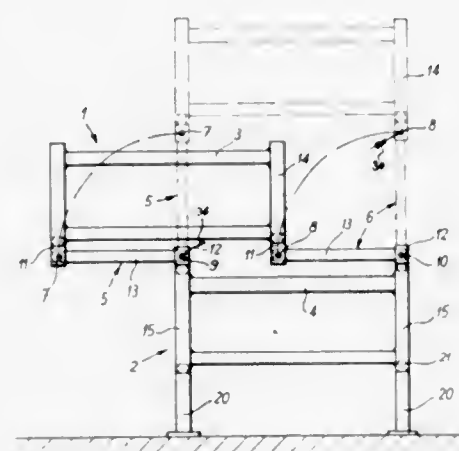
Filed Feb. 5, 1971, Ser. No. 112,958

Claims priority, application Switzerland, Feb. 20, 1970, 2454/70

Int. Cl. A47c 17/40

U.S. Cl. 5—8

9 Claims



There is disclosed a cabin or double deck-bed arrangement of the type incorporating two substantially similar beds providing repose or reclining surfaces and which are arranged above one another in tier-like fashion to afford the double deck-bed arrangement. Between the superimposed beds there are provided four pivotal supports which connect the head and foot ends of the bed frames of both beds with one another. Each two pivotal supports together with the bed frames interconnected thereby form a four-point pivot linkage mechanism by means of which the upper bed can be downwardly pivoted while being retained in substantial parallelism with respect to the lower bed.

3,693,200

**BEDS**

John Neville Stafford, 11 S. Wharf Road, London, W.2, England

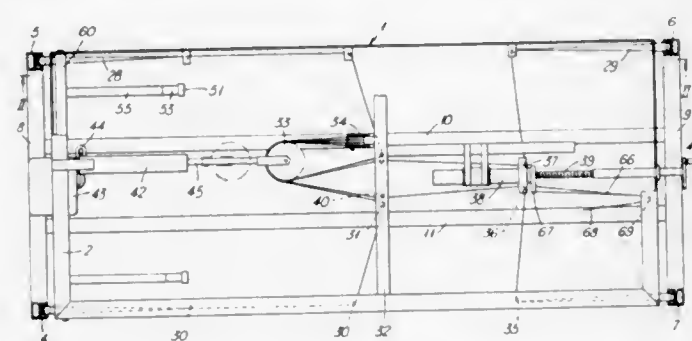
Filed Dec. 28, 1970, Ser. No. 101,852

Claims priority, application Great Britain, Dec. 29, 1969, 63107/69; March 2, 1970, 9912/70

Int. Cl. A61g 7/10

U.S. Cl. 5—68

7 Claims



This invention concerns a bed frame comprising a platform and a supporting structure therefor, the said supporting structure comprising rigid uprights between which the platform is supported or is adapted to be supported, the said platform having carrying members for slideable engagement with the said uprights and the said platform being suspended or adapted to be suspended from the said uprights by at least one

flexible elongated suspension member which passes or is adapted to pass beneath the said platform, a first operating means being provided for shortening or lengthening the or each said suspension member to effect raising and lowering of the said platform which respect to the said supporting structure and second operating means being provided for shortening and lengthening the or those of the suspension members necessary to effect tilting of the platform.

3,693,201

Patent Not Issued For This Number

3,693,202

**SEA RESCUE BALL UNIT**

Takemitsu Ohtani, 1-605, Shimotoyooka-cho, Gumma pref., Takasaki, Japan

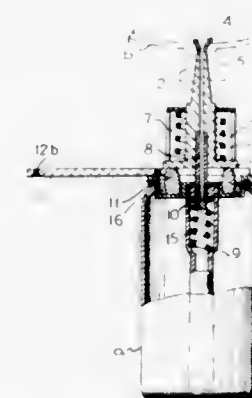
Filed Aug. 21, 1970, Ser. No. 65,974

Claims priority, application Japan, Sept. 1, 1969, 44/82991; Jan. 26, 1970, 45/8117

Int. Cl. B63c 9/18

U.S. Cl. 9—317

4 Claims



A sea rescue ball unit which comprises a plastic ball, a life belt folded into compact form and disposed in said plastic ball and having a gas bomb containing a compressed gas therein with an opening thereof normally being closed with a water-soluble solid, and which is operative in such a manner that, when the ball unit is dropped onto the sea, the water-soluble solid is dissolved in the sea water and the gas in the gas cartridge is injected into the life belt through the opening thereof.

3,693,203

Patent Not Issued For This Number

3,693,204

**CLOSURE APPARATUS**

Walter S. Eggert, Jr., Huntingdon Valley, Pa., assignor to Boothe Airside Services Inc.

Filed Sept. 24, 1970, Ser. No. 75,035

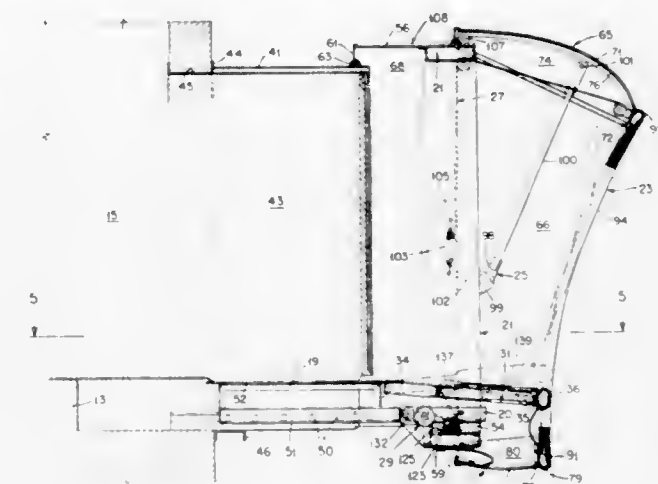
Int. Cl. B65g 1/100

U.S. Cl. 14—71

9 Claims

Closure apparatus for a walkway which closes the small gap remaining after the walkway has been aligned with a doorway opening in a structure such as a parked aircraft. The apparatus includes an inclinable threshold ramp which will follow lateral excursions of the airplane with a constant force contact. The

threshold ramp includes apparatus which cooperates with the parked aircraft door to release the threshold to enable it to go



to its lowest position in case of a sudden lowering of the position of the aircraft.

3,693,205

Patent Not Issued For This Number

3,693,206

**CAR WASHING DEVICE**

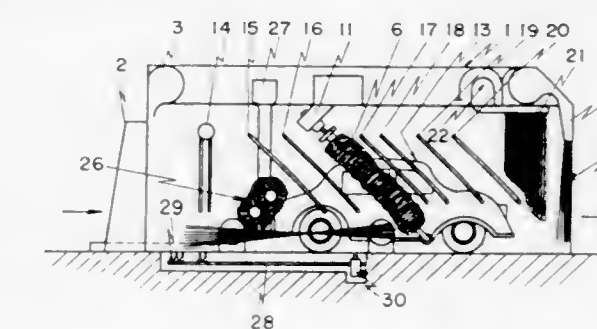
Seizo Tataru, 18, Takidai-cho, Chiba-ken, Funabashi-shi, and Yoshio Ohdachi, 1477, Higashiterao-cho, Tsurumi-ku, Kanagawa-ken, Yokohama-shi, both of Japan

Filed May 13, 1970, Ser. No. 36,728

Int. Cl. B60s 3/06

U.S. Cl. 15—21 D

6 Claims



A car washing device comprises a plurality of soft and small diameter rotary brushes which are secured to resilient flexible shafts, with two or more sets of brushes in pairs, and with two brushes in a pair being spaced apart adequately and rotated at low speeds. The brushes are soft enough to be compressed to every curved surface of an automobile. The latter brush assembly forms part of an entire car washing installation through which automobiles are automatically drawn while suitable devices are arranged along the installation for washing, polishing and drying each automobile as it passes through the installation.

3,693,207

Patent Not Issued For This Number

3,693,208

Patent Not Issued For This Number



### 3,693,209 WINDSHIELD WIPER UNIT

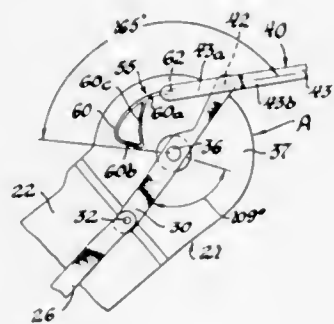
Herbert E. Winkelmann, and Roy C. Bodem, both of Kettering, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed June 18, 1971, Ser. No. 154,287

Int. Cl. B60s 1/32

U.S. Cl. 15—250.21

4 Claims



In a preferred form, this disclosure relates to a window wiping apparatus for wiping a tailgate window of a station wagon vehicle. The window wiping apparatus includes an oscillatable window wiper, a support means, a crank arm pivotally supported intermediate its ends by the support means for movement in opposite directions and which has one end pivotally connected to the wiper intermediate the ends of the latter, a drive mechanism operatively connected adjacent the other end of the crank arm for oscillating the same through a given angular extent, an arcuate stationary cam track on the support means and a cam follower means carried by the wiper adjacent its lower end and which is received in the cam track. The cam track guides the movement of the wiper as the latter is oscillated by the crank arm and causes the wipers to be oscillated through an arcuate extent which is substantially greater than the given angular extent the crank arm is rotated.

### 3,693,210 WRAP-AROUND VALANCE FINIAL

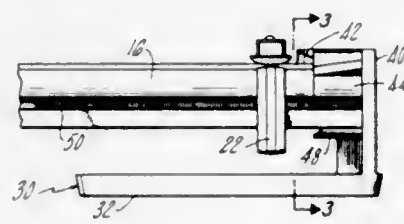
Walter J. MacFarlane, Kensington, Conn., and Lawrence P. Feer, Cazenovia, N.Y., assignors to Stanley Judd, Wallingford, Conn.

Filed Sept. 13, 1971, Ser. No. 179,913

Int. Cl. E05d 13/02

U.S. Cl. 16—87

5 Claims



A generally rectangular telescoping cafe traverse rod has a longitudinal slot on the back wall thereof and end finials decorating its ends. The end finials are wrap-around valance-type finials having a flat front face suited for custom home decoration by the application of fabric or paper, extend toward each other a limited distance in front of the rod, and are spaced forwardly of the rod to permit the passage of the ring glides between them and the rod. A tongue on each end finial is positioned in the slot and other projections provided by the finial engage the front, bottom, and back walls of the rod to non-rotatably support and resiliently clamp the end finials to the rod and reinforce the rod.

3,693,211

Patent Not Issued For This Number

### 3,693,212 CARPET ANCHORING MEANS

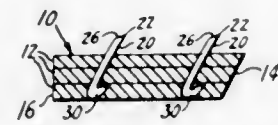
James W. Handy, Rte. 1, Box 799, Benton, Ark.

Filed Dec. 10, 1969, Ser. No. 883,742

Int. Cl. A47g 27/04

U.S. Cl. 16—16

1 Claim



A plurality of pins are driven into a carpet retaining strip having one edge adjacent one wall of the building. The pins are driven at an angle downwardly away from the wall and the pointed lower end of each pin is clinched by a suitable machine into the bottom of the retaining strip. The lower end of each pin will be bent back toward the wall to clinch into the bottom of the strip. The upper end of each pin is pointed to penetrate the carpet to hold it in position and the pull of the carpet against each pin tends to increase the clinching action against the bottom of the strip.

### 3,693,213 MOLDING APPARATUS

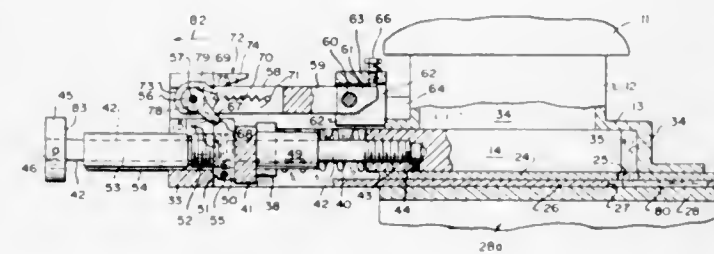
James A. Holly, Richton Park, Ill., assignor to Hollymatic Corporation

Continuation-in-part of Ser. No. 26,814, April 9, 1970, Pat. No. 3,654,665. This application June 15, 1971, Ser. No. 153,376

Int. Cl. A22c 7/00

U.S. Cl. 17—32

18 Claims



A molding apparatus for forming articles and particularly patties from a moldable material and specifically ground meat, fish and the like in which there are a hopper for retaining the material and including an extruding section with passage means from this section, a feeder in the extruding section movable away from and toward a position adjacent the passage means to force material therethrough, a movable mold having a mold opening movable away from and toward the passage means out of and into communication therewith to receive material from the extruding section when the opening is in communication with the passage means and the feeder is in its adjacent position and a catch operatively engaging the feeder comprising a pivoted lever having a latch portion of extensive surface area engaging a retainer also having a retaining portion of similar surface area to retain the feeder adjacent the passage until the mold opening has been moved out of communication with the passage.

3,693,214

Patent Not Issued For This Number

3,693,215

Patent Not Issued For This Number

### 3,693,216 ANIMAL SHACKLING DEVICE

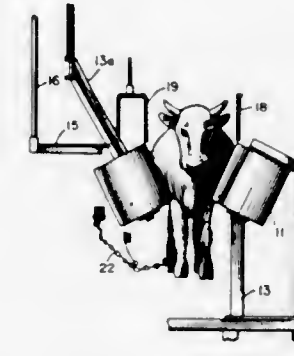
Donald J. Willems, Woodbridge, Ill., and Everett F. Markey, Omaha, Nebr., assignors to Armour and Company, Chicago, Ill.

Filed April 13, 1971, Ser. No. 133,673

Int. Cl. A22b 5/02

U.S. Cl. 17—24

10 Claims



A tension adjusting device, alongside a conveyor frame, which provides a meat animal passage, and alongside a shackle-equipped animal transportation track, is supported inwardly of the shackle chain for movement up and down or toward and away from the passage so as to yield when the shackle is applied to an animal's leg and then to swing outwardly and/or down to maintain tension upon the attached shackle as the animal moves through the passage.

3,693,217

Patent Not Issued For This Number

### 3,693,218 CONVEYOR BELTS

Pierre Jaubert, 12, rue de la Meulomiere, 92 Rueil-Malmaison, and Jean Lassere, 9, rue Albert Lawrenson, 92 Boulogne, both of France

Filed Oct. 6, 1971, Ser. No. 186,953

Claims priority, application France, Oct. 12, 1970, 7036843

Int. Cl. F16g 3/00; B32b 7/08

U.S. Cl. 24—38

9 Claims



This invention relates to conveyor belts and particularly to methods for making a joint in a conveyor belt that is made from rubber or like elastomeric material, that is provided with a reinforcement constituted by at least one layer of longitudinal metal cables. In accordance with the invention, two connecting strips of longitudinal metal cables are positioned in bridge fashion over the abutting ends of the reinforcing layer of two belt portions and these strips are placed on either side of the reinforcing layer to which they are connected by a thin layer of rubber or like elastomeric material, which adheres to both of them.

3,693,219

SHARPENING DEVICE

Douglass R. Falkenberg, Rocky River, Ohio, assignor to Douglass Manufacturing Company

Filed March 22, 1971, Ser. No. 126,419

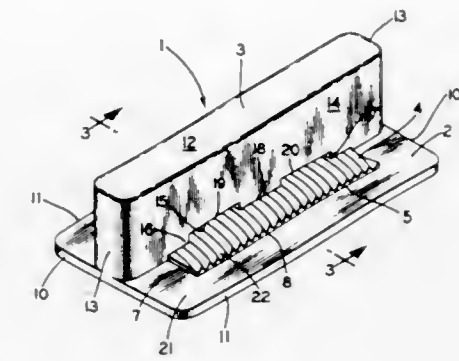
Int. Cl. B23d 71/00

U.S. Cl. 29—78

6 Claims

A sharpening device for sharpening metal edges of skis having a base portion and a handle and guide portion mounted at

a right angle on the base portion. The base portion contains an



elongated opening for receipt of a file which has work surfaces extending above and below the base portion.

### 3,693,220 WING HEADED FASTENERS AND PROCESS FOR ATTACHING SAME

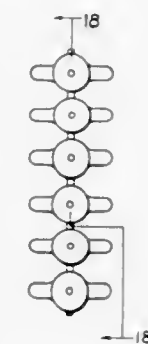
Richard W. Pabich, c/o Acme-Lane Co., 4904 W. Fullerton, Chicago, Ill., and Richard W. Treiber, deceased, late of 1340 Sherwood Road, Glenview, Ill. (by E. Louise Treiber, executrix)

Division of Ser. No. 800,362, Feb. 12, 1969, Pat. No. 3,612,378, and a continuation-in-part of Ser. No. 615,830, Feb. 13, 1967, abandoned, and a continuation-in-part of Ser. No. 689,939, Nov. 24, 1967, Pat. No. 3,429,013, and a continuation-in-part of Ser. No. 777,652, Nov. 21, 1968. This application July 23, 1970, Ser. No. 63,984

Int. Cl. A44b 17/00; B25c 3/00; B27f 7/00

U.S. Cl. 24—221 R

10 Claims



The invention provides (a) a strip of wing headed fasteners integrally interconnected by means of a thin web and (b) a method of using the strip. These strips are inserted into a magazine in air tools that force nails therein. Uniquely formed wing headed fasteners and tool attachments are correspondingly adapted to each other to enable the wing headed fasteners to be pivotally mounted to said members with the nails from the tool for releasably holding a first member, such as a cabinet backing in a position relative to a second member such as a cabinet frame therebehind.

### 3,693,221 SAFETY SEAT BELTS FOR VEHICLES

Douglas J. Cunningham, Chichester, England, assignor to Wingard Limited, Chichester, Sussex, England

Filed Feb. 27, 1970, Ser. No. 14,916

Claims priority, application Great Britain, March 7, 1969, 12,084/69

Int. Cl. A44b 11/26

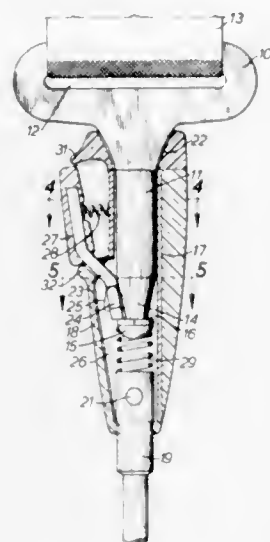
U.S. Cl. 24—230 AU

5 Claims

In a safety seat belt assembly for vehicles in which lap and diagonal straps are attached to one part of a two part separable buckle that part has a shank adapted to enter a socket in



the second part which is secured to the floor of a vehicle and the second part incorporates a releasable spring-pressed latch



co-operating with a shoulder on the shank on the first part when that is pushed home into the socket.

3,693,222

## YARN TEXTURING APPARATUS

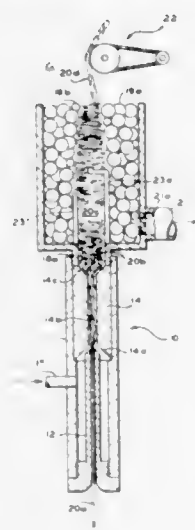
John B. Caffry, Greenville, S.C., assignor to Phillips Petroleum Company

Filed Dec. 28, 1970, Ser. No. 102,014

Int. Cl. D02g 1/12

U.S. Cl. 28—1.6

10 Claims



Yarn is textured by passage at an elevated temperature into a zone of turbulence. The resulting textured yarn is passed through a first chamber defined by a sleeve into a second chamber which contains a plurality of stacked balls. These balls exert a force on the yarn to produce a confined wad. Fluid employed to produce the turbulence zone is separated from the textured yarn in the two chambers.

## ERRATUM

For Class 29—78 see:  
Patent No. 3,693,219

3,693,223

## SCREENING PROCESS FOR COLOR CATHODE-RAY TUBE

Sam H. Kaplan, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Division of Ser. No. 866,694, Oct. 8, 1969, Pat. No. 3,599,503.

This application Dec. 30, 1971, Ser. No. 214,281

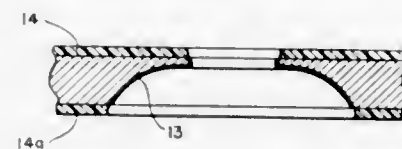
Int. Cl. H01j 9/16, 9/44

U.S. Cl. 29—25.13

8 Claims

The aperture mask of a color cathode-ray tube is formed of a blank of annealed steel which has a multiplicity of apertures

disposed in a rectangular field. The opposed surfaces of the blank have etchant resistant oxide layers and the walls of the apertures are lined with a flash coating of a material which is resistant to oxidation but is subject to attack by the same etchant that attacks the material of the blank. The apertured blank is used for photographic printing of the screen of the



color tube after which it is subject to an etch bath which first removes the liner and then, by attacking the walls of the apertures, enlarges them to a size exceeding the phosphor deposits of the screen. With the apertures enlarged, and with the oxide layers retained, the mask is installed in operative position relative to the screen.

3,693,224

## GROOVING TOOL

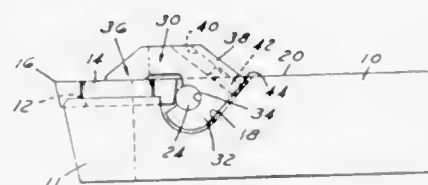
Joseph G. Bartoszewicz, Plantsville, Conn., assignor to Fansteel Inc., North Chicago, Ill.

Filed March 8, 1971, Ser. No. 121,838

Int. Cl. B26d 1/00

U.S. Cl. 29—96

1 Claim



A toolholder clamp combination which includes a body having a forward seat area for a cutting insert, there being a recess behind the seat area in a side wall of a body with a fulcrum pin embedded into the toolholder within this recess. A tool clamp then has a portion which fulcrums on this pin, the forward portion of the pin serving as an indexing stop for the insert. The remainder of the clamp curves up and over the insert and carries a pressure screw which exerts against a wall of a recess to apply clamping pressure while fulcruming the clamp around the pin.

3,693,225

## ROTARY CUTTER FOR CUTTING TEETH

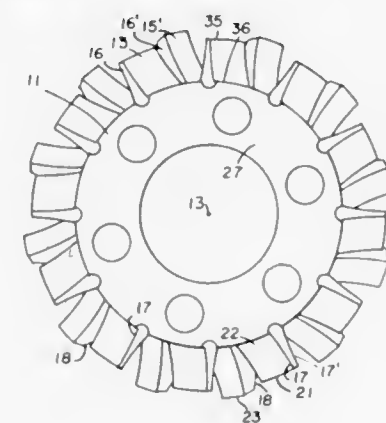
Ernest Wildhaber, 124 Summit Drive, Rochester, N.Y.

Filed March 16, 1971, Ser. No. 124,729

Int. Cl. B26d 1/00

U.S. Cl. 29—103 R

14 Claims



These rotary cutters for cutting teeth in rotating cylindrical workpieces contain cutting teeth inclined to the peripheral direction of the cutter and arranged in two or more circles about the cutter axis. Said circles have different positions axi-

ally of the cutter. Each of said circles contains identical cutting teeth different from the cutting teeth of the other circles. Preferably the cutting teeth extend lengthwise at a constant distance from the cutter axis, along helices.

3,693,226

## METHOD OF MAKING AN ANTIFRICTION BEARING RING

Ralph S. Howe, Jr., New Britain, Conn., assignor to Textron, Inc., Providence, R.I.

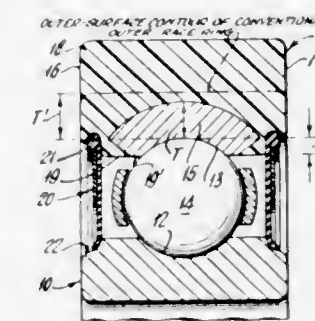
Division of Ser. No. 868,736, Oct. 23, 1969, Pat. No.

3,640,592. This application Jan. 7, 1971, Ser. No. 104,569

Int. Cl. B21h 1/12

U.S. Cl. 29—148.4 R

12 Claims



The invention contemplates a major economy in the metal required for manufacture of an antifriction bearing ring, such as the outer-race ring of a ball bearing, said economy being realized without loss of integrity of the race or its radial-load capability, as compared with a conventional all-metal racing ring construction of equivalent capacity. Economy is realized by forming an insert from a cylindrical annulus of a deformable and hardenable material, such as ductile steel, the deformation being to create a ring of substantially uniform thickness but continuously concaved, at one of the inner and outer surfaces, to define the raceway contour. The deformation is to an extent producing a concave surface of depth exceeding the desired ultimate raceway depth. The deformed ring is hardened and then embedded in a body molding of plastic or elastomeric material, depending on ultimate-use requirements. Race-finishing, including the step of removing excess insert metal to create the desired raceway depth, can proceed before or after molding.

3,693,227

## FIXTURE FOR MOUNTING TAPE GUIDES WITH RESPECT TO HELICAL SCANNING ASSEMBLY

Alexander R. Maxey, Newark, Calif., assignor to Ecco Science Corporation

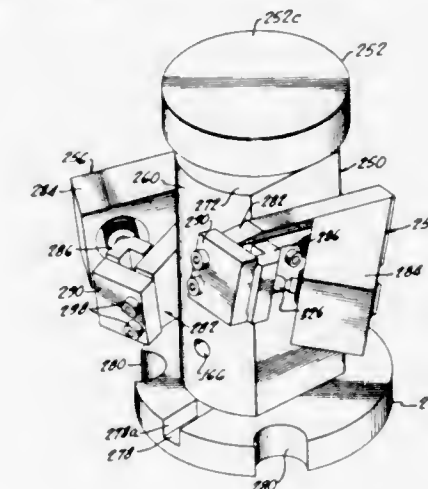
Division of Ser. No. 738,250, June 19, 1968, Pat. No.

3,516,146. This application March 19, 1970, Ser. No. 24,973

Int. Cl. B23p 19/00

U.S. Cl. 29—200.P

10 Claims



A fixture for mounting tape guides so that tape is a video recorder will pass the scanner of a drum assembly at the

proper angle and height. A bracket, which has elongated reference ways to align the placement of the drum assembly thereon is connected to the fixture with the reference way surfaces of the bracket abutting a cylindrical reference surface of the fixture and a reference plate on top of the fixture. This fixes the bracket references in a known preselected position relative to guide positioning jigs on the fixture. The guide positioning jigs are used to mount the guides on the bracket in the desired relationship to the bracket reference surfaces, precise alignment of the guides being permitted by movement of the guide pins in oversize bores before applying adhesive. The bracket is then separated from the fixture.

3,693,228

## MACHINE FOR ASSEMBLING WIRE HARNESS

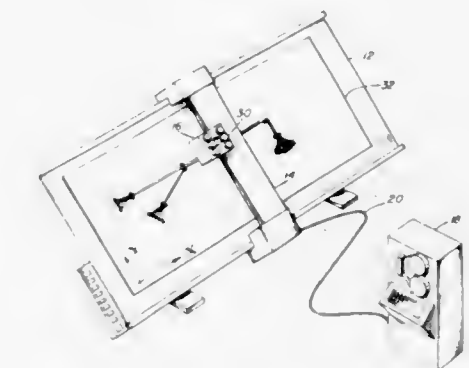
David J. Logan, Glastonbury, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Nov. 12, 1970, Ser. No. 88,922

Int. Cl. H01r 43/00; H05k 13/04

U.S. Cl. 29—203 MW

7 Claims



A system is disclosed for the automated assembly of a wire harness from one or more spools of premarked wire. The spools of wire are mounted on a cross-head which is movable in the Y direction on a carriage, movable in the X direction above a surface. A jig board is placed on this surface, and has wire holding devices at preselected locations for receiving the wire. Means is provided for feeding the wire downwardly through a funnel in the cross-head as the head is moved in response to a predetermined program from one point to another on the "plotting" surface. The head includes a tool for inserting the wire into wire retaining slots in the wire holding devices, and a cut-off knife is provided for severing the wire once a particular length has been layed-up.

3,693,229

## CANNED TRANSISTOR-IC LEAD BENDER

Donald H. Daebler, Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Dec. 16, 1970, Ser. No. 98,529

Int. Cl. H01r 43/00

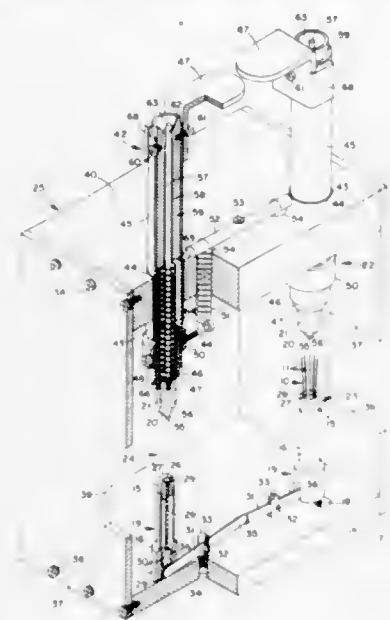
U.S. Cl. 29—203 B

17 Claims

A lead bending tool for uniform tight forming of leads about a canned circuit can for upside down mounting of the canned circuit on a planar circuit board. The tool includes a canned circuit holding die member and a relatively moveable tool lead bending assembly with a conical surfaced member for engaging and radially deflecting leads, and a cylindrical die wire bending member that receives the conical surfaced member in



a telescoping action during lead bending and that with continued lead bending movement moves into radially aligned



overlap about a die annular rim of the canned circuit holding die member in completing a lead bend forming stroke.

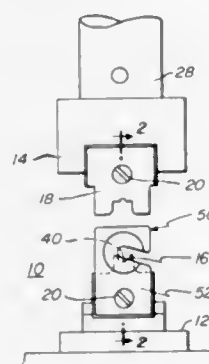
### 3,693,230 WIRE GUIDE

Thomas E. Morgan, Cleveland Heights, Ohio, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 18, 1970, Ser. No. 99,597  
Int. Cl. H01r 43/04; H05k 13/00

U.S. Cl. 29—203 D

7 Claims



A wire guide for facilitating the entry of a wire end into a funnel ferrule terminal prior to crimping of the terminal onto the wire. The guide is alignable with the crimping device to allow the manual insertion of the wire through the guide into the ferrule. The guide has a slot generally horizontal and inclined from an enlarged entry area upwardly to an area alignable with the ferrule opening to facilitate the wire insertion and to permit the removal of the crimped assembly.

### 3,693,231 DOUBLE END TERMINAL ATTACHMENT DEVICE

Herbert D. Scharf, 437 Merwyn Road, Merion, Pa.

Filed April 5, 1971, Ser. No. 131,310

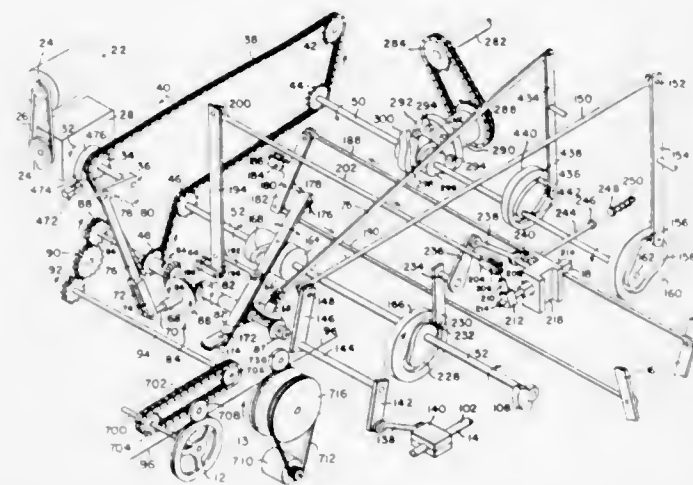
Int. Cl. H01r 43/04

U.S. Cl. 29—203 D

9 Claims

A double end terminal attachment machine constituting an improvement over one of the devices disclosed and claimed in U. S. Pat. No. 3,267,556 wherein there is a feed wheel having its own separate torque motor. Wire is propelled about the feed wheel to the clutch wheel and the wire is then propelled about the clutch wheel and downstream toward the terminal affixing components of the machine. The variable drive of the feed wheel is achieved through the provision of two trunnions which act individually and together to slow down the action of

the feed wheel, stop the feed wheel, allow it to move somewhat forwardly, then reverse it for a very short period and start the feed wheel moving again to propel wire forwardly to the clutch wheel which operates at a constant speed except that it is shut off from the time the forward motion of the feed wheel stops until the time as the reversing action of the feed wheel has been completed. The foregoing action produces a



sufficient delay in the operation of the feed wheel so that the terminal affixing mechanism of U.S. Pat. No. 3,267,556 can become operative and complete its function. By virtue of the interposition of the second trunnion the wire is gripped when it is stationary, and this gives rise to an improvement in accuracy and achieving a more precise length of cut, stripped and terminated wire.

### 3,693,232 APPARATUS FOR ASSEMBLING ELONGATED COMPONENTS IN SIDE-BY-SIDE RELATION

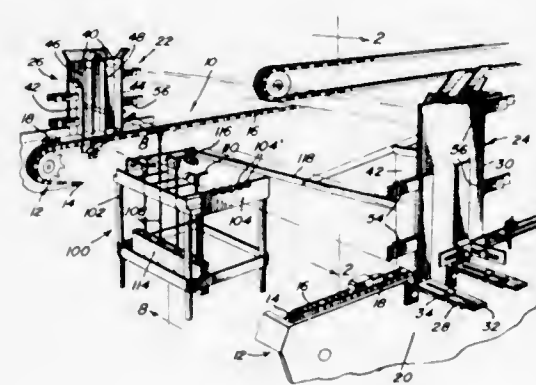
Alex W. Mingus, P.O. Box 291, Hines, Oreg.

Filed Dec. 15, 1970, Ser. No. 98,401

Int. Cl. B23q 7/10; B23p 19/00

U.S. Cl. 29—211 R

13 Claims



A conveyor for engaging and stripping components from successive bottom discharge vertical magazines or feed hoppers spaced longitudinally along the conveyor by engaging the bottom component of the first magazine, conveying the first engaged component toward assembled engagement with the bottom component of the second magazine and displacing the assembled first and second components toward the discharge end of the conveyor assembly.

### 3,693,233 MACHINE FOR CLIPPING AND BENDING THE TWIGS AND LIMB OF ARTIFICIAL TREE BRANCHES

Stephen D. Kent, Newburgh, N.Y., assignor to R. O. Kent Corp., Newburgh, N.Y.

Filed April 23, 1971, Ser. No. 136,770

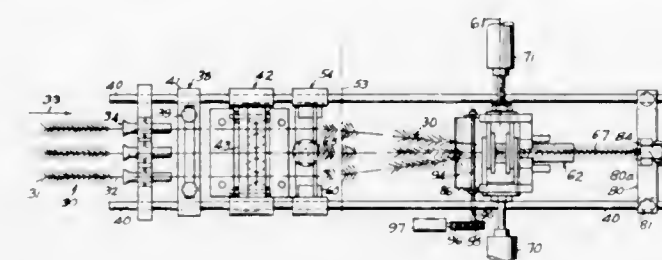
Int. Cl. B23p 19/04

U.S. Cl. 29—208 D

10 Claims

One or more twig garlands are fed, cut and assembled to one end portion of a limb garland. The other end portion of

the limb garland is bent by the machine at a suitable angle for entrance into an inclined hole in a tree trunk. The twig gar-



lands are also bent by the machine smoothly, curvilinearly and progressively throughout the lengths thereof after being cut and clipped to the limb garland.

### 3,693,234

Patent Not Issued For This Number

### 3,693,235

#### SPLIT RETAINER FOR CHECK VALVE SPRINGS

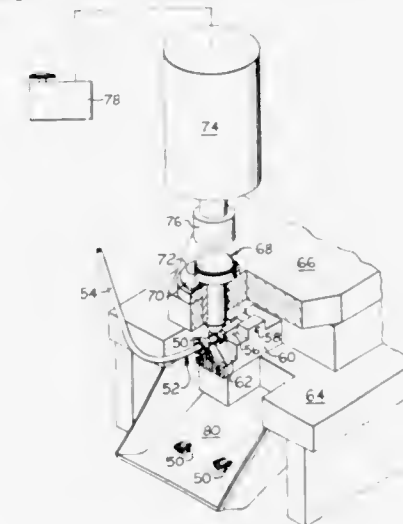
Calvin D. Loyd, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 4, 1970, Ser. No. 69,746

Int. Cl. B23p 17/00

U.S. Cl. 29—412

3 Claims



An original retainer is precisely fabricated from a single piece of material of selected properties. The original retainer is then substantially evenly fractured into complementary parts to define a split retainer, by subjecting it to a sharp blow applied as by means of a hammer and anvil. The resulting split retainer parts are then re-assembled about a check valve stem of, for example, a capsule valve, etc., and are secured in place by a locking washer disposed thereabout. Since the complementary parts are halves of an original retainer, the resulting confronting surfaces formed during the fracturing process, as well as the axial dimensions of shoulders, etc., are perfectly matched to provide thereby a precisely dimensioned retainer upon assembly.

### 3,693,236

#### METHOD OF DETACHING GALVANICALLY PRODUCED SHEETS FROM MASTER SHEETS

Gerhard Kapell, Warlimontweg 22, and Schummer, Anton, Packersweide 40, both of Hamburg 28, Germany

Continuation of Ser. No. 635,547, May 2, 1967, abandoned.

This application May 5, 1970, Ser. No. 33,158

Claims priority, application Germany, May 12, 1966, N 28517

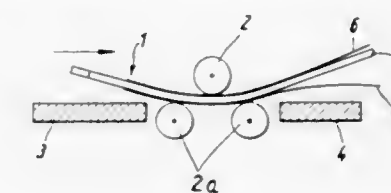
Int. Cl. B23p 17/00

U.S. Cl. 29—423

3 Claims

This specification describes the mechanical separation of galvanically-formed metal sheets from a master by subjecting

a composite, consisting of a master sheet and a formed sheet on each side of said master, to the action of multiple rolls disposed in non-aligned relation on both sides of said composite so as to cause said composite to bend in at least one



direction without any substantial decrease in the cross-section thereof. This controlled bending causes the formed sheets to readily separate from the master sheet without manual mechanical manipulation. It is stated that slight elastic deformation of the master upon bending is sometimes desirable.

### 3,693,237

#### METHOD OF SECURING FASTENERS TO SHEET MATERIAL

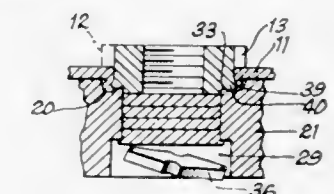
William L. Grube, Lake Bluff, Ill., assignor to MacLean-Fogg Lock Nut Co., Mundelein, Ill.

Filed Feb. 20, 1970, Ser. No. 13,007

Int. Cl. B23p 11/00

U.S. Cl. 29—432.2

7 Claims



A combined self-clinching pierce fastener and panel, and the method of attaching the nut to the panel are disclosed wherein by a single stroke a threaded fastener, such as a nut, acts as a punch and pierces its own hole in the sheet metal panel to which it is to be fastened. The nut has one or more laterally extending flanges which abut upon one side of the said panel, the corners of the nut being displaced laterally in the die associated with the piercing operation, preferably under the flange, to clinch the material therebetween. The panel is also displaced at the displaced region of the nut and in the same general direction as the displaced region of the nut. The method is not dependent upon any particular thickness, hardness or ductility of the material of the panel, nor does the nut need to have any predetermined hardness. The displaced material of the nut and panel is compressed together to form, in effect, a cold weld, but it is not confined laterally, thereby avoiding binding of the displaced material in the back-up die used to displace the material.

### 3,693,238

#### FRICTION WELDING OF ALUMINUM AND FERROUS WORKPIECES

Fred R. Hoch, and James W. McIntee, both of Lower Burrell, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 52,087, July 2, 1970, abandoned. This application Oct. 2, 1970, Ser. No. 90,191

Int. Cl. B23k 27/00

U.S. Cl. 29—470.3

2 Claims

A method of joining together an aluminum workpiece and a ferrous workpiece by relative rotation of the workpieces while the workpieces are forced together at mutually engaging parallel, planar surfaces. The surfaces are thereby frictionally heated, and sufficient axial pressure is applied to the workpieces to pressure weld them together at the interface of the planar surfaces using an amount of rotational, kinetic energy

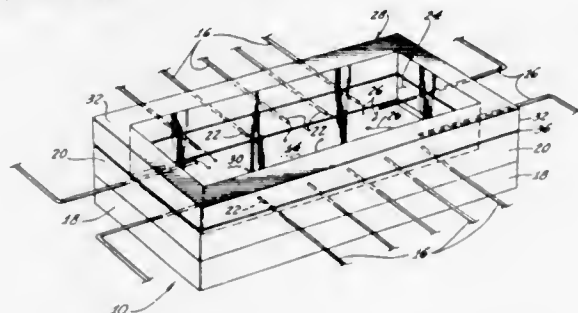


input to the weld area in the range of about 3,500 to 5,500 pounds per square inch of weld area. The compressive yield strength of the aluminum alloy workpiece at the temperature to which the planar surfaces are heated by the rotational energy is such that the amount of metal of the aluminum workpiece radially displaced at the interface is less than 10 percent of the weld area.

3,693,239

**METHOD OF MAKING A MICROMODULAR PACKAGE**  
Sidney Dix, 2863 Ellesmere Ave., Costa Mesa, Calif.  
Division of Ser. No. 712,875, Nov. 28, 1967, Pat. No. 3,468,523. This application July 25, 1969, Ser. No. 870,195  
Int. Cl. B23k

U.S. Cl. 29—470



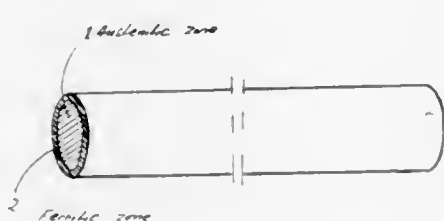
Disclosed is a method of making micromodular packages having a housing enclosing a space containing a plurality of electrical components. The method includes the steps of forming a base with a side wall extending therearound to at least partially define a space, providing a metal rim on the side wall, placing electrical components in the space, placing a cover having a metal frame on the side wall such that the metal frame rests on the metal rim and soldering the frame to the rim while maintaining the temperature of the electrical components below a predetermined level.

3,693,240

**METHOD OF MANUFACTURING FILLER MATERIAL FOR WELDING**  
Lars Olov Lennart Jansson, and Lars Gosta Ljungstrom, both of Sandviken, Sweden, assignors to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden  
Filed Aug. 24, 1970, Ser. No. 66,417  
Claims priority, application Sweden, Aug. 27, 1969, 11853  
Int. Cl. B21d 39/04

U.S. Cl. 29—474.3

9 Claims



Hot working a welding rod or strip to form a composite body consisting of a tubular case or sheath of one material surrounding a core of a different material. One of the two materials is ferritic metal whilst the other of the two materials is austenitic metal. The resulting weld consists essentially of a stainless steel.

3,693,241

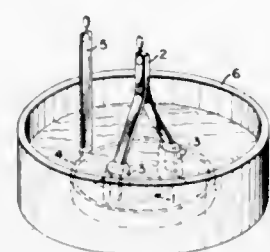
**MANUFACTURE OF FOIL SEALS**  
Elmer G. Fridrich, 9933 Wilson Mills, Chardon, Ohio  
Division of Ser. No. 734,910, June 6, 1968, Pat. No. 3,582,704.  
This application Aug. 27, 1970, Ser. No. 76,339  
Int. Cl. B23k 31/02

U.S. Cl. 29—475

8 Claims

Molybdenum foils for pinch sealing into quartz are etched using shields which protect selected welding areas at each end

from the action of the electrolyte. Etching provides feathered edges all around but leaves thicker areas under the shields to which the inleads and electrodes are welded without any need



5 Claims

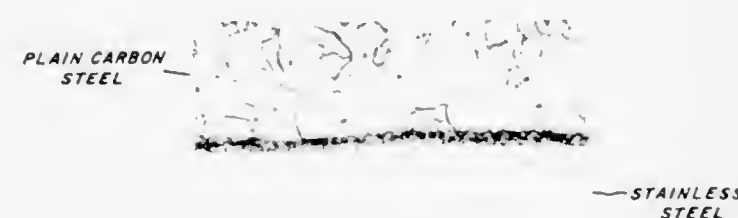
for extra tabs to facilitate welding or to increase the current carrying capacity. In a preferred foil-inlead construction, the inlead and electrode have spade ends coextensive with the thicker areas in the foils to which they are welded.

3,693,242

**COMPOSITE MATERIAL AND PRODUCTION THEREOF**  
Joseph A. Chivinsky, Sarver, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.  
Filed Jan. 2, 1970, Ser. No. 177  
Int. Cl. B23k 31/02

U.S. Cl. 29—480

8 Claims



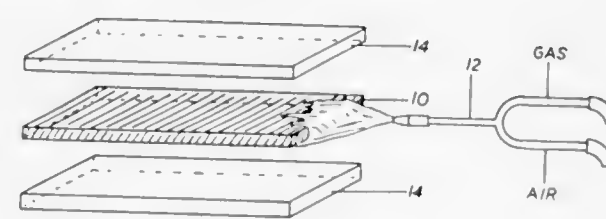
A composite material which has a substantially reduced incidence of defects after drawing, and a method of producing it. The composite material is comprised of at least one layer of plain carbon steel containing up to 1.5 percent of carbide former present in a carbide former-to-carbon ratio of from about 1.5 to about 25 and at least one layer of stainless steel. It is formed by pressure bonding carbon steel containing carbide former to stainless steel.

3,693,243

**METHOD AND APPARATUS FOR CLADDING METALS**  
James Q. Steigelman, Detroit, Mich., assignor to W. M. Chace Company  
Filed April 20, 1970, Ser. No. 29,962  
Int. Cl. B23k 31/02

U.S. Cl. 29—487

11 Claims



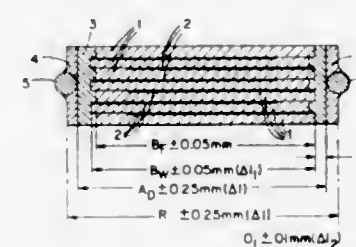
A layer of a metal or alloy is clad to at least one surface of a substrate of another metal or alloy. The cladding process is carried out at elevated temperatures in order to produce a metallurgical bond at the interface between the layer and substrate. Normally, a substantial portion of the layer liquifies at these temperatures; however, the layer is cooled in a region remote from the interface during the cladding process to confine the liquification to the immediate region about the interface.

3,693,244

**FRONT CONTACTED ELECTRICAL COMPONENT**  
Reinhard Behn, Munich; Heinrich Gottlob, Regensburg; Gerhard Hoyler, Munich, and Hartmut Kessler, Regensburg, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany  
Division of Ser. No. 841,860, July 15, 1962, abandoned. This application Sept. 22, 1970, Ser. No. 74,473  
Int. Cl. B23k 31/02

U.S. Cl. 29—492

4 Claims



A pile or layer condenser is provided with external connecting wires on its two frontal sides by pressing the connecting wires into an outer metallic layer which has a lower melting point than an inner metallic layer which contacts the plates of the condenser. The connecting wires are thereby embraced by the outer layer and adhere to the inner layer.

3,693,245

**WELDED DEPOSITS FOR AUSTENITIC STEELS**  
Jean-Jacques de Cadenet, Les Charmettes (73), Ugine, France  
Continuation-in-part of Ser. No. 608,971, Jan. 13, 1967, abandoned. This application Feb. 24, 1970, Ser. No. 13,757  
Claims priority, application France, Jan. 13, 1966, 6645725  
Int. Cl. B23k 31/02, 35/24

U.S. Cl. 29—504

1 Claim

Weld deposits joining nickel-chrome austenitic steels, a method of making the weld deposits and filler metals yielding such weld deposits which have the general composition in percent by weight of carbon 0.06 to 0.12, chromium 15 to 20, nickel 7.5 to 13, tungsten 3.5 to 5, manganese 0.5 to 2, silicon 0.6 and nitrogen (N<sub>2</sub>) 0.10, and a ferritic tendency index of less than or equal to 15.

3,693,246

BRAZING SOLDER

Vladimir Vasilievich Novikov, ulitsa Kachalinskaya, 9, kv. 72; Alexandr Ivanovich Gubin, B. Naberezhnaya ulitsa, 25/1 kv. 111, and Vasily Mikhailovich Sorokin, Spartakovskaya ulitsa, 20, kv. 66, all of Moscow, U.S.S.R.  
Filed Nov. 17, 1970, Ser. No. 90,452  
Int. Cl. B23k 31/02

U.S. Cl. 29—504

5 Claims

The invention relates to brazing solders applied for brazing parts made of steel, cast iron, copper and nickel alloys, as well as of noble metals and alloys having their melting point lying above 800° C.

The invention is characterized in that the brazing solder proposed therein, has the following weight percent composition: Cu, 20-65; Mn, 15-35; Ag, 15-25; and Ni, 5-20; Zn, 0-15.

3,693,247

**METHOD OF SECURING TOGETHER A PLURALITY OF STRUCTURAL MEMBERS**

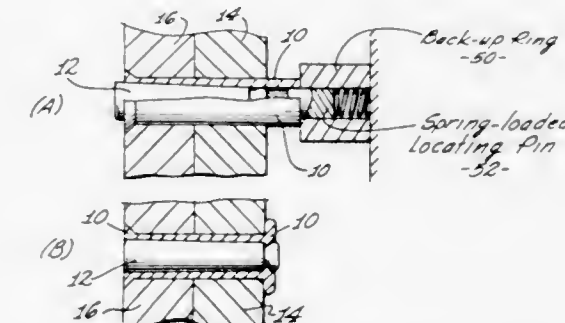
Clarence K. Brown, 6219 East 6th St., Long Beach, Calif.  
Continuation-in-part of Ser. No. 764,811, Oct. 3, 1968, abandoned. This application Feb. 2, 1970, Ser. No. 7,617  
Int. Cl. B21d 39/00; B23p 11/00

U.S. Cl. 29—512

2 Claims

The invention is concerned with fasteners which are used to secure a plurality of plates, or other structural members, together in an interference fit between the fastener and the plates to impart a residual hoop stress within the structural

members and around the hole through which the fastener extends so as to obviate fatigue failure in the structural members in the vicinity of the hole. The fastener assembly of the invention comprises the combination of a flared sleeve of relatively soft material, and a tapered mandrel of relatively hard material. The mandrel is first driven into the sleeve at the factory in a preliminary interference fit with the sleeve, and the sleeve is then finish ground to the final tolerances, so that each mandrel and sleeve becomes a matched pair. When inserted into the



hole in the structural members to be joined thereby, the mandrel is then driven further into the sleeve causing the sleeve to expand radially outwardly to assume a final diameter greater than the original diameter of the hole. In this way the fastener assembly imparts a residual tension stress into the portions of the structural members surrounding the hole; this being achieved without burnishing or galling the bore of the hole due to the fact that the expansion of the sleeve is purely in the radial direction and there is no axial movement thereof.

3,693,248

**SURFACE INVERSION PROTECTION METHOD AND APPARATUS**

Jared F. Ferrell, 109 Belhaven Drive, Los Gatos, Calif.  
Division of Ser. No. 772,191, Oct. 31, 1968, Pat. No. 3,519,897. This application April 6, 1970, Ser. No. 31,061  
Int. Cl. B01j 17/00; H01g 9/00

U.S. Cl. 29—570

3 Claims



A novel metal-insulator-semiconductor capacitor device and method of manufacture wherein means are provided for narrowly defining the boundaries of the inversion region lying beneath the metallic electrode disposed on the surface of the semiconductive chip. An impurity region highly doped with an appropriate dopant is provided around the intentional inversion region for delimiting the area thereof as well as prohibiting an unintentional expansion of this area due to spurious inversion of the substrate surface caused by accumulation of surface charge on the overlying dielectric.

3,693,249

**METHOD FOR ASSEMBLING REFRACTORY METAL RODS IN A HEATING SYSTEM SHOWING NO OVERHEATED SECTIONS**

Maxime Monne, Paris, France, assignor to Sedimac Societe d'Exploitation d'Inventions Metallurgiques Mechaniques et Chimiques, Paris, France  
Filed Nov. 16, 1970, Ser. No. 89,990  
Claims priority, application France, Nov. 14, 1969, 6939328  
Int. Cl. H05b 3/00

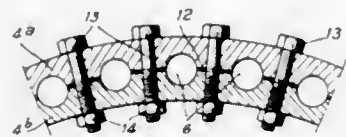
U.S. Cl. 29—611

2 Claims

A method of producing heating systems constituted by parallel rods of a refractory metal such as tungsten, tantalum or molybdenum, fitted at least at one end between cooperating connecting elements also of a refractory metal, to prevent



the formation of overheated sections, ascribable to a faulty contact between the ends of the rods and the connecting elements. Between the assembled cooperating connecting elements is inserted a thin sheet of material such as copper or the like foil and is formed with the holes which are to receive the



corresponding ends of the rods in the assembled elements and intermediate sheet. The thin sheet is then removed and the ends of the rods are fitted in the holes so that upon tightening of the elements over the rods, an intimate contact is obtained therebetween.

3,693,250

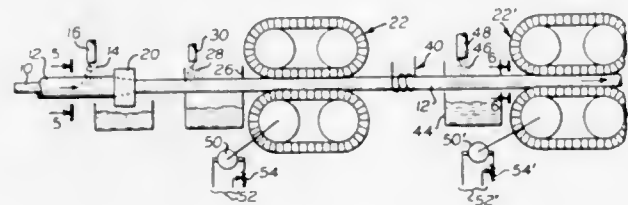
# METHOD OF MAKING METALLIC SHEATHED CABLES WITH FOAM CELLULAR POLYOLEFIN INSULATION AND METHOD OF MAKING

William J. Brorin, 17 Longview Drive, Whippany, and Fred F. Polizzano, 520 Brookside Ave., Allendale, both of N.J. Division of Ser. No. 733,528, May 31, 1968, Pat. No. 3,567,846. This application July 20, 1970, Ser. No. 56,325

Int. Cl. H01b 13/00

U.S. Cl. 29—624

14 Claims



This specification discloses a method of making a metallic sheathed electrical cable having foamed cellular polyolefin dielectric insulation which is fusion-bonded to the inside of an annealed sheath to obtain better electrical and mechanical characteristics. The sheath is applied to a foam-insulated core and then sunk down by drawing through a die or reducing rolls to make the tube fit the insulated core snugly. Controlled heating of the sheathing melts the part of the insulation, or adhesive material, when used, which is in contact with the sheath to produce the fusion bond. The heating period is short and is followed by a quench. This controlled heating and cooling is also used to anneal the metallic sheath.

3,693,251

# METHOD OF FORMING CLOSELY SPACED CONDUCTIVE LAYERS

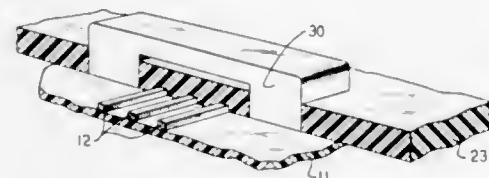
Ralph James Jaccodine, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Dec. 3, 1970, Ser. No. 94,679

Int. Cl. B41M 3/08

U.S. Cl. 29—625

2 Claims



An air isolated crossover is fabricated on an integrated or thin film circuit by first forming on the device surface, along with the conductive metal pattern, metal base pads for the crossover members. The horizontal beam members of each crossover then are formed in the required pattern on a copper

foil carrier. Holes are etched through the copper foil at the ends of each beam member and in register with the base pads on the device surface. A resin pattern is formed on the underside of the copper foil for spacing and protective purposes and the preform assembly then is placed, resin side down, on the device surface. A metal plating step then completes the crossover structure by building by the base pads to connect to the ends of the beam members. Finally, the copper foil is dissolved leaving the gold crossover member.

3,693,252

# METHOD OF PROVIDING ENVIRONMENTAL PROTECTION FOR ELECTRICAL CIRCUIT ASSEMBLIES

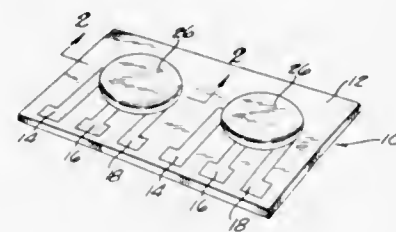
Mark Christian Robertson, Grafton, and Donald Lloyd Bishop, Shorewood, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Aug. 21, 1969, Ser. No. 862,582

Int. Cl. H05k 3/28

U.S. Cl. 29—627

11 Claims



The application of environmental protection for discrete electrical components mounted on a circuit substrate is precisely controlled by first forming a thermosetting material, such as a bisphenol epoxy resin, into a body having a cavity sufficient to accommodate the electrical component, preferably by mechanical compaction of the material in powder form, placing the preformed body in the inverted position over the circuit element, and then heating the assembly to cure the thermosetting material to at least a semi-hardened state. In one embodiment, a second thermosetting material, having a coefficient of thermal expansion closely approximating that used for the preformed body in order to minimize internal stresses during thermal cycling of the completed assembly, is used as a protective overcoating.

3,693,253

# CUTTING APPARATUS AND CUTTING HEAD THEREFOR

Georg Jager, Gerlinden near Munich; Helmut Wenger, Allershausen, and Karl Zangl, Munich, all of Germany, assignors to Zongl G.m.b.H., Frohschammerstr., Germany

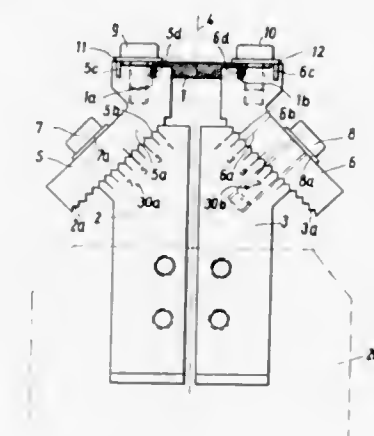
Filed Sept. 3, 1969, Ser. No. 855,158

Claims priority, application Germany, Sept. 3, 1968, P 17 79 616.6

Int. Cl. B26f 3/08

U.S. Cl. 30—140

5 Claims



A cutting head for a cutting apparatus with a transformer for heating the cutting blade has a pair of mutually insulated

contact members each carrying a contact bridge, the contact bridges extending at about 45° to the longitudinal central axis of the apparatus. When the blade is mounted in place, it short-circuits the secondary of the transformer and is heated rapidly.

3,693,254

# MOTORIZED SHEARING IMPLEMENT

Albert R. Salonen, 560 Baxter Avenue, Victoria, British Columbia, Canada

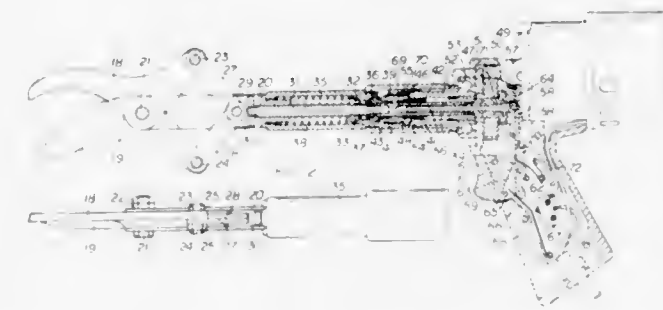
Filed Feb. 5, 1971, Ser. No. 112,926

Claims priority, application Canada, Aug. 26, 1970, 091570

Int. Cl. B26b 15/00

U.S. Cl. 30—228

17 Claims



This invention relates to a portable, hand-held shearing implement, which includes a pair of cutting blades employing a motor powered mechanism to apply the cutting force. The invention is particularly adaptable for an implement to execute individual, deliberate, cutting strokes. One version may be powered by an electric motor or a self-contained internal combustion engine, driving through a gear reduction train to a reciprocating mechanism having threaded means with a releasable coupling to drive the power stroke. Another version employs a controllable reversing switch to effect the reciprocating action and is limited to an electric motor drive. In the former version, reopening of the blades is spring actuated with provision included to soften the impact of termination, and includes a triggering means to stop and hold the reciprocating action after each cycle until released by trigger actuation.

3,693,255

# LAWN EDGE TRIMMER

Julius Langenstein, Max-Eyth-Str. 4, 7918 Illertissen, Germany

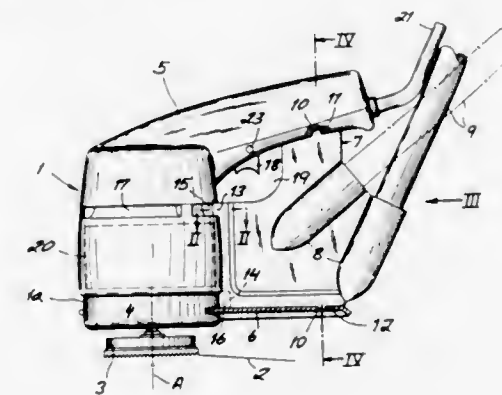
Filed March 8, 1971, Ser. No. 122,111

Claims priority, application Germany, Nov. 26, 1970, G 70 43 648.5

Int. Cl. B26b 27/00

U.S. Cl. 30—276

9 Claims



A lawn edge trimmer has a motor housing with a cutting element rotatably mounted at one end and a grip extending laterally from the other end. A shield is provided adjacent the cutting element. A handle-mounting member is provided between the grip and the shield, engaging in holes into the grip and shield by means of tabs and embracing lugs on the motor

housing with claws so that it is securely anchored on the housing. This member is formed with at least two sockets which are inclined to each other and are both adapted to receive the end of an elongated handle to allow different settings of the handle angle. Simple elastic deformation of the shield allows removal of the handle-mounting member.

3,693,256

# PROCESS AND APPARATUS FOR CONTINUOUSLY SEPARATING AND WASHING A COAGULUM AND MORE PARTICULARLY CURD FOR MAKING CHEESE AND CASEIN

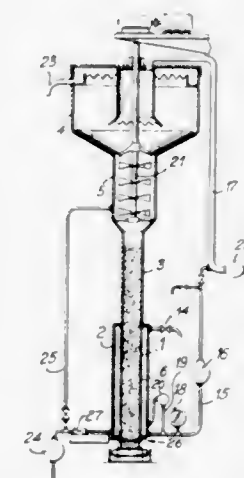
Jean-Louis Fernand Joux, Epinay; Bernard Michel Mignot, Les Rottes, Vendome, both of France, and Michel Gaston Albert Billon, Kavaklidere - Ankara, Turkey, assignors to Fromageries Bel-La Vache Qui Rit, Paris (Seine), France

Filed July 22, 1970, Ser. No. 57,212

Int. Cl. A01j 25/00, 25/11

U.S. Cl. 31—46

10 Claims



Apparatus for continuously processing a coagulated raw milk product comprising a constant-level mixture separating chamber and at least one means for compressing the curd in the whey. The means for discharging the whey from the curd compressing means communicate with a point on the apparatus located upstream of the curd compressing means, the whey discharge means have connected thereto a pressure-gauge and an adjustable-output pump, a smooth tube is positioned upstream of each curd compressing means, and the curd compressing means is a perforated tube the perforations of which are slots parallel to its axis. This apparatus can be applied with advantage to the production of cheesemaking curds.

3,693,257

# METHOD AND ELEMENT TO DETERMINE THE CORRECT DEPTH OF THE LINGUAL RIM OF A BITE PLATE DURING THE CONSTRUCTION OF A DENTURE FOR A TOOTHLESS MANDIBLE, OR TO CHECK THE CORRECTNESS OF THE DEPTH OF THE LINGUAL RIM OF A LOWER DENTURE

Josephus Schreinemakers, Wilhelminastrat 43, Sittard, Netherlands

Filed Jan. 30, 1970, Ser. No. 7,103

Claims priority, application Netherlands, Feb. 2, 1969, 6901664

Int. Cl. A61c 9/00

U.S. Cl. 32—19

9 Claims



A method to determine the correct depth of the lingual rim of a bite plate during the construction of a denture for a



toothless mandible, or to check the correctness of the depth of the lingual rim of a lower denture. According to the invention the distance is measured between the occlusal surface of the wax rim or the bite plate on the level of the incisal edges of the teeth of the lower denture, on the one side, and the highest point of the inner surface of the bite plate or of the lower denture, which covers in situ the anterior part of the jaw ridge of the mandible, on the other side, whereafter a plate-shaped registering element with a height substantially equal to said distance is positioned vertically on the anterior part of said jaw ridge and the extension rate of the tongue is measured and compared with its extension rate after the bite plate or the lower denture has been positioned in situ. This plate-shaped registering element comprises a flat lower supporting face and an upper face in parallel therewith, said element being bent about an axis which extends perpendicularly to said faces in the median plane of the registering element.

3,693,258

# INERTIA RELEASE FOR DENTAL HANDPIECE HOSE RETRACTOR

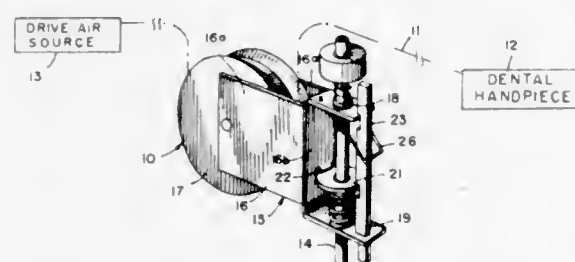
Bertram A. Fulton, Lynnfield, Mass., and Richard A. Slouka, Carpentersville, Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed May 5, 1971, Ser. No. 140,534

Int. Cl. A61c 19/02

U.S. Cl. 32-22

8 Claims



A retractor for the hose of a dental handpiece, the retractor being equipped with a spring-supported weight for tripping the release mechanism of the retractor when the hose is pulled abruptly.

3,693,259

# Patent Not Issued For This Number

3,693,260

MULTIPURPOSE ADJUSTABLE OCCLUSAL FORK  
Snowden Hernandez, c/o Medical Science Campus, San Juan, P.R.

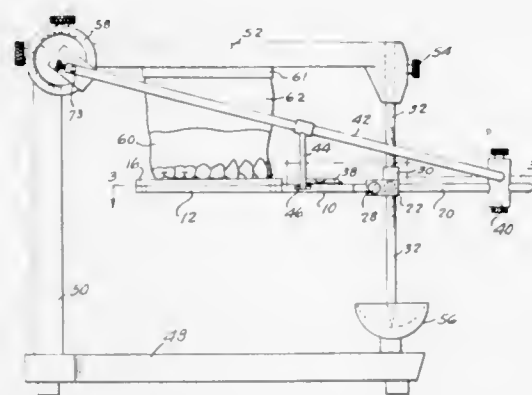
Continuation-in-part of Ser. No. 712,215, March 11, 1968, abandoned.

This application May 22, 1970, Ser. No. 39,765

Int. Cl. A61c 11/00

U.S. Cl. 32-32

9 Claims



A horizontal bite plate support combined with a dental articulator which has a calibrated vertical post member and

which has a connection to support a face bow in a position to establish the location of a patient's transverse mandible hinge axis. The bite plate support has a calibrated elongated handle portion with a slide member on the handle portion slidably receiving and being clampingly engageable with the handle portion and also slidably receiving the vertical post member and being clampingly engageable therewith. The horizontal bite plate support has an inner plate member recessed to interlock with a smooth bite plate, whereby the bite plate can be positively supported in a horizontal position corresponding to the location of a patient's occlusal area relative to his transverse mandible hinge axis.

3,693,261

# ANGLE TRISECTOR

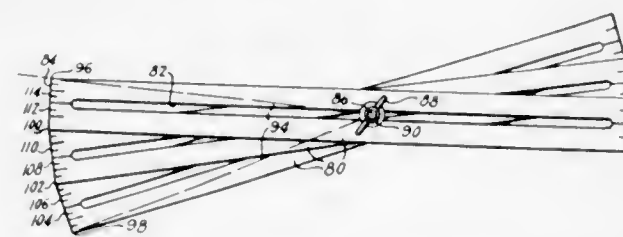
William M. Moore, 1578 Scotty St., San Jose, Calif.

Filed June 2, 1970, Ser. No. 42,724

Int. Cl. B43I 9/08

U.S. Cl. 33-1 AP

3 Claims



Transparent plastic T-square, dual blade, and protractor devices for performing geometrical and trigonometrical measurements with particular emphasis on trisecting angles and dividing angles into a plurality of equal segments.

3,693,262

# BOWSIGHT

Brian Wood, 414 E. Harry St., Hazel Park, Mich.

Filed March 20, 1970, Ser. No. 21,353

Int. Cl. F41g 1/00; F41b 5/00

U.S. Cl. 33-265

8 Claims



A bowsight structure is provided having an L-shaped bracket which is attached at one end to the handle of an archery bow and which supports a plate member on its other end; the bracket is provided with movable adjusting means which engage the plate member to pivot it about a fulcrum pin and hold the plate in a desired position; the plate member supports a pair of rod elements on which is slidably mounted a sighting device; a tightening screw is provided to retain the sighting device in a preselected position on the rod elements.

3,693,263

# Patent Not Issued For This Number

3,693,264

# SIMULATING APPARATUS FOR TEACHING THE ART OF SAILING

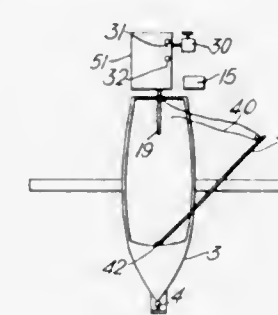
Rogor Strange Waddington, deceased, late of Lausanne, Switzerland; by David Buckley Sharp, executor; Joan Rubinstein, executrix, both of London, England, and Bruce Duval, Lausanne, Switzerland, assignors to T.P.I. Limited, Nassau, Bahamas

Division of Ser. No. 840,611, July 8, 1969, Pat. No. 3,597,856, which is a continuation-in-part of Ser. No. 775,559, Nov. 13, 1968, Pat. No. 3,471,943. This application May 17, 1971, Ser. No. 143,988

Int. Cl. G09b 9/06

U.S. Cl. 35-11

8 Claims



Sensitivity control means are provided for modifying the response of a sailing simulator to its helm to take into account the supposed wind force. Allowance is preferably made for the supposed wind direction and the boom setting.

The effect of the inertia of a craft upon steering may be represented by a capacitor and a thermistor. The effect of heeling upon helm sensitivity may be reproduced by transducers in the system. To demonstrate the effect of a center board on steering a transducer representing wind direction may be switched into or out of circuit.

Conveniently a wind force signal is provided as the output potential of a variable transformer and this potential is adjusted by the difference between the output potentials of two variable transformers, representing respectively wind direction and boom position relative to the wind, to provide an output which controls a reversible and stoppable variable-speed turning motor.

3,693,265

# PILOT ARMREACH AND COCKPIT CONTROL LOCATOR MACHINE

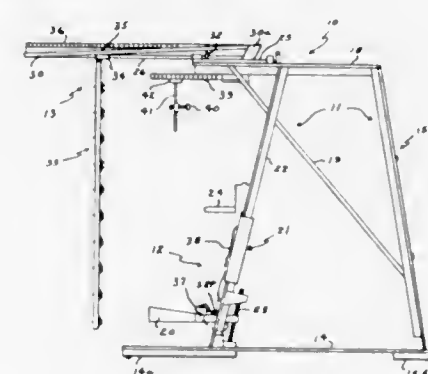
Milton Alexander, Fairborn; John W. Garrett, Bellbrook, and Ralph R. Riepenhoff, Dayton, all of Ohio, assignors to The United States of America as represented by the Secretary of the United States Air Force

Filed July 7, 1971, Ser. No. 161,361

Int. Cl. G09b 9/08

U.S. Cl. 35-12 F

9 Claims



Test apparatus for determining the capability of a pilot, while suited, helmeted and restrained in an aircraft cockpit seat, to reach, grasp and manipulate a control knob located at various angular distances and knob heights above floor level. The apparatus consists basically in a seat and support therefor, a deck simulating the floor of the aircraft cockpit, and a knob-

mounted vertical member having a series of vertically-aligned knobs located at preselected heights, and being quickly adjusted to preselected angular positions.

3,693,266

# EDUCATIONAL TOY BALLOON SYSTEMS

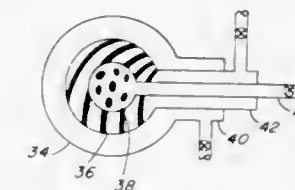
Jerome Pressman, 4 Fessenden Way, Lexington, Mass.

Filed June 30, 1971, Ser. No. 158,380

Int. Cl. G09b 23/12

U.S. Cl. 35-19 R

8 Claims



Two or more balloons are cooperatively related by interconnection and/or by nesting in different combinations utilizing valves and tubes to produce a variety of effects by selective inflation. The balloons may be interconnected by tubes with a valve for each balloon for independent inflation or deflation in conjunction with one or more other balloons in various configurations. Valved manifolds may be employed for selectively inflating and/or interconnecting a plurality of balloons to demonstrate the hydrodynamics of pressure and the properties of elastic materials as well as to train children in manipulation and logical thinking.

3,693,267

# ANSWER AND SCORING SHEET

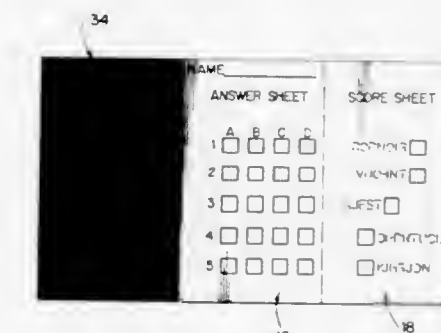
John C. Bertolet, 918 Great Plain Avenue, Needham, Mass.

Filed May 5, 1970, Ser. No. 34,837

Int. Cl. G09b 3/06

U.S. Cl. 35-48 A

6 Claims



A self-correction answer and scoring sheet for use in multiple choice testing. The sheet is imprinted on the same surface both with a panel of groups of response boxes to be marked by the person tested and a scoring panel having scoring boxes which correspond to the correct or preferred answer for each group of response boxes. The sheet is folded so that the scoring panel underlies the response panel with each of the scoring boxes being in registry with a selected response box in each group, the selected response box corresponding to the correct or desired answer. Means are provided for forming a visible mark on the score sheet in response to impression of an answer on the response panel. A correct response is indicated by the formation of the visible mark within the score box. An incorrect answer is indicated by the formation of the visible mark outside of the score box.



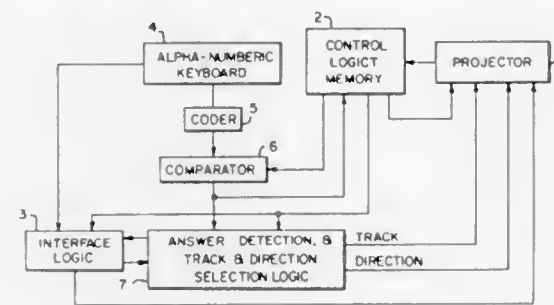
3,693,268

**DUAL ANSWER MODE TEACHING SYSTEM**

Francis T. Thompson, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.  
Filed Oct. 13, 1970, Ser. No. 80,360  
Int. Cl. G09b

U.S. Cl. 35—48 R

9 Claims



A teaching system wherein the correctness of a student response is determined on the basis of a commutative or non-commutative mode of operation by storing correct answer information in a manner corresponding to the mode of operation and modifying the correct answer information in accordance with student response when operating in the commutative mode and comparing a correct answer information with the student response when operative in the non-commutative mode so that an indication of the correctness of the student answer is provided in either mode of operation.

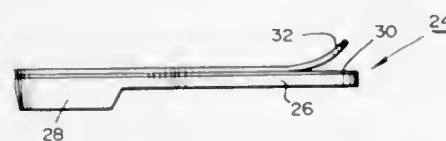
3,693,269

**SHOE CONSTRUCTION AND REPAIR UNIT THEREFOR**

Anthony T. Guarrera, 34-36 80th St., Jackson Heights, N.Y.  
Filed Nov. 23, 1970, Ser. No. 92,013  
Int. Cl. A43c 13/00

U.S. Cl. 36—15

13 Claims



A new shoe is manufactured with a double layer sole having visually distinctive wear indicating means between the layers. The same double layer construction with integral wear indicating means may also be applied to the heel portion of the new shoe. The ground engaging (outer, i.e., "wera") layer of either the sole, the heel or both sections is peeled off when it is worn down sufficiently to expose the wear indicating means which may be a distinctively colored, double faced pressure-sensitive adhesive tape. A spare sole and/or heel sold with the new shoe is cut to the exact size and shape of the corresponding portion of the original shoe by the shoe manufacturer and is provided with a pressure-sensitive adhesive coating on one surface that is covered by a strippable, protective layer. When the worn down, original outer sole and/or heel is peeled off, it is replaced by the spare.

3,693,270

**INTERNAL PADS FOR RUBBER FOOTWEAR**

Brian L. Murray, 147-37 38th Avenue, Flushing, N.Y.  
Filed Jan. 8, 1971, Ser. No. 104,964  
Int. Cl. A13b 23/28; A43b 23/28

U.S. Cl. 36—58.5

2 Claims

Internal pads of sponge material are preferably enclosed in a fabric casing and secured to the inside surface of rubber boots or shoes. The construction permits the wearer to put his feet into the boots without strenuous effort. Also, the boots may be removed easily without using a zipper opening or shoe laces. While being worn, the wearer may run or take long

walking steps without fear of losing the boots or of displacing the foot within the boot. The sponge inserts hold the foot in its



proper place by forcing the foot into contact with the inner sole.

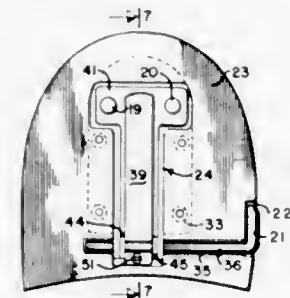
3,693,271

**BUILT-IN RETRACTABLE ICE SPUR DEVICE FOR SHOE HEELS**

Joseph Korpei, 63-23 50th St., Woodside, N.Y.  
Filed Jan. 11, 1971, Ser. No. 105,433  
Int. Cl. A43c 15/00

U.S. Cl. 36—61

1 Claim



The shoe heel is formed of an assembly of leather layers, some of the layers being cut-out or hollowed to receive and confine a retractable spur device that is mountable as a unit within the heel layer openings. The bottom heel layer has openings through which two spurs are projected across the rear of the heel of the shoe. The spur device comprises generally a bottom base plate, a retractable spur plate having spurs extending through the base plate and adapted to be extended through the holes in the bottom layer of the heel. Lying above the spur plate is a main pressure spring plate, pivotally connected to one end of the base plate and normally free of spring action. A lock lever having a shank with an opening therein extends over the spring plate and transversely thereto and with the spring plate lying within the opening no spring action is exerted against the spur plate. Upon the lock lever and its shank being turned, pressure is applied to the spring plate so as to activate the same and to extend the spurs. By this construction the spurs and the strong spring will engage the ice and will substantially support the weight of the wearer of the shoe so that it penetrates the ice, but upon solid concrete or rocks the spur plate will be upwardly forced against the action of the spring plate so that the spurs will not be harmed by walking upon a hard surface other than ice. The lock lever extends through the side of the heel and its handle arm lies within a recess in the side of the heel.

3,693,272

**FLOATING TOWER FOR UNDERWATER DREDGING**

Paul Gariel, 3, rue Lesdiguières, 38-Grenoble, France  
Filed April 29, 1970, Ser. No. 32,993

Claims priority, application France, April 30, 1969, 6912354; May 13, 1969, 6914340

Int. Cl. E02f 3/90

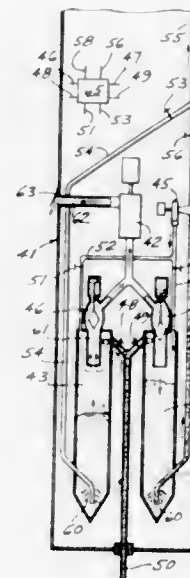
U.S. Cl. 37—63

3 Claims

A suction-dredging installation for operation at great depths and having considerably increased stability in rough water.

comprising a suction nozzle in contact with the sea-bed and drawing in a mixture of water and materials, a pump installed in a floating tower of elongated form and a suction conduit coupling said suction nozzle to said pump, the tower being maintained in a vertical working position in the water by bal-

bucket members are moved by fluid operators reacting between the arms and the bucket members. A suction pipe ex-



lasting means, said pump being mounted near the lower extremity of the tower so as to obtain a great apparent depth of immersion, the pump being coupled to a delivery conduit which applies a back-pressure corresponding substantially to said depth of immersion so that the pump is capable of working without cavitation.

3,693,273

**SCRAPER APRON FOR IMPROVED CLOSING IN ROCK**

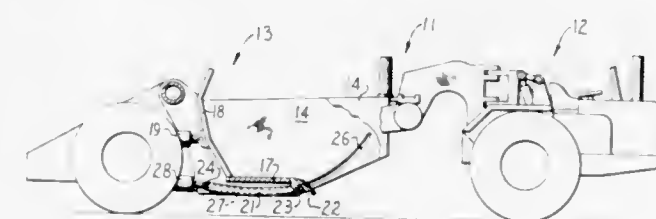
Robert J. Sullivan, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 14, 1970, Ser. No. 97,788

Int. Cl. E02p 5/00

U.S. Cl. 37—129

13 Claims



An apron carried below the floor of a scraper bowl and having the scraper cutting edge on the forward portion thereof is arranged for selective forced movement through the material ahead of the bowl in an upward and preferably forward direction to close the forward end of the bowl without interference to the closing action by rocks or other material.

3,693,274

**CLAM SHELL EXCAVATOR**

Ugo Piccagli, 14202 Hay Meadow Dr., Apt. 167, Dallas, Tex.

Filed Oct. 13, 1970, Ser. No. 80,357

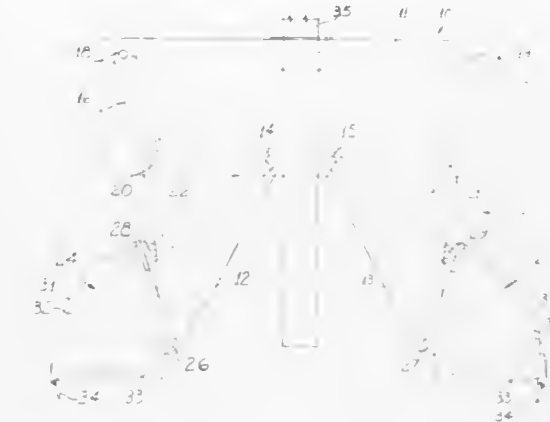
Claims priority, application Canada, Sept. 10, 1970, 092866

Int. Cl. B66c 3/02

U.S. Cl. 37—187

2 Claims

A supporting frame cars a pair of pivoted arms which are movable toward and away from each other by fluid operators reacting between the arms and the frame. A pair of complementary bucket members are pivoted to lower end of the respective arms for movement toward and away from each other independently of the pivotal movement of the arms. The



tends through the frame between the arms for picking up material loosened by the bucket members.

3,693,275

**FISHING LURE**

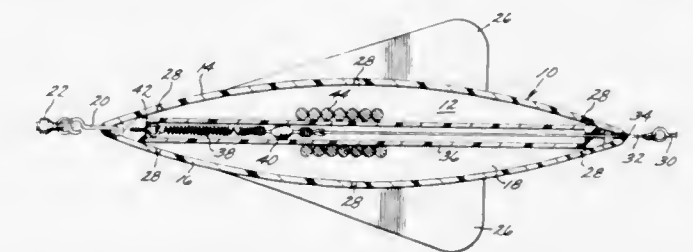
Jack Q. Craig, 44 N.W. 101st Ave., Portland, Oreg.

Filed Sept. 30, 1970, Ser. No. 76,699

Int. Cl. A01k 85/00

U.S. Cl. 43—15

4 Claims



A fishing lure for connection to a leader and adapted to trail a fishhook, the lure including a bias means which yields when a fish initially strikes the fishhook, the lure further including a relatively heavy mass to provide inertial resistance to movement so that the fishhook is abruptly and forcibly set when the bias means ceases to yield further.

3,693,276

**DEVICE FOR ELECTRIC SEA-FISHING**

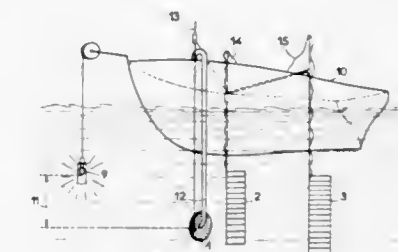
Georges Kurc, Nantes, France, assignor to Institut Scientifique et Technique des Pêches, Maritimes, Nantes, France  
Filed March 3, 1970, Ser. No. 16,081

Claims priority, application France, March 6, 1969, 6906150

Int. Cl. A01k 79/00

U.S. Cl. 43—6.5

15 Claims



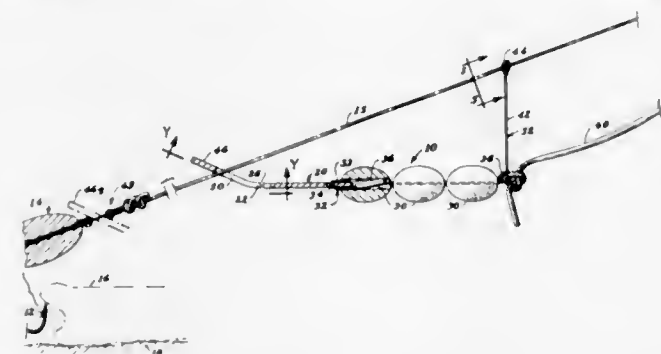
Electric sea-fishing apparatus employing an electrode array for subjecting fish to an electric field of a strength equal to or in excess of the galvanotactic threshold, the electrode structure including an anode and two cathodes arranged to define an equilateral triangle and the power source supplying a pulsating DC voltage.



### 3,693,277 LURE-RETRIEVER

Wallace N. Wells, 7415 Hollingsworth Dr., New Augusta, Ind.  
Filed Nov. 10, 1969, Ser. No. 875,056  
Int. Cl. A01k 97/00  
U.S. Cl. 43—17.2

4 Claims



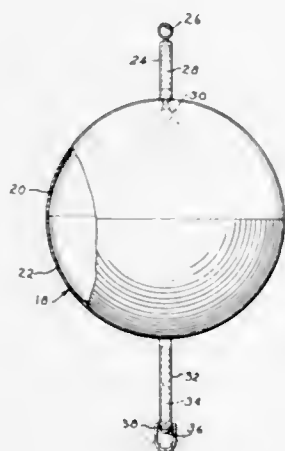
A fish lure retriever, readily attachable onto an extended fishing line having its lure snagged or caught by some underwater obstruction. The retriever has an opening through which the fishing line extends and also through which a portion of the snagged lure is received, permitting the lure-retrieving force to be applied against those received lure portions. Thus, the fishing line, which guides the retriever to the submerged lure, also automatically directs and guides the retriever to a position in which a portion of the retriever is latched or locked onto a portion of the lure.

The concepts of the present invention provide a convenient, handy, and extremely useful means for retrieving a fishing plug or lure which has somehow become snagged or entangled.

### 3,693,278 ILLUMINATED FISHING BOBBER

Asie Mahone, Jr., 1309 North 44th St., Kansas City, Kans.  
Filed April 23, 1971, Ser. No. 136,743  
Int. Cl. A01k 93/00  
U.S. Cl. 43—17.5

7 Claims



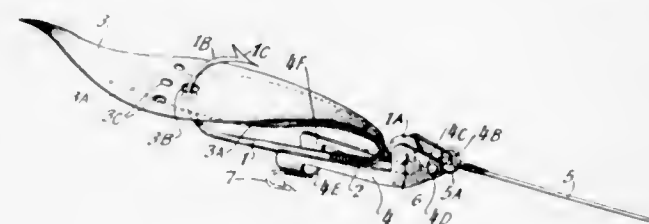
A fishing bobber having a source of illumination to accommodate night fishing. A first source of illumination is disposed in the bobber, a part of which is translucent, to make the bobber visible in the water at night. An elongated projection extends from the bobber into the water and houses a second source of illumination which is directed downwardly onto the baited hook. The lower half of the bobber is substantially opaque so as not to be visible to a fish in the water beneath the bobber. The fishing line which is attached to the bobber includes a leader section which extends directly beneath the bobber and is secured to the end of the aforementioned projection. The main length of line which is secured to the fishing pole is attached to the bobber by an elongated structure at the top of the bobber, in the same vertical plane as the projection which mounts the leader section.

A plurality of flotation balls or fins may be provided around the bobber to help stabilize it in the water.

### 3,693,279 SOUND PRODUCING FISHING LURE

Kenneth Mackie, 23 Riverside Rd., Alnmouth, England  
Filed April 14, 1970, Ser. No. 28,451  
Claims priority, application Great Britain, April 18, 1969, 19,840/69  
Int. Cl. A01k 85/04  
U.S. Cl. 43—42.06

13 Claims

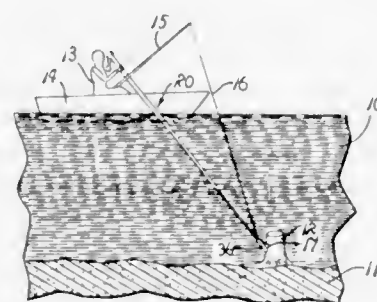


The invention described relates to a fishing lure in which relative motion through the water when fishing promotes two different modes of vibration or oscillation due to the hydrodynamic instability of two hydrofoil elements. One of the modes produces percussive waves in the water in the manner of a rattle and the other produces acoustic waves of a continuous nature. The lure comprises a hook which is pivotally connected at its eye to a striker element and free to rotate about an axis spaced from the end at which the hook line is attached and about which the striker may rotate. The striker presents a rearwardly directed extension against which the shank of the hook may percussively impact and is apertured to provide a water passageway therethrough. Further, at least one flexible laminar element is mounted on the hook so as to be attached to the hook shank near the eye and is impaled near the barb. This latter element which is responsible for undulatory oscillations occasions the acoustic waves.

### 3,693,280 COMBINED BOAT HOOK AND LURE RETRIEVER

Ray Calhoun, P.O. Box 1336, Taft, Calif.  
Filed Nov. 13, 1970, Ser. No. 89,169  
Int. Cl. A01k 97/00  
U.S. Cl. 43—17.2

3 Claims



A fish lure retriever having a pole, a fish line following guide mounted on the pole, and hook snagging means mounted on the pole adjacent to the guide.

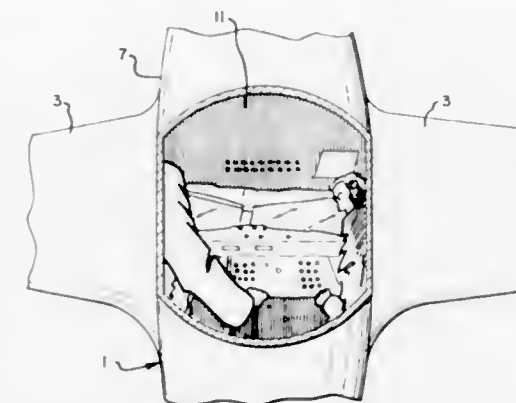
### 3,693,281 PEEK IN MODEL KIT

Tobin Wolf, 447 Essex Avenue, Bloomfield, N.J.  
Filed Jan. 15, 1971, Ser. No. 106,761  
Int. Cl. A63h 33/26  
U.S. Cl. 46—228

7 Claims

The disclosure relates to a model kit which consists generally of premolded parts, such as plastic or the like which can be preassembled in well known manner to provide a resulting scale model of considerable accuracy and detail of the external part of the original structure being copied. The disclosure also includes at least one photo-optical system which is positioned at strategic locations in the model upon assembly beneath a peep hole wherein a peep hole is provided

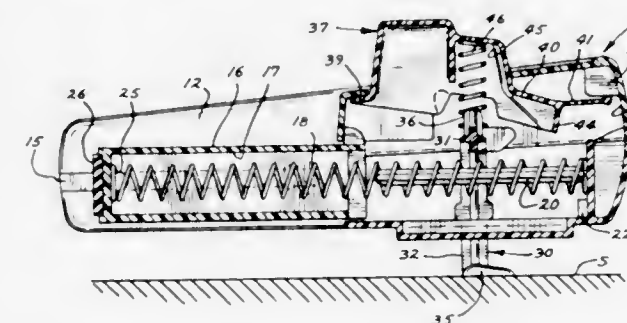
going into the interior of the assembled model, the photo-optical system including a lens and a photograph or the like capable of being seen through the peep hole to provide an indication of what would normally be positioned within the original structure when viewing at the location of the peep hole.



### 3,693,282 TOY VEHICLE LAUNCHING DEVICE WITH SAFETY MECHANISM

Cecil F. Adicks, Playl Del Rey (Mound), and Cecil F. Adicks, Playa Del Rey, Calif., assignors to Tonka Corporation, Mound, Minn.  
Filed April 5, 1971, Ser. No. 130,895  
Int. Cl. A63h 33/00, 33/00  
U.S. Cl. 46—1 R

7 Claims

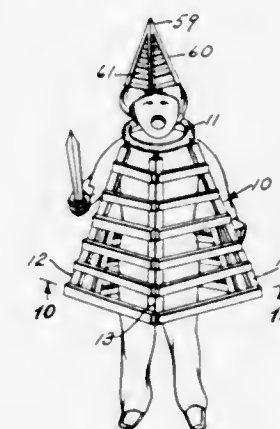


A device for launching a toy vehicle across a floor surface, the piston or launch bar device having a spring actuated piston and means for locking the piston in a cocked position with the spring stressed, a button for releasing the piston from said locking means, and a safety device wherein the button will not release the piston unless the device is held firmly against the floor in launching position.

### 3,693,283 CHILD'S TOY

Dora Marcus, 345 Eighth Avenue, New York, N.Y.  
Filed Oct. 1, 1971, Ser. No. 185,725  
Int. Cl. A63h 33/00  
U.S. Cl. 46—16

3 Claims



A construction toy that a child user may build up around himself. It consists of a plastic ring placed over the head and

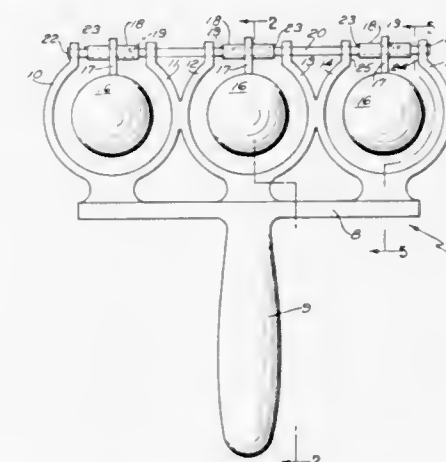
which rests upon the shoulders. From the ring there are suspended a plurality of synthetic resinous or wood strips, three in front and three in back spaced at regular intervals. Small strips are attachable to the above strips in desired number and spacing by the use of magnets. A pointed hat may be formed in completely assembled condition, or constructed using similar strips with a frame to fit on the head and small strips attached to the frame with magnets. Another pointed strip may be provided to be used as a sceptre or whatever the user's imagination wishes him to believe.

### 3,693,284 Patent Not Issued For This Number

### 3,693,285 TOY WITH A PLURALITY OF ORBITING MEMBERS

John Manzo, 1225 Cranston St., Cranston, R.I.  
Filed June 1, 1971, Ser. No. 148,451  
Int. Cl. A63h 1/32  
U.S. Cl. 46—47

8 Claims

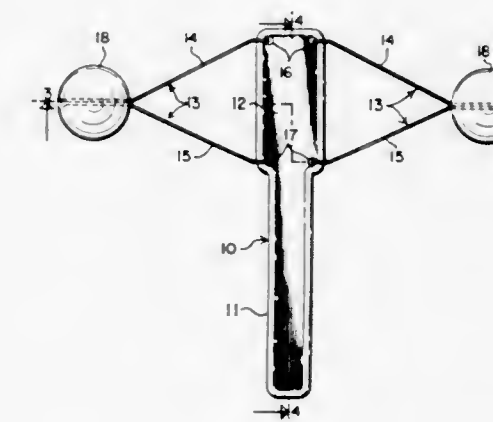


A toy device adapted to be held in the hand by a handle which supports a plurality of spaced arms between each pair of which there is rotatably supported on a pin extending between the arms a ball which may be rotated about the pin, the arrangement being such that one of the balls may rotate about the pin in one direction while another of the balls may be rotated about the pin in the opposite direction or be stationary depending upon the skill of the operator.

### 3,693,286 AMUSEMENT TOY

Ettore Marcotti, 2363 Arthur Avenue, Bronx, N.Y.  
Filed April 21, 1971, Ser. No. 135,978  
Int. Cl. A63h 1/32  
U.S. Cl. 46—47

4 Claims





permitted to impact resiliently with each other on each side of the handle.

### 3,693,287 MUSICAL TOY

Claude Martin, Sainte-Croix, Switzerland, assignor to Reuge SA, Sainte-Croix, Switzerland

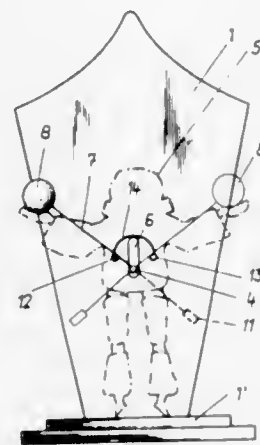
Filed May 21, 1971, Ser. No. 145,729

Claims priority, application Switzerland, May 7, 1971, 6774/71

Int. Cl. A63h 5/00

U.S. Cl. 46—118

7 Claims



An articulated toy figure is mounted on an axle driven with a vertical reciprocating movement by a musical motor. A rod pivoted about said axis can pivot between two extreme positions defined by stop members, and upon impact with one stop is rebounded to the other stop so that an object on the rod is apparently juggled from one hand of the figure to another hand.

### 3,693,288 GRASPING HAND FOR DOLL

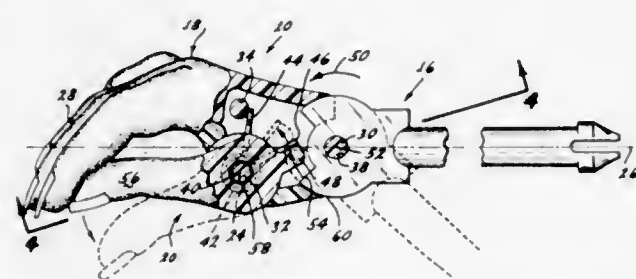
J. Stephen Lewis, Pacific Palisades; Harold B. Collins; Jurgis Sapkus, both of Manhattan Beach, and Juanito O. Villanueva, Lawndale, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 26, 1971, Ser. No. 192,424

Int. Cl. A63h 11/00

U.S. Cl. 46—119

6 Claims



A hand assembly for a doll, which includes a pivotally mounted thumb for grasping and releasing objects, the position of the thumb relative to the fingers being controlled by pivoting of the entire hand rather than directly moving the thumb. The assembly includes a wrist armature that can be mounted on a doll arm, a hand member with a multiple finger portion pivotally mounted on the wrist armature, a thumb member pivotally mounted on the hand member, and a spring connecting the thumb and hand members to urge the thumb toward a closed position. When the hand member is pivoted in a predetermined direction on the wrist armature, a part of the wrist armature pivots the thumb faster than the hand member so that the thumb opens on the finger portion of the hand. When the hand is pivoted to an extreme position the wrist armature maintains the hand posed with the thumb opened.

### 3,693,289 TOY VEHICLE WITH SOUND-PRODUCING WHEELS

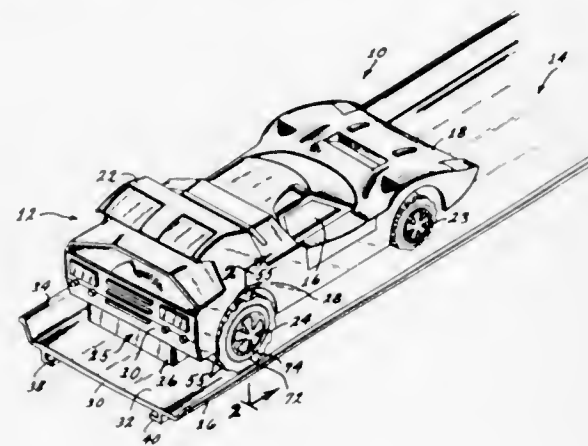
Orbert S. Smith, Hawthorne; Denis V. Bosley, Palos Verdes Peninsula, and George Soulakis, Pasadena, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 18, 1971, Ser. No. 107,383

Int. Cl. A63h 17/34

U.S. Cl. 46—175

12 Claims



A toy racing vehicle and track system wherein the toy vehicle is self-powered and has wheels with interrupted running surfaces which induce vibrations of the vehicle and/or the track system over which the vehicle moves so as to simulate the sound of a real racing vehicle.

### 3,693,290 CABLE MOUNTED TOY VEHICLE AND TOY SYSTEM EMPLOYING THE SAME

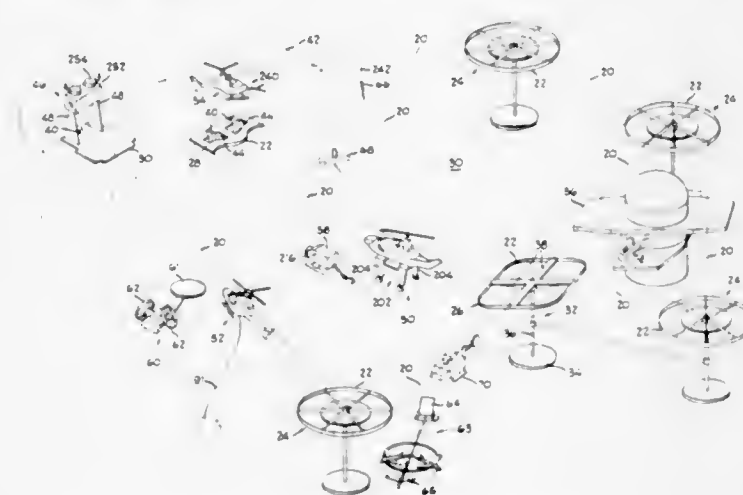
Jeffrey D. Breslow, Evanston; Marvin I. Glass; Burton C. Meyer; Eugene Jaworski, all of Chicago, and Gordon A. Barlow, Evanston, all of Ill., assignors to Marvin Glass & Associates

Filed Dec. 23, 1970, Ser. No. 100,873

Int. Cl. A63h 11/10

U.S. Cl. 46—202

22 Claims



A toy system of the type wherein toy vehicles are suspended and move upon an elevated rail system. The exemplary embodiment contemplates the use of a plurality of rails, some of which may intersect each other, and vehicles which are suspended by the rails and include drive mechanism for driving the same along the rails. The vehicles further include a transfer device which is operative when the vehicle is at an intersection of two rails to transfer the vehicle from the rail on which it was traveling to the intersecting rail. Also included is a retaining device to insure that a vehicle will not drop from the rails during transfer at an intersection. The system further includes a vehicle operative to release one or more projectiles at a target mechanism with the target mechanism being operative to launch one or more projectiles upon being struck by a projectile dropped from a vehicle. Also contemplated is an auxiliary, normally ground engaging vehicle and a cooperating

vehicle to be suspended from the rail system. Cooperating elements on the auxiliary vehicle and the suspended vehicle are operative to releasably secure the two together when one vehicle engages the other during relative movement therebetween.

### 3,693,291 TOY VEHICLE AND PLAYING BOARD

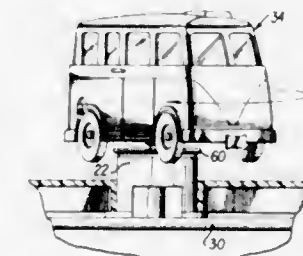
Masaru Aoki, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan

Filed Sept. 16, 1971, Ser. No. 180,990

Int. Cl. A63h 33/00

U.S. Cl. 46—202

5 Claims



An amusement device for small children featuring a playing board resembling a town having building structures and intersecting streets, openings provided in the surface of the board at the intersections of the streets, buttons mounted within the openings for upward movement and a toy vehicle featuring powered wheels permitting travel along the streets and a disk mounted for rotation in a plane below the vehicle and above the streets such that as the vehicle enters the intersection of two streets and the button is pushed upwardly the engagement of the button against the rotating disk causes the vehicle to rotate and change direction while lowering of the button at a selected time permits the vehicle to continue its travel along the selected street.

### 3,693,292 SWIMMING DOLL

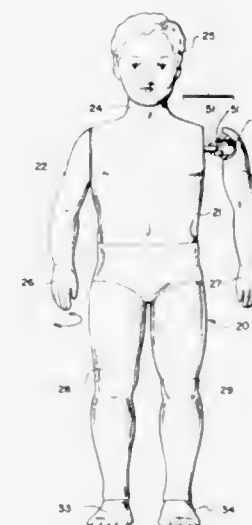
Anthony Joseph Di Leva, 174 West 72nd St., New York, N.Y.

Filed April 7, 1971, Ser. No. 131,902

Int. Cl. A63h 33/26

U.S. Cl. 46—247

9 Claims



A swimming doll made of separable parts comprising a main body part, leg, foot, arm and hand parts, as well as a head, all of which parts are detachable from one another, certain of the parts being connected by ball and socket joints adjustable relative to one another as with the leg and foot parts to provide a rudder effect so as to steer the swimming doll, and in the hand parts to control the speed of propulsion of the doll. The head part is connected to upstanding neck portion in such a manner, either through the twisting of the neck over a motion of the head relative to the neck, the head will be turned from side to side as when the arms are extended for propelling

the doll. A self contained motor unit including transversely extending shaft, the ends of which extend outwardly through the sides of the main body for driving connection with the arms at the shoulders of the doll. This propulsion motor unit is removable from the back of the doll through an opening which has a tight fitting cover thereover, and which is pliable to operate a switch on the motor unit. Batteries for operating the electric motor according to one form of the invention are either contained in the body housing for the motor or in the legs of the doll. According to another form of the invention there is provided a spring operated motor that can be wound by extending a key through the cover back wall.

### 3,693,293 PROTECTIVE SLIDING WALL PANEL ASSEMBLY

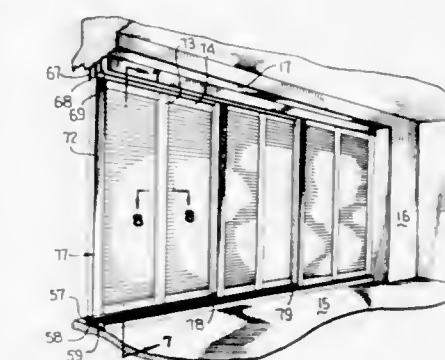
Bruce C. Egan, Jr., 5750 N. Federal Highway, Ft. Lauderdale, Fla.; Morton S. Rifkin, Miami, and Grover C. King, Plantation, both of Fla., assignors to Bruce C. Egan, Jr., Fort Lauderdale, Fla.

Filed May 6, 1971, Ser. No. 140,785

Int. Cl. E06b 5/12

U.S. Cl. 49—56

7 Claims



A panel slider assembly for protecting verandas and exposed glass surfaces from wind damage and burglary attempts, comprising at least one panel slider of snap-lock construction, an inverted channel-shaped frame housing that extends along the entire bottom edge of the panel slider, a plurality of roller frames which are spaced apart within the frame housing and are equipped with horizontally disposed retention shelves, a bottom roller which is rotatably attached to each roller frame, a floor-mounted retention channel having a mushroom track upon which the bottom rollers travel and horizontally disposed retention lips which are higher and spaced closer together than the retention shelves, a downwardly disposed adjustment channel which is attached to the ceiling and within which the top portion of the wall panel slides, and at least two pairs of rotatably attached and horizontally disposed adjustment rollers which fend off the sides of the adjustment channels while permitting vertical movement of the panel slider therewithin.

3,693,294  
Patent Not Issued For This Number

3,693,295  
Patent Not Issued For This Number



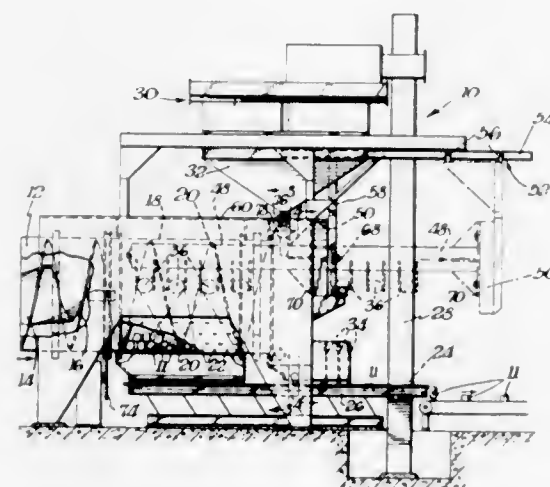
3,693,296

**WORKPIECE TREATING APPARATUS**

James H. Carpenter, Jr., Hagerstown, Md., assignor to The Carborundum Company, Niagara Falls, N.Y.  
Continuation-in-part of Ser. No. 687,701, Dec. 4, 1967, Pat. No. 3,521,406. This application July 17, 1970, Ser. No. 55,699  
Int. Cl. B24c 3/00

U.S. Cl. 51-13

21 Claims



A workpiece treating arrangement includes a slatless rotatable drum which has centrifugal throwing wheels disposed therein for treating workpieces during rotation of the drum.

3,693,297

**APPARATUS AND METHOD FOR GRINDING IRREGULAR SURFACES OF REVOLUTION**

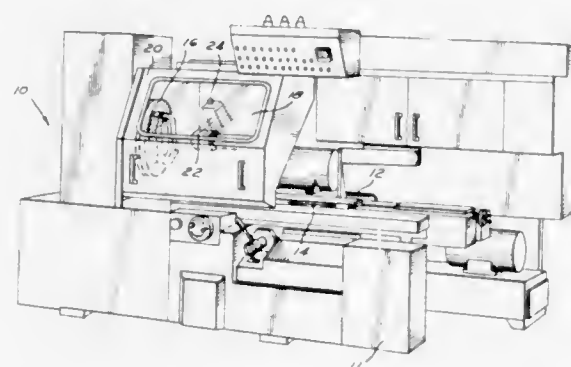
Roald Cann, Weathersfield, Vt., assignor to Bryant Grinder Corporation, Springfield, Vt.

Filed March 24, 1970, Ser. No. 22,307

Int. Cl. B24b 17/02, 5/16, 5/36

U.S. Cl. 51-94 R

9 Claims



A workhead, for the grinding of non-circular workpieces, equipped with a pair of compensating cams to shift the workpiece axis relative to the axis of the grinding wheel. The "X" cam shifts the workpiece axis horizontally; the "Y" cam shifts it vertically. The rotation of work and cams is synchronized so that the line joining the point of grind, the center of the grinding wheel and the instant center of curvature of the desired surface is coincident with the feed and compensation line of the grinder at all times.

3,693,298

**VIBRATORY FINISHING MACHINE**

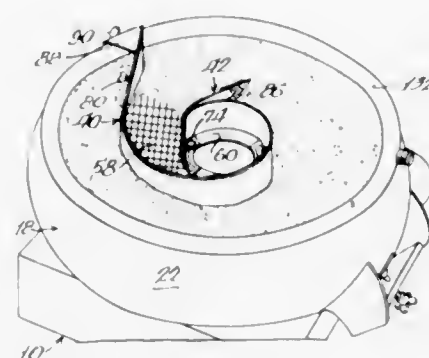
Achille K. Ferrara, 848 Westgate Drive, Addison, Ill.  
Filed Jan. 14, 1971, Ser. No. 106,503  
Int. Cl. B24b 31/06

U.S. Cl. 51-163

16 Claims

A vibratory finishing machine having an improved screen separating device and discharge mechanism for separating the

finished parts from the polishing media at the conclusion of a finishing operation and for discharging the parts from the



machine, and improved drive mechanism for imparting vibratory motion to the bowl of the finishing machine.

3,693,299

Patent Not Issued For This Number

3,693,300

Patent Not Issued For This Number

3,693,301

**METHOD FOR PRODUCING OPTICAL ELEMENTS WITH ASPHERICAL SURFACES**

Gerard Lemaitre, Marseille, France, assignor to Etablissement Public: Agence Nationale de Valorisation de la Recherche (Anvar) Tour Aurore, Paris, France

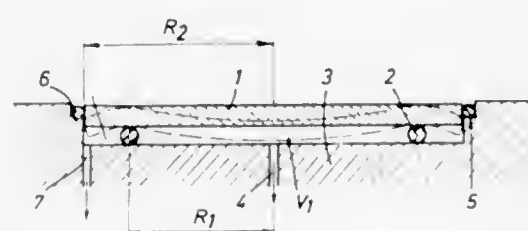
Filed Jan. 19, 1971, Ser. No. 107,680

Claims priority, application France, May 27, 1970, 7019261

Int. Cl. B24b 47/00

U.S. Cl. 51-235

8 Claims



A method for producing optical elements with aspherical surfaces with a pneumatic device for deforming the plates to be formed into optical elements. The plates are deformed by reducing the pressure in a central chamber independently of the reduction of pressure in one or more concentric annular chambers. Toroidal sealing members are provided between the chambers and serve as supports for the plate to be deformed. The invention is particularly useful in optical instruments for astronomy.

3,693,302

**ABRASIVE DICING OF SEMICONDUCTOR WAFERS**

Glade L. Hakes, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 12, 1970, Ser. No. 79,929

Int. Cl. B24c 1/04

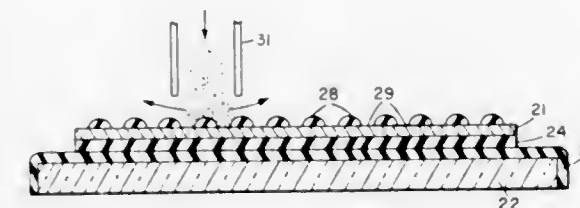
U.S. Cl. 51-312

4 Claims

A heat curable plastisol is used for forming an easily applied, abrasion resistant and acid etch resistant mask to a

semiconductor wafer, preliminary to dicing, for protecting a

necessary for windows of various types and/or doors as may be required.



supporting substrate, and for attaching the semiconductor wafer to the protected substrate.

3,693,303

**REMOVABLE GRID MEMBER**

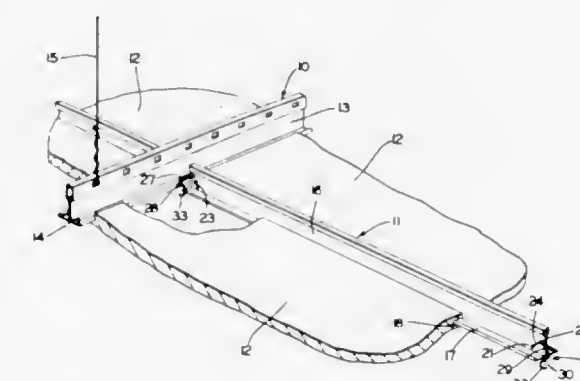
Lucien R. Downing, Jr., Avon Lake, and David F. Mielal, Strongsville, both of Ohio, assignors to Donn Products, Incorporated

Filed Oct. 26, 1970, Ser. No. 83,895

Int. Cl. E04b 5/52

U.S. Cl. 52-476

8 Claims



A removable member for an assembly of members supporting panel boards having means cooperating therewith permitting disassembly of the members and a reaction force on one of said members tending to maintain the members in secure assembled relationship with the panel boards.

3,693,304

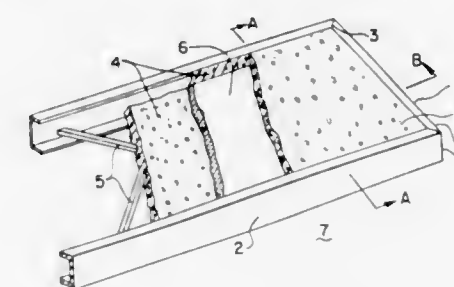
**BUILDING PANEL AND WALL**

William O. Shell, 52 W. Downer Place, Aurora, Ill.  
Filed July 29, 1970, Ser. No. 59,227

Int. Cl. E06b 1/04

U.S. Cl. 52-204

12 Claims



A structural, or non-structural element forming a rigid module of various sizes and dimensions, which may be described as a panel, including a perimeter metal frame either continuous or discontinuous at certain points and a rigid filler material either homogeneous or non-homogeneous such as concrete with necessary stiffening and/or reinforcing elements for both frame and filler material and with or without sound or heat insulating material embedded within the module or panel, a plurality of the modules or panels being utilized to form the walls of a building, with or without additional structure, the frames of the modules or panels mutually abutting and constituting the exterior and/or interior structure, the closure and/or partition walls with such openings as may be

3,693,305

**CAP ASSEMBLY FOR ROOF RIDGE**

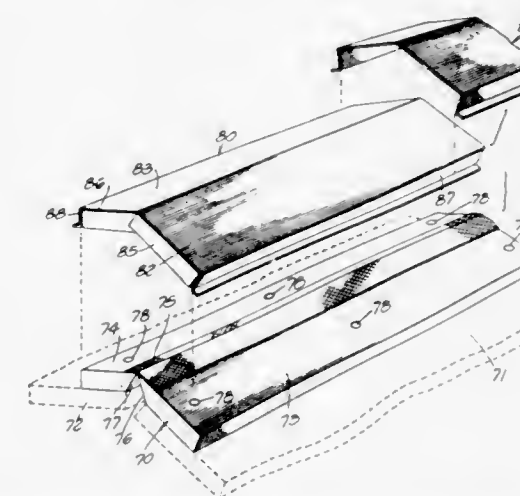
Joseph P. Kneisel, 3920 El Lado Drive, La Crescenta, Calif.  
Division of Ser. No. 885,148, Dec. 15, 1969, Pat. No.

3,626,439. This application Nov. 26, 1971, Ser. No. 202,140

Int. Cl. E04d 1/30

U.S. Cl. 52-276

1 Claim



There is disclosed herein a new roof construction wherein the roofing material is in the form of planks and may be secured directly to rafters, eliminating the need for sheathing and a moisture barrier or membrane such as felt sheeting. The planking has a particular lock joint arrangement which, along with joint drain clips, provides a watertight construction. The exposed surfaces of the planks may be textured to simulate shakes, shingles, tiles or any other texture or pattern desired, and the planks may be of laminated construction, such as of plywood. Not only is the construction water-tight, but it is particularly structurally sound and with no exposed fasteners, such as nails and the like. The planks may be readily mass produced and then shipped to the site for installation. A fireproof coating and coloring may be applied to the planks during manufacture thereof.

3,693,306

**REFRIGERATOR VEHICLE FLOOR EXTRUSION**

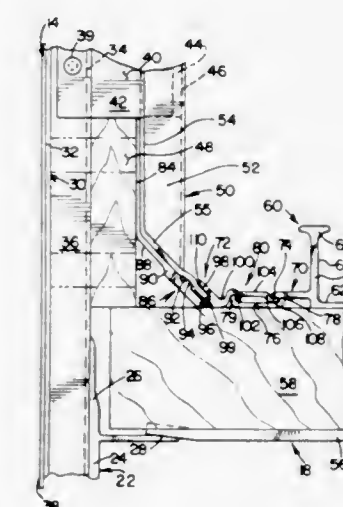
Robert G. Heinz; Harry Cohen, and Edwin L. Carmel, all of Cincinnati, Ohio, assignors to Pullman Incorporated, Chicago, Ill.

Filed June 19, 1970, Ser. No. 47,855

Int. Cl. E04b 5/10

U.S. Cl. 52-288

14 Claims



An extruded corner member for providing a seal between the floor of a refrigerator cargo carrying vehicle and a side wall, the member having interlocking portions for securing to



the floor and to the side wall panels. The interlocking portions provide a watertight joint which can be sealed to prevent spoilable fluid from penetrating to the underside of the floor structure and contaminating insulating materials. The corner member is self-securing and does not require additional rivets, screws or other fasteners to secure it to the floor or side wall panels.

3,693,307

## VARIABLE WALL STRUCTURE

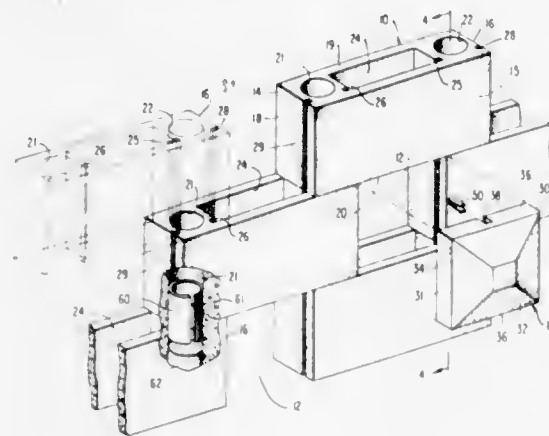
George B. Muse, Calhoun, Ga.

Continuation-in-part of Ser. No. 252, Feb. 2, 1970. This application Oct. 26, 1970, Ser. No. 83,939

Int. Cl. E04b 2/46; E04c 1/08, 1/10

U.S. Cl. 52—438

3 Claims



A variable wall structure in which a wall is formed by a plurality of overlying horizontal courses of building blocks, with adjacent building blocks in the same course being spaced from one another to provide openings in the wall, and with the openings in adjacent courses of blocks being staggered with respect to each other. Vertical alignment channels formed in the blocks and alignment wedges are placed in the channels to assure proper alignment of the blocks in successive courses of blocks. The blocks define circular vertical openings and expandable sleeves are inserted in the openings. Mortar is poured down the aligned openings and sleeves to bond the blocks of the wall structure. Filler blocks are provided to be received within the wall openings, and means are provided to hold the filler blocks in place prior to application of a grout or other holding means. The filler blocks can be selectively positioned to give the finished wall any of a number of desired appearances.

3,693,308

## BUILDING CONSTRUCTION

Henri Louis Trezzini, Paris, and Norbert Czaryski, Fresnes, both of France, assignors to B.C.T.I. Bureau de Coordination de Travaux Industrialises, SARL, Paris, France

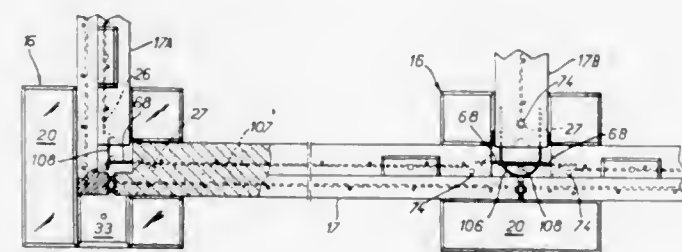
Filed Feb. 2, 1970, Ser. No. 7,692

Claims priority, application France, Feb. 18, 1969, 6903979

Int. Cl. E02d 27/00; E04b 1/00; E04c 1/10

U.S. Cl. 52—293

4 Claims



A building construction of the type using prefabricated reinforced concrete panels for the internal and external walls and the flooring is provided with a concrete foundation having a sole-piece on which are mounted a plurality of supporting

blocks having recesses in which the first level of panel walls are mounted. The panels are positioned in the supporting blocks by pins extending between aligned holes in the recesses and the panels. At their other ends the panels are provisionally connected together by connecting means of various configurations depending on what combination of panels are connected together. Spaces are maintained between adjacent panels into which concrete is poured to make the connection permanent. Additional stories may be added by pins connected between the wall panels of wall panels of adjacent levels. Various seals may be provided between the panels for weather protection and for preventing the escape of concrete during pouring.

3,693,309

## SHORING SYSTEM

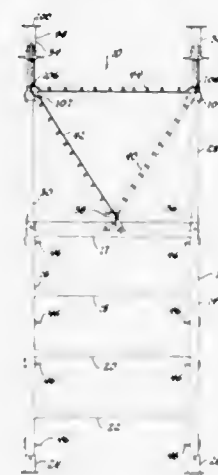
Jacob H. Kutchai, 630 Merrick, Detroit, Mich.

Filed Aug. 19, 1970, Ser. No. 65,137

Int. Cl. E04g 25/00

U.S. Cl. 52—632

8 Claims



A shoring system of the type having one or more vertically arranged frame sections and telescopic extension members extendable therefrom. A frame brace bar extends laterally between and is slidably connected to the extension members at the top of the frame section to provide lateral stability and to serve as an anchor point for diagonal braces to the extension members. Jack screws are disposed on the ends of the extension members and are provided with load-bearing sleeves which fit radially over the jack staffs and inner stabilizing shafts which extend telescopically into the jack staffs and are of a length greater than the length of the threaded portion of the jack staff.

3,693,310

## SUPPORT FOR ELONGATED REINFORCING MEMBERS IN CONCRETE STRUCTURES

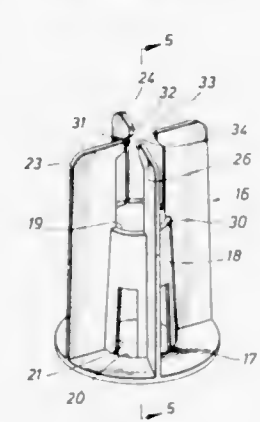
Thomas E. Middleton, Houston, Tex., assignor to Pre-Stress Concrete, Inc., Houston, Tex.

Filed Nov. 9, 1970, Ser. No. 87,924

Int. Cl. E04c 5/16

U.S. Cl. 52—685

2 Claims



A support for reinforcing members used in fabricating concrete structures including a base and an upright portion

which is formed to receive and support two intersecting reinforcing members in a concrete structure at the point where the members intersect. The support holds the reinforcing members during the pouring of concrete to maintain the reinforcing members at a predetermined position with reference to the ground or the outer surface of the concrete structure.

3,693,311

## REINFORCEMENT ELEMENTS FOR CONCRETE STRUCTURES

Sven-Erik Björking, Gotagatan 3, Uppsala, Sweden

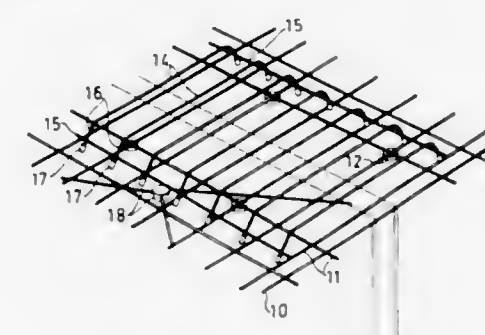
Continuation of Ser. No. 565,423, July 15, 1966, abandoned, and a continuation-in-part of Ser. No. 332,447, Dec. 23, 1963, Pat. No. 3,302,360. This application Nov. 8, 1968, Ser. No. 774,539

Claims priority, application Sweden, Nov. 12, 1965, 14635/65

Int. Cl. E04c 5/18

U.S. Cl. 52—677

6 Claims



A unitary reinforcing mat for reinforcing the top portion of a self-supporting, substantially horizontal concrete slab which includes a plurality of elongated, longitudinally-extending reinforcing bars arranged in spaced, parallel relation to one another and having their free ends bent downwardly to form support legs which are substantially shorter than the remaining longitudinal portion of the bars; at least two connecting bars extending transversely across the longitudinal bars and fixedly attached thereto at points spaced from the tips of the support legs but immediately adjacent the bends in the longitudinal bars so as to rigidly support the support legs and plastic coverings on the tips of the support legs to prevent rusting of any exposed portion thereof. The mats may be formed as a plurality of joined, single longitudinal bars or as pairs of parallel, longitudinal bars and such pairs and multiple single units may be combined with their longitudinal portions parallel to one another or transversely crossing one another.

3,693,312

## CONCRETE INSERT

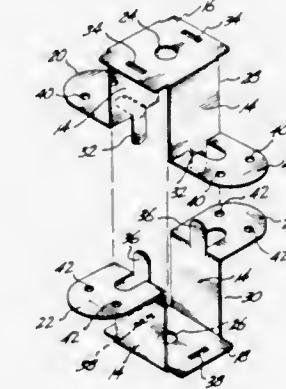
Herman C. Miller, Route 2, Box 2220, Gig Harbor, Wash.

Filed July 27, 1970, Ser. No. 58,286

Int. Cl. E04b 1/41

U.S. Cl. 52—699

5 Claims



A pair of substantially identical formed metal members are interconnected to form a hollow rectangular body having pairs of outwardly extending ears associated with each opposed end of the rectangular body. The ears include holes for receiving

fasteners for fixedly mounting the body on a concrete form. The end portions of the rectangular body include female coupling means of varying size adapted to alternatively receive and hold threaded or unthreaded pin means.

3,693,313

## CIGARETTE PAPER TUBE MANUFACTURE

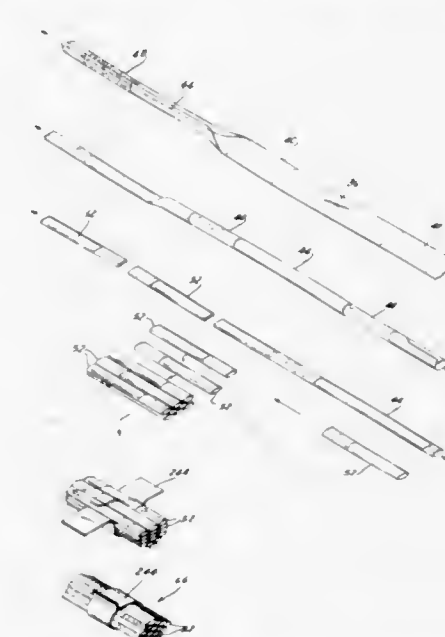
John H. Sextone, Middletown, Ky., assignor to Brown &amp; Williamson Tobacco Corporation, Louisville, Ky.

Filed July 29, 1970, Ser. No. 59,052

Int. Cl. A24c 5/46, 5/52; B65b 19/34

U.S. Cl. 53—3

35 Claims



In the manufacture of spills of cigarette paper for use in the manual making of filter cigarettes, apparatus is provided for initially forming a web of cigarette paper into a hollow tube. The formed tube is flattened and then cut in predetermined lengths to form spills to be used with a manual cigarette making machine. The web has a tipping part. A photocell arrangement is operable to sense the location of the tipping part in relation to the cutting of the tube to assure cutting along the center line of the tipping part as well as along a line centrally located between tipping parts. In order that there be proper registration of the tipping part in relationship to such cutting, the photocell arrangement is designed to adjust the speed of movement of a cutting knife. The cut spills are then picked up by a separating conveyor traveling at a higher speed to space the spills from one another. The spaced cut spills are then directed against a stop plate after having been deformed slightly by the separating conveyor to impart rigidity thereto. The spills are deposited on a collecting conveyor which transfers the spills substantially parallel to one another and in a direction substantially normal to the path of travel of the paper tube. A spacing gate cooperates with the collecting conveyor to collect the spills and then permits only a predetermined number thereof to pass therethrough to a spill bundling assembly. A banding assembly is designed to sever a length of banding material from a web. The severed band is then secured about the collected spills located at the bundling assembly. The banded bundle of spills are discharged and then placed in a kit designed to permit a cigarette smoker to manually make a filter tip cigarette.

3,693,314

## CLOSING SYSTEM FOR BAGS AND THE LIKE

Philip L. Reid, Lyman, and Edward L. Holcombe, Taylors, both of S.C., assignors to W. R. Grace &amp; Co., Duncan, S.C.

Filed Dec. 14, 1970, Ser. No. 97,747

Int. Cl. B65b 31/02

U.S. Cl. 53—22 B

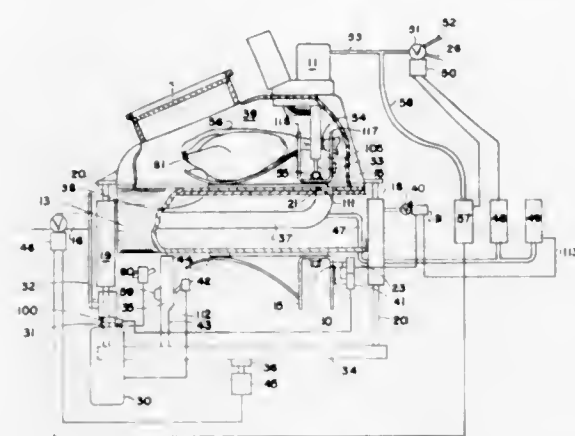
8 Claims

Disclosed is an apparatus and method for closing containers and especially useful for closing bags containing vacuum



packaged products. The following features are included: means for straddling the bag's neck, means for positioning the

natively, an auxiliary motor may drive the second part when a main motor driving both parts is inoperative. The speed at



bag's neck, means for pressure closing a clip, means for sensing that the pressure applied to close the clip is sufficient and associated apparatus for vacuumizing the bag.

3,693,315

## METHOD OF MAKING TAMPERPROOF PACKAGE

Joseph M. Segel, Merion, and Roy E. Okell, Broomall, both of Pa., assignors to The Franklin Mint, Corporation, Yeadon, Pa.

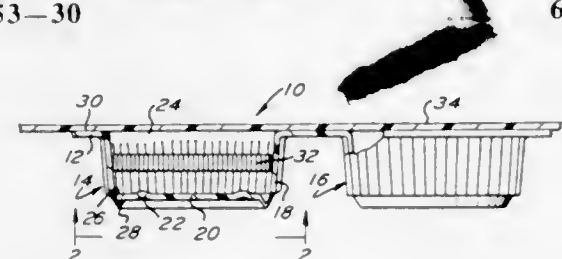
Division of Ser. No. 798,715, Feb. 12, 1969, Pat. No.

3,615,005. This application June 30, 1970, Ser. No. 60,193

Int. Cl. B65b 47/10

U.S. Cl. 53—30

6 Claims



A tamperproof and easy-open package of polymeric plastic materials is disclosed wherein a base sheet is provided with specially designed receptacles integral therewith and defined by corrugated side walls with a sharp top edge and a bottom wall. A top sheet overlies the open end of the receptacle and is welded to a peripheral flange portion of the base sheet with the welds circumscribing the receptacles. When downward pressure is applied on the top of the receptacle, the bottom wall is pushed in, the receptacle ruptures at a weak section between the corrugated side wall and the bottom wall before the bottom wall makes contact with an article within the receptacle.

3,693,316

## MACHINES FOR WRAPPING BLOCK-LIKE ARTICLES

Alfred Schmermund, 62, Kornerstrasse, D-5820 Gevelsberg, Germany

Filed May 1, 1970, Ser. No. 33,743

Claims priority, application Great Britain, May 8, 1969, 23,485/69

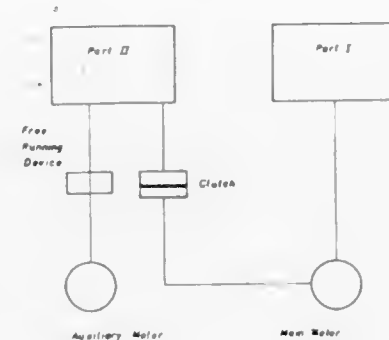
Int. Cl. B65b 53/00, 65/00

U.S. Cl. 53—52

1 Claim

In machines for wrapping rectangular block-like articles such as cigarette packets, the articles are enveloped in wrapping material in a first part of the machine and the wrapping material is heat sealed in a second part of the machine. Each part is provided with drive means so that when the first part is inoperative (during changing of a reel of wrapping material) the second part remains operative and damage to the articles due to overheating, while stationary in the second part, is avoided. The parts may be driven by separate motors, or a single motor employing a clutch. Alter-

natively, an auxiliary motor may drive the second part when a main motor driving both parts is inoperative. The speed at which the second part is driven may be related to the temperature at which the wrapping material is heat sealed.



3,693,317

## APPARATUS FOR IMPREGNATING FABRICS, MORE PARTICULARLY GLASS CLOTHS, WITH PLASTICS

Andre Violleau, Vitrolles Le Roucas, and Rene Louis Coffy, Marseille, both of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris (Seine), France

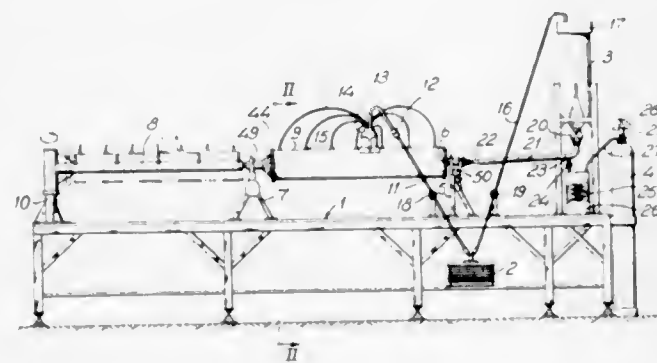
Division of Ser. No. 886,198, Dec. 18, 1969, Pat. No.

3,653,174. This application Dec. 21, 1971, Ser. No. 210,315

Int. Cl. B65b 55/22

U.S. Cl. 53—111 R

10 Claims



An apparatus for impregnating fabrics, more particularly but not exclusively glass cloths, with plastics such as synthetic resins still in the fluid state, wherein a roll of the fabric is first subjected to the action of a substance intended to enhance the intimacy of the bond between the fibers and the impregnating plastic, and is thereafter exposed to a vacuum together with said plastic, following which the plastic content of the fabric is calibrated and the impregnated fabric is finally packaged for storage.

3,693,318

## TRAY COVERING AND SEALING APPARATUS

Winton E. Balzer, 963 Central Ave., Needham, Mass., and Kenneth M. Knobel, 37 Percy Rd., Lexington, Mass.

Filed Aug. 26, 1970, Ser. No. 66,965

Int. Cl. B65b 7/28, 41/04, 41/14

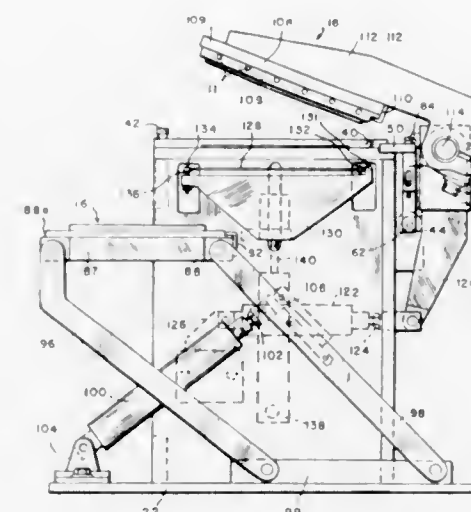
U.S. Cl. 53—329

10 Claims

A sheet holder comprising a flat plate overlain by a bar held in closely spaced parallel relation thereto for holding a sheet with a short portion of its leading end projecting therefrom, a reciprocally mounted pair of jaws movable toward and from the sheet holder for taking hold of the leading end of the sheet and drawing out a predetermined length thereof, a tray holder and a platen movable from below and above the plane of the sheet to press the sheet into engagement with the rim of a tray supported by the tray holder to effect sealing of the sheet to

the rim of the tray, a sheet severing device for cutting off the sheet close to the sheet holder, and control means for effect-

present are disqualified and dust and other contamination are



ing movement of the jaws, tray holder and platen in timed relation.

3,693,319

## WRAPPING INDIVIDUAL SLICES OF FOOD

David N. Hunsader, Green Bay, Wis., assignor to Swift & Company, Chicago, Ill.

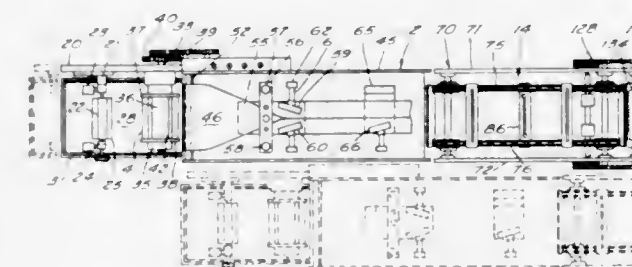
Division of Ser. No. 30,700, April 22, 1970. This application

Dec. 10, 1971, Ser. No. 206,971

Int. Cl. B65b 51/30

U.S. Cl. 53—123

6 Claims



A method and apparatus for wrapping individual slices of product, such as cheese, in film where the slices are first cut from a continuously produced ribbon and are thence carried upon a web of film that is drawn through enfolding operations to entube the successive slices by successive pairs of jaws. The jaws are evenly spaced on endless conveyor driven at a speed slightly greater than the ribbon of product thus producing spaces between successive slices where the jaws engage the film and where the film is first heat sealed while engaged and then severed immediately before being disengaged and discharged.

3,693,320

## NOVEL CAPSULE FINISHING APPARATUS

Carl C. Garland, 15700 Kentfield, Detroit, Mich.

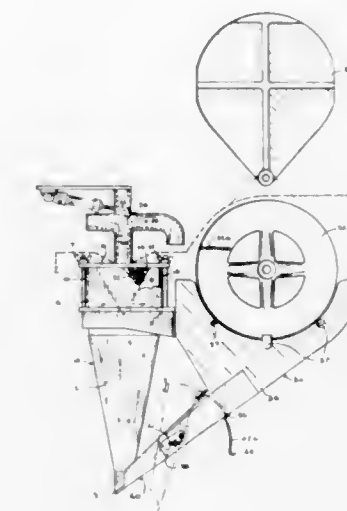
Filed Nov. 9, 1970, Ser. No. 88,053

Int. Cl. B07b 7/04; B08b 5/00

U.S. Cl. 53—167

5 Claims

Apparatus and means are provided for finishing pharmaceutical capsules under vacuum whereby any empty capsules



cleared from the surfaces of capsules, capsule filling machinery, etc.

3,693,321

## MACHINES FOR PACKING SHEET GLASS WITH INTERLEAVING MEANS

Leif Billy Nilsson, Emmaboda, Sweden, assignor to AB Emmaboda Glasverk, Emmaboda, Sweden

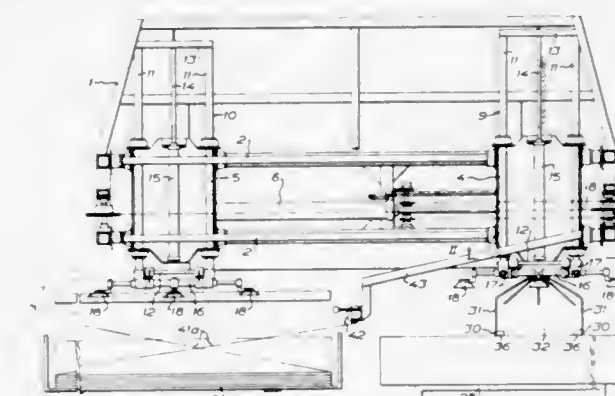
Filed June 21, 1971, Ser. No. 154,842

Claims priority, application Sweden, June 22, 1970, 8551/70

Int. Cl. B65b 5/10, 11/00

U.S. Cl. 53—244

3 Claims



A machine for packing glass sheets interleaved with paper and having two carriages provided with movable suction heads and movable along parallel paths simultaneously in mutually opposite directions for alternately picking up the glass sheets one by one at a pick-up station and stacking them at a delivery station, and a holder with a paper roll secured to one of the carriages in position to be carried past the delivery station on each station-to-station movement thereof, thereby rolling out paper over the glass sheet last delivered.

3,693,322

## APPARATUS AND METHOD FOR DEODORIZING OILS

Dewey D. Lineberry, Louisville, Ky., and Frank A. Dudrow, Louisville, Ky., assignors to Chemetron Corporation, Chicago, Ill.

Filed July 17, 1970, Ser. No. 55,675

Int. Cl. B01d 19/00

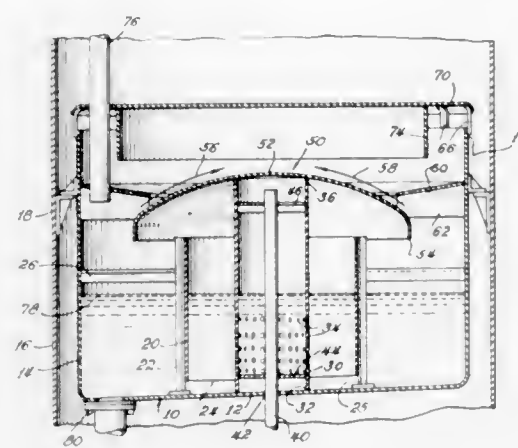
U.S. Cl. 55—54

18 Claims

This invention provides an apparatus and method for contacting liquid with gas in a vessel in which an upstanding jet-forming means directs jets of gas along a path having a horizontal component and through the liquid. The jet forming element may be an upright distributor having orifices spaced along its length from near the bottom of a tray to about the level of the liquid. The jets of gas generate a rising column of liquid and inject gas into the column so formed. Considerable



velocity develops and the rapidly moving gas and liquid are impinged with turbulence against a plate and deflected



downward. Currents of escaping vapor are driven against each other and against elements of the apparatus to coalesce and separate entrained droplets.

3,693,323

# PROCESS FOR THE TRAPPING OF MERCURY VAPORS AND APPARATUS THEREFOR

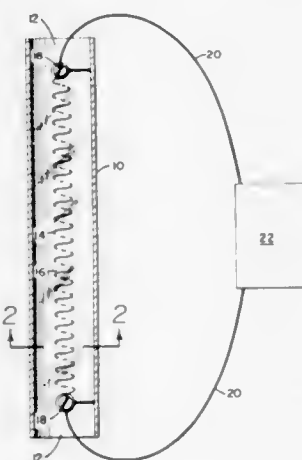
Preston L. Grant, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Dec. 30, 1970, Ser. No. 102,571

Int. Cl. B01d 53/04

U.S. Cl. 55—72

6 Claims



An improved process and apparatus for the collection of mercury vapors from a volume of air or other gases. The improvement comprises the direct resistance heating of a noble-metal absorbent in a mercury trap to release absorbed mercury for the subsequent measurement thereof.

3,693,324

# FLASH ECONOMIZER FOR VARIABLE LOADS

John A. McNeil, 161 Franklin Avenue, Brookville, Pa.

Filed Feb. 9, 1972, Ser. No. 224,866

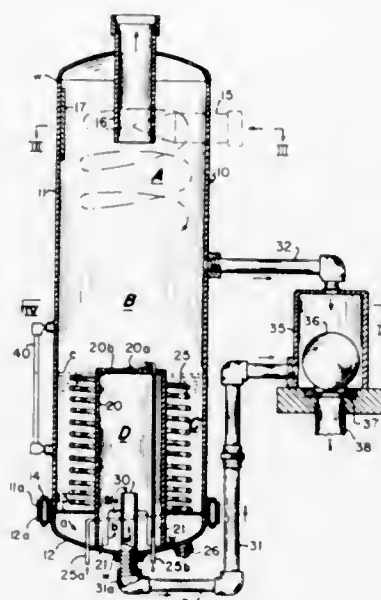
Int. Cl. B01d 19/00

U.S. Cl. 55—191

15 Claims

Apparatus is provided for separating out pure flash or dry steam from a blowdown effluent discharge and, at the same time, for recovering a maximum amount of heat from and cooling the liquid content of the effluent to enable directly discharging the liquid into a natural body of water. The apparatus has an elongated main chamber-defining container or vessel provided with a vortex outlet for the steam in its upper area, an intermediate separation area, a heat exchange coil and baffle assembly within a bottom liquid collecting area, and

pressure-sensitive trap means connected between lower and intermediate areas within the container for maintaining an ef-



fective and efficient operation under variable pressures and flow rates of introduction of the effluent.

3,693,325

# DEVICE FOR SEPARATING FOAM INTO ITS CONSTITUENT LIQUID AND GASEOUS PHASES

Hans Muller, Im Allmandli, Erlenbach, Zuerich, Switzerland

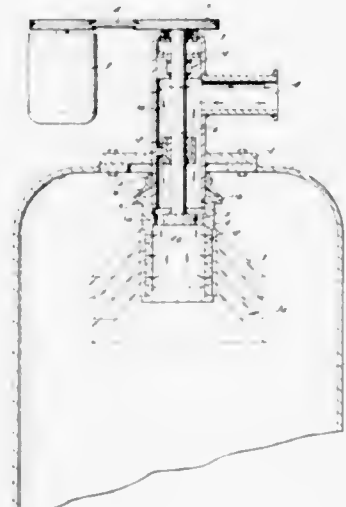
Filed Feb. 11, 1971, Ser. No. 114,598

Claims priority, application Switzerland, Feb. 16, 1970, 2205/70

Int. Cl. B01d 19/02

U.S. Cl. 55—178

8 Claims



A housing defines a chamber for foam consisting of a gaseous and liquid phase. A rotatable shaft extends from the exterior to the interior of the housing; the portion located in the interior of the housing is in form of a tubular hollow shaft portion connected with the remainder of the shaft which extends to the exterior of the housing and is of solid cross section. The portion of the shaft of solid cross-section is gas-tightly surrounded by a stationary conduit and an annular sealing element of elastomeric material is either fast with the conduit in the interior of the housing and has a lip which engages the sealing surface on the rotatable hollow tubular shaft portion, or is fast with the hollow tubular shaft portion and has a lip which engages a sealing surface on the stationary conduit, in either case in sliding relationship. Foam-breaking elements are carried for rotation by the hollow tubular shaft portion and define with one another gaps extending radially of the latter and communicating with the interior of the hollow tubular shaft portion, with the interior in turn communicating with the space between the conduit and the solid cross-section shaft

portion so that gaseous phase separated from the liquid phase by the foam-breaking elements can escape from the housing in this manner.

3,693,326

# AIR POLLUTION CONTROL DEVICE

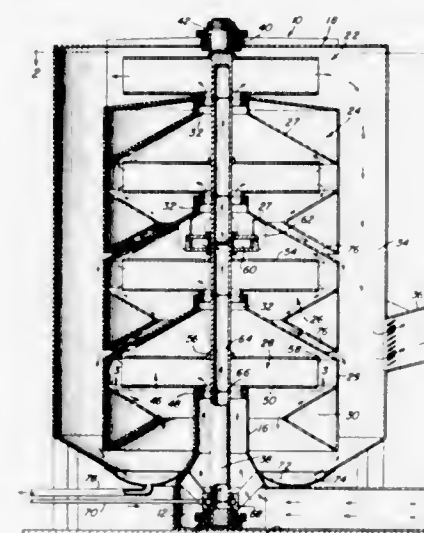
Clifford T. Deane, South Charleston, W. Va., assignor to Vortex Air Corp.

Filed Feb. 16, 1971, Ser. No. 115,437

Int. Cl. B01d 47/08

U.S. Cl. 55—230

9 Claims



Air polluting smoke particles are substantially removed from the upflow of smoke through a vertical series of housing sections into which water under pressure is injected closely below impeller blade assemblies. The blade assemblies are driven by a fluid motor through which the pressurized water is conducted to produce turbulence and mixing of the smoke with the water. The heavier water and smoke particles are flung radially outwardly to form a slurry which is baffled and collected from downwardly converging walls of the housing sections.

3,693,327

# FILTERS AND CARBON MONOXIDE INDICATORS

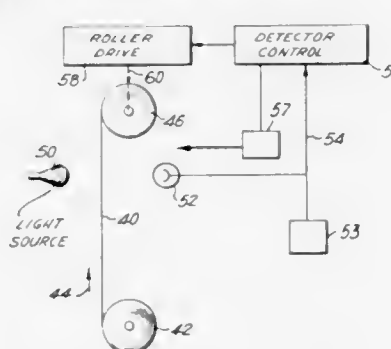
Israel Herbert Scheinberg, 5447 Palisade Avenue, Bronx, N.Y.

Continuation-in-part of Ser. No. 85,057, Oct. 29, 1970, abandoned. This application Dec. 30, 1970, Ser. No. 102,869

Int. Cl. B01d 23/24

U.S. Cl. 55—274

39 Claims



A filter wherein the filter medium is selected from the group consisting of amorphous hemoglobin, crystalline hemoglobin, amorphous heme and crystalline heme in the presence of a stoichiometric excess, with regard to the iron in said hemoglobin or heme, of a suitable reductant. The filter is adapted to remove carbon monoxide from air or the gases inhaled by a smoker. The filter medium assumes a predetermined color and infrared absorptivity characteristic when exposed to a predetermined quantity of carbon monoxide. Support for said filter medium may be provided with windows for visual access to said filter medium and automatic means may

3,693,328

# FILTER APPARATUS WITH REMOVABLE FILTER ELEMENTS

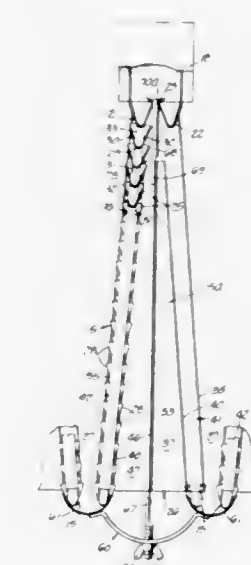
Gene Paucha, Montreal, Quebec, Canada, assignor to Farr Company, El Segundo, Calif.

Filed May 4, 1970, Ser. No. 34,132

Int. Cl. B01d 45/06

U.S. Cl. 55—436

8 Claims



An inertial type dust separating apparatus having a filtering media which includes a plurality of individually removable filter elements which are rigidly secured to the apparatus in a spaced and converging relationship.

3,693,329

# HUB ASSEMBLY FOR IN-LINE CENTRIFUGAL SEPARATOR

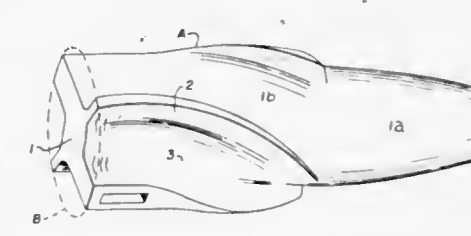
Robin Burke Willis, Edmonton, Alberta, Canada, assignor to Porta-Test Manufacturing Ltd., Edmonton, Alberta, Canada

Filed Aug. 24, 1970, Ser. No. 66,468

Int. Cl. B01d 45/12

U.S. Cl. 55—457

7 Claims



The hub assembly comprises a cigar-shaped hub carrying vanes. The hub defines a central bore opening at the downstream end. Two or more vanes define conduits leading into the bore.

The assembly is normally mounted in the inlet of a vortex tube. The vanes force the gas flow into helical paths for centrifugal separation of entrained liquid. The bore and conduits connect the low pressure zone at the axis of the vortex tube with the space exterior of the vortex tube.



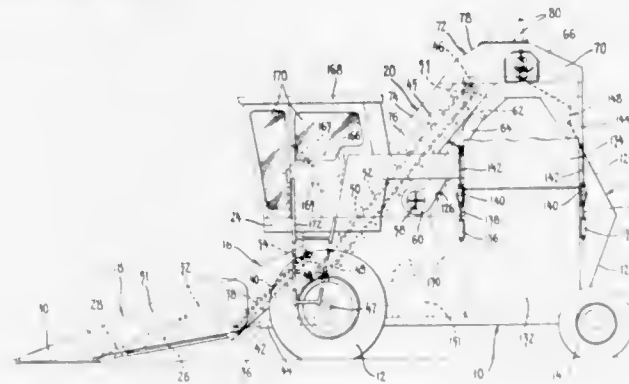
3,693,330

**SELF PROPELLED SWEET CORN HARVESTER**

Wilbert D. Weber, Mississauga, and Robert Ashton, Islington, Ontario, both of Canada, assignors to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada  
Filed Oct. 8, 1971, Ser. No. 187,677  
Int. Cl. A01d 45/02

U.S. Cl. 56—12.8

3 Claims



A self propelled sweet corn harvester with a corn head having multiple snapping units with a pair of snapping rolls and a pair of gathering chains for each snapping unit, a tank for temporary storage of ears of unhusked green corn, a conveyor system to elevate the ears of corn from the corn head to the storage tank, and cleaning means including a fan, a beater, a hood assembly and a panel assembly for removing stalks and other trash from the ears of corn and ejecting the trash from the harvester. The beater is mounted above the storage tank for both vertical and horizontal adjustment. The hood assembly includes an adjustable section for adjusting the size of the passage between the beater and the hood assembly through which stalks and trash are ejected from the machine. The panel assembly includes a panel pivotally attached to the beater supports and movable with the beater and a second panel pivotally attached to the first panel and to the storage tank.

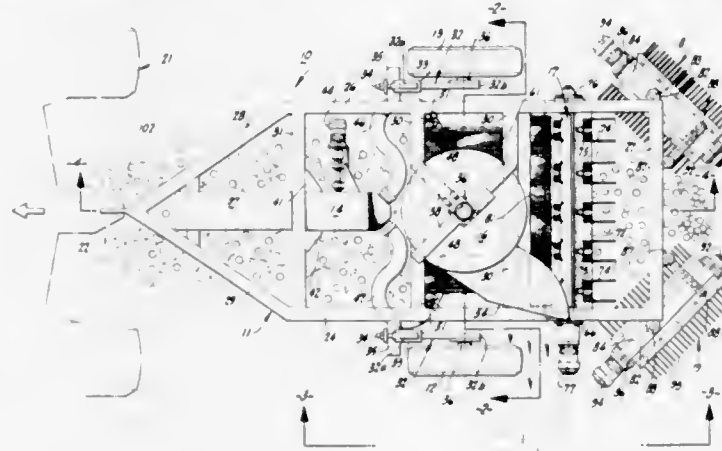
3,693,331

**WINDROW LEAF SCAVENGER**

John Edward Richter, and George Olavi Tiura, both of Modesto, Calif., assignors to Agmac, Inc., Ripon, Calif.  
Filed Aug. 9, 1971, Ser. No. 169,902  
Int. Cl. A01g 19/00

U.S. Cl. 56—13.2

13 Claims



This invention pertains to machines for handling nuts and other ground-harvested crops and particularly relates to a windrow leaf scavenger machine which affords airborne separation of leaves from nut-like fruit on the ground.

Certain ground-harvested crops including nuts such as pecans and late walnuts are harvested after a hard frost or rain which removes most of the leaves from the trees in the orchard. The harvest then must deal with the desired nuts intermixed with a large quantity of unwanted leaves, twigs and

the like. The harvesting procedure entails operation of a windrowing machine in the orchard to arrange all of the nuts and leaves, twigs, etc. into windrows. It has been found that the quantity of leaves and other unwanted materials present in the windrow under such harvest conditions impede the efficient operation of the picker machines commonly employed in sifting the nuts from the large quantity of leaves. It is highly desirable to have available a machine to remove the unwanted leaves etc. from the windrow while leaving the nuts or other ground-harvested crops on the ground arranged in a desirable pattern for harvesting.

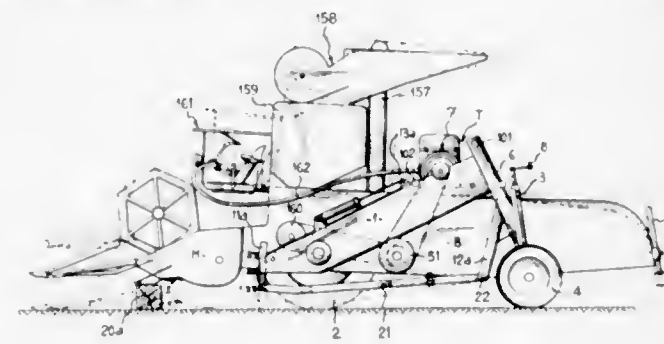
3,693,332

**SELF-PROPELLED MACHINES FOR FARMING AND ANALOGOUS PURPOSES**

Emile Bobard, 17 rue de Reon, Beaune, Cote D'Or, France  
Continuation-in-part of Ser. No. 709,756, March 1, 1968, abandoned. This application March 4, 1970, Ser. No. 16,372  
Int. Cl. A01d 41/02

U.S. Cl. 56—15.6

7 Claims



The disclosure of the present invention is a self-propelled composite machine for harvesting cereals, resulting from the incorporation of a harvesting and threshing implement or the like to a self-propelled vehicle having a straddle-type frame and including various harvesting implements permitting of successively farming machines of the type of the composite self-propelled machine. By "incorporation" as here meant a coupled condition of the tractor and implements, such that the implement is directly supported by the tractor, rather than being coupled thereto in trailing relation, so that in such composite machines the implement frame may be, and in fact generally is, entirely wheel-less.

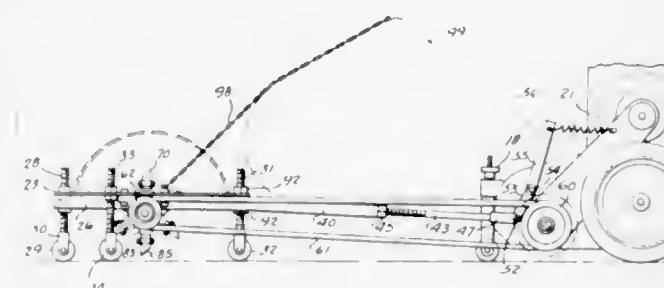
3,693,333

**LAWN MOWER VERTICAL CUTTER ATTACHMENT**

Forest M. Bishop, 1217 G. W. Highway #76, Richland, Wash.  
Filed June 5, 1970, Ser. No. 43,777  
Int. Cl. A01d 57/14

U.S. Cl. 56—16.1

4 Claims



An attachment for a power lawn mower consisting of a wheel-supported frame on which is journaled a transverse shaft carrying a plurality of spaced radially extending saw-cutting blades rotating in longitudinal vertical planes. The frame is attached to a lawn mower and the shaft is drivingly connected by a belt and pulley to the lawn mower reel shaft so as to be driven simultaneously therewith.

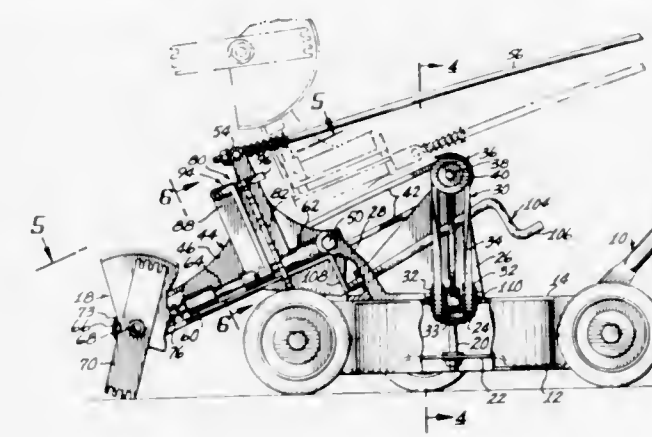
3,693,334

**LAWN MOWER AND EDGER MECHANISM**

James R. Lowery, 2235 East Larkspan Drive, Phoenix, Ariz.  
Filed May 24, 1971, Ser. No. 146,177  
Int. Cl. A01g 3/06

U.S. Cl. 56—16.9

4 Claims



A rotary lawn mower in combination with an edge trimmer is disclosed in which a single power source is employed to drive both mechanisms. The edge trimmer is positioned on the upper surface of the mower housing and is adapted to pivot into a retracted position when not in use so that the mower is able to function in a normal manner.

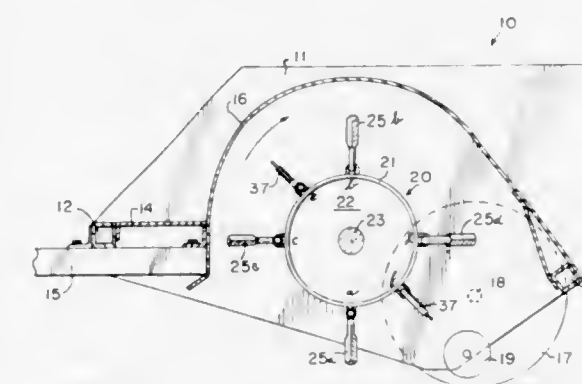
3,693,335

**FLAIL TYPE ROTOR ASSEMBLY AND BLADE FOR SAME**

Bernard C. Mathews, P.O. Box 70, Crystal Lake, Ill.  
Continuation-in-part of Ser. No. 12,095, Feb. 17, 1970, Pat. No. 3,633,349. This application Jan. 3, 1972, Ser. No. 214,816  
Int. Cl. A01d 55/20

U.S. Cl. 56—294

12 Claims



The rotor has four rows of blade mounts on its surface, the rows spaced 90° apart. Each blade mount is a U-shaped metal strip welded to the rotor surface. The blade has a shank and is single side arm, the latter terminating in a laterally disposed cutting edge. The free end of the shank is screw threaded, the shank extending through the blade mount and being confined therein by a lock nut on the screw threaded end. Paddles are also mounted on the rotor in the same fashion and create windage. A link may be interposed between the blade and the blade mount where additional blade movement is desired.

3,693,336

**CLOTH DETWISTER APPARATUS**

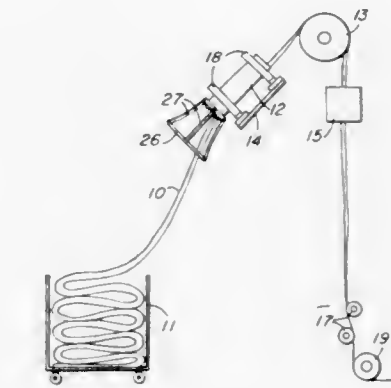
Mariano Bassani, Milan, Italy, assignor to Mount Hope Machinery Company, Taunton, Mass.  
Filed April 19, 1971, Ser. No. 135,163  
Int. Cl. D06c 3/06

U.S. Cl. 57—1 UN

7 Claims

A detwister apparatus for use in finishing operations on longitudinally travelling cloth or other sheet materials, especially materials such as knit goods which require handling at low

levels of tension. The cloth, gathered into a rope-like bundle, is passed through a rotatable tube guide. The entrance end of the guide is fitted with a plurality of smoothly curved protrusions which extend radially inwardly only partially across the entrance, and are circumferentially spaced apart to engage the



rope-like bundle lightly. The entrance may further be fitted with a bell mouth frame to guide the cloth bundle smoothly into the guide.

By rotating the guide, the cloth bundle is turned by the protrusions, and is thus twisted or detwisted.

3,693,337

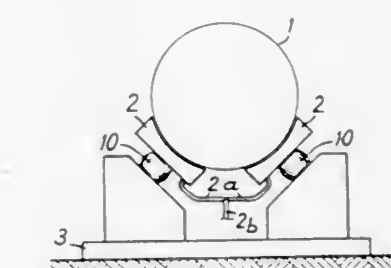
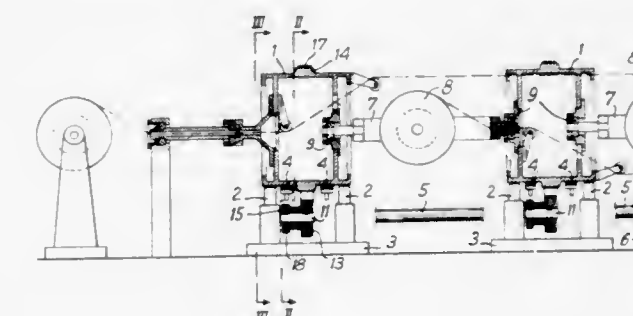
**TUBULAR STRANDING MACHINES**

Charles M. Fevre, Lyon, France, assignor to Societe Stephanoise De Constructions Mechaniques  
Filed April 20, 1971, Ser. No. 135,701  
Claims priority, application France, April 21, 1970, 7014459

U.S. Cl. 57—58.32

Int. Cl. D07b 3/12

7 Claims



A tubular stranding machine comprising rotatable tubular sections coaxially arranged and longitudinally spaced to support therebetween cradles carrying wire spools or bobbins. Each tubular section is supported on elastic or resilient bearings and is driven from a common main drive shaft through a secondary drive shaft pivotally supported on the main drive shaft. Transmission belts or gearing connect the main drive shaft and each



secondary-drive shaft, and each secondary drive shaft and its corresponding tubular section.

3,693,338

## TWIST FRAME APPARATUS

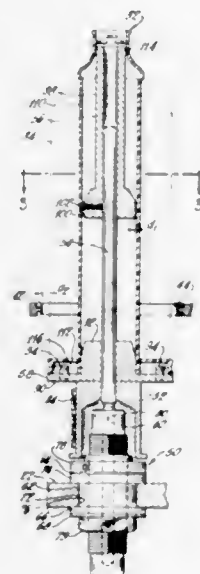
Cecil R. Cunningham; William R. Beach, and Ray D. Brinkley, all of Aiken, S.C., assignors to Owens-Corning Fiberglass Corporation

Filed Dec. 30, 1970, Ser. No. 102,576

Int. Cl. D01h 7/16

U.S. Cl. 57-75

9 Claims



Twist frame apparatus for rotary support and doffing guidance of tubular collectors placed thereon for winding a yarn package; the apparatus including a spindle projecting from a bobbin support for extension within a tubular collector placed thereover and an adapter on the spindle for extension within such tubular collector beyond the zone of collection; the adapter including a laterally extending portion for doffing guidance during removal of such collector from the spindle.

3,693,339

## ROLLER SUPPORT MEANS FOR ROLLER TWISTING APPARATUS

David Ernest Henshaw, 5 Calbin Avenue, Belmont, Victoria, and Lionel Stern, 39 Stawell St., Kew, Victoria, both of Australia

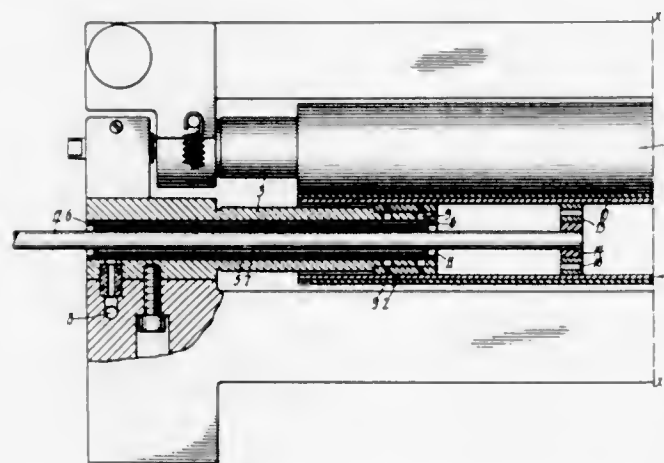
Filed Feb. 9, 1971, Ser. No. 114,018

Claims priority, application Australia, Feb. 9, 1970, PA 0284/70

Int. Cl. D01h 7/46

U.S. Cl. 57-77.42

2 Claims



A reciprocating roller twisting mechanism including a hollow cylindrical roller supported internally on a pair of bearing members spaced longitudinally thereof, a rod extending from outside the roller through one of said bearing members into the interior of the roller between the bearing members where

it is fastened to the roller by fastening means and means to reciprocate the rod longitudinally and simultaneously to rotate it thereby to impart axial reciprocation and simultaneous rotation of the roller on said bearing members.

3,693,340

## SPINDLE SPEED CONTROLLING DEVICE FOR RING SPINNING AND TWISTING MACHINES

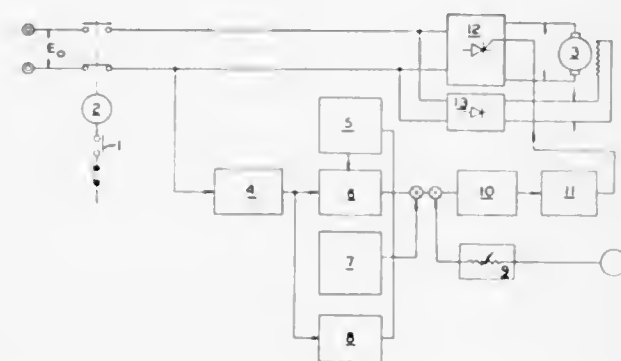
Hiroyuki Kanai, No. 67, Matsunouchi-cho, Ashiya, Hyogo Prefecture, Japan, and Tuneso Kojima, No. 288, Makiuchi, Minoo, Osaka Prefecture, Japan

Filed Aug. 7, 1969, Ser. No. 848,296

Int. Cl. D01h 1/26

U.S. Cl. 57-93

9 Claims



Spindle speed controlling device characterized in that voltages generated at the soft start circuit, the base speed change set circuit to give programmed changes to spindle speed, the speed feedback circuit which maintains the spindle speed at each stage and the chase speed change circuit to give the desired speed changes between the length of chase in synchronization with rising and falling of the ring rails, are combined together. This combined voltage is put as the instructing signal in the revolution controlling part lying between the power source and the electric motor so as to effect the program control of spindle speeds and the speed control which synchronizes with rising and falling of the ring rail at the same time on the ring spinning machine and twisting machine.

3,693,341

## YARN TREATMENT PROCESS

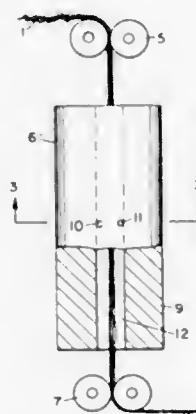
Wade L. Higgins, Jr., Knollwood, Apex, N.C., assignor to Hercules Incorporated, Wilmington, Del.

Filed April 17, 1970, Ser. No. 29,585

Int. Cl. D02j 1/22, 1/12

U.S. Cl. 57-157 R

2 Claims



Yarns prepared by a fluid jet bulking technique have been found to contain a large number of loops which interfere with processing when the yarns are tufted into carpets. These loops are removed by subjecting the yarn to a false untwisting operation while under a tension of at least about 0.02 gram per denier.

3,693,342

## TUNING-FORK TYPE ELECTRONIC CLOCK

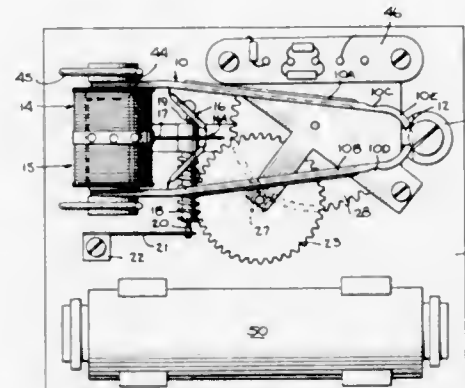
Egbert Van Haaften, Closter, N.J., assignor to Bulova Watch Company, Inc., New York, N.Y.

Filed July 8, 1971, Ser. No. 160,835

Int. Cl. G04c 3/00; H02k 33/00

U.S. Cl. 58-23 TF

9 Claims



An electronic clock making use of an electromagnetically actuated tuning fork whose vibrations are converted into rotary motion for driving the gear train of the clock by means of a motion transformer including a V-shaped indexing element. The ends of the indexing element are attached to the tines of the fork at corresponding points thereon, and the vertex thereof is flattened to define a rectangular tongue whose edge engages the ratchet teeth of an index wheel whereby as the tines vibrate, the tongue reciprocates in a rectilinear path at right angles to the direction of vibration. The index wheel is joined to a worm gear coupled to the first wheel in the gear train, the worm gear being supported for rotation between a fixed pivot and a spring-biased pivot, whereby sufficient friction is introduced to prevent retrograde motion of the index wheel.

3,693,343

## WRIST WATCH WITH A PIEZOELECTRIC CRYSTAL AS TIME-KEEPING OSCILLATOR

Friedrich Assmus; Wolfgang Ganter, and Hans Flaig, all of Schramberg-Sulgen, Germany, assignors to Gebrüder Junghans GmbH, Schramberg, Germany

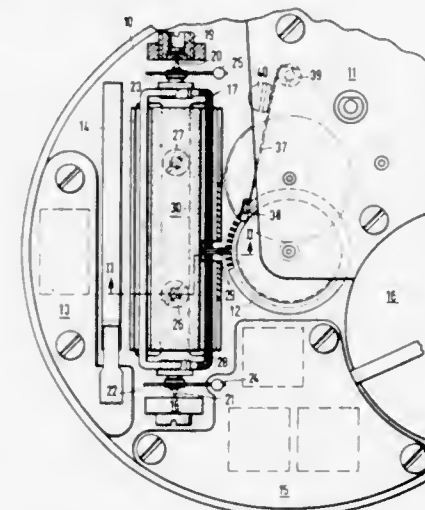
Filed Nov. 14, 1969, Ser. No. 876,880

Claims priority, application Germany, Nov. 15, 1968, P 18 09 223.452

Int. Cl. G04c 3/02

U.S. Cl. 58-23 TF

22 Claims



A wrist watch using a piezoelectric crystal as the time-keeping oscillator. The time-keeping oscillator has its output fed to a number of frequency divider stages so as to reduce the ultimate frequency to some low value, e.g., below 5 cps. By reducing the frequency to this low value, the moving device can directly engage the second-wheel thereby minimizing the

size and friction losses in the wheel mechanism. Two exemplary moving devices are disclosed, one of which utilizes a rotating coil assembly which has a shift finger to engage the toothing on the second-wheel. The other disclosed example utilizes a driving fork fastened to the shaft of an oscillating magnetic system with the arms of the driving force engaging the toothing on the second wheel. The basic frequency divider also includes a number of various electronic circuits for reducing the width of the driving pulses so as to minimize power losses and maximize the effective battery life.

3,693,344

## TIMEPIECE MOVEMENT

Willy Cleusix, Bienne, Switzerland, assignor to Omega Louis Brandt & Frere S.A., Bienne, Switzerland

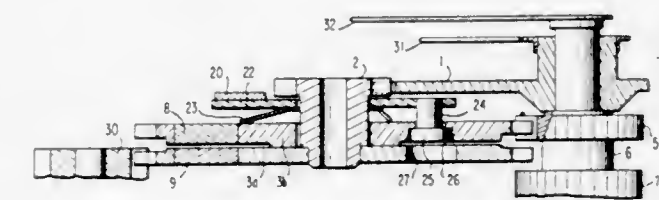
Filed Dec. 22, 1970, Ser. No. 100,598

Claims priority, application Switzerland, Jan. 17, 1970, 614/70

Int. Cl. G04b 19/22, 27/02

U.S. Cl. 58-42.5

10 Claims



A timepiece movement for driving a plurality of hands, one of which is an hour hand, comprises a power train including a pair of identical, coaxially mounted, independently rotatable gears operatively connected with the hour hand, one of said gears being driven by said power train and the other of said gears being selectively operated manually, with magnetic means normally coupling said gears for simultaneous rotation but permitting adjustment of said manually operable gear relative to the other gear to change the indication of the hour hand without affecting any other hand. Means are provided under the control of the manually operated means for selectively positively coupling said gears to enable rotation simultaneously of said gears by such manual means.

3,693,345

## CALENDAR WATCH MOVEMENT

Jean-Claude Schneider, La Chaux-de-Fonds, Switzerland, assignor to Fabrique d'horlogerie Chis. Tissot et fils S.A., Le Locle, Switzerland

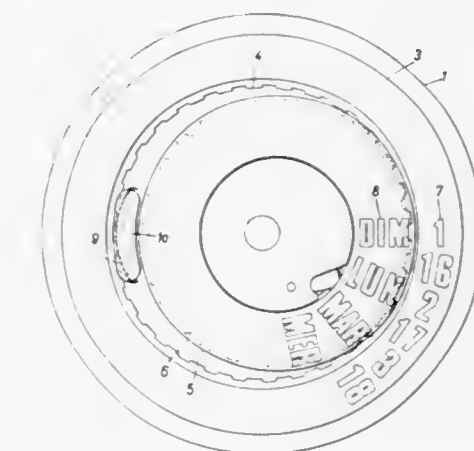
Filed Dec. 20, 1971, Ser. No. 209,523

Claims priority, application Switzerland, Dec. 23, 1970, 19139/70

Int. Cl. G04b 19/24

U.S. Cl. 58-58

10 Claims



A calendar watch movement comprising a date-of-the-month indicator and a day-of-the-week indicator and also a



time-setting and rapid correction mechanism. A control stem is radially located with respect to the movement and is capable of assuming several positions along its axis. A clutch pinion is positioned on a square of the stem. There are control components which are capable of moving the clutch pinion along the stem under the influence of the latter's axial displacement between two of said positions, and transmission means for transmitting rotational motion from the clutch pinion to the indicators. The transmission means comprises a transmission pinion coaxial with the stem which, in one of said positions, ensures at least an unidirectional linkage between clutch pinion and date-of-the-month indicator alone and which, in the other of said positions, ensures linkage between the clutch pinion and at least the day-of-the-week indicator. The stem further offers a third axial position in which the clutch pinion, engages the time setting-wheel but does not engage said indicators, and a fourth position in which the clutch pinion also does not actuate said indicators.

3,693,346

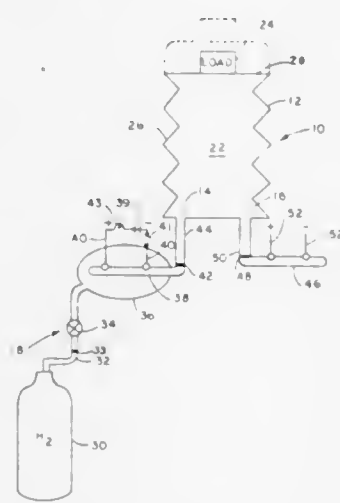
## GAS OPERATED ACTUATOR

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with Respect to the Invention of Alex Ambruso, Anaheim, Calif.

Filed May 28, 1971, Ser. No. 147,997  
Int. Cl. F01k 25/00

U.S. Cl. 60—36

7 Claims



A gas operated actuator including an expansion chamber having an inlet and an outlet containing a membrane or film of material selectively permeable to the drive gas when the membrane is heated. The inlet membrane communicates with a high pressure source of drive gas and the outlet membrane communicates with a low pressure environment or a fluid environment reactive with the drive gas. The actuator is driven by alternately heating the inlet and outlet membranes to affect a cyclical expansion and contraction of the chamber. The actuator may contain a combined inlet-outlet and the membrane contained therein is alternately exposed to the drive gas and low pressure or reactive environment to effect the cyclical motion of the chamber.

3,693,347

## STEAM INJECTION IN GAS TURBINES HAVING FIXED GEOMETRY COMPONENTS

Paul H. Kydd, and William H. Day, both of Scotia, N.Y., assignors to General Electric Company

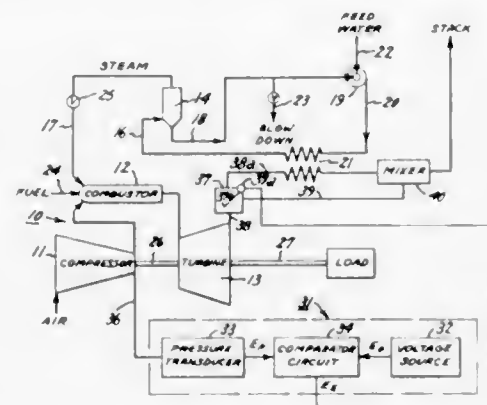
Filed May 12, 1971, Ser. No. 142,471  
Int. Cl. F02g 3/00

U.S. Cl. 60—39.05

30 Claims

Control means are provided for utilizing maximum tolerable amounts of steam in gas turbines having fixed geometry components under various operating conditions. Optional means include: means for automatically holding a constant cycle pressure ratio under all ambient conditions; temperature sensing control means for automatically adjusting steam injection

tion in both low and high temperature ambients to avoid visible plumes and to avoid acid condensation, respectively; or



combined temperature and humidity sensing control means for automatically optimizing steam injection under all conditions of ambient temperature and humidity.

3,693,348

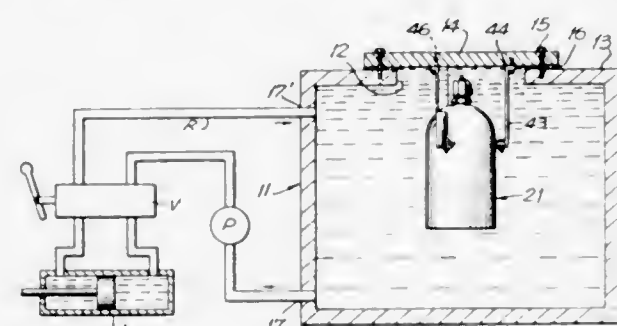
## VOLUME COMPENSATED HOUSING

Jacques H. Mercier, 49 rue de Naples, Paris, France

Filed Oct. 16, 1970, Ser. No. 81,384  
Int. Cl. F15b 1/02

U.S. Cl. 60—51

2 Claims



This invention relates to a housing containing oil which has means to compensate for variations in the volume of oil in the housing, such means comprising a cartridge having a rigid shell in which a deformable partition is positioned defining a gas chamber and an oil chamber on opposed sides thereof respectively, the gas chamber being charged through a charging fitting rigidly secured to one end of the shell, with the other end of the shell having a relatively large opening in communication with the housing through a perforated disc extending across the opening, the cartridge being totally immersed in the housing.

3,693,349

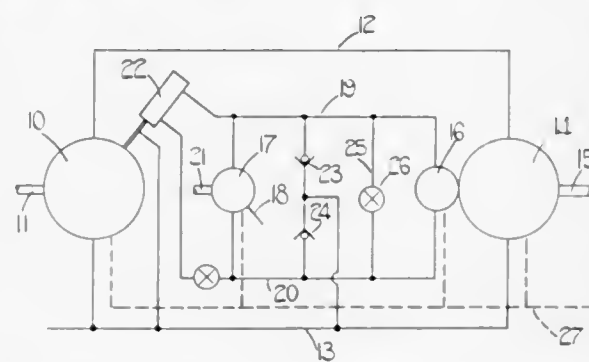
## SPEED CONTROL FOR HYDRAULIC TRANSMISSION

John Morris, The Gable, Plex Moss Lane, Halsall, near Ormskirk, England

Filed Dec. 11, 1970, Ser. No. 97,222  
Int. Cl. F15b 15/18; F16d 31/06

U.S. Cl. 60—52 VS

5 Claims



A speed control for a hydraulic transmission having a pump and motor in series has a pair of pumps in an auxiliary series

circuit, one of the pair being driven by the motor shaft and the other of the pair being driven at a known reference speed. A pressure difference across the pair of pumps is used to position an actuator which controls the stroke of the motor.

3,693,350

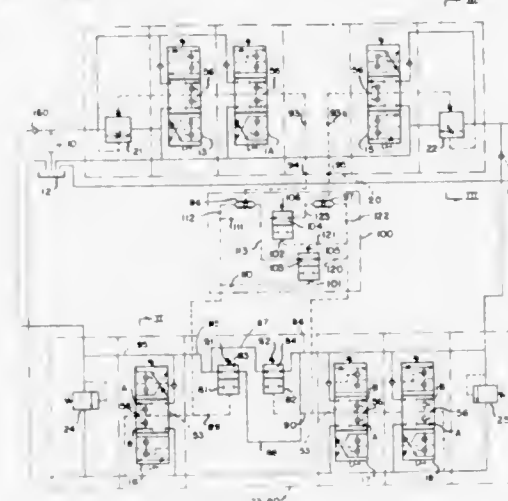
## HYDRAULIC CONTROL CIRCUITS AND APPARATUS

John D. Petro, Hubbard, and Robert F. Hodgson, Canfield, both of Ohio, assignors to Commercial Shearing & Stamping Company

Filed Jan. 11, 1971, Ser. No. 105,428  
Int. Cl. F15b 11/16, 13/06, 13/09

U.S. Cl. 60—52 R

6 Claims



A fluid circuit is provided for operation of multiple motors which comprises a pair of sources of high pressure fluid, two groups of directional control valves, each group containing at least two directional control valves separated by a signal block, each directional control valve operatively connected to deliver fluid to a fluid motor, one of said groups of valves being connected on opposite sides of a first signal block to each of said pumps through a pressure compensating valve, the other of said groups of valves being connected on opposite sides of a second signal block to each of said pumps through a pressure relieved inlet section, said second signal block in said other group including a pair of pressure operated spools regulating the flow of fluid from the two pumps to the directional control valves in said other group whereby the valves on either side of the second signal block can receive fluid from both pumps so long as only valves on one side or the other of the signal block are operative and receive fluid only from one pump at each side of the second block when valves on both sides are operative and shuttle valve means in connections between the signal blocks of each group whereby valves in each group may be simultaneously operated without starving the highest pressure motor.

3,693,351

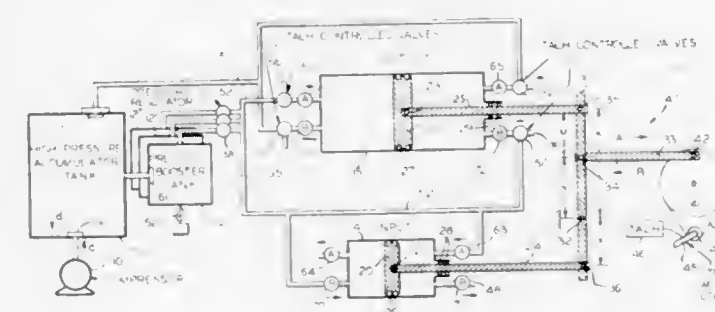
## ANTI-POLLUTION REGENERATIVE ENGINE

Herbert L. Minkus, Chicago, Ill., assignor to Albert M. Sheppard, Chicago, Ill., a part interest

Filed Jan. 29, 1971, Ser. No. 108,064  
Int. Cl. F01b 1/00

U.S. Cl. 60—57 R

11 Claims



Air motor cylinders are paired, with one cylinder having a greater volume than the other. Lever arms attached to two

pistons in these cylinders have a length differential which compensates for the volume differential so that both pistons perform the same amount of work on a load device. Attached to a drive shaft for driving the load device is a tachometer which indicates when the load is applied or removed. When the tachometer indicates that the load has slackened, valves operate so that one of the cylinders ceases to act as a driving force and acts, instead, as a compressor, thereby returning air to a compressed air tank. Thus, during a slack load conditions, the compression cylinder stores energy to drive the system during high load conditions.

3,693,352

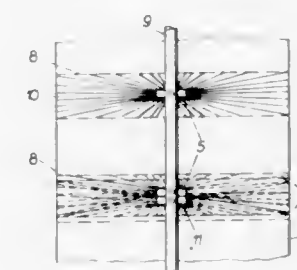
## METHOD AND APPARATUS FOR COOLING WIDE CONTINUOUS METAL CASTINGS, PARTICULARLY STEEL CASTINGS

Horst Hinze, Duisburg-Serm, and Frantisek J. Jansch, Duisburg, both of Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany

Filed Sept. 22, 1970, Ser. No. 74,330  
Int. Cl. B22d 27/04

U.S. Cl. 62—64

9 Claims



A method for cooling wide continuous metal castings uses cooling water jets which impinge on the casting surface in the secondary cooling zone and which are produced with a slanting or arched characteristic. The jets are distributed over the width and length of the casting to form a cohering jet covering the width of the casting and having its greatest cooling power in the longitudinally extending central zone of the casting. The kinetic energy of the cohering jet is controlled to be intentionally smaller in the marginal impingement zones along the casting and, with increasing distance from the casting surface, the kinetic energy is increased, from the margins to the central zone of the casting, in proportion to the quantity of heat to be extracted locally. Apparatus for practicing the method includes spray cone nozzles which are contiguous to each other, and a supply line extending substantially centrally of the casting is adjustable in height during the cooling operation.

3,693,353

## METHOD AND MEANS FOR PREVENTING LOW TEMPERATURE CORROSION, BY SULPHUR CONTAINING FLUE GASES, OF THE TERMINAL PARTS OF AIR HEATING MEANS

Jacques Lemoine, 2, rue Auguste Maguet, 75 Paris 16e, and Paul Lugand, 21 Domaine du Salbert, 60 Cravanche, both of France

Filed May 14, 1970, Ser. No. 37,085  
Int. Cl. F01k 7/44

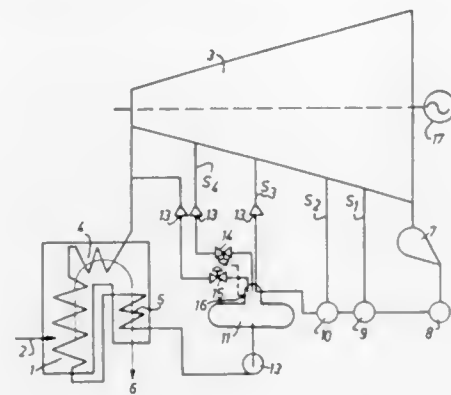
U.S. Cl. 60—67

2 Claims

In order to prevent corrosion of economizers and the like structures carried in the output section of steam generators burning sulphur-containing fuel, the feed water circuit for the steam generator includes the usual heat exchangers followed by a deaerator feeding the economizers and the temperature of the water supplied by the deaerator to the economizers is raised on an adjustable extent above corrosion temperature by



steam extracted from different points of the steam turbine. Gates controlled by the pressure in the deaerator control the



flow of steam out of these different points to ensure the desired pressure and temperature in the deaerator.

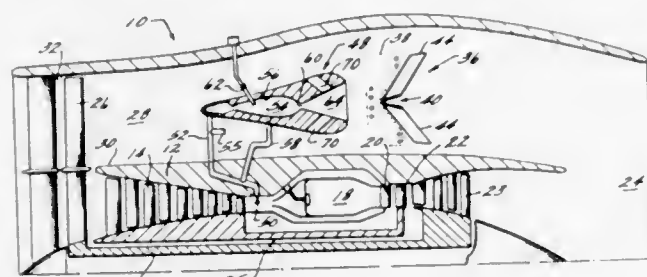
3,693,354

**AIRCRAFT ENGINE FAN DUCT BURNER SYSTEM**  
Thomas Neil Hull, Jr., Marblehead, Mass., assignor to General Electric Company

Filed Jan. 22, 1971, Ser. No. 108,867  
Int. Cl. F02k 3/04, 3/10

U.S. Cl. 60—261

6 Claims



A bypass gas turbine engine is provided with an augmentation burner in the bypass airpassage for additional thrust, wherein combustion in the augmentation burner is supported and enhanced by the exhaust from an auxiliary combustor stationed forward of the augmentation burner.

3,693,355

**APRON CONSTRUCTION FOR AUTOMATIC WATER GATE**

Jacques L. Dubouchet, 427 Weaver St., Larchmont, N.Y.

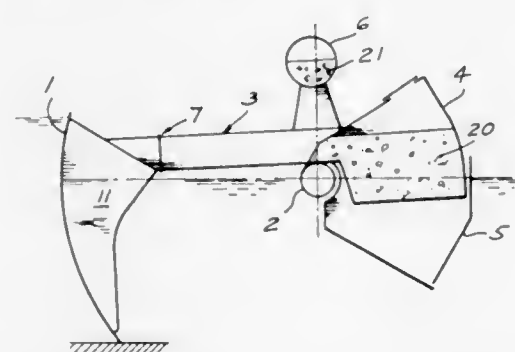
Filed March 24, 1971, Ser. No. 127,587

Claims priority, application France, March 26, 1970, 7011061

Int. Cl. E02b 7/42

U.S. Cl. 61—23

4 Claims



The apron is made as a separate unit and fixed to the frame by a U-link which is secured to a frame beam by a crosspiece fixedly connected to the upper end of the apron, and by an inverted U-link which is secured to a spaced portion of the frame beam by a second crosspiece fixedly connected to gussets forming part of the apron. Stops are provided to fix the

position of the inverted U-link on the frame beam, and shims are utilized with the second crosspiece to effect precise adjustment of the centering of the apron on the axis of rotation of the gate.

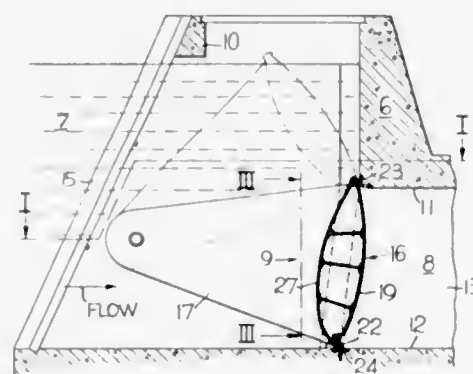
3,693,356

**HYDRAULIC TURBINE INLET CONFIGURATION**  
Howard A. Mayo, Jr., and Edwin W. Murphy, both of York, Pa., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Oct. 19, 1970, Ser. No. 81,862  
Int. Cl. E02b 7/40; F01b 25/02

U.S. Cl. 61—25

1 Claim



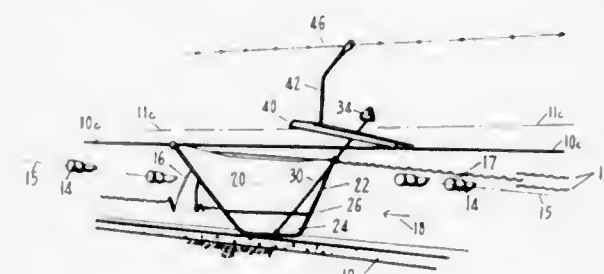
An intake configuration for a low head hydraulic turbine installation wherein the inlet control gate is positioned upstream from the entrance to the turbine water passageway inlet and is located below the level of the turbine headwater reservoir. The upstream side of the gate body is constructed and arranged to combine with the turbine water passageway inlet to present an efficiently smooth contoured approach for the water into the turbine. When in the open position, the bottom gate seal coacts with the top of the inlet to insure that the water will follow the contoured surface of the upstream side of the gate body.

3,693,357

**IRRIGATION CONTROL**  
Ralph E. Shettel, Rte. 1, Twin Falls, Idaho  
Filed March 21, 1969, Ser. No. 809,164  
Int. Cl. E02b 7/44

U.S. Cl. 61—29

15 Claims



A planned system in checking that provides the mechanical means for the automatic diversion of irrigation waters to the field; that progressively reduces the human involvement through practical basic mechanisms and regulator devices; that provides for the incorporation of various mechanical actuators and automatic controls; that anticipates the coming sophistication of remote control as a part of a completely programmed auto-interpretative system; that provides the necessary protective considerations for its mechanisms and equipment against the abuses of livestock and related maintenance practices; that eliminates the problem of check manipulation while solving those of pressure head and seal and surge and flooding.

3,693,360

**TRENCH SHORING FRAME**  
Anthony Ronald Seaton Morrice, 72 Kent Road, Harrogate, England

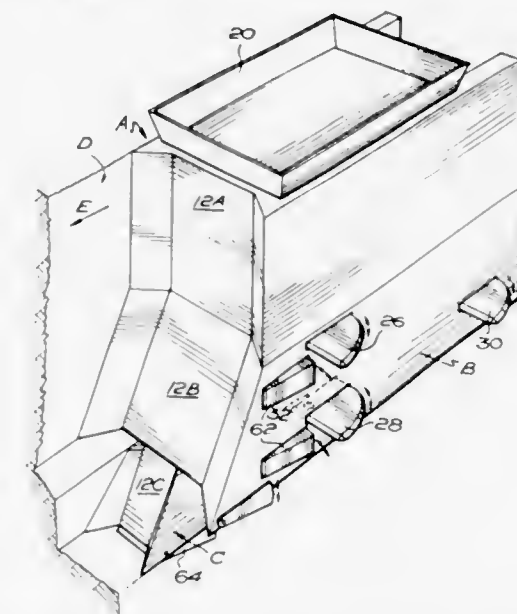
Filed March 22, 1971, Ser. No. 126,795

Claims priority, application Great Britain, March 25, 1970, 14,464/70

Int. Cl. E21d 7/00

U.S. Cl. 61—41 A

7 Claims



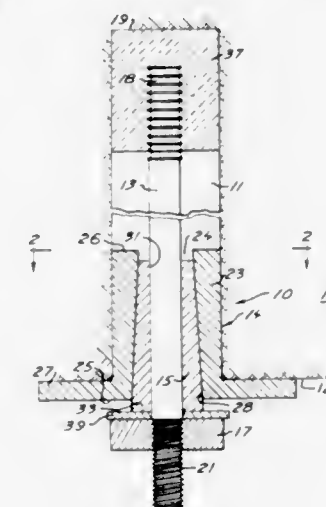
A trench shoring frame comprising side wall structures, a backfill engaging structure connected to the side walls, and independently movable downward sections on each side wall with fluid pressure operated piston and cylinder devices to move these sections.

3,693,359

**ROCK STABILIZING APPARATUS**  
Said M. Karara, Stewart, British Columbia, Canada  
Filed Jan. 25, 1971, Ser. No. 109,161  
Int. Cl. E21d 21/00

U.S. Cl. 61—45 B

1 Claim

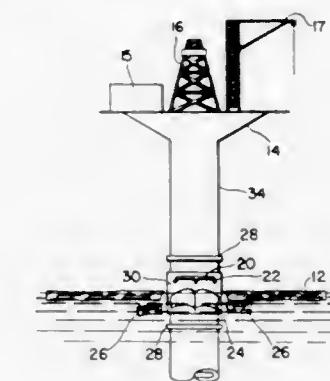


Rock stabilizing apparatus having a tension member adapted to be inserted in a drill hole and being adapted to be cemented at an inner end to the drill hole walls. A longitudinally segmented expansion member having a tapered bore and a radially extending flange fits over the tension member and is insertable in the hole. A tapered wedge slidable of the tension member is forced into the tapered bore of the expanding member by operation of a nut threaded on an outer end of the tension member so that the expansion member expands outwards against the drill hole walls, and at the same time, the flange is pressed against the rock face so as to develop lateral compressive stresses in the rock adjacent the rock face and longitudinal compressive stresses in the rock longitudinally of the tension member.

3,693,360

**ICE BREAKER FOR MARINE STRUCTURES**  
John E. Holder, 503 N. Central Expressway, Richardson, Tex.  
Filed Oct. 2, 1970, Ser. No. 77,506  
Int. Cl. E02b 15/02; B63b 35/12

10 Claims



An ice breaker for marine structures comprising a rotatably mounted plow member on an offshore platform and utilizing a vane member to position the plow member in the path of encroaching ice floes. Buoyant chambers vertically position the plow member so that the leading edge will be under or above the ice floe. High pressure fluids or mechanical saws can be used as cutting members to cut sections in the ice floe and allow the plow member to break the ice sections from the ice floe and force them above or below the remaining ice floe. High pressure jets may be located in apertures in the face of the plow member and/or located between the ice floe and the plow member. The cutting members are arranged to cut sections of ice resembling the vertical section of a truncated pyramid.

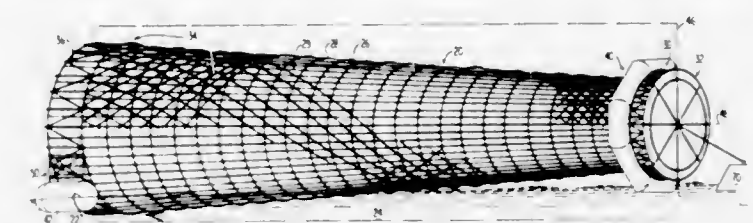
3,693,361

**METHOD AND APPARATUS FOR TRANSPORTING AND LAUNCHING AN OFFSHORE TOWER**  
Albert M. Koehler, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed April 20, 1970, Ser. No. 29,831

Int. Cl. E02b 17/00; B63b 35/44  
U.S. Cl. 61—46.5

16 Claims



A method and apparatus for transporting an offshore tower to a preselected marine site upon an annular floatation collar encompassingly connected to the upper end of the offshore tower and one or more floatation chambers connected to the outer periphery of the base of the tower. At the preselected site the tower is removed from the base floatation system and pivots about the center of gravity of the offshore tower into a generally vertical posture within the body of water. The annulus is then at least partially ballasted to lower the tower to a position adjacent the bed of the body of water while maintaining the vertical posture of the central axis of the offshore tower with respect to the plane of the surface of the body of water. The tower is then pinned to the bed of the body of water to stably support the tower and retain the vertical orientation thereof with respect to the surface of the body of water, notwithstanding an irregular geography of the bed of the body of water.

In one embodiment the floatation system, connected to the base of the outer periphery of the offshore tower, comprises a pair of floatation chambers spaced symmetrically on opposite



sides of a plane intersecting the central axis of the offshore tower and lying normally with the plane of the surface of the body of water. In this embodiment one of the floatation chambers is at least partially flooded to induce a rotation of the offshore tower 130° about its center of gravity prior to releasing the floatation chambers from the base of the offshore tower.

3,693,362

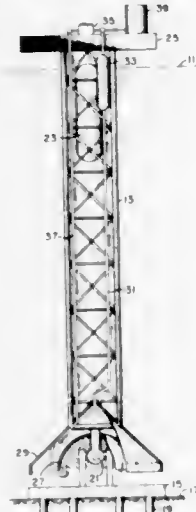
# PROTECTION OF UNDERWATER EQUIPMENT BY IMMERSION

Theodore E. Leonard, Houston, Tex., and James R. Lloyd, Houston, Tex., assignors to Esso Production Research Company

Filed May 12, 1970, Ser. No. 36,521  
Int. Cl. E02b 17/02; B63b 21/38

U.S. Cl. 61—46.5

6 Claims



An improvement is disclosed in apparatus of the type including a base anchored to a submerged bottom, an elongated tower provided with a buoyancy chamber near its upper end, and a pivot assembly that connects the tower to the base and permits the tower to sway in response to environmental forces. The improvement resides in a fluid tight, open bottom housing connected to said tower and adapted to enclose the pivot assembly in a bath of a lubricant, regardless of the angle of tower sway.

3,693,363

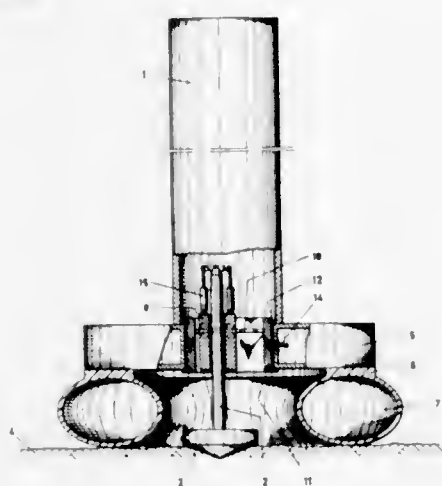
# EQUIPMENT FOR MOVING STEP BY STEP A STRUCTURE CARRYING OUT OPERATIONS SUPPORTED ON A SEA-BED OR THE LIKE

Henricus Hubertus Van den Kroonenberg, Amsterdam, Netherlands, assignor to N.V. Industriele, Handelscombinatie, Netherlands

Filed March 31, 1971, Ser. No. 129,695  
Claims priority, application Netherlands, April 3, 1970, 70/4824

Int. Cl. E02b 17/00; B63b 21/50, 21/56, 15/00  
U.S. Cl. 61—46.5

4 Claims



A mobile marine platform can be supported on as few as three legs, with the legs vertically and horizontally adjustable

so as to move the platform laterally, by surrounding each leg with an inflatable ring. When the ring is inflated, the ring supports the load while the leg is raised and laterally shifted and then lowered again, after which the ring is deflated and the load shifts back to the leg.

3,693,364

# SONIC METHOD FOR INSTALLING A PILE JACKET, CASING MEMBER OR THE LIKE IN AN EARTHEN FORMATION

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif.  
Division of Ser. No. 873,298, Nov. 3, 1969, Pat. No. 3,624,760.

This application Sept. 9, 1971, Ser. No. 178,945  
Int. Cl. E02d 7/18; E21b 5/00

U.S. Cl. 61—53.7

3 Claims



A jacket member is placed over a bar which forms a mandrel and is acoustically coupled thereto by means of adjustable couplers at a plurality of points therealong. A sonic oscillator of the orbiting mass type is coupled to the mandrel and driven at a frequency such as to set up resonant standing wave vibration of the mandrel. Sonic energy is thus coupled to the jacket and in turn into the earth formation into which the jacket is to be installed, thereby fluidizing the earthen material and causing the jacket to be driven into the ground.

3,693,365

# SUBMARINE PIPELINE FOR FLUID TRANSPORTATION

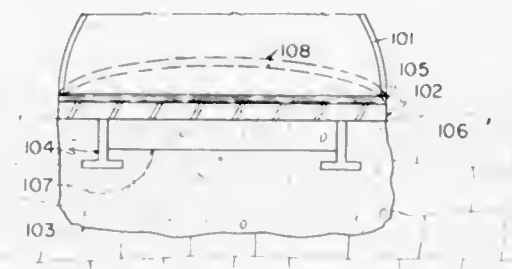
Donald W. Dareing, Fayetteville, Ark., assignor to Cities Service Oil Company

Filed May 11, 1970, Ser. No. 36,242

U.S. Cl. 61—72.1

Int. Cl. F16I 10/00

7 Claims



An inflatable flexible shrouding is affixed to the sea floor by means for weighting the pipeline, such as a metal plate or concrete anchor, to form a submarine pipeline. Under adverse weather conditions the flexible shrouding may be evacuated and collapsed, thus reducing the chances of damage to the pipeline. The composition of the flexible shrouding eliminates corrosion and resists the abrasive effect of ocean floor movement. Pipeline flexibility facilitates the shrouding to be spooled on land and unspooled at sea, appreciably reducing transportation and construction costs.

3,693,366

# Patent Not Issued For This Number

## ERRATUM

For Class 62—64 see:  
Patent No. 3,693,352

3,693,367

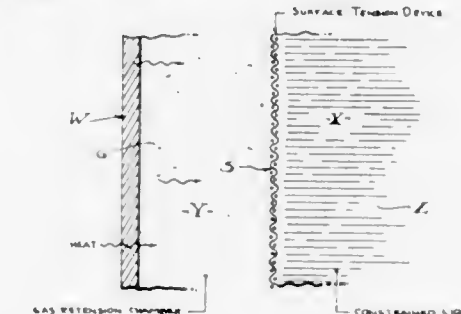
# THERMODYNAMIC CONTROL DEVICE

Leonard J. Di Peri, 18325 Lahey St., Northridge, Calif.  
Filed April 24, 1970, Ser. No. 31,624

U.S. Cl. 62—45

Int. Cl. F17c 7/00

13 Claims



A device for the elimination of heat transfer out of and/or into a body of liquid material, and particularly applicable to cryogenics contained at low temperature. Surface tension phenomenon and pressure are employed in establishing a gas barrier between the liquid and the structural container therefor, the pressure being applied to the gas barrier from an external source or accumulated from said liquid as it is liberated from said contained body thereof. The said body of liquid is constrained within the confines of a porous membrane and out of contact with containment walls by means of an intervening body of restraining gas maintained within a range of pressured equilibrium with the pressure prevailing in the constrained liquid and preferably at a pressure equal to or less than the bubble-point pressure of said membrane. Unobvious practicality resides in embodiments of the foregoing concept wherein substantially complete structural isolation of liquid from containment walls is maintained, thereby minimizing heat transfer.

3,693,368

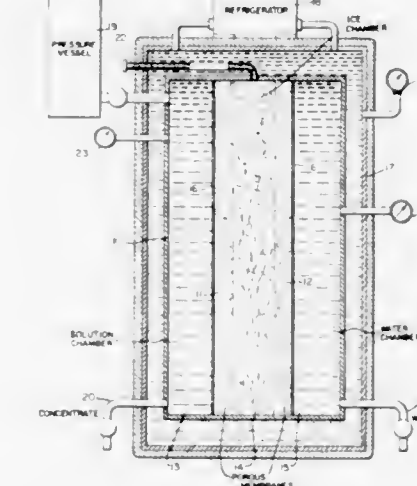
# METHOD OF SEPARATING WATER FROM A SOLUTION

Robert D. Miller, Cornell University, Ithaca, N.Y.  
Continuation of Ser. No. 684,008, Nov. 17, 1967, abandoned.

This application Feb. 19, 1971, Ser. No. 117,096  
Int. Cl. B01d 9/04

U.S. Cl. 62—58

3 Claims



Water is separated from aqueous solutions by maintaining a body of water in the solid phase between two spaced porous

phase barriers, maintaining a body of aqueous solution in a supercooled condition in contact with the opposite side of one barrier, maintaining a body of liquid water in a supercooled condition in contact with the opposite side of the other barrier and subjecting the body of the solution to a pressure that exceeds the pressure on the body of liquid water by more than the osmotic pressure of the solution.

3,693,369

# PACKAGING OF LIQUIDS

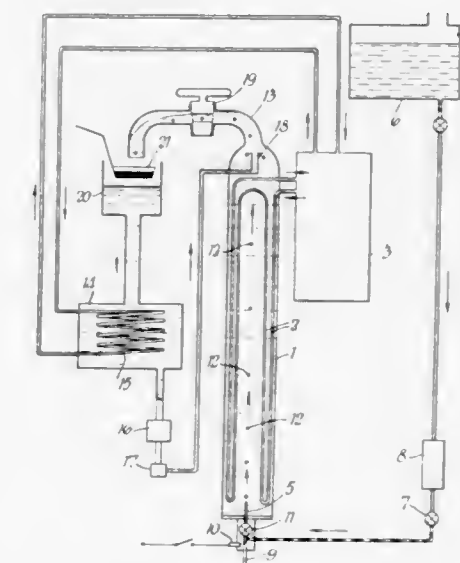
Henry George Horwell, and Arthur John Terry, both of Hampshire, England, assignors to Brown and Williamson Tobacco Corporation, Louisville, Ky.

Filed March 31, 1970, Ser. No. 22,354  
Claims priority, application Great Britain, March 24, 1969, 15318

U.S. Cl. 62—60

Int. Cl. B65b 63/08

2 Claims



The invention concerns a method for packaging a liquid. The liquid is fed portionwise through cooling means to produce frozen solid entities which are transferred to apparatus which applies a substantially even layer of coating material over the surface of the entities, the coating material being thereafter induced or allowed to solidify and the frozen contents to melt, whereby sealed containers with liquid contents are produced.

3,693,370

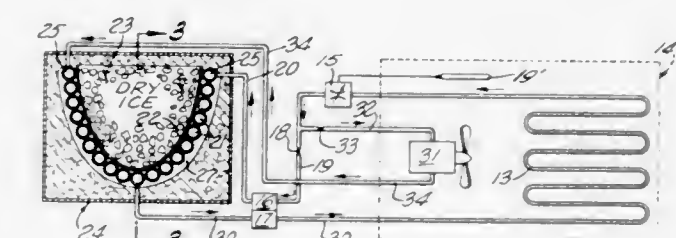
# THERMODYNAMIC CYCLES

David T. Miller, Long Beach, Calif., assignor to Statham Instruments, Inc., Oxnard, Calif.

Filed Sept. 25, 1970, Ser. No. 75,337  
Int. Cl. F25b 25/00

U.S. Cl. 62—175

3 Claims



This invention relates to thermodynamic cycles operating between two levels of subatmospheric temperature, whereby power is generated and/or refrigeration obtained, in which a heat transfer liquid is employed having a relatively high vapor pressure at atmospheric temperature.



3,693,371

**AUXILIARY REFRIGERATING APPARATUS**

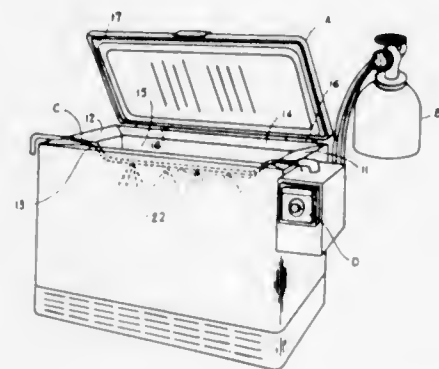
Robert E. Clark, West Columbia, S.C., assignor to Revco, Inc., Columbia, S.C.

Filed Jan. 25, 1971, Ser. No. 109,314

Int. Cl. F25b 41/04

U.S. Cl. 62—222

4 Claims



An auxiliary refrigerating apparatus for chest-type freezers and the like, for automatically spraying a coolant into the freezer. The apparatus includes an elongated tubular member having a plurality of spaced openings therein for spraying coolant within a cavity, an outlet for relieving pressure build-up within the cavity, and a pair of spaced flat portions allowing the elongated member to rest on the walls of the freezer with the door closed. Controls are provided for automatically spraying coolant into the freezer responsive to a predetermined condition.

3,693,372

Patent Not Issued For This Number

3,693,373

**ABSORPTION REFRIGERATION MACHINE**

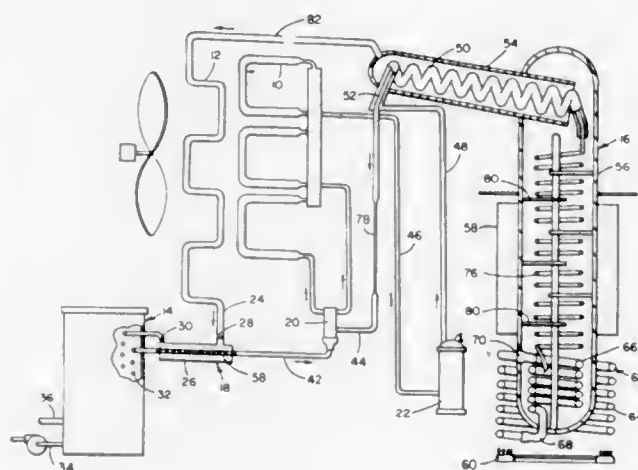
Gerald K. Gable, 7654 Villa Maria, North Syracuse, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,274

Int. Cl. F25b 15/04; F22b 1/02

U.S. Cl. 62—476

3 Claims



An absorption refrigeration system employing a generator having a heat pipe associated therewith to transfer heat from a suitable burner to the interior of the generator to increase the capacity of the generator without a proportionate increase in the size thereof and to minimize the inside surface temperature of the generator wall.

3,693,374

**VARIABLE TEMPERATURE COOLING APPARATUS**

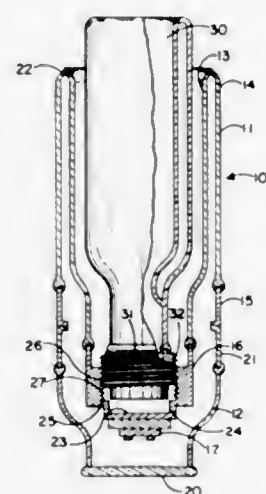
Toivo A. Juvonen, Quincy, and Gene A. Robillard, Stoneham, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 18, 1970, Ser. No. 90,725

Int. Cl. F25b 19/00

U.S. Cl. 62—514

8 Claims



Variable temperature cooling apparatus in which a cooling element and an element to be cooled are provided with inter-fitting thermally conducting members arranged so that relative movement between the elements varies the area of contact between the members and hence the rate of heat transfer therethrough. Means for accomplishing the relative movement may be incorporated in or independent of the contact area varying arrangement.

3,693,375

**WRIST BAND WITH HIGH RESISTANCE TO EXPANSION AND RELATIVELY LOW CONTRACTIVE FORCE**

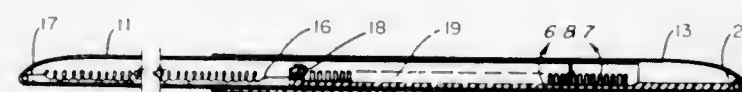
Jens C. Paulsen, 2275 Page Mill Road, Palo Alto, Calif.

Filed Oct. 12, 1971, Ser. No. 188,098

Int. Cl. A44c 5/04

U.S. Cl. 63—5 R

3 Claims



An expansible wrist band having first and second telescoped sections with spring means for contracting said band on the wrist with low tension and means providing a high resistance to expansion of said band to maintain the band securely on the wrist.

3,693,376

**RING WITH DETACHABLE ORNAMENT HAVING UNCOVERED INNER FACE**

Robert Willner, 2 Cherry Lane, Bristol, R.I.

Filed Feb. 8, 1971, Ser. No. 113,513

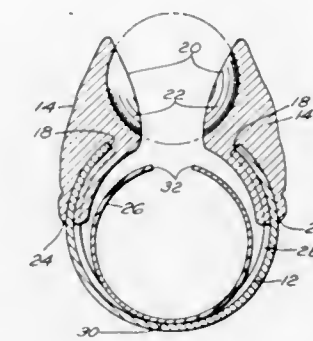
Int. Cl. A44c 9/02, 17/02

U.S. Cl. 63—15.6

3 Claims

A finger ring having a relatively rigid but somewhat resilient shank of generally circular configuration and having spaced apart ends, said ends each having a housing secured thereto, said housings having oppositely disposed faces in spaced relation to each other and located substantially exteriorly of the circle defined by the shank, said faces having depressions

therein for snap-receiving an ornamental member therebetween, whereby said ornamental member may be easily



ly assembled and disassembled for purposes of interchangeability.

**ERRATUM**

For Class 64—29 see:  
Patent No. 3,693,381

3,693,377

**FLAT BED KNITTING MACHINE**

Wilhelm Hadam, Reutlingen, Germany, assignor to H. Stoll and Company, Reutlingen, Stollweg, Germany

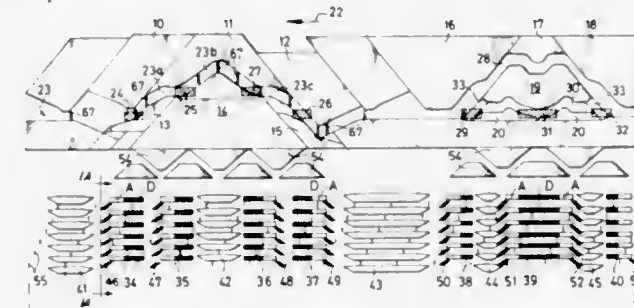
Filed Jan. 22, 1971, Ser. No. 108,763

Claims priority, application Germany, Jan. 23, 1970, P 20 02 991.8

Int. Cl. D04b 7/00, 7/20

U.S. Cl. 66—75 R

13 Claims



A flat bed knitting machine including jacks mounted in needle tricks in the needle beds and arranged to control movement of the needles. Selector jacks operate the needle-actuating jacks in accordance with the pattern and patterning butts on successive selector jacks are staggered in different planes. Each patterning lock has, for each plane of the patterning butts, adjustable advancing lock parts for selecting jack butts to be acted on and hence to operate the respective needle-actuating jacks. Each advancing lock part is controlled electrically, independently of the other advancing lock part in accordance with the pattern. The advancing lock parts, viewed in the direction of travel of the carriage, are located in advance of a characteristic operating position of the needles. Further lock parts return the selector jacks to the original positions following each characteristic operating position.

3,693,378

**YARN FEEDING METHOD AND APPARATUS FOR CIRCULAR WARP KNITTING MACHINES**

Federico Sanfelix Noguea, Calle Diputacion, 68 Barcelona, Spain

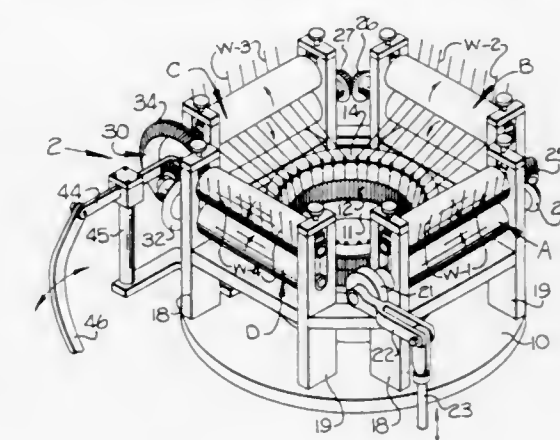
Filed Oct. 27, 1970, Ser. No. 84,432

Int. Cl. D04b 25/02

U.S. Cl. 66—81

5 Claims

Certain groups of adjacent warp yarns are at times fed to the circular warp knitting machine at a different rate than the remaining groups of warp yarns to thereby vary the length of



the stitch loops being formed and to fashion the tubular fabric while it is being knit. Pairs of warp yarn feeding rolls are drivingly interconnected and are arranged around the needle

3,693,379

**METHOD OF OPERATING A WARP KNITTING MACHINE**

Walter Reiners, Peter Nonnenmuhlen Allee 54; Albert Tho Pesch, Wilhelm-von-Julichstr. 12, and Karl Bungter, Gockelsweg 17, all of 4050 Monchengladbach, Germany

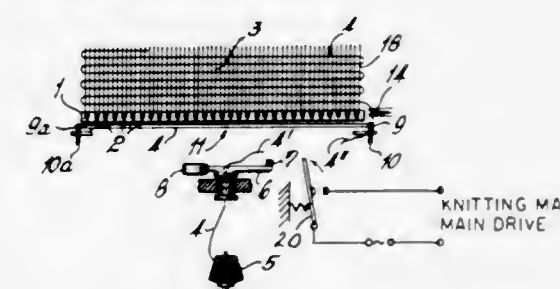
Filed May 14, 1971, Ser. No. 143,489

Claims priority, application Germany, May 16, 1970, P 20 24 088.4

Int. Cl. D04b 23/06

U.S. Cl. 66—84

3 Claims



Method of operating a warp knitting machine includes, after interruption of a weft running to the weft storage and activation of a machine shut-down device, initially controlling slow-down of the knitting instruments of the machine so that when the machine stops, the weft storage has been emptied of all but a predetermined number of weft lengths, severing the drive connection between the weft storage and the knitting instruments, removing from the weft storage the weft remaining therein, automatically filling the weft storage with weft, and the restoring the drive connection for continuing the knitting operation.

3,693,380

**APPARATUS FOR REMOVAL OF ENTRAINED AIR FROM CELLULOSE PULP BEFORE BLEACHING OF THE PULP**

Hans-Erik Rye Engstrom, Kristinavagen 4, Sundsvall, Sweden

Division of Ser. No. 771,593, Oct. 29, 1968, abandoned. This application Dec. 17, 1970, Ser. No. 99,309

Claims priority, application Sweden, Nov. 10, 1967, 15463/1967

Int. Cl. D21c 9/10

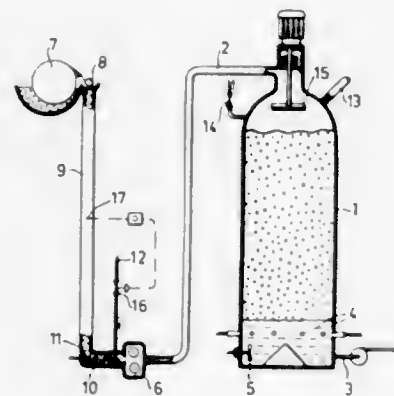
U.S. Cl. 68—5 C

3 Claims

A down-flow bleaching tower having a space under pressure at the top thereof is provided for bleaching cellulose pulp with



a gaseous bleaching agent. An inlet is provided at the top of the tower for introducing the gaseous agent in the space. A first conduit, having an inlet for pulp containing entrained air, is connected to the inlet of a pump. A second conduit, having an inlet connected to the outlet of the pump, introduces the



pulp to the top of the tower against the pressure of the gaseous bleaching agent. Pressure admitting means is connected to the outlet of the first conduit to force steam, oxygen, or a gaseous bleaching agent counter-current to the pulp to expel and replace at least a portion of the entrained air in the pulp.

3,693,381

## TORQUE RESPONSIVE CLUTCH

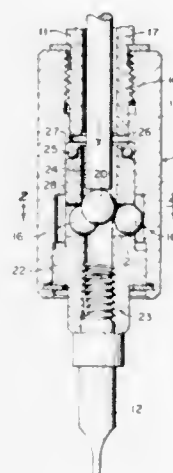
Harold E. McGee, Loves Park, Ill., assignor to Hill-Rockford Co., Rockford, Ill.

Division of Ser. No. 829,650, June 2, 1969. This application  
Feb. 12, 1971, Ser. No. 114,916

Int. Cl. F16d 7/06

U.S. Cl. 64—29

8 Claims



This torque responsive clutch involves the use of a larger central steel ball and three slightly smaller steel balls, the central ball being under a predetermined spring pressure toward the other balls to hold them in a drive position in relation to and between driving and driven members, whereby, when sufficient resistance to turning of the driven member occurs, the clutch is automatically released. The three drive transmitting balls operate in radial holes in one of said relatively rotatable members and engage in radial recesses in the other member. A trip rod through which spring pressure is applied to the central ball operates control means to disconnect drive from the driving member. A control lever pivoted at one end has spring pressure applied to the other end and applies increased spring pressure to the trip rod at a point intermediate its ends, the lever in turn controlling a drive means driving the drive member. The clutch was especially designed for driving the bit of power operable screwdriver.

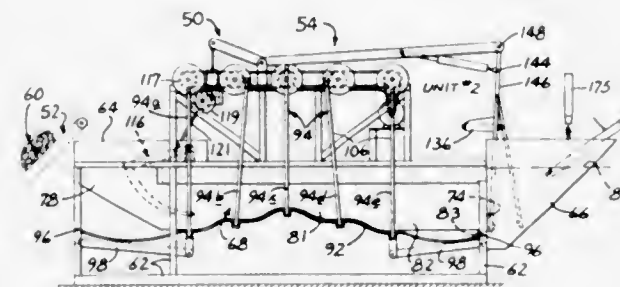
3,693,382  
CONTINUOUS WASHING APPARATUS  
Frederick W. Grantham, 152 W. Pico Blvd., Los Angeles, Calif.

Filed March 4, 1970, Ser. No. 16,318

Int. Cl. D06f 31/00, 39/00

U.S. Cl. 68—96

24 Claims



A washing unit, or a series of similar washing units for different stages of washing such as washing, rinsing, bleaching, etc.; each washing unit including a flexible tube containing the water, and the goods are propelled through the tube; the propelling action is produced by a peristaltic action which also produces an agitating and washing action; it also includes a pusher to aid in starting the goods into the tube, and means for removing them from the exit end, such as a conveyor or gripper or both; the apparatus additionally includes an extracting unit continuously receiving the goods from the final washing unit and continuously extracting the water from the goods, and a drying unit continuously receiving the goods from the extracting unit and continuously drying them.

3,693,383

## DEVICE FOR PREVENTING ACCESS TO AN OPERATING PART

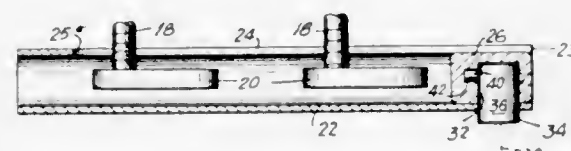
Ira Krupen, Howard Beach, and Marvin A. Gilman, Croton-on-Hudson, both of N.Y., assignors to Marsal Crafts, Inc., Peekskill, N.Y.

Filed Jan. 20, 1971, Ser. No. 108,026

Int. Cl. F16b 41/00

U.S. Cl. 70—232

11 Claims



A device for preventing access to an operating part which is fixed to a rotary member of a smaller cross section than the operating part. The device includes an elongated tube having a hollow interior large enough to accommodate the operating part and formed with a slot extending longitudinally along the tube from an open end thereof with this slot having a width great enough to receive a rotary member but too small to permit the operating part to pass through the slot. Thus the tube can be advanced at its slot along the rotary member with the operating part received in the interior of the tube. After the operating part is thus situated within the tube, a plug is inserted into the tube and a releasable lock coacts with the plug and the tube for preventing the plug from being removed so that access to the operating part is prevented as long as the plug remains in the tube.

3,693,384

## STEP CAM DISC CYLINDER LOCK

Joseph M. Genakis, 948 W. Boylston St., Worcester, Mass.

Filed Aug. 25, 1970, Ser. No. 66,725

Int. Cl. E05b 15/14, 27/00, 63/00

U.S. Cl. 70—364 A

5 Claims



A step cam type of disc lock comprising a series of key-movable step cam discs each having a plurality of step cam surfaces internally thereof, in combination with a like series of setting discs which are actuated by a series of key-activated cam contact pins. The setting discs have notches on the peripheries thereof and when these notches are aligned as by means of a proper key, they provide a common receptacle for a pivoted finger selector bar which then makes a locking engagement with respect to a transmission device which may be connected to the actual locking bolt.

3,693,385

## FLUID CONTROL SYSTEM FOR SELECTIVELY SELF-ADJUSTING MILL REDUCTION FORCE OR INTERWORKING ROLL DISTANCE

Kiyoshi Fujino; Shigenobu Otsuka; Tetuo Kaichi; Takaharu Sugiyama, and Koji Tamura, all of Ube, Japan, assignors to Ube Industries Ltd., Yamaguchi-ken, Japan

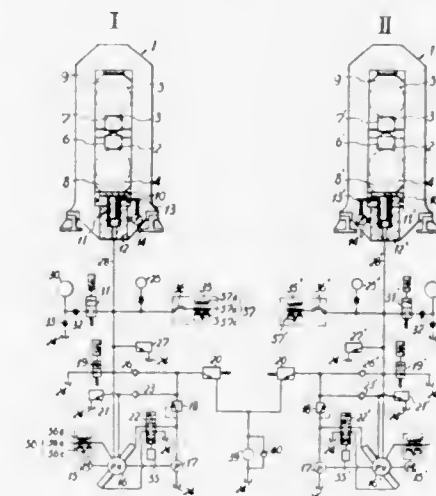
Filed Sept. 23, 1970, Ser. No. 74,789

Claims priority, application Japan, Sept. 29, 1969,  
44/76935; Jan. 30, 1970, 45/8905

Int. Cl. B21b 37/10, 37/08

U.S. Cl. 72—8

9 Claims



A fluid control system for selectively self-adjusting mill reduction force or interworking roll distance or roll gap comprising a variable discharging plunger pump having one port connected to a hydraulic cylinder adapted to apply pressure on working rolls in a mill and the other port connected to a fluid supply source. A servo valve is provided for deflecting deflection means in one or the other direction to control the discharge direction and discharge amount of said pump. In order to detect an existing value of mill reduction force, a fluid

pressure detector is provided for electrically detecting fluid pressure in a fluid passage adapted to be connected to said hydraulic cylinder. A detector is provided for producing an electrical signal in response to the position of the ram of the cylinder. The servo valve operates in response to a result of a comparison between signals from the above-mentioned detectors and a reference value and thereby fluid is controlled so that the fluid may be in a predetermined direction and a predetermined amount so as to self-adjust mill reduction force or inter-working roll distance.

3,693,386

## SAFETY PARTS FEEDER FOR PRESSES

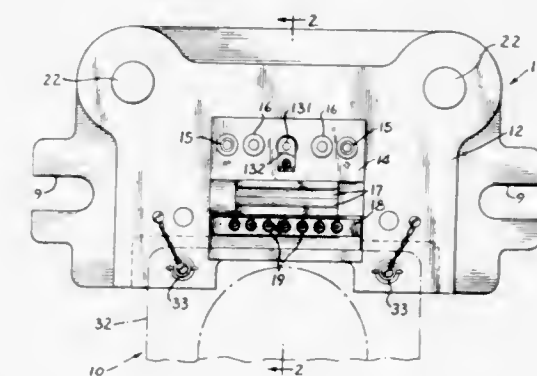
David A. Hedberg, Elk Grove Village, Ill., assignor to Melray Manufacturing Company, Schiller Park, Ill.

Filed Oct. 26, 1970, Ser. No. 83,719

Int. Cl. B21j 7/26; B21d 43/02

U.S. Cl. 72—24

10 Claims



For safely feeding parts to a conventional press having a bed and a manually controlled power operated ram and a die set including a die carried by the bed and a punch carried by the ram, a safety parts feeder is provided. It includes a movable table adjacent the die set, a pneumatically operated rotary motor carried by the bed for rotatably driving and positioning the table, a pneumatically operated reciprocating motor for raising and lowering the table, and a plurality of jigs carried by the table for receiving parts placed therein and feeding them to the die set to be formed thereby as the table is rotated and positioned by the rotary motor and raised and lowered by the reciprocating motor. Control means, operated in timed relation with the operation of the ram of the press, controls the rotary motor and the reciprocating motor to lower the table in one rotary position for forming a part fed by one of the jigs into the die set and for receiving another part in another of the jigs, and to raise, rotate to another position and lower the table and jigs for feeding another part into the die set and for receiving another part to be fed.

3,693,387

## AUTOMATIC LUBRICATING AND COOLING DEVICE FOR TUBE EXPANDER

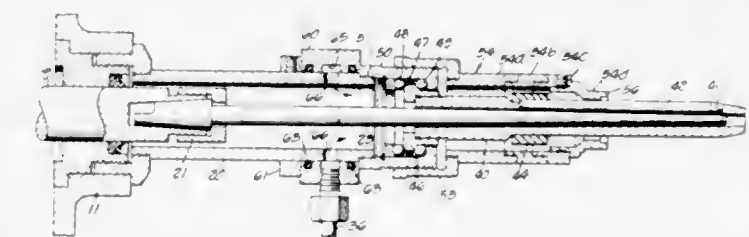
Marvin J. Blackburn, Pasadena, Calif., assignor to Vernon Tool Co., Ltd., Alhambra, Calif.

Filed Dec. 14, 1970, Ser. No. 97,570

Int. Cl. B21d 39/10

U.S. Cl. 72—41

9 Claims



Automatic lubricating and cooling means for tube expanding equipment utilizing compressed air to distribute vapor



over components of a power operated tube expander and to discontinue the flow as an incident to completion of a rolling cycle.

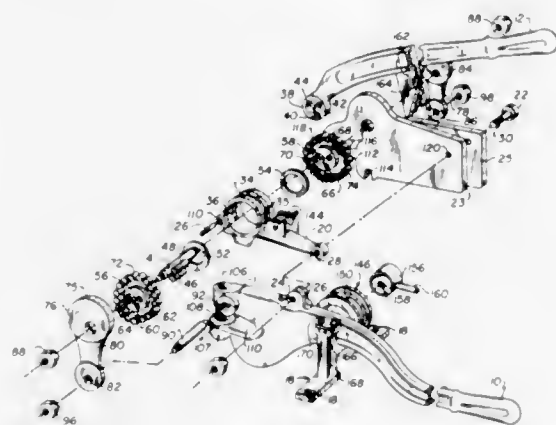
3,693,388

## COMBINATION TOOL

Jacob Yoskowitz, 11 Raynor Road, West Orange, N.J.  
Filed March 12, 1970, Ser. No. 18,825  
Int. Cl. B21b 28/00

U.S. Cl. 72-70

6 Claims



A combination tool which performs punching, cutting, bending, and twisting of preferably flat stock material. An eccentric arm and cam means are employed as the drive mechanism for several of the operations.

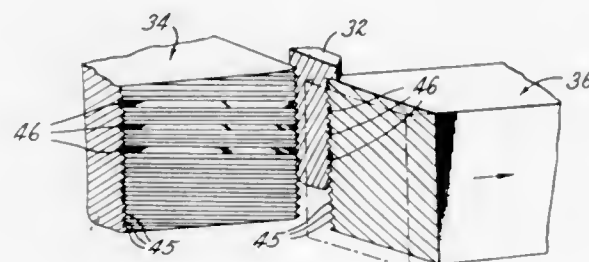
3,693,389

## SELF-LOCKING FASTENERS

Howard I. Podell, 6 Dawes Place, Larchmont, N.Y., and  
Stephen J. Kehoe, Kings Highway, Valley Cottage, N.Y.  
Continuation of Ser. No. 842,990, July 18, 1969, abandoned.  
This application Aug. 11, 1971, Ser. No. 170,962  
Int. Cl. B21h 3/04; B23g 9/00; B21d 17/04

U.S. Cl. 72-88

2 Claims



The invention is directed to self-locking screws in which the locking action is produced by at least a part of two adjacent thread convolutions which lean out of normal position toward each other and thereby grip the interposed thread of the mating part.

3,693,390

## METHOD AND APPARATUS FOR THE PRODUCTION OF ELONGATED CONICAL METALLIC ARTICLES

Otto Oehm, Werdohl, Germany, assignor to Stahlwerke Brunningshaus Gesellschaft Mit, Westhofen/Westfalen, Germany

Filed May 22, 1969, Ser. No. 826,943

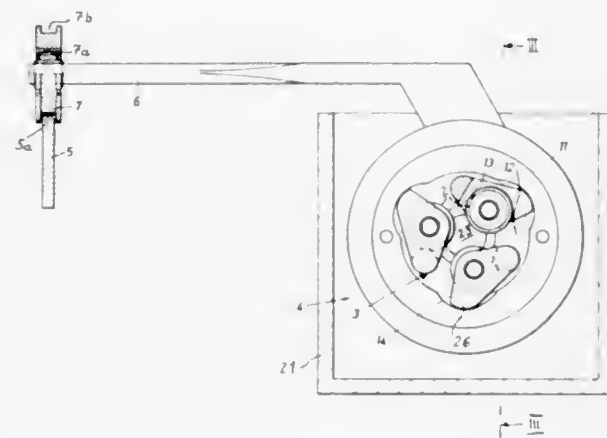
Int. Cl. B21d 15/00

U.S. Cl. 72-107

3 Claims

Conical metallic blanks for the production of progressive helical springs are produced by rotating an elongated metallic rod about its axis, by simultaneously moving a die with three equidistant idler rolls in axial direction of the revolving workpiece, and by moving the rolls toward the axis of the workpiece in accordance with a predetermined pattern so that the rolls convert the workpiece into a blank which tapers from

one end toward the other end, either gradually or stepwise. The means for moving the rolls toward the axis of the workpiece comprises a fixed template and a scanning arm whose



follower tracks the template and which transmits motion to the rolls by way of a turnable ring and pivotable one-armed levers.

3,693,391

## STEEL PLATE BENDING APPARATUS

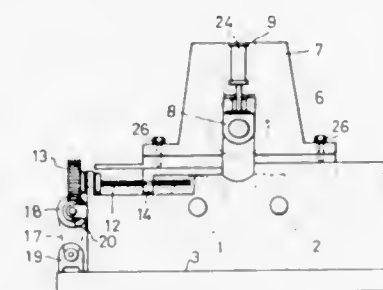
Masunori Mori, 116 Nozaki, Wakayama-shi, Wakayama-ken, Japan

Filed June 3, 1971, Ser. No. 149,440

Int. Cl. B21d 5/14

U.S. Cl. 72-173

3 Claims



A steel plate bending apparatus so constructed that, when an end bending of the steel plate is required, the steel plate is inserted between an upper roll and a pair of lower rolls, the top roll being predeterminedly positioned in a movable manner with respect to the bottom rolls, so that the end bending of the steel plate may be effected in a single operation without reinserting again the steel plate.

3,693,392

## AUTOMOBILE CONVEYOR

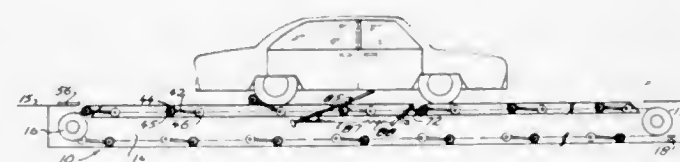
John Watson, Vancouver, British Columbia, Canada, assignor to Monarch Western Equipment Ltd., British Columbia, Canada

Filed June 3, 1971, Ser. No. 149,525

Int. Cl. B61h 13/00

U.S. Cl. 104-172 B

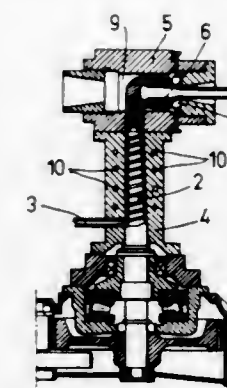
4 Claims



Automobile conveyor apparatus having a continuous chain running beneath a slotted car supporting platform, the chain having pushing assemblies mounted at spaced intervals thereon normally passing beneath the platform and selectively

movable on passage of a front wheel and rear wheel of the automobile over an advance end of the platform to a tire engaging position supported on top of the platform. A ramp, spring urged to, and releasably locked in, a horizontal supporting position at an opening in the platform spaced from the advance end thereof a distance a little greater than a car length is released by operation of a lever disposed in the path of an automobile approaching the opening to permit the ramp to swing to a sloping non-supporting position so that a pushing assembly pushing the front wheel of the automobile can descend through the opening to an inoperative position. The lever is positioned so that it clears the automobile before a rear wheel of the automobile reaches the opening so as to lock the ramps in a horizontal supporting position so that a pushing assembly pushing the rear wheel passes over the opening and pushes the automobile the length of the platform.

cluding a power zone and extrusion die means. On leaving the



power zone, the metal is heated to facilitate its passage from the screw to and through the die means.

3,693,393

## ROLLING OF METAL INGOTS INTO BANDS

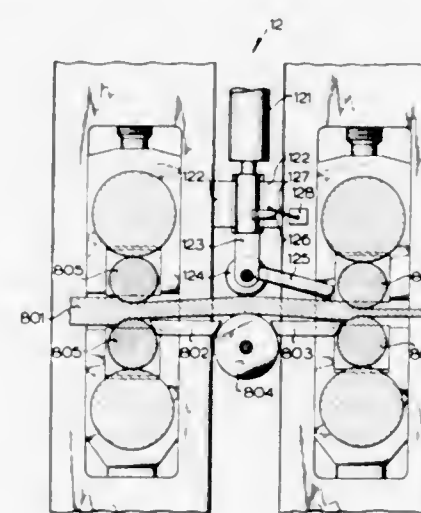
Wilhelm Nellen, Dortmund-Hoechst/Sommerberg; Theodor Sevenich, and Hans Wladika, both of Dortmund, all of Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Germany

Filed June 25, 1970, Ser. No. 49,852

Int. Cl. B21b 39/00

U.S. Cl. 72-226

6 Claims



In a process for the continuous or semi-continuous hot rolling of metal ingots into bands with a high specific band weight, especially 30-40 kg per mm of band width, the material is heated, descaled, prerolled and reduced in thickness during the final rolling under tension in the longitudinal direction. During prerolling and/or intermediate rolling, the ingot is reduced in thickness under compressive stresses in the longitudinal direction. The pre-stage and/or the intermediate stage of the rolling mill are provided with roller controls such as to produce this longitudinal compression.

3,693,394

## PROCESS IN CONTINUOUS EXTRUSION OF METALS AND THE LIKE

Agar Evald Runevall, Tranvagen 67, Segeltorp, and Bror Hansson, Karlavagen 97, Stockholm, both of Sweden

Filed Nov. 12, 1970, Ser. No. 88,707

Claims priority, application Sweden, Nov. 17, 1969, 15710/69

Int. Cl. B21c 29/00

U.S. Cl. 72-262

5 Claims

Metal and the like is extruded by means of a screw press in-

3,693,395

## RECIPROCATING CARRIAGE DRAWING MACHINE

Johann Greven, Schleckheim, Germany, assignor to Schumag Schumacker Metallwerke Gesellschaft mit beschränkter Haftung, Aachen, Germany

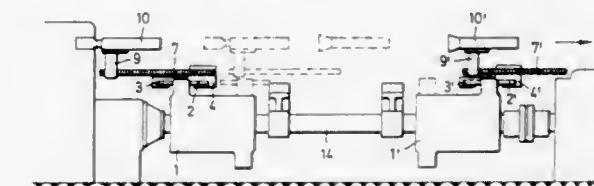
Filed July 15, 1970, Ser. No. 55,092

Claims priority, application Germany, July 16, 1969, P 19 36 139.8

Int. Cl. B21c 1/28

U.S. Cl. 72-287

10 Claims



Reciprocating carriage drawing machine includes first guideways extending in a given drawing direction, a drawing carriage reciprocally mounted in the guideways, revolving cam means operatively connected to the drawing carriage for reciprocating the same along the first guideways, an intermediate carriage interposed between the drawing carriage and the cam means for lengthening the stroke of the drawing carriage, the intermediate carriage being also operatively connected to the cam means and being similarly reciprocable thereby in second guideways in the given drawing direction, and step-up transmission means for increasing the length of stroke of the drawing carriage comprising at least one axle carried by the intermediate carriage and extending substantially perpendicularly to the given drawing direction, a pinion loosely mounted on the axle and being in meshing engagement at one side thereof with a stationary rack and on the other side thereof with a rack slidable in third guideways parallel to the drawing direction, the slidable rack being coupled to the drawing carriage.

3,693,396

## APPARATUS FOR CREASING AND TAPERING USED METAL CONTAINERS

Richard E. Bertelson, 137 Washington St., Marblehead, Mass., and Robert W. Mezitt, Frankland St., Hopkinton, Mass.

Filed April 14, 1971, Ser. No. 133,903

Int. Cl. B21d 28/32

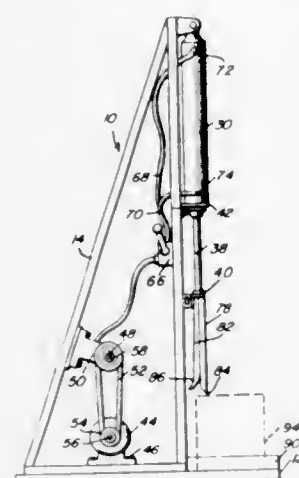
U.S. Cl. 72-325

11 Claims

An apparatus including a pair of side-by-side elongated members generally V-shaped in cross-section and slightly relatively inclined whereby one pair of base ends of the elongated members are closely nested and the other free ends of the members are only slightly nested relative to each other. The free end of the outer V-shaped member is beveled and sharpened for piercing the bottom of an inverted open top container immediately inwardly of one peripheral portion of the bottom wall and continued downward movement of the elon-



gated members after piercing the bottom wall results in the side wall portions of the corresponding peripheral portion of the container being crimped or corrugated with upstanding



corrugations whose ends adjacent the bottom of the inverted container are more sharply crimped or corrugated, the corrugated portions of the container being wedged between the confronting surfaces of the V-shaped elongated members.

3,693,397

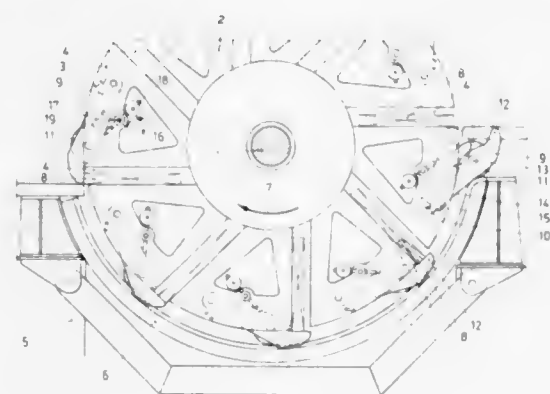
## SPOKED WHEEL CONVEYING DEVICE

Friedrich Rotter, Kreuztal-Kredenbach, Germany, assignor to Siemag Siegener Maschinenbau, G.m.b.H.

Filed Sept. 29, 1970, Ser. No. 76,355  
Int. Cl. B21d 37/16; B21c 1/14

U.S. Cl. 72-342

6 Claims



The disclosure of this invention relates to a spoked wheel conveying device for the conveyance of rolled stock, for instance, hot metallic rolled slabs, through a cooling bath. The slabs are inserted into the gaps or openings formed by the spokes and rest on end bars whenever they pass through the lower part of their path of motion. These end bars are, on one hand, hinged in the direction of rotation of the spoked wheel and have portions that extend in front of an adjacent spoke gap that serves to close the gap and are, on the other hand, supported on circular rails by rollers when in the position where they close the open ends of the wheel.

3,693,398

## METHOD FOR PRODUCING CASES HAVING ROUNDED SIDES AND BEING OPEN AT BOTH ENDS

Johannes Sigurd Pedersen, Aabyhoj, Denmark, assignor to Aarhus Metalemballage Industri, Aabyhoj, Denmark  
Filed May 26, 1970, Ser. No. 40,662

Claims priority, application Denmark, May 27, 1969, 2847/69

Int. Cl. B21d 51/10

U.S. Cl. 72-368

8 Claims

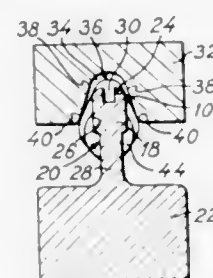
A method of producing metal cases having opposite rounded sides, preferably being of circular cylindrical shape, and being open at both ends, from a blank consisting of a

rectangular piece of sheet metal, said method comprising the steps of

I. bending each border of said blank to form a border zone of approximately the shape of a circular arch of an angle of between 75° and 120°, preferably about 90°, and having a radius of curvature smaller than, preferably between 20 and 40 percent smaller than the radius of curvature of the rounded side of the case to be provided by said border zones,

II. bending the work obtained by step I at its middle line into U-shape with the two curved border zones facing each other and with the bottom of the U forming approximately a circular arch of an angle of between 125° and 175° and having a radius of curvature smaller than, preferably 20 to 40 percent smaller than the radius of the rounded side of the case to be provided at the middle zone of the blank, and

III. arranging the U-shaped work thus obtained on a mandrel having the same cross-section as the case to be



produced, but having dimensions so much smaller than the cross-section of the case as corresponding to slide fit, pressing said U-shaped work against said mandrel by means of two press dies having recesses together defining a cavity of the same shape and dimensions as the external sides of the case to be produced, one of said dies being forced towards the middle line of the work symmetrically thereto, the other being forced against the borders of the U-shaped work. This last said press die first being forced towards the mandrel until it has a minimal distance therefrom greater than the thickness of the original blank, then the first said of the two press dies is forced towards the mandrel until it has approximately the same distance therefrom as the second press die, whereupon both press dies are simultaneously forced together enclosing the case, therewith produced, and the mandrel, thereby a case being obtained having longitudinal edges directly contacting each other with a not unessential pressure and without the borders overlapping each other.

3,693,399

## FASTENER INSTALLATION AND CRIMPING TOOL

Peter R. Chirco, Utica, Mich., assignor to Huck Manufacturing Company

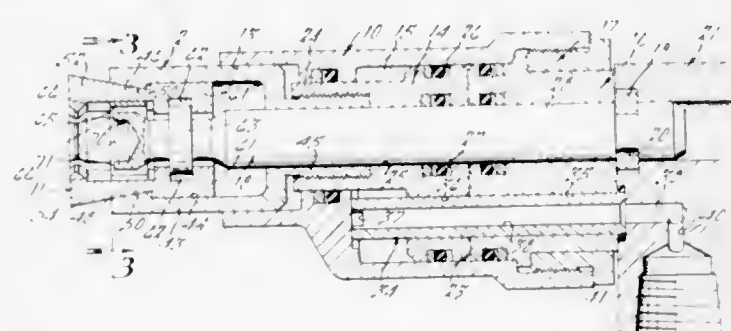
Continuation of Ser. No. 708,713, Feb. 27, 1968, abandoned.

This application Nov. 2, 1970, Ser. No. 76,841

Int. Cl. B21d 9/05

U.S. Cl. 72-391

13 Claims



An installation tool for applying fasteners which comprise a bolt and a collar or nut in which a radially directed crimping force is applied to the nut substantially therearound, after the

nut is first threaded on the bolt, to effect an elongation of the nut and into which the crimping force is applied by a plurality of separate crimping jaws constructed so that a relatively short tool with an offset or eccentric crimping nose is provided for clearance applications and reduction in weight.

3,693,400

## METHOD FOR MEASURING THE CHARACTERISTICS OF MECHANICAL-TO-ELECTRICAL TRANSDUCERS

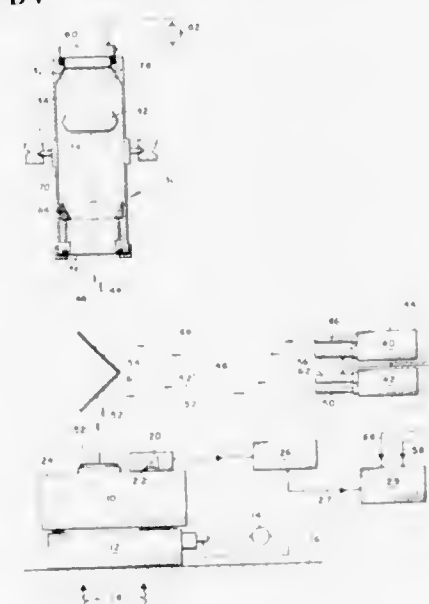
Carl H. Savit, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Filed May 20, 1970, Ser. No. 39,114

Int. Cl. G04r 29/00

U.S. Cl. 73-1 DV

14 Claims



A transducer to be tested is mounted on a shaking table which is energized by a desired driving test signal. The table's motion is precisely measured with reference to an inertial system, for example, a freely falling body. The precise measurement of the shaking table's movements is correlated with the electric output signal from the transducer, and the result of this correlation allows an accurate measurement of the characteristics of the transducer subjected to vibrations by the shaking table.

3,693,401

## APPARATUS FOR CHECKING OPERATION OF SMOKE DETECTORS

Gustav Puri, Rapperswil; Walter Bosshard, Stafa, and Gerhard Meier, Meilen, all of Switzerland, assignors to Cerberus AG, Mannedorf, Switzerland

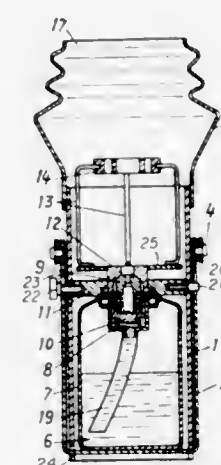
Filed Nov. 13, 1970, Ser. No. 89,176

Claims priority, application Switzerland, Nov. 14, 1969, 17011/69

Int. Cl. G08b 13/18, 27/00

U.S. Cl. 73-1 R

13 Claims



A testing device for smoke detectors wherein a housing is placed over the detector under test and a test medium is

sprayed into the housing. The smoke detector responds to the test medium to indicate operability thereof. The internal volume of the housing is equal to at least twice the internal volume of the smoke detector under test.

3,693,402

## VIBRATION DAMPER TEST MACHINE

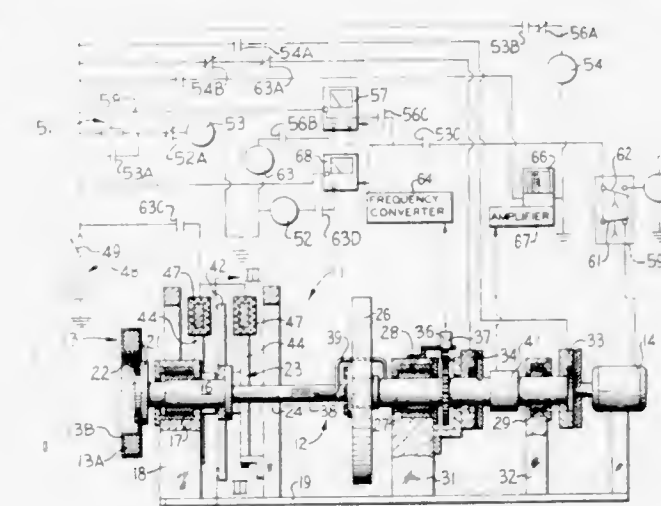
Nelson A. Jones, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 19, 1971, Ser. No. 163,647

Int. Cl. G01m 7/00

U.S. Cl. 73-11

12 Claims



A vibration damper test machine including a rotary mass elastic system and characterized by electromagnetic means for exciting the system in the form of an oscillating torque of resonant frequency to produce large torsional vibrations at an end of the system adapted to receive a torsional vibration damper. The electromagnetic excitation means is arranged such that an excitation frequency corresponding to a predetermined order of vibration and an excitation torque corresponding to the order of vibration amplitude can be induced into the mass elastic system to simulate conditions existing in a particular engine. An observed excessive amount of strain on the system at resonance provides an indication of malfunction of the damper.

3,693,403

## GAS ANALYSIS APPARATUS AND METHOD USING PARALLEL GAS DENSITY DETECTORS AND DIFFERENT CARRIER GASES TO DETERMINE MOLECULAR WEIGHT

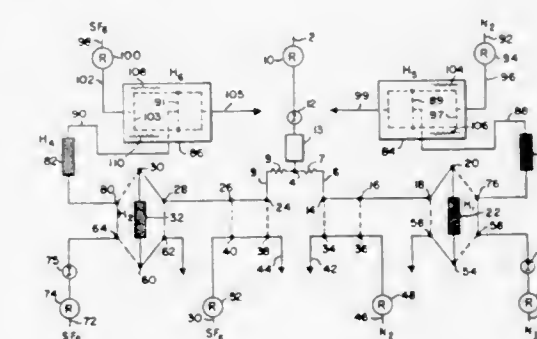
Donald G. Paul, Kennett Square, Pa., assignor to Chemalytics Corporation, Unionville, Pa.

Filed Nov. 9, 1970, Ser. No. 87,680

Int. Cl. G01n 9/00, 31/08

U.S. Cl. 73-30

13 Claims



A method and apparatus are provided for measurement of a function of the molecular weight of a volatile chemical compound of a sample and the absolute weight contained therein by dividing a flow of volatilized sample into a plurality of portions having a fixed volume proportion to each other, trapping the chemical compound from each of said portions separately



in trapping means, transferring the chemical compound of each of said portions into different carrier gases, said carrier gases differing in molecular weight from each other and from the chemical compound of the sample to form separate flows and passing the separate flows through separate means of the recording gas density cell type whereby signal outputs are obtained, the ratio of any two signal outputs being a function of the molecular weight of the compound, the means for trapping of the chemical compound to be measured preferably including a chromatographic tube when more than a single component is present.

3,693,404

Patent Not Issued For This Number

3,693,405

BAROMETRIC ALTIMETER

Naonobu Shimomura, No. 13-8 Sakuragawa-cho, Shibuya-ku, Tokyo, Japan

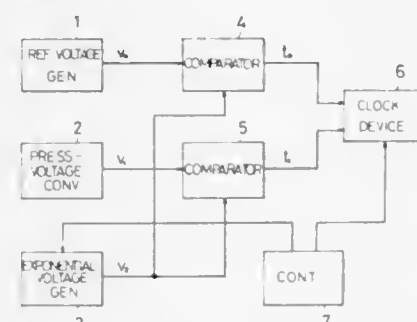
Filed Dec. 31, 1970, Ser. No. 103,055

Claims priority, application Japan, Jan. 7, 1970, 45/2426

Int. Cl. G01H 7/12

U.S. Cl. 73—384

10 Claims



An exponentially changing voltage is compared respectively with a voltage proportional to the atmospheric pressure at a reference altitude and a voltage proportional to the atmospheric pressure at the altitude to be measured and their respective times of equality are measured. The altitude can then be obtained by the time interval because the time interval is shown to be proportional to the difference between the altitude to be measured and the reference altitude.

3,693,406

METHOD FOR INSPECTING FILTERS

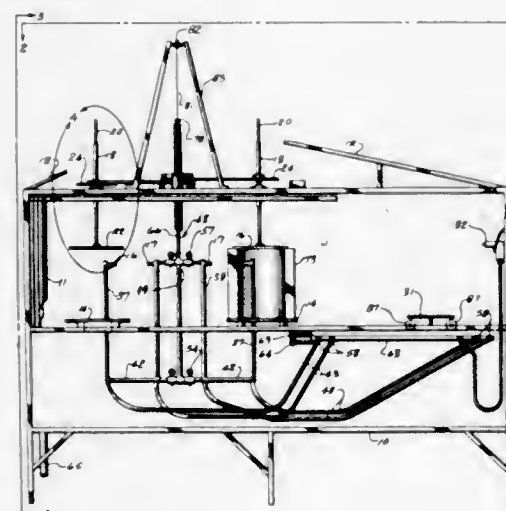
Benjamin F. Tobin, III, Los Altos, Calif., assignor to Air Intake Renu, Montebello, Calif.

Division of Ser. No. 5,546, Jan. 26, 1970. This application Jan. 20, 1971, Ser. No. 108,139

Int. Cl. G01m 3/00; G01n 15/08

U.S. Cl. 73—38

5 Claims



Method and apparatus are described for washing hollow cylindrical engine air cleaners or filter elements on inside and

outside surfaces. After the washing operation and before drying the filters are inspected by directing a forceful flow of water heavily aerated with entrained bubbles of air against the filter surface. Visual observation of bubbles passing through the filter element provides rapid and reliable detection of leaks through the filter.

3,693,407

VENTED SAMPLING DEVICE

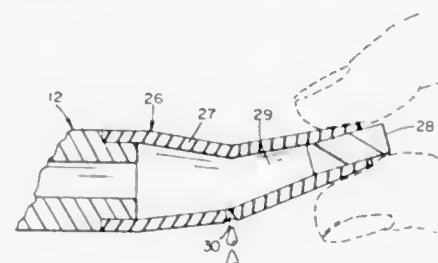
Daniel M. McWhorter, Arlington Heights, and Frank K. Villari, Oak Park, both of Ill., assignors to The Kendall Company, Boston, Mass.

Filed July 1, 1971, Ser. No. 165,846

Int. Cl. G01H 19/00; A61b 5/00

U.S. Cl. 73—420

9 Claims



In measuring manometrically the pressure of body fluids such as spinal fluid, a connector is provided which comprises an air-pervious liquid-impervious closure plug at one end, together with a sampling slit in the surface of the connector.

3,693,408

PIPELINE TESTING PLUG

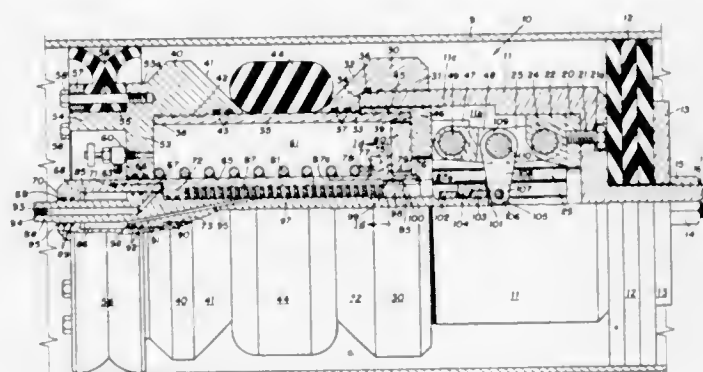
Walter E. Hyde, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Nov. 20, 1970, Ser. No. 91,450

Int. Cl. G01m 3/28

U.S. Cl. 73—49.8

21 Claims



A pipeline testing plug with a cylindrical body has scraper cups attached to it, resilient packer ring positioned on the body, a pair of wedges positioned one on each side of the packer ring and a pair of mandrels and jackknife linkage within the body. The mandrels are hydrostatically operated, with the linkage arranged for blocking the first mandrel which is connected to one of the wedges, and the other mandrel being connected to the linkage in order to remove the linkage from blocking the first mandrel in response to applied hydrostatic pressure.

The pipeline plug is inserted into the line and pushed down the line by low-pressure fluid flow. After the plug reaches the desired area, the pipeline is closed off at opposite ends and hydrostatic pressure is built up, activating the plug sealing means. Pressure at both ends of the line is then monitored to determine which section of the line contains the leak. Upon reduction of hydrostatic pressure the sealing means in the plug automatically releases, allowing the plug to be moved to a new position, thereby further narrowing the area in which the leak could be located.

3,693,409

METHOD AND APPARATUS FOR MEASURING THE CARBON POTENTIAL IN GAS ATMOSPHERES

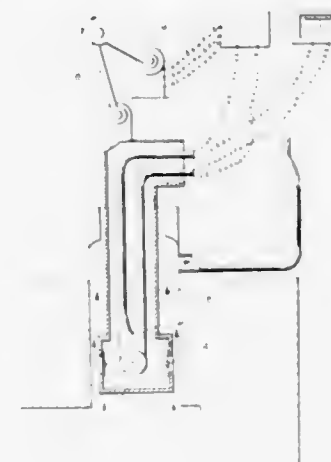
Kazuo Yamagishi, Urawa, Japan, assignor to Tokyo Gas Company Limited, Tokyo, Japan

Filed Oct. 12, 1970, Ser. No. 79,872

Int. Cl. G01n 25/02

U.S. Cl. 73—25

2 Claims



A method and apparatus for detecting the carbon potential of a gas atmosphere within a heat-treatment furnace. A sample of gas atmosphere is extracted from the furnace and while cooling it the carbon deposit temperature is measured by a measuring element having of a carbon deposit detecting tip and a thermocouple adapted to be inserted directly into the furnace to measure the carbon deposit temperature of the said gas atmosphere. A temperature control means is connected with the carbon deposit detecting tip for changing the temperature of said tip, and a recorder is connected with said thermocouple for recording the temperature at which the tip detects a carbon deposit. The internal temperature of the furnace is measured, and the thus measured temperature values are used to determine the carbon potential.

3,693,410

DISPOSABLE AIR SAMPLING FILTER CASSETTE

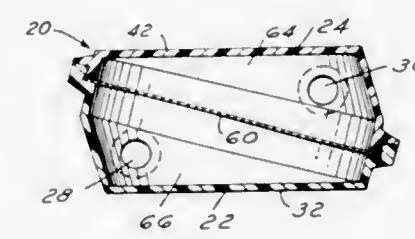
Charles J. Robrecht, and John S. Wyman, Jr., both of Ann Arbor, Mich., assignors to The Bendix Corporation

Filed Feb. 2, 1970, Ser. No. 7,458

Int. Cl. G01n 31/00; B01d 49/00

U.S. Cl. 73—28

7 Claims



A composite filter unit and cassette to serve as an air sampler for personal use in connection with a metering pump and a cyclone unit. The filter unit is formed of two opposed shells with interfitting flanges to provide a support for the circumferential edges of a filter disc and to form chambers on each side of the disc, one to serve as an inlet and one to serve as an outlet. The chambers are provided with tangential openings so that inlet air is directed parallel to the disc in a toroidal path where it can flow uniformly through the filter disc to the opposed chamber and outlet. The composite filter unit is encapsulated in a cassette during use to protect it against outside contamination, the encapsulator having a special configuration for cooperation with a garment support bracket.

3,693,411

APPARATUS FOR MEASURING THIXOTROPY

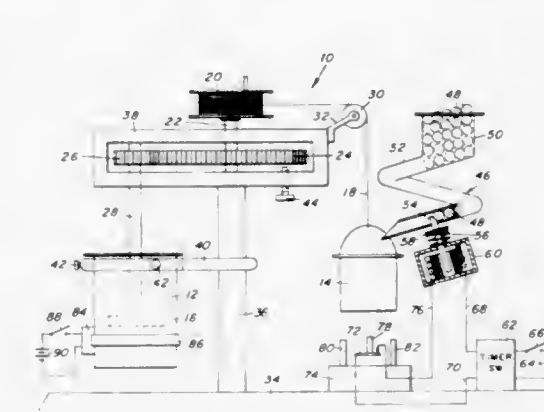
George L. Kalousek, 2395 Urban Drive, Lakewood, Colo., and Phillip F. Enger, Arvada, Colo.

Filed March 18, 1971, Ser. No. 125,651

Int. Cl. G01n 11/10

U.S. Cl. 73—59

5 Claims



Thixotropy is measured by analyzing a sample in two different states. First, the total load to break thixotropic set is determined. To achieve maximum rheopectic set before breaking the thixotropic set, a viscosimeter-type apparatus is loaded by impacting steel balls into a fixed container at regular intervals. Second, the minimum load to break thixotropic set is determined by vibrating the sample to break thixotropic set, while simultaneously loading a fixed container in the above manner. The two tests provide values for (1) the total load to shear the set sample, and (2) the minimum load to initiate flow. Algebraically, these values are combined into a thixotropic index.

3,693,412

METHOD FOR MEASURING THIXOTROPY

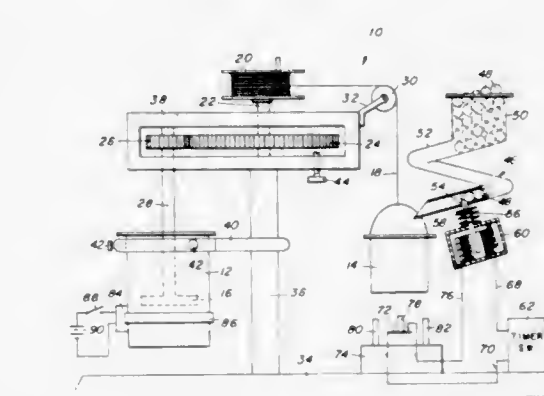
George L. Kalousek, 2395 Urban Dr., Lakewood, Colo.

Filed March 18, 1971, Ser. No. 125,649

Int. Cl. G01n 11/10

U.S. Cl. 73—59

2 Claims



Thixotropy is measured by analyzing a sample in two different states. First, the total load to break thixotropic set is determined. To achieve maximum rheopectic set before breaking the thixotropic set, a viscosimeter-type apparatus is loaded by impacting steel balls into a fixed container at regular intervals. Second, the minimum load to break thixotropic set is determined by vibrating the sample to break thixotropic set, while simultaneously loading a fixed container in the above manner. The two tests provide values for (1) the total load to shear the set sample, and (2) the minimum load to initiate flow. Algebraically, these values are combined into a thixotropic index.



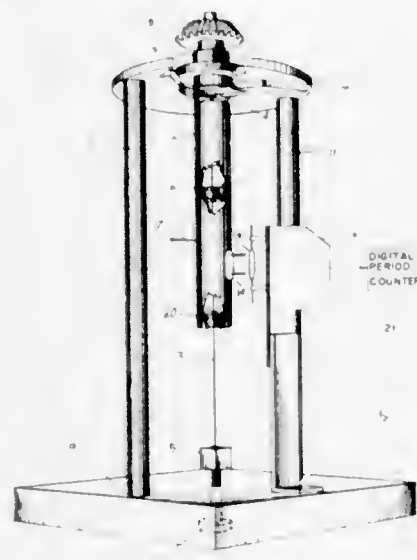
3,693,413

**MOMENT OF INERTIA MEASURING INSTRUMENT**  
Richard Studley Boynton, 81 Hillcrest Terrace, Meriden, Conn.

Filed Feb. 2, 1971, Ser. No. 111,979  
Int. Cl. G01m 1/10

U.S. Cl. 73-65

5 Claims



An inverted torsion pendulum which may be used to measure the moment of inertia of physical parts of any size or shape. In one preferred embodiment, a taut wire is placed in tension in a rigid fixed frame. A test object is attached to an object mounting surface located above the fixed frame and concentric with the longitudinal axis of the taut wire. A rigid support structure couples this object mounting surface to the center of the taut wire. Bearings limit the motion of the oscillating assembly to pure rotation. The period of oscillation of the torsion pendulum is determined with a magnetic reed switch and electronic period counter and the moment of inertia of the test object calculated using conventional methods.

3,693,414

**ULTRASONIC IMAGE PRODUCING INSTRUMENT**  
Richard Ernest Soldner, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Rulangen, Germany

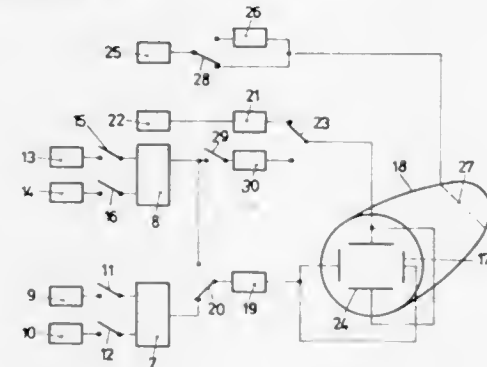
Filed May 8, 1970, Ser. No. 35,740

Claims priority, application Germany, June 4, 1969, P 19 28 367.1

Int. Cl. G01n 29/04

U.S. Cl. 73-67.9

2 Claims



An ultrasonic image producing instrument of the impulse echo type is used for making visible sections of an object being examined, particularly inner organs in the body of a patient. The instrument has an ultrasonic emitting and receiving system, the emitter of which sends an ultrasonic ray into the object being examined and the receiver of which receives echo impulses reflected from various limiting surfaces of the object. The instrument also has drives for shifting the system relatively to the object being examined, namely, by shifting the ultrasonic ray line by line selectively in one plane or in a plane perpendicular thereto while the ray direction always remains the same. The instrument also has an oscillograph tube having an electron ray which is deviated by a vertical

sweep generator synchronized with the ultrasonic emitter in a vertical direction with a speed proportional to the duration of the emitted impulse in the object being examined and deviated by a horizontal sweep generator capable of being synchronized with the drives in the horizontal direction with a speed proportional to the shifting speed of the ultrasonic ray in the respective plane, the deviation taking place over the image screen of the tube, which lights and measures the echo impulses transmitted by the receiver to the Wehnelt cylinder of the tube.

3,693,415

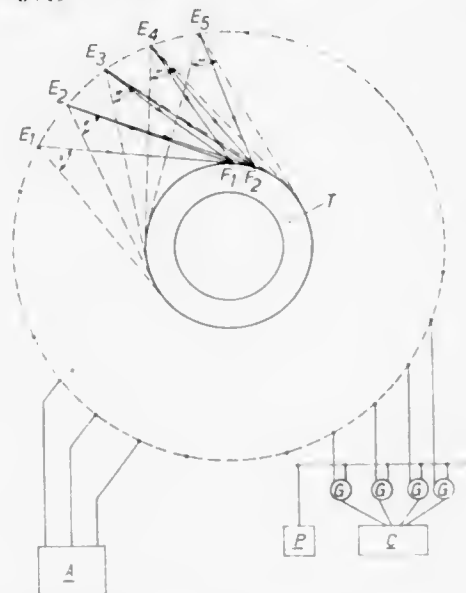
**SCANNING ULTRASONIC INSPECTION METHOD AND APPARATUS**

Keith Richard Whittington, Greatshelton, England, assignor to T. I. (Group Services) Limited, Birmingham, England  
Continuation-in-part of Ser. No. 787,287, Nov. 26, 1968, abandoned. This application July 9, 1971, Ser. No. 161,079  
Claims priority, application Great Britain, Nov. 29, 1967, 54,224/67

Int. Cl. G01n 29/04

U.S. Cl. 73-67.9

42 Claims



A method and apparatus for testing for flaws by ultrasonic energy in which transducer elements are uniformly spaced in a row relative to a work piece and successive groups thereof are energized in a progressive manner along the row, each group being energized in the same manner so that successive foci are on a path on the outer surface of the work piece. Preferably, each transducer element emits a pulse of ultrasonic energy throughout a substantial angle towards the work piece and the pulses arrive substantially simultaneously and in phase at a point within the work piece.

3,693,416

**APPLANATION TONOMETER ARRANGEMENT**  
Joseph C. Dianetti, East Aurora, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

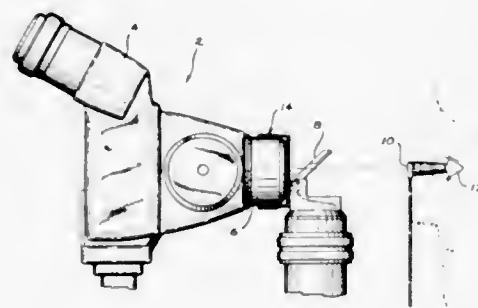
Continuation of Ser. No. 789,790, Oct. 8, 1969, abandoned.

This application Nov. 25, 1970, Ser. No. 92,852

Int. Cl. A61b 3/16, 3/10; G02b 7/04, 15/02

U.S. Cl. 73-80

1 Claim



An applanation tonometer having a bi-prism to indicate the

3,693,419

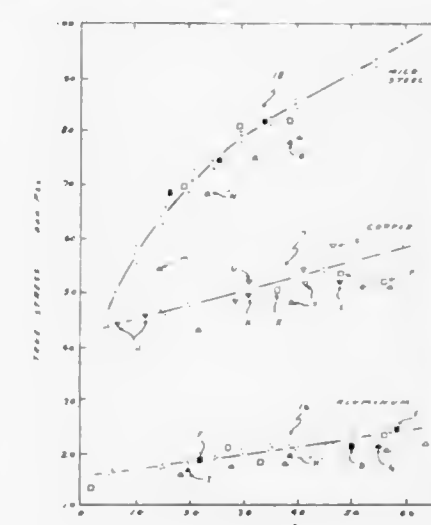
COMPRESSION TEST

Vincent De Pierre, Dayton, Ohio; Alan T. Male, Export, Pa., and George Saul, Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force

Continuation-in-part of Ser. No. 64,536, Aug. 14, 1970, abandoned. This application Dec. 30, 1970, Ser. No. 102,583  
Int. Cl. G01n 3/08

U.S. Cl. 73-89

2 Claims



A combined true stress-strain data-generating testing technique, and method for determining unknown loads applied in compression to relatively thin, metallic and ring-shaped test specimens by means of flat die platen members. Both the die friction component  $\Delta D$  of the total applied load and the percent deformation  $\Delta T$ , or true strain of the ring specimen, as well as the unknown compression load, may be determined respectively from the change in shape or inside diameter and thickness of the deformed specimen. From a plot between the previously computed deformation,  $\Delta T$ , or true strain, and die friction component,  $\Delta D$ , the ratio between the total pressure applied to the specimen and the true flow stress may be computed from the total pressure required to overcome the previously found die friction component,  $\Delta D$ . A true stress-strain curve may be plotted from values found in testing a number of specimens under various loads, and the load being applied may be found, when the basic flow behavior of the material under test is known.

3,693,418

ADJUSTABLE FORCE PROBE

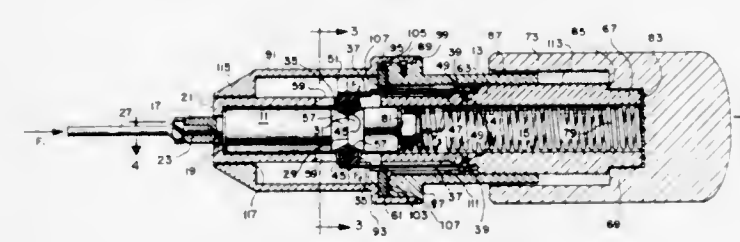
Walter E. Kasparek, deceased, late of Huntsville, Ala. (by Anni Kasparek, administratrix); Ben B. Swords, Albertville, and Werner K. Rosinski, Huntsville, both of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 17, 1970, Ser. No. 99,174

Int. Cl. G01n 3/42

U.S. Cl. 73-85

9 Claims



A hand operated force probe for applying a preset force against an object to determine if the object is properly secured comprising a plunger engaged by rollers fitting in an annular groove in the plunger. The rollers are held in the groove by longitudinal yieldable springs and the effective length of the springs is adjustable to vary the stiffness of the springs and thus vary the force required to ride the rollers out of the groove. In operation, the end of the plunger is pressed against a surface and when the force applied through the plunger exceeds the preset force, i.e. the force required to ride the rollers out of the groove, the plunger promptly retracts.

3,693,420

COHESION TEST DEVICE

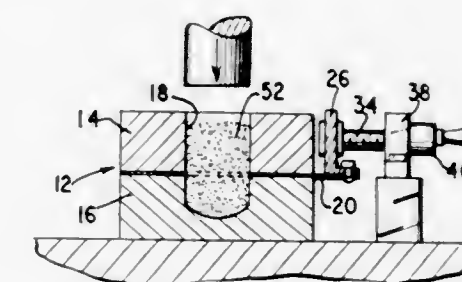
Paul E. Wray, 30 Stonehenge Lane, Chester, Pa., and Stephen A. Howard, 265 Iven Avenue, Delaware, Pa.

Filed June 1, 1971, Ser. No. 148,352

Int. Cl. G01n 3/42, 3/24

U.S. Cl. 73-94

4 Claims



The disclosure is directed to a method and apparatus for measuring the cohesive forces in a tablet formed from compressed powders and is made up of a split die which has a cavity for the powders to be compressed, a cutting blade disposed between the two portions of the split die and extending outside the die, a cantilever beam connected at its free end to the extending end of the blade, reciprocating means connected to



the other end of the cantilever beam to draw the blade through a compressed powder, while the compressed powder is still in the die cavity, and strain gauges connected to the cantilever beam to measure the amount of bending imparted to the cantilever beam by the resistance of the compressed powder to the movement of the blade. The cohesion forces thus determined may be used to predict the tableting characteristics of the material.

3,693,421

## ELASTOMER TESTING INSTRUMENT

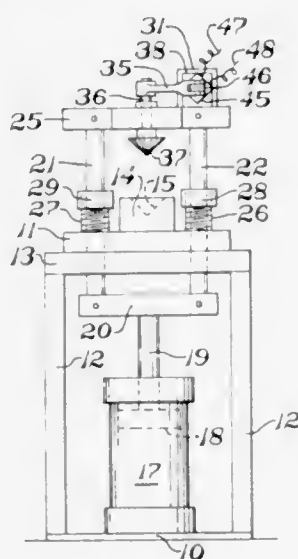
Paul W. Karper, 3391 Charring Cross Drive, Stow, Ohio, and John P. Porter, 3028 West Bailey Road, Cuyahoga Falls, Ohio

Continuation-in-part of Ser. No. 880,786, Nov. 28, 1969, abandoned. This application June 15, 1971, Ser. No. 153,394

Int. Cl. G01n 3/30

U.S. Cl. 73—101

24 Claims



Stress relaxation apparatus and method which applies a sudden impulse torque to a heated or an unheated sample of material of uncured or cured elastomeric material such that a stress relaxation measuring means located between the sample of material and the force applicator is effective to measure the relaxation that occurs in the sample of material progressively.

3,693,422

## VEHICLE TESTING APPARATUS

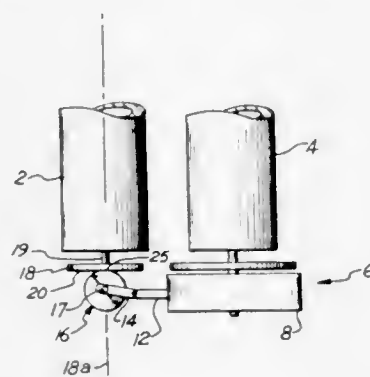
John Anthony Marten, and Bernard Arthur Gee, both of Norfolk, England, assignors to Suntester Limited, Kings Lynn, Norfolk, England

Filed March 15, 1971, Ser. No. 124,402

Int. Cl. G01h 5/13

U.S. Cl. 73—117

11 Claims



The disclosure describes a chassis dynamometer having at least one pair of rollers for contact with at least one traction wheel of a motor vehicle, one of the rollers being braked by an eddy-current brake the stator of which is mounted for pivotal movement in accordance with the braking torque developed against a resilient bias. A perforated disc is mounted on and

for movement with the stator of the eddy-current brake, the rim of the disc being in driving contact with the surface of the second disc driven to rotate by the other roller so that the speed of rotation of the first disc is substantially proportional to the traction power output of the motor vehicle.

3,693,423

## NATURAL CIRCULATION LIQUID PUMPING SYSTEM IN PLUME PUMPING SYSTEM FOR TEST ENGINES

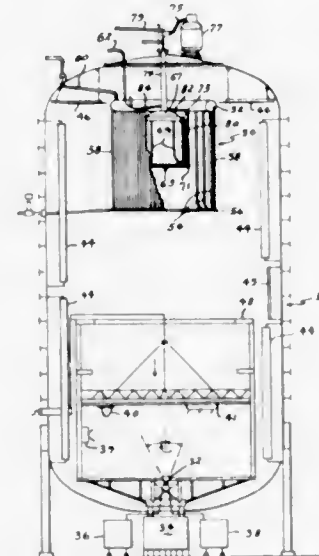
Milton J. Triplett, Tullahoma, Tenn., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Oct. 6, 1971, Ser. No. 187,040

Int. Cl. G01m 15/00

U.S. Cl. 73—117.1

5 Claims



A natural circulation pumping system, used in a plume pumping system for a test engine, having a liquid coolant in a reservoir-separator which supplies the liquid to a plurality of insulated downcomer tubes. The downcomer tubes are connected at their lower ends to an annular manifold. The liquid is returned to the reservoir-separator through a plurality of riser tubes wherein the vaporizing of the liquid, by the heat added, causes the liquid to circulate, since the liquid-vapor mixture in the riser tubes has less weight than the liquid in the downcomer tubes. Natural separation takes place in the reservoir-separator as the heavier liquid falls into the liquid pool and the light gas rises to be vented.

3,693,424

## RING TESTING MACHINE

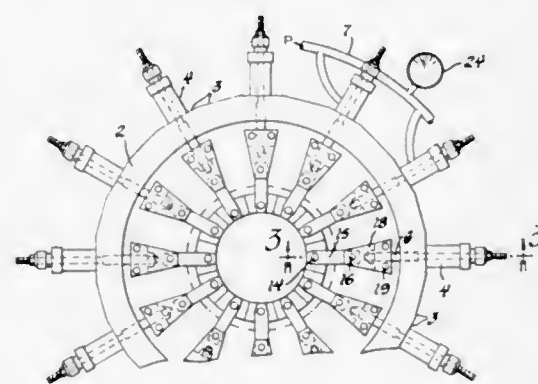
Joseph A. Wagle, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 21, 1970, Ser. No. 82,614

Int. Cl. G01n 3/08

U.S. Cl. 73—120

3 Claims



Ring testing machines which embody an annular frame, a ring of jacks, and tension members extending in from the jacks to a ring to be tested. The tension members may be coupled to

shoes to fit the inside of the ring to be tested or the ring may be clamped so that the jacks exert a delaminating or separating pull on the radially outer portion of the ring. Heat may be applied to the ring during the testing.

3,693,425

## FORCE MEASURING APPARATUS

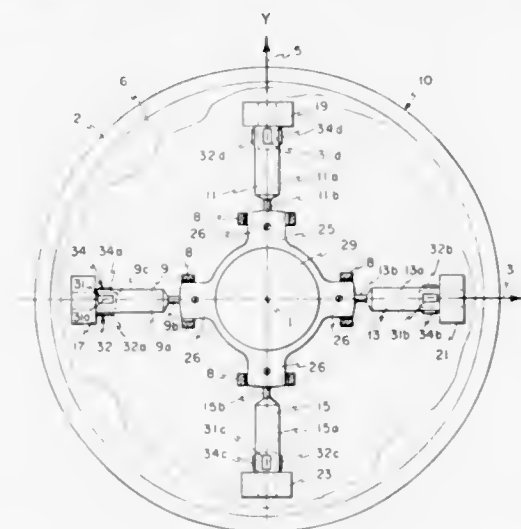
Joseph M. Starita, 10305 Foxbow Dr., Louisville, Ky., and Christopher W. Macosko, 220-C King St., Princeton, N.J.

Filed April 30, 1970, Ser. No. 33,251

Int. Cl. G01l 5/16

U.S. Cl. 73—133

12 Claims



Apparatus for independently measuring mutually perpendicular forces and torque about the line of action of one said force. A set of four cantilevered beams extends along a pair of X—Y coordinate axes and supports a rigid platform in the X—Y plane. A force receiving means above said X—Y plane and on the Z-axis intersecting the origin of said X—Y axes, is rigidly coupled to said platform, whereby forces applied thereto produce bending in said beams in accordance with the direction of the force. Strain gauge means and bridge circuit means are arranged to detect only strains in said beams resulting from the force desired to be measured.

3,693,426

## PORTABLE USEFUL HORSEPOWER MEASURING INSTRUMENT

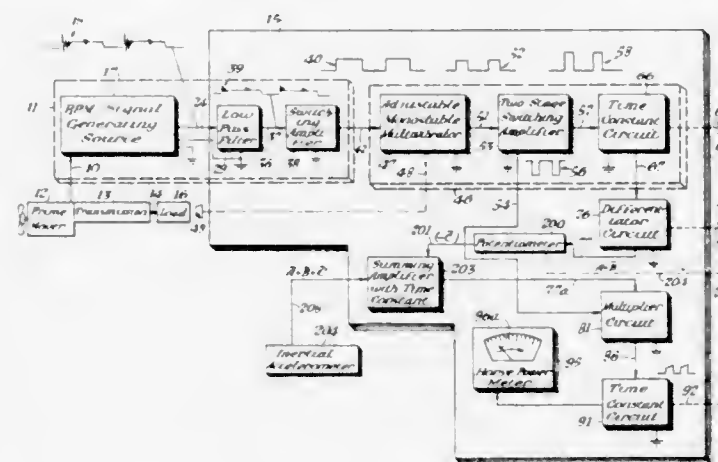
Donald R. Little, 132 Chestnut Drive, Greensburg, Pa.

Filed July 2, 1971, Ser. No. 159,202

Int. Cl. G01l 3/24

U.S. Cl. 73—133

18 Claims



A readily portable apparatus and method for determining the useful horsepower of any prime mover, operating on any given roadway grade with a known load. The apparatus includes a velocity signal source having an input of the velocity of rotation delivered by the prime mover and having an output directly proportional to the velocity of rotation of the prime mover. An inertial acceleration signal generator which has a

3,693,427

## SHAPE CONTROL SENSOR FOR COLD ROLLING MILLS

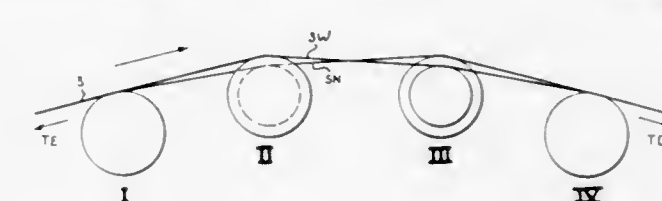
Allyn S. Norton, Jr., Charlottesville, Va., assignor to General Electric Company

Filed Dec. 23, 1970, Ser. No. 100,973

Int. Cl. G01l 5/04

U.S. Cl. 73—144

10 Claims



An apparatus for sensing "shape" of a strip in processing by a rolling mill including two or more rolls over which the strip is passed between successive stands of the mill, each roll being journaled at each end and each journal being supported by a load cell for measuring the force exerted by its roll and differentiating circuits for receiving the measured forces for determining the "flatness" of the strip and therefrom correcting or adjusting the parameters of the mill stands. In its simplest form one of the rolls is provided with a convex crown, and in a more sophisticated version of the invention the apparatus includes two crowned rolls, one roll being convex and the other being concave.

3,693,428

## HYDRAULIC CONTROL DEVICE FOR TRANSMITTING MEASURING VALUES FROM THE BOTTOM OF A WELL TO THE SURFACE AS PRESSURE PULSES THROUGH THE DRILLING MUD

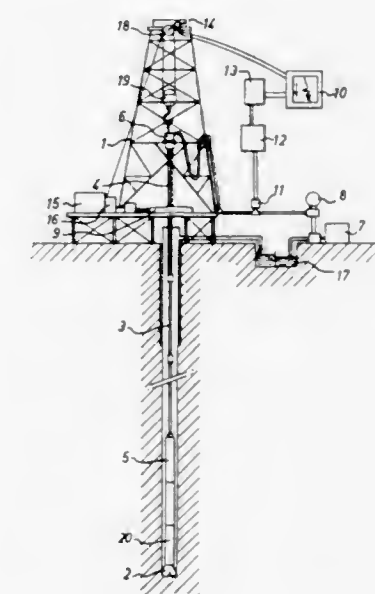
Jean Pierre Le Peuedic, Avenue Montardam, Lotissement du Levant No. 4, 64 Pau, and Claude Quichaud, 22, rue des Chenes, 64 Billere, both of France

Filed July 24, 1970, Ser. No. 58,085

Int. Cl. E21b 47/12

U.S. Cl. 73—151

7 Claims



Device for transmitting information with respect to measuring values of parameters of a drilling operation from the bottom of the well to the surface in the form of pressure pulses through the mud stream comprising flow limiting means in the path of said stream controlled by electric signals derived from the measured values of said parameters, hydraulic power-accumulator means storing under pressure a control fluid forced



therein by pump means energized by a bottom turbine driven by the mud stream and releasing said pressurized fluid through said control means in response to said electric signals, and surface means for sensing said pressure pulses and converting the same to electric values representative of the measured values of said parameters.

3,693,429

Patent Not Issued For This Number

3,693,430

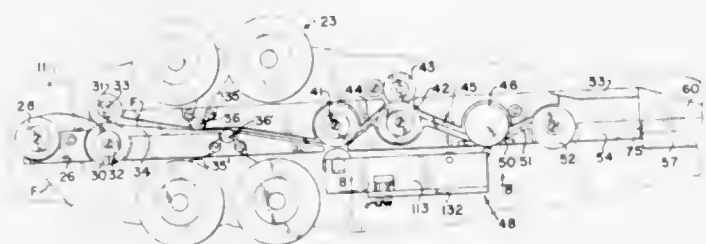
FILM INSPECTION MACHINE

Robert F. Menary, 2449 Strand, Northbrook, Ill.  
Filed Nov. 16, 1970, Ser. No. 89,572

Int. Cl. G01n 19/08

U.S. Cl. 73—157

10 Claims



A machine is disclosed for inspecting motion picture film to enable improper splices, sprocket hole tears and similar defects to be detected so that appropriate repairs may be made, which machine comprises an upright cabinet having a vertical work face with reel supports on opposite sides of a center work area across which the film traverses a generally horizontal path between the reels. Film cleaning devices, thickness sensors, and hole or tear detecting devices are provided along the film path with associated operating mechanism for stopping the film travel when a defect is detected which requires repair. The film is guided by edge guide channels and guide members extending between rollers or other film supports where the sensing and detecting operations are carried out and provision is made for advancing the leading end of the film so as to automatically thread the film when a reel is placed in the machine for inspection.

3,693,431

GEAR TOOTH DEFLECTION MEASURING MACHINE

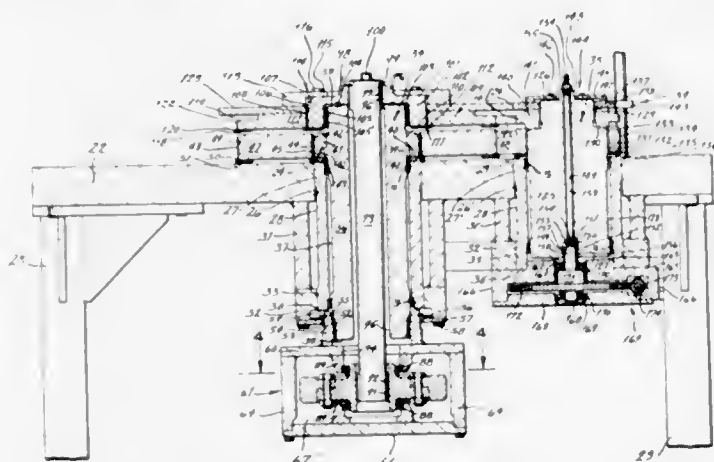
Dean D. King, Princeville, Ill., assignor to Westinghouse Air Brake Company, Pittsburgh, Pa.

Filed Aug. 26, 1971, Ser. No. 175,241

Int. Cl. G01m 13/02

U.S. Cl. 73—162

21 Claims



A gear tooth deflection measuring machine adapted to measure both the deflection of a single tooth under loaded and unloaded conditions and to measure the total deflection of the particular gear teeth in engagement during rotative mesh and

in loaded condition; said machine being based upon the closed loop or four-square theory incorporating a pair of spaced-apart parallel shaft assemblies, each of which are operatively engaged at their lower end portion to a gear box unit for effecting independent rotation of same and at their upper end portion to a gear and ring assembly, including a test gear, a measuring ring and a load ring. The test gears are disposed in meshing engagement and the measuring and load rings are interconnected by a relatively thin band of linear stretch material, such as beta titanium or beryllium bronze; the load band being utilized for applying a predetermined load or torque on one of said shaft assemblies through operation of one of said gear box units, and the measuring band for recording the total deflection of the engaged gear teeth when run through operative mesh under the said predetermined load upon operation of the other gear box unit; said total deflection being determined by the elongation or reduction in length of the measuring band

3,693,432

ARTILLERY GUN SHOCK SIMULATOR

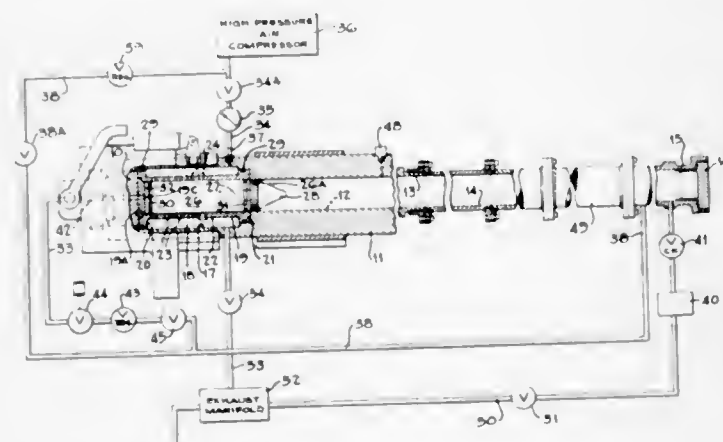
Walter N. Stewart, Willingboro, and William J. Tatu, Palmyra, both of N.J., assignors to The United States of America, as represented by the Secretary of the Army

Filed June 22, 1971, Ser. No. 156,411

Int. Cl. G01m 19/00

U.S. Cl. 73—167

5 Claims



A weapon shock simulator testing arrangement having a gun tube with a breech mechanism to close its rearward end and extension tubes connected to its forward muzzle end terminating with a sealing cap. A metering sleeve, having a plurally apertured cylindrical sidewall between its outwardly directed end flanges, is positioned in an internally enlarged annulus of the gun tube that defines a breech chamber. A piston or projectile containing a mechanical time fuze test sample is slidably mounted in the metering sleeve and adopted to operatively spin through the gun tube rifling grooves when moved forwardly by low and high fluid pressures from controlled sources. A regulated intermediate fluid pressure is delivered to the forwardmost extension tube adjacent the sealing cap to cushion and retard or stop the fired specimen carrier prior to its extraction for inspection or observation purposes.

3,693,433

ULTRASONIC ANEMOMETER

Yasuhiro Kobori, Tanashi, and Yukiji Morita, Tokyo, both of Japan, assignors to Kaijo Denki Kabushiki Kaisha (A. K/a Kaijo Denki Co. Ltd.), Tokyo-to, Japan

Continuation-in-part of Ser. No. 667,279, Sept. 12, 1967,

abandoned. This application March 31, 1970, Ser. No. 24,213

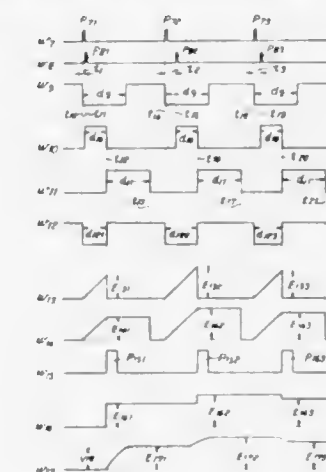
Int. Cl. G01w 1/02

U.S. Cl. 73—189

5 Claims

An ultrasonic anemometer for detecting the direction and the magnitude of the wind by the use of two pairs of ultrasonic transmitters and receivers arranged in the wind in spaced-apart opposition to each other and in reverse sense directions to each other and each pair of received ultrasonic pulsive

signals is converted to a pulse the duration of which is proportional to a time difference between respective incoming instants of said each pair of received ultrasonic pulsive signals. The setting of a multivibrator is carried out when the instantaneous level of the signal exceeds a predetermined threshold level and the resetting of the multivibrator is carried out when



the number of zero-crossing instants of the signal reaches a predetermined number so that the incoming instant is detected at the resetting of the multivibrator for each of the received ultrasonic pulsive signals. The velocity of wind along the sense direction can be detected by discriminating the duration of the pulse converted.

3,693,434

Patent Not Issued For This Number

3,693,435

TIME AVERAGING METHOD AND APPARATUS FOR OBTAINING FLUID MEASUREMENTS

John B. Cox, 2608 Fannin St., and Jacque R. Stoltz, 3211 West Dengar, both of Midland, Tex.

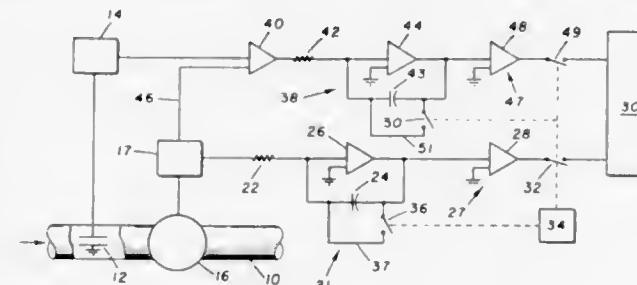
Division of Ser. No. 693,867, Dec. 27, 1967, Pat. No.

3,580,072. This application Aug. 19, 1970, Ser. No. 65,037

Int. Cl. G01f 1/00

U.S. Cl. 73—194 E

6 Claims



This specification discloses a method and apparatus for accumulating signals from a water-cut monitor and a flow meter in a form whereby the net oil and net water in an oil-water mixture may be determined. A flow meter signal in the form of constant-amplitude, frequency-variable d-c pulses is applied to a capacitor to charge the same. A signal from the water-cut monitor is modulated in proportion to the meter signal in order to produce a modulated signal of d-c pulses in which pulse amplitude is proportional to water content and pulse frequency is proportional to flow rate. This modulated signal is stored on another capacitor. Both capacitors are interrogated at periodic time intervals in order to obtain read-out signals representative of the charges thereon and the capacitors are discharged. Also disclosed is a system for obtaining gas flow information. In this system a pressure signal is modulated in proportion to a  $\Delta P$  signal to produce a modulated signal of d-c pulses which is applied to a capacitor. The capacitor is interrogated as described above.

3,693,436

LIQUID FLOW METER

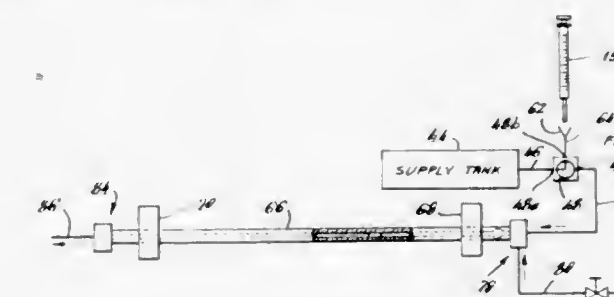
Kenneth J. Gildner, New Milford, Conn., assignor to Laboratory Data Control, Inc., Danbury, Conn.

Filed Aug. 28, 1970, Ser. No. 67,796

Int. Cl. G01f 1/00

U.S. Cl. 73—194 E

7 Claims



There is disclosed a liquid flow meter comprising a transparent glass tube upon which is positioned a pair of spaced photodetectors. The liquid to be measured is passed through the tube and through the detectors. A supply tank filled with gas at a suitable pressure is connected to a valve which, when actuated, injects into the liquid stream a bubble of predetermined size. Passage of the bubble through the two photodetectors actuates a timing circuit which displays the elapsed time, thereby giving an accurate measurement of flow rate.

3,693,437

MOVABLE VENTURI TYPE TUBE FLOW METER

Kamekichi Shiba, No. 159, Kagocho, Bunkyo-ku, Tokyo, Japan

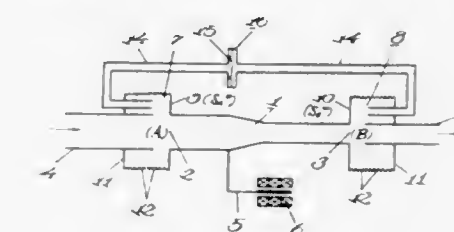
Continuation-in-part of Ser. No. 743,200, July 8, 1968, which is a continuation-in-part of Ser. No. 500,666, Oct. 22, 1965, Pat. No. 3,429,181. This application Jan. 26, 1971, Ser. No.

109,815

Int. Cl. G01f 1/00

U.S. Cl. 73—194 M

14 Claims



A flow meter for measuring the rate of flow of a liquid regardless of the viscosity losses. The flow meter includes an axially movable Venturi tube arranged between a pair of stationary tubes coaxial with the Venturi tube and respectively feeding liquid to be measured in and out of the Venturi tube, first actuator means connected to the Venturi tube for movement therewith in axial direction during flow of liquid through the latter, second actuator means actuated by the pressure in the liquid at the inlet and outlet end of the Venturi tube, and means for determining the actual flow of liquid through the Venturi tube, which means is actuated by the first and second actuator means.

3,693,438

KARMAN'S VORTICES GENERATING DEVICE

Hiroo Yamasaki; Yoshio Kurita; Yutaka Ishikawa, and Takehiro Sawayama, all of Tokyo, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed April 23, 1971, Ser. No. 136,980

Claims priority, application Japan, May 9, 1970, 45/39601

Int. Cl. G01f 1/00

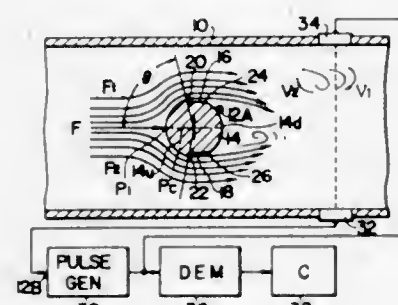
U.S. Cl. 73—194 B

18 Claims

A vortex generating element of the type used in flow metering apparatus and having a generally elongate cylindrical



shape mounted in a stream of flowing fluid so as to produce Karman's vortices at a rate proportional to the velocity of the flowing fluid, with means detecting the production of vortices to give a linearly related measure of fluid velocity. To improve the correspondence of vortex production rate with flow velocity over wide conditions of flow, the element is formed on opposite sides thereof with recessed surface portions meet-



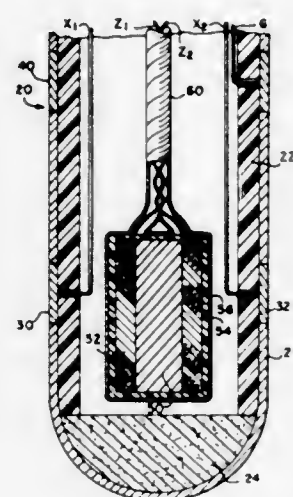
ing the upstream surface of the element in an edge which lies substantially where the boundary layer of the fluid separates from the element surface during low velocity conditions of flow. The recessed surface portion meets the downstream surface of the element inwardly of said edge, whereby said edge forms an outer extremity of said element to said fluid flow and compels boundary layer separation.

3,693,439

**ELECTROMAGNETIC WATER CURRENT METER**  
Vincent J. Cushing, 9804 Hillridge Drive, Kensington, Md.  
Filed July 30, 1971, Ser. No. 167,673  
Int. Cl. G01f 1/00; G01p 5/08

U.S. Cl. 73—194 EM

5 Claims



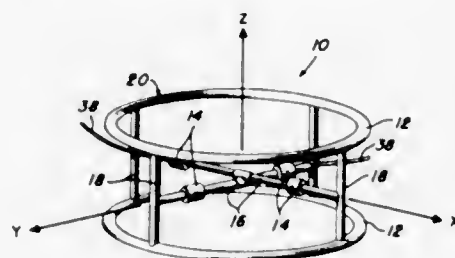
An electromagnetic water current meter employing a magnet producing an alternating flux field which is of finite intensity and zero slope during a significant portion of each half cycle. The electrodes which receive the water current-generated voltage signal exhibit a sufficiently high resistivity as to assure that the distributed capacitance at the exposed faces of the electrodes does not cumulatively produce an integrating effect which will extend decay of "transformer effect" voltages into the terminal portions of each half cycle during which signal sampling is effected. Carbon which displays a resistivity of about 3,500 microhm-cm at room temperature is a preferred material.

3,693,440  
**ELECTROMAGNETIC FLOWMETER**

Jack R. Olson, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy  
Filed March 21, 1969, Ser. No. 809,361  
Int. Cl. G01f 1/00; G01p 5/08

U.S. Cl. 73—194 EM

6 Claims



An electromagnetic flowmeter which has an "open" cage construction of magnet coils and electrodes arranged to achieve an angular response which closely approximates a true cosine, resulting from unrestricted fluid flow through the magnetic field.

3,693,441

**FLUID STREAM SENSING DEVICE**  
Heinz-Jurgen von Obstfelder, Speldorf Birkenstr. 15, 433 Mulheim/Ruhr, Germany  
Filed Oct. 26, 1970, Ser. No. 84,043  
Claims priority, application Germany, Nov. 4, 1969, P 19 55 280.8

U.S. Cl. 73—208

Int. Cl. G01f 1/00

4 Claims



A fluid stream sensing device has a casing and therein a transparent measuring tube and within the same a sensing body arranged to be floated by incoming fluid stream and lifted by same to a level being representative of the parameters of said stream to be measured. The tube is provided with a series of compensating openings on a line parallel to the longitudinal tube axis, and the tube is composed of easily assemblable shells.

3,693,442

Patent Not Issued For This Number

3,693,443

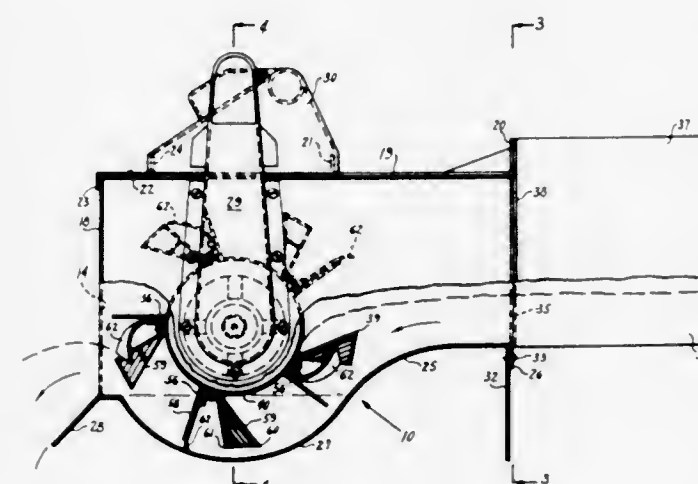
**INTEGRATING WATER METER**  
Norman F. Willett, 1302 L St.; Perry R. Stout, 710 Oak Avenue, both of Fresno, Calif., and James R. Brownell, 5541 N. 6th St., Fresno, Calif.

Filed Jan. 15, 1971, Ser. No. 106,869

Int. Cl. G01f 1/02

U.S. Cl. 73—229

5 Claims



An integrating water meter for use in irrigation ditches to record the volume of water used in irrigating the farmers fields. The meter consist of a small undershot water wheel with flexible vanes supported on each side to improve operation and sealing of the vanes in the raceway. The raceway is a 120° cylindrical segment with an axis that coincides with the axis of the vane rotor. The rotor is connected to a cyclometer to integrate water flow.

3,693,444

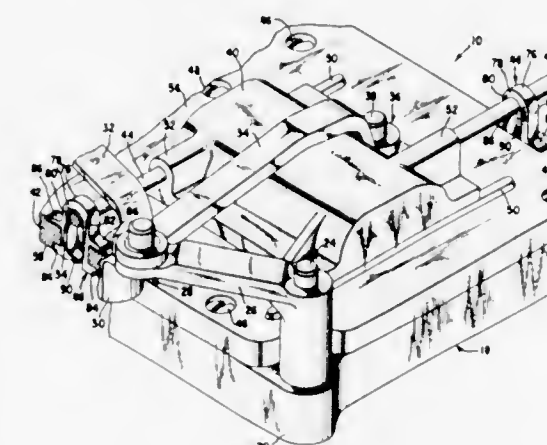
**VALVE GUIDES FOR METER SLIDE VALVES**  
Kenneth A. Carroll, Mt. Airy, Pa., assignor to The Singer Company, New York, N.Y.

Filed July 28, 1971, Ser. No. 166,882

Int. Cl. G01f 1/108

U.S. Cl. 73—268

7 Claims



A self-stabilizing valve guide secured in a slot in a meter valve housing to guide a slider rod of a slide valve. The valve guide is snapped into position within the slot wherein pairs of tabs formed on said guide hold the same in position. A lock

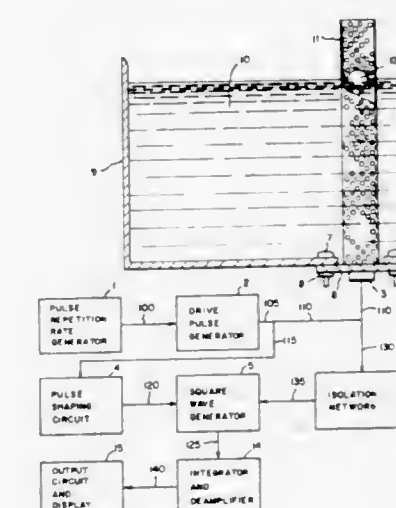
tab is formed on said guide to permit limited yielding of said guide due to external forces, but prevents the pairs of tabs from being unseated from the slot.

3,693,445

**LIQUID LEVEL MEASUREMENT DEVICE**  
Sven J. Johnson, Main Road, Southold, N.Y.  
Filed June 26, 1970, Ser. No. 50,192  
Int. Cl. G01f 23/12, 23/28

U.S. Cl. 73—290 V

4 Claims



A liquid level measurement device utilizes ultrasonics to determine the height of a liquid. The ultrasonic transducer is located at the bottom of the liquid container and within a porous or holey cylinder. Ultrasonic pulses are transmitted up the cylinder to a spherical float where they are reflected back to the transducer and sensed. The cylinder tends to minimize the spherical spread of the pulse wave. A timing system measures the time interval between the transmission and reception of the ultrasonic pulses by the transducer. The time interval measured is directly proportional to the height of the liquid and is electronically converted to an equivalent height.

3,693,446  
**DEPTH GAUGE**

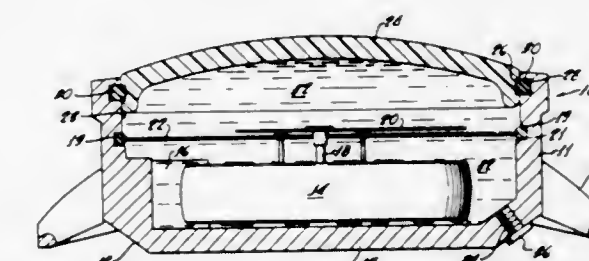
Douglas K. MacNiel, Costa Mesa, Calif., assignor to U.S. Divers Co., Santa Ana, Calif.

Filed Aug. 11, 1970, Ser. No. 62,951

Int. Cl. G01f 23/20; G01f 7/16, 7/02

U.S. Cl. 73—300

20 Claims



The casing of a diver-held depth gauge comprises a liquid filled chamber in which is carried a pressure indicating



mechanism comprising a Bourdon tube, dial and pointer. The chamber extends substantially across the entire casing and is sealed by a rigid plexiglass lens. The lens itself is resiliently mounted in the opening of the casing for limited sliding movement. In addition to the usual function of enabling visual access to the internal indicating mechanism, the lens transmits ambient external pressure to the confined internal liquid.

3,693,447

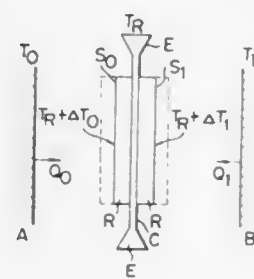
## RADIANT HEAT FLOW METER

Sadao Sumikama, Yokohama, Japan, assignor to Showa Denko K.K., Tokyo, Japan  
Filed Dec. 29, 1970, Ser. No. 102,385

Int. Cl. G01k 7/02, 17/00

U.S. Cl. 73—341

3 Claims



A radiant heat flow meter is constructed of thermally resistant plates disposed on two faces of a thin plate of good heat conductivity. One or more pairs of differential thermocouples are disposed on the surfaces of the thermally resistant plates and connected with each other. Black thermally resistant plates are arranged in contact with the thermocouples and thin transparent plates over the black plates so as to form air layers therebetween.

3,693,448

## INDICATING DEVICE FOR ENGINES

Harry Seltzer, East Meadow, N.Y., assignor to Lee Myles Corp., Maspeth, N.Y.

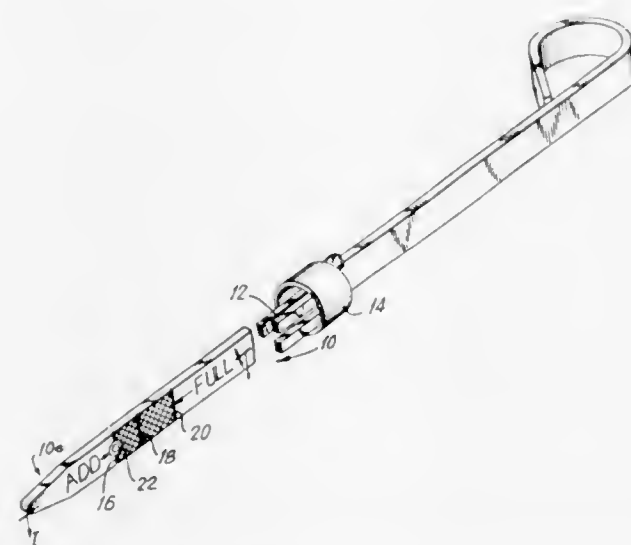
Continuation of Ser. No. 726,683, May 6, 1968, abandoned.

This application Oct. 12, 1970, Ser. No. 80,210

Int. Cl. G01k 11/08; G01f 23/04

U.S. Cl. 73—344

3 Claims



An oil temperature indicating device which comprises an oil temperature indicating means adapted to undergo a detectable physical change when subjected to an oil operating temperature at or above a pre-determined temperature, and a

mounting means therefor adapted to dispose said oil temperature indicating means within a mass of oil under operating conditions, whereby operation of the oil at or above the pre-determined temperature can be detected by a change caused thereby in the oil temperature indicating means.

3,693,449

## DEVICE FOR SAMPLING MOLTEN METAL

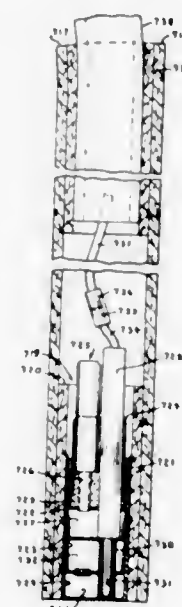
William J. Collins, 7005 Madison St., Merrillville, Ind.  
Division of Ser. No. 61,625, Aug. 6, 1970, Pat. No. 3,656,338.

This application Nov. 30, 1971, Ser. No. 203,168

Int. Cl. G01n 1/12

U.S. Cl. 73—354

11 Claims



Apparatus of the type in which a sample receiving means is positioned in the end of an elongated tube intended to be dipped into a body of molten metal. The sample receiving means along with a thermocouple is supported in a mass of cement surrounded by a sleeve inserted into the end of a hollow tube.

3,693,450

Patent Not Issued For This Number

3,693,451

## FALLING WEIGHT GRAVITY GRADIOMETER

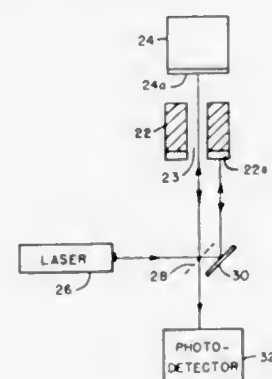
Henry F. Dunlap, 7422 Rosemont Rd., Dallas, Tex., and William M. Campbell, 1521 Atlanta, Irving, Tex.

Filed Aug. 12, 1970, Ser. No. 63,089

Int. Cl. G01v 7/14

U.S. Cl. 73—382

5 Claims



A gravity gradiometer based on dual free-falling objects in an evacuated vessel. A laser light source generates a beam of coherent light which is split into two measuring beams by optical dividing means. Light reflective means directs the measur-

ing beams in vertical pathways so that one of the beams strikes one object and the other beam strikes the other object. Light reflectors mounted on the objects return the measuring beams to an optical combining means which combines them into a single output beam. Photodetector means optically coupled to the output of the optical combining means produces a signal determinative of the movement of the objects relative to each other during free fall.

3,693,452

## BROILER AND GRILL

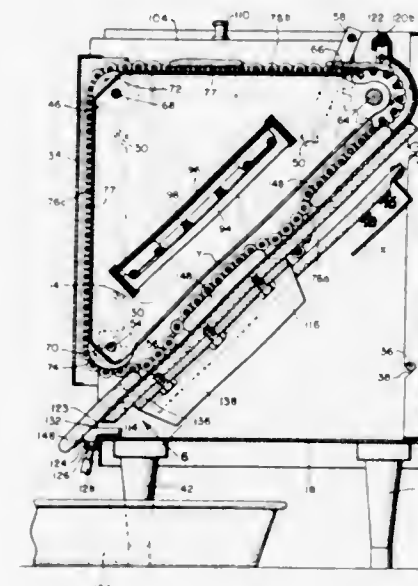
William L. McGinley, 6142 Averill Way, Dallas, Tex., and Johnnie Prine Pearson, Route 2, Box 147A, Terrill, Tex.

Filed June 3, 1971, Ser. No. 149,644

Int. Cl. A47j 37/00

U.S. Cl. 99—386

9 Claims



An automatic broiler and grill has heat generating means for cooking and heating food products and heat exchanging means located to ensure uniform heating of the product, and to prevent overheating of the grill plate as food products are conveyed along the grill plate. A thermostatically controlled auxiliary heater is disposed beneath the grill plate to ensure thorough cooking of the food products. A sheet of non-sticking substance may be loosely hung on the grill plate to prevent the food products from sticking to the grill plate. A conveyor assembly is arranged to provide for the loading of a plurality of food products at one time as well as to convey the food products past and in contact with the grill plate. Heat reflecting means are provided to prevent heat loss upwardly and outwardly of the heat generating means.

3,693,453

Patent Not Issued For This Number

3,693,454

Patent Not Issued For This Number

3,693,455

## SAMPLE INJECTION DEVICE

Albert Frederick Harding, 129 Hanworth Road, Hampton; Brian Pearce, Beg Mell, Onslow Crescent, Woking, and William Llewellyn Thomas, Pen Bryn, Bagshot Road, Englefield Green, Egham, all of England

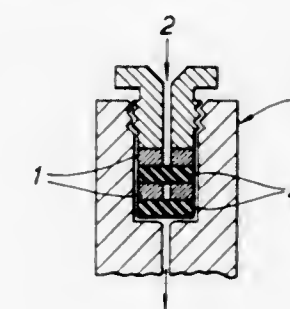
Filed Aug. 25, 1970, Ser. No. 66,708

Claims priority, application Great Britain, Sept. 2, 1969, 43,311/69

Int. Cl. G01n 1/00, 31/08

U.S. Cl. 73—422 GC

2 Claims



An injection port suitable for use with a hypodermic syringe in high pressure gas chromatography comprises 2 septa mounted in series in a housing. The septa are made of a material which can be penetrated by the needle of a syringe and each septa is backed by a disc of rigid material having a hole for the needle to pass through. Preferably the septa are made of silicone rubber and backed by a disc of stainless steel.

3,693,456

Patent Not Issued For This Number

3,693,457

## SOURCE TEST CASCADE IMPACTOR

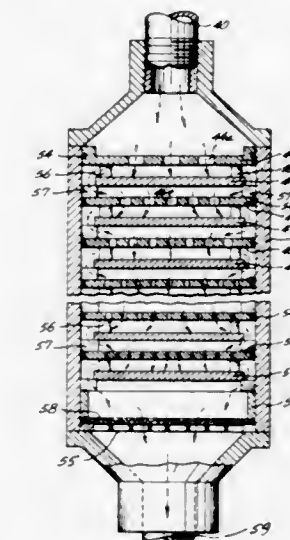
Michael J. Pilat, Seattle, Wash., assignor to The Battelle Development Corporation, Columbus, Ohio

Filed Feb. 24, 1971, Ser. No. 118,408

Int. Cl. G01n 15/02

U.S. Cl. 73—432 PS

4 Claims



A cascade impactor for measuring the quantity and size distribution of suspended particles in stacks, ducts and other pollution sources is described. The impactor which is adapted to be placed within the duct carrying the particle-laden fluids comprises a tubular body containing a plurality of serially spaced-apart impactor plates interspaced between serially spaced-apart jet stages, each succeeding jet stage having a smaller gas flow cross section than the preceding jet stage. A sized portion of the particulate matter suspended in gases flowing through the cascade impactor is captured by collection surfaces on the impactor plate placed below the specific

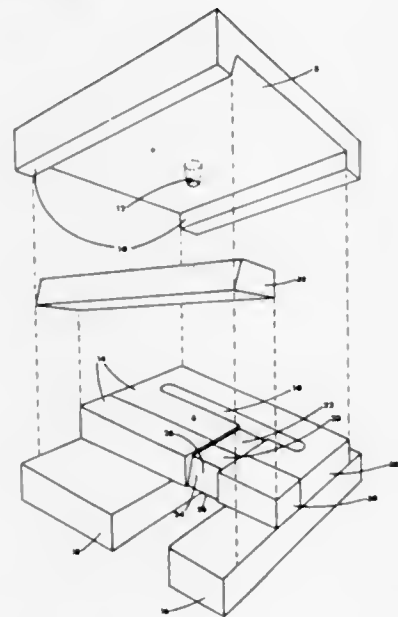


jet stage which imparts a sufficient amount of inertia to the particle for it to impinge upon the collection surface. Dry collection surfaces are used for liquid aerosols whereas collection surfaces covered with a sticky substance such as grease are utilized for dry particulate matter. The size distribution of the particulate matter is reflected by the amounts of particulate matter adhering to the various impactor plates.

3,693,458

**RESIN FLOW TEST APPARATUS AND METHOD**  
Norman F. Odell, Crystal Lake, Ill., assignor to Morton International, Inc., Chicago, Ill.  
Filed Sept. 30, 1970, Ser. No. 76,810  
Int. Cl. G01n 11/04  
U.S. Cl. 73—432 R

9 Claims

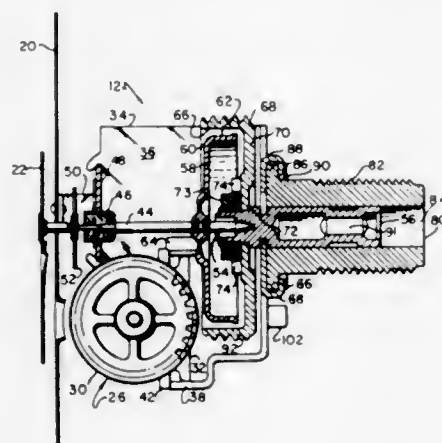


An apparatus and method for testing the performance of a thermo-setting resinous composition said apparatus comprising two cooperatively engageable sections, one of said sections having a series of depressions terminating in an exit gate thereby providing voids which when filled with a pressure injected resinous material cause said resinous material to be extruded in a ribbon from said exit gate.

3,693,459

**SPEEDOMETER AND ODOMETER ASSEMBLY**  
Patrick L. Powell, Franklin Park, Ill., assignor to Stewart Warner Corporation, Chicago, Ill.  
Filed Feb. 10, 1971, Ser. No. 114,193  
Int. Cl. G01p 3/42  
U.S. Cl. 73—490

7 Claims



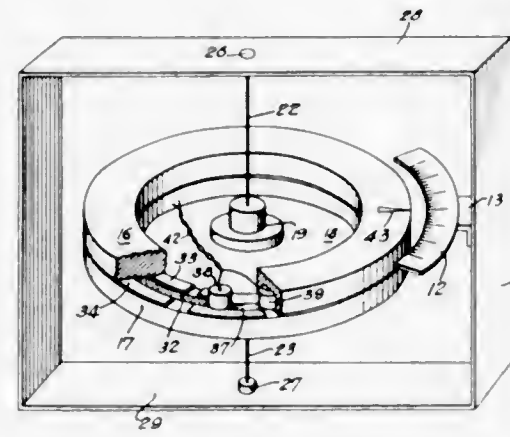
The following specification describes a speedometer having a worm gear on the field cup of the magnet driving the speed cup for simultaneously driving an odometer. In addition, the speedometer is provided with a one piece stamped U-shaped bracket for supporting the odometer and cross shaft trans-

mitting movement from the field cup to the odometer with a tubular element fixed to the bracket for rotatably supporting the magnet shaft and cooperating with the bracket to prevent axial separation of the magnet shaft. The odometer dial brackets are positioned to form stops for the speed cup.

3,693,460

**ANGULAR ACCELEROMETER**  
Fuad T. Saadeh, c/o Texaco Incorporated, P.O. Box 425, Belaire, Tex.  
Filed Sept. 22, 1969, Ser. No. 859,768  
Int. Cl. G01p 15/08  
U.S. Cl. 73—516

5 Claims

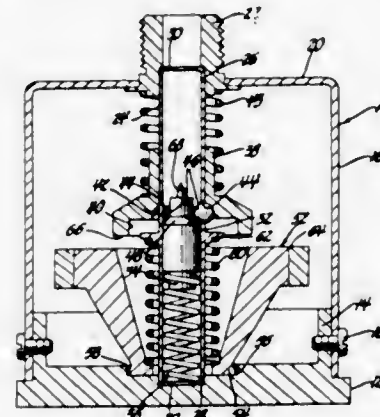


An angular accelerometer which employs an annular conduit filled with a dielectric fluid. The conduit is blocked at at least one point and there are piezoresponsive elements mounted so as to have the fluid directly apply pressure thereto. The elements are mounted adjacent to the blocked portion of the conduit, one on either side thereof. The structure is adapted for use with a drilling bit in order to indicate eccentricities during drilling as well as to measure instantaneous angular acceleration.

3,693,461

**MULTIDIRECTIONAL SENSOR**  
William G. Daffron, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.  
Filed May 6, 1970, Ser. No. 34,980  
Int. Cl. G01p 15/02  
U.S. Cl. 73—514

9 Claims



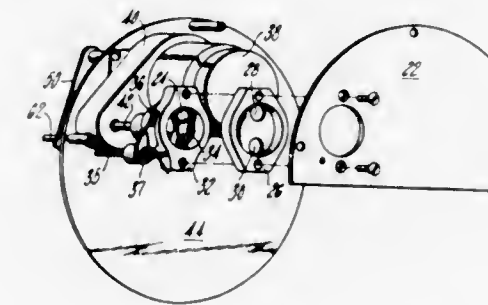
A multidirectional sensor having an operator slidably mounted within a guide tube and resiliently biased toward actuated position. A plurality of balls are located within apertures in the tube and engage opposed radial shoulders of the operator and of an escapement to retain the operator against movement. The escapement is slidably mounted on the tube and resiliently biased into engagement with the balls to locate the escapement in a predetermined position. The resilient bias on the escapement is opposite that exerted on the operator. A seismic mass is seated on a support and surrounds the guide tube. The mass is resiliently located in a predetermined posi-

tion wherein its longitudinal axis is coaxial to or aligned with the axis of the operator and guide tube. An acceleration pulse of predetermined amplitude and time moves the seismic mass to a position where its axis is out of alignment with that of the operator and tube and the mass engages the escapement to move the escapement axially of the guide tube and permit the balls to move radially out of engagement with the opposed radial shoulders to release the operator.

3,693,462

**TORQUELESS TRANSMISSION**  
Harold F. Eichacker, 23 Churchill Road, Wethersfield, Conn.  
Filed June 28, 1971, Ser. No. 157,552  
Int. Cl. F16h 21/16  
U.S. Cl. 74—25

15 Claims

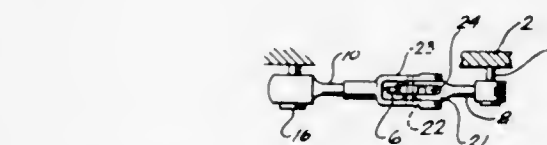
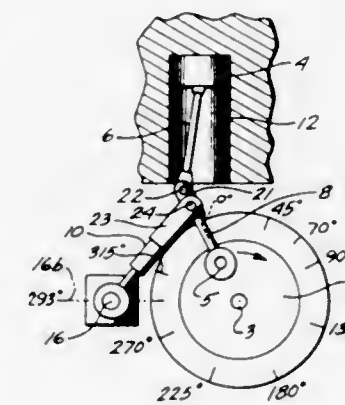


Apparatus for mechanically converting the movement of a driven member into usable mechanical output signals without imposing any significant loading on the driven member. The driven member is modified as necessary to permit it to roll a lightweight bearing element between a pair of apertures and the bearing element will pass through the second of said apertures and be picked up by a power drive unit which includes means for sensing the presence of the bearing element as it is driven back to the vicinity of the first aperture through which it is returned so as to again be intercepted by the driven member.

3,693,463

**LINKAGE FOR A RECIPROCATING ENGINE CRANKSHAFT**  
Wilbur G. Garman, 349 E. 16th St., San Bernardino, Calif.  
Continuation-in-part of Ser. No. 758,532, Sept. 9, 1968, Pat. No. 3,568,416. This application Aug. 3, 1970, Ser. No. 60,356  
Int. Cl. F16h 21/26  
U.S. Cl. 74—38

6 Claims



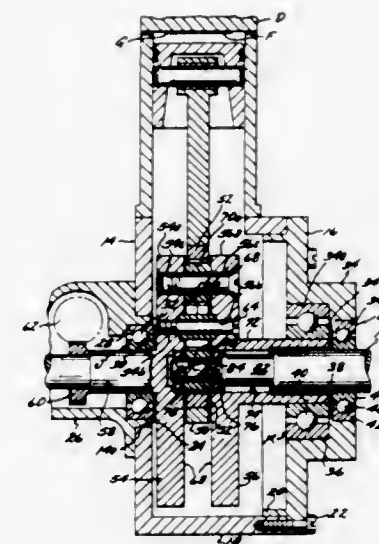
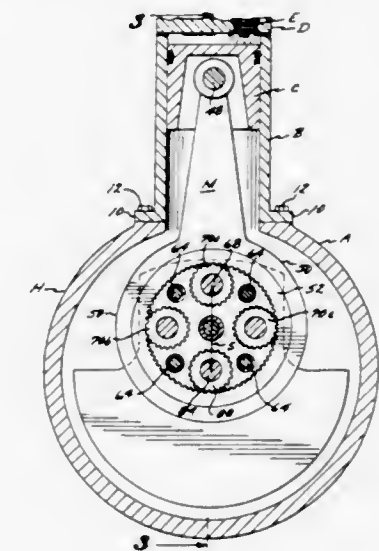
A connecting linkage between a piston and a crank pin of a crankshaft in a reciprocating engine comprises a crank pin extension link pivotally connected at one end to the piston rod and pivotally connected at the other end to the crank pin. A

toggle arm, which is longer than the crank pin extension link, pivots at one end about a stationary pivot point, and is pivotally connected at the other end to the point of connection between the piston rod and crank pin extension link. The toggle linkage drives the crank pin through an arc of substantially more than 180° during the power stroke of the piston, and applies a tangential thrust to the crank pin during a substantial portion of the power stroke of the piston.

3,693,464

**RECIPROCATING-ROTARY MOTION CONVERSION DEVICE**  
Gerhard Wieckmann, 20311 Gresham St., Canoga Park, Calif.  
Filed July 8, 1971, Ser. No. 160,663  
Int. Cl. F16h 37/12  
U.S. Cl. 74—52

6 Claims



A reciprocating-rotary motion conversion unit that is particularly adapted for use with a conventional cylinder, piston and wrist pin to more efficiently utilize the power generated when charges of fuel are intermittently exploded in timed sequence within the cylinder.

The increased efficiency is attained by a unique connecting rod and gear assembly that are so operatively associated with the wrist pin and a drive shaft that the latter is rotated more than one revolution for each reciprocating cycle of the piston. In addition, the gear assembly is of such design that it has a throw that is twice the stroke of the piston, and as a result the torque exerted on the drive shaft is increased.

The invention is highly advantageous from an ecology standpoint in an automotive application as a simple reciprocating cycle of the piston results in the drive shaft being rotated more than one revolution rather than one revolution as occurs in a conventional internal combustion engine. Also, due to the increased number of revolutions of the



drive shaft for each cycle of reciprocation of the piston, less fuel is burned by a vehicle over that consumed in a conventional internal combustion engine, in rotating the drive shaft the same number of revolutions, and accordingly less products of combustion are discharged to the ambient atmosphere.

The present invention while most adaptable to automotive combustion engines may also be used advantageously for a high speed motor to rotate the drive shaft and impart relatively low speed reciprocating movement to a piston, such as is required in pumps and the like.

3,693,465

# RECIPROCATORY MOTION MECHANISM WITH INTERCONNECTED DUAL ACTUATORS

Guy C. Caraway, 9703 Wiley Burke Ave., Downey, Calif.

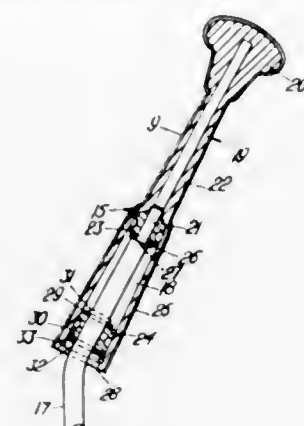
Filed Nov. 27, 1970, Ser. No. 93,046

Int. Cl. F16h 21/44

U.S. Cl. 74—110

8 Claims

control knob may carry a press-button for operating a reverse blocker arrangement of an associated gearbox.



3,693,468

# Patent Not Issued For This Number

3,693,469

# BICYCLE GEAR SHIFT LEVER

Nobuo Ozaki, Osaka, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan

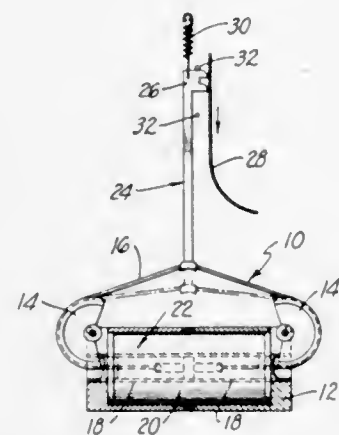
Filed Feb. 8, 1971, Ser. No. 113,287

Claims priority, application Japan, Nov. 26, 1970, 45/113350

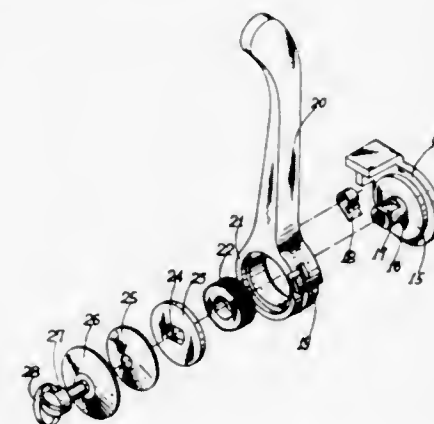
Int. Cl. G05g 5/18

U.S. Cl. 74—489

4 Claims



A film advancing mechanism comprising a cable, a claw connected to the midpoint of the cable and movable laterally of the direction of the cable, a return spring connected to the claw and tending to bow the cable, and means for pulling on the cable on opposite sides of the claw to tend to straighten the cable and thus displace the claw laterally to advance a film engaged thereby. The pulling means comprises oppositely moving solenoid armatures or cam followers connected to the ends of the cable, or oppositely moving pulleys around which the cable is trained.



A rotatable ratchet means is provided within a ring portion of a lever handle in a bicycle gear shift lever apparatus. By tightening an adjusting screw bolt, the ratchet means can be frictionally locked between a washer and a flange portion of a ratchet supporting shaft, whereby the lever handle can be operated smoothly and easily at least in one direction.

3,693,470

# POWER STEERING MECHANISM

Toshio Masuyama, 1155, Okazu-cho, Totuka-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Dec. 9, 1970, Ser. No. 96,570

Claims priority, application Japan, Dec. 9, 1969, 44/116325

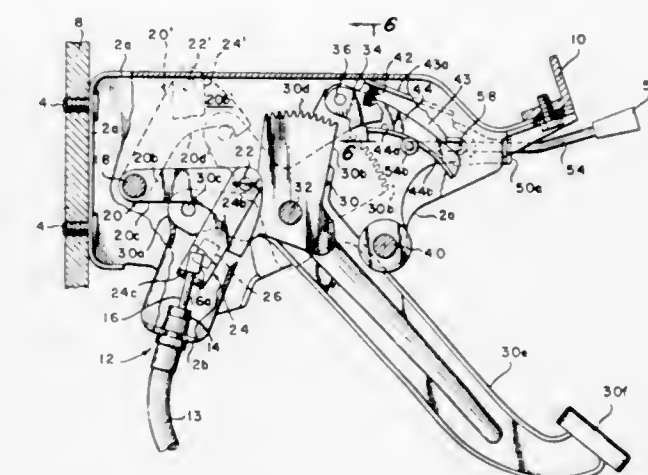
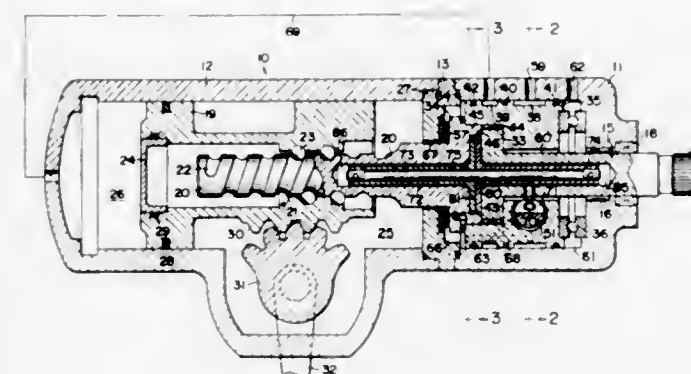
Int. Cl. B62d 1/20

U.S. Cl. 74—499

3 Claims

A torsion bar system is provided for a power steering mechanism which makes use of liquid pressure for steering operation. The torsion bar system comprises a torsion bar and two brims joined to both ends thereof, at least one brim being joined to one end of the torsion bar via a tube covering the torsion bar and the brims being closely opposed to each other. Such two brims have a plurality of recessed portions on their respective peripheries, which are different in phase and in

which projections from input and output members are received and held so that the torsion bar system may be easily two-part cam surface on the cam member, and a second arm



incorporated in the power steering mechanism with initial load being applied to the torsion bar and so that torsion may be given over the full length thereof in handling operation.

portion that carries one of pawl and ratchet locking components that releasably lock the actuator member in a brake engaged position.

3,693,471

# ARTICULATED BRAKE PEDAL

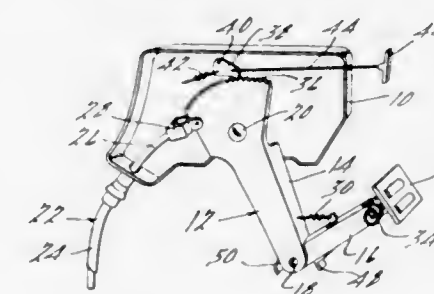
Patrick M. Glance, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 22, 1970, Ser. No. 100,612

Int. Cl. G05g 1/04

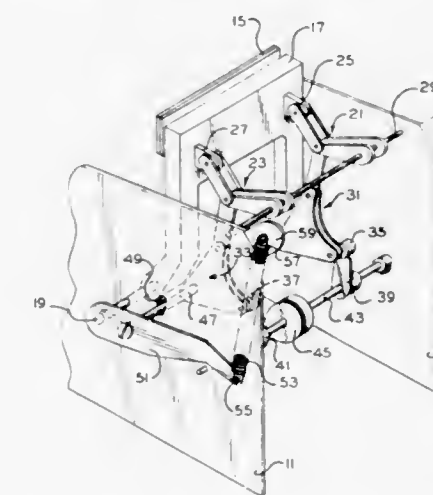
U.S. Cl. 74—518

5 Claims



A variable ratio parking brake pedal assembly for a motor vehicle including a foot-operated articulated pedal lever. The articulated pedal has a first pedal section pivotally supported on vehicle body structure and connected to a brake actuator cable. A second section is pivotally connected to the first section and is constructed to swing through an arc whereby the effective length of the lever arm between the pivot and the pedal pad is increased during a brake application.

A controlled pressure platen is disclosed having a pair of actuating toggle linkages. A driving toggle linkage acts on a driven toggle linkage to move the platen at a controlled pressure. The driving toggle linkage has a biased resist point, the biasing of which determines the minimum pressure applied by the platen.



3,693,474

# MULTIPLE FULCRUM VALVE OPERATING LEVER

Robert E. Trick, Racine, Wis., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Feb. 16, 1971, Ser. No. 115,511

Int. Cl. G05g 1/04

U.S. Cl. 74—522

6 Claims

A pivotal control lever for a valve stem has two differently spaced fulcrum connections with a base, one through a pin and slot connection and the other through a floating abutment which is held in a normal position by opposite springs. Initial pivotal movement of the lever is about the abutment, but when the limit of movement of the pin-slot connection is reached the lever begins to pivot about that connection, overriding the springs. In one form, deadband reduction is achieved by having the abutment radially further from the connection between the lever and stem than the pin and slot.

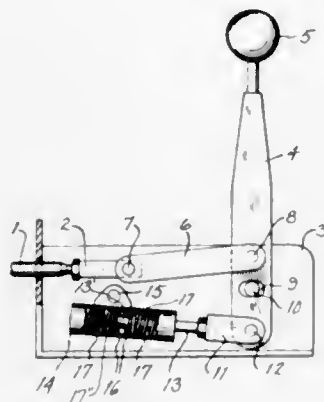
U.S. Cl. 74—518

6 Claims

Improved parking brake apparatus, including a pivotable cam member operable to initially effect fast take-up of the brake cable with relatively low mechanical advantage, and to subsequently effect slow take-up of the cable with relatively high mechanical advantage. The cam member is pivoted in the brake engaging direction by a foot-operated actuator member that is pivotally connected with the same housing as the cam member. The cam actuator member has a first arm portion



A second form has the abutment closer to enhance initial control. A modification of the second form has a lost motion connection between the lever and the abutment and a torsion



spring between the lever and stem which provides, in effect, an infinite lever to reduce deadband. Another form simply uses the torsion spring with a lost motion connection to reduce deadband.

3,693,475

## PLANETARY DETENT FOR ROTARY DEVICES

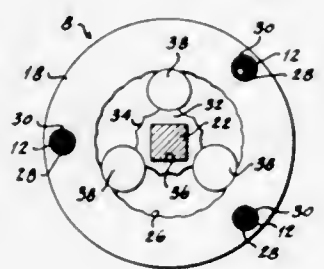
Robert C. Williams, III, Smithfield, N.C., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Jan. 6, 1971, Ser. No. 104,294

Int. Cl. G05g 5/06

U.S. Cl. 74-527

6 Claims



A fluted disc is maintained concentrically within an internally serrated ring by a plurality of elastic cylinders disposed therebetween and positioned to provide a zero summation of forces through the central axis of the mechanism. The ring is fixed to the rotary device housing and a manually operable control shaft for the latter extends axially through the disc which is keyed for rotation with the shaft. Rotation of the disc rolls the elastic cylinders along the surfaces of the disc and ring to seat in the next adjacent flutes and serrations, respectively, the cylinders being compressed when passing over the ridges between adjacent flutes and serrations and rapidly restoring upon passing beyond the ridges to positively seat within the next flutes and serrations. The detent torque may be readily varied by increasing or decreasing the number of elastic cylinders. While mathematical and geometrical relationships are established to permit a detent mechanism to be provided for almost any rotary application, a primary relationship to be established in each instance requires that the chord length of the flutes be identically equal to the chord length of the serrations to permit continuous rotary operation.

3,693,476

Patent Not Issued For This Number

3,693,477

Patent Not Issued For This Number

3,693,478

## TRANSMISSION HAVING A CONVERTER CLUTCH AND A CONTROL

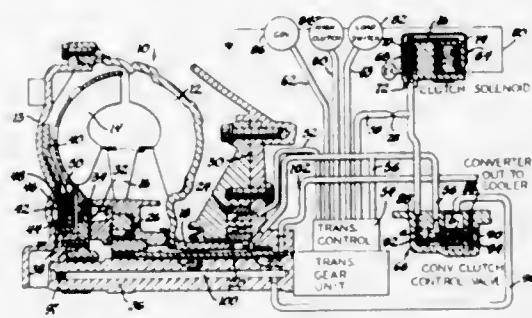
John D. Malloy, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 6, 1971, Ser. No. 104,224

Int. Cl. F16h 47/00

U.S. Cl. 74-731

5 Claims



A transmission and control having a limited slip clutch located between the impeller and turbine members of the torque converter to improve transmission efficiency and reduce heat losses. A valve member responsive to turbine speed is incorporated in the control for controlling the engagement force on the clutch thereby controlling the amount of slip between the torque converter impeller and turbine members. A control valve is also included to prevent engagement of the clutch except when the high gear ratio is established in the transmission.

3,693,479

## AUTOMATIC TRANSMISSION SYSTEM HAVING A VARIABLE SPEED CHANGING POINT

Eiji Toyoda, Toyota-shi; Masaaki Noguchi, Chikusa-ku, and Osamu Ito, Toyota-shi, all of Japan, assignors to Nippondenso Kabushiki Kaisha, Karlya-shi, Aichi-ken and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

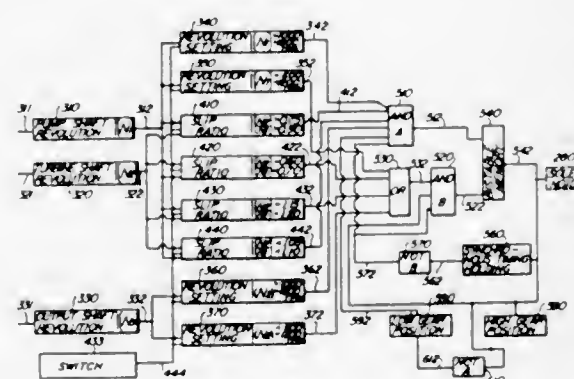
Filed Nov. 10, 1969, Ser. No. 875,070

Claims priority, application Japan, March 25, 1969, 44/22826

Int. Cl. F16h 47/08; B60k 31/00

U.S. Cl. 74-731

3 Claims



An automatic transmission system in which the factor related to the load on the engine such as the degree of depression of the accelerator pedal, the negative pressure in the air intake pipe or the slippage of the torque converter and the factor related to the revolution of the engine such as the velocity of air flow into the engine or the number of revolutions of the input shaft of the transmission are the main factors for determining the speed changing point, and speed changing instructions are issued by an electrical control device including a log-

ical operation circuit and transistor relay circuit. In the system, the settings such as the slip ratio of the torque converter, the vehicle speed and the number of revolutions of the engine for determining the speed changing point are changed over by switch means which is manipulated as is desired.

3,693,480

## COMPOUND FLUID PRESSURE ACTUATOR FOR FRICTION TORQUE COUPLINGS

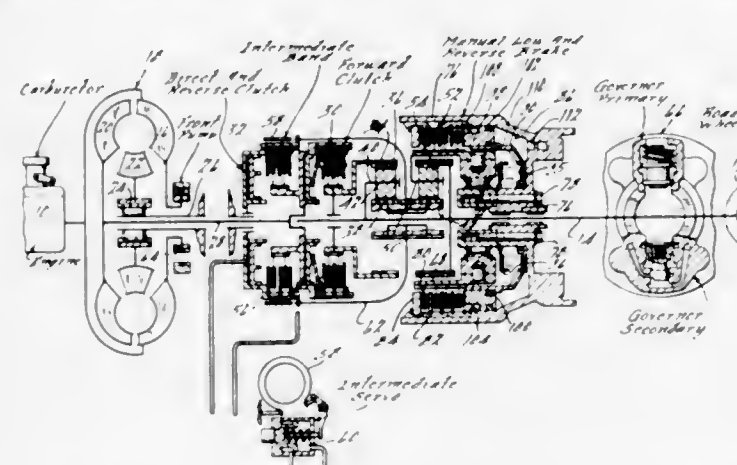
George E. Lemieux, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 27, 1971, Ser. No. 147,549

Int. Cl. F16h 3/44

U.S. Cl. 74-789

7 Claims



A fluid pressure operated friction disc coupling comprising a multiple disc assembly adapted to transfer friction torque when it is frictionally engaged, an annular cylinder and a compound annular piston received in the cylinder, said piston including a small annular piston portion engagable with the disc assembly and a larger annular piston portion registering with the smaller piston, said piston portions cooperating with the annular cylinder to define a common pressure chamber whereby initial actuation of the small piston portion upon distribution of pressure to the pressure cavity is cushioned prior to full engagement.

3,693,481

Patent Not Issued For This Number

3,693,482

## REMOVER FOR SNAP-ON JAR LIDS

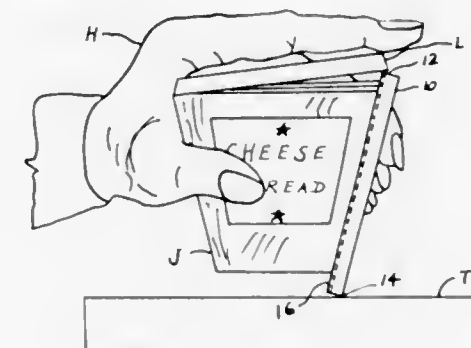
Norman L. Herold, 2404 Pinewood Ave., Baltimore, Md.

Filed Nov. 20, 1970, Ser. No. 91,410

Int. Cl. B67b 7/16

U.S. Cl. 81-3.34

1 Claim



A jar-lid remover for snap-on type lids, particularly as used on conical-shaped containers, consisting of a rigid member longer than the height of the jar to be opened, the member adapted to be grasped with the jar in one hand with a contoured surface provided on the member fitting the side of the

jar, the upper end of the member being against the lower edge of the lid, and the lower end of the member projecting below the jar, so that lowering the hand holding the jar and removing thereby bringing the lower end of the member into contact with a table surface, causes low-stress removal of the jar lid.

3,693,483

## TORQUE POWER WRENCH MARKING DEVICE

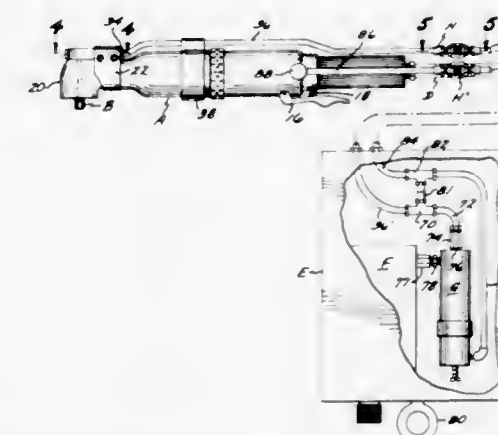
Oakley Butler Palmer, 12852 Lakewood Blvd., Downey, Calif., and Paul E. Spencer, 513 S. Dale St., Anaheim, Calif.

Filed April 21, 1971, Ser. No. 133,225

Int. Cl. B25b 23/14, 21/00

U.S. Cl. 81-52.4

6 Claims



A fluid actuated torque power wrench that includes a power driven member for rotating a fastener to a desired degree of torque and automatically discharging a predetermined quantity of colored ink or paint on the fastener after the completion of the torquing operation. The spot of ink or paint on a fastener immediately indicates to an inspector that the fastener has been torqued to a predetermined degree.

3,693,484

## SNAP-ON SPANNER WRENCH

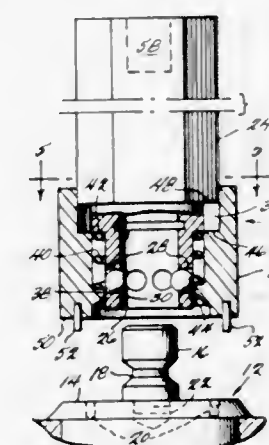
George H. Sanderson, Jr., 18 Kamehameha, Charleston, S.C.

Filed April 29, 1971, Ser. No. 38,659

Int. Cl. B25b 13/00

U.S. Cl. 81-90 C

6 Claims



A tool for threading and unthreading a plug member having a grooved nipple; the tool is provided with a member having a bore adapted to receive the nipple; movable ball detent elements are provided about the lower end of the bore for engaging the grooved portion of the nipple; a spring biased movable member disposed about the bore is provided with cam surfaces for urging the ball detent elements into engagement with the groove of the nipple whereby backing off of the tool from the plug is prevented; the movable member is provided with diametrically disposed pins for engaging bores in the face of the plug so that rotation of the movable member will effect rotation of the plug.

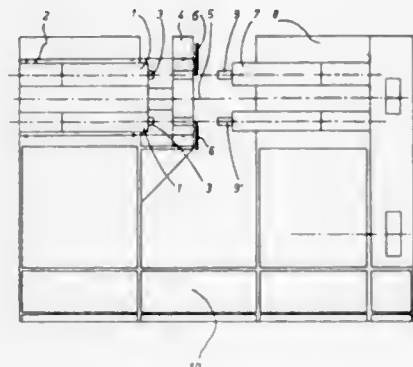


### 3,693,485 MULTI-SPINDLE AUTOMATIC LATHE

Rene Maurer, 29, rue des Gorges, 2740 Moutier, Switzerland  
Continuation-in-part of Ser. No. 746,621, Jan. 22, 1968,  
abandoned. This application May 21, 1970, Ser. No. 39,310  
Int. Cl. B23b 9/04

U.S. Cl. 82-3

9 Claims



Automatic lathe for use in the watchmaking industry having a bar-holding headstock provided with means for advancing the bars axially and a turret mounting tool holders working tools operable radially of the turret and end tool holders mounting tools operable axially. The headstock has as many bar-holding elements as there are radially operated tool holders for working tools and an equal member of end tool holders operable axially.

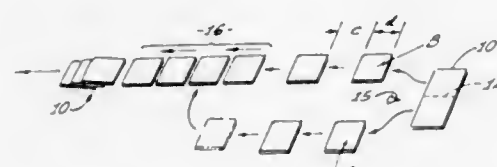
### 3,693,486 CONVEYOR SYSTEM

Philip J. Maniaci, West Covina, and Byron E. McKinsey, Montebello, both of Calif., assignors to Arcata Graphics, Los Angeles, Calif.

Filed March 3, 1971, Ser. No. 120,559  
Int. Cl. B26d 7/06

U.S. Cl. 83-88

21 Claims



Books are printed in units each comprising two integral books positioned edge to edge and the units are bisected at a shearing station to produce single books on each side of the shearing station. The sheared books from one side of the shearing station are conveyed in a first traveling row with spaces between the successive books and the other books are conveyed in a second traveling row that merges with the first traveling row at the spaces thereof to form a combined row of closely spaced books which accumulate at a collecting station.

### 3,693,487 VARIABLE LENGTH STAPLE CUTTER

Vollie L. Murdock, Rte. 2, Box 189-C; Virgil Leonard, 1914 Cedar Bayou Road; Benjamin M. Holleman, 201 Graham St., and John W. Harding, 4806 St. Andrews, all of Baytown, Tex.

Continuation of Ser. No. 750,066, Aug. 5, 1968, abandoned.  
This application Nov. 12, 1970, Ser. No. 89,041

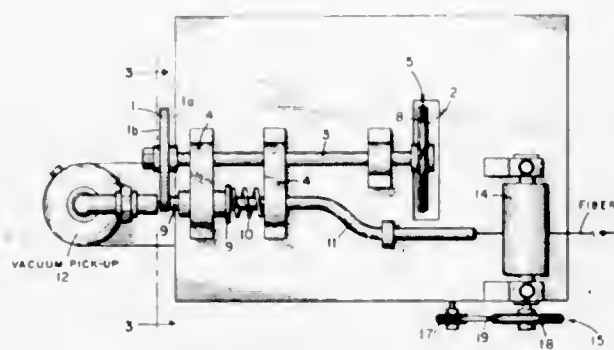
Int. Cl. B65h 29/24

U.S. Cl. 83-100

3 Claims

The problem of cutting textile filaments into staple while eliminating the fusing of the ends is largely overcome by a variable length staple cutter which feeds the filament through a die into a rotatable cutter wheel having a plurality of

openings which are sequentially aligned with the die and form a shear facing with the die. Feed rollers and a vacuum pickup



provide for a controlled advance of the fiber through the die to obtain a uniform staple length.

### 3,693,488

Patent Not Issued For This Number

### 3,693,489

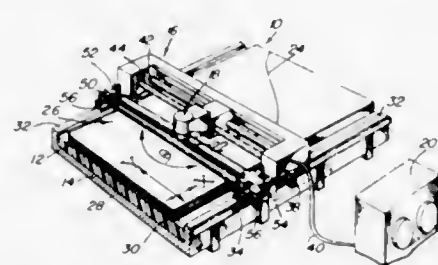
APPARATUS FOR CUTTING SHEET MATERIAL  
David R. Pearl, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., East Hartford, Conn.

Filed March 25, 1971, Ser. No. 127,994

Int. Cl. B26d 5/00

U.S. Cl. 83-374

9 Claims



Apparatus for cutting layups of sheet material and including an elongated table for supporting a layup, a main carriage supported for movement longitudinally of the table and a cutting tool supported on the main carriage for movement therewith and relative thereto in cutting engagement with the layup. The main carriage and the cutting tool move in response to positioning signals received from a numerically controlled or computerized controller. A pair of power driven hold-down rolls positioned at opposite sides of the cutting tool extend transversely of the table and move with the main carriage and in rolling engagement with the upper surface of the layup. At least one of the rolls is driven so that its tangential velocity at its point of contact with the layup is substantially equal to the lineal speed of the main carriage relative to the table but in the opposite direction. Thus, the one roll has a substantially zero velocity relative to the supporting table at its point of contact with the layup and exerts only a downwardly directed force upon the layup. Both rolls may be driven in the aforesaid manner, or, if desired, one of the rolls may be driven at a slightly different speed than the other roll to impart spreading action to the layup in the vicinity of the cutting tool.

### 3,693,490

STRINGED INSTRUMENTS WITH ADJUSTABLE  
FRICTIONAL GRIPPING MEANS FOR THE STRING  
SUPPORTING PINS

Nathaniel W. Raphael, 207 Brooklyn Blvd., Sea Girt, N.J.

Filed May 21, 1969, Ser. No. 826,345

Int. Cl. G10c 3/10

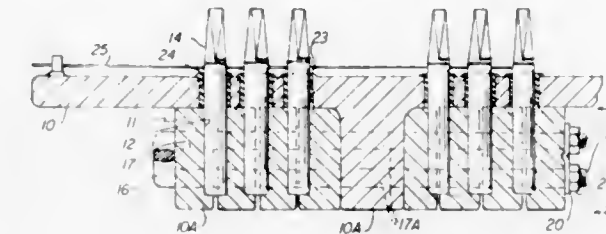
U.S. Cl. 84-202

6 Claims

A stringed instrument with tuning pins to retain the strings, in which said tuning pins are mounted in a split wrest block

with the pins positioned between the abutting block section and a bolt mounted to retain said block sections in a com-

pressed relationship and to further provide a tight frictional setting for said tuning pins when they have been tuned.



### 3,693,491

MUSICAL INSTRUMENT WITH CAM CONTROLLING

REED VIBRATION

Wade E. Creager, 2120 Arlington Ave., N.E., Atlanta, Ga.

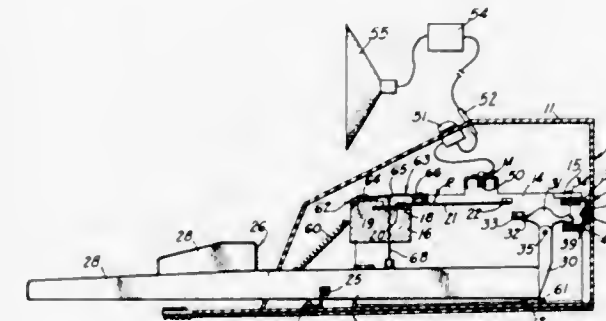
Continuation of Ser. No. 37,118, May 14, 1970, This

application Jan. 17, 1972, Ser. No. 218,264

Int. Cl. G10c 3/14; G10h 3/08

U.S. Cl. 84-402

4 Claims



A musical instrument including a plurality of tuned vibratory reeds, each having an electromagnetic pickup associated therewith and an amplifier for amplifying the output from the reeds; and a plucking assembly for selectively vibrating each of the reeds. The plucking assembly includes a pedal pivotally mounted in the instrument with a contact or plucking head after engagement with the reed to pluck or deflect same and for preventing contact between the head and the reed until the pedal has been released and then depressed again. The electromagnetic pickup includes a permanent magnet selectively positionable with respect to each reed to finely tune same.

### 3,693,492

KEY GUIDE FOR ELECTRONIC MUSICAL INSTRUMENT

Junji Ohno, Hamamatsu, Japan, assignor to Nippon Gakki

Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Feb. 8, 1971, Ser. No. 113,345

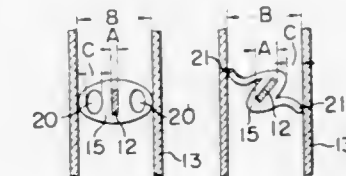
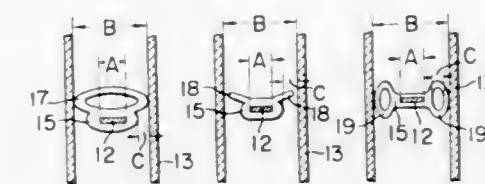
Claims priority, application Japan, Feb. 9, 1970, 45/12460

Int. Cl. G10c 3/12

U.S. Cl. 84-436

11 Claims

For an electronic musical instrument including a keyboard wherein sound can be produced by depressing a key of the keyboard and vibrato or like effect can be produced by vibrating the depressed key to right and left; a key guide which comprises guiding members which are fixed in position and project at their upper ends into recesses formed underside of the keys, respectively, the upper end of each guiding member having a transverse width substantially narrower than that of the recess, and caps of elastic material each fixed around the upper end of the guiding member and having thin wall portions, integrally formed therewith, projecting laterally beyond the both sides of the cap so as to make slidable contact with inside



serving to properly guide the key in vertical direction when the key is depressed downward.

### 3,693,493

LIGHT BAR INDICATOR FOR KEYBOARD TEACHING DEVICES

Arthur R. Schmoyer, 11708 River Road, Potomac, Md.

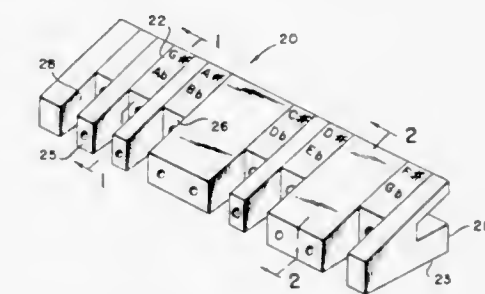
Division of Ser. No. 151,729, June 10, 1971. This application

June 23, 1971, Ser. No. 155,787

Int. Cl. G09b 15/08

U.S. Cl. 84-479

2 Claims



An instructional indicator for placement on a keyboard includes lights individually focused on the surface of the keys.

### 3,693,494

FASTENER

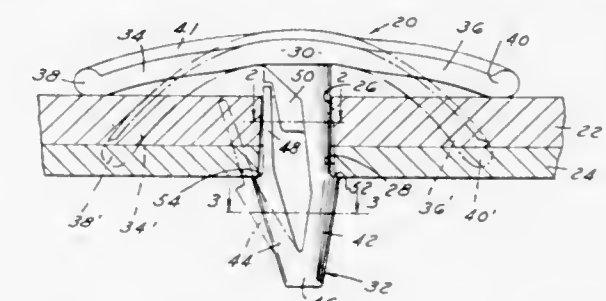
Engelbert A. Meyer, Union Lake, Mich., assignor to USM Corporation, Warren Division, Mount Clements, Mich.

Filed June 3, 1971, Ser. No. 149,690

Int. Cl. F16b 19/00

U.S. Cl. 85-5 R

5 Claims



A one piece, resilient fastener, preferably constructed of a plastic material, having a head and a shank, the head being elongate and longitudinally bowed, and the shank being generally V-shaped with a relatively rigid leg secured to the concave surface of the head, and a relatively flexible opposite leg terminating in a free end portion adjacent the head, the shank legs being provided with laterally extending locking shoulders. The fastener is particularly adapted for securing two sheet-like members in face-to-face relationship, the shank of the fastener projecting through aligned apertures in the



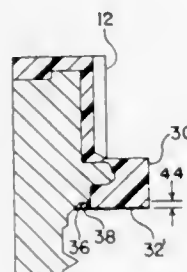
members, with its locking shoulders overlying the aperture marginal edges, and the opposite ends of the bowed head tensioned against the sheet surface spaced from the apertures to retain the sheets.

### 3,693,495 COMPOSITE SCREW

David P. Wagner, 8501 W. Higgins Road, Chicago, Ill.  
Filed Oct. 30, 1970, Ser. No. 85,524  
Int. Cl. F16b 15/02, 23/00

U.S. Cl. 85—9 R

8 Claims



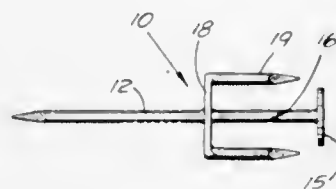
A composite threaded fastener in which a metal body including a head and washer portion having ribs formed thereon are encapsulated with a molded plastic outer surface, the outer surface and the head and washer interlocking through the interaction of the plastic and rib structure on the head and washer portion.

### 3,693,496 CONCEALED NAILS

Minoru Koide, 3561 Moultrie Ave., San Diego, Calif.  
Filed April 21, 1971, Ser. No. 135,851  
Int. Cl. F16b 15/02

U.S. Cl. 85—14

6 Claims



The invention is directed to a new type of concealed nail comprising a body section having two ends with an integral flange portion extending from the body sections and positioned to stop the penetration of one of the nail ends at a desired depth. The other nail end is then left extending from the work surface a distance which is less than the thickness of a second work piece so as to eliminate holes in finished or exterior surfaces of the second work piece.

### 3,693,497 SHELL RELOADING APPARATUS

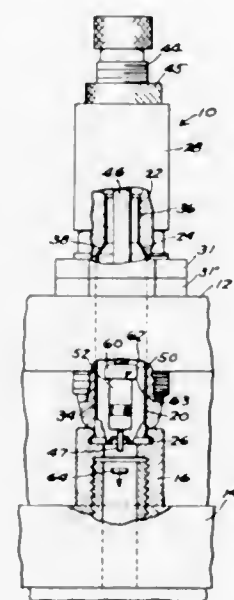
Harvey A. Jacobitz, Flushing, Mich., assignor to C-H Tool & Die Corporation, Flushing, Mich.  
Filed March 4, 1971, Ser. No. 120,855  
Int. Cl. F32b 33/02

U.S. Cl. 86—28

13 Claims

A shell reloading apparatus having an improved expander button which is positioned to expand the bullet-gripping shell neck. A used shell is first inserted into a cavity of the apparatus to reduce the diameter of the shell neck. The shell is then withdrawn from the cavity and over the expander button. A hard metal carbide ring on the expander button engages the

inside of the shell neck as the shell is withdrawn from the cavity to thereby expand the shell neck to an accurately controlled



diameter. Lubrication of the neck is not required and the ring can last indefinitely since it is highly immune to wear.

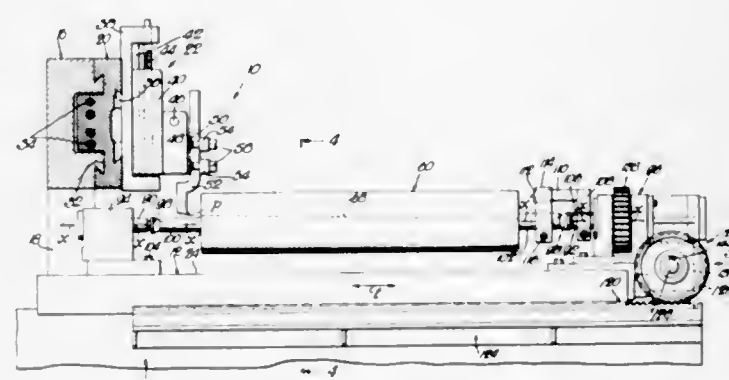
### 3,693,498 Patent Not Issued For This Number

### 3,693,499 PLANER FOR MACHINING HELICAL SURFACES OF IDENTICAL BUT OPPOSITELY DIRECTED LEADS ON COMPANION SHEAR DRUMS

James D. Ingham, Thomaston, Conn., assignor to The Hallden Machine Company, Thomaston, Conn.  
Filed Sept. 3, 1970, Ser. No. 69,233  
Int. Cl. B23d 5/02

U.S. Cl. 90—29

1 Claim



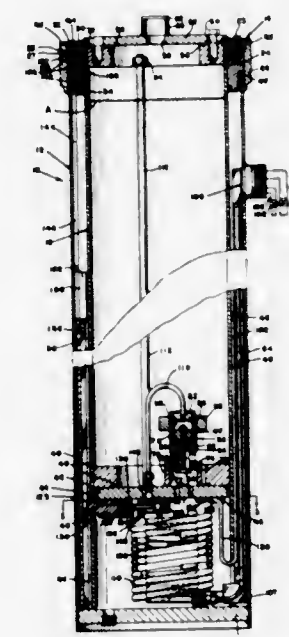
An operationally reciprocating traverse table of a planar, with at least one tool head on a cross rail, carries two parallel pairs of bearing-type end supports for two drums, of which adjacent end supports of the pairs are, through a gear drive connection on the table with a fixed rack, operationally driven through equal angular distances but in opposite directions on each traverse motion of the table, and either driven end support is releasably coupled to the associated supported drum, whereby the tool on the head may be operated to machine on the supported drum on the reciprocating table a helical surface of a uniform lead and in a direction depending on the pair of end supports on which the drum is supported.

### 3,693,500 FLUID PRESSURE CONTROLLED POWER UNIT

Stanley C. Crandall, Greensboro, N.C., and David B. Puryear, Summerfield, N.C., assignors to Gilbert & Baker Manufacturing Company, New York, N.Y.  
Filed June 1, 1970, Ser. No. 41,857  
Int. Cl. F15b 21/04, 15/26

U.S. Cl. 91—4 A

2 Claims



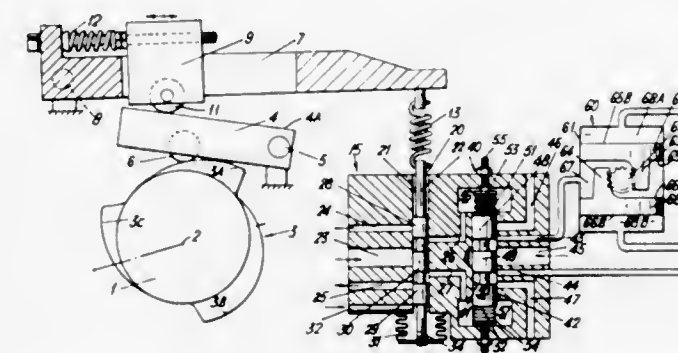
An air powered, oil controlled power unit including a cylinder having a plunger and control valve mounted for reciprocation therein. Air from a supply source pressurizes a liquid within the plunger for displacement thereof, upon opening of a control valve by air pressure, by permitting the oil to flow from within the plunger into the cylinder. Closing of the valve immediately stops plunger displacement. The unit is provided with a displaceable, automatically controlled safety latch and a leg member to prevent rotation of the plunger relative to the cylinder. A float assembly cooperates with the valve to prevent elevation of the plunger when the oil level within the unit drops below a predetermined point.

### 3,693,501 SERVO-SYSTEMS

Edward J. Ward, Haywards Heath, and Rodney Way, Portsmouth, both of England, assignors to The Worcester Valve Company Limited, Sussex, England  
Filed Aug. 25, 1970, Ser. No. 66,678  
Claims priority, application Great Britain, Aug. 28, 1969, 42,853/69; June 26, 1970, 31,179/70  
Int. Cl. F15b 13/16; F01b 7/04

U.S. Cl. 91—186

9 Claims



A servo-valve having a range of settings is urged progressively to or from a predetermined setting by a bellows responsive to input-signal fluid pressure. Feed-back from the valve output is to a cam having a cam follower linked by a lever of variable velocity ratio to a spring connected to the valve which biases the valve towards one end of its range of settings. The

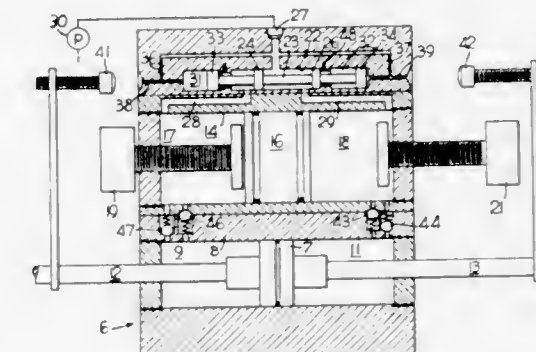
relationship between input-signal fluid pressure and valve output is determined by the contour of the cam surface and the relationship between change in input-signal fluid pressure and corresponding change in valve output is determined by the velocity ratio of the lever.

### 3,693,502 CYCLING MECHANISM

Charles W. Smith, York, Pa., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.  
Filed Dec. 2, 1970, Ser. No. 94,446  
Int. Cl. F01l 1/20, 25/06

U.S. Cl. 91—219

4 Claims



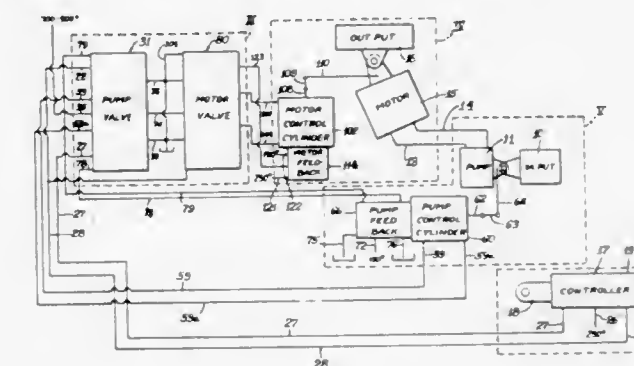
A pressure fluid operated motor moves a predetermined distance in one direction and then a predetermined distance in another direction. The activating pressurized fluid flows through an expansible chamber having a pressure relief valve to the motor. A predetermined volume of fluid must enter the expansible chamber before sufficient pressure is built up to unseat the relief valve and allow pressure fluid to flow to the motor. This results in a time delay between each change in direction of movement of the motor.

### 3,693,503 HYDROSTATIC TRANSMISSION CONTROL WITH HYDRAULIC FOLLOW-UP

Charles A. L. Ruhl, Wheaton; Edward Meyer, North Riverside, and Probr K. Chatterjee, Des Plaines, all of Ill., assignors to International Harvester Company, Chicago, Ill.  
Filed Dec. 14, 1970, Ser. No. 97,899  
Int. Cl. F15b 9/10

U.S. Cl. 91—368

1 Claim



A hydraulic follow-up for use with a hydraulic system placed between a rotating input member and a rotating output member. The hydraulic system is a hydrostatic transmission for driving a tractor, and comprises a hydrostatic pump and a hydrostatic motor driven by the pump. When the hydrostatic pump is angularly shifted with respect to the input member, the shifting is controlled by the hydraulic follow-up, which also shifts the motor in relation to the output member.



3,693,504

## MANIPULATOR SYSTEM

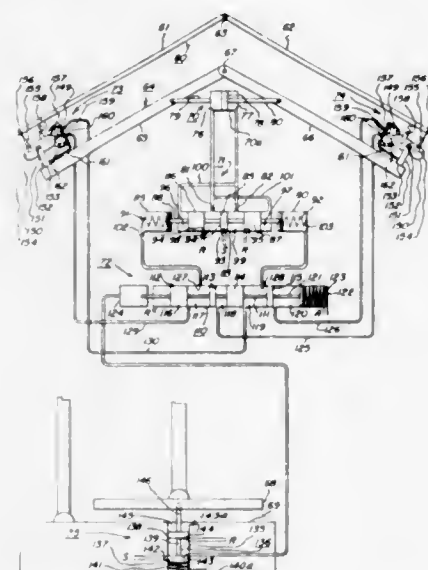
Kendall E. Gilbert, 1174 Van Antwerp Road, Schenectady, N.Y.

Continuation-in-part of Ser. No. 779,795, Nov. 29, 1968, abandoned. This application Aug. 19, 1970, Ser. No. 65,138

Int. Cl. F15b 13/16; F01b 15/02; F15b 13/042

U.S. Cl. 91—385

5 Claims



In a manipulator system including a master and a slave skeleton, each of which has a plurality of limbs, and each limb of which has a plurality of serially connected elements, each of the remote ends of corresponding elements of master and slave members are position sensed and brought into correspondence by a respective servo loop. Associated with each joint of a slave leg member are pairs of position sensing devices connected to points remote from the joint. Associated with each corresponding set of leg members is a device for producing a control signal representing grounding of a respective set of leg members. A pair of selector switches are provided. Each selector switch is responsive to a respective control signal for passing the signal from the appropriate position sensing device of a pair to maintain the leg members of a respective set in correspondence.

3,693,505

## Patent Not Issued For This Number

3,693,506

## CONTROL CIRCUIT

Kenneth G. McMillen, Wolcottville, and Wendell E. Miller, Warsaw, both of Ind., assignors to Borg-Warner Corporation, Chicago, Ill.

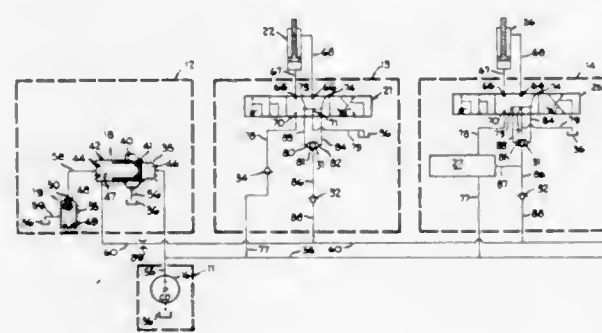
Continuation of Ser. No. 757,961, May 1, 1968, abandoned.

This application April 15, 1971, Ser. No. 134,466

Int. Cl. F15b 11/00

U.S. Cl. 91—412

23 Claims



A control circuit for a plurality of manual control valves each controlling a hydraulic motor including a bypass valve

and a first logic system including a means for each control valve adapted to select and transmit the load actuating pressure. The circuit includes a second logic system connected to the first logic system which selects the highest pressure signal transmitted by the first logic system and supplies same to a control means for the source of supply pressure to act as a signal pressure to ensure that adequate pressure exists in the fluid pressure supply conduit to the control valves.

3,693,507

## RADIAL PISTON HYDRAULIC DEVICE

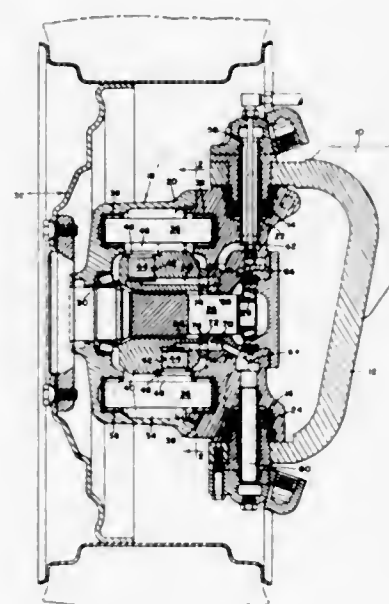
James Henry Kress, Cedar Falls, Iowa, assignor to Deere &amp; Company, Moline, Ill.

Filed Aug. 21, 1970, Ser. No. 65,881

Int. Cl. F01b 1/06, 13/06; F01b 33/02

U.S. Cl. 91—492

4 Claims



A radial piston-type hydraulic motor has a rotatable inner body element journaled in a fixed housing having a plurality of rollers disposed at equiangular intervals about the axes of the inner body element and axially parallel thereto. The inner body element has a plurality of radially extending cylinders with reciprocating pistons disposed around the inner body element at equiangular intervals preferably greater than the angular intervals between the rollers. The outer end of each piston is provided with a cam engageable with the rollers to cause rotation of the inner body element in response to reciprocation of the pistons.

3,693,508

## POWER TRANSMISSION

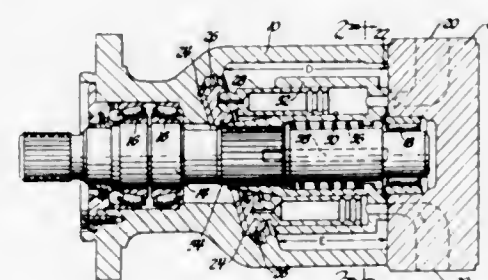
Edward J. Chondzinski, Detroit, Mich., assignor to Sperry Rand Corporation

Filed Dec. 28, 1970, Ser. No. 101,647

Int. Cl. F01b 3/00, 13/04, 104b 1/20

U.S. Cl. 91—499

5 Claims



A hydraulic pump or motor of the axial piston type having a cylinder barrel rotating against a fixed valve plate perpendicular to the shaft and free to find its own seat against the valve plate has an improved casing which restricts circulation of liquid tending to be carried around with the rotating cylinder

3,693,512

## APPARATUS FOR HANDLING PARTICULATE MATERIAL

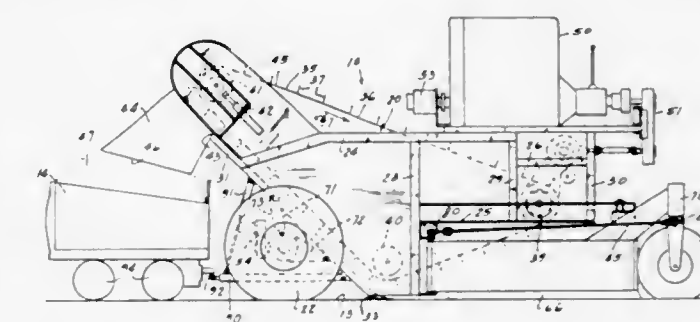
Fred T. Smith, Aurora, Ill., assignor to Barber-Greene Company, Aurora, Ill.

Filed Jan. 21, 1971, Ser. No. 108,506

Int. Cl. E01c 19/48

U.S. Cl. 94—46

13 Claims



A method and apparatus for handling particulate material which is particularly adapted for loading particulate paving material into a paving device which is either a separate unit connected thereto or carried thereby characterized by a scraper for lifting the material from a surface, a conveyor for elevating the material to a discharge point, and a storage space for storing material. The elements of the material handling device are arranged so that the device will rapidly load a hopper of the paving device to a predetermined level and maintain that level while storing any conveyed material which is in excess of the amount needed to maintain the level, and using the stored material when the amount of material being conveyed by the conveyor decreases below the demand of the material required to maintain the hopper full.

3,693,513

## SOIL COMPACTING APPARATUS ADAPTED TO OPERATE WITH ROTATING UNBALANCES

Eberhard Borsutzki, Rotenburg, and Gerhard Liehmann, Lingen/Ems, both of Germany, assignors to Deutsche Schachtbau- und Tiefbohrgesellschaft mbH, Lingen, Germany, by said Liehmann

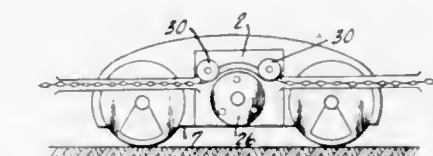
Filed May 6, 1970, Ser. No. 35,118

Claims priority, application Germany, June 27, 1969, P 19 32 635.3

Int. Cl. E01c 19/28

U.S. Cl. 94—50 V

8 Claims



The invention concerns soil compacting apparatus which is adapted to operate with rotatable unbalance and which will be positively driven along a chain by means of a driven sprocket wheel, such chain spanning the soil surface to be compacted. The apparatus of the invention is characterized in that it comprises soil compacting apparatus which is adapted to operate with rotatable unbalance and which will be positively driven along a chain by means of a driven sprocket wheel, characterized in that said apparatus comprises a chain guiding system which is settable in a first position in which the chain will be maintained in engagement with the sprocket wheel in the zone of a circumferential sector, and which is movable from said first position towards a second position in which the chain can be detached from engagement with the sprocket wheel.

3,693,509

## Patent Not Issued For This Number

3,693,510

## MANUFACTURE OF APERTURE CARDS

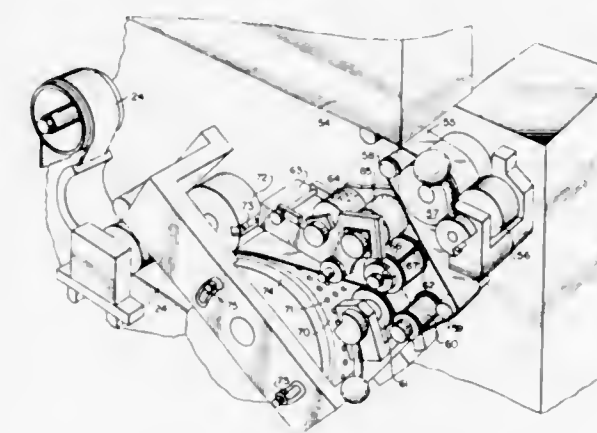
John F. Langan, Pennsauken, N.J., assignor to Langan Aperture Cards, Inc., Pennsauken, N.J.

Filed Nov. 2, 1970, Ser. No. 86,183

Int. Cl. B31b 1/24, 1/62, 1/82

U.S. Cl. 93—1 G

8 Claims



Strips of card stock and of film move longitudinally in timed relation with each other. Apertures are formed in the card strip during its longitudinal movement through grinding and cutting zones, the successive apertures being spaced from each other by one card length and each aperture having a thin border of card stock around its edges. The film strip passes through a zone where lines of adhesive are applied to form patterns in the successive sections which correspond to the thin borders of the apertures, after which the film is severed between successive sections and each separate section is applied to one of the apertures in the longitudinally moving strip of card stock. Thereafter the card strip is cut into card lengths and the cards finished by printing or otherwise.

3,693,511

## ROAD STUDS

Mieczyslaw Tadeusz Wladyslaw Medynski, Kingfishers, Brookthorpe, Gloucestershire, England

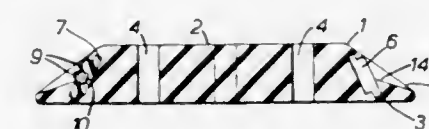
Filed Dec. 16, 1970, Ser. No. 98,771

Claims priority, application Great Britain, Dec. 16, 1969, 61161/69

Int. Cl. E01c 23/16

U.S. Cl. 94—1.5

7 Claims



A reflective road stud or 'cat's eye' has a body moulded of flexible and resilient rubber or the like in which at least one reflective element is housed, which element has projections by which it is retained in position and which provide a "snap-in" fixing utilizing the natural resilience of the body material. The body may have an extensive flat under-surface secured to the road by a suitable adhesive, preferably a thermo-set resin sprayed on to the road surface or an emulsified epoxy resin mortar so that work can continue in wet weather as a dry road surface is not required. The reflective element may be a rigid plastics moulding with rows of inset bead like reflecting lenses.



## ERRATUM

For Class 95—42 see:  
Patent No. 3,693,284

3,693,514

## ELECTROPHOTOGRAPHIC COMPOSING DEVICE

Yutaka Koizumi, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

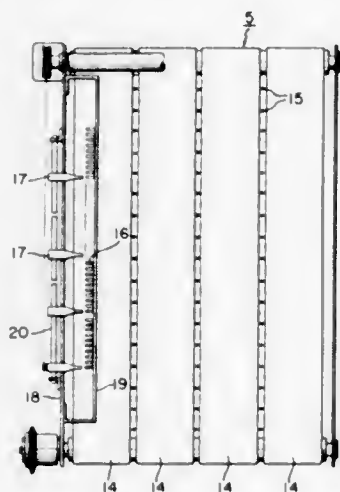
Filed Sept. 8, 1970, Ser. No. 70,129

Claims priority, application Japan, Sept. 9, 1969, 44/70986

Int. Cl. G03b 17/24

U.S. Cl. 95—1.1

4 Claims



A device for recording a plate indicia representing a number of copies to be printed by the plate is provided for an electrophotographic composing device. The indicia recording means consists of graduated scales and pointers or indicators and are recorded upon a plate together with the image of an original in a portion outside thereof. Irrespective of the magnification or reduction of the original, the dimensions of the indicia remain unchanged so that the detection of indicia may be precisely made. Furthermore, undesired markings other than indicia may be positively prevented.

3,693,515

## OPTICAL REFLECTOR SYSTEM

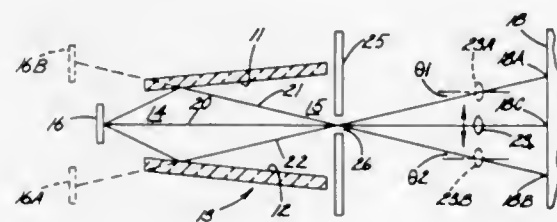
Charles W. Baker, Cedar Grove, N.J., assignor to Vari-typer Corporation, Hanover, N.J.

Filed April 30, 1971, Ser. No. 139,112

Int. Cl. B41b 21/08, 21/12

U.S. Cl. 95—4.5 R

25 Claims



An optical reflector system is disclosed utilizing a plurality of reflecting surfaces forming a diverging tunnel to project a substantially uniform intensity on an optical surface spaced from the reflector system. The invention is suitable for use with optical projection systems and is able to compensate for the effects of other optical components within the projection system. The reflector system is applicable to high speed character projection as used in the photo-composition and photo-type setting arts.

3,693,516

## PHOTOCOMPOSING MACHINE WITH FLEXIBLE FIBER OPTICS SCANNING MEMBER

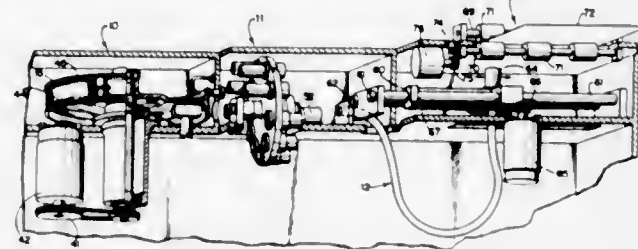
Edward A. Aron, Needham, Mass.; Louis E. Griffith, Hampstead, N.H., and James A. Tidd, Haverhill, Mass., assignors to Graphic Systems, Inc., Lowell, Mass.

Filed Nov. 20, 1969, Ser. No. 878,368

Int. Cl. B41b 17/10

U.S. Cl. 95—4.5 R

6 Claims



A photocomposing machine is described for composing a master useful in the printing industry. A film record, suitably mounted, contains recordings of a type font, including an appropriate selection of alphanumeric characters or type faces which can be selectively employed to compose a printed page. A selected image from the film record is projected through one of the various lenses in a lens turret to project the image on the input end of a fiber optics bundle. The output end is movable in a stepping or scanning mode across a photosensitive recording material. The selected characters are recorded in sequence by selected stroboscopic lighting. An electronic control center receives a coded input signal and appropriately activates the strobe lamp and other components to provide selection of the alphanumeric character as well as timing of the selection to provide justification.

3,693,517

## PRINTING APPARATUS

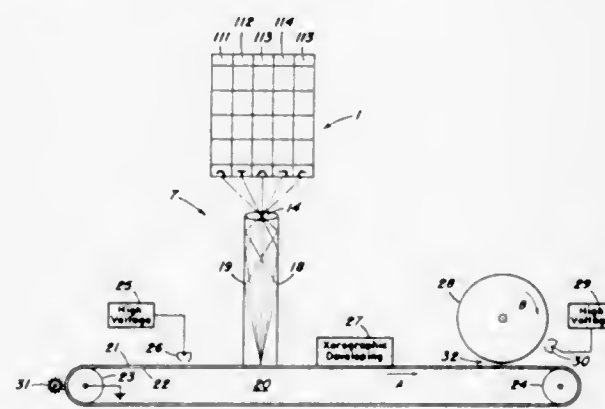
Harold E. Clark, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,666

Int. Cl. B41b 21/24

U.S. Cl. 95—4.5

5 Claims



Printing methods and the apparatus therefor are provided in accordance with the teachings of the present invention. According to one embodiment of this invention a radiant energy source selectively transmits radiant energy through a plurality of character patterns arranged in columns and rows. The character patterns are adapted to move relative to the source so that radiation modulated by predetermined ones of the character patterns is selectively applied to a plurality of input paths of an optical positioning means. The optical positioning means includes optical tunnel means which acts to position radiation received at any of a plurality of input paths thereto to a single output location. Photoreceptor means is located at the output location of the optical positioning means whereupon modulated radiation applied to any of the input paths of the optical positioning means is communicated to and imaged

upon such photoreceptor means. The photoreceptor means thereby receives modulated radiation corresponding to selected character patterns. The photoreceptor means may then be developed and the images present thereon transferred to print receiving means.

3,693,518

## MEMORY CIRCUIT OF AN ELECTRIC SHUTTER

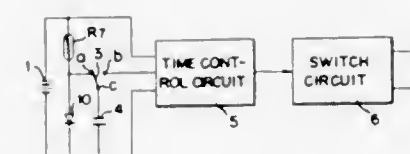
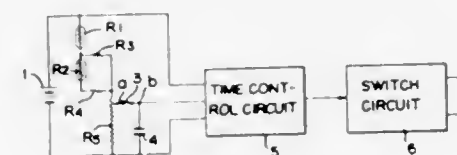
Takeo Yamada, Tokyo, and Shigeo Ono, Yokohama-shi, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jan. 2, 1968, Ser. No. 695,200

Int. Cl. G01j 5/30; G03b 7/08

U.S. Cl. 95—10 CT

13 Claims



An exposure control arrangement for a camera having an objective lens and a shutter moveable between closed and open positions is disclosed. A light intensity to voltage conversion means is positioned behind the objective lens for converting essentially each value of the intensity of the light passing through the objective lens during use of the camera to a voltage having a value essentially linearly proportional to a logarithm of the value of said intensity, and a capacitor memory means is selectively coupled to the conversion means for storing this voltage. Switch means are provided for selectively coupling the capacitor memory means to the conversion means during intervals when light passing through the objective lens is incident on the conversion means and for disconnecting the capacitor memory means from the conversion means when the light passing through the objective lens is not incident on the conversion means. The camera shutter is actuated by a control means which is coupled to the capacitor memory means and which controls the open time of the shutter in accordance with the voltage stored in the capacitor memory means.

3,693,519

Patent Not Issued For This Number

3,693,520

## COPIER SYSTEM

Gerald M. Goldman, 185 Bronx River Rd., Yonkers, N.Y., and Sherman Smith, 811 Keene Lane, Woodmere, L.I., N.Y., assignors to said Goldman, by said Smith

Filed June 4, 1969, Ser. No. 830,300

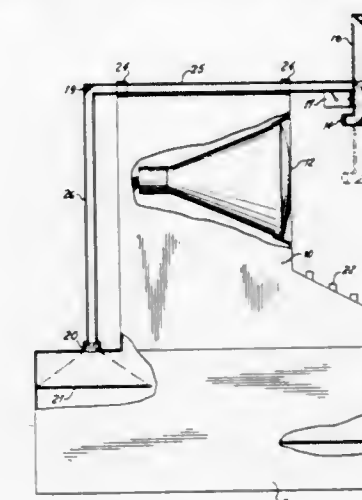
Int. Cl. G01d 9/42; H01j 29/89

U.S. Cl. 95—12

3 Claims

This invention provides a unique system for capturing the image of a cathode ray tube (CRT) and transferring it to a copier machine. Cathode ray tubes have many uses, one being part of a terminal device for a computer, another being the screen of an oscilloscope and one other being part of a televi-

sion set. Sometimes a permanent image is desired of what is displayed on a CRT. This is often referred to as a hard copy.



This invention provides for the transfer of the image displayed on the CRT screen to a copier machine.

3,693,521

## LATCH AND PRESSURE-APPLYING DEVICE

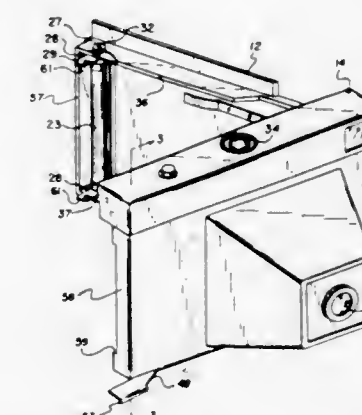
Donald M. Harvey, and Chester W. Michatek, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed April 2, 1971, Ser. No. 130,752

Int. Cl. G03b 17/50

U.S. Cl. 95—13

9 Claims



A self-processing camera is provided with a novel latch and pressure-applying device that releasably latches the camera's loading door in its closed position and applies resilient nip pressure directly to the film processing members without imposing substantial corresponding forces on the door or the camera housing.

3,693,522

## AUTOMATIC COUNTER-ACTUATED APPARATUS FOR TAKING AND DEVELOPING PHOTOGRAPHS

Luigi Chiesa, Turin, Italy, assignor to Morena S.A., Fribourg, Switzerland

Filed May 21, 1971, Ser. No. 145,730

Claims priority, application Italy, May 23, 1970, 68775 A/70

Int. Cl. G03b 17/50

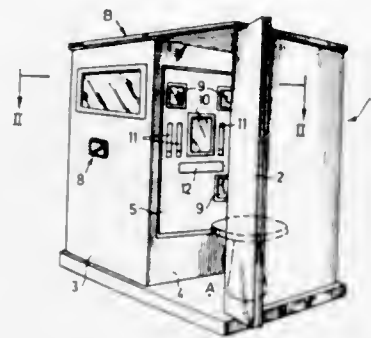
U.S. Cl. 95—14

9 Claims

Coin-operated apparatus for photographing a person in a cubicle and developing the photograph has two cameras, a first one for taking a single large photograph and a second one for taking four small photographs, a reel of reversible paper which passes through first one camera and then the other camera, two slide projectors to hold photographic slides for photographing in two of the four small photographs and program selectors. The second camera has four separate lens assemblies and four screened-off compartments. Program selec-



tor means provides for selection of either a single large photograph or four small photographs of the person or two photo-



graphs of the person and two photographs of the slides or two photographs of the person and two blank spaces.

3,693,523

# AUTOMATICALLY WINDING TYPE PHOTOGRAPHIC CAMERA WITH A ROTARY SHUTTER

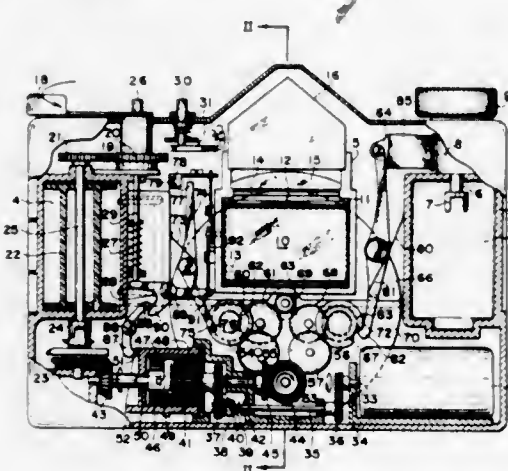
Shohei Tenkumo, and Yoshio Kuramoto, both of Sakai-shi, Japan, assignors to Minolta Camera Co., Ltd., Osaka-shi, Japan

Filed Feb. 18, 1971, Ser. No. 116,542

Claims priority, application Japan, Feb. 18, 1970, 45/13623  
Int. Cl. G03b 19/04, 9/26

U.S. Cl. 95—31 EL

5 Claims



The shutter in an automatically winding type photographic camera comprises a rotary shutter which rotates intermittently only in one direction, places the shutter charge into practice while in the process of stopping, and effects the exposure when it rotates. The rotary shaft of the shutter plate in said rotary shutter is supported substantially at its center directly beneath the exposure opening of the camera; the lowermost end of the turning track of said shutter plate is substantially coincided with the bottom of the camera body and the uppermost end thereof is located beneath the eye piece portion of the finder of the camera. In the space beneath said exposure opening there are disposed a shutter driving mechanism having a prime mover for interlocking with said rotary shaft and an automatically winding mechanism for interlocking with said prime mover.

3,693,524

# SHUTTER SAFETY DEVICE IN A CAMERA PROVIDED WITH AN ELECTRIC SHUTTER

Koichi Furuta, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Sept. 10, 1971, Ser. No. 179,486

Claims priority, application Japan, Sept. 19, 1970, 45/82118

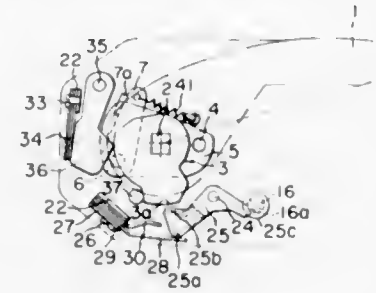
Int. Cl. G03b 17/00

U.S. Cl. 95—31 EL

4 Claims

A safety device for an electric shutter in a camera is disclosed. The device is comprised of a wind-up lever which

operates a power switch for turning the electric shutter on and off. The lever is movable through an angle of idle rotation between a retracted and extended position for respectfully



turning the shutter off and on. The device also included a device for preventing actuation of the shutter release when the lever is in its retracted position to prevent photography when the electric shutter is off.

3,693,525

# CASSETTE SUPPORT FOR CAMERA ASSEMBLY

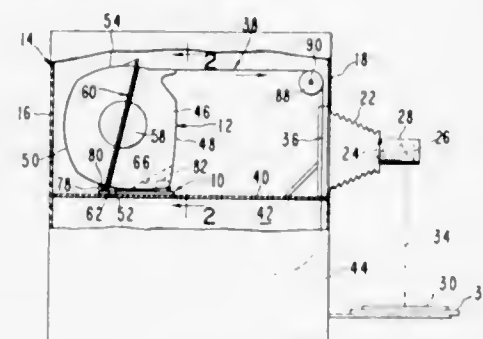
Walter W. Barber, 31830 Trevor Ave., Hayward, Calif.

Filed Sept. 16, 1971, Ser. No. 181,132

Int. Cl. G03b 1/42, 17/30, 19/04

U.S. Cl. 95—31 CA

10 Claims



Structure for supporting a film cassette in the housing of a camera assembly wherein the apparatus includes a flat plate having a pair of opposed edges. The plate has a pair of projections near one of the edges and an aligning member near its opposite edge. The projections are adapted to engage a horizontal base flange on the cassette and the member is disposed in an aligning recess in the bottom of the cassette. The projections prevent rotation of the cassette relative and along the plate as film is removed from the cassette.

3,693,526

# COMPACT FOLDING CAMERA

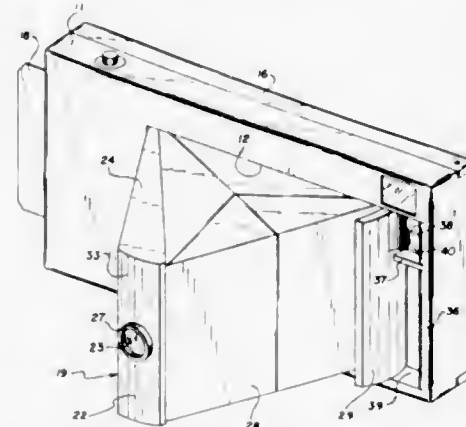
Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,469

Int. Cl. G03b 17/04

U.S. Cl. 95—39

2 Claims



A self-processing photographic camera includes a box-like housing provided with a lens support door that is hinged to the

housing at one end and which supports the camera lens at its opposite end. A collapsible bellows provides a light seal between the door and the housing and permits the door to move between an open position in oblique relation to the casing and a closed position at which the lens end of the door is adjacent the front wall of the casing but extends somewhat forwardly thereof. A novel supplemental door cooperates with the lens support door to releasably retain the latter in its closed position and to protect the camera lens from dirt or accidental damage.

3,693,527

# CAMERA ACTUATOR MECHANISM WITH AN ELECTRONIC TIMER

Mutsuhide Matsuda, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

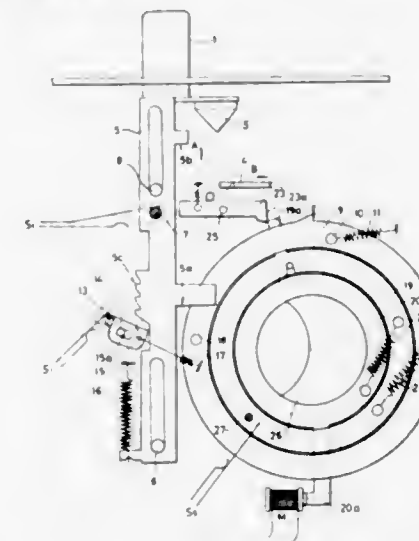
Filed May 13, 1970, Ser. No. 36,713

Claims priority, application Japan, May 20, 1969, 44/38867

Int. Cl. G03b 7/08, 9/62

U.S. Cl. 95—53 E

7 Claims



In the camera actuator mechanism disclosed, two series main switches serve to energize an electronic timer. One of the switches is normally closed. A shutter release holds the other switch open. As the shutter release is depressed to snap a picture it first performs preliminary functions other than opening the shutter. During this stage of depression the shutter release closes the open switch. The shutter release forms a ratchet-pawl arrangement with a pivotally mounted locking member. When the shutter release reaches a second position from its first, undepressed position, the locking member locks the shutter release in the second position and simultaneously is pivoted by the shutter release to open the normally-closed switch. In that second position the open switch closes. When the shutter release reaches a third position it allows the locking member to pivot around. This releases the shutter release and at the same time allows the normally-opened switch to close. The other switch remains closed. Thus both switches are closed only when the shutter release is depressed to its third position. This prevents needless use of electrical power while the shutter release performs its preliminary function in the first and second position. From its third position the shutter release returns to its first position.

3,693,528

# APPARATUS FOR PROCESSING STRIPS OF PHOTOGRAPHIC MATERIAL OR THE LIKE

Hans-Dieter Frick; Erwin Geyken; Peter Dawidowitsch, and Helmut Schausberger, all of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 11, 1970, Ser. No. 97,273

Claims priority, application Germany, Dec. 12, 1969, P 19 62 421.6

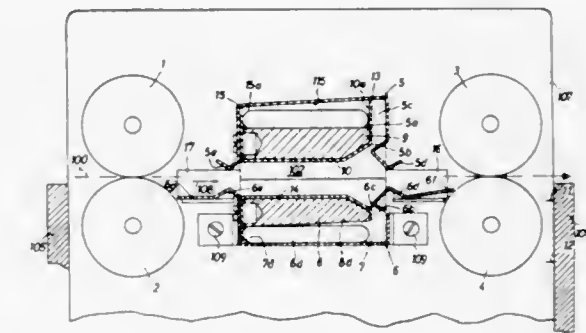
Int. Cl. G03d 3/02

U.S. Cl. 95—89 R

10 Claims

Apparatus for treating strips of photographic material with a developing solution which reacts with oxygen has upper and

lower chambers defining a channel for lengthwise transport of strips and orifices which discharge streams of developing solution against the respective sides of strips. The chambers further have passages which receive developing solution from



3,693,529

# DEVELOPING APPARATUS

Theodor Stabler, Leinfelden-Oberaichen, Germany, assignor to Autopan Heimerding & Stabler O.H.G., Oberaichen, Germany

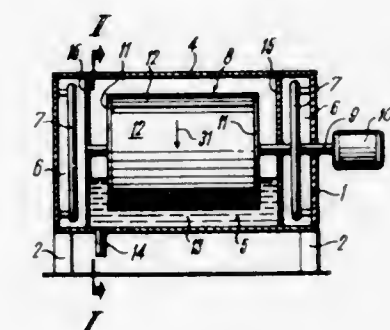
Filed Sept. 2, 1971, Ser. No. 177,253

Claims priority, application Germany, Oct. 1, 1970, P 20 48 302.7

Int. Cl. G03d

U.S. Cl. 95—93

9 Claims



An apparatus for processing photographic sheet materials comprising a container for holding a processing liquid, a shaft rotatable in the container and a pair of parallel disklike walls mounted on the shaft which are spaced from each other to permit a plurality of sector-shaped supporting shells to be resiliently clamped between the two walls. These shells when inserted between the two walls extend coaxially to the shaft, and each of these shells is adapted to carry some of the sheet material to be processed which may be connected to these shells anywhere outside of the container.

3,693,530

# VENTILATED FLUORESCENT TUBE FIXTURE

Birger Larkfeldt, Genargen 5, 555 90 Odensjö-Barnarp, and Rolf Petersson, Harsörnsgratan 151, 552 66 Jonköping, both of Sweden

Filed Dec. 29, 1971, Ser. No. 213,665

Int. Cl. F21f 7/00; F21v 33/00; F21s 3/02

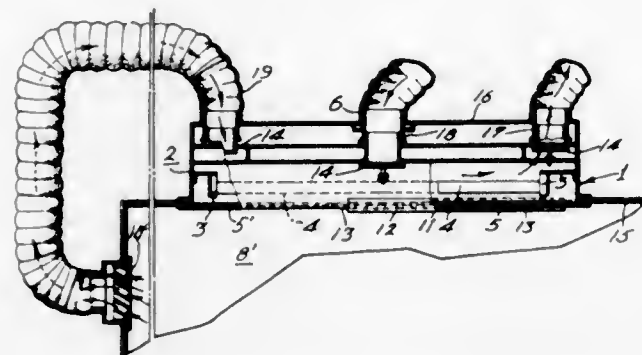
U.S. Cl. 98—40 DL

4 Claims

A fluorescent tube fixture having passages for ventilating air in which the passage for supply air is partitioned from the



tubes and blows the fresh air across the outer surface of the lens to cool the same, and the passage for exhaust air includes



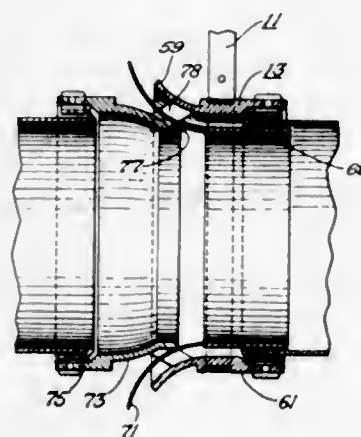
the casing of the fixture so that the exhaust air flows past the fluorescent tubes in the casing.

3,693,531

**FLUID DISTRIBUTION APPARATUS PRESERVING ALIGNMENT OF LONGITUDINAL AXES OF FLOW**  
Matthew Siegel, 4051 Riverside Court, Fort Worth, Tex.  
Division of Ser. No. 881,016, Dec. 1, 1969, Pat. No. 3,643,580.  
This application Nov. 29, 1971, Ser. No. 202,919  
Int. Cl. F24f 7/00

U.S. Cl. 98—40 C

5 Claims



Apparatus for use in a fluid distribution system characterized by a combination hanger and coupling adapter having a coupling means with ends adapted to receive and support ends of ducts with their respective longitudinal axes being maintained in linear alignment so as to preserve the velocity component of a fluid flowing therethrough; and fastening means such as spring clips retained in each end of the coupling means and adapted to move outwardly to allow passage of the end of the ducts and to snap inwardly once the ends have passed, retaining the ducts in the coupling means. Great flexibility is attainable since one end of the coupling means may be smaller than the other and may be concentrically or eccentrically positioned to provide a vent means for general or directional distribution of a fluid flowing therethrough. The apparatus enable economical and rapid installation of a fluid distribution system, as well as low operating cost.

3,693,532

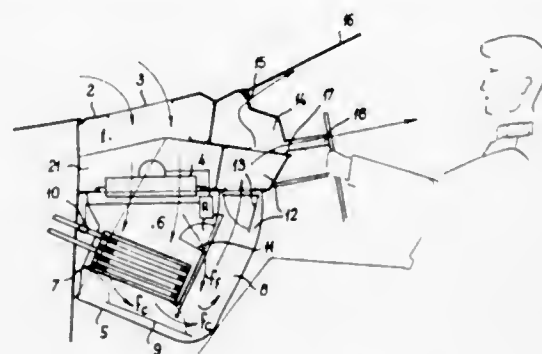
**HEATING AND VENTILATING SYSTEM FOR VEHICLES**  
Andre Collnet, and Jacques Mercier, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, 07, Billancourt and Automobiles Peugeot, Paris, France  
Filed Oct. 26, 1970, Ser. No. 84,070  
Int. Cl. B60h 1/24

U.S. Cl. 98—2.07

6 Claims

This heating and ventilating system is adapted to deliver air in sheet form and comprises an upper hollow inlet beam associated with a helical fan and motor unit, an upper beam for de-misting and a lower beam for distributing air, which extend

throughout the width of the vehicle, a casing comprising a pressurizing chamber, a heat exchanger, a mixing chamber equipped with shutters for controlling the ingress of reheated



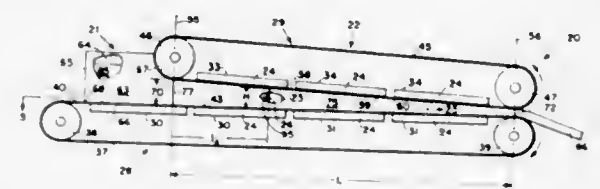
air, the opening of one of these last-named shutters being operatively connected to the inlet means for warm water from said exchanger and, in conjunction with the opening of the other shutter, a rheostat for starting said fan and motor unit.

3,693,533

**MEAT ANALOG APPARATUS**  
Alexander L. Liepa, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio  
Filed Dec. 28, 1970, Ser. No. 101,930  
Int. Cl. A21c 3/04

U.S. Cl. 99—234 R

26 Claims



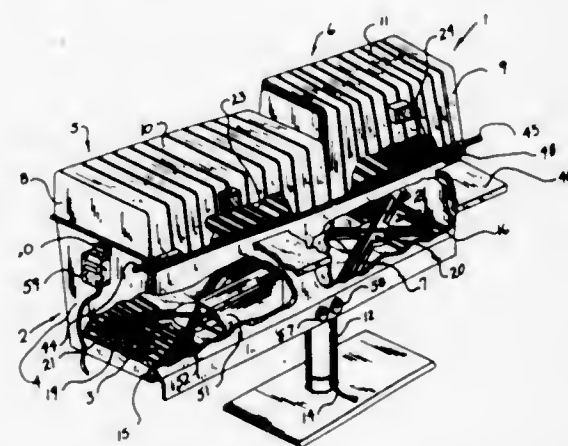
An apparatus for continuously producing a slab of fibrous, meat-like product in which amorphous heat coagulable dough is forwarded from a hopper by converging conveyors which induce substantially unidirectional transverse distension of the dough which distended dough, upon being heated sufficiently to induce coagulation, is transformed into a meat-like slab of substantially parallel, bonded, fibers.

3,693,534

**COOKING DEVICE**  
Norman L. Martin, Lake Quivira, Kan., assignor to Locke Stove Company, Kansas City, Mo.  
Continuation of Ser. No. 54,212, July 13, 1970, abandoned.  
This application May 26, 1971, Ser. No. 147,236  
Int. Cl. B30b 15/00

U.S. Cl. 99—260

17 Claims



A cooking device for outdoor use comprises a base unit having bottom and side walls defining a plurality of side-by-side compartments each having an open top with each bottom wall

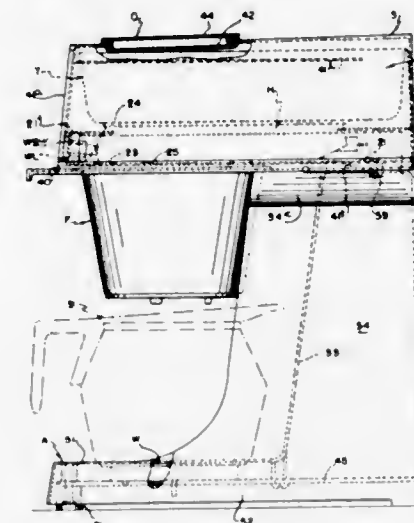
having a plurality of passages therethrough to provide a source of combustion air for fuel burners in the respective compartment. Each compartment has a cover with a portion thereof hingedly mounted for opening and closing same with the covers having a flue passage therethrough for improved draft characteristics. At least one of the compartments has a bake chamber therein.

3,693,535

**POUR-IN, INSTANT BREWING ELECTRIC COFFEE MAKER**  
Edmund A. Abel, Jr., 345 South Island Dr., Rocky River, Ohio  
Filed July 26, 1971, Ser. No. 166,104  
Int. Cl. A47j 31/057

U.S. Cl. 99—282

15 Claims



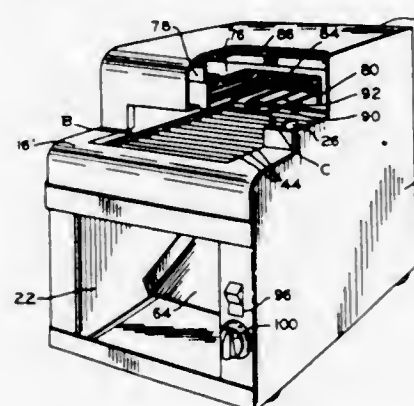
In a pour-in, instant brewing type coffee maker, gravity flow of water, from a receiving tray bottom orifice to an electric resistance heated block of a unit heating the water as it passes to a brewing funnel discharging hot brewed coffee, is controlled by a float-varied orifice structure, and the tray overlies the block for tray water heating by water vapor latent heat; thus eliminating need of a large block mass or excessive heater wattage to provide requisite hot water temperature in an acceptable cycle time, and permitting a simple molded plastic housing design. Baffling in a block water flow top cavity conduces to efficient heat transfer and to reduction of steaming and of attendant noise.

3,693,536

**APPARATUS AND METHOD OF TOASTING BREAD LIKE ARTICLES**  
James G. Carville, Westfield, and John F. Rekesius, Watchung, both of N.J., assignors to Savory Equipment, Inc., Newark, N.J.  
Filed June 29, 1970, Ser. No. 50,783  
Int. Cl. A47j 37/08

U.S. Cl. 99—386

9 Claims



An electric toasting apparatus comprised of a conveyor adapted to support articles to be toasted and having the trans-

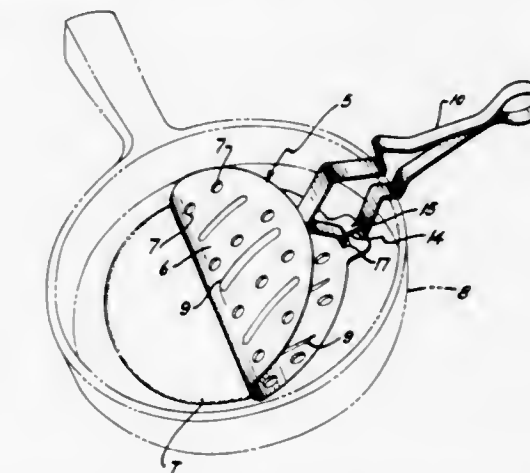
verse width and a preselected rate of movement in a longitudinal direction. The apparatus includes at least two radiant heater means disposed adjacent the conveyor, each arranged to provide generally uniform heating conditions across substantially the entire transverse width of the conveyor and along at least a substantial portion of the longitudinal length of the conveyor. One heater runs constantly and has a heat output to bring the articles close to the toasting point. The other is modulated to control its heat output and thus the total output of both heater means to give the desired degree of toasting. The method comprises the steps of: (a) conveying the articles past and adjacent to the first and second heater means at a uniform rate; (b) fully energizing the first heater means in an amount sufficient to bring the articles at least close to the toasting point; and (c) simultaneously energizing the second heater means to produce less than its maximum heat output, but sufficiently to fully toast the articles.

3,693,537

**UTENSIL FOR USE IN COOKING TORTILLAS**  
Charles R. Johnson, Route 11, Box 144K, San Antonio, Tex., and Jack F. Henderson, 554 E. Congress, San Antonio, Tex.  
Filed Aug. 3, 1970, Ser. No. 60,544  
Int. Cl. A47j 43/18

U.S. Cl. 99—426

1 Claim



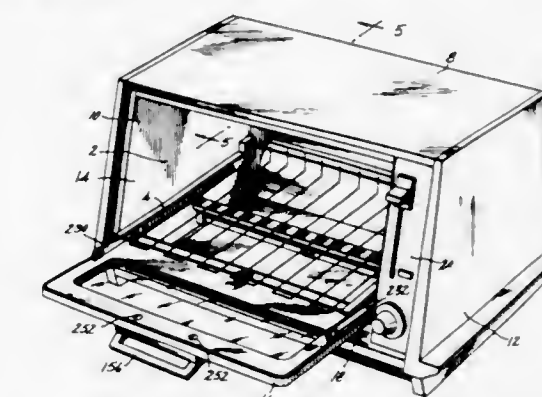
This invention consists of a piece of metal that is basically U-shaped when viewed from the end and as half of a disk when viewed from the front, and to which is secured a handle made of a strip of spring steel or the like. The aforesaid piece of metal is provided with a plurality of equally spaced openings, preferably round, for the draining of cooking oil from the tortillas when they are lifted from a skillet (frying pan).

3,693,538

**ELECTRIC OVEN TOASTER CONSTRUCTION**  
Paul V. Synder, Whitehall, Pa., assignor to General Electric Company  
Filed Nov. 19, 1970, Ser. No. 90,890  
Int. Cl. A47j 37/04

U.S. Cl. 99—447

11 Claims



An electric oven toaster construction wherein two sheet metal side plates are provided with a plurality of slots and



apertures for readily mounting upper and lower reflectors, upper and lower heating elements, and a front door of the oven toaster.

# ERRATUM

For Class 99—386 see:  
Patent No. 3,693,452

3,693,539

Patent Not Issued For This Number

3,693,540

## EXTRACTION APPARATUS

Francis Dambrine, Marq en Baroeul, France, assignor to Fives Lille-Cail

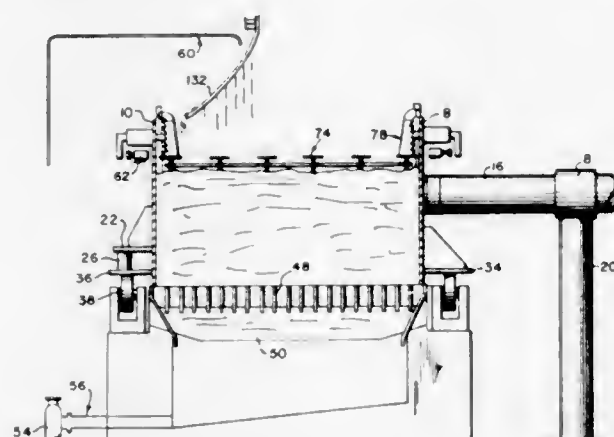
Filed March 23, 1971, Ser. No. 127,126

Claims priority, application France, March 27, 1970, 7011105

Int. Cl. B30b 9/06, 15/02

U.S. Cl. 100—110

11 Claims



Soluble substances contained in vegetal matter are extracted by diffusion in an apparatus wherein a plurality of cells are successively filled with the vegetal matter at a charging station and displaced during the extraction operation to a discharge station where the exhausted vegetal matter is removed from the cells. Each cell has a glidably mounted cover for compressing the vegetal matter in the cell. A bolting mechanism holds the cover at a desired level in the interior of the cell after the cover has been moved to this level at the charging station to compress the vegetal matter in the cell.

3,693,541

## APPARATUS FOR COMPACTING REFUSE

Daniel L. Lombard, 369 Wick Avenue, P.O. Box 177, Youngstown, Ohio, and Daniel A. Katko, 2575 Wick Tibbets Rd., Hubbard, Ohio

Filed Nov. 24, 1969, Ser. No. 879,120

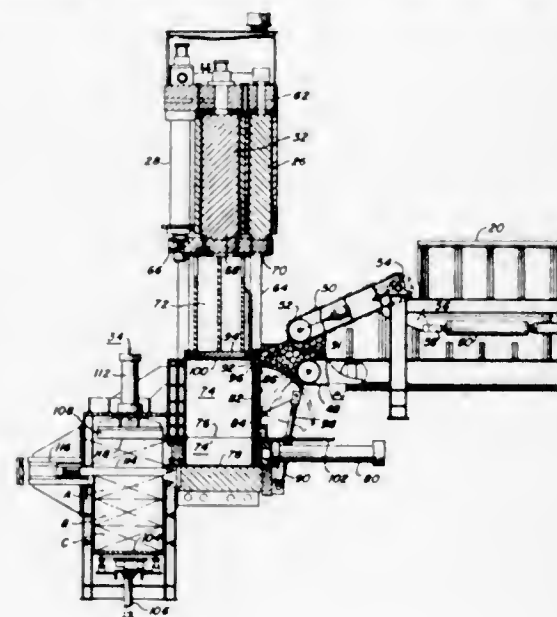
Int. Cl. B30b 1/34, 9/30, 15/30

U.S. Cl. 100—137

9 Claims

Method and apparatus for compacting refuse in accordance with which the refuse is fed by means of a pair of converging conveyors into a press chamber where it is compressed by the ram of a hydraulic cylinder assembly against a fixed wall at one end of the chamber. The refuse, when compressed, comprises a block of high density, on the order of 1,500 to 2,400 pounds per cubic yard, disposed within a rectangular slide box which forms one end of the press chamber. This slide box, containing the high density block of compressed refuse, is then caused to move laterally to a position adjacent the remainder of the press chamber where the high density block is removed; whereupon the slide box moves back into alignment with the remainder of the press chamber preparatory to

a succeeding compaction cycle. The apparatus is characterized in that the compaction takes place in stages of increasingly greater force. In the first stage, the press ram moves rapidly into the press chamber under relatively little force.



Then, as the density of the refuse increases, the ram slows down in one or more stages as the force it exerts increases. This materially increases the speed of the compaction process, a factor vital to a commercially economical system for disposing of large amounts of refuse.

3,693,542

## APPARATUS FOR FABRICATING WOOD STRUCTURES

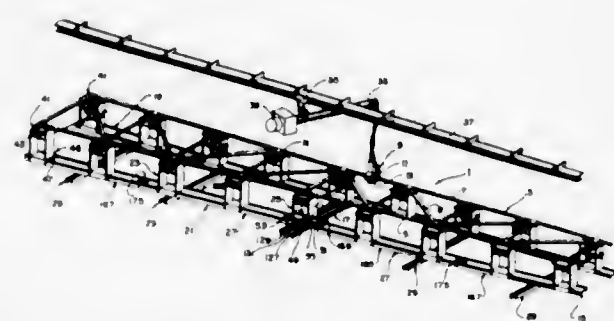
Walter G. Moehlenpah, 1210 South Vandeventer, Laude, Mo.

Filed Jan. 14, 1971, Ser. No. 106,419

Int. Cl. B30b 1/18

U.S. Cl. 100—231

24 Claims



Apparatus for fabricating wood trusses of the type having lower chord members, upper chord members, and web members extending from the lower chord members to the upper chord members, which utilizes a C-shaped press having an upper platen and a lower platen which are relatively movable toward and away from each other for driving nailing plates into two or more wood members of a truss from above and below. The apparatus has floor level track means comprising central track means extending heightwise in relation to the truss between the locations of the lower and upper chord members, lower chord track means extending outwardly from both sides of the central track means, and upper chord track means extending outwardly from both sides of the central track means. A plurality of stands are mounted on the track means for holding the wood members to be operated on by the press, with the central track means having at least one of the stands mounted thereon for movement therealong heightwise in relation to the truss. Others of the stands are mounted on the upper and lower chord track means for chordwise movement therealong. The upper chord track means comprises wing track members extending outwardly from the central track means with the inner ends of the wing tracks being

pivotaly connected to the movable central track stand for swinging movement in a generally horizontal plane relative to the movable central track stand. Additionally, the apparatus includes outboard track means on both sides of the central track means extending generally heightwise in relation to the truss, and carriage means movable on each outboard track means. The wing track members are supported on the carriage means for movement therewith while swinging about their pivotal connection to the central track stand.

3,693,543

## IMPRINTING MECHANISM

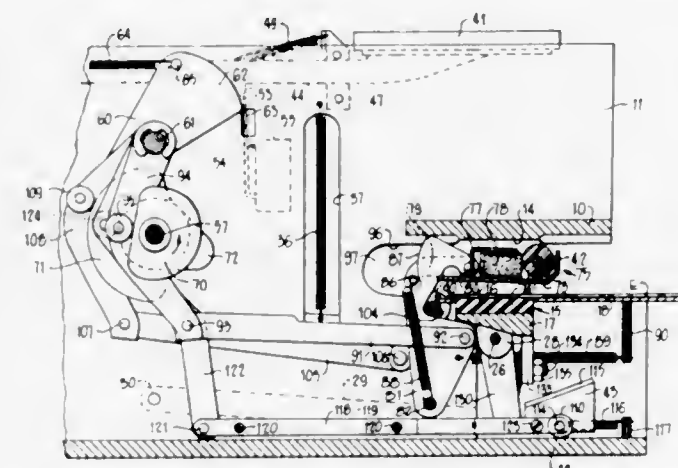
Harry F. Noller, Moraga, Calif., assignor to The Singer Company, New York, N.Y.

Filed Oct. 26, 1970, Ser. No. 84,092

Int. Cl. B41f 1/00

U.S. Cl. 101—287

5 Claims



A cam operative mechanism for controlling the platen of a printing device to provide a uniform printing pressure on articles of varying thicknesses. The platen is normally spring-biased in its printing stroke to impress the article to be printed against the print die. During such movement a wedge is moved beneath and into engagement with a pair of yieldable arms carried by the platen to impart an additional movement to the platen, whereby printing pressure is applied. Regardless of the thickness of the article to be printed, an equal printing pressure is effected by the wedge and the arms, carried by the platen, thereafter yield as the printing stroke is completed.

3,693,544

## PRINTOUT DRUM

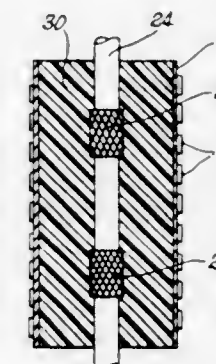
Charles J. Trzyna, Long Grove, Ill., assignor to Charles J. Trzyna, Long Grove, Ill. and Electronic Precision Industries Corporation Inc.

Filed April 2, 1970, Ser. No. 25,138

Int. Cl. B41f 13/10

U.S. Cl. 101—375

5 Claims



A printout drum in which a metal tubular member carrying a plurality of characters on its outside surface has a centrally positioned shaft which is rigidly fastened to the tubular member by means of a hardenable resinous filler material filling at least a portion of the tubular member.

3,693,545

## COAXIAL TYPE DRUMS WITH APERTURES FOR CHANGEABLE TYPE SEGMENTS

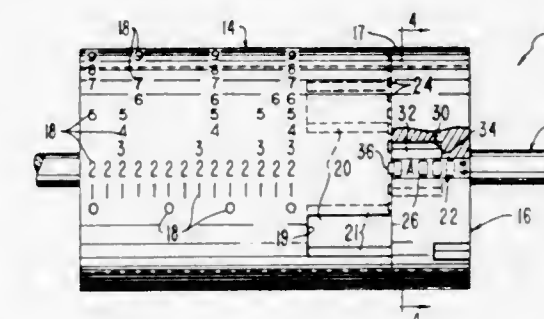
Nicholas Kondur, Jr., Rolling Meadows, Ill., and Ronald H. Mack, Plymouth, Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sept. 18, 1970, Ser. No. 73,497

Int. Cl. B41f 13/10; B41j 1/34

U.S. Cl. 101—375

6 Claims



A printing device for use in print type equipment is provided, having a shaft, a print type drum affixed to the shaft and an auxiliary type drum adjustably mounted on the shaft. The auxiliary drum is secured to the shaft in abutting relation to one end of the print drum when in its operating position. A plurality of type segments are carried by a like number of mounting apertures or slots in the periphery of the auxiliary drum and are slidably removable therefrom. The type segments are removable and insertable through peripheral access apertures provided in the abutting end of the print drum when the auxiliary drum is rotatably adjusted on the shaft to align the type segments with the access apertures, without the need to remove the drum or other parts of the assembly or perform an awkward time-consuming task to accomplish this purpose.

3,693,546

Patent Not Issued For This Number

3,693,547

## CLEANING UNIT FOR PRINTING PRESS BLANKET

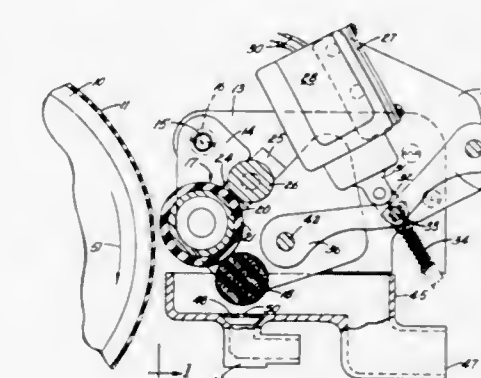
Edward T. Morgan, Mentor, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed July 27, 1971, Ser. No. 166,376

Int. Cl. B41f 35/06; B41l 41/00

U.S. Cl. 101—425

2 Claims



A cleaning unit is provided for removing ink, sludge and like matter from the blanket of a printing press or machine. In one form, the unit comprises a cleaner roll mounted for rotation and adapted to contact and be driven by the blanket during its travel. A wick roll is mounted substantially parallel to and in wiping contact with the cleaner roll, the two rolls being adapted as a unit to be moved toward and away from the blanket to place the cleaner roll in and out of contact with the blanket. However, the wick roll is periodically repositioned with respect to the cleaner roll while that roll is out of contact



with the blanket in order to present another wiping portion of the wick roll to contact the cleaner roll.

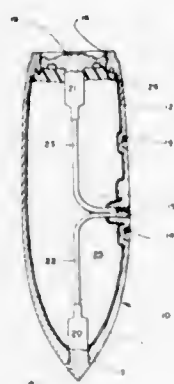
In this manner, the cleaner roll picks up the ink, sludge and other like matter from the blanket and transfers it to the wick roll. Optionally, as the wick roll continues to be periodically repositioned, the matter collected on the wick roll is removed by a plurality of jets of a cleaning fluid directed against a side of the wick roll that is disposed away from the cleaning roll.

3,693,548

## MILITARY BOMB

John E. Dereich, Edgeworth; James E. Gleeson, and Glenn J. Earle, both of Pittsburgh, all of Pa., assignors to H. H. Robertson Company, Pittsburgh, Pa.  
Filed Nov. 2, 1970, Ser. No. 86,089  
Int. Cl. F42b 25/10

U.S. Cl. 102—2



A military bomb is provided which has an elastomeric tail pad and seal formed from a composition including the reaction product of a mixture of asphaltic filler; hydroxy terminated polydiene; non-volatile organic polyisocyanate.

3,693,549

## CONVEYORS

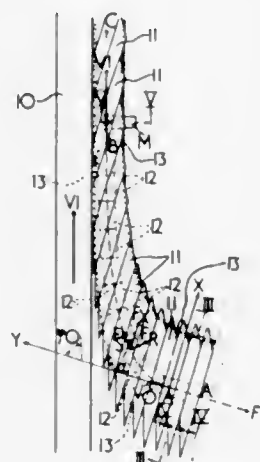
Gerard Cuenoud, and Roland Addoutte, both of Geneva, Switzerland, assignors to Dunlop Holdings Limited, London, England

Filed Nov. 9, 1970, Ser. No. 87,711

Claims priority, application Switzerland, Nov. 28, 1969, 17754/69; Great Britain, Sept. 9, 1970, 43,051/70  
Int. Cl. B65g 15/22

U.S. Cl. 104—25

13 Claims



A conveyor for passengers and/or freight, formed from a plurality of platforms, the conveyor having high speed and low speed sections joined by variable speed sections. The variation in speed is obtained by relative lateral sliding of the platforms, and the platforms are driven in the variable speed sections by linear motors and speed control is imposed on the exit from the variable speed zones, of which the following is a specification.

3,693,550  
Patent Not Issued For This Number

3,693,551  
Patent Not Issued For This Number

3,693,552

## CART STRUCTURE FOR DRAGLINE SYSTEMS

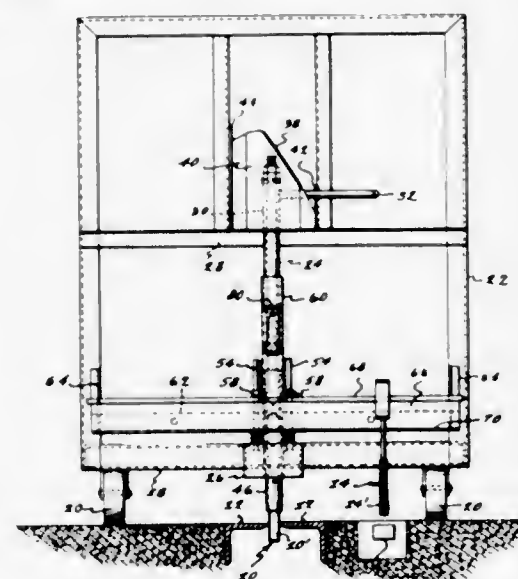
Joseph L. Brown, and Neil N. Brown, both of Charlotte, N.C., assignors to Brown Truck and Trailer Manufacturing Company, Charlotte, N.C.

Filed May 28, 1971, Ser. No. 147,889

Int. Cl. B61b 9/00

U.S. Cl. 104—172 BT

5 Claims



A cart structure is provided for dragline systems of the sort now commonly employed for material handling in freight terminals and industrial warehouses. The cart structure features an improved arrangement for related mounting of the dragline engaging drop pin and the switch actuating probe or probes, by which the latter may be lowered and latched in position for switch actuation whenever the drop pin has been lowered for dragline engagement, but are released to an upward retracted position and conditioned against lowered latching whenever the drop pin is raised to disengage the dragline.

## ERRATUM

For Class 104—172 B see:  
Patent No. 3,693,392

3,693,553

## MOTORIZED RAILWAY LOCOMOTIVE TRUCK

Richard L. Lich, Town and Country, Mo., assignor to General Steel Industries, Inc., St. Louis, Mo.

Filed March 3, 1970, Ser. No. 16,236

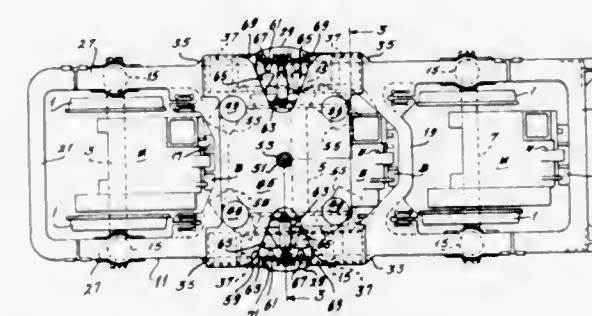
Int. Cl. B61c 3/00; B61f 3/05, 5/06

U.S. Cl. 105—136

10 Claims

A multiple axle railway locomotive truck includes a rigid truck frame spring supported on the axles, and a bolster formed with a plurality of upwardly facing nonresilient body supporting surfaces spaced apart longitudinally and transversely of the bolster, the bolster being supported on the truck frame at each side by a pair of elastomeric pad devices each of which is upwardly and inwardly inclined longitudinally of the truck so that their normals converge at a low level, preferably at that of the rail, the combination of the longitudinal spacing

of the body supports and the rail-level convergence of the pad normals ensuring elimination of weight transference resulting from tractive forces. Preferably all motor reaction connec-



tions to the truck frame are in the same direction longitudinally of the truck from the respective axles whereby to eliminate axle-to-axle weight transference resulting from opposite motor reactions on the truck frame.

3,693,554

## FLAT CAR HAVING A PLURALITY OF FIXED INTERMEDIATE BULKHEADS

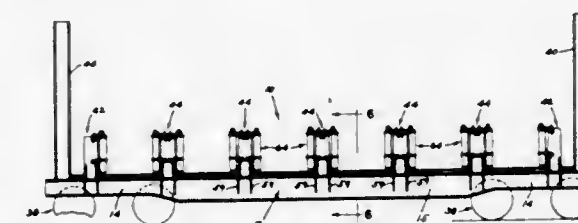
Walter E. O'Leary, 1324 White Orchard Lane, Creve Coeur, Mo., and Duane V. Thornton, 1538 Sherman Drive, St. Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed May 11, 1970, Ser. No. 36,104

Int. Cl. B65j 1/22; B60p 7/06

U.S. Cl. 105—366 R

4 Claims



A railway flat car having an end stub center sill structure adjacent each end thereof and a pair of side sills extending the length of the car. A plurality of bulkheads forming load compartments therebetween extend between the side sills and are fixed to the deck of the car for transferring loads between the side sills and the end stub center sill structures. Gates are mounted on the ends of the bulkhead for selective pivotal movement between open and closed positions thereby to restrain lading between the bulkheads against lateral movement when the gates are in a closed position.

3,693,555

## FOLDABLE SERVICE TABLE

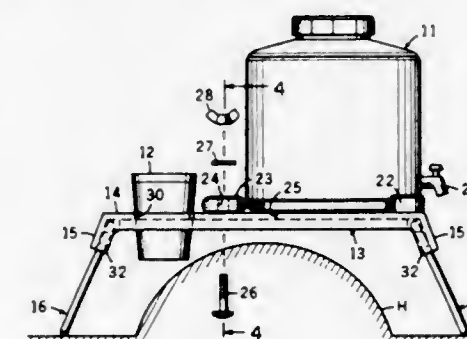
Donald R. Holtzmann, 3107 Wheaton, Bel Ridge, Mo.

Filed March 4, 1970, Ser. No. 16,484

Int. Cl. A47b 85/00

U.S. Cl. 108—25

2 Claims



This service table includes a platform supported by inclined U-shaped frames pivotally mounted to each end of the plat-

form and capable of being folded for storage. The ends of the platform are formed into apron portions extending below and outwardly of the pivot axis so that the frames bear against the aprons and stabilize the table in the erected position. The platform includes three stops, one of which is adjustable to hold various sizes of containers securely in place. The platform is also adapted to hold tapered cups.

3,693,556

## SECTIONAL SHELVING

Pierre Rous, 61 Boulevard Cornot 31, Toulouse, France

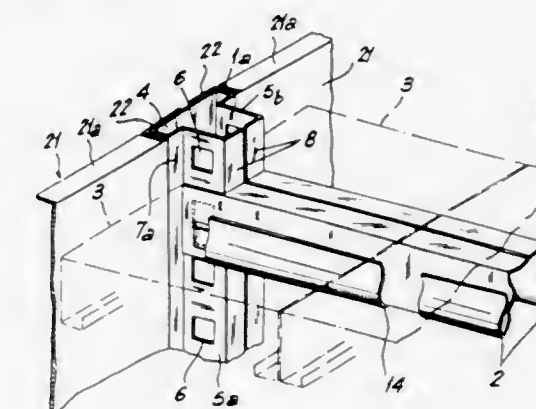
Filed Dec. 2, 1970, Ser. No. 94,320

Claims priority, application France, Dec. 11, 1969, 6942937; June 9, 1970, 7021102

Int. Cl. A47f 5/10

U.S. Cl. 108—109

1 Claim



This shelving comprising vertical uprights of T cross-sectional contour, horizontal cross-members interconnecting pairs of uprights and formed to this end with end lugs engageable in perforations of said uprights for supporting the shelving trays, comprises series of plates adapted to be disposed vertically and side by side to constitute the bottom or rear wall or panel of the shelving, each plate having a length corresponding substantially to the distance between two adjacent uprights, the inner face of said uprights being formed with two series of perforations disposed in superposed relationship for receiving the anchoring lugs formed along the vertical edges of said plates.

3,693,557

## ADDITIVE FEED CONTROL FOR AIR POLLUTION CONTROL SYSTEMS

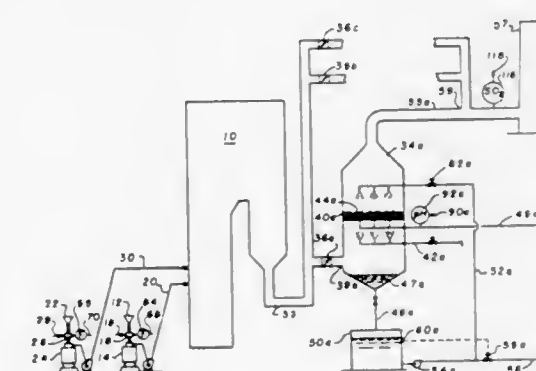
John A. Makuch, Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed July 8, 1971, Ser. No. 160,855

Int. Cl. F23b 7/00

U.S. Cl. 110—1 J

9 Claims



The method of and apparatus for controlling additive delivery to and circulation within an air pollution control system. The system of the invention controls the scrubber recycle flow rate and additive-to-fuel delivery ratio in response to an established pH operating level in the scrubber. The established pH operating level may be varied within limits



in response to the sulfur oxide content of the gas leaving the scrubber for optimum additive usage.

3,693,558

## ASH REMOVAL SYSTEM

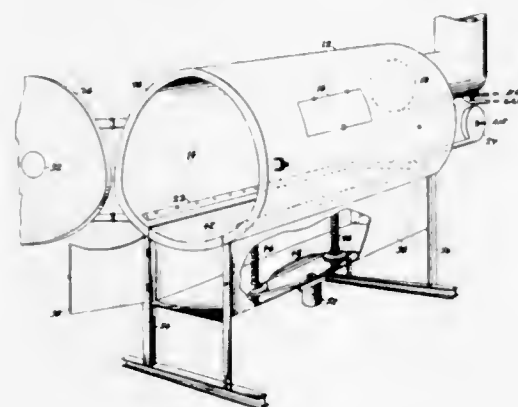
Gregory Theoclitus, Wellsville, N.Y., assignor to The Air Pre-heater Company, Inc., Wellsville, N.Y.

Filed June 14, 1971, Ser. No. 152,769

Int. Cl. F23g 5/00

U.S. Cl. 110—8 R

8 Claims



An incinerator constructed with a floor portion which is separate from the incinerator walls whereby said floor may be lowered or raised independently into a closed casing to compensate for the accumulation ash on said floor to thus provide for a sealed combustion chamber having a constant volume.

3,693,559

## POLLUTION CONTROL APPARATUS FOR COMBUSTIVE DISMANTLING

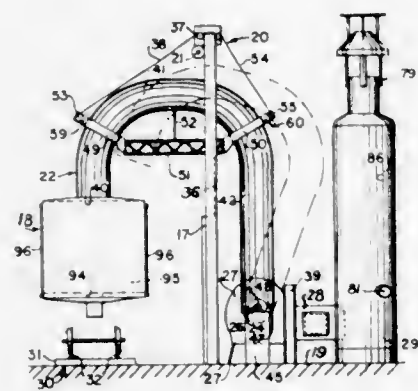
Richard H. Allen, Cincinnati, Ohio, assignor to The David J. Joseph Company, Cincinnati, Ohio

Filed Nov. 22, 1971, Ser. No. 200,809

Int. Cl. F23g 5/00, 5/12

U.S. Cl. 110—18 R

15 Claims



Apparatus for use in disposing of products of combustion created by burning a railway car which includes a snorkel which can be raised and lowered over an opening in the top of the railway car. A fan is connected to the snorkel and draws products of combustion therefrom and discharges the products of combustion into a combustion chamber. The combustion chamber is heated to cause further burning of the products of combustion to eliminate partially burned portions thereof.

3,693,560  
SELECTIVE BUTTON HOLDING ATTACHMENT FOR SEWING MACHINES

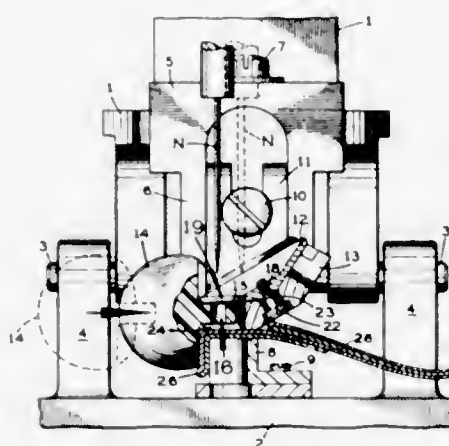
Martin Weiss, 2100 S.W. 20 Street, Miami, Fla.

Filed May 12, 1971, Ser. No. 142,500

Int. Cl. D05b 3/00

U.S. Cl. 112—114

5 Claims



A selective rotary button holding turret attachment for a power button sewing machine selectively adjustable for holding a predetermined plurality of self shank and metal shank type buttons for the thread sewing operation to fabric positioned under the turret including adjustment means for positioning the turret for the sewing of the selected type buttons to the fabric or other sheet material.

3,693,561

## AUTOMATIC EDGE GUIDE MECHANISM FOR SEWING MACHINES

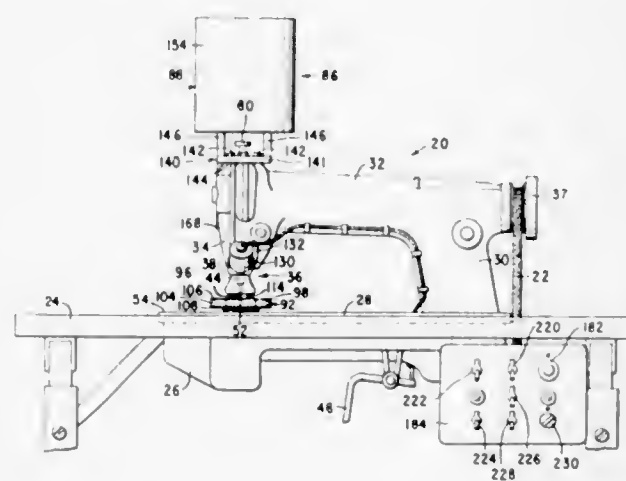
Peter Hrinko, Jr., Fair Lawn; Irvin Krause, Mountainside, and Nandor K. Latlincsics, Ringwood, all of N.J., assignors to The Singer Company, New York, N.Y.

Filed June 5, 1970, Ser. No. 43,872

Int. Cl. D05b 19/00, 27/14

U.S. Cl. 112—121.11

6 Claims



An edge guidance system which permits an otherwise conventional sewing machine automatically to sew a work piece along a predetermined margin. The automatic edge guide mechanism has a margin guidance means including a sensor to sense edge of the work piece prior to sewing and a servomotor operative responsive to the sensor reversibly to drive a guide ring mounted parallel to the work surface and about the stitch forming instrumentalities of the sewing machine, which ring is alternately operative with the feeding mechanism to shift the edge of the work piece into marginal alignment.

3,693,562

## OFF-THE-ARM SEWING MACHINE AND CUTTING ASSEMBLY

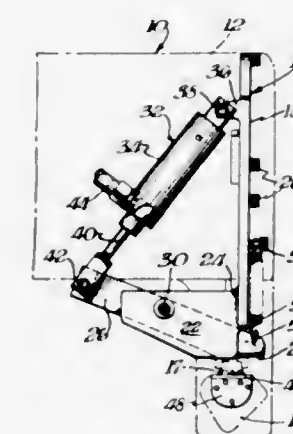
Billy L. Speer, Campbellsville, Ky., assignor to Spear Systems, Inc., Campbellsville, Ky.

Filed Oct. 23, 1970, Ser. No. 83,482

Int. Cl. D05b 37/04

U.S. Cl. 112—130

2 Claims



Off-the-arm sewing machine and cutting assembly comprises machine having longitudinally oriented machine arm and cutting assembly including mounting plate secured to sewing machine. Blade mounting arm is integral with mounting plate, and movable cutter blade is pivotally connected at its mid-portion to blade mounting arm for movement in plane substantially perpendicular to longitudinal axis of sewing machine arm. Motivating structure connected between movable cutter blade and mounting plate moves cutter blade toward and away from sewing machine arm. Stationary cutter blade is secured to free end portion of sewing machine arm. Cutter blades cooperate with each other to cut material positioned in path of motion of movable cutter blade when motivating structure is actuated.

3,693,563

## ORNAMENTAL CAM SELECTING DEVICE FOR ZIG ZAG SEWING MACHINE

Noboru Kasuga, Kamiichibun-Kata-Machi, Japan, assignor to Janome Sewing Machine Co., Ltd.

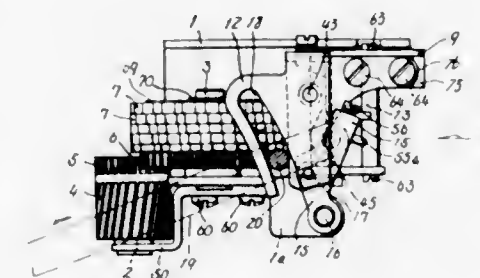
Filed Dec. 22, 1970, Ser. No. 100,675

Claims priority, application Japan, Dec. 26, 1970, 44/123000; Dec. 26, 1970, 44/123001

Int. Cl. D05b 3/04

U.S. Cl. 112—158 A

11 Claims



A cam selecting device comprising a plurality of ornament cams packed in a row, a cam follower provided opposite to the ornament cams and shiftable along the cams, a selecting cam for shifting the cam follower along the ornament cams, and a rack mechanism for releasably securing the cam follower in any predetermined positions along the ornament cams so that precise cam selecting relation of the constituent parts may be established to obtain correct ornamental zigzag stitches.

3,693,564

## CONTROL MECHANISM FOR SEWING MACHINE

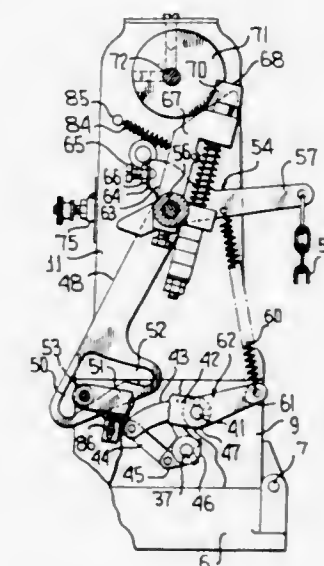
James C. Hsiao, Chicago, Ill., assignor to Union Special Machine Company, Chicago, Ill.

Filed April 30, 1971, Ser. No. 138,979

Int. Cl. D05b 1/24

U.S. Cl. 112—176

16 Claims



This disclosure relates to a control mechanism for a blind-stitch tacker wherein a single control device is provided for progressively moving a node former and work clamp of a sewing machine into clamping engagement with a workpiece, and further movement of the control mechanism results in the initiation of the stitching operation. The control mechanism includes a multiple lever arm bell crank with different ones of the lever arms thereof actuating different mechanisms of the sewing machine. The control mechanism also includes a cam and cam follower for actuating the node former and work clamp with there being an overcenter position wherein further movement of the bell crank does not result in further movement of the node former and work clamp. When the bell crank has moved to this position, a spring retains the bell crank in its operative position without assistance by the operator. The control mechanism is automatically returned to its inoperative position upon the termination of a predetermined sewing cycle.

3,693,565

## LOCKSTITCH LOOP TAKERS FOR SEWING MACHINES

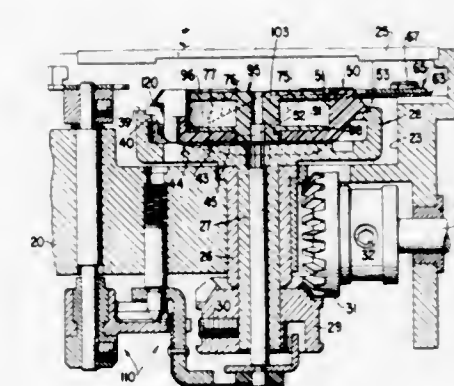
Stanley J. Ketterer, Jamesburg, N.J., assignor to The Singer Company, New York, N.Y.

Filed April 20, 1971, Ser. No. 135,671

Int. Cl. D05b 57/08

U.S. Cl. 112—184

9 Claims



A lockstitch, rotary hook including a stationary bobbin case with a bobbin thread tensioning spring located diametrically opposite the place of loop seizure of the hook and with a passageway for the bobbin thread to the stitching point extending between the bobbin case and the rotary hook and being subjected to periodic bobbin thread pull-off action of



relatively moving surfaces on the bobbin case and the rotary hook.

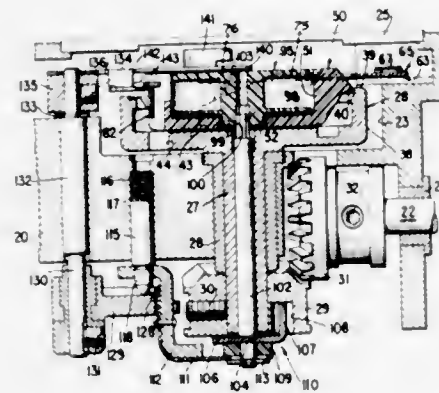
3,693,566

# BOBBIN THREAD REPLENISHING MECHANISM FOR SEWING MACHINES

Stanley J. Ketterer, Jamesburg, N.J., assignor to The Singer Company, New York, N.Y.

Filed April 23, 1971, Ser. No. 136,929  
Int. Cl. D05b 57/14, 59/00

U.S. Cl. 112—184



A lockstitch sewing mechanism in which needle thread may be directed to the bobbin for bobbin thread replenishment by a novel route beneath the level of the path of the loop seizing beak of the loop taker together with means for introducing and snubbing the thread on a plain cylindrical bobbin hub of small diameter whereby an appreciable increase in bobbin thread capacity is obtained.

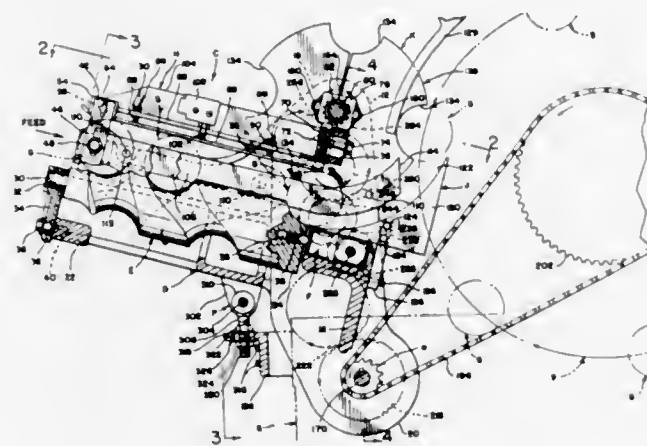
3,693,567

# INFEED MECHANISM FOR CAN MACHINERY

Donald P. Dalman, Hastings, Mich., assignor to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Filed Sept. 29, 1970, Ser. No. 76,578  
Int. Cl. B21d 43/16

U.S. Cl. 113—115



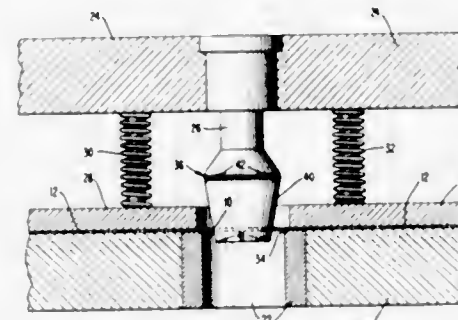
An infeed mechanism for can machinery includes a frame mounting a spiral feed screw, a guide and a transfer wheel. All of these elements are quickly detachable so that the infeed mechanism can be quickly modified for use with different size cans. The frame of the infeed mechanism is pivotally mounted so that the transfer wheel can be moved toward or away from a can machine.

# METHOD OF FORMING HEAT EXCHANGER FIN COLLARS

Francis G. McKee, 232 Fernledge Drive, New Kensington, Pa., and Roger C. Haddon, 4175 Ivanhoe Drive, Apt. 513, Monroeville, Pa.

Continuation-in-part of Ser. No. 45,341, June 11, 1970, abandoned, which is a continuation-in-part of Ser. No. 748,725, July 30, 1968, abandoned. This application March 29, 1971, Ser. No. 128,694  
Int. Cl. B21d 19/08

5 Claims U.S. Cl. 113—118 C



Method of forming integral extending collars from relatively thin aluminum alloy sheet material by incremental and composite flanging and ironing operations on portions of such sheet that overlie an aperture in a female die member by passage of a selectively sized and shaped punch therethrough.

3,693,569

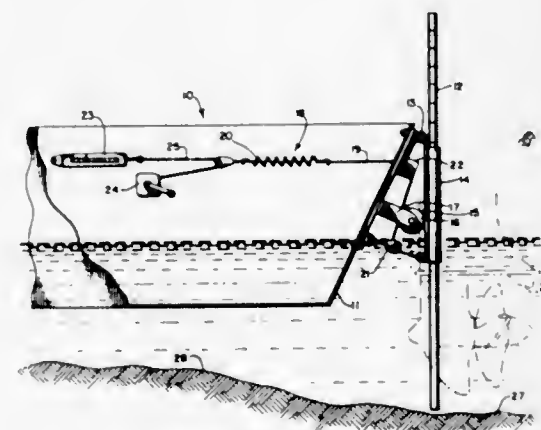
# BOAT TURN-BRAKE

Louis E. Chauvin, 735 Esplanade Ave., New Orleans, La.

Filed May 14, 1971, Ser. No. 143,321  
Int. Cl. B63b 35/00

U.S. Cl. 114—0.5 R

8 Claims



The present invention is primarily concerned with a device and its method of use with small fishing, utility and pleasure boats to prevent their grounding on the water bottom or to protect their propulsion unit from contact therewith. This is accomplished by the present invention which comprises an adjustable shaft member fitted in a cooperating support assembly mounted on the boat. The elevation of the shaft is adjusted such that its end strikes the water bottom before the bottom of the boat or its propulsion unit does so.

3,693,570

# HYDROFOIL WATERCRAFT

Ivan Ivanovich Erlykin, ulitsa E fremova, 4, kv. 2; Alexandr Ivanovich Vasin, Jubileiny bulvar, 7, kv. 17; Mikhail Mikhailovich Korotkov, Sormovskoe shosse, 4, kv. 2; Vadim Yakovlevich Maximov, ulitsa Svetlayarskaya, 50, kv. 3; Ivan Ivanovich Matveev, ulitsa L. Tolstago, 6, kv. 75; Vladimir Alexandrovich Kadysh, ulitsa C hernyakhorskago, 8, kv. 6; Valentin Vladimirovich Volkov, prospekt Gagarina, 20, kv. 55; Vladlen Borisovich Firsell, ulitsa Zavodsky Park, 18, kv. 1; Vladimir Dmitrievich Bulatkin, ulitsa Sudostroitel'naya, 4, kv. 1; Igor Evgenievich Malekhanov, ulitsa Dzerzhinskogo, 8, kv. 19, and Stanislav Nikolaevich Suldin, ulitsa Komintern, 123, kv. 2, all of Gorky, U.S.S.R.

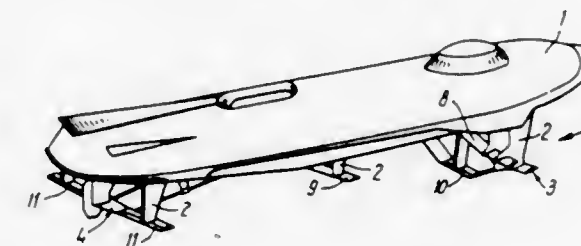
Filed May 20, 1971, Ser. No. 145,180

Claims priority, application U.S.S.R., Dec. 9, 1970, 1498470; Sept. 7, 1970, 1465851

Int. Cl. B63b 1/26

U.S. Cl. 114—66.5 H

7 Claims



The watercraft has a fore hydrofoil and an aft carried hydrofoil arranged in the "tandem" manner.

The fore hydrofoil includes a central portion and two side portions of which the upper extremities are located above the water line corresponding to the cruising speed of the watercraft.

The angles of deadrise, or lateral rise of the side portions of the fore hydrofoil are diminishing in the direction from the diametral central plane of the watercraft toward the sides thereof. This diminishing of the angles of lateral rise starts from the depth of submergence in respect of the cruising speed water line, not smaller than half a chord of the fore hydrofoil measured in place of intersection thereof with the water line corresponding to the cruising speed.

3,693,571

# SAIL RIG

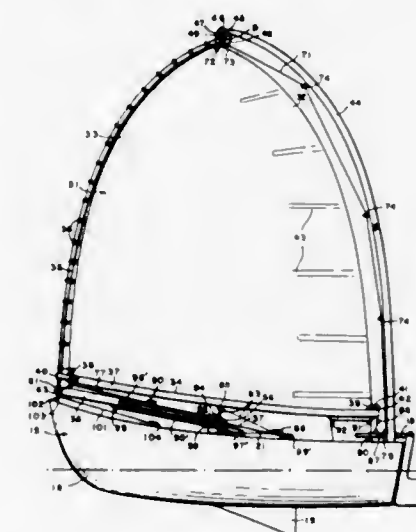
Earle F. Hiscock, Old Harbor Road, Chatham, Mass.

Filed Dec. 14, 1970, Ser. No. 97,732

Int. Cl. B63h 9/04

U.S. Cl. 114—102

19 Claims



This invention relates to a sail rig adapted for use with any sail propelled vehicle which permits both the tack and the clew of the sail to be positioned independently relative to the

3,693,572

# MARINE FENDER

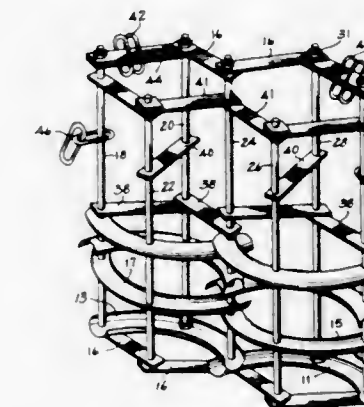
Stanley R. Crook, 16 Grenelle St., Bridgeport, Conn.

Continuation-in-part of Ser. No. 799,159, Feb. 14, 1969, abandoned. This application June 22, 1970, Ser. No. 48,294

Int. Cl. B63b 21/56

U.S. Cl. 114—219

14 Claims



The invention discloses a marine fender which is of unique scissors-type construction and is made of readily available vehicle tires to provide a rugged flexible fender for boat and pier use and that is easily built to any size.

3,693,573

# MULTI-PURPOSE BOAT FENDER

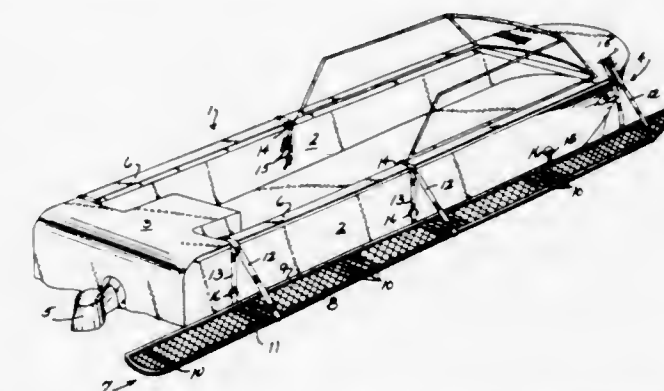
Willard J. Murphy, R.R. #1, St. Cloud, Minn.

Filed Aug. 20, 1970, Ser. No. 65,608

Int. Cl. B63b 29/02

U.S. Cl. 114—219

8 Claims



A boat hull has an elongated, flat platform suspended by straps from the gunwale to serve as a fender along the outside surface of the hull sides. The fender has suction cups which releasably hold it to the hull and with the straps support the platform in a horizontal position. The suction cups are hinged to the inside longitudinal edge of the platform so that the platform can be swung upwards to a vertical position. Additional platforms can be provided for the stern and bow of the boat



and extendable rods can be connected between various platforms and the suction cups to adapt the assembly for use with various hull shapes.

3,693,574

**PORTABLE BOAT LANDING APPARATUS**

Roy F. Dickey, 5400 Skiles, Kansas City, Mo.  
Filed Nov. 27, 1970, Ser. No. 93,052  
Int. Cl. B63b 21/04

U.S. Cl. 114—219

4 Claims



A portable landing apparatus for use on a boat or similar vessel adapted to be beached or driven ashore during landing thereof to protect the bottom surface of the boat during beaching of the latter. The apparatus employs an elongated, rigid member disposed transversely on the bottom surface of the boat and releasably secured thereto by a pair of spring-loaded fastening assemblies adapted to be mounted over the gunwale on each side of the boat for yieldably biasing the rigid member into engagement with the bottom surface of the boat, and a securing cable adapted to be attached to the bow of the boat for holding the member from sliding toward the rear of the boat during beaching of the latter.

3,693,575

**SHIP'S DRIVE AND METHOD OF OPERATING THE SAME**

Rudolf Mades, Brandenburgische Strasse 6, Berlin, 30, Germany

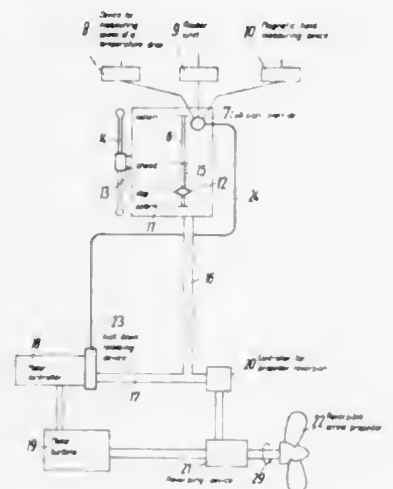
Filed Dec. 22, 1970, Ser. No. 100,676

Claims priority, application Germany, Dec. 27, 1969, P 19 65 794.4

Int. Cl. B63h 3/10

U.S. Cl. 115—34 R

10 Claims



A ship's drive and a method of operating it. The drive has a prime mover which can operate at a first power output, at a higher second power output and at a highest third power output. A screw propeller is driven in rotation by the prime mover and includes several blades which are mounted on it angularly adjustable so that they can be displaced either in leeward or, optionally, in luffward direction between a first, a second, and a third position which respectively correspond to full ahead, astern and emergency full astern drive mode. A control unit is provided which couples the propeller with the prime mover in such a manner that the blades can be displaced towards the first position only in leeward direction and only when the

prime mover is at its first power output. When the prime mover delivers its second power output the blades can be displaced towards the second position only in luffward direction. In case of an emergency stop, an override arrangement displaces the blades to the third position in luffward direction and irrespective of their previous position while simultaneously initiating the operation of the prime mover at its third and highest power output.

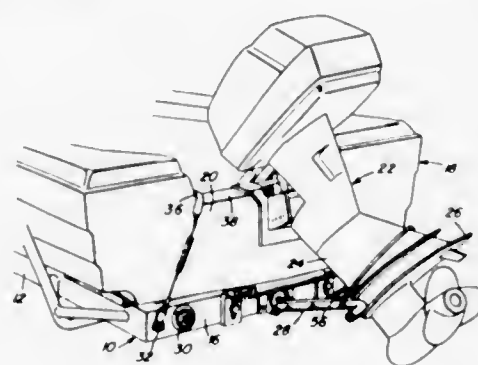
3,693,576

**OUTBOARD MOTOR STABILIZER**

James A. Driscoll, 506 Roosevelt, Sand Springs, Okla.  
Filed Jan. 6, 1971, Ser. No. 104,422  
Int. Cl. B63h 5/12

U.S. Cl. 115—41 R

10 Claims



An elongated outboard motor prop including a first forked end for embracingly engaging the front side of the lower end of the upstanding propeller shaft housing of an outboard motor and provided with strap means for releasably securing the propeller shaft housing in the first forked end of the prop. The second end of the prop has a mounting bracket oscillatably supported therefrom for swinging of the prop relative to the mounting bracket about an axis extending transversely of the second end of the prop. The mounting bracket is in turn oscillatably supported from a mounting plate for swinging about an axis relative to the latter disposed at right angles to the first mentioned axis and the mounting plate is provided with means for at least semi-permanent securement to the rear transverse cross member of a trailer frame. This mounting of the prop enables the latter to be used as a prop in securing an associated outboard motor in a tilted position or to be swung to an out of the way position extending along and disposed behind the rear transverse frame member of the associated boat trailer.

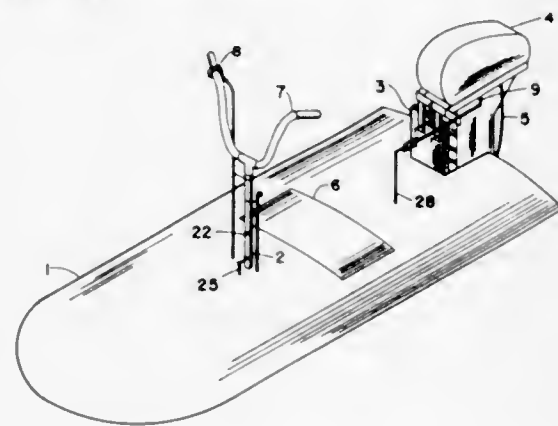
3,693,577

**MOTOR DRIVEN AQUATIC DEVICE**

Martin Sade, 407 Rogers Ave., Glen Burnie, Md.  
Filed April 23, 1970, Ser. No. 31,272  
Int. Cl. B63b 35/00

U.S. Cl. 115—70

6 Claims



A balance-steered motor-driven aquatic device having a single hull with a partial tunnel and adjustable height outboard

motor mount means astern, and a rigid, vertically telescoping handle bar post for a standing operator forward, with a pressure-grip throttle control including deadman safety cut-off integral with a handle on the post.

3,693,578

**Patent Not Issued For This Number**

3,693,579

**TEMPERATURE INDICATOR**

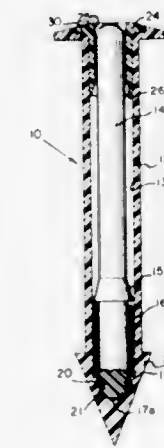
George G. Kiewer, Fresno, Calif., assignor to Commodity Marketers, Inc., Fresno, Calif.

Filed Nov. 12, 1964, Ser. No. 410,603

Int. Cl. G01k 11/06

U.S. Cl. 116—114.5

10 Claims



A temperature responsive device having an extensible indicator rod or staff which is held in place within a bored shell by a ring of fusible material disposed within a generally toroidal chamber formed between confronting annular grooves on the staff and the shell adjacent complementally nestable end portions thereof.

3,693,580

**MEMORY BOARD**

Walther Thierer, Nagold, Germany, assignor to Firma Adolf Hofele, Nagold, Germany

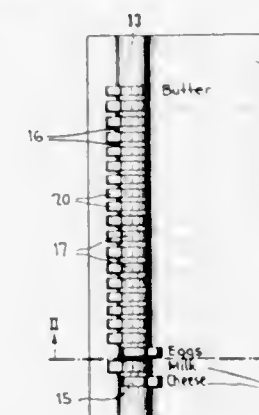
Filed Aug. 27, 1971, Ser. No. 175,449

Claims priority, application Germany, Sept. 3, 1970, G 70 32 909.8

Int. Cl. G09f 9/00

U.S. Cl. 115—134

4 Claims



A memory board having a column of items listed on its face and having an individual rotary indicator or pointer positioned abreast of each item for rotary movement between angular positions in which each pointer may either be angularly positioned to designate its associated item or else placed in an inoperative position. The board is formed with a rearwardly opening groove which is bridged by a plurality of relatively

spaced apart bearing strips defining internal bearing surfaces disposed on a common cylinder having its cylindrical axis forwardly of and parallel to the board, the opposite circumferential ends of said strips being connected to the board at opposite sides of the slot. Rotary indicators having pointers projecting through the spaces between adjoining bearing strips have oppositely directed co-axial bearing portions journalled in relatively adjacent bearing strips respectively. The distances between the circumferentially directed ends of the respective bearing strips are somewhat less than the diameters of the bearings to be received therein, and the respective indicators and their said bearings are of annular resiliently deformable construction, whereby they may be snap-fitted into operative positions in the bearing strips.

3,693,581

**TONER DISPENSER CIRCUIT FOR ELECTROSTATOGRAPHIC APPARATUS**

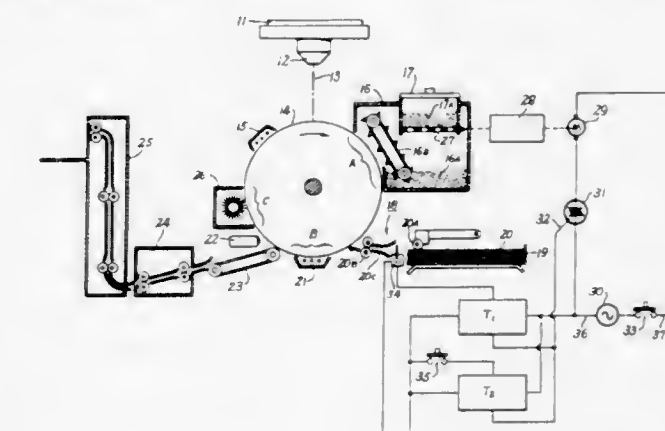
Donald J. Quant, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Oct. 29, 1970, Ser. No. 85,049

Int. Cl. G03g 13/00

U.S. Cl. 118—7

11 Claims



In an electrostatographic reproduction apparatus, a toner control system is provided for regulating the quantity of toner supplied to the developer station, said control system operating in response to signals produced by the copy counter switch and employing an electric timing mechanism for controlling the duration of application of the toner to the developer mechanism.

3,693,582

**APPARATUS FOR APPLYING A METAL COATING TO AN ELONGATED METAL ARTICLE**

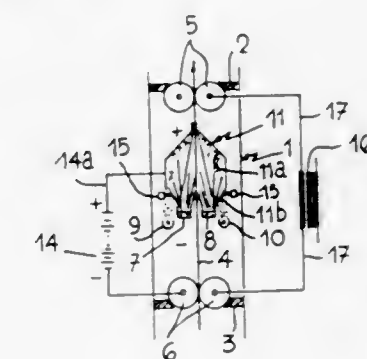
Leon Joseph Eugene Delcour, Liege, and Dominique Thomas Francois Stree, Cointe-Sclassin, both of Belgium, assignor to Cockerill-Ougree-Providence Et Esperance-Longdoz, en abregé "Cockerill," Seraing-Liege, Belgium

Filed Feb. 10, 1970, Ser. No. 10,169

Claims priority, application Belgium, Feb. 24, 1969, 42,121  
Int. Cl. C23c 13/12

U.S. Cl. 118—49.5

11 Claims



An apparatus for applying a metallic coating to an elongated metal article. The article to be coated is transported



through an enclosure with closure gates at the ends. A source of ionized metallic atoms is positioned around the article. Also within the enclosure is a tubular deflection screen at a potential which is of the same polarity as the ionized atoms. The deflector screen deflects back towards the article the ionized atoms produced by the source which do not strike the article when emitted by the source.

3,693,583

## VAPOR DEPOSITION APPARATUS

Emile Vanderschueren, Schagen, Netherlands, assignor to European Atomic Energy Community (Euratom), Brussels, Belgium

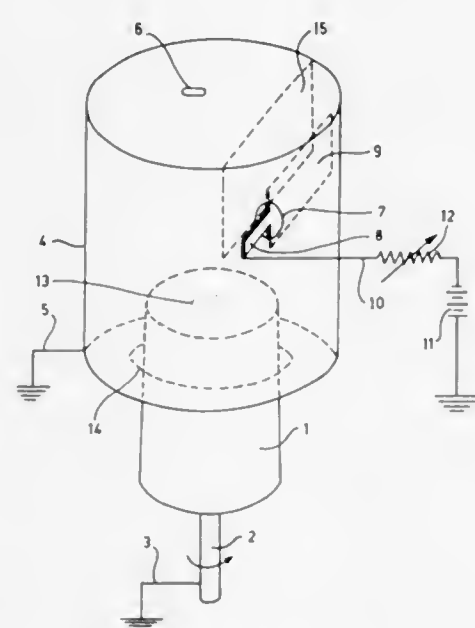
Filed April 22, 1969, Ser. No. 818,270

Claims priority, application Belgium, June 28, 1968, 60325

Int. Cl. C23c 13/12

U.S. Cl. 118—49.5

1 Claim



An apparatus for producing monocrystalline deposits on a substrate by vacuum evaporation. The source of vapor to be deposited is a rotating cylinder which is off center with respect to an electron beam which strikes it and causes vaporization. The chamber walls are grounded and the substrate is held at a low positive potential rather than a high negative potential as is the usual practice.

3,693,584

## APPARATUS FOR IMPREGNATING POROUS SUBSTRATES WITH TREATING LIQUIDS

Jackson H. Barnett, Jr., 84 N. Crest Road, Chattanooga, Tenn.

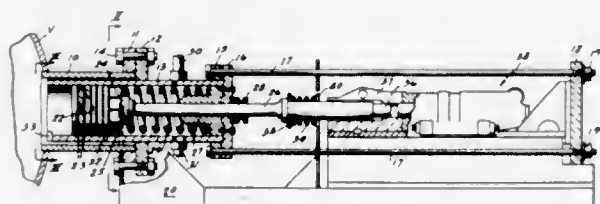
Division of Ser. No. 877,403, Nov. 17, 1969, Pat. No.

3,632,409. This application July 12, 1971, Ser. No. 161,775

Int. Cl. B27k 3/10

U.S. Cl. 118—50

6 Claims



Apparatus for impregnating a porous substrate such as wood with a treating liquid including a cylinder which is arranged to be secured to a pressure vessel, a free piston

reciprocable in the cylinder and being exposed to the pressure conditions in the vessel, a striker pad and striker rod assembly cooperating with the free piston, a bias spring acting on the striker rod to urge the rod and striker pad in opposition to the fluid pressure acting on the piston, damping means urging the rod against the striker pad, and impacting means for periodically striking the rod, the damping spring having a fundamental frequency differing from the fundamental frequency of the piston-striker pad-bias spring assembly so that the piston delivers variable amplitude energy pulses into the vessel.

3,693,585

## ROLL COATING APPARATUS FOR PANEL PRODUCTS

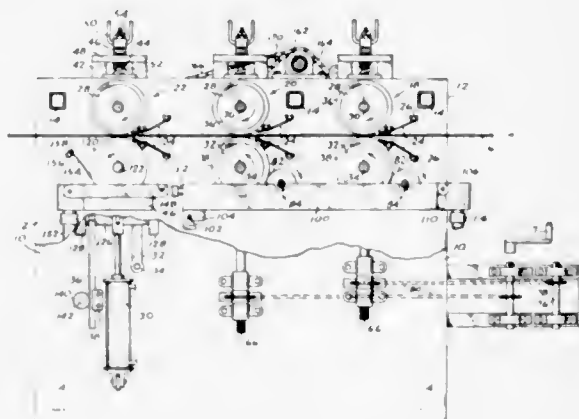
Darrel Lon Reeve, and Stanley Mortensen, both of Eugene, Oreg., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Filed Aug. 6, 1970, Ser. No. 61,587

Int. Cl. B05b 13/02

U.S. Cl. 118—104

3 Claims



Roll coating apparatus for coating plywood and other panels comprises coating applicator means and wiping means arranged sequentially for processing the underside of a horizontally positioned panel. The applicator means preferably comprises a roll coater. The wiping means comprises an upper pressure roll, a lower wiping roll, and mounting means mounting the rolls rotatably in axially aligned, cooperating relation a predetermined distance from each other. Wiping roll drive means are connected to the wiping roll for reversely rotating it in a direction opposed to the panel feed direction. The applicator means applies coating material to the underside of the panel while the wiping means distributes the coating material and wipes off the excess to produce a highly finished surface. The sequence may be applied to panels moving rapidly along a high speed production line.

3,693,586

Patent Not Issued For This Number

3,693,587

## APPARATUS FOR TREATING WOVEN PLASTIC BANDAGES USED IN ORTHOPEDIC CASTS

Roger Anderson, 5421 First Ave. S., Seattle, Wash.

Filed April 10, 1969, Ser. No. 815,085

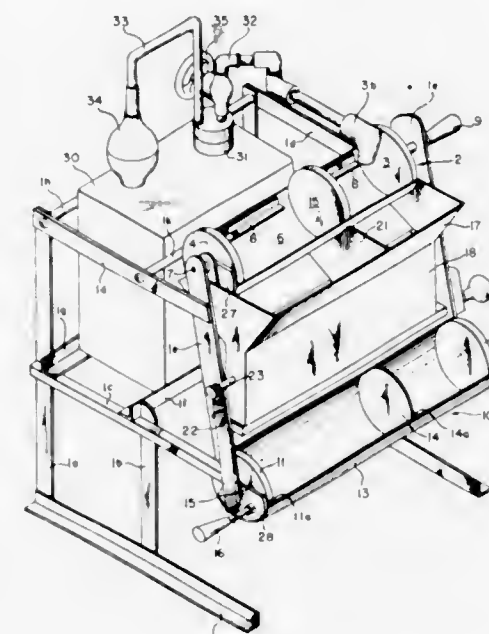
Int. Cl. B05c 3/09, 5/00

U.S. Cl. 118—304

4 Claims

Disclosed herein are an apparatus and method for uniformly wetting knitted plastic bandages used to form orthopedic casts and splints with measured amounts of treating solution in which portions of the fibers making up the bandage are soluble in certain chemical solutions. The apparatus comprises an

upper tray rotatable about its axis for holding a measured amount of the treating solution or fluid, a lower tray rotatable about its axis for holding a roll of bandage material, and dis-



tributing means positioned between the upper and lower trays for uniformly distributing the treating solution over the bandage. The tray may be sectioned to handle bandages of different widths.

3,693,588

## APPARATUS FOR THE INTERIOR COATING OF A CELLULOSE TUBE

Gunter Gerigk, Oberursel/Taunus, and Wolfgang Klendauer, Wiesbaden, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Division of Ser. No. 783,892, Dec. 16, 1968, Pat. No.

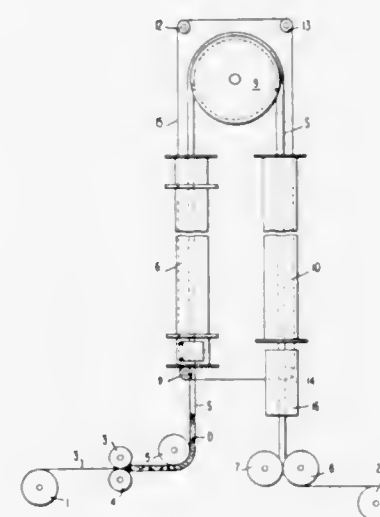
3,556,701. This application Nov. 5, 1970, Ser. No. 87,129

Claims priority, application Germany, Dec. 18, 1967, P 16 21 990.2

Int. Cl. B05b 13/6; B05c 7/04, 8/04

U.S. Cl. 118—407

2 Claims



This invention relates to an apparatus for the continuous interior coating of a tubular material which comprises a pair of squeeze rolls through which the tube is passed in a substantially horizontal direction, a guide roll for deflecting the tube into a substantially vertical direction, heating means through which the tube passes in the substantially vertical direction, and a second pair of squeeze rolls through which the tube passes after leaving the heating means.

3,693,589

## PAINT SHIELDS, PARTICULARLY FOR SHIELDING CARPETS

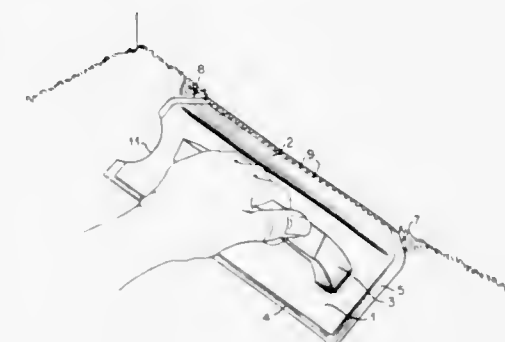
Joseph W. Knox, 18 Magnolia Ave., Dover, N.J.

Filed Feb. 26, 1971, Ser. No. 119,207

Int. Cl. B05b 15/04

U.S. Cl. 118—504

11 Claims



A paint shield having a first portion with a handle thereon, and a second portion extending from the first portion at an angle of 90° or more for engaging the carpet. The free lengthwise edge of the second portion has a plurality of cut-out, serrations, or the like formed therein to enhance the shielding characteristics of the paint shield.

3,693,590

## ANIMAL CONDITIONED AVOIDANCE APPARATUS

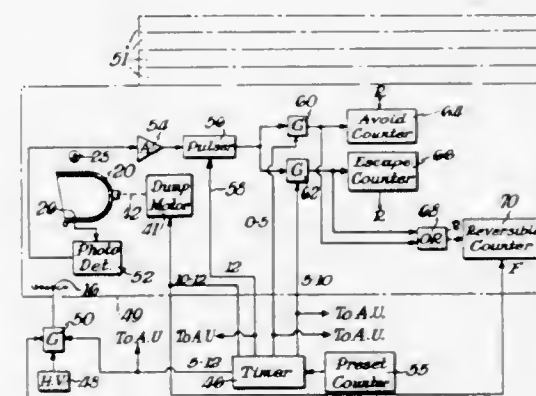
John C. Bowers, Wilmington, Del., assignor to Bowers Instrument Company

Filed April 21, 1971, Ser. No. 135,920

Int. Cl. A01k 45/00

U.S. Cl. 119—1

10 Claims



The apparatus disclosed includes a cage having a surface on which a small animal can stand. The surface includes a mechanism for stimulating, by means of an electrical shock or otherwise, the animal into activity such that the animal jumps into a nearby escape unit. A sensor detects the animal's entry into the escape unit. Counters responsive to the sensors and to the energizing means determine whether the animal has entered into the escape unit prior to or subsequent to the application of the stimulus. An automatic device cuts off the unit in the event the animal does not respond at all to this stimulus after a predetermined number of times. This apparatus permits the characteristic effects of toxic products, mental retardation, various drugs, other pharmaceuticals and the like to be studied entirely automatically without the need for continuously monitoring the operation by a human operator.



3,693,591

**BABY SAVER FOR TROPICAL FISH**

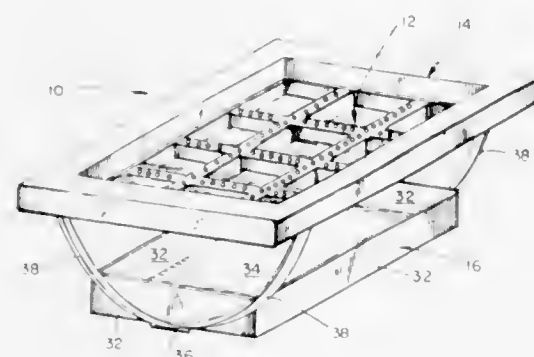
Robert Stasio, 2302 85th St., Brooklyn, N.Y.

Filed May 6, 1971, Ser. No. 140,841

Int. Cl. G01k 61/00

U.S. Cl. 119—3

10 Claims



A device for separating newly born fish from other fish in a fish aquarium, the device consisting of a float supporting a generally opaque chamber-equipped frame on its underside and which carries a nesting tray spaced below the opaque frame. The frame is provided with small openings so that new-born fish may escape, from the adult fish and enter safely into the chamber-equipped frame, the openings being designed so that the new-born fish may only pass upward therethrough and cannot return downward again.

3,693,592

**HORSE BARN**

Glen Melvon Little, P.O. Box 244, Burns, Oreg.

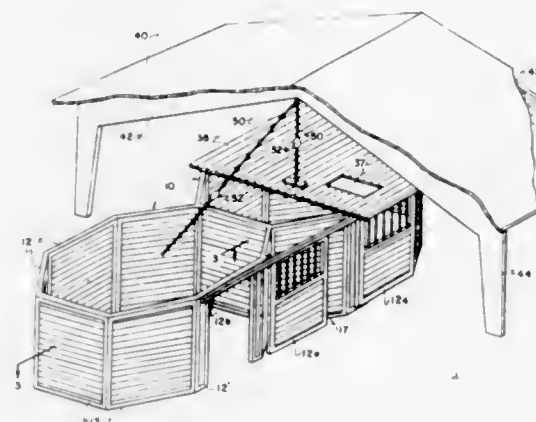
Continuation-in-part of Ser. No. 20,008, May 15, 1970,

abandoned. This application Nov. 16, 1970, Ser. No. 89,619

Int. Cl. A01k 01/00

U.S. Cl. 119—16

7 Claims



A horse barn containing a plurality of stalls octagonally shaped for anti-casting purposes and serially arranged in one or more rows. The individual stalls are formed of prefabricated wall and door sections comprised of tongue-and-groove wood slates reinforced with a series of tie rods and framed by channel iron members. These modular sections are secured together and to floor anchors by welding. A subroof formed over the top of the stall array provides storage for hay or other feed with a separate upper roof supported over the entire barn structure for providing protection from the elements.

3,693,593

**AUTOMATIC POULTRY FEEDING DEVICE**

Harry John Ackermann, 332 S. Sycamore, Monticello, Iowa;

Louis Dewey Blessin, 2327 Dresden Ave., Rockford, Ill.;

Leroy Nicholas Hermann, R. R. #1, Box 193A, Roscoe, Ill.;

Max Henry Ririe, 1635 T Street, Gering, Nebr., and Everett

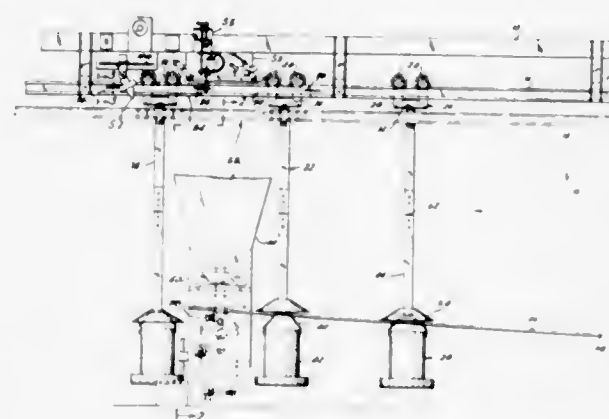
John Swinbank, 10524 Ventura Blvd., Loves Park, Ill.

Filed May 7, 1971, Ser. No. 141,144

Int. Cl. A01k 05/02, 39/00

U.S. Cl. 119—52 AF

5 Claims



A poultry feeding device comprising an overhead trolley system, motor means for driving said system, a plurality of trolleys adapted for congruent movement with said trolley system at spaced positions therewith, a covered silo feeder suspended from each of said trolleys, a feed station portion of said trolley system, means for lifting the cover of a silo feeder approaching said feed station, a feed dispenser at said feed station, said dispenser having a discharge end capable of communication with the open upper end of a silo feeder located at said feed station, electrically operated gate means for controlling the flow of feed through said discharge end of said dispenser and a control means on the overhead trolley at said feed station comprising an electrical circuit, a switch means wired to alternately operate said motor means and said gate means, a first actuator wired to said switch means engageable by a trolley having a hanging feeder approaching said feed station for changing the condition of said switch to shut off flow of current to said motor means and to complete the circuit to said gate means for discharging feed into the open upper end of said silo feeder in register therewith, a second actuator wired to said switch means responsive to a silo feeder receiving feed from said feed dispenser for changing the condition of said switch to shut off flow of current to said gate means and to complete the circuit to said motor means.

3,693,594

**Patent Not Issued For This Number**

3,693,595

**HOLDER FOR TEMPORARILY RESTRAINING AND SUSPENDING A LIVE ANIMAL**

Stanly J. Stewart, R. R. 2, Carlinville, Ill.

Filed May 12, 1971, Ser. No. 142,507

Int. Cl. A62b 35/00; A01k 29/00; A61d 3/00

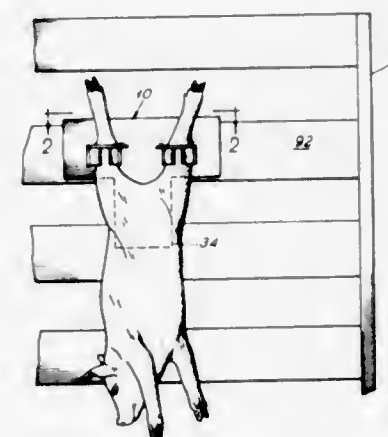
U.S. Cl. 119—98

12 Claims

Holder is used for temporarily restraining and suspending a live animal, such as a pig, by the hind legs during a castration, vaccination, or other treatment procedure. A base having a pair of adjustably spaced vertical webs enables it to be secured to any convenient upright support, such as a rail on a fence or gate, or the side of a farrowing crate or pen. Opposite pairs of elongated jaw members extend forwardly from the base to grip the animal's hind legs when suspended in a head-down posi-

tion. Each pair of jaw members has a plurality of separate, leg-embracing pockets spaced at different distances from the base. Smaller animals are suspended from rearward pockets nearer the base, and larger animals are suspended from for-

means at that free end, the collector includes a container part located wholly within the steam jacket, an appendage thereof



ward pockets farther from the base. To accommodate the larger legs of larger animals, the pockets increase in size from rearward to forward positions. The spacing between pairs of jaw members is adjustable for animals of different sizes.

3,693,596

**DOG LEASH RETRIEVER**

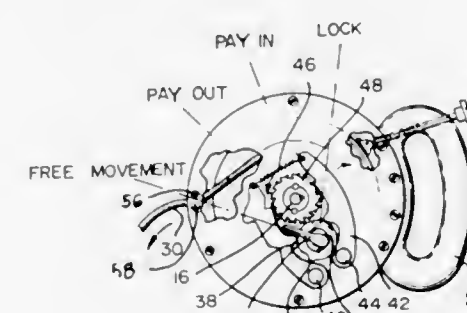
Joseph Croce, and Kurt Bayer, both of 742 Deerpark Ave., Babylon, N.Y.

Filed June 1, 1971, Ser. No. 148,828

Int. Cl. A01k 27/00

U.S. Cl. 119—109

5 Claims



A reel type spring wound extendible animal leash controlled by cam and gears under manual setting of a select lever to have four different positions: locked leash; free movement of leash; leash restrained to be payed but not to be wound up; and leash restrained to be wound up but not unwound.

3,693,597

**HIGH-PRESSURE FEEDWATER PREHEATER**

Fritz Kelp, 1 Stettiner Str., Erlangen, Germany

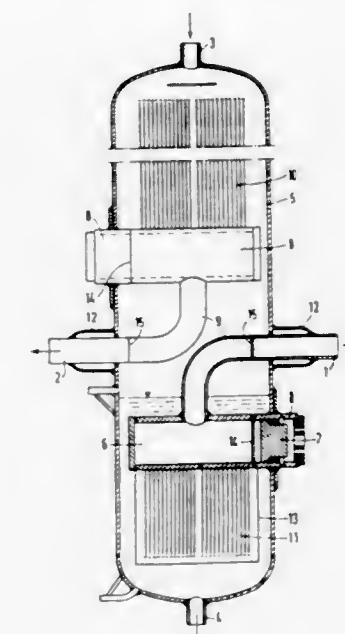
Filed July 19, 1971, Ser. No. 163,653

Claims priority, application Germany, July 18, 1970, G 70 27 187.3

Int. Cl. F22b 1/16

2 Claims

In a high-pressure feedwater preheater having a steam jacket and containing a collector having a free end extending through the steam jacket and provided with removable closure



forming the free end of the collector, and a welding seam located within the steam jacket and securing the appendage to the container part.

3,693,598

**BOILER**

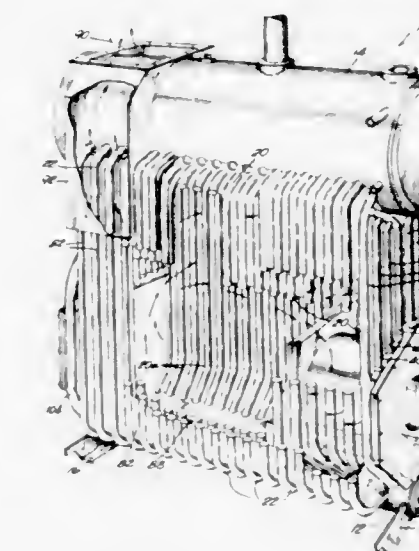
John C. Cleaver, Milwaukee, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Filed June 29, 1971, Ser. No. 157,981

Int. Cl. F22b 21/00

U.S. Cl. 122—274

23 Claims



A water tube boiler has rows of inner and outer riser tubes extending along opposite sides of a furnace area. A burner opens into one end of the furnace area. The areas between adjacent riser tubes in each row are closed except in the inner row where a number of such areas are left open to the furnace area at the burner end of the furnace area. A refractory tunnel extends from the burner into the furnace area beyond the open areas in the inner tube rows. In an alternative embodiment two additional rows of riser tubes extend into the furnace area beyond the open areas in the inner tube rows with the areas between adjacent tubes of the additional rows being closed.



3,693,599

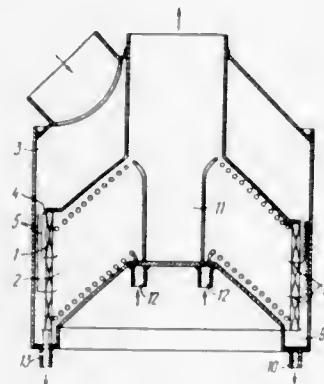
**INTER-STAGE STEAM SEPARATOR-SUPERHEATER APPARATUS FOR TURBINES OPERATING WITH SATURATED STEAM**

Pavel Alexeevich Andreev, prospekt Engelsa, 21, kv. 52; Konstantin Andreevich Blinov, prospekt Engelsa, 96, kv. 67; Dmitry Ivanovich Gremilov, prospekt Engelsa, 95, kv. 63; Boris Izrailevich Kanaun, ulitsa Ordzhonikidze, 37, korpus 1, kv. 10; Andrei Andreevich Kanaev, Yaroslavsky prospekt, 13, kv. 8, all of Leningrad; Gurken Nazarovich Aslanian, Moskovsky prospekt, 63, kv. 5, Kharkov; Pavel Mikhailovich Paramonov, 2-i Murinsky prospekt, 3, kv. 18, Leningrad; Boris Mikhailovich Panshin, ulitsa Danilevskogo, 19, kv. 45, Kharkov; Sergei Petrovich Sobolev, Molchanovskiy prospekt, 7, kv. 5, Kharkov, and Leonid Alexandrovich Shubenko-Shubin, Sumskaya ulitsa, 69, kv. 21, Kharkov, all of U.S.S.R.

Filed Sept. 4, 1970, Ser. No. 69,713  
Int. Cl. F22g 5/16

U.S. Cl. 122—483

8 Claims



An inter-stage steam separator-superheater apparatus whose separator is annular and whose multi-tube steam superheater is mounted inside the separator and coaxially therewith, the plurality of the helically coiled heat exchange tubes, extending along multiple helices, of the steam superheater, the steam to be superheated being directed into the spaces between this plurality of the helically coiled heat exchange tubes, and the heating steam being directed into these helically coiled heat exchange tubes.

3,693,600

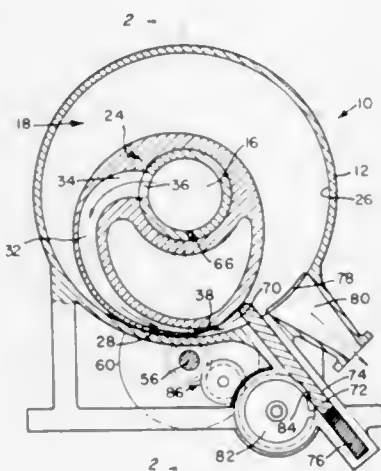
**ROTARY MACHINE WITH DUCTED ECCENTRIC ROTOR AND SLIDING STATOR VANE**

Ata Nutku, Technical University I.T.U., Gumussuyu, Istanbul, Turkey

Filed Dec. 3, 1970, Ser. No. 94,887  
Int. Cl. F02b 53/04

U.S. Cl. 123—8,39

19 Claims



Rotary engines and pumps employing ducted eccentric rotor and one or more reciprocating stator vanes which engage the rotor periphery. Engines may have a central com-

bustion chamber with a spiral rotor duct extending from the combustion chamber to the rotor periphery, air being compressed in the combustion chamber by auxiliary pistons or by a compression duct extending from the rotor periphery. In a pump or hydraulic motor, the rotor has intake and exhaust ducts leading from spaced apertures at the rotor periphery to axial intake and exhaust ports.

3,693,601

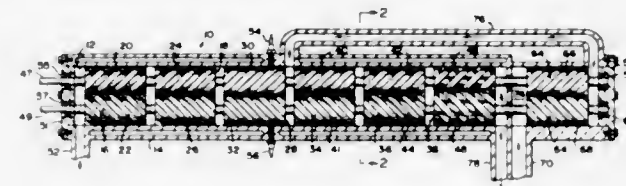
**ROTARY ENGINE**

Kenneth D. Sauder, 1861 Brentwood Drive, Clearwater, Fla.  
Filed Jan. 6, 1971, Ser. No. 104,285

Int. Cl. F02b 53/00

U.S. Cl. 123—8,41

15 Claims



A rotary internal combustion engine including a plurality of rotary pumps arranged in successive communicating fashion such that compression, combustion and expansion of the gases to rotate the engine may take place in a successive, step-like manner. The plurality of rotary pumps may be positioned in substantially linear relation to one another and mounted on one or more common drive shafts serving to rotate the engine. Alternatively, the plurality of rotary pumps may be arranged in a stacked array wherein each pump cooperates with individual drive shaft. An emission control means, also comprising a plurality of cooperatively arranged rotary pumps is arranged in communicating relation with the exhaust end of the engine.

3,693,602

**INTERNAL COMBUSTION ENGINE WITH SOUND-PROOFING CASING**

Gerhard Thien, and Heinz Fachbach, both of Graz, Austria, assignors to Hans List, Graz, Austria

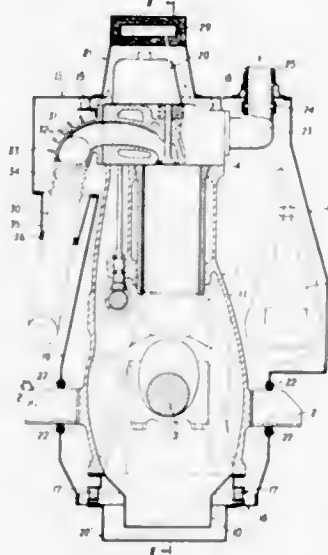
Filed Sept. 15, 1970, Ser. No. 72,350

Claims priority, application Austria, Sept. 17, 1969, A 8819/69

Int. Cl. F02p 1/02

U.S. Cl. 123—41,7

3 Claims



A sound-proofed internal combustion engine having a casing spaced around the engine and having a cooling-air blower driven by the engine arranged inside the casing with inlet and outlet in the casing and an exhaust pipe extending through the casing and exposed to the cooling-air stream of the blower to produce both a sound proofing and heat absorbing effect.

3,693,603

**CONTROL SYSTEM FOR FUEL CONTROL UNDER STARTING AND EXCESSIVE SPEED CONDITIONS IN AN INTERNAL COMBUSTION ENGINE**

Rudolf Lemanczyk, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

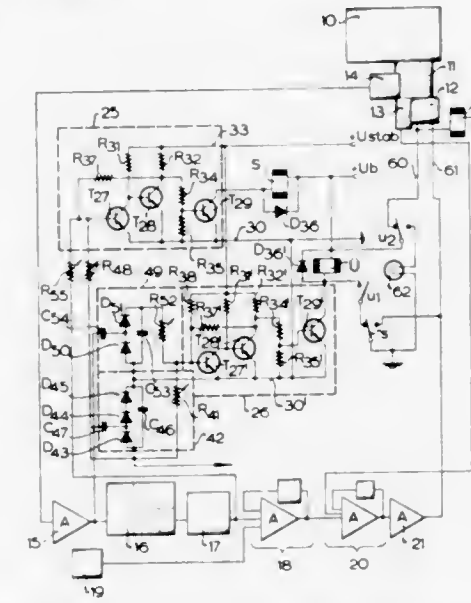
Filed Dec. 14, 1970, Ser. No. 97,980

Claims priority, application Germany, Dec. 13, 1969, P 19 62 573.1; Aug. 29, 1970, P 20 42 914.5

Int. Cl. F02d 1/10; F92n 17/00

U.S. Cl. 123—102 R

16 Claims



A pulse sequence having a frequency proportional to engine speed is converted to a D.C. voltage decreasing in amplitude with pulse frequency. When this voltage has predetermined magnitude, starting fuel control switch circuit energizes a relay causing maximum fuel injection.

First and second rectifier means having different frequency varying characteristics furnish, respectively, a positive and negative voltage. When combination of positive and negative voltage reaches a determined magnitude, excess speed control switching circuit energizes a relay furnishing a control signal for minimum injected fuel.

3,693,604

**RESONANT ENERGY-CONVERSION SYSTEMS WITH FLUID-ENERGY INPUTS**

John J. Horan, 420 Quigley Ave., Willow Grove, Pa.

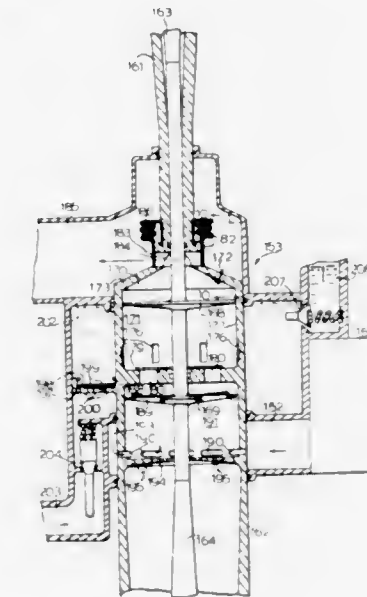
Continuation-in-part of Ser. No. 654,569, July 19, 1967, Pat. No. 3,558,936.

Filed Dec. 1, 1970, Ser. No. 94,063

Int. Cl. F02b 33/00

U.S. Cl. 123—119 C

20 Claims



Resonant energy-conversion systems involving high-Q, constant-frequency, mechanical apparatus and providing for

energy conversion from fluid sources to mechanical, hydraulic and electrical outputs.

3,693,605

**SPEED CONTROLLER FOR A DIESEL ENGINE**

Koichiro Hirozawa, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

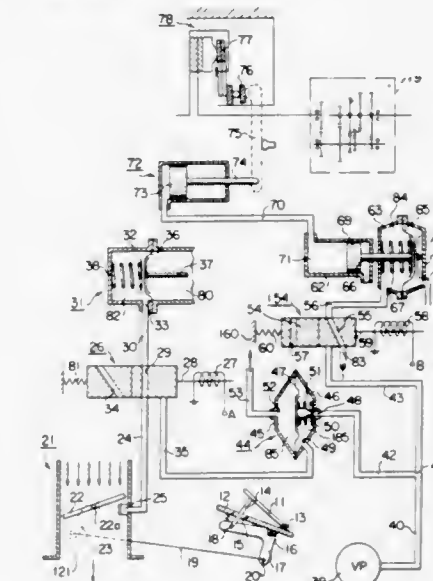
Filed Dec. 23, 1970, Ser. No. 100,938

Claims priority, application Japan, Dec. 23, 1969, 44/103979

Int. Cl. F02d 1/04

U.S. Cl. 123—140 MP

7 Claims



This invention relates to a speed controller for a diesel engine, said controller being arranged to be controlled normally by a pneumatic negative pressure controlled by a throttle valve operatively connected with an engine accelerator pedal or its equivalent means.

The speed controller is characterized by the provision of a vacuum pump, a pressure controller and change-off valve means which are connected in such a way that upon reception of an instruction signal for control of the engine revolutions, said change-off valve means is/are brought into operation and the negative pressure created and delivered by said pump and modified by said pressure controller is used for the speed control purpose and in place of said negative pressure created at the throttle valve.

3,693,606

**VALVE SEAT FOR AN INLET VALVE OF MIXTURE-INDUCING INTERNAL COMBUSTION ENGINES**

Horst Hardenberg, Stuttgart-Unterturkheim, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

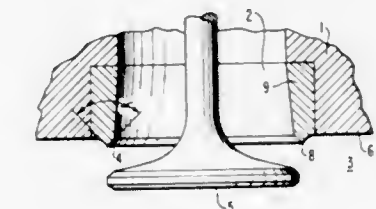
Filed Aug. 15, 1969, Ser. No. 850,536

Claims priority, application Germany, Aug. 16, 1968, P 17 51 908.3

Int. Cl. F02m 29/00; F011 3/00; F02b 23/00

U.S. Cl. 123—141

16 Claims



An internal combustion engine which draws in a fuel-air mixture through the inlet channel controlled by an inlet valve, in which the valve seat is constructed as a flow-disruption edge in order to minimize the overflow of liquid fuel from the walls of the inlet channel into the walls of the combustion space.



3,693,607

**MAKE-AND-BREAK SPARK PLUG**

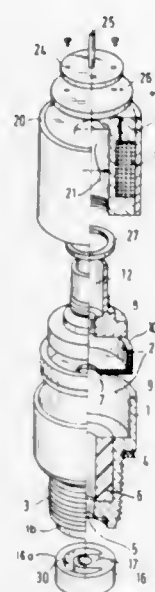
Max Pasbrig, Casa Luce, Via Eco, 6644 Orselina, Switzerland

Filed Jan. 11, 1971, Ser. No. 105,403

Int. Cl. F02p 23/00

U.S. Cl. 123—143 R

12 Claims



There is disclosed a make-and-break type of spark plug for piston engines comprising a spark plug housing equipped with a counter electrode and a movable electrode positioned to cooperate with said counter electrode to form therebetween a short-circuit path. An armature is movably arranged within the spark plug housing and a magnetic coil acts upon said armature. Means serve to connect the armature with the movable electrode, and said armature includes an end face directed away from said movable electrode with a pressure equalization compartment being located within said spark plug housing at the region of said end face of said armature facing away from said movable electrode. At least one bore communicates the pressure equalization compartment with the interior of an engine cylinder associated with the spark plug, said at least one bore extending through said armature, said connecting means for said armature with said movable electrode and through both of said electrodes.

3,693,608

**END WALL CONSTRUCTION FOR A ROTARY PISTON INTERNAL COMBUSTION ENGINE**

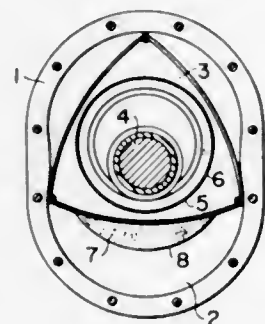
Kiyosou Neishi, Hiroshimaken, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jan. 15, 1971, Ser. No. 106,836

Int. Cl. F02f 1/20

U.S. Cl. 123—193 C

4 Claims



A rotary piston internal combustion engine has a casing including a center wall having trochoidal inner peripheral surface and end walls disposed on both sides thereof. Said end walls are porous at the inner surface at the inside of the outer envelope line of a sliding trace drawn by a ring-shaped oil seal member disposed on the side face of the rotary piston.

3,693,609

**REPEATING TYPE RUBBER BAND PROJECTING PISTOL**

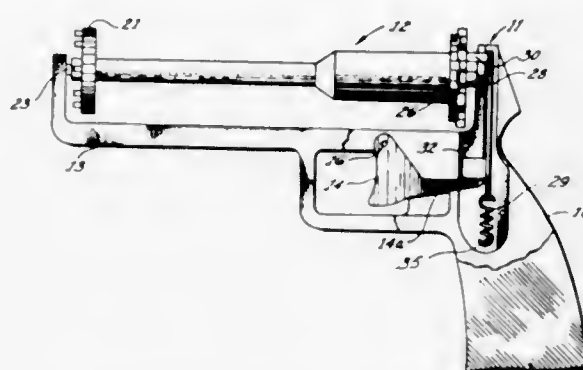
Hien Vodinh, 6418 Covington Road, Fort Wayne, Ind.

Filed June 17, 1971, Ser. No. 154,022

Int. Cl. F41b 7/02

U.S. Cl. 124—19

8 Claims



A repeating toy pistol for shooting rubber bands. The pistol has a cylinder structure which is rotationally indexed with each trigger pull. Both the tripper-pull motion and the trigger-return motion are utilized to provide the indexing motion of the barrel thereby providing a positive, relatively lengthened indexing motion of the barrel with a limited, relatively short trigger motion. The pull of the trigger causes a slide to engage and lift a rubber band off of a ridge on the cylinder.

3,693,610

**CAMPING STOVE**

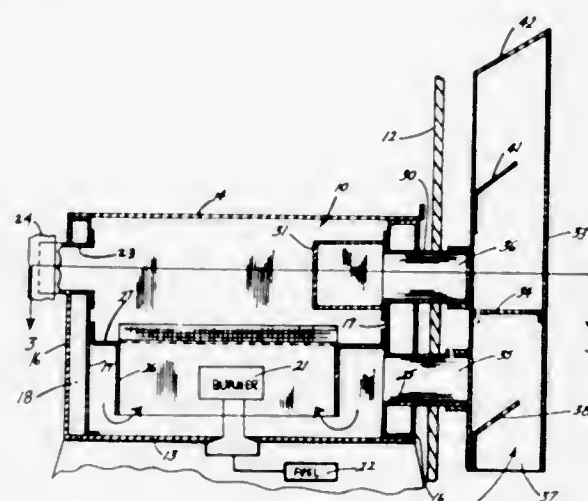
Merlin W. Ehrlichmann, Minnetonka, Minn., assignor to West Creek Co., Inc., Minnetonka, Minn.

Filed Dec. 10, 1970, Ser. No. 96,944

Int. Cl. F23i 17/04; F24c 3/00

U.S. Cl. 126—85 B

6 Claims



A camping stove for use with campers, travel trailers, tents, or the like which is safe, gives even heat, provides a cooking surface at the top thereof, and uses only outside air for combustion to prevent the depletion of oxygen inside the camper or tent in which the unit is used.

3,693,611

**VALVE FOR STETHOSCOPIC MONITORING**

William R. Ploss, Gainesville, Fla., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 714,226, March 19, 1968,

Pat. No. 3,517,664. This application Feb. 24, 1970, Ser. No.

13,524

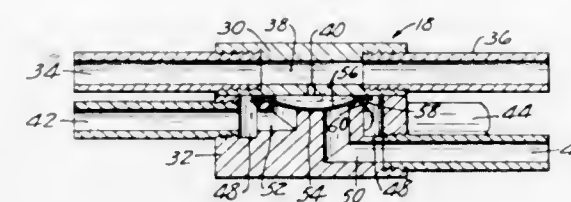
Int. Cl. A61b 5/02

U.S. Cl. 128—2.05 S

3 Claims

A pressure-activated, two-way valve means adapted for use in devices for monitoring blood pressure, pulse, and respiration during anesthesia. The valve communicates with a blood

pressure acoustic pickup which is always open, but the pressure-activated feature automatically closes off communication



with another acoustic pickup, e.g., a chestpiece, in response to inflation of the blood pressure cuff. The sound from the chestpiece is thereby temporarily shut off while the cuff is inflated.

3,693,612

**MANOMETER WITH SLIDING ADJUSTABLE SCALE AND MENISCUS INDICATOR**

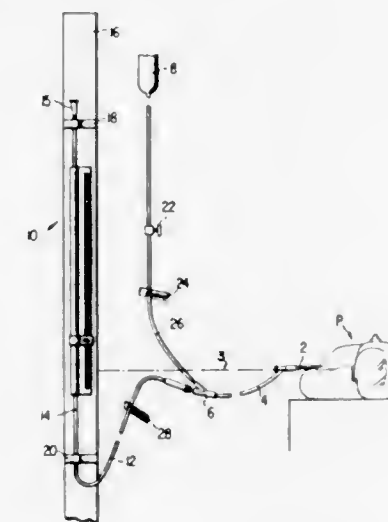
Joseph F. Donahoe, Waukegan, and Fidel V. Macalalad, Lake Forest, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed April 21, 1970, Ser. No. 30,380

Int. Cl. A61b 5/02

U.S. Cl. 128—2.05 D

11 Claims



Disclosed herein is an improved manometer in which the calibrated scale for reading the fluid pressure is provided on a transparent sheath rather than directly on the manometer tube, the sheath being slidably mounted on the manometer tube. This sheathing permits the zero point of the scale to be readily adjusted and includes a cylindrical portion integral with a wing, the wing carrying the scale either as a direct imprint or as an insert in the wing. An indicator for marking the meniscus level encapsulates the sheathing. The indicator is slidable on the sheathing and has a mark for establishing the pressure reading for subsequent reference.

3,693,613

**SURGICAL HANDPIECE AND FLOW CONTROL SYSTEM FOR USE THEREWITH**

Charles Kelman, New York, N.Y., assignor to Cavitron Corporation, Long Island City, N.Y.

Filed Dec. 9, 1970, Ser. No. 96,473

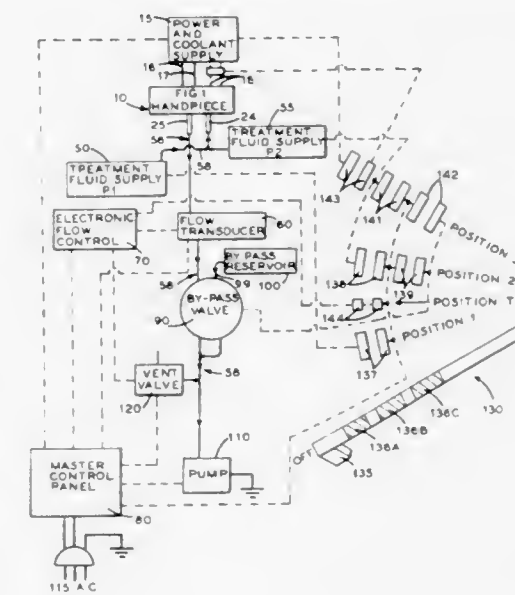
Int. Cl. A61h 1/00; A61b 17/00; G05d 11/02

U.S. Cl. 128—24 A

9 Claims

A flow control system is used in conjunction with a surgical handpiece for the removal of unwanted material in a very small enclosed operative site in which it is very critical to maintain a pressure within a certain range, such as in the surgical operation of the removal of a cataract lens from the human eye. The system includes an irrigation subsystem comprising a source of treatment fluid, such as an artificial aqueous solution, at a preselected constant pressure for supplying said fluid to the enclosed operative site via the handpiece. A suspension

of the treatment fluid, including any unwanted material, is removed from the operative site by an aspiration subsystem. The aspiration subsystem comprises a pump used to remove the suspension and to overcome the friction and other losses throughout the entire fluid system, a flow transducer for mea-



suring the rate of flow, and a vent valve to reduce the flow in the aspiration subsystem when necessary to assist in maintaining a relatively constant pressure within the operative site. An electronic flow control receives signals from the flow transducer and reacts to certain changes in flow signals by sending a signal to the venting valve.

3,693,614

**EXERCISE APPARATUS AND METHOD FOR PARALYTIC PATIENTS**

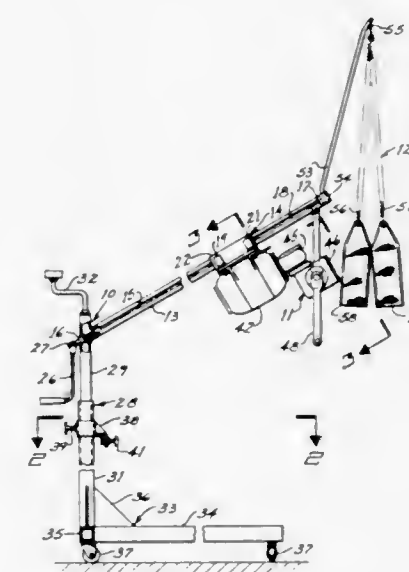
Kenneth A. Schon, 27717 Moran, Mount Clemens, Mich.

Filed May 28, 1971, Ser. No. 147,953

Int. Cl. A61h 1/02

U.S. Cl. 128—25 R

11 Claims



A therapeutic exercising device of the circular or rotary motion type particularly adapted for exercising the arms and legs of a paralytic patient. A method of operating the device is provided for paralytic patients subject to muscle spasms.

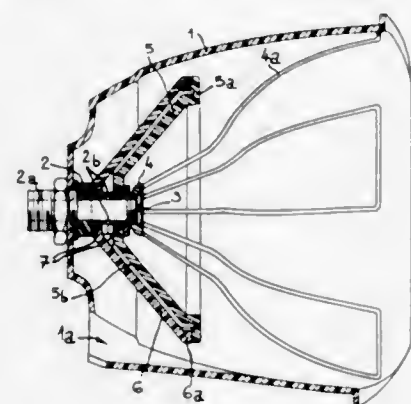


### 3,693,615 HYDROTHERAPEUTIC BREAST TREATING APPARATUS

Camille Dunoyer, 10 Blvd. Jules Favre, Lyon, France  
Filed June 10, 1971, Ser. No. 151,874  
Claims priority, application France, June 22, 1970, 7022868  
Int. Cl. A61h 9/00

U.S. Cl. 128—66

3 Claims



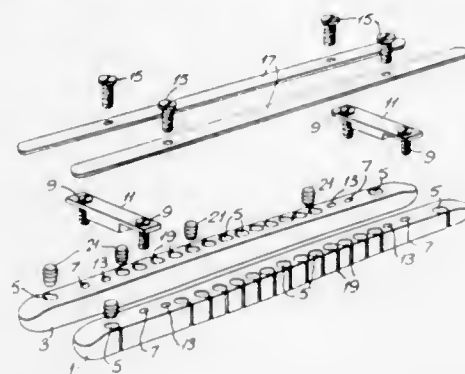
In an apparatus for the hydrotherapeutic treatment of breasts, the spray unit which rotates in the bottom of the conventional hollow bell-shaped body is made of two frusto-conical members, preferably of molded plastics, which are applied against each other, one at least of their facing sides being formed with grooves which realize in the assembly radial canals and tangential nozzles adapted to propel the unit by reaction effect, while the inner frusto-conical member has radial lines of perforations which communicate with these canals to produce the conventional inwardly directed treating jets. The central annular portions of the frusto-conical members are mounted on a common hub wherein they define an inner annular space which receives water under pressure from the fixed tubular shaft of the apparatus through radial perforations provided in same and through radial passages provided in the hub. The latter may be made of two sleeves the abutting ends of which are formed with indentations which protrude axially and radially.

3,693,616  
DEVICE FOR CORRECTING SCOLIOTIC CURVES  
Robert Roaf, 219 Speke Road, Liverpool, and John Thomas  
Matthew Wright, 23 Grosvenor Road, Southport, both of  
England

Filed June 23, 1971, Ser. No. 155,796  
Claims priority, application Great Britain, June 26, 1970,  
31,141/70

Int. Cl. A61f 5/00  
U.S. Cl. 128—69

8 Claims



An implantable spinal stabilizing device, developed initially for correcting and maintaining the correction of scoliotic curves, but also useful for fixing spinal fractures and dislocations, involves a pair of spaced parallel rigid bars, each bar having a succession of apertures. The bars are located on opposite sides of the spinous processes, between the spinous and respective transverse processes, and held in this location by tape laced through the bar apertures and around the spinous

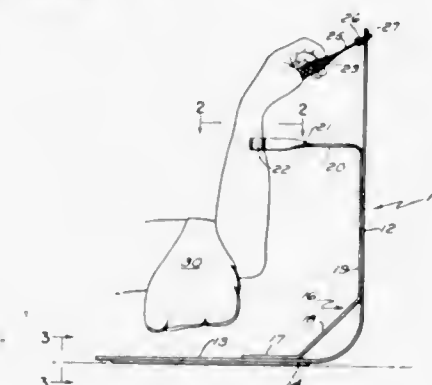
laminae or transverse processes. The tape is tensioned and secured by plugs in the relevant apertures, and the overall assembly serves to stabilize the spine in a required configuration.

3,693,617  
FRACTURE REDUCING APPLIANCE FOR THE ARM  
Raymond H. Trott, White Oaks, Hope, R.I.

Filed Feb. 5, 1971, Ser. No. 112,941  
Int. Cl. A61f 5/04

U.S. Cl. 128—84 B

3 Claims



A fracture reducing appliance having a horizontal base, a vertically oriented standard attached to the base, a unitary brace and arm support member, and an expansible and contractible finger trap. The unitary brace and arm support member has a bottom leg attached to the base. Its intermediate section runs vertically parallel to the standard and is fixedly secured thereto. Its non-adjustable arm support section extends from the standard at a right angle positioning it parallel to and directly over the base. An eyelet formed adjacent the top of the standard provides structure for detachably securing the finger trap thereto.

3,693,618  
DISPOSABLE UNITARY SURGICAL DRAPE  
John J. Madden, deceased, late of Kearney, N.J. (by Marilyn B. Madden, administratrix), assignor to Becton, Dickinson & Company, E. Rutherford, N.J.

Filed July 31, 1970, Ser. No. 59,925  
Int. Cl. A61b 19/06

U.S. Cl. 128—132 D

10 Claims

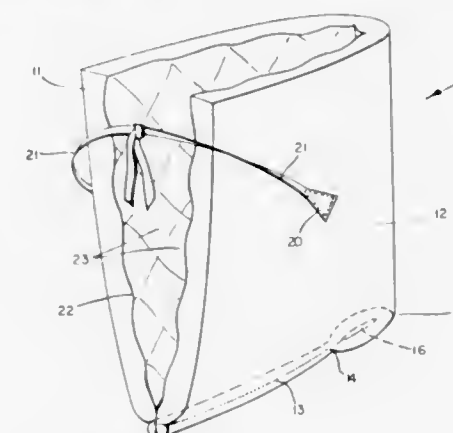


A disposable surgical drape is provided for obstetrical and gynecological operative procedures. The drape consists of a combined plastic tail sheet and nonwoven abdominal cover, and leggings folded into a compact package which may be unfolded directly on a patient without necessitating that the surface in patient contact be handled by the doctor or nurse applying the drape. To this end, the abdominal cover which comprises a rectangular sheet is first longitudinally folded and then fan-folded inwardly from both transverse edges toward the center to form a compact rectangular package. Thereafter the tail sheet and leggings which are affixed to the folded abdominal cover along an edge are transversely fan-folded from both edges and subsequently longitudinally folded to form a second rectangular package some of the folds of which overlie and are interdigitated with those of the first package.

3,693,619  
CUSHION PROTECTOR  
Harry Albert Williams, 28711 Indies Lane, Saugus, Calif.  
Filed Oct. 28, 1970, Ser. No. 84,788  
Int. Cl. A61b 19/00

U.S. Cl. 128—149

8 Claims



Cushion protector for bony protuberances of the human body, composed of convoluted foam having a convoluted surface adapted to fit adjacent to the body of a medical or health care patient. The convolutions are curved and substantially uniform, forming peaks and valleys which are spaced from the base such that the distance ratios from peak to valley, from peak to base and from valley to base fall within critical limits. In the form of a heel protector, a seam is provided extending along the bottom, forward of the heel and toward the toe of the wearer, terminating forward of the back of the heel and leaving an open loop of foam material in the area of and below the heel. A tie strap is provided, anchored at about the middle of the heel protector. In the form of an elbow protector, square ends having a critical construction are provided at both sides of the elbow.

3,693,620  
Patent Not Issued For This Number

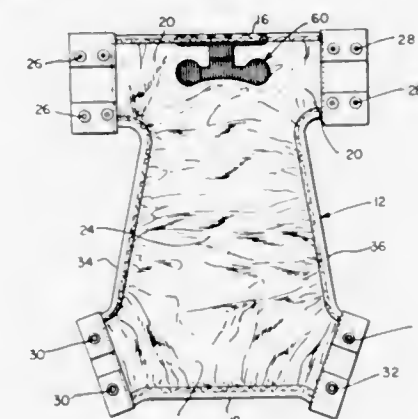
3,693,621  
HOLDING DEVICE AND DIAPER SYSTEM UTILIZING  
SUCH DEVICE

Paul Jarusik, Wilmington, Del., and Alexander Pociluyko, Glen Mills, Pa., assignors to Scott Paper Company, Delaware County, Pa.

Filed Dec. 24, 1970, Ser. No. 101,292  
Int. Cl. A61f 13/16

U.S. Cl. 128—287

11 Claims



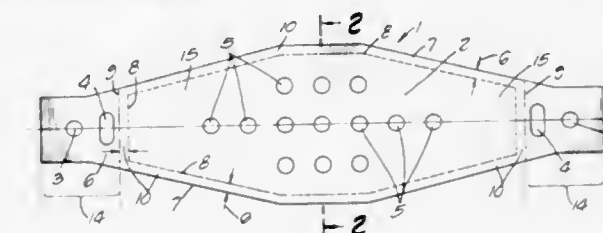
A holding device for retaining an elongated absorbent pad to a supporting garment, the absorbent pad having elongated side regions folded over an elongated center region and secured to the center region by securing tacks. The holding device has a securing section which is secured to a forward marginal edge of the supporting garment. A stem portion is integrally formed with the securing section and extends in a rearward direction toward a rearward marginal edge of the

supporting garment. The stem portion terminates in laterally extending members which are adapted to be positioned between the side regions and the center region of the absorbent pad, and rearwardly of and in overlying relationship with the securing tacks.

3,693,622  
WASTE FLUID FLOW CONTROL ELEMENT  
John Leslie Jones, Sr., 1070 Glen Oak Blvd., Pasadena, Calif.  
Filed Aug. 14, 1970, Ser. No. 63,747  
Int. Cl. A61f 13/16

U.S. Cl. 128—290 R

13 Claims



Waste fluid absorption devices, including sanitary napkins, tampons and baby diapers, comprising coplanar multiple ply of thin absorbent tissue paper, are impregnated in selected exterior border areas with non-toxic, waste fluid repellant compositions. The repellant compositions are applied in the minimum concentrations necessary, and produce separate and discrete tissue paper plies which are not easily wet by menstrual and urine fluids. Sanitary napkins comprising coplanar multiple ply of tissue paper disposed in an elongated pattern are impregnated at the exterior border planar area of the napkin, typically for a border area of 1/4-1/2 inch width disposed around the menstrual fluid absorptive section. A menstrual tampon comprises coplanar multiple plies of absorbent tissue paper formed into a compressed cylindrical tampon. The tampon end opposite the insertion end of the tampon is impregnated with a menstrual fluid repellant composition, in a concentration sufficient to prevent menstrual fluid flow through the interstices of paper plies of the tampon. The baby diaper is impregnated along the absorbent pad diaper edges.

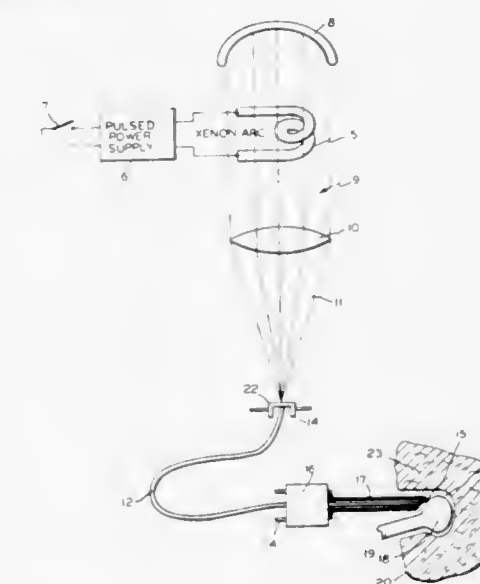
3,693,623  
PHOTOCOAGULATION MEANS AND METHOD FOR  
DEPILATION

Richard A. Harte, Redwood City, and Edwin A. Amstutz, Santa Clara, both of Calif., assignors to Gregory System, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 23,921, March 30, 1970,  
abandoned. This application Dec. 25, 1970, Ser. No. 92,598

Int. Cl. A61r 3/00  
U.S. Cl. 128—303.1

20 Claims



Depilation is effected by use of light energy of a selected frequency band concentrated into a flexible fiber small



enough to enter the region of the follicle. This effects photocoagulation tissue in a limited region determined by the placement of the fiber.

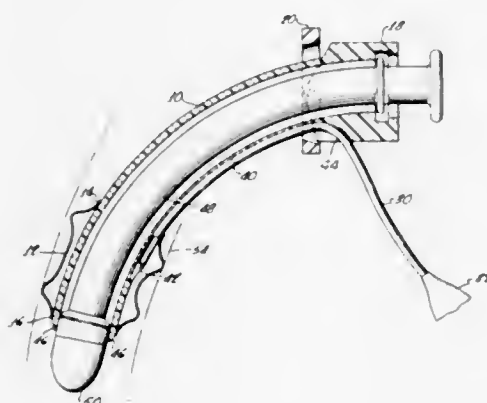
### 3,693,624 TRACHEOTOMY TUBE

Donald P. Shiley, 11022 Huntinghorn, Santa Ana, Calif.;  
Bruce E. Fettel, Diamond Bar, and Kenneth L. Hardy,  
Oakland, both of Calif., assignors to Donald P. Shiley,  
Santa Ana, Calif.

Filed Oct. 2, 1969, Ser. No. 863,229  
Int. Cl. A61b 25/00

U.S. Cl. 128—351

5 Claims



A tracheotomy tube for insertion into the trachea to support breathing, having a 70° arc between its two ends and including a concave sealing balloon which, when inflated, assumes a cylindrical shape and therefore forms a seal between the cannula and the trachea over an extended axial length, the tracheotomy tube also incorporating an inner cannula which is disposed within and throughout the entire length of the outer cannula and is connected to the outer cannula by a removable fitting which assures a pneumatic seal between the two cannulas, the tracheotomy tube also including a rotatable connector which allows attachment to respiration support equipment in a variety of angular positions. The portion of the tracheotomy tube which extends outside of the patient is hinged to a swivel neck flange which makes the tube adaptable to various anatomies. The tube leading to the sealing balloon is controlled by an isolation valve outside of the patient which allows quick sealing and releasing of the pressure within the sealing balloon.

### 3,693,625 HEART STIMULATOR AND HEART-POWERED ENERGY SUPPLY THEREFOR

Michel Joseph Auphan, Courbevoie, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 1, 1970, Ser. No. 33,745

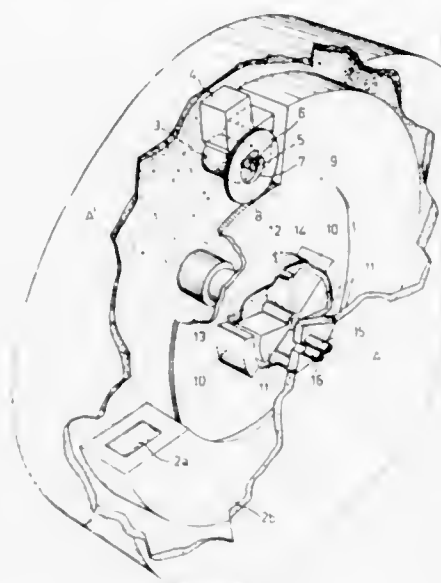
Claims priority, application France, May 13, 1969, 6915527  
Int. Cl. A61n 1/36

U.S. Cl. 128—419 P

7 Claims

A device for supplying electrical energy to a heart stimulator which is formed as an air-tight casing arranged to be placed within the human body in close proximity to the heart muscle. The casing has housed therein an annularly arranged magnetic circuit with a rotor arranged in a gap of the circuit. A rotary piston is accommodated within a piston chamber having four compartments divided in pairs. One of the pair is connected via a flexible tube to a first flexible bag arranged at the tip of the heart and the other pair communicates via another flexible hose to a second flexible elastic bag. The elastic bags contain fluid which communicate alternately between the pairs of compartments within the chamber so that

upon the pumping action of the heart the piston is caused to oscillate in a rotary motion and mechanical coupling means are connected between the piston and a driving member



mounted coaxially with the rotor so as to drive the rotor thereby producing electrical signals in response to the movement of the heart.

### 3,693,626 DEMAND PACER WITH HEART RATE MEMORY

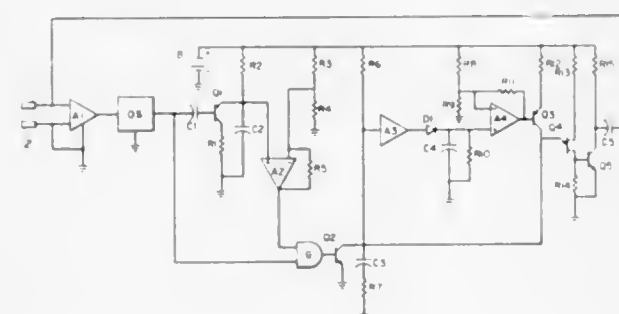
Addison D. Cole, Natick, Mass., assignor to Adcole Corporation, Waltham, Mass.

Filed Nov. 2, 1970, Ser. No. 86,107

Int. Cl. A61n 1/36

U.S. Cl. 128—419 P

11 Claims



A demand controlled cardiac pacer including a pair of electrodes for connection with the heart, a variable frequency relaxation oscillator connected to the electrodes, a resetting circuit for disabling the oscillator when heart pulses are produced at a normal rate, and a circuit responsive to the rate of reset for modifying the frequency of the oscillator so that upon heart failure stimulating pulses will be applied to the electrodes at a rate that begins somewhat below the last rate of production of natural pulses and gradually decreases to a fixed minimum rate.

### 3,693,627 STIMULATOR FOR TREATMENT OF TACHYCARDIA WITH A BURST OF STIMULI HAVING A CONTINUOUSLY VARIABLE RATE

Barouh V. Berkovits, Newton Highlands, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Sept. 14, 1970, Ser. No. 71,799

Int. Cl. A61n 1/36

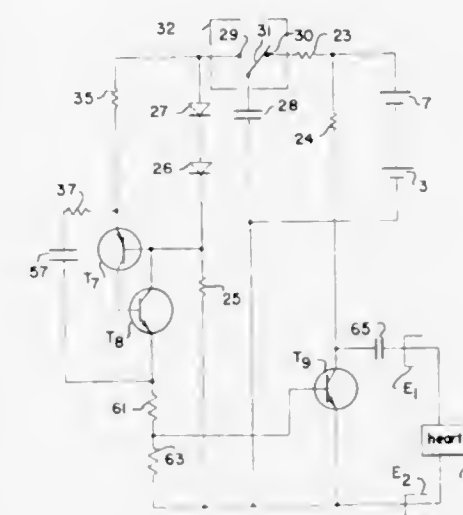
U.S. Cl. 128—419 P

8 Claims

An externally activated implantable heart stimulator. Apparatus is disclosed for supplying to the heart of a patient a burst of stimulating pulses having a repetition rate in excess of the physiological heartbeat range of the patient. The stimulator comprises terminals for connection to the heart, a control-

lable electrical stimuli generator controlled internally by a discharging capacitor and controlled externally by a magnet. The stimulator is particularly applicable to the treatment of

same time moving a retaining lever to retain a cigarette tube on a nipple through which the tobacco wad is injected. A second layer including a spoon is provided for displacing the tobacco wad from the machine into a cigarette tube.



paroxysmal supra-ventricular tachycardias, a rapid heartbeat condition originating in the atrium. The stimulator can be temporarily activated by anyone including the patient being stimulated.

### 3,693,628 Patent Not Issued For This Number

### 3,693,629 LIGHTLY PRIZED TOBACCO

James A. Broughton, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed June 1, 1971, Ser. No. 148,967

Int. Cl. A24b 13/00

U.S. Cl. 131—5

6 Claims

A new form of chewing tobacco in cake form but with a low tensile strength such that it may be easily torn, broken, or bitten into smaller pieces.

### 3,693,630 CIGARETTE MAKING MACHINE

Arnold Kastner, 10220 Armond Laverne, Montreal 460, Canada

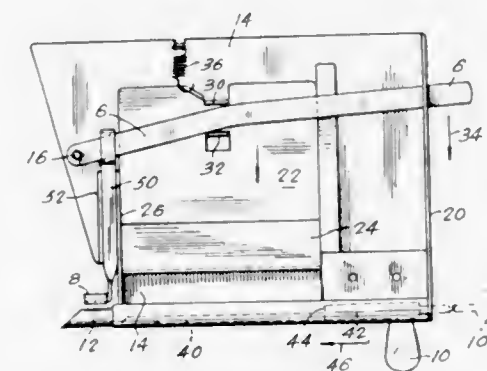
Filed Nov. 23, 1970, Ser. No. 92,060

Claims priority, application Canada, May 11, 1970, 082,438

Int. Cl. A24c 05/42

U.S. Cl. 131—70

6 Claims



A hand-operated cigarette making machine is disclosed. The machine consists of one lever for moving a tobacco compacting member into tobacco compacting position while at the

### 3,693,631 TOBACCO EXPANSION PROCESS

Arnold G. Moore, Winston-Salem, and Donald A. Newton, Clemmons, both of N.C., assignors to Reynold Leasing Corporation, Jacksonville, Fla.

Filed April 28, 1971, Ser. No. 138,039

Int. Cl. A24b 03/18

U.S. Cl. 131—140 P

11 Claims

A process of expanding the filling capacity of tobacco which comprises introducing tobacco and a stream of vapors of a compound having an atmospheric pressure boiling point between about -50° and +80° C. into one end of an impregnating zone wherein the temperature of the tobacco and of the vapors introduced into said zone are, respectively, below and above the boiling point of the compound at the prevailing pressure. The tobacco is impregnated with the compound and the impregnated tobacco is withdrawn from the impregnation zone and subjected to vapor-expanding conditions such as immediate treatment with a hot gas to expand the tobacco. The relative amounts of the compound and the tobacco introduced into the impregnating zone and in the impregnated tobacco at the time of expansion is within the range of about 5 to 200 parts by weight of compound per 100 parts by weight of tobacco (dry basis). The flow of vapors to the impregnating zone is controlled with respect to the rate at which the tobacco is introduced into said zone.

### 3,693,632 TOBACCO-SMOKE FILTERS

Thomas William Charles Tolman, Eastleigh, England, assignor to Brown and Williamson Tobacco Corporation, Louisville, Ky.

Filed April 7, 1971, Ser. No. 132,212

Claims priority, application Great Britain, April 20, 1970, 18,757/70

Int. Cl. A24b 15/02

U.S. Cl. 131—266

3 Claims

A tobacco-smoke filter includes a granular compound or substance comprising silver permanganate and zinc oxide and acting as a catalyst for the oxidation in combination with chloramine-T for preventing poisoning of the catalyst by tobacco-smoke. For instance, the catalyst compound or substance may be interposed between a mouth-end filter section of cellulose-acetate and a filter section of paper soaked in a solution of the chloramine-T.

### 3,693,633 WAVING HAIR WITH A WATER SOLUBLE THIOL CHAIN CONTAINING POLYMER AND A WATER SOLUBLE DISULFIDE

Gregoire Kalopissis, Paris, and Andre Viout, Montreuil, both of France, assignors to Societe anonyme dite L Oreal, Paris France

Continuation-in-part of Ser. No. 360,730, April 17, 1964, abandoned. This application May 11, 1970, Ser. No. 36,398

Claims priority, application Austria, Apr. 18, 1963, 3150/63

Int. Cl. A45d 7/06

U.S. Cl. 132—7

9 Claims

An aqueous solution containing (a) a water soluble polymer having thiol chains that remain bound to the polymer in solu-



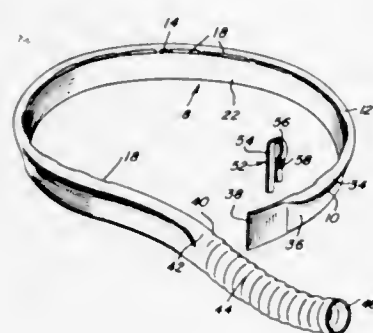
tion and (b) a water soluble disulfide. The process of shaping keratinic fibers by applying to the keratinic fibers said polymer composition and shaping the fibers to the desired shape. Keratinic fibers coated with polydisulfides derived from said composition.

3,693,634

**HAIR COLLECTING COLLAR FOR BARBERSHOP USE**  
Jerry E. Gilbert, St. Louis, Mo., assignor to James Craig Foster, Jr., Fenton, Mo., a part interest  
Filed July 19, 1971, Ser. No. 163,769  
Int. Cl. A45d

U.S. Cl. 132-9

10 Claims



A readily attachable elastic collar (rubber or plastic material) adapted to be fitted snugly but yielding around the neck of a customer whose hair is being cut and which embodies facilities to collect, trap and dispose of the hair clippings. The upper edge is fashioned into a hollow bead whose hollow portion provides a hair conveying duct. An inward convex surface of the bead is provided with a row of hair inlet slots which feed the loose hairs into the duct. One rearward end terminates in a corrugated neck which is connectible with a suction hose. The other end is provided with an extending tongue which provides a hose-end connecting flap and which is adjustably but retentively held in a given position. The lower edge portion of the collar has a channel for reception and support of the upper hem-equipped end of the usual apron.

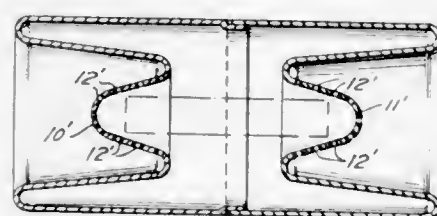
3,693,635

**HEATED HAIR ROLLER**

William Garrett, New York, N.Y., assignor to Flaiescence Ltd., New York, N.Y.  
Filed Feb. 2, 1971, Ser. No. 111,833  
Int. Cl. A45d 4/14

U.S. Cl. 132-33 R

5 Claims



A two-piece hair roller is formed so as to provide for an internal cavity. A water activatable heating composition is placed within this cavity so as to heat the roller after the hair has been wound upon it. The two parts may be separate until use, or may be joined.

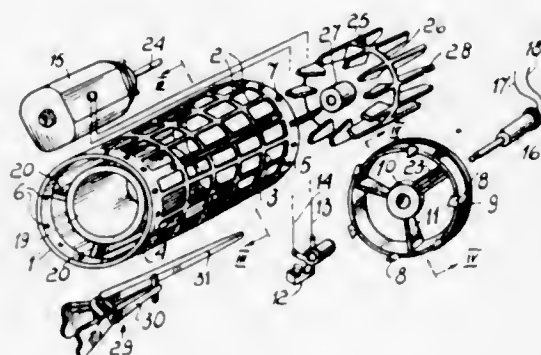
3,693,636  
**HAIR CURL SETTING AND DRYING DEVICE**  
Umberto Tomiati, Via Filippini 19, Verona, Italy  
Filed Feb. 8, 1971, Ser. No. 116,714

Claims priority, application Italy, Feb. 10, 1970, 84906 A/70

Int. Cl. A45d 2/12

U.S. Cl. 132-33 R

1 Claim



A hair curl setting and drying device comprising a cage-like cylinder around which the hair locks are wound and within which an electric motor is housed which propels a fan therein.

3,693,637

**CHIGNON FOUNDATION**

Abraham Sidelman, P.O. Box 589, Manchester, Ga.  
Filed March 1, 1971, Ser. No. 119,592  
Int. Cl. A41g 5/00

U.S. Cl. 132-55

5 Claims



A chignon foundation or so-called rat is here formed of a knit sleeve of resilient nylon rolled into itself so as to have a central through opening. A captive rubber band surrounds the opening. In use, the wearer pulls her medium long hair through the opening, then spreads the hair over the foundation and pins it in place. The knit nylon foundation imparts to the chignon the soft and resilient feel of a chignon formed wholly of a greater quantity of the wearer's hair.

3,693,638

**TOOTH CLEANER**

Angelo Ciccarelli, 32 North Osprey Avenue, Sarasota, Fla.  
Filed April 12, 1971, Ser. No. 133,199  
Int. Cl. A61c 15/00

U.S. Cl. 132-91

6 Claims

The present invention comprises a device for cleaning between and around the teeth of a user which comprises a pair of slightly diverging arms having dental floss confining means at their outer ends and which terminate in a laterally projecting holding projection to be gripped by the thumb and a finger of the user, and to tightly hold the ends of a piece of dental floss which passes through the dental floss holding means at

the ends of the arms. The device also includes a stabilizing member which engages the arms and rigidly supports them as



well as a suitable guiding element for guiding the ends of the floss into proper relation with the thumb and finger grip.

3,693,639

**APPARATUS FOR TREATING ARTICLES WITH LIQUID TREATMENT MEDIA**

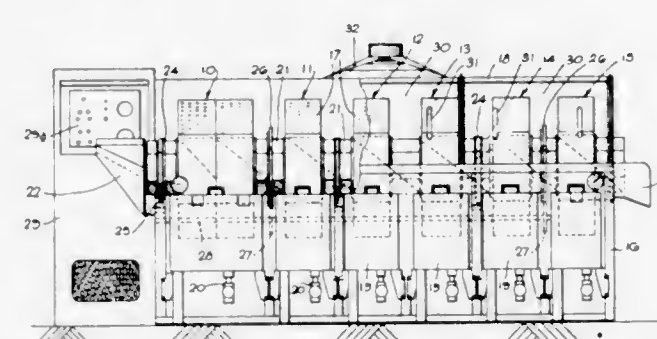
Sydney C. Corbett, Birmingham, England, assignor to The Hockley Chemical Company Limited, Birmingham, England

Continuation-in-part of Ser. No. 705,212, Feb. 13, 1968, Pat. No. 3,481,347. This application Oct. 27, 1969, Ser. No. 869,805. The portion of the term of this patent subsequent to Dec. 2, 1986, has been disclaimed.

Int. Cl. B08b 3/06

U.S. Cl. 134-69

3 Claims



A drum of polygonal cross-section has a hollow spindle secured to each side thereof. The spindles support the drum for rotation thereof about the axes of the spindles and provide means for loading and unloading workpieces to and from the drum. The drum is provided with perforations so that, when it dips into a treatment medium in a tank, workpieces within the drum are exposed to the medium. The drum is oscillated during treatment of the workpieces and is rotated through 360° to effect discharge of the workpieces.

3,693,640

**ARRANGEMENT FOR CLEANING OF DOSING SYSTEMS FOR FLUID MATERIALS**

Roland Wettlen, Eslov; Hans-George Melle, Hoor, and Jan Palsson, Lund, all of Sweden, assignors to Tetra Pak International AB, Lund, Sweden

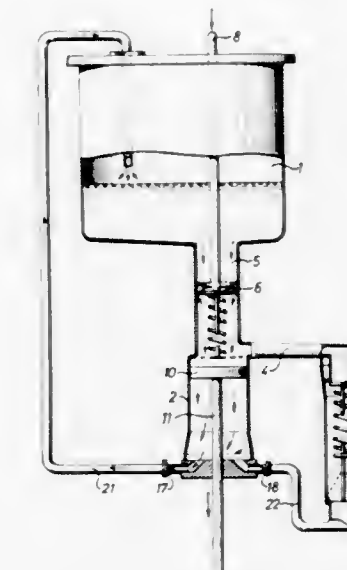
Filed Dec. 21, 1970, Ser. No. 99,835  
Claims priority, application Sweden, Dec. 30, 1969, 18062/69

Int. Cl. B08b 9/08

U.S. Cl. 134-169 R

3 Claims

A method of and apparatus for carrying out the method of cleaning a dosing system normally used for providing mea-



entire dosing system is cleaned as well as both sides of a reciprocating piston in the pump and also the periphery thereof.

3,693,641

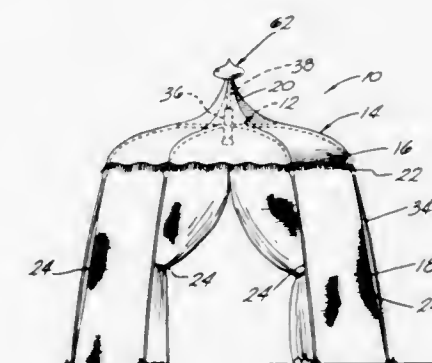
**PORTABLE SHELTER**

Charles W. Moss, P.O. Box 34, Ann Arbor, Mich.  
Continuation of Ser. No. 745,048, July 15, 1968, abandoned.  
This application March 9, 1970, Ser. No. 17,034

Int. Cl. A45f 1/00

U.S. Cl. 135-1 R

14 Claims



A portable screen house which has a flexible frame structure and a cover supported in tension thereon. The cover has screen material for its sides and an impervious dome-shape top portion having an upwardly projecting cone-shape peak at its center. A bulbous ornament element is supported above the cone-shaped peak by the frame structure.

3,693,642

**RIB ASSEMBLY FOR FOLDING UMBRELLA**

Nobutoshi Kida, No. 1-27, Minami, Nonia-cho, and Kazo Saito, No. 9-374, Ohtori, Naka-machi, Sakai, Osaka Prefecture, both of Japan

Filed March 5, 1970, Ser. No. 16,680  
Claims priority, application Japan, Nov. 14, 1969, 44/90147

Int. Cl. A45b 19/00

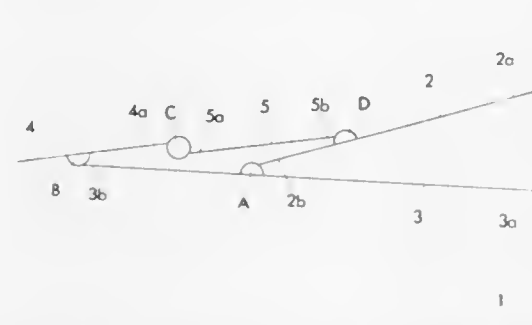
U.S. Cl. 135-25

5 Claims

A rib assembly for a folding umbrella which comprises a support rib, a receiving rib, an end rib and a connecting rib which are so assembled that they are adapted to form a quadrilateral in the open position of umbrella, said receiving rib being adapted to be held at substantially right angles with a



center rod of the umbrella in said open position, one or more corners of said quadrilateral being made slidable and/or one or more sides of said quadrilateral being made contractile and extensible, thereby enabling the length of at least one side of



the quadrilateral to be varied. Thus, there can be provided a folding umbrella capable of being easily opened with a little force and folded neatly while making an external appearance of the umbrella beautiful or nice at the open position thereof.

3,693,643

## COLLAPSIBLE UMBRELLA

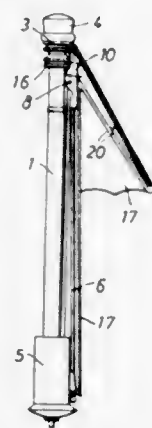
Heinz Weber, Hilden, Rhineland, Germany, assignor to Bremshey & Co., Soligen-Ohigs, Germany  
Continuation of Ser. No. 768,213, Oct. 11, 1968, which is a continuation of Ser. No. 568,187, July 27, 1966.

Filed Dec. 18, 1969, Ser. No. 882,769

Int. Cl. A45b 19/06

U.S. Cl. 135—26

8 Claims



Collapsible umbrella having telescoping roof-supporting ribs and stick includes a plurality of rods each extending beneath the roofing material of the umbrella in a direction parallel to a roof-supporting rib thereof and having an upper end located adjacent the upper end of the respective rib. The rods extend from the upper ends thereof, in detelescoped condition of the umbrella, a distance substantially equal to half the distance between the normally upper end of the stick and the upper end of a respective lower telescoping rib portion. The rod and the respective rib are separate from and movable relative to one another.

3,693,644

## PRESSURE VESSEL FILL AND PRESSURE RELIEF VALVE

Vincent Dilorenzo, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 20, 1971, Ser. No. 145,157

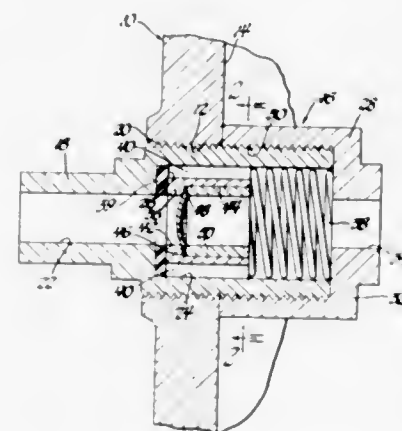
Int. Cl. F16k 17/16

U.S. Cl. 137—71

2 Claims

A pressure vessel includes a threaded aperture in a wall thereof which threadedly receives the outer threaded surface of a cylindrical housing. The housing includes an inlet cylindrical bore which merges across a radial wall into a like bore of larger diameter. A threaded cylindrical cap is threaded over the housing interiorly of the vessel and includes an apertured radial wall providing an outlet. The radial walls of the housing and cap and the larger diameter bore of the housing define a

chamber. A hollow cylindrical valve member is slidably mounted within the chamber and includes a plurality of axial grooves in the periphery thereof. A coil compression spring seats on one end of the valve member and the radial wall of the cap to seat the other end of the valve member against the radial wall of the housing to close the grooves to the inlet. The valve member includes a counterbore and a fluid pressure rupturable diaphragm seats against the radial wall of the counter-



bore and is retained in place by a press fitted retainer ring to block communication between the inlet and outlet through the valve member and cooperatively define with such member a fluid pressure actuated piston. Communication of the inlet with a source of pressure fluid displaces the piston against the spring to fill the vessel through the axial grooves. Pressure relief is obtained when the diaphragm ruptures under a pressure level in the vessel exceeding a predetermined pressure.

3,693,645

## MANUAL-AUTOMATIC CHANGE-OVER DEVICE FOR PNEUMATIC CONTROLLER

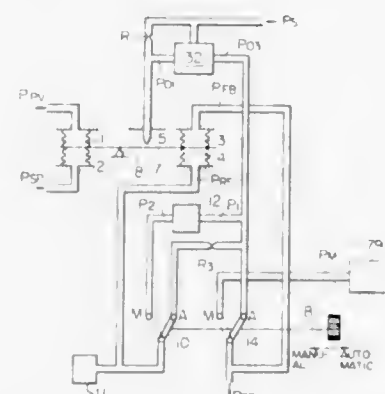
Shinichiro Ogawa, Fujisawa, and Ryuhei Fukuda, Yokohama, both of Japan, assignors to Honeywell Inc., Fort Washington, Pa.

Filed June 9, 1971, Ser. No. 151,246

Int. Cl. F15b 3/14; G05d 16/00

U.S. Cl. 137—86

1 Claim



In a manual operation, the output pressure of an inverse proportion pressure converter provided in a second feedback circuit acts against a back pressure detected by a nozzle and a balancing element. This output pressure is applied to a resetting pressure receiving chamber to balance a feedback pressure receiving chamber which receives a manually operating pressure directly.

3,693,646

## FLUID PULSING DEVICE

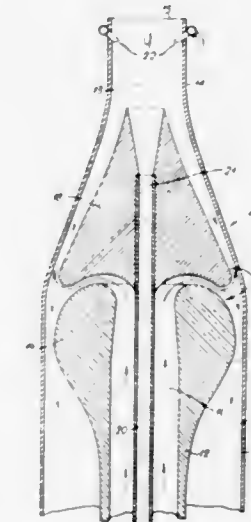
Peter John Baker, 12 Welton Park, Welton, Daventry; Graham John Gale, 103 Home Park, Hurst Green, Oxted, and Barry Edward Adrian Jacobs, 2 Ruffs Furze, Oakley, Bedford, all of England

Filed Jan. 19, 1971, Ser. No. 107,692

Int. Cl. F15c 1/04

U.S. Cl. 137—81.5

11 Claims



A fluid pulsing device suitable for controlling the output of a chimney to enable the smoke to be discharged as smoke rings comprises an input passageway such as the chimney stack, and output passage such as a vent to atmosphere and a reservoir for smoke. Switching means switches the smoke alternately to the reservoir and to the output passageway, whereupon entrainment empties the reservoir. The switching means may be fluidic, mechanical or means for resonating fluid.

3,693,647

## POSITIVELY ORIENTED, ADJUSTABLE LENGTH, BURIED VALVE OPERATOR AND INDICATOR SUPPORT

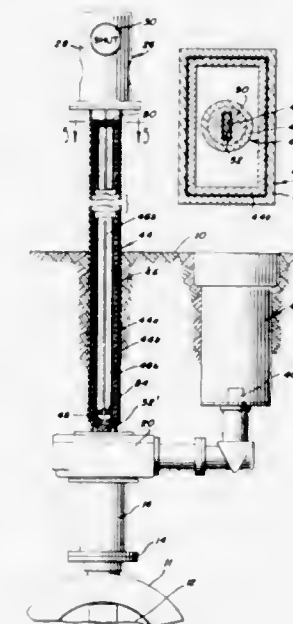
Robert P. Saar, Downers Grove, Ill., assignor to Henry Pratt Company

Filed July 27, 1970, Ser. No. 58,524

Int. Cl. F16l 5/00

U.S. Cl. 137—363

3 Claims



In combination, a self-contained adjustable post for connecting an underground rotary valve to an above ground valve operator, valve position indicator, or the like. An elongated generally hollow housing portion, comprising a pair of relatively non-rotatable telescoped members, extends upwardly from the underground valve to ground level whereby the housing may be telescopically adjusted to accommodate rotary

valves buried at variable depths. A connecting shaft portion, comprising a pair of relatively non-rotatable telescoped members, is disposed within the housing, connected at its lower end to the rotary valve shaft to rotate with the valve shaft, and extending at its upper end to ground level within the housing. The upper end of the connecting shaft and the housing are interconnected either directly or by means of the valve operator or valve position indicator whereby the length of the connecting shaft is automatically and simultaneously telescopically adjusted as the length of the housing is telescopically adjusted.

3,693,648

## DUCT SYSTEM FOR LOW-TEMPERATURE FLUIDS AND THERMALLY ISOLATED ELECTRICAL CONDUCTORS

Wolfgang Sassin, Julich, Germany, assignor to Kernforschungssoultage Julich Gesellschaft mit beschränkter Haftung, Julich, Germany

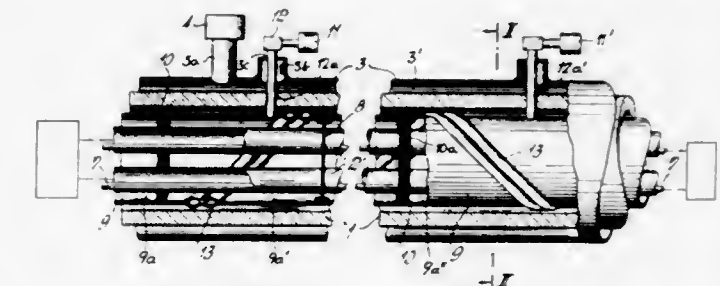
Filed May 4, 1970, Ser. No. 34,082

Claims priority, application Germany, May 2, 1969, P 19 22 487.4

Int. Cl. F16l 7/00

U.S. Cl. 137—375

6 Claims



A duct system for low-temperature fluids, especially low-boiling-point gases such as helium, and for thermally isolated electrical conductors wherein an evacuated outer rigid conduit surrounds the fluid-carrying duct which consists of a foil flexible and nonsupporting at room temperature but reinforced by a helical strip. The foil preferably consists of polyethyleneterephthalate.

3,693,649

## WATER CONTROL FOR TOILET TANKS

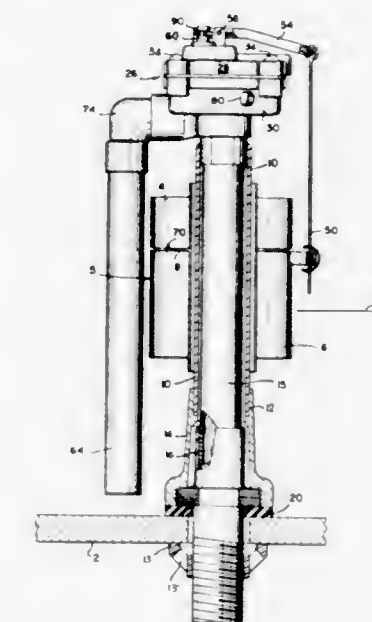
Frederick Armstrong Gordon, James Richard Griffin, and John Joseph Pezzarossi, all of Louisville, Ky., assignors to American Standard Inc., New York, N.Y.

Filed March 31, 1970, Ser. No. 24,247

Int. Cl. F16k 31/18

U.S. Cl. 137—414

13 Claims



Covers a water control valve for a water tank which is associated with a conventional toilet bowl. The water control



valve includes a valve structure mounted on a vertical water inlet pipe and a float structure which moves vertically along the inlet pipe to control the valve structure. The float structure includes two cup-shaped elements, one positioned vertically above the other, both moving along the inlet pipe in response to any change in the water level within the water tank. The valve structure includes a flexible diaphragm which is normally positioned upon a seat at the upper opening of the inlet pipe and blocks the flow of water into the tank, and a pilot valve to control the movement of the flexible diaphragm. The pilot valve is mechanically coupled to the float structure so that, as the float structure descends toward the bottom of the tank, the pilot valve will be opened and, in turn, allow the diaphragm to be flexed upwardly to allow the entry of water into the tank. When the float structure reaches an upper predetermined position, the pilot valve will be closed and the diaphragm will be returned to its normal position to block the flow of water into the flush tank.

3,693,650

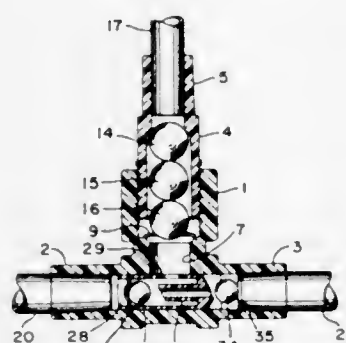
# VALVE DEVICE AND ANTI-POLLUTION SYSTEM EMPLOYING THE SAME

Andrew E. MacGuire, Willowdale, Ontario, Canada, assignor to The Ferry Cap & Set Screw Co., Cleveland, Ohio

Filed Aug. 12, 1970, Ser. No. 63,186  
Int. Cl. F02d 9/00; F16k 15/04, 15/14

U.S. Cl. 137—480

30 Claims



A fluid pressure responsive valve device utilizing a valve member of elastomeric material, particularly adapted for employment in a supplemental air supply system to the manifold of an internal combustion engine.

3,693,651

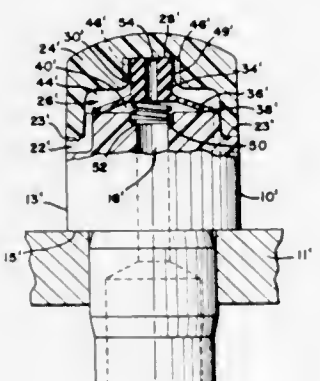
# VALVE ASSEMBLY

Robert T. Gifford, Green County, Ohio, assignor to Vernay Laboratories, Inc., Yellow Springs, Ohio

Filed Aug. 19, 1970, Ser. No. 65,129  
Int. Cl. F16k 15/16

U.S. Cl. 137—493

5 Claims



A valve assembly for venting a structure such as an automobile transmission, includes a closure cap which fits over the vent opening in the structure and a dish-shaped, one-piece resilient valve member which fits over the vent opening and is flexed into sealing engagement by the closure cap. Venting

takes place when pressure builds up sufficiently inside the structure to flex the valve member out of sealing engagement and allow excess pressure to escape around the flexed valve member and through an outlet in the cap. In a modification, the central portion of the valve member, which is contacted by the cap, has an opening formed in it which is normally closed by the contact with the cap, but which may be flexed inwardly, uncovering the opening, to provide vacuum relief for the interior of the structure.

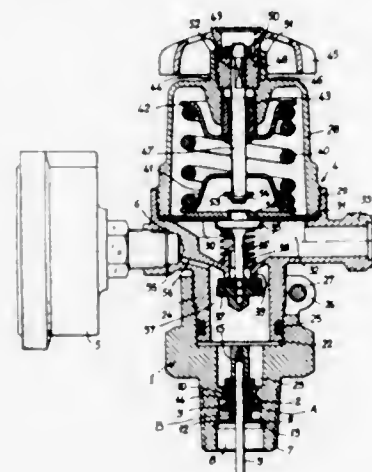
3,693,652

# LIQUEFIED GAS TANK DISTRIBUTOR VALVE UNITS Jacques Iung, Paris, France, assignor to Gurtner S.A., Paris, France

Filed March 4, 1970, Ser. No. 16,387  
Int. Cl. F16k 17/30

U.S. Cl. 137—557

21 Claims



A distributor unit for liquefied gas tank, which comprises the whole or part of a tank filling gauge, an output limiter, and possibly a service member, a pressure-reducing device comprising a body and a cover enclosing a resilient diaphragm responsive to the expanded gas pressure and to the action of a compensator spring co-acting with a control knob, and a valve member of the pressure-reducing device actuated by said diaphragm, a pressure indicator being also provided, this unit consisting of a vertical grouping, into a single assembly, of said filling gauge, said output limiter and said pressure reducing device or other service member, said pressure indicator being incorporated in this assembly.

3,693,653

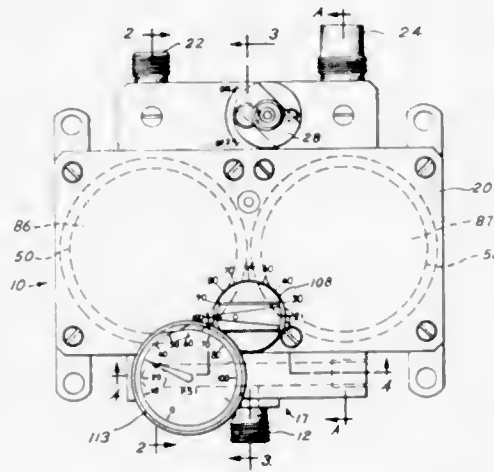
# FLUID MIXING REGULATOR

Robert L. Cramer; John W. Herneman, and Jack E. Dunbar, all of P.O. Box 4508, Davenport, Iowa

Filed Jan. 29, 1971, Ser. No. 110,955  
Int. Cl. F16k 37/00

U.S. Cl. 137—557

11 Claims



A control mechanism for regulating the amount of fluid from a first and second supply source to an outlet. The fluid

from the first source is transmitted to a first chamber having a valve mechanism controlled by a diaphragm whereas the fluid from the second source is transmitted to a second chamber having an identical valve mechanism controlled by an identical diaphragm. A control mechanism transmits the same fluid pressure to one side of the first diaphragm and to one side of the second diaphragm. Any pressure differential across the respective diaphragm members will operate the valve mechanisms simultaneously to transmit the fluids from the first and second supply sources to a flow chamber from whence the mixture can travel through an outlet in a predetermined ratio to a receiving apparatus.

3,693,654

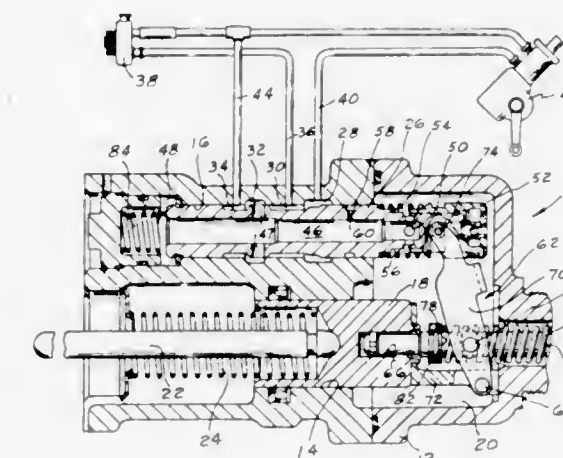
# FRICTIONLESS PRESSURE SEAL

Dean E. Runkle, South Bend, Ind., assignor to The Bendix Corporation

Filed Nov. 23, 1970, Ser. No. 91,694  
Int. Cl. F16k 11/07, 11/10

U.S. Cl. 137—596

5 Claims



A hydraulic brake booster is disclosed which includes a housing in which a spool valve is slidably supported to control fluid communication between a fluid pressure source and the booster pressure chamber. A frictionless pressure seal is provided to prevent fluid leakage from the pressure chamber to the outlet port through the interface between the outer circumferential surface of the spool and the wall of the housing. The frictionless pressure seal consists of a passage extending radially through the wall of the spool that communicates an annular groove in the outer circumferential surface of the spool with high pressure fluid contained in a channel provided within the spool. The high pressure fluid in the groove prevents fluid communication from the booster pressure chamber to the outlet port of the booster through the interface between the spool and the wall of the bore.

3,693,655

# DEVICE FOR CONNECTION OF HYDRAULIC APPARATUSES

Knut Olov Frisk, Gavle, Sweden, assignor to AB Tico, Gavle, Sweden

Filed Dec. 16, 1970, Ser. No. 98,708

Claims priority, application Sweden, Dec. 23, 1969, 17914/69

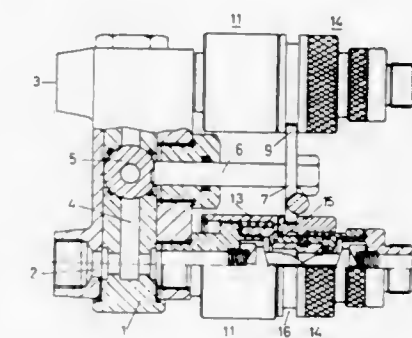
Int. Cl. F16l 37/28

U.S. Cl. 137—599.1

5 Claims

Hydraulic connecting device with a pressure pipe speed coupling spigot, a return pipe speed coupling spigot, a cut-off valve between the pressure and return pipes, an actuator controlling said valve and a locking device coupled to the actuator which can be brought into mechanical engagement with each speed coupling spigot, the locking device being designed to

prevent the cut-off valve to be closed before each of the speed coupling spigots is coupled to its associated speed coupling



3,693,656

# DEVICE FOR ADDING AND DISTRIBUTING A LIQUID OR A GAS IN OTHER MEDIA

Theo Sauer, Starnberg, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

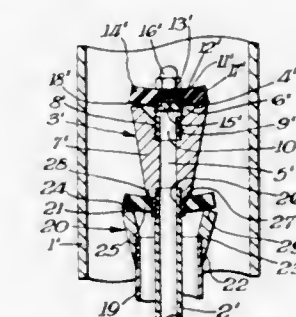
Filed Dec. 15, 1970, Ser. No. 98,342

Claims priority, application Germany, Dec. 18, 1969, P 19 63 376.2

Int. Cl. F16k 19/00

U.S. Cl. 137—604

8 Claims



An arrangement for adding and dispersing a liquid or gas into another medium is characterized by a conducting pipe for the other liquid, having coaxially therein a mixing nozzle valve connected to an intake pipe for the one liquid with a substantially radially directed circular slot opening variably in its rotationally symmetric cross-section by the pressure from the one liquid which overcomes the pressure of a resilient disk at the top of the valve.

3,693,657

# FLOW RESTRICTOR WITH FLUSHING MEANS

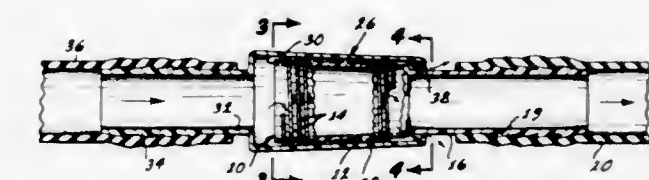
Donald O. Olson, 5885 Dartmouth, Chula Vista, Calif.

Filed Dec. 10, 1970, Ser. No. 96,883

Int. Cl. F16k 47/00; F15d 1/04; F17d 1/10

U.S. Cl. 137—608

6 Claims



A flow restricting device with means for flushing particularly adapted as a dripper to provide a slow drop flow for use in irrigation. Two tapered telescoping members are provided, the inner one having a helical groove providing a restricted passageway between it and the outer member. By moving the tapered members axially, free flow is provided for between them for flushing.



3,693,658

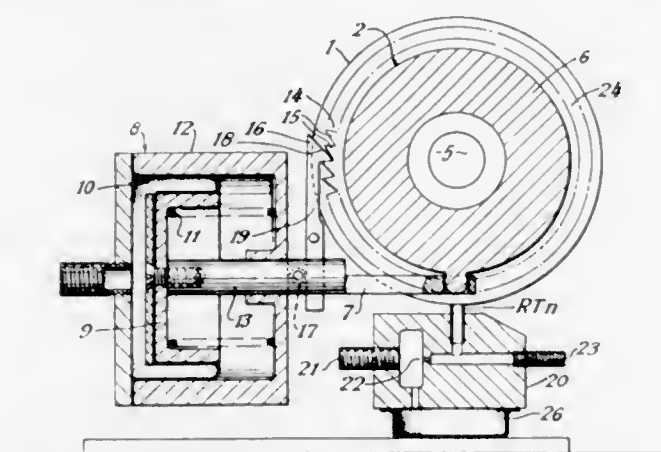
## PNEUMATIC PROGRAM READER

Norman A. de Bruyne, Princeton, N.J., and Geoffrey M. Brewin, Duxford, England, assignors to Techue Systems Incorporated

Filed April 13, 1970, Ser. No. 27,914  
Int. Cl. G05b 19/44

U.S. Cl. 137—624.18

28 Claims



The described invention resides in a pneumatic step-by-step perforated-tape reader comprising a rotatable drum for translating the tape on engagement with the drum, a pneumatic reading head for reading the tape when engaged with the drum, and indexing means for rotating the drum by indexed movements; the indexing means comprising escapement means for controlling rotation of the drum so that the drum undergoes the same degree of rotation in each indexed movement thereof, whereby when the tape is engaged with the drum, the tape can be translated to bring each of the succession of data locations on the tape, in turn, to the reading head to be read thereby. The invention includes mechanical features involved in the operation of the foregoing combination.

3,693,659

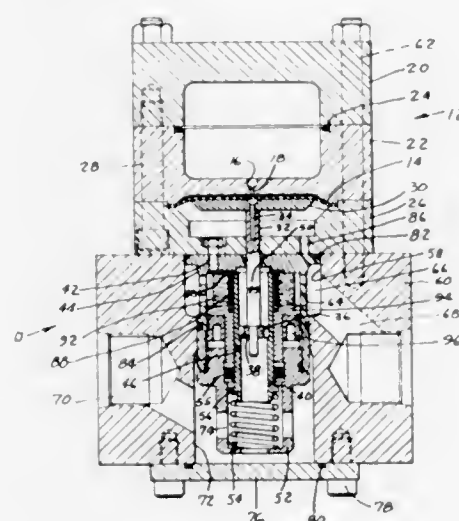
## SILENT OPERATING VALVE

Gary D. Parola, Lafayette, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Feb. 8, 1971, Ser. No. 113,370  
Int. Cl. F16k 3/32, 47/14

U.S. Cl. 137—625.3

5 Claims



A silent valve with an axially operated valve closure plug, operating against axial inlet flow. An outlet passage is disposed radially outward of the closure plug, and intermediate it and the closure plug is an annular member of porous material. The plug is guided in a sleeve disposed intermediate it and the annular member. A plurality of through openings around and along the guide sleeve are covered progressively as the closure plug moves toward open position.

3,693,660

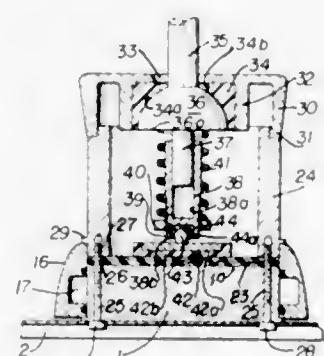
## SINGLE LEVER VALVE

Lee V. Wheelock, 1385 Norris Dr., Franklin County, Ohio  
Filed Sept. 9, 1970, Ser. No. 70,712

Int. Cl. F16k 11/00

U.S. Cl. 137—625.4

15 Claims



A single lever valve for simultaneously regulating the flow of fluid to outlet means from one or more sources. The valve comprises a base member having one or more fluid inlet passages and one or more fluid outlet passages therethrough. The fluid inlet and outlet passages form inlet and outlet openings in the top planar surface of the base member. The top surface of the base member is covered with a diaphragm. A shoe is located on the top surface of the diaphragm and causes that portion of the diaphragm beneath the shoe to be depressed against the top surface of the base member. Single lever means are provided to shift the shoe along the top surface of the diaphragm whereby the amount of fluid issuing from the inlet openings and the amount of fluid entering the outlet means may be simultaneously regulated in any desired combination.

3,693,661

## MULTIPLE FLOWPATH ROTARY VALVE

Jacques Aurenge, 74, Avenue du Fort St. Irene, 69 Lyon Seme, and Jean Desfeuillet, Route du Pont, 69 Jons, both of France

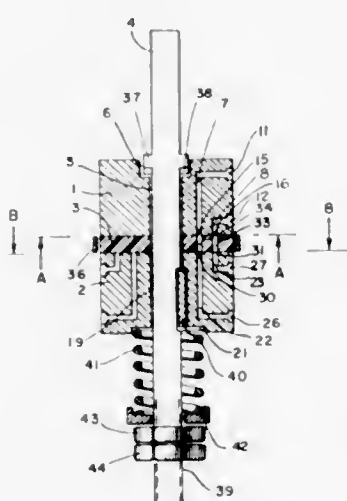
Filed Aug. 7, 1970, Ser. No. 62,080

Claims priority, application France, Aug. 12, 1969, 6927636

Int. Cl. F16k 5/14, 11/00

U.S. Cl. 137—625.18

5 Claims



A multi-way valve capable of use at high pressures including a pair of coaxial cylindrical facing bodies, one rotatable and the other stationary, having passageways therethrough, a seal therebetween, an axle and a spring urging the bodies together.

3,693,662

## Patent Not Issued For This Number

3,693,663

## MIXING VALVE

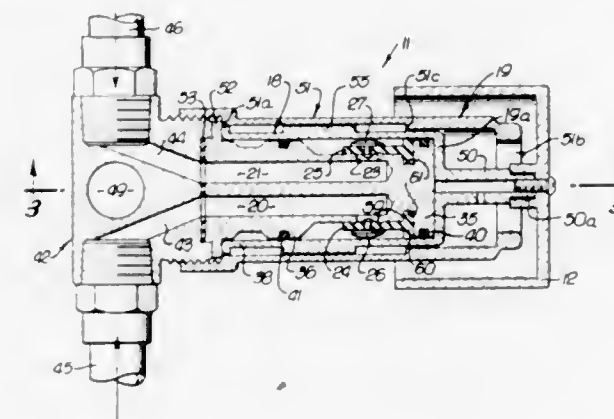
Julius L. Tolnai, Los Angeles, and Patsy B. Palmer, Granada Hills, both of Calif., assignors to Price-Pfister Brass Mfg. Co., Pacoima, Calif.

Filed Nov. 27, 1970, Ser. No. 93,225

Int. Cl. F16k 11/14, 19/00

U.S. Cl. 137—636.1

12 Claims



A mixing valve having a valve post wherein a pair of fluid supply channels terminate at respective laterally facing orifices. A flexible sealing flap overlies each orifice. A post encircling valve sleeve includes an interior cam surface which presses the sealing flaps against the orifices for selective blocking or opening thereof depending on the axial and angular position of the sleeve. Fluid emergent from the orifices flows through a mixing chamber between the post and sleeve to a return port in the post.

## ERRATUM

For Class 137—57 see:  
Patent No. 3,693,666

3,693,664

## MODULAR CELLULAR CONDUIT ASSEMBLY

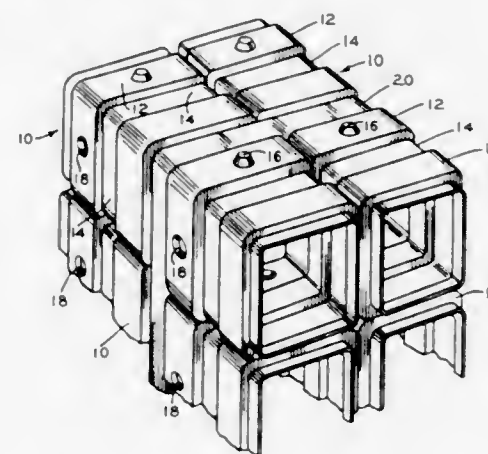
John D. Schmunk, Findlay, Ohio, assignor to The Hancock Brick & Tile Company

Filed Oct. 15, 1970, Ser. No. 81,027

Int. Cl. F16l 9/18, 39/00

U.S. Cl. 138—111

8 Claims



A modular assembly for constructing conduits of the type used for underground telephone lines, electrical lines, and the like. The specification discloses several embodiments each of which generally comprises a plurality of side-by-side corrugated plastic tubing sections. These sections are provided with laterally extending means which engage to prevent relative longitudinal movement between adjacent sections. Preferably, longitudinally spaced and circumferentially extending wrapping or binding members encircle the assembled section to prevent relative movement between the sections in the lateral direction. The specification and drawings also disclose several forms of joints for connecting aligned assemblies. In the preferred form, the joints include resilient foam members having spaced openings for receiving the aligned ends of the tubes in successive sections. Additionally, clamp means are provided for drawing the sections together to compress the foam members.

3,693,665

## PIPELINE FOR THE TRANSPORT OF COLD LIQUIDS

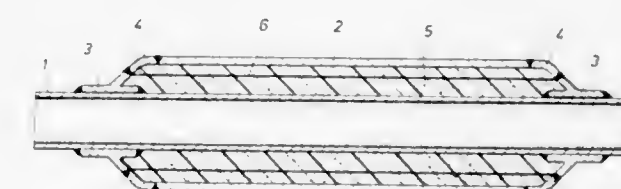
Coenraad W. N. Veerling, Amsterdam, and Victor A. Grossen, Hague, both of Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,556

Int. Cl. F16l 9/14

U.S. Cl. 138—149

16 Claims



Pipeline for cold liquids made of coaxial pipes and insulation therebetween, one of the pipes being under axial compression and the other being under axial tension, buckling being prevented by the elastic support of the insulation between the pipes.

3,693,666

## FLOW CONTROL VALVE

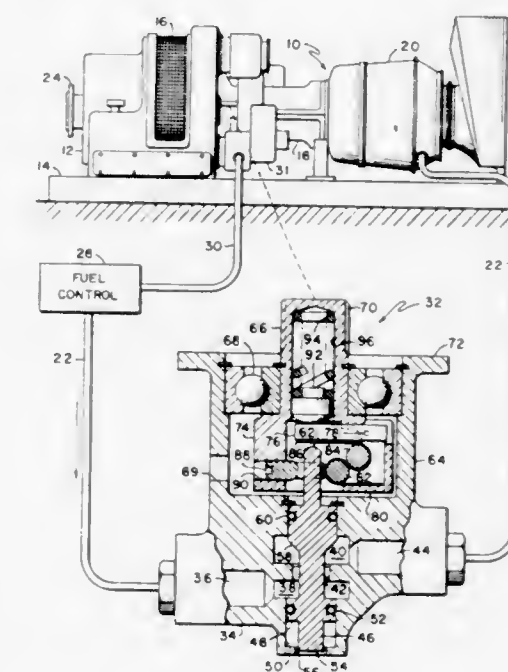
Paul A. Avery, Fort Collins, Colo., assignor to Avco Corporation, Stratford, Conn.

Filed May 3, 1971, Ser. No. 139,580

Int. Cl. G05d 13/04

U.S. Cl. 137—57

10 Claims



The disclosure illustrates an overspeed cutoff valve for a gas turbine engine. The valve has a rotatable base incorporating a Rolamite device in which a pair of rotatable elements and an S-shaped band are biased toward the axis of rotation of the base. At a predetermined R.P.M. the rotatable elements displace outwardly so that one of the walls which guides the rotatable elements may pivot and displace a valve element to a cutoff position.



3,693,667

**HEALD FRAME**

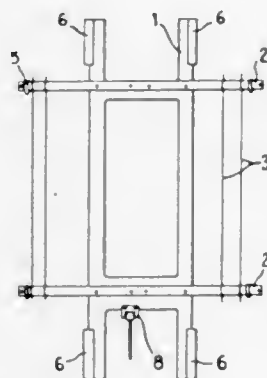
William Charles Arnold, 4 Mill Hill Drive, Winshill, Burton-on-Trent, Staffordshire, England

Filed Sept. 23, 1970, Ser. No. 74,745

Int. Cl. D03c 9/06, 13/00

U.S. Cl. 139—91

3 Claims



A heald frame for a loom the type in which two fabrics are woven simultaneously in side by side positions at high speeds. The heald frame has receiving bars which are supported in widely spaced disposition intermediate their ends so as to thereby provide heald receiving end regions of such width so as to be able to accept a sufficient number of healds for the production of a fabric and furthermore, provides unrestricted access to the heald receiving portions of the heald receiving bars. The heald receiving bars are secured to a support frame in the central region of the bars and thereby the bars have ends which project in cantilever manner from the frame.

3,693,668

**PNEUMATIC WEFT DELIVERY MEANS FOR SHUTTLELESS LOOMS**

Vladimir Svaty, Liberec, Czechoslovakia, assignor to Elitex, Zavody textilního strojírenství, generalni reditelství, Liberec, Czechoslovakia

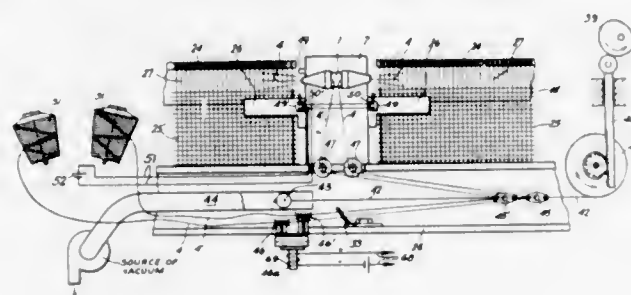
Filed Oct. 8, 1970, Ser. No. 79,035

Claims priority, application Czechoslovakia, Oct. 8, 1969, 6716-69

Int. Cl. D03d 47/30

U.S. Cl. 139—127 P

13 Claims



A shuttleless loom having a pneumatic delivery means comprising an orifice and means for impressing an air jet therethrough. The orifice being adapted to allow a yarn from a supply source to pass therethrough and to be carried by said jet to said loom. The delivery means being rotatably mounted having in preferred form two orifices.

3,693,669

**RIBBON WEAVING MACHINE**

Hubertus N. C. Evers, Nieuwendijk, Heeze, Netherlands

Filed April 16, 1970, Ser. No. 29,014

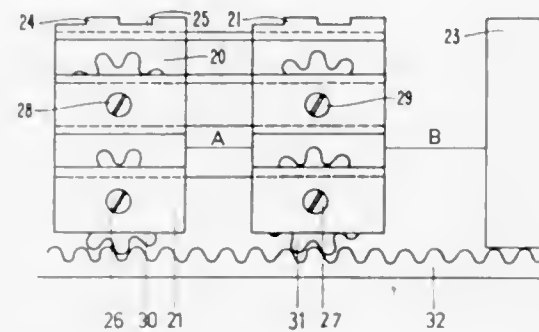
Int. Cl. D03d 35/00

U.S. Cl. 139—136

5 Claims

A batten for a ribbon weaving machine having a plurality of clamps for holding yarn bobbins. Each clamp is formed of at

least two identical laterally disposed portions, each portion having a single set of gear wheels to cooperate with one or more toothed racks in shuttles upon which the yarn bobbins



are carried. Each portion has at least one channel and the channels of all portions are in line with each other so that a guide path for the soles of the shuttles is formed.

3,693,670

**PLASTIC LAMINATED SHUTTLES HAVING PLASTIC CORES OF IMPROVED IMPACT RESISTANCE**

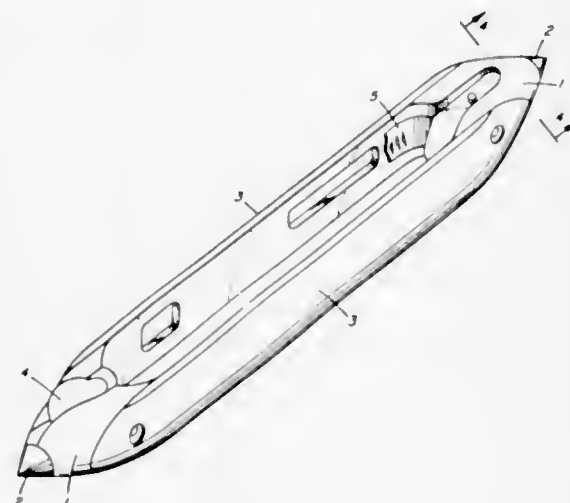
Kenneth Donald Meyres, Cincinnati, Ohio, assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Feb. 9, 1971, Ser. No. 113,921

Int. Cl. D03j 5/02

U.S. Cl. 139—196

4 Claims



Plastic laminated shuttles are provided with cores which form the ends of the shuttle consisting of high impact, cross-linked polyolefin, which reduces the weight of the shuttle and hence its inertia and increases the resilient characteristics of the core, which reduces or eliminates splitting of the core and also permits reduction in operational noise when used in flying shuttle looms.

3,693,671

**PHOTOELECTRIC WEFT DETECTOR**

Dhimat R. Desai, Palatine, Ill., assignor to The Singer Company, New York, N.Y.

Filed March 12, 1971, Ser. No. 123,634

Int. Cl. D03d 45/12

U.S. Cl. 139—273 A

8 Claims

A photoelectric weft detector for fly-shuttle weaving looms utilizing photoelectric sensing means comprises a first photocell positioned to sense specular and diffuse reflected light from a specified surface area of a bobbin, and a second

3,693,673

**DELIVERY OF FLOWABLE MATERIALS INTO CONTAINERS**

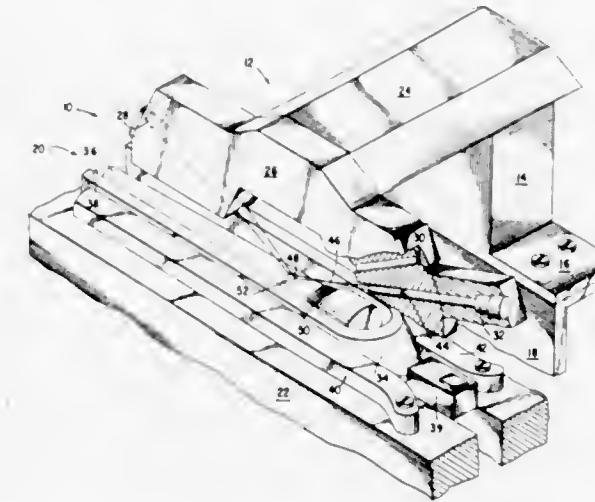
John E. Oates, 6329 Alamo Avenue, Clayton, Mo.

Filed Dec. 18, 1970, Ser. No. 99,545

Int. Cl. B65b 1/04, 3/04

U.S. Cl. 141—237

3 Claims



reflected light. The photocells provide a voltage proportional to their resistance ratio for activating a mechanism which replaces the bobbin upon exhaustion of the weft material.

3,693,672

**CONTAINER FILLING SYSTEM**

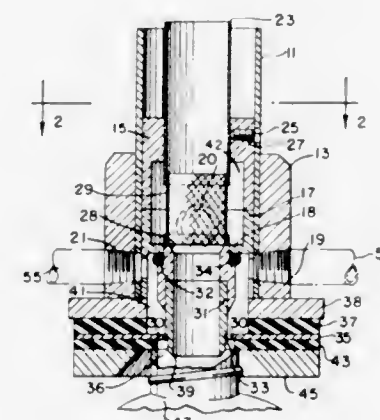
Lewis R. Hiland, Peekskill, N.Y., assignor to Avon Products, Inc.

Filed Dec. 16, 1970, Ser. No. 98,736

Int. Cl. B65b 1/04, 3/04

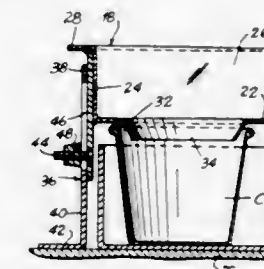
U.S. Cl. 141—7

11 Claims



An apparatus for rapidly filling containers with a pulverulent material. A hollow tube forming a passageway for the material is provided having an air permeable portion surrounded by a vacuum chamber; the air permeable portion being generally powder impermeable. A nozzle is connected to the hollow tube for passing the material from the tube into a container which is to be filled. Another chamber is situated adjacent the nozzle and is separated from the container orifice by a retainer plate having a plurality of holes therethrough.

In operation, when the pulverulent material is to be passed into a container, a vacuum is established in the first vacuum chamber. This vacuum is conveyed to the container and the nozzle through the apertured nozzle retainer. The pulverulent material is thereby suctioned into the container. When the container is filled, a vacuum is created in the second chamber which vacuum is transferred through the air permeable portion of the tube into the hollow passageway. The pulverulent material is thereby inhibited from passing through the tube. At the same time, a blast of air is forced into the first chamber thereby packing the material in the container and clearing the material from the second chamber and the apertured retainer.



3,693,674

**DEVICE FOR DISPENSING A FLUID SUBSTANCE, AND MORE PARTICULARLY MELTED CHEESE**

Marcel, Aime, Rene Guyonnet, Chaville, France, assignor to Fromageries Bel-La Vache Quit Rit, Paris, France

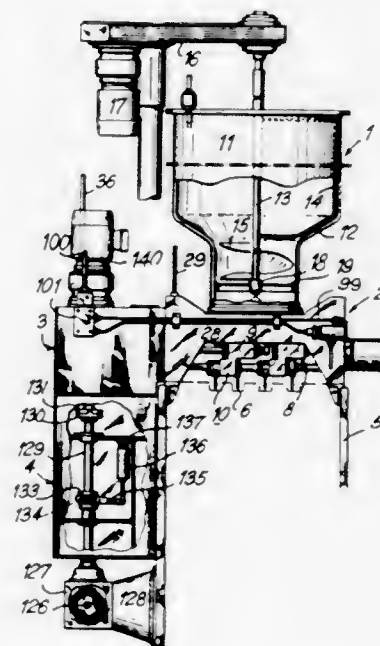
Filed Dec. 2, 1970, Ser. No. 94,300

Claims priority, application France, Dec. 4, 1969, 6941905

Int. Cl. B65b 3/32

U.S. Cl. 141—242

3 Claims



A device for simultaneously filling, with a fluid substance and more particularly with melted cheese, a plurality of containers positioned along parallel lines, the device having a tank the bottom of which is provided with orifices the number of which being equal to the number of containers to be filled. Beneath each orifice is disposed dosing means.

The orifices and the dosing means are positioned at the corners of regular polygons having their centers lying on the axis of the tank. Discharge conduits are provided at the outlets of the dosing means and are so directed as to convey the substance above the various parallel lines.



3,693,675

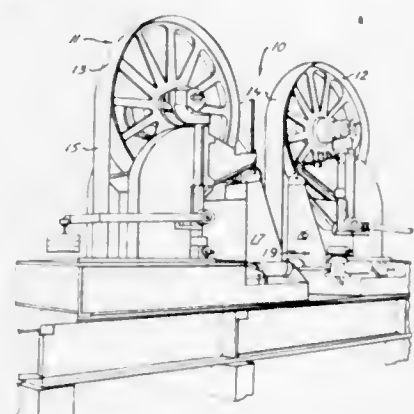
**SHEAR BLADE**

Francis E. Allen, 956 Beaumont Drive, North Vancouver, British Columbia, Canada

Filed July 7, 1970, Ser. No. 52,943

Int. Cl. B27b 15/08

U.S. Cl. 143—22



Shear blade for use in band mills used in lumber processing, the shear blade adapted to restrict propelling of lumber. Leading edge of shear blade is tight, being at higher stress than remaining portions of blade, tightness attained by using one or more of three approaches. First approach is to apply asymmetrical load to the blade, load being applied forward of center line of blade. Second approach is to make trailing edge longer than leading edge, and third approach is to roll-tension shear blade.

3,693,676

**UNDERWATER PILE CUTTING SAW**

Edward N. Burch, 6261 Swartout Road, Algonac, Mich.

Filed Dec. 16, 1970, Ser. No. 98,663

Int. Cl. B27b 17/08

U.S. Cl. 143—32 R



A power saw capable of being manually manipulated above the surface of a body of water for cutting off pilings and the like adjacent the bottom. A locator member which engages around the piling or object to be cut includes a post about which the saw swings, across the locator member, for cutting off the piling or object.

3,693,677

Patent Not Issued For This Number

3,693,678

**SHORT WOOD ATTACHMENT FOR TREE HARVESTERS**

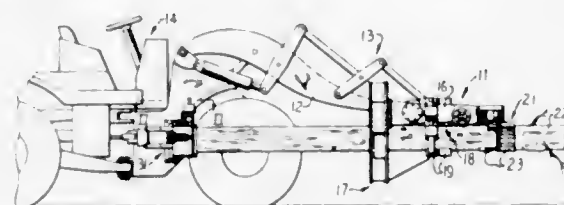
Raymond L. Moser, Tremont, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 28, 1970, Ser. No. 101,559

Int. Cl. A01g 23/02

9 Claims U.S. Cl. 144—2 Z

6 Claims



A short wood or bucking attachment for a tree harvester of the type having a shear assembly, a drive mechanism and a processing implement arranged in operating alignment with the drive mechanism serving to propel or feed a tree past the implement and shear assembly, the attachment including a positive stop for accurately positioning the tree relative to the shear assembly, a sensing mechanism arranged between the stop and the shear assembly and a control unit for deactuating the drive mechanism and operating the shear assembly in response to engagement of the tree with the sensing mechanism, spacing between the sensing mechanism and stop permitting momentum of the tree to carry it into engagement with the stop after deactuation of the drive mechanism and before substantial cutting engagement of the shear assembly with the tree.

3,693,679

**DELIMBING AND TOPPING BLADE CONTROL LINKAGE**

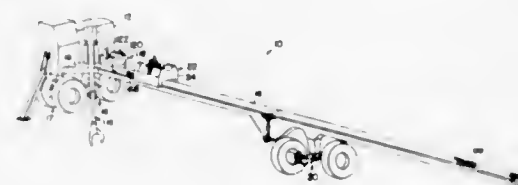
Victor Charles Pierrot, III, Dubuque, Iowa, assignor to Deere &amp; Company, Moline, Ill.

Filed April 16, 1971, Ser. No. 137,155

Int. Cl. A01g 23/02

U.S. Cl. 144—2 Z

5 Claims



A delimbing machine includes an elongate horizontal platform on which full-length trees are placed and along which a blade-carrying carriage is propelled to delimb and then cut the top from a tree stem. The delimbing blades are spring-biased into encirclement of a tree stem and cams mounted on the opposite ends of the platform operate a crank to cause the blades to open to permit a tree to be delimbed to be placed for encirclement by the blades and to permit a delimbed tree to be removed from the blades. The topping blades are also spring-biased toward engagement with the tree stem but are held away from the tree stem by an overcenter linkage which is moved overcenter by a linkage connected to the crank arm for opening the delimbing blades when the delimbing blades reach a predetermined small diameter near the top of the tree stem.

3,693,680

**TREE HARVESTER DRIVE ARRANGEMENT**

Raymond L. Moser, Tremont, Ill., and Max J. Teasdale, Waterloo, Belgium, assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 7, 1971, Ser. No. 150,525

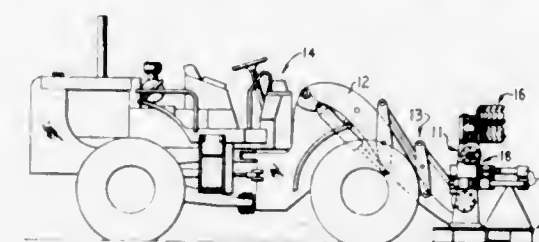
Int. Cl. A01g 23/02

U.S. Cl. 144—3 D

16 Claims

A tree harvesting machine including a processing implement, clamping and drive mechanisms for respectively secur-

ing a tree in proper alignment and propelling the tree past the processing implement, a rotary motor for operating the drive means and a speed reducing assembly for coupling the motor with the drive means, a flywheel being arranged for rotation with the motor to assist the motor in meeting peak torque de-



mands of the drive means and maintaining generally constant operation of the harvesting machine. In another embodiment, a hydraulically actuated clutch engages the flywheel with an output shaft of the motor in response to a fluid supply with also operates the motor so that the flywheel is permitted to freewheel when the motor is not operating.

3,693,681

Patent Not Issued For This Number

3,693,682

**ROTARY CUTTING MACHINE WITH ADJUSTABLE CUTTER**

Morten Birger Hasfjord, Odeshog, Sweden, assignor to Svenska Industriablering Saktiebolaget, Stockholm, Sweden

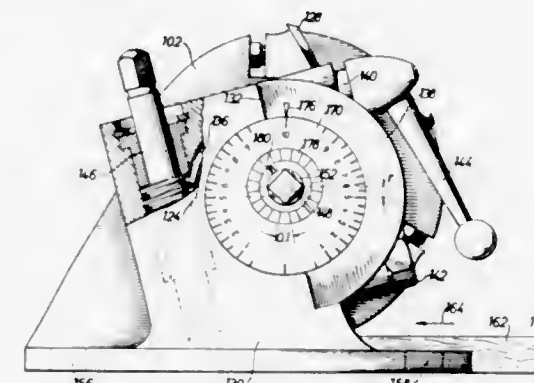
Filed Aug. 21, 1970, Ser. No. 66,037

Claims priority, application Sweden, Aug. 21, 1969, 11591/69

Int. Cl. B27c 1/00

U.S. Cl. 144—130

7 Claims



The disclosure relates to an adjustable rotary cutting head for use in jointers, planers, and other similar machines with rotary cutting heads. The rotary cutting head is mounted for rotation in a fixed shaft. The cutting head is adjusted vertically by means of an eccentric portion which raises and lowers the shaft as the eccentric member is rotated. The shaft is adjusted laterally by means of a threaded bore and adjustment screw which moves the shaft axially as the adjustment screw is rotated. Means are provided for indexing the relative rotation of the eccentric member.

3,693,683

**METHOD AND APPARATUS FOR WORKING ELONGATE COMPONENTS AT SUCCESSIVE LONGITUDINAL LOCATIONS**

James Hurn, Fresford, England, assignor to Hurn Brothers Engineering Limited, Melksham, Wiltshire, England

Filed April 17, 1970, Ser. No. 29,568

Claims priority, application Great Britain, April 17, 1969, 19,636/69

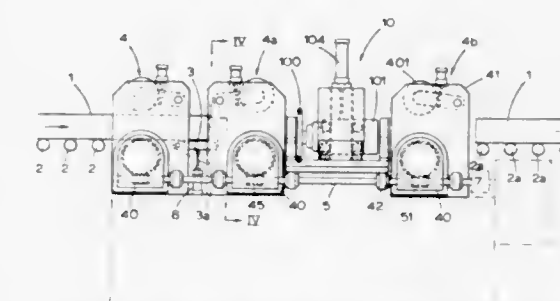
Int. Cl. B27m 3/00

U.S. Cl. 144—325

7 Claims

The invention is concerned with a method of and apparatus for performing a succession of working operations at

preselected locations along the length of an elongate workpiece. The leading end of the workpiece is advanced up to a datum position. On the upstream side of the datum position there is located a drive roller, and on the downstream side of the datum position there is located a working station. The work station has at a predetermined distance from the datum position, at least one working tool, for example a saw or a drill. The workpiece is held against the drive roller, and then said drive roller is rotated through a succession of rotary movements, with the drive roller being stationary between move-



ments for predetermined time intervals. During each movement the drive roller is rotated through a predetermined amount. The workpiece is thereby advanced in successive steps through said work station and successive preselected locations longitudinally of the workpiece are brought opposite the working tool, and held stationary for predetermined time intervals between the periods of movement. A second drive roller is located on the downstream side of the work station which is driven in synchronism with the upstream drive roller. Working operations are only performed when the workpiece is stationary.

3,693,684

**CUTTING APPARATUS**

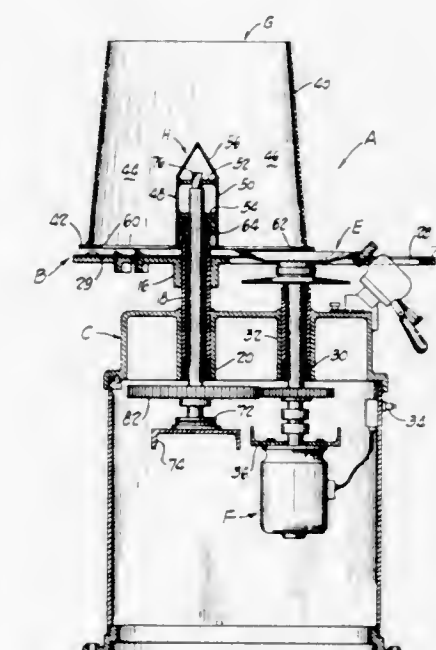
Louis A. Bettcher, Amherst, Ohio, assignor to Bettcher Industries, Inc., Birmingham, Ohio

Filed Dec. 28, 1970, Ser. No. 101,457

Int. Cl. B26d 4/28

U.S. Cl. 146—105

7 Claims



Apparatus for severing a comestible product, such as, meat, vegetables, and the like, having a multiple compartment product carrier rotatable about a generally vertical axis for moving a product or products to be severed past a rotating knife and which can be loaded without interrupting its rotation.



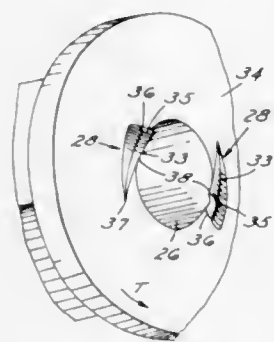
### 3,693,685 FASTENER

George R. Onufer, Tulsa, Okla., assignor to Russell, Burdshall & Ward Bolt and Nut Co., Port Chester, N.Y.  
Continuation-in-part of Ser. No. 806,119, March 11, 1969, Pat. No. 3,638,700. This application May 14, 1971, Ser. No. 143,354

Int. Cl. F16b 39/282, 39/30

U.S. Cl. 151—21 C

3 Claims



A nut, for mounting on a screw extending through a member against which the nut is to be tightened, has a plurality of spiral ramps on the face adapted to abut the member during nut tightening, with the ramps arranged adjacent the nut bore and having the high ends which first engage the member being disposed radially closer to the bore axis than the lower opposite ends with the slope of the ramp between such ends being opposite to the helix slope of the thread of the screw whereby the member is ironed radially inwardly by the ramps during nut tightening to force portions of the member into the threads of the screw increasing the locking action between the screw, the nut and such member. In a modification of the nut the ramps may be either concentric or spiral, but have end faces opposing unthreading of the nut. The ramps may have a screw thread form on their radially inwardly facing edges to provide a lead screw action in starting a screw member through an unthreaded bore of the nut. Also disclosed is an application of the ramp concept to a bolt head and to a lock washer. Methods of making the nut are also shown.

3,693,686

Patent Not Issued For This Number

### 3,693,687 PNEUMATIC VEHICLE TIRE

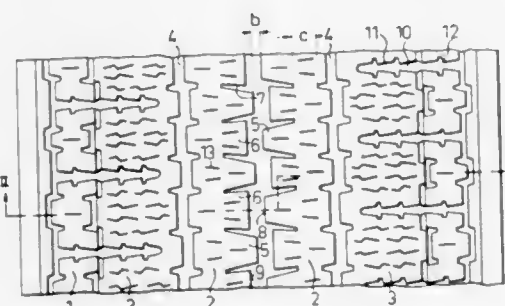
Kurt May Hannover, and Gunter Johannes, both of Neustadt/RBGE, Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany  
Filed Oct. 14, 1970, Ser. No. 80,577

Claims priority, application Germany, Oct. 25, 1969, G 69 41 584.5

Int. Cl. B60c 11/08

U.S. Cl. 152—209

10 Claims



A pneumatic vehicle tire with a profiled tread strip in which at least two circumferential ribs are provided with a circumferential groove therebetween while said ribs located on op-

posite sides of said grooves are respectively provided with protrusions extending from opposite sides into said circumferential groove, each protrusion on one side of one and the same groove being located oppositely one protrusion on the other side of said groove while one of each two protrusions which are located opposite to each other extend into the groove to a different extent.

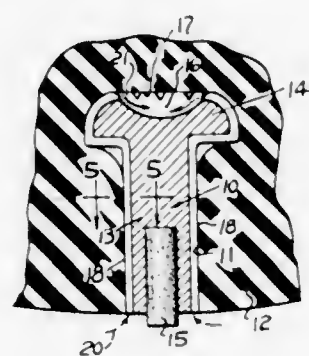
### 3,693,688 TIRE STUDS

Mark Schuman, 101 G St., S.W. Apt. 516, Washington, D.C.  
Filed Jan. 8, 1971, Ser. No. 104,914

Int. Cl. B60c 11/16

U.S. Cl. 152—210

11 Claims



A studded tire having blind holes in its tread into which headed studs are fitted, with a space provided between the inner end of each stud head and the bottom of its blind hole, and passageways communicating said space to the exterior of the tread for passage of fluid from the road to the space for forming a less compressible backing for the studs when they contact a wet road surface.

3,693,689

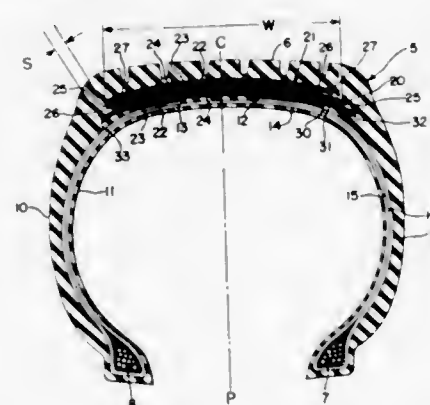
### PNEUMATIC TIRE

Hans Joachim Winter, Bereldange, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio  
Filed Oct. 13, 1970, Ser. No. 80,363

Int. Cl. B61c 9/18

U.S. Cl. 152—361

12 Claims



A radial tire with a pair of folded breaker strips for annularly reinforcing the tire. An unfolded breaker strip, laterally spanning the folded breaker strips, is positioned between the carcass plies and nearest folded breaker. The unfolded breaker includes reinforcing cords having an angular disposition between the angles of the cords reinforcing the carcass plies and folded breakers.

3,693,690

### PNEUMATIC AIRCRAFT TIRE

Harold E. Mills, Wadsworth, Ohio, and Claude S. Young, Danville, Va., assignors to The Goodyear Tire and Rubber Company, Akron, Ohio  
Filed June 29, 1970, Ser. No. 50,643

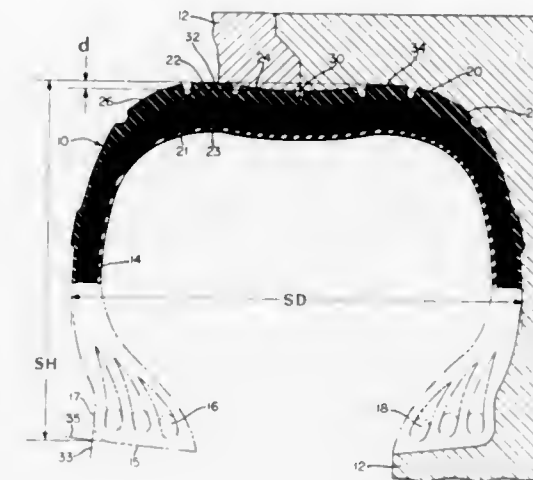
Int. Cl. B60c 3/00

U.S. Cl. 152—352

5 Claims

A bias belted pneumatic aircraft tire having belts of nylon cord fabric and a molded cross-sectional tread configuration

wherein the center portion of the tread is depressed with the flange to a released position. A releasable device locks the second lever to the body member during the initial wedging



3,693,691

### PRESSURE RELIEF DEVICE

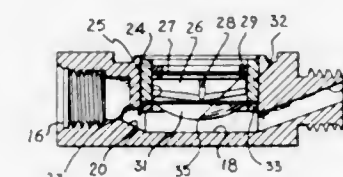
Stanley E. Summers, Woodland Hills, Calif., assignor to Ametek, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 54,397, July 13, 1970, abandoned. This application Nov. 23, 1970, Ser. No. 91,845

Int. Cl. F16k 17/16; B60c 29/00

U.S. Cl. 152—427

10 Claims



A device is disclosed which is useful for the pressure relief of inflatable, enclosed receptacles. The device is particularly suited for use with aircraft wheels or similar wheels bearing tires which are inflated with a gas from a source that is at a pressure that exceeds the safety limits of the wheel. The device is mounted in the valve stem of the wheel and comprises a body, a flow passageway therethrough and in communication with at least one inlet and two outlet ports with one of the outlet ports sealed by a ruptureable diaphragm and the other outlet port communicating with the tire chamber. The flow pressure drop through the device and the valve stem insure that the diaphragm is exposed to a pressure greater than that existing in the tire chamber during its inflation. By appropriate design, the pressure supply will rupture the diaphragm before any excessive pressure rise occurs within the tire. The use of ruptureable diaphragms for this purpose provides a tamper proof relief system with a positive seal.

3,693,692

### TIRE BEAD BREAKING TOOL

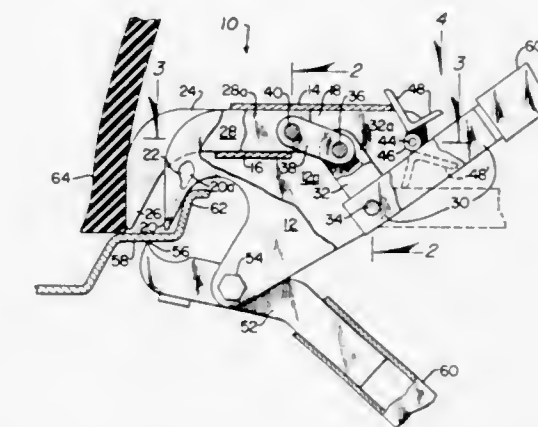
Charles Earl Branick, 1601 S. 9th St., Fargo, N. Dak.  
Filed Dec. 23, 1970, Ser. No. 100,913

Int. Cl. B60c 25/06

U.S. Cl. 157—1.17

10 Claims

Portable tire bead breaking tool characterized by a body member having a pair of fixed spaced wedges and a movable pusher foot of like shape disposed therebetween; a pivoted lever for initially forcing the fixed wedges radially inward between a tire bead and a wheel rim flange; and a second pivoted lever for thence moving the pusher foot laterally relative to the fixed wedges for further forcing the bead away from



3,693,693

### VERTICALLY SLIDING DOOR MOUNTED IN HORIZONTALLY PIVOTED FRAME

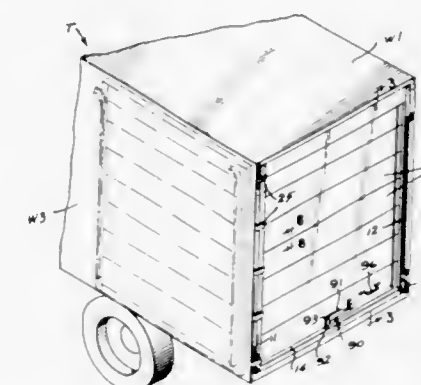
Charles T. Court, P.O. Box 1921, Texarkana, Tex. 75501

Filed Dec. 11, 1970, Ser. No. 97,211

Int. Cl. E05d 15/22

U.S. Cl. 160—195

3 Claims



An assembly of articulated panels is slidably mounted in tracks on a door frame which interconnect with overhead tracks in an enclosure, the door frame tracks being separable from the overhead tracks and the frame being hinged in a doorway for horizontal opening of the frame when the panels are closed. Latch means is provided which prevent opening movement of the frame except when the panels are completely closed.

3,693,694

### SECTIONALIZED PANEL STRUCTURE

Karl C. Elhen, Montreal, Quebec, Canada, assignor to Modernfold of Canada Limited-Modernfold Du Canada Limitee, St. Lambert, Quebec, Canada

Filed Oct. 1, 1970, Ser. No. 77,256

Int. Cl. E05d 15/26

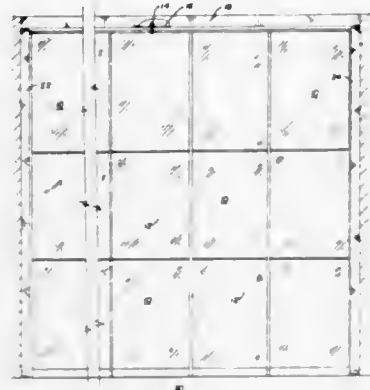
U.S. Cl. 160—199

8 Claims

A space divider assembly includes an overhead track arrangement and a plurality of built-up space divider panels suspended therefrom by means permitting movement of said panels along the track arrangement. Each of the built-up space divider panels includes a plurality of panel sections secured together and disposed end-to-end in co-planar vertically stacked relation to provide the required overall panel height. Each panel section defines pairs of spaced marginal edges, with adjacent spaced pairs of marginal edges of the respective end-to-end co-planar panel sections confronting



each other. An elongated alignment strip is disposed between each adjacent confronting pair of marginal edges to assist in



maintaining the panel sections in the desired co-planar relationship.

3,693,695

**CLOSURE CONSTRUCTION**

Chester A. Deane, 3149 Allentown Road, Lima, Ohio  
Continuation-in-part of Ser. No. 753,463, Aug. 19, 1968. This application July 31, 1970, Ser. No. 60,069

Int. Cl. E06b 9/10

U.S. Cl. 160—243

7 Claims



A closure for a vertical doorway comprises a sheet of flexible material secured at the top of the doorway in the plane of the latter and fixed at its lower edge to a roller within which is mounted a driving motor for rotating the roller to wind and unwind the flexible sheet about the roller. The roller is guided in its winding and unwinding movements by rails which are inclined to the vertical in such manner as to assure that those portions of the sheet that are unwound from the roller remain at all times flush with the plane of the doorway.

3,693,696

**TRAVERSE ASSEMBLY FOR DRAPERIES AND THE LIKE**

Ferdinand F. Salzmann, Madison, Wis., assignor to Consolidated Foods Corporation, Chicago, Ill.

Filed Aug. 30, 1971, Ser. No. 176,161

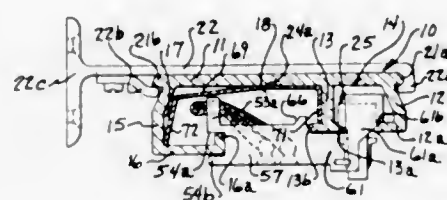
Int. Cl. A47h 5/032

U.S. Cl. 160—345

10 Claims

A traverse assembly for draperies and the like including an elongated rigid rod having a top wall and front and intermediate walls extending downwardly from the top wall defining a downwardly opening front carrier track, and a rear wall extending downwardly from the front wall and having a bottom wall portion at its lower edge defining a forwardly opening rear cord track spaced rearwardly from the front carrier

track to provide a downwardly opening access passage therebetween. Headed drapery carriers are supported in the front carrier track and extend downwardly below the track to support drapery panels adjacent the front of the rod and



traverse cords are disposed in the rear cord track and connected to a master carrier that is guidably supported at the forward edge of the bottom wall portion of the rear cord track and extends forwardly across the access passageway and below the intermediate wall of the front carrier track.

3,693,697

**CONTROLLED SOLIDIFICATION OF CASE STRUCTURES BY CONTROLLED CIRCULATING FLOW OF MOLTEN METAL IN THE SOLIDIFYING INGOT**

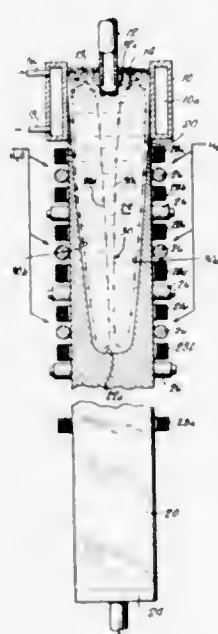
Alexander A. Tzavaras, Broadview Heights, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Filed Aug. 20, 1970, Ser. No. 65,611

Int. Cl. B22d 27/02, 11/12

U.S. Cl. 164—51

15 Claims



Continuously casting an ingot wherein the ingot has a pool of molten metal extending downstream a substantial distance from the casting mold, entrained by an outer skin of the ingot formed during passage through the mold. The molten metal within the pool is continuously circulated along the solid/liquid interface advantageously for at least a major portion thereof in a first direction the same as that of ingot movement and is returned in an opposite direction within the interior of the pool. This sweeping flow of metal along the interface changes the solidification microstructure from that which would be normally present, and results in the formation of improved and advantageously new products, e.g., new steel bodies, particularly noted by unique microstructures. The flow rate is chosen to provide a variety of novel solidification structures, i.e., modified equiaxed dendritic structure, or structures herein described as thamnitic of fibrous structures, within the ingot. The circulation of the molten metal may be provided by a helical coil which extends about the ingot downstream from the mold and, in the optimum arrangement, for substantially the entire extent of the molten pool within the ingot.

3,693,698

**METHOD OF CASTING VOLATILE METALS**

Angel Tontchev Balevski, and Ivan Dimov Nikolov, both of Sofia, Bulgaria, assignors to Institut po metaloznanie i tehnologia na metalite, Sofia, Bulgaria

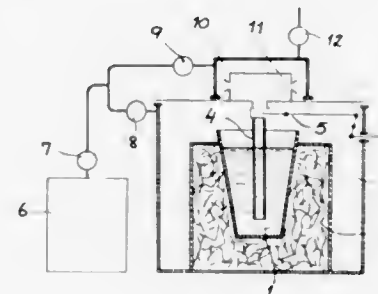
Filed March 28, 1969, Ser. No. 811,450

Claims priority, application Bulgaria, April 5, 1968, 9749 The portion of the term of this patent subsequent to Oct. 6, 1987, has been disclaimed.

Int. Cl. B22d 27/14

U.S. Cl. 164—119

2 Claims



A method of casting of metals wherein the metal is heated under a pressure sufficient to prevent evaporation or disassociation, is transferred to a mold while the pressure is maintained and is finally cooled under the aforementioned pressure. Thereafter, the pressure is reduced to allow removal of the cast article.

3,693,699

**ARRANGEMENT FOR ELECTROSLAG REMELTING OF METALS AND, IN PARTICULAR, STEEL**

Wolfgang Holzgruber, and Otmar Kleinhagauer, both of Kapfenberg, Austria, assignors to Gebr. Boehler & Co., Kapfenberg, Austria

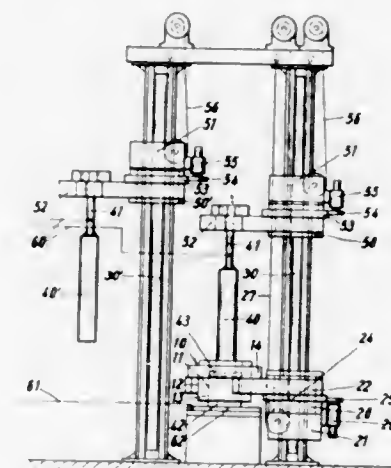
Filed June 15, 1970, Ser. No. 46,014

Claims priority, application Austria, June 17, 1969, A 5711/69

Int. Cl. B22d 27/02

U.S. Cl. 164—250

7 Claims



An installation for electroslag remelting of metals and, in particular, steel. Two vertical columns are provided on each of which there is vertically slidably mounted electrode-holding means. One of the two columns also vertically slidably supports a mold-holding means adapted to support a mold for receiving the molten metal. Each one of the electrode-holding means is horizontally swingably mounted about the longitudinal axis of its associated column so that each electrode-holding means is adapted to describe a predetermined arcuate path which intersects the arcuate path described by the other electrode-holding means. The mold-holding means is also horizontally swingable and adapted to position the mold during the remelting process so that its longitudinal axis substantially coincides with the point of intersection of the arcuate paths of the electrode-holding means.

3,693,700

**INSTALLATION FOR THE ELECTROSLAG REMELTING OF CONSUMABLE ELECTRODES WITH MODULATED CURRENT**

Boris Evgenievich Paton, ul. Katsjubinskogo, 11/13, kv. 21; Vladimir Konstantinovich Lebedev, ul. Engelsa, 25, kv. 12; Boris Izrailevich Medovar, bulvar L. Ukrainki, 2, kv. 8; Jury Vadimovich Latash, Vozdukhoflatsky Prospekt, 81, kv. 14; Nikolai Vasilievich Podola, Pushkinskaya ul., 8, kv. 12; Oleg Petrovich Bondarenko, Kreschatik 15, kv. 34, all of Kiev; Semen Abramovich Leibenzon, prosp. Lenina, 185, kv. 36, Zaporozhie; Gary Petrovich Kaganovskiy, patrioticheskaya ul., 48, kv. 71, Zaporozhie; Vadim Filimonovich Smolyakov, pr. Lenina, 155, kv. 60, Zaporozhie; Konstantin Sergeevich Eltsov, ul. 40 letia Sovetskoi Ukrainy, 6, kv. 1, Zaporozhie; Georgy Kharitonovich Gabuer, prospekt Lenina, 228, kv. 17, Zaporozhie, and Dmitry Fedorovich Gladky, prospekt Metallurgov, 3, kv. 33, Zaporozhie, all of U.S.S.R.

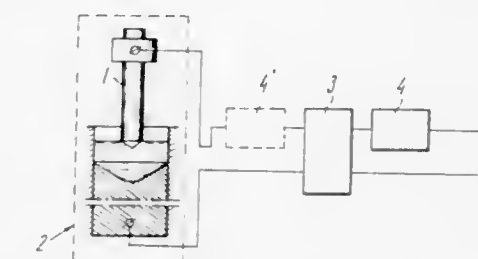
Continuation of Ser. No. 641,605, May 26, 1967, abandoned.

This application July 6, 1970, Ser. No. 56,141

Int. Cl. B22d 27/02

U.S. Cl. 164—250

14 Claims



A device for improving the quality of the metal of ingots, produced by the method of electroslag remelting of consumable electrodes in cooled moulds, the amplitude of the alternating current of low frequency of the installation being modulated by means of various modulators series-connected in the primary or secondary circuit of a transformer feeding the electroslag remelting installation. The modulation of the amplitude of the alternating current of a frequency equal or close to the frequency of the oscillations of the liquid metal bath causes resonance oscillations of the metal bath, which cause refining of the structure of the crystallizing ingot, elimination of dendritic non-uniformity and a higher quality of the metal.

3,693,701

**CONTINUOUS CASTING PLANT FOR CONTINUOUSLY CASTING HOT LIQUID METALS**

Herbert V. Wacławiczek, Duisburg, Germany, assignor to Vereinigte Österreichische Eisen-und Stahlwerke Aktiengesellschaft, Muldenstrasse, Linz, Austria

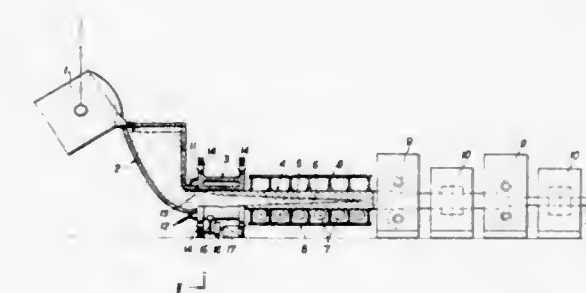
Filed Dec. 22, 1970, Ser. No. 100,705

Claims priority, application Austria, Jan. 9, 1970, A 166/70

Int. Cl. B22d 11/10

U.S. Cl. 164—260

1 Claim



The invention envisages a plant for continuously casting hot liquid metals comprising an intermediate supply vessel having a substantially horizontal outlet duct, a water-cooled mould arranged with play substantially in alignment with said outlet duct, a cooling passage including guide means for continuous



cast stock following said mould, and reshaping means for further processing said cast stock, in which the mould is arranged to be rotatable around its longitudinal axis and connected to a rocking drive for oscillatory movement of said mould in peripheral direction relative to said supply vessel, said play between said mould and said supply vessel being sealed by a covering ring having inlet means for introduction of a lubricating and sealing agent. By adoption of the new arrangement according to the invention it is possible to reduce the construction height of continuous casting bays, thereby eliminating any risks of accidents involved in the previous cascade arrangement.

3,693,702

### PRESSURE CASTING MACHINE WITH PRESSURE INCREASE SYSTEM

Rolf Piekenbrink, Markgrafenstrasse 58, Dusseldorf-Oberkassel, and Albert Reinhardt, Reiherstrasse 2, Monheim, both of Germany

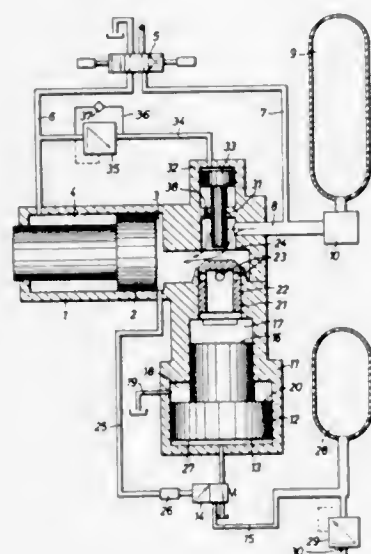
Filed May 26, 1970, Ser. No. 40,574

Claims priority, application Germany, April 15, 1970, P 20 17 951.5

Int. Cl. B22d 17/04

U.S. Cl. 164—134

12 Claims



A pressure casting machine having a moulding piston slidable in a cylinder and a pressure-increase system having a stepped piston and serving to increase the pressure in the moulding cylinder towards the end of the working stroke of the moulding piston, the pressure line leading to the working chamber of the moulding cylinder being closed by means of a valve when the pressure-increase system is in operation, wherein the annular face of the pressure-increase piston is free from pressure and the large face of the said piston is actuated by a predetermined pressure through a feed line controlled by a valve.

3,693,703

### SPUR DRIVE FOR REGENERATOR-TYPE HEAT EXCHANGER

Thomas Rowe Stockton, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 31, 1970, Ser. No. 103,215

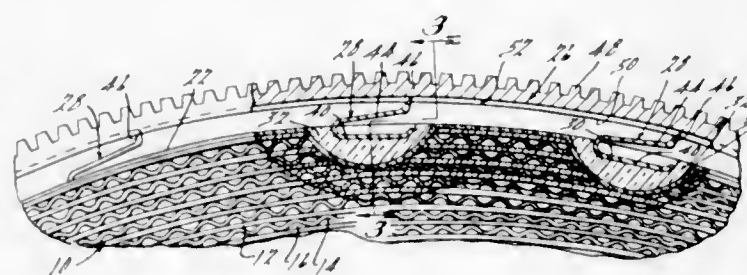
Int. Cl. F28d 19/04

U.S. Cl. 165—8

7 Claims

A rimless rotary heat exchanger of the disc type having ceramic plugs buried in the peripheral face thereof. These

plugs have depressions frictionally containing spring metal clips which have means in the form of a sharp spur that engage



and deform the material of a drive ring gear positioned about the peripheral face of the heat exchanger.

3,693,704

### AIR CONDITIONING SYSTEM

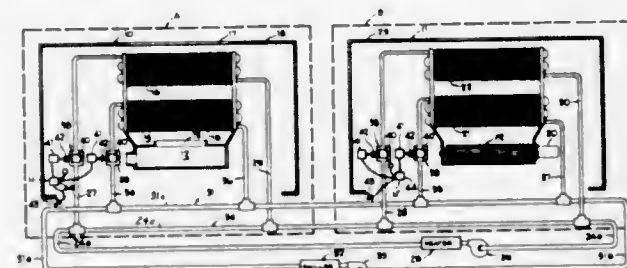
Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sept. 11, 1970, Ser. No. 71,550

Int. Cl. F24f 3/14

U.S. Cl. 165—21

7 Claims



An air conditioning system employing separate chilled water and heated water single pipe loops and designed for use with individual room air conditioning units (inductor or fan-coil) equipped with separate heating and cooling heat exchange coils. The system provides local control at each unit, for both heating and cooling at all times when the heated water and chilled water circuits are active, as each circuit in the unit includes a circulating pump and coil, the pumps being under thermostatic control responsive to room temperature requirement.

3,693,705

### MULTIZONE AIR CONDITIONING AND VENTILATING UNIT

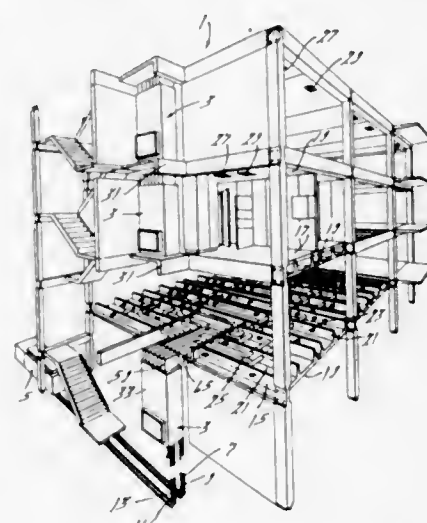
Robert B. Stotz, 1005 Greenridge Drive, Dayton, Ohio

Filed Jan. 21, 1971, Ser. No. 108,495

Int. Cl. F24f 3/00

U.S. Cl. 165—22

13 Claims



A system for air conditioning, heating and ventilating a multistory building having a plurality of living spaces on

several of the stories. Each story has a separate unit for air conditioning, heating and ventilating all the living spaces on each story.

3,693,706

### PNEUMATIC CONTROL SYSTEM

Larry V. Nisley; Klaus P. Mueller, and Kenneth G. Kreuter, all of Goshen, Ind., assignors to Robertshaw Controls Company, Richmond, Va.

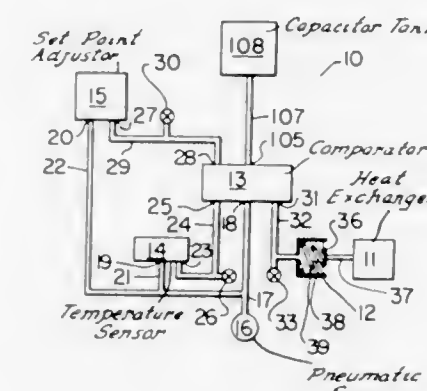
Division of Ser. No. 719,495, April 8, 1968, Pat. No.

3,587,395. This application July 1, 1970, Ser. No. 60,204

Int. Cl. B60h 3/04

U.S. Cl. 165—23

3 Claims



This disclosure relates to a vacuum temperature control system wherein a pair of vacuum signals respectively from a temperature sensor and a temperature selecting means are translated by a comparator into a vacuum control signal that operates a temperature output means for the system in relation to the vacuum control signal to produce a proportional action thereof, the system, however, having vacuum signal means for resetting the comparator to slowly eliminate the proportional action caused by the comparator.

3,693,707

### FRACTIONAL DESUBLIMATION

Guenther Richter, Gladbeck, Germany, assignor to Gelsenberg Benzin Aktiengesellschaft, Gelsenkirchen, Germany

Division of Ser. No. 784,284, Dec. 9, 1968, and a continuation-in-part of Ser. No. 784,284, Dec. 9, 1968. This application

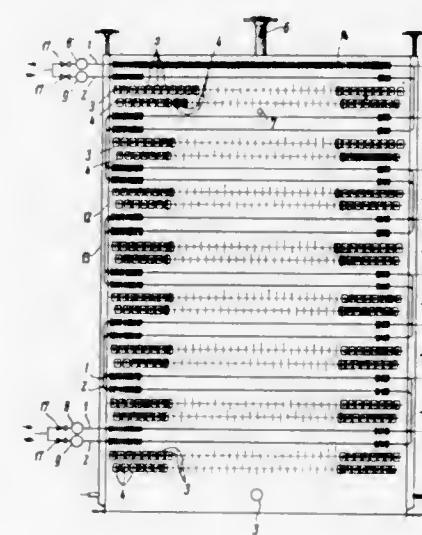
April 12, 1971, Ser. No. 133,130

Claims priority, application Germany, Dec. 9, 1970, P 16 68 161.1

Int. Cl. B60h 1/00

U.S. Cl. 165—39

14 Claims



Separation of a component contained in a gas, by desublimation is carried out in a separator outfitted with a plurality of

tube coils interposed so that turns of one coil are disposed between turns of another coil. The coils are connected in parallel so that coolant can be passed in timed sequence, successively through the coils, changing the coils used for cooling in accordance with build up of sublimate on the turns to maintain in cooling service coils not bearing excessive sublimate. The turns of each coil can be uniformly spaced, and said spacing for each coil can be the same. Said spacing can be selected to provide the residence time adjacent the separator outlet necessary to provide the desired degree of separation. Thereby, in effect, fractionation as well as separation can be realized, i.e. a sublimate of high purity can be produced. The invention is particularly effective for separation of pyromellitic acid dianhydride.

3,693,708

### DEVICE FOR EVAPORATIVE COOLING OF METALLURGICAL FURNACES

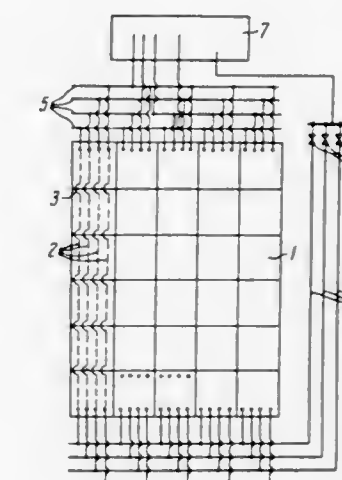
Sergei Mikhailovich Andoniev; Gerber Leonid Moisevich; Grigory Ivanovich Kasyanov; Gennady Alexandrovich Kudinov; Dorina Borisovna Kutsykovich; Tamara Izovna Nissenbaum; Jury Borisovich Raikovskiy, all of Kharkov; Mikhail Semenovich Somchenko, Kharkovskoi oblasti; Oleg Vladimirovich Filipiev, and Jury Petrovich Entis, both of Kharkov, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatel'skiy i Preektny Institut po Ochistke Tekhnologicheskikh gazov i stochuykh vod prospekt lenina, i Ispol'zovaniyu Vtorichnykh Energoresursov Predpriyati Chernoi Metallurgii, U.S.S.R., Kharkov.

Filed Sept. 30, 1970, Ser. No. 76,702

Int. Cl. F28f 27/02

U.S. Cl. 165—101

2 Claims



A device for evaporative cooling of metallurgical furnaces, which comprises banks of vertically arranged cooling members connected in series, wherein pipes for passing the coolant in each bank are connected to individual supply and discharge headers.

3,693,709

Patent Not Issued For This Number

3,693,710

### RADIATOR FIN-TUBE CONSTRUCTION AND METHOD

Sidney S. Drosnin, 2087-10th Ave., San Francisco, Calif.

Filed April 20, 1970, Ser. No. 29,862

Int. Cl. F28f 1/10

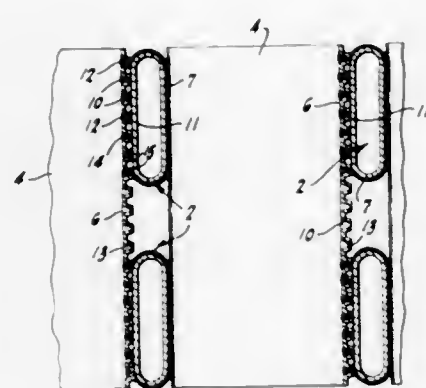
U.S. Cl. 165—152

6 Claims

Fin-tube radiator core construction and method in which the fins are formed by folding a strip of sheet metal back and



forth on itself and perforations are formed at the fold lines of the fins adjacent the tubes for receiving projections of adhesive member so that the surfaces of the latter lie substantially in coplanar relation to the surface element, the extension member



sive from the coating thereof on the surface of the tube to create a strong bond between the fins and the tubes.

3,693,711

**MONOLITHIC CAST BODY HEAT EXCHANGER**

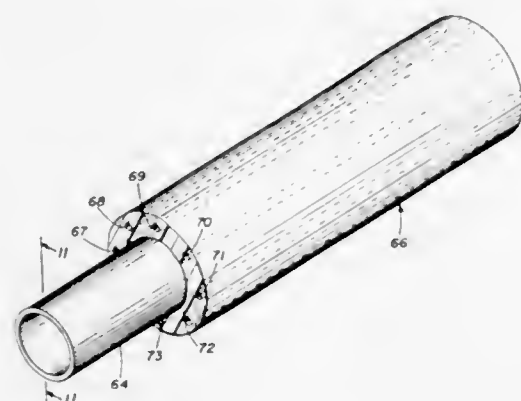
Alfred E. Zygiel, 2510 Hillsboro, Dallas, Tex.

Continuation-in-part of Ser. No. 871,112, Oct. 2, 1969, abandoned, Division of Ser. No. 645,436, June 12, 1967, Pat. No. 3,498,371. This application March 8, 1971, Ser. No. 121,750

Int. Cl. F28d 7/00

U.S. Cl. 165—164

7 Claims



Heat transferring apparatus cast from a resinous metallic composition and having a plurality of passages formed therein. The resinous metallic composition includes a base material, such as an epoxy resin, mixed with a solidifying hardener and metallic particles to enhance the heat transferring abilities of the solidified resin. Individual heat exchanger passages are formed by pressurizing flexible tubing arranged in the desired configuration during the solidifying process of the resinous metallic composition.

3,693,712

Patent Not Issued For This Number

3,693,713

**FINNED TUBE AND METHOD OF MANUFACTURE**

Frederick J. Stahl, Hawthorne, N.J., assignor to Curtis-Wright Corporation

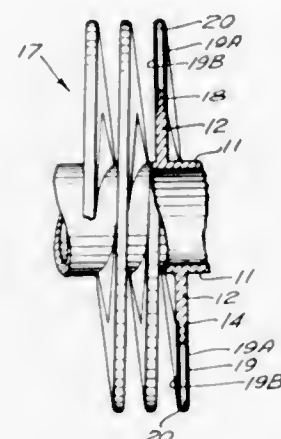
Filed July 16, 1970, Ser. No. 55,494

Int. Cl. F28f 1/14

U.S. Cl. 165—184

3 Claims

A finned tube which has a helical surface element formed by displacement of a portion of the tube wall and securing to the distal end edge of the surface element a helical extension



3,693,714

**TUBING HANGER ORIENTING APPARATUS AND PRESSURE ENERGIZED SEALING DEVICE**

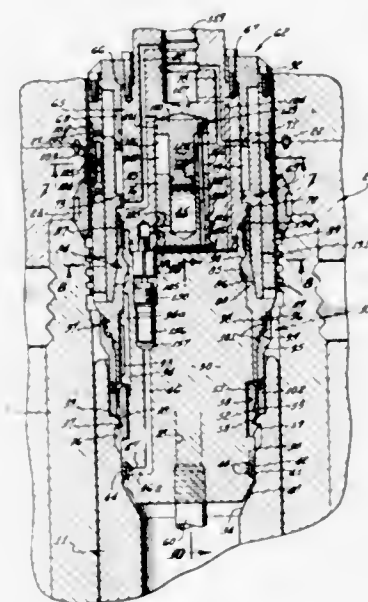
Benton F. Baugh, Houston, Tex., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed March 15, 1971, Ser. No. 123,983

Int. Cl. E21b 33/035

U.S. Cl. 166—6

32 Claims



A tubing hanger for suspending multiple tubing strings is seated in a subsea wellhead or casing hanger, being properly oriented with respect to a running tool by means of which the tubing hanger is lowered from the drilling vessel to seat in the casing hanger. The running tool is properly oriented relative to a guidance system as a reference point which extends from the subsea floor to the drilling vessel, resulting in the multiple string tubing hanger being properly oriented with respect to the guidance system for subsequent appropriate connection with a Christmas tree, or other apparatus, to be lowered down the guidance system, which it also uses as a reference point, thereby properly relating the Christmas tree to the multiplicity of passages in the tubing hanger. The tubing hanger is sealed against the wellhead in which it is seated by hydraulic actuation of the seal and without the necessity for transmitting torque through any parts of the apparatus.

3,693,715

**APPARATUS FOR BLOCKING FLUID FLOW IN A WELL CASING**

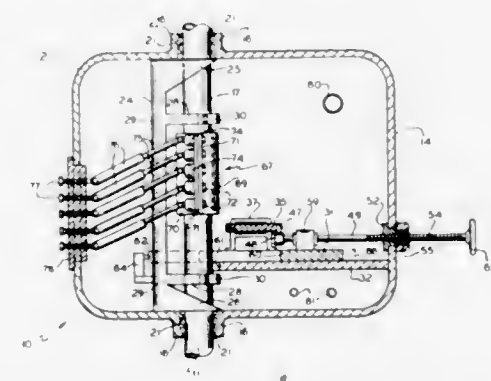
John M. Brown, 5787 Pine Grove Road, R.D. # 3, Clay, N.Y.

Filed May 14, 1971, Ser. No. 143,406

Int. Cl. E21b 29/00

U.S. Cl. 166—55

10 Claims



Apparatus for blocking fluid flow in a well casing where the well is out of control due to blowout, fire or casing leaks. A shell comprised of two hingedly connected mating parts is mounted on the casing so as to enclose a portion thereof in a sealed manner. A metal cutting saw blade in the shell is provided with power means to reciprocate it and move it into the casing whereby the blade cuts through the casing. The width of the blade is greater than the casing diameter so that upon completion of the cut the blade blocks the fluid flow. This permits a shut off valve or other control means to be installed in the casing above the shell after which the saw can be withdrawn and the shell removed for re-use.

3,693,716

Patent Not Issued For This Number

3,693,717

**REPRODUCIBLE SHOT HOLE**

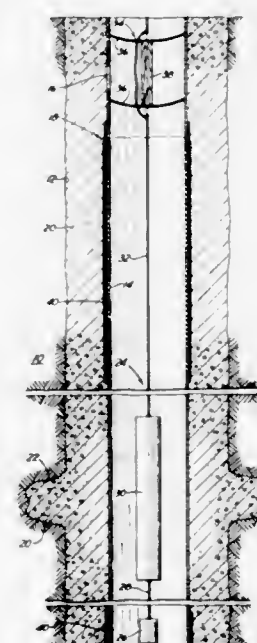
Paul C. Wuenschel, Glenshaw, Pa., assignor to Gulf Research &amp; Development Company, Pittsburgh, Pa.

Filed Oct. 22, 1970, Ser. No. 82,907

Int. Cl. E21b 33/13

U.S. Cl. 166—285

3 Claims



A reproducible shot hole for geophysical use wherein a deformable metal liner, such as aluminum, of predetermined diameter, wall thickness, and alloy is selected, and the annulus between the liner and the hole filled with sand-cement under pressure, so that the lined hole will withstand repeated explosions by expanding.

902 O.G.—49

3,693,718

**LASER BEAM DEVICE AND METHOD FOR SUBTERRANEAN RECOVERY OF FLUIDS**

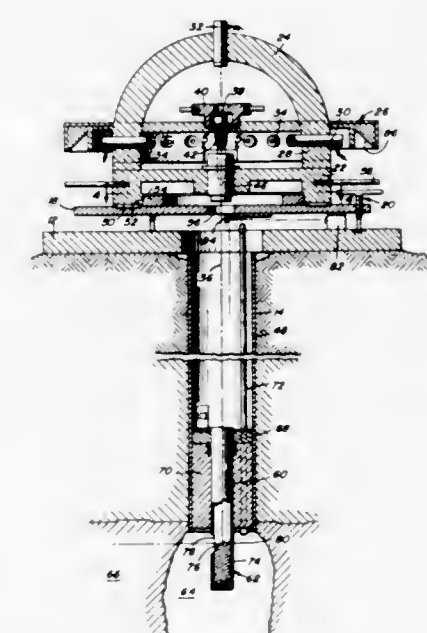
Daniel W. Stout, Lake Park, Fla., assignor to Paul Washburn, David J. Rupp, Erwin D. Latimer and Henry McGinnes, all of Palm Beach, Fla.

Filed Aug. 17, 1970, Ser. No. 64,436

Int. Cl. E21b 43/24

U.S. Cl. 166—302

16 Claims



Monochromatically identical beams emitted from a plurality of laser devices positioned in radial relation to a common optical axis along which a composite beam of concentrated energy is projected. A rotatable reflective lens device located a remote distance from the source of the composite beam directs the composite beam transverse to the common optical axis. The direction of the common optical axis and the concentration of the laser beams are adjustable.

3,693,719

**PROCESS FOR PARAFFIN REMOVAL FROM HYDROCARBON-BEARING FORMATIONS**

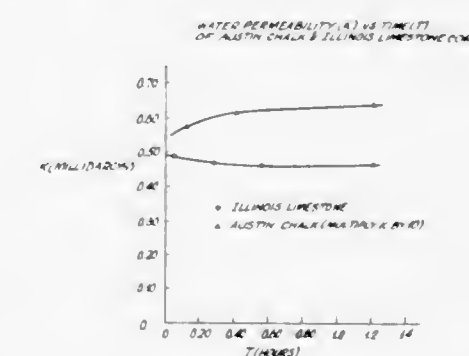
Thomas E. Sample, Jr., and Jack F. Tate, both c/o Texaco Inc., P.O. Box 425, Bellaire, Tex.

Filed Nov. 2, 1970, Ser. No. 86,242

Int. Cl. E21b 43/00, 43/25

U.S. Cl. 166—304

6 Claims



Solid paraffin-like hydrocarbon materials derived from petroliferous fluids which have been deposited in hydrocarbon-bearing formations are removed by introducing into the formation in the vicinity of the well bore a hydrolyzable, aprotic, halogenated organic material, such as allyl chloride, whereby the said paraffin-like hydrocarbon material is removed, and the permeability and porosity of the formation and production of hydrocarbons therefrom is increased, the well is returned to production and the hydrolyzable, aprotic, halogenated organic compound containing the dissolved or peptized paraffin is removed from the well and conducted to a vessel containing water or a base dissolved in water.



### 3,693,720 CRUDE OIL RECOVERY METHOD USING A POLYMERIC WAX INHIBITOR

Lee A. McDougall, Houston, Tex.; Albert Rossi, Warren, N.J., and Max J. Wisotsky, Highland Park, N.J., assignors to Esso Research and Engineering Co.

Filed Jan. 29, 1971, Ser. No. 111,151  
Int. Cl. E21b 43/00; C09k 3/00

U.S. Cl. 166—304

8 Claims

The recovery of crude oil may be improved by inhibiting deposition of wax from the oil. Wax deposition may be inhibited by adding to the oil a polymer having pendant polar and non-polar moieties, such as a partially hydrolyzed ethylene-vinyl acetate copolymer.

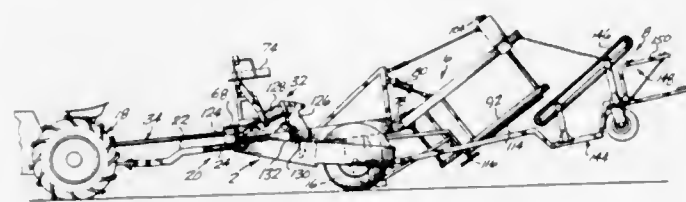
### 3,693,721 APPARATUS AND TECHNIQUE FOR HARVESTING PLANTS ROOTED IN THE GROUND

Eugene W. Arnold, and Earl D. Hasenwinkle, both of Longview, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Sept. 24, 1970, Ser. No. 75,219  
Int. Cl. A01d 25/04

U.S. Cl. 171—61

18 Claims



The apparatus includes means for severing the body of earth contiguous to the roots of the plants from the surrounding ground; and means for relatively removing the plants from the body of root-contiguous earth, including means for lifting the plants in relation to the ground, and means for agitating the body of root-contiguous earth when it is severed from the ground, so as to loosen the earth and reduce its cohesion with respect to the roots, before the plants are lifted in relation to the ground. The apparatus is thus able to harvest the plants without undue damage to the roots. In addition, damage to the stems is minimized through the use of a special elastomer-faced belt lift mechanism as part of the lift means; and a rapid harvesting rate is maintained through the use of a special apparatus and technique for collecting and discharging the plants from the lift mechanism in a containerized condition.

### 3,693,722 FINE GRADING DEVICE FOR RUBBER TIRE ROAD GRADER

Robert L. Brown, Chesapeake, Va., assignor to Brohigbu, Ltd., Norfolk, Va.

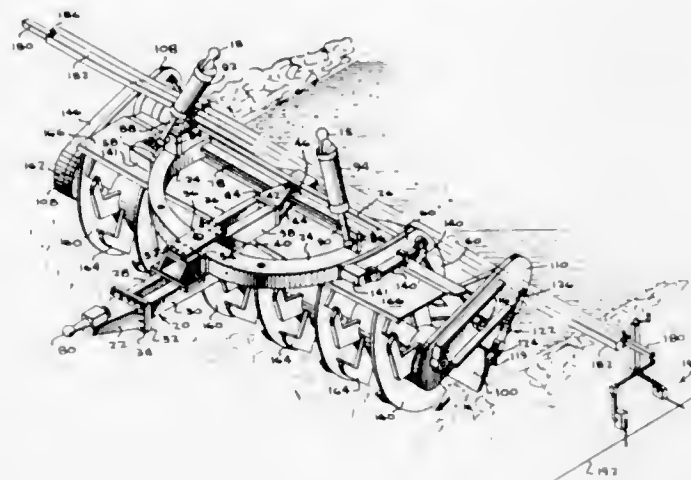
Filed Aug. 11, 1970, Ser. No. 62,917  
Int. Cl. E02f 3/76; A01b 49/02; E02f 3/12

U.S. Cl. 172—4.5

14 Claims

A grading blade and parallel rotary auger are supported on an auxiliary frame transversely with respect to a grader vehicle from which the frame is supported with the auger being connected to the blade for unitary pivotal movement about a pivot point on the frame between the front of the blade and the rear of the auger in general vertical alignment with the cutting edge of the blade so that the height of the auger can be pivotally adjusted by hydraulic cylinder means with respect to

the cutting edge of the blade for differing soil conditions by pivoting the auger and blade with there being a negligible vertical displacement of the cutting edge of the blade; an automatically operable control means actuates hydraulic cylinders supporting the auxiliary frame from the vehicle in response to



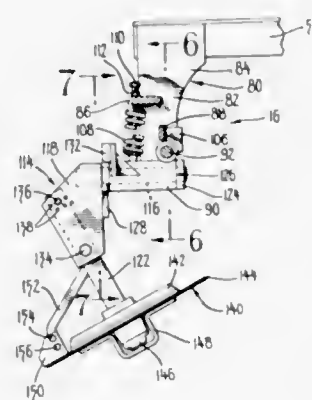
### 3,693,723 SELF-REVERSING REAR FURROW WHEEL ASSEMBLY FOR A MOUNTED REVERSIBLE DISK PLOW

Jose Cavazos Guardado, Alcatraz 31; Jorge Cervantes Talavera, Madero 303-A, and Alcibiades Gonzalez Ibarra, Allende 13 Sur, all of Queretaro, Mexico

Filed May 12, 1971, Ser. No. 142,704  
Int. Cl. A01b 3/16; 3/40

U.S. Cl. 172—212

5 Claims



A mounted reversible disk plow with a headstock, a tool beam assembly pivotally mounted on the headstock, a plurality of tool posts pivotally mounted on the tool beam assembly, a disc rotatably supported by each tool post, disc positioning means to control the position of the tool posts, a reversing assembly and a furrow wheel assembly attached to the rear portion of the tool beam assembly. The furrow wheel assembly includes a furrow wheel support assembly, a furrow wheel axle assembly and a furrow wheel. The furrow wheel support assembly is pivotally attached to the tool beam assembly for pivotal movement about an axis transverse to a vertical plane through the longitudinal axis of the tool beam assembly. A stop limits movement of the rear portion of the furrow wheel support assembly down and away from the rectangular tube

member of the tool beam assembly. An adjustable spring biases the furrow wheel support assembly toward the stop. The furrow wheel axle assembly extends to the rear of and is pivotally attached to the furrow wheel support assembly for limited pivotal movement about an axis in a vertical plane through the longitudinal axis of the tool beam assembly. The furrow wheel is rotatably attached to an adjustable arm on the furrow wheel axle assembly at a point spaced to the rear of the pivotal axis between the furrow wheel support assembly and the tool beam assembly.

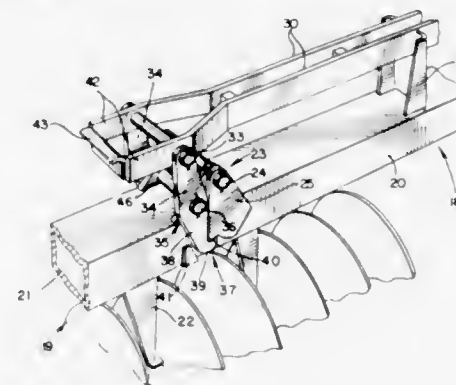
### 3,693,724 MECHANISM FOR FOLDING AND LOCKING DISK HARROW GANGS

Jerome L. Fueslein, and Fred R. Andrews, both of Stockton, Calif., assignors to International Harvester Company, Chicago, Ill.

Filed July 17, 1970, Ser. No. 55,800  
Int. Cl. A01b 63/32; 65/02

U.S. Cl. 172—456

3 Claims



A folding wing disk harrow has a double ended hydraulic cylinder which is connected to wings at opposite ends of a central section and which automatically actuates latches to lock the wings in their extended operating position and to release the latches when the wings are to be folded.

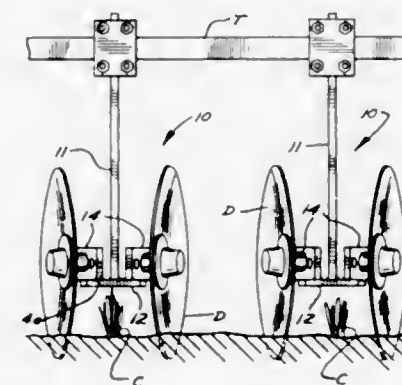
### 3,693,725 DIVERGING TOOL MOUNTS HAVING A PLURALITY OF APERTURES FOR LATERAL ADJUSTMENT OF THE TOOLS

Wayne S. Tonsfeldt, Sabin, Minn.

Continuation-in-part of Ser. No. 559,616, June 22, 1966, abandoned. This application Feb. 16, 1970, Ser. No. 879,637  
Int. Cl. A01b 39/22; 65/02

U.S. Cl. 172—655

1 Claim



This invention relates to a tool mounting bar for mounting various pairs of cultivating and other field preparing tools onto a tool bar and includes a generally vertically arranged upright support member for attachment to a tool bar and a pair of diverging implement mounting elements at the lower end thereof such that a pair of implements may be mounted on each individual support member. The diverging support members include two modifications, one providing a plurality of apertures for mounting of various elements thereon and the

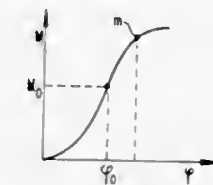
other providing a slideable clamping member for sliding and positioning on the diverging members with the implement being connected directly to the clamping device. This slideable clamping device permits a wide range of adjustments for the implements.

### 3,693,726 TIGHTENING DEVICE FOR AUTOMATICALLY TIGHTENING BOLTS AND THE LIKE

Rudolf Hornig, Hofingen, Wurttemberg, and Siegfried Sailer, Grossheppach, Wurttemberg, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany  
Filed Sept. 17, 1970, Ser. No. 72,978  
Int. Cl. B23p 19/06

U.S. Cl. 173—12

29 Claims



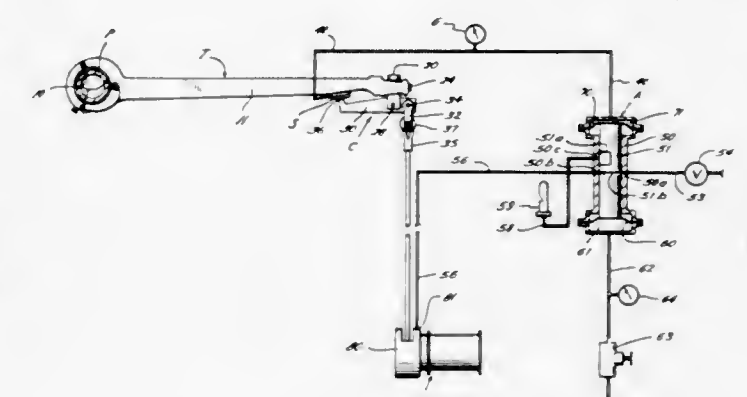
A device for automatically tightening threads of a threaded connection, in which the threads of, for example, bolts are adapted to be tightened in such a manner that a yielding of the material occurs in the shanks of the bolts; the device is provided with a measuring installation which measures, when the yield point is reached, by the change of the tightening torque of as function of the change of the rotation of the bolt and then turns off the device for tightening the bolt.

### 3,693,727 TORQUE CONTROL APPARATUS

Leo A. Bell, Villa Maud, Kappara Road, San Gwann, Malta  
Filed Nov. 2, 1970, Ser. No. 86,108  
Int. Cl. B25b 23/14

U.S. Cl. 173—12

7 Claims



Torque control apparatus for use with pipe tongs in assembling threaded pipe sections, wherein means are provided for sensing and transmitting only the torque producing component of forces applied to the pipe tongs, and means are provided for controlling the amount of such torque applied to the pipe tongs in accordance with a predetermined limit.

### 3,693,728 PERCUSSION AND ROTARY DRILLING MACHINE

Reinhold Stroezel, Reuteweg 15., 7022 Leinfelden, Germany  
Filed Nov. 6, 1970, Ser. No. 87,459

Claims priority, application Germany, Nov. 15, 1969, P 19 57 505.4

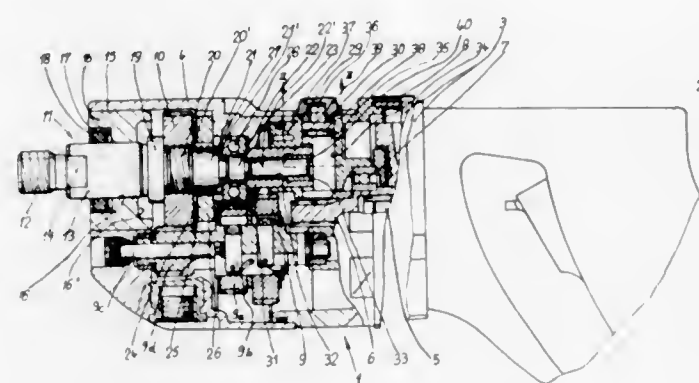
U.S. Cl. 173—13

11 Claims

A drilling machine has a tool holder shaft on which are mounted a spring and a blocking sleeve which abuts one or the other of two eccentric abutment faces of a manually turnable



member. In a first position of the manually turnable member, the spring permits movement of the shaft due to pressure against the workpiece to a first axial position in which the shaft is axially reciprocated by suitable displacement means during rotation, and performs a percussion drilling operation.



In a second position of the manually turnable member, the blocking sleeve engages the shaft directly, and blocks the same in a second axial position in which the shaft is not reciprocated but only rotated during drilling, irrespective of the pressure applied by the shaft to the workpiece.

3,693,729

## AIR CUSHION DRILLING VEHICLE

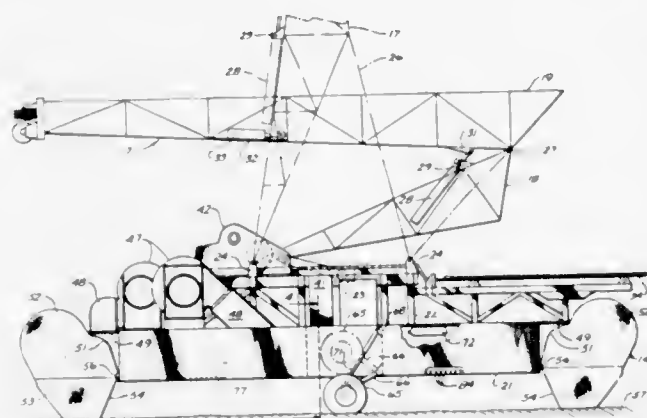
Leon C. Blurton, Brea, Calif., and Saverio J. Cina, Brooklyn, assignors to Global Marine Inc., Los Angeles, Calif.

Filed Feb. 19, 1970, Ser. No. 12,778

Int. Cl. E21b 7/12

U.S. Cl. 173-23

12 Claims



An air cushion vehicle particularly useful for a drilling rig for oil wells and the like employed in arctic environments having open water, muskeg, ice, snow, and tundra is described. The vehicle includes a watertight compartmented chassis or platform about which is provided a flexible skirt for cooperation with a surface for minimizing air leakage therebetween. Means are provided on the platform for supplying a volume of air under pressure to the region within the skirt for raising the pressure thereunder and thereby lifting the principal portion of the weight of the platform. Wheels are also provided for resiliently applying a force to the surface on which the vehicle rides to provide sufficient contact with the surface to provide control of the vehicle as it is towed. The means for supplying air comprises blowers selectively connected to prime movers, such as diesel engines, which are also selectively connectable to the draw works of the drill rig. The drill rig also includes a tower foldable between an erect drilling position and a lowered transporting position with the mode of folding such that the transverse center of gravity of the tower is not significantly shifted between these two positions. Means are also described for launching the air cushion vehicle from a ship and for preparing an arctic drilling site for the air cushion supported drilling rig.

### 3,693,730 VIBRATORY DEVICE FOR TAKING BOTTOM SEDIMENTS CORES

Zorab Parnakovich Edigarian; Evgeny Ivanovich Kudinov, and Vladimir Evgenievich Sukhov, all of Moscow, U.S.S.R., assignors to Institut Geologii i razrabotki gorjuchikh rskopomofh, Moscow, U.S.S.R.

Filed July 22, 1970, Ser. No. 57,133

Int. Cl. E21b 7/12

U.S. Cl. 175-6

4 Claims



A vibratory device for taking bottom sediments cores, comprising a string of pipes deepened into the ground by means of a vibrator disposed thereon. In accordance with the present invention it is provided with an arrangement connected with the vibrator and providing for periodical engagement and disengagement of the vibrator with the string of pipes, and a hoist providing for periodical displacement of the vibrator which is originally disposed on the lower portion of the string of pipes up the latter as it is being deepened, and operatively coupled with the engaging arrangement.

3,693,731

### METHOD AND APPARATUS FOR TUNNELING BY MELTING

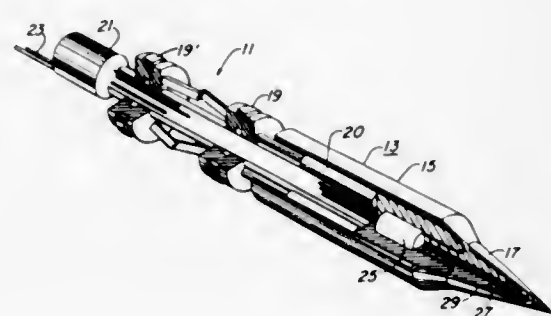
Dale E. Armstrong, Santa Fe; Berthus B. McInteer; Robert L. Mills; Robert M. Potter; Eugene S. Robinson; John C. Rowley, and Morton C. Smith, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 8, 1971, Ser. No. 104,872

Int. Cl. E21c 21/00

U.S. Cl. 175-11

6 Claims



A machine and method for drilling bore holes and tunnels by melting in which a housing is provided for supporting a heat source and a heated end portion and in which the necessary melting heat is delivered to the walls of the end portion at a rate sufficient to melt rock and during operation of which the molten material may be disposed adjacent the boring zone in cracks in the rock and as a vitreous wall lining of the tunnel so

formed. The heat source can be electrical or nuclear but for deep drilling is preferably a nuclear reactor.

### 3,693,732 APPARATUS FOR CONTROLLING PRESSURE IN A WELL

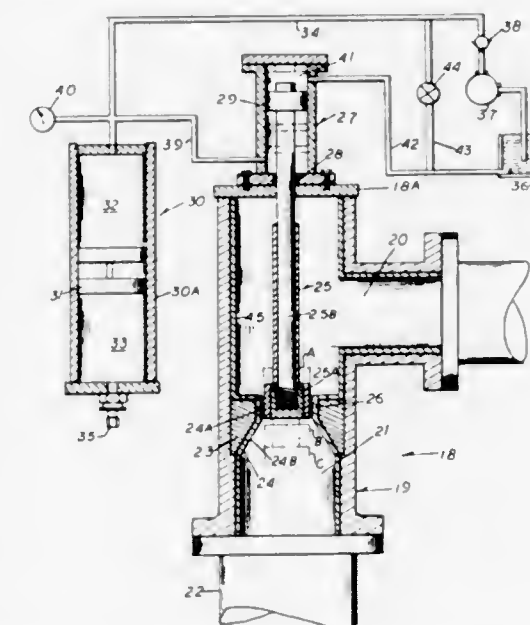
Nestor Sabi, Gretna, La., assignor to Edwards Engineering Corporation, New Orleans, La.

Filed Oct. 15, 1970, Ser. No. 80,946

Int. Cl. E21b 21/00

U.S. Cl. 175-25

13 Claims



This disclosure is directed to a system for controlling pressure in a well bore having a drill string through which a drilling fluid is directed. A balanced piston well choke is disposed in the drilling fluid return line which is automatically responsive to varying flow rates of the return drilling fluid in a manner to maintain a substantially constant back pressure on the return drilling fluid.

3,693,733

### METHOD AND APPARATUS FOR AVOIDING WATER POLLUTION AT AN OFFSHORE DRILLING SITE

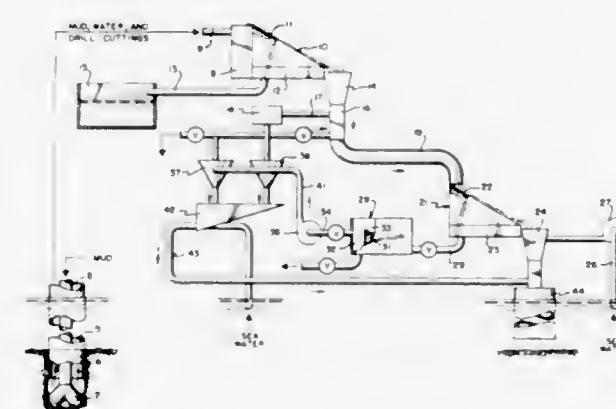
Loy P. Teague, Morgan City, La., assignor to Texaco Inc., New York, N.Y.

Filed March 8, 1971, Ser. No. 121,644

Int. Cl. E21b 21/00

U.S. Cl. 175-66

11 Claims



Method and apparatus for treating well drilling cuttings that normally result from the boring of an oil or gas well in an offshore body of water. The treating process includes the sequential separation and washing of the drilling cuttings to free them of water contaminating components. The washing is achieved through a detergent circulatory system in which particulated cuttings are removed from the mud. The cuttings are then washed to remove possible water contaminating com-

ponents therefrom. Thereafter, the drilling cuttings are rinsed and returned to the body of water, free of both water polluting elements and the detergent washing agent.

3,693,734

### BORING AUGER FOR HORIZONTAL EARTH BORING MACHINE

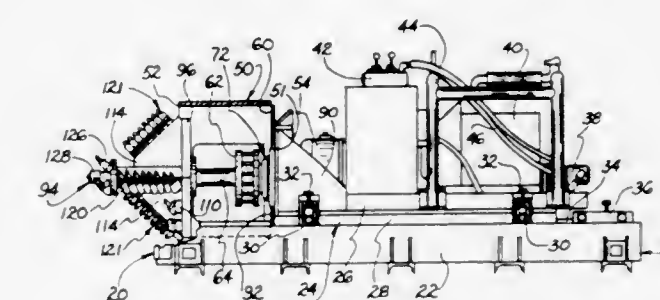
Albert R. Richmond, West Salem, Ohio, assignor to The Richmond Manufacturing Company, Ashland, Ohio

Filed Oct. 30, 1970, Ser. No. 85,614

Int. Cl. E21c 1/94, 13/02

U.S. Cl. 175-122

12 Claims



A portable earth boring machine adapted for horizontal boring of shafts for the insertion of pipelines in installations where excavation from the surface is undesirable. The machine is characterized by a novel earth boring auger for effectively drilling pipeline holes under difficult earth conditions such as are encountered in boring earth of hard rock content. The novel auger comprises a base plate, spaced auger side plates forming rigid gussets, with such plates providing bit mounting surfaces for a unique and efficient array of a plurality of bits mounted on the auger.

3,693,735

### DRILLING TOOL WITH ELEMENTS HAVING DIAMOND- STUDED ATTACK SURFACE

Abel C. Cortes, Neuilly-sur-Seine, France, assignor to Compagnie Francaise Des Petrole, Paris, France

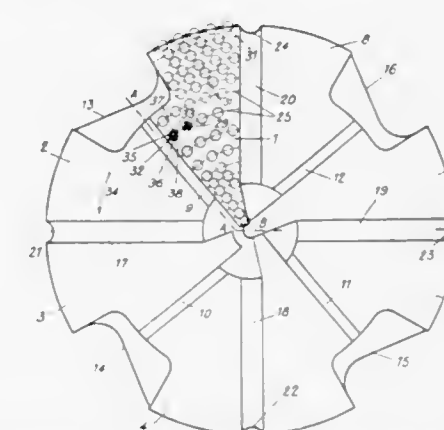
Filed Sept. 29, 1970, Ser. No. 76,512

Claims priority, application France, Sept. 29, 1969, 6933081

Int. Cl. E21b 9/36

U.S. Cl. 175-329

7 Claims



A drilling tool for drilling in either hard or soft ground at high speeds and incorporating a plurality of diamond-studded protuberances formed on the end cutting surface of the tool, with a plurality of radially outwardly extending grooves formed in the end of the tool and having additional circular grooves formed between rows of protuberances to assist in removal of the debris. The protuberances are formed so that the diamond projections thereon are each aligned with each other in a given row in the direction of rotation to assist in cutting.



3,693,736

**CUTTER INSERT FOR ROCK BITS**

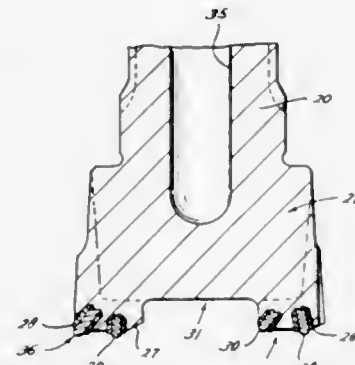
Jimmy D. Gardner, Houston, Tex., assignor to Mission Manufacturing Company, Houston, Tex.

Filed Sept. 4, 1969, Ser. No. 855,208

Int. Cl. E21c 13/01

U.S. Cl. 175—410

3 Claims



A carbide cutter insert for a rock bit body is strengthened against breakage and its removal and replacement are facilitated by encasing the insert in a protective jacket of material substantially softer than the carbide. The composite element is then firmly pressed and/or bonded in an orifice in the cutting face of the bit body. The element can be readily removed simply by cutting away the softer jacket by a suitable machine tool operation without damaging the body bore.

3,693,737

**REVERSIBLE MANUAL AND AUTOMATIC LABELING MACHINE WITH WEIGHER**

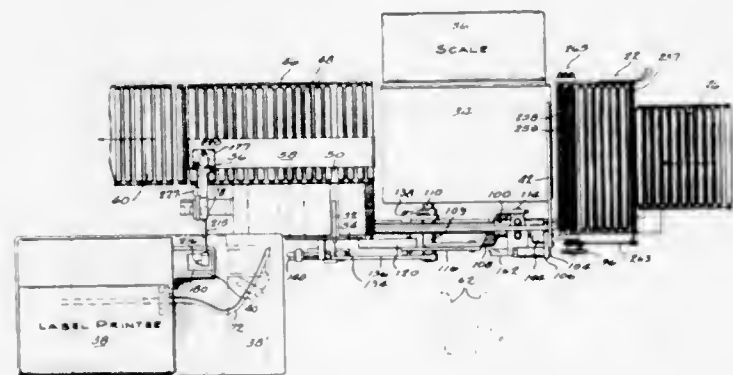
John T. Young, Lake Bluff, Ill.; Charles E. Michels, Racine; Thomas C. Zimmerman, and Gilbert M. Hagemann, both of Franksville, all of Wis., assignors to Wrapping Machinery Company, Inc., Franksville, Wis.

Division of Ser. No. 732,750, May 28, 1968, abandoned. This application July 22, 1970, Ser. No. 57,282

Int. Cl. G01g 13/00, 13/22, 15/00

U.S. Cl. 177—52

5 Claims



Between input and output conveyors is an opening in which a computer scale may be reversed to face toward either side of the machine, parts required for propelling the workpiece across the scale table being interchangeable from one side to the other. Regardless of scale position, mechanism associated with the output conveyor rectifies successive workpieces on the conveyor rather than the scale platform to align them with the labeler for automatic operation irrespective of the side toward which the scale faces. The label printer remains at one side of the output conveyor and is operable either manually or automatically. The printer is mounted for bodily movement to facilitate manual operation whether the operator stands at one side or the other side of the machine.

3,693,738

**LEGAL LOAD INDICATOR FOR A LIQUID TANKER**

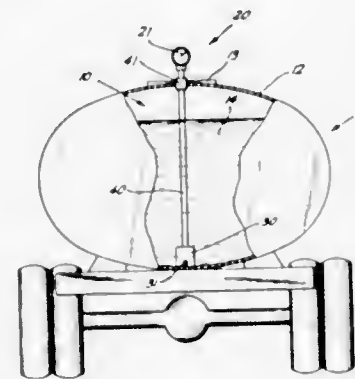
Ottie H. Andrews, 2230 W. Orange Avenue, Anaheim, Calif.

Filed April 7, 1971, Ser. No. 131,869

Int. Cl. G01g 19/10

U.S. Cl. 177—141

8 Claims



A legal load indicator for a liquid tanker comprising a gauge adapted to be positioned outside of the tanker and having a pressure responsive, pivotable, pressure-weight indicating pointer and a manually rotatable face having a marker so positioned thereon as to be alignable with the pointer in a selected position thereof. A pipe connects the gauge to a bell positioned at the bottom of the tanker for conducting the pressure of the air trapped within the bell to the gauge so that the pointer indicates the weight of liquid in the tanker independently of the height and density of such liquid. By positioning the marker on the movable face relative to the pointer at a position indicative of the legal weight limit of the tanker, the tanker may be filled with any liquid to its legal weight limit. According to a preferred embodiment of the present invention, the apparatus also includes a mechanism for removing hardening materials from the bell and pipe to insure proper operation of the gauge.

3,693,739

**BATHROOM SCALE**

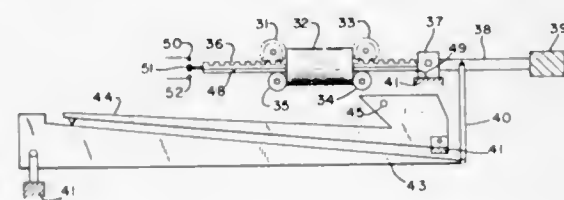
Arpiar Kaloustian, 10 Arch St., Providence, R.I., and D. Richard Small, 21 Latern Lane, Sharon, Mass., assignor to said Arpiar Kaloustian by said Small

Filed June 2, 1971, Ser. No. 149,293

Int. Cl. G01g 7/00

U.S. Cl. 177—214

6 Claims



A bathroom scale electrically operated having a folded lever arm and small electric motor for counterweight. The scale need not return to zero after each weighing and dual power supply provide a rugged scale which has no contacts which need careful adjusting.

3,693,740

**LOAD-CARRYING OR LIFTING DEVICES**

James Gabriel Lewis, The Gables, Wrington, Somerset, and Owen Temple Lewis, Quarry House, Seale, Surrey, both of England

Filed Oct. 26, 1970, Ser. No. 83,889

Claims priority, application Great Britain, Oct. 30, 1969, 53,115/69

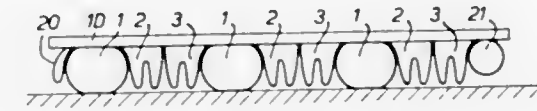
Int. Cl. B62d 67/02

U.S. Cl. 180—8 R

9 Claims

Apparatus for raising, carrying, or transporting loads, comprises a plurality of expandible elements connected to a base

support, and each arranged on expansion to increase the perpendicular displacement between the base support and a load carrying surface of the respective element, and means for creating relative lateral displacement between the base support and the load carrying surface of each element. The ex-



pandible elements may be inflatable bags or tubes connected on one side to the base support and resting on the other side on the ground, when inflated, and grouped in parallel rows or sets and inflatable in series so that one bag displaces the adjacent bag laterally and thereby effects displacement of the load.

3,693,741

**DRIVING DEVICE FOR HEAVY MOTOR-TRUCKS**

Willy Scheuerle, D-7114 Pfedelbach-Ohringen, Germany

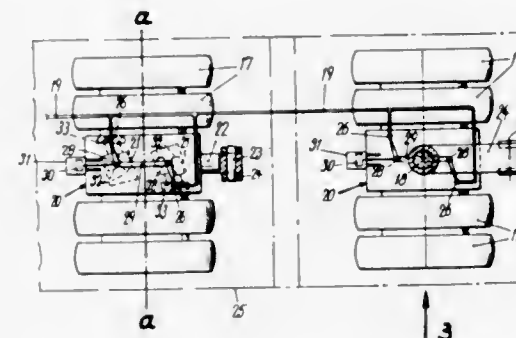
Filed March 3, 1970, Ser. No. 15,986

Claims priority, application Germany, March 4, 1969, P 19 10 809.9

Int. Cl. B60k 7/00

U.S. Cl. 180—23

12 Claims



A driving device for heavy motor trucks in which each axle assembly supports at least one wheel on each side and comprises an axle housing block containing two hydraulic motor units located along the longitudinal axis of the vehicle on either side of the wheel center plane, preferably in the form of adjustable stroke motor units for driving the wheels.

3,693,742

**VEHICLE TRANSMISSION**

Peter Eiler, Langenfeld, and Klaus Sprave, Kaarst, both of Germany, assignors to Leo Gottwald K.G., Dusseldorf, Germany

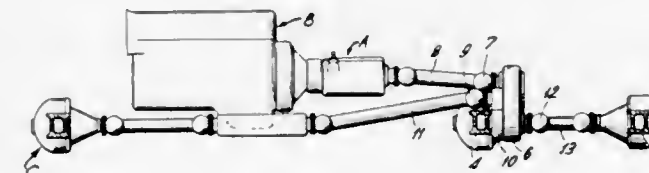
Filed July 22, 1970, Ser. No. 57,270

Claims priority, application Germany, July 25, 1969, G 69 29 464.0

Int. Cl. B62d 61/10; B60k 17/36

U.S. Cl. 180—23

6 Claims



A vehicle having a front axle and tandem rear axles all of which are driven from a speed change gearbox through a common distributor gearbox which is mounted on one of the tandem axles.

3,693,743

**OSCILLATING TANDEM WHEELS**

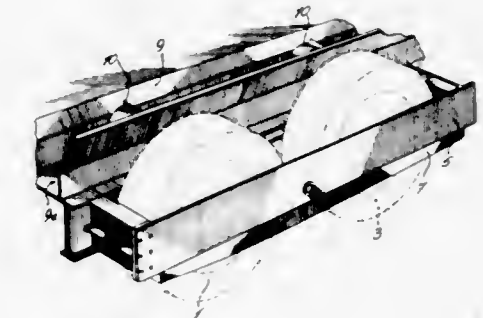
Jean-Paul Tanguay, St-Prime, Quebec, Canada, assignor to Placements Jean-Paul Tanguay Ltée, Comte de Roberval, Province of Quebec, Canada

Filed Sept. 25, 1970, Ser. No. 75,475

Int. Cl. B62d 61/10

U.S. Cl. 180—24.05

8 Claims



For a heavy vehicle such as a mobile tree slasher there is provided a device which is adapted to facilitate the traction of such vehicle over rough and irregular surfaces. The device consists of a pair of oscillating tandem wheels and should be capable of allowing free oscillation of the tandem wheels about an axis which is located substantially between the axis of both tandem wheels. The heavy vehicle has a power arrangement which is connected to drive at least one and preferably both of the oscillating tandem wheels while allowing free oscillation to the tandem wheels.

3,693,744

**MULTI-PURPOSE VEHICLE**

Josef Horn, Rimschweiler; Kurt Neumeier, and Franz Scharfenberger, both of Zweibrücken, all of Germany, assignors to Karl Peschke Kapitalverwaltungsgesellschaft Karl Peschke mbH, Zweibrücken/Pfalz, Germany

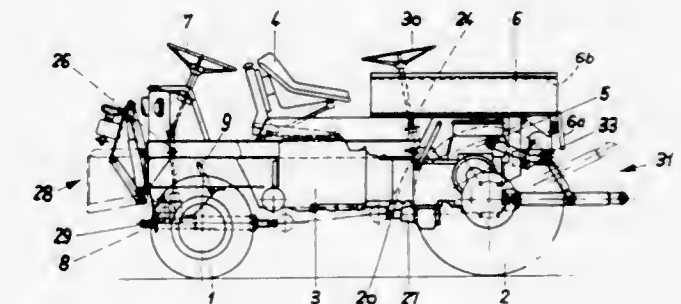
Filed March 13, 1970, Ser. No. 19,425

Claims priority, application Germany, March 13, 1969, P 19 12 641.1

Int. Cl. B60n 1/02; B60k 17/28

U.S. Cl. 180—53 R

2 Claims



Multi-purpose vehicle having a steering axle with small wheels and a rigid drive axle with large wheels for supporting and operating tools to be mounted on the vehicle and a vehicle propulsion means for moving in two directions of travel, in street driving direction and work driving direction, which has a driver seat disposed generally centrally pivotable through a 180° angle, one each steering wheel and foot pedal levers for gas, clutch and brake in each direction of travel, and the other operating and control levers for operating the vehicle and the tools carried thereby disposed laterally of the driver's seat.



3,693,745

**DRIVING AXLE FOR ELECTRIC VEHICLES**

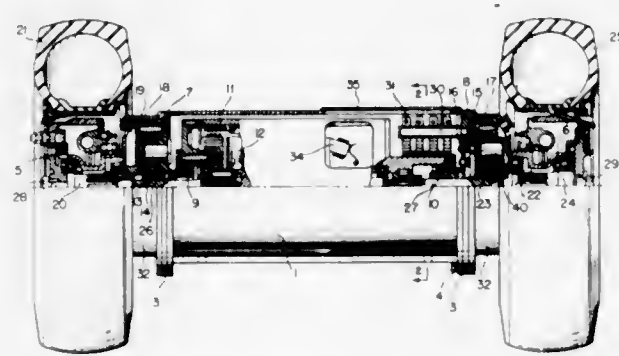
Ivan Yordanov Petrov, Sofia, Bulgaria, assignor to Nipkien, Sofia, Bulgaria

Filed May 11, 1970, Ser. No. 36,166

Claims priority, application Bulgaria, May 9, 1969, 12214  
Int. Cl. B60k 7/00

U.S. Cl. 180—60

7 Claims



A driving axle for electric vehicles. An electric motor with field and armature rotating in opposite directions is mounted in a hollow beam. Two reduction gears of the planetary type are mounted in axle housings affixed at each end of the hollow beam, the axle housings rotatably mounting two coaxial vehicle wheels. One of the reduction gears is drivingly connected to one of the field and armature; the other of the reduction gears is drivingly connected to the other of the field and armature. Accordingly, one wheel is driven by the field, and the other wheel is driven by the armature.

3,693,746

**AUTOMOTIVE SUSPENSION MECHANISM**

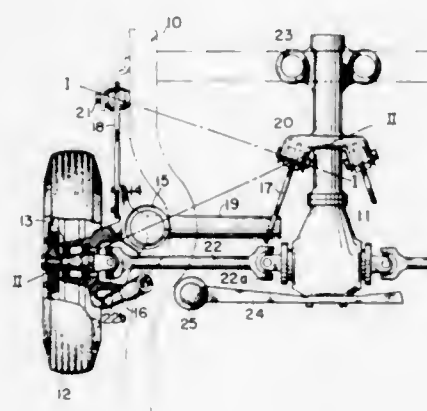
Akira Yamamoto, No. 1024 Shimanagatami-cho, Minami-ku, Yokohama, Japan

Filed Nov. 5, 1969, Ser. No. 874,319

Claims priority, application Japan, Nov. 14, 1968, 43/82866  
Int. Cl. B60g 11/36

U.S. Cl. 180—73 TL

14 Claims



A rear suspension mechanism of motor vehicles having a pair of trailing arms and a pair of axle drive shafts with inner and outer universal joints, each of the trailing arms being made up of an inner and outer leaves connected with each other through a connecting member connected to the wheel hub and the axle drive shaft being of the type that no positively sliding mechanism is involved. The suspension mechanism permits the driving wheels to assume proper camber and steer angles and to move in the fore-and-aft direction of the vehicle.

3,693,747

**APPARATUS FOR CONTROLLING THE OPERATION OF POWER STEERING APPARATUS IN A VEHICLE**

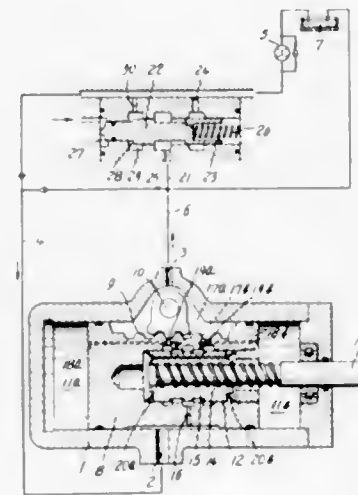
Masao Nishikawa, Saitama-ken, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1970, Ser. No. 80,338

Claims priority, application Japan, Oct. 13, 1969, 44/81124  
Int. Cl. B62d 5/08

U.S. Cl. 180—79.2 R

1 Claim



Apparatus is provided for controlling the operation of a power steering unit in a vehicle and comprises a main passage connecting an oil pressure pump selectively with either one of two opposite end chambers in a steering power cylinder by means of a control valve operated by a steering handle. The main passage is provided with a bypass connecting the positive side and the negative side of the pump, and a vehicle speed responsive valve is interposed in the bypass and controls the size of the bypass by being gradually increased in its degree of opening in response to increase in the vehicle speed.

3,693,748

**MOTORCYCLE HELMET COMMUNICATION SYSTEM**

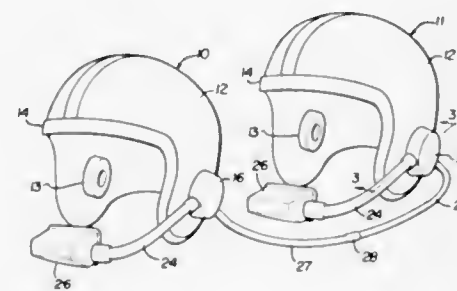
Doyal H. Jones, 176 Barrington Rd., and Hanna Stibel, 88 Marlborough Dr., both of Bloomfield Hills, Mich.

Filed Nov. 10, 1971, Ser. No. 197,470

Int. Cl. G10k 11/12

U.S. Cl. 181—20

4 Claims



A pair of motorcycle helmets worn by two riders on the same motorcycle are interconnected by a hollow, flexible tube, whose opposite ends are connected to an ear covering portion of each helmet. Each helmet also has a stiffer, speaking tube, having an end connected to the same helmet portion as the flexible tube, and an opposite end connected to a mouthpiece located just forwardly of the wearer's mouth. Thus, the two helmet wearers can talk to each other through the tubes as well as hear themselves talk.

3,693,749

**REDUCTION OF GAS TURBINE ENGINE NOISE ANNOYANCE BY MODULATION**

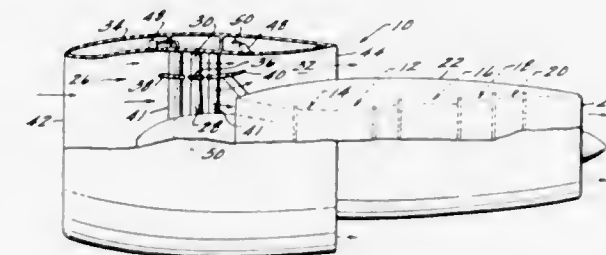
Russell E. Molsinger, Cincinnati, and Edwin B. Smith, Mason, both of Ohio, assignors to General Electric Company

Filed April 26, 1971, Ser. No. 137,516

Int. Cl. F01n 1/06; B64d 33/06

U.S. Cl. 181—33 F

10 Claims



Method and apparatus for reducing the audible or annoying sound i.e., the noise emanating from a gas turbine engine are described. The sound energy is modulated by imposing on it a higher frequency sound source, which may be of either higher or lower intensity. In one form, the modulation is achieved by producing a higher frequency sound source with an ultrasonic siren. The higher frequency sound energy and the sound energy generated by the gas turbine engine interact so that the original tones disappear and two new tones appear, the new tones being at frequencies which occur at the sum and at the difference of the frequencies of the original tones.

3,693,750

**COMPOSITE METAL STRUCTURE USEFUL IN SOUND ABSORPTION**

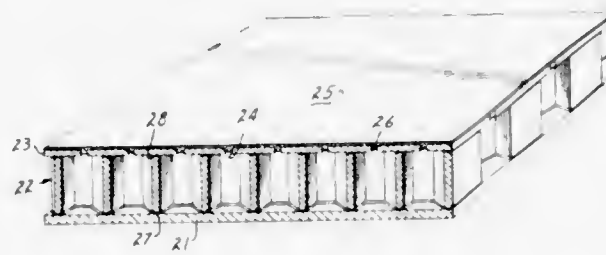
Philip D. Takkunen, Woodbury Township, County of Washington, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 21, 1970, Ser. No. 73,890

Int. Cl. E04b 1/86; B22f 7/04

U.S. Cl. 181—33 G

7 Claims



A composite metal structure, useful in sound absorption applications, comprising a metal part having perforations or recesses containing sintered porous powdered metal is made by pressing said metal part with a mixture of powdered metal and heat-fugitive binder to force said mixture into said perforations or recesses, and then heating the assembly to volatilize the burn-off said binder and sinter said powdered metal, the powdered metal in the resulting structure being held in said perforations or recesses by a metallurgically integral bond as well as mechanical bond.

3,693,751

**Patent Not Issued For This Number**

3,693,752

**LOUD SPEAKER SYSTEM**

Shouzo Kinoshita, Tokorozawa and Isao Yamamura, Tokyo, both of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

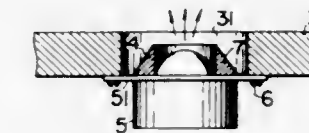
Filed Sept. 28, 1971, Ser. No. 184,404

Claims priority, application Japan, Sept. 29, 1970, 45/96093; Sept. 29, 1970, 45/96094

Int. Cl. G10k 13/00; H04r 1/28

U.S. Cl. 181—31 A

6 Claims



A loud speaker is installed on the rear plane of a baffle board facing an opening within the baffle board which opening in cross section takes the form of a narrow forwardly directed cone and an annular acoustic resistance member which is triangular shaped in section is fixed to the cutting plane of the opening. Alternatively, a ring member which narrows in a forward direction to form a forwardly narrowing cone in cross section is fixed to the front of a loud speaker flange and fits within a baffle board opening with the flange installed on the rear plane of the baffle board. An annular acoustic resistance member of triangular cross section is fixed to the inside surface of the forwardly narrowing ring or to the front surface of the loud speaker flange internally of the ring.

3,693,753

**Patent Not Issued For This Number**

3,693,754

**PORTABLE FOLDING STEPS AND LANDING FOR A MOBILE HOME AND THE LIKE**

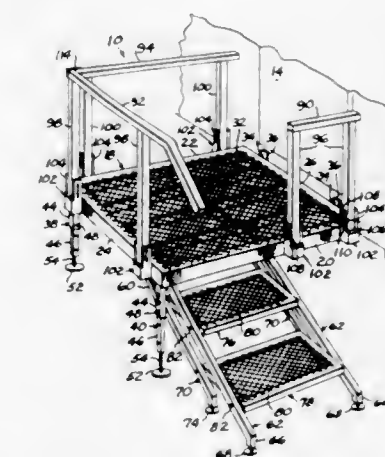
Le Roy O. Butler, Route 1, Box 4410, Sutherlin, Oreg.

Filed March 16, 1971, Ser. No. 124,704

Int. Cl. E06c 1/383

U.S. Cl. 182—86

4 Claims

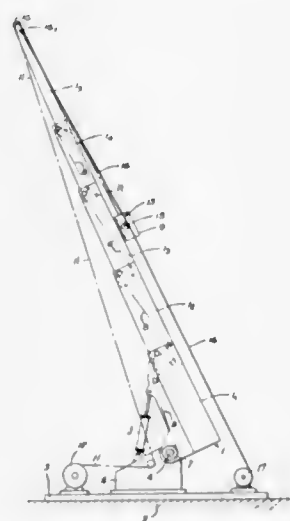


A rectangular platform is removably secured horizontally by one side to one side wall of a mobile home below the lower limit of its door. A pair of telescoping legs are pivotally connected in depending relation to the opposite side of the platform in under-the-platform folding relation. A pair of steps are similarly connected with and supported by pairs of bars pivotally connected with the platform in a downwardly and outwardly projecting direction. Hand rails are supported by upstanding supports pivotally connected with marginal side edges of the platform. The hand rail supports, legs and pairs of step supporting bars are foldable towards the respective upper and lower surfaces of the platform for collapsing and rendering the device portable.



**3,693,755**  
**DEVICE FOR PREVENTING FALLING DOWN OF LIFTER**  
**OF FIRE FIGHTING LADDER-EQUIPPED VEHICLE**  
 Fusaji Terayama, Osaka, Japan, assignor to Morita Fire Pump  
 Mfg. Co., Ltd., Osaka, Japan  
 Filed Aug. 3, 1970, Ser. No. 60,573  
 Int. Cl. E06c 7/16

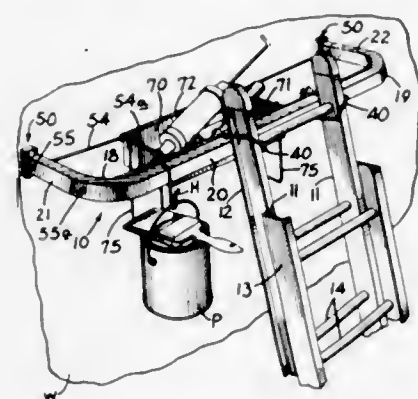
U.S. Cl. 182-102



A falling down-preventive cable is provided in addition to a lifting cable, with the intermediate portion of said falling down-preventive cable being wrapped a plurality of turns around a drum or pulley provided in a lifter, and brake means for said drum or pulley is held inactive during normal operation by the weight of the lifter, thereby permitting the up and down movements of the lifter. Upon breakage of the lifting cable, the brake means is actuated to control the rotation of the drum or pulley and henceforth said falling down-preventive cable prevents the lifter from falling down. Other advantages and details of the construction will be made clear.

**3,693,756**  
**LADDER STABILIZER**  
 Patrick J. Walker; Harold W. Stillman, Jr., Chicago, Ill.,  
 assignor to Kinthead Industries, Incorporated, Chicago, Ill.  
 Filed Dec. 14, 1970, Ser. No. 97,809  
 Int. Cl. E06c 7/14, 7/48

U.S. Cl. 182-129



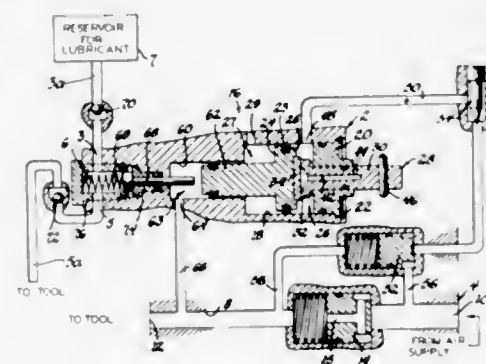
A stabilizer for supporting a ladder formed of a U-shaped frame of extruded tubing of diamond shaped cross section providing a flat clamping surface cocked at an angle to the plane of the frame and which is clamped to the upright members of a ladder so as to be automatically oriented in horizontal position to press at right angles against the wall of the building when the ladder is in its normal working position. Pivoted feet are provided at the ends of the frame held resiliently in a centered, wall engaging, position but capable of rocking movement for self alignment with angled wall surfaces. Each foot is fitted with a rubber pad surfaced to prevent slipping in any direction. The diamond cross section provides an adjacent clamping surface which is parallel to the plane of

the frame for permitting the frame to be clamped parallel to the upright members of the ladder to provide lateral outboard support. The frame is fitted with a pair of parallel rods for slidable reception of a rectangular tray.

**3,693,757**  
**LUBRICATING APPARATUS**  
 James J. Callahan, Mentor, and John Proctor Snow,  
 Macedonia, both of Ohio, assignors to McCord Corporation  
 Filed Aug. 3, 1970, Ser. No. 60,411  
 Int. Cl. F16n 25/02

U.S. Cl. 184-7 D

22 Claims

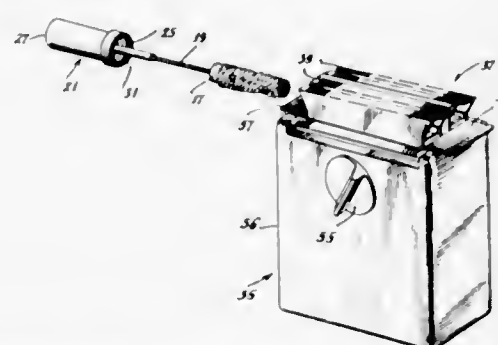


Lubricating apparatus for automatically providing a constant supply of lubricant to air operated tools during the operation of such tools, including an expansible and contractible pump chamber having an intake port for connection with a supply of lubricant and a delivery port for delivering lubricant from the pump chamber to the tool being lubricated. The apparatus includes a main air passage for connection with a source of air under pressure for driving the tool, and a normally closed control valve controls flow through the main air passage and is movable to an open position to permit flow through the air passage in response to a pressure drop between the upstream and downstream sides of the valve caused by starting the tool into operation. Means operable in response to air flow through the main passage causes the pump chamber to alternately expand and contract and pump lubricant to the working parts of the tool so long as the tool is in operation. The cycle of the pump can be selectively adjusted to increase or decrease the rate of flow of lubricant to the tool.

**3,693,758**  
**LUBRICATING DEVICE FOR ELECTRIC DRY SHAVER**  
 John Robert Tierney, Milford, Conn., assignor to Sperry Rand  
 Corporation, New York, N.Y.  
 Filed Nov. 23, 1970, Ser. No. 92,063  
 Int. Cl. F16n 15/00

U.S. Cl. 184-102

4 Claims

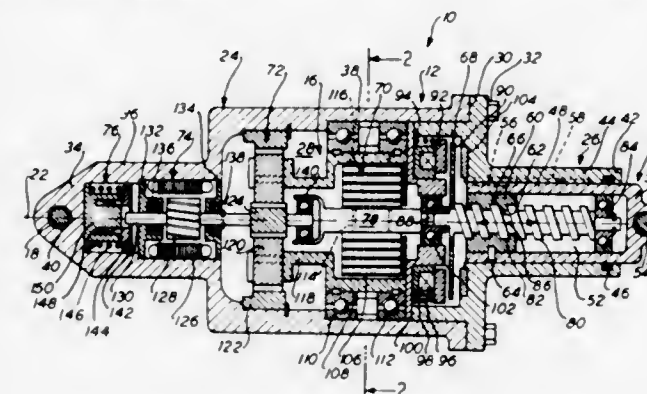


A lubricating device for depositing a lubricant onto the cutter teeth of a reciprocating inner cutter movable relative to a stationary outer cutter of an electric dry shaver, and which device includes a brush and container. The brush has bristles which are immersible within a gelled lubricant within an elongated container and the lubricant is carried by the bristles, whereby when the brush is inserted into the inner cutter the lubricant is caused to deposit on the cutter teeth. A cap constitutes the handle of the brush as well as serving to seal the container when the brush is stored therein.

**3,693,759**  
**THRUST ACTUATOR**  
 Arnold Schindler, Fairlawn, N.J., assignor to Slinger-General  
 Precision, Inc., Little Falls, N.J.  
 Filed March 25, 1971, Ser. No. 127,914  
 Int. Cl. F03g 1/00

U.S. Cl. 185-40 R

10 Claims



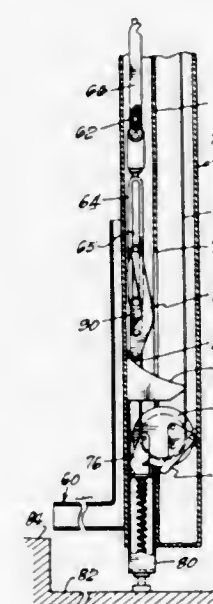
An electromechanical thrust actuator including a cylinder having a cavity with a longitudinal axis, a piston received in the cavity for displacement relative to the cylinder along the axis, and electromechanical drive means disposed in the cavity and connecting to the cylinder and the piston for axially displacing the piston relative to the cylinder, wherein the electromechanical drive means includes a ring member disposed in the cavity and movable relative to said cylinder, a torsion spring disposed within the ring member, the torsion spring having an outer end portion connected to the ring member, and having an inner end portion connected to the piston, and a motor adapted to rotate the ring member in order to wind-up the torsion spring, and clutch means engaging the spring inner end and being adapted to suddenly release the spring for instantaneously displacing the piston relative to the cylinder along the axis.

**3,693,760**  
 Patent Not Issued For This Number

**3,693,761**  
**ELEVATOR SYSTEM**  
 Thomas F. Fitzgibbon, Madison, Ind., assignor to The Garrett  
 Corporation, Los Angeles, Calif.  
 Filed Aug. 28, 1970, Ser. No. 67,817  
 Int. Cl. B66b 5/28

U.S. Cl. 187-67

4 Claims



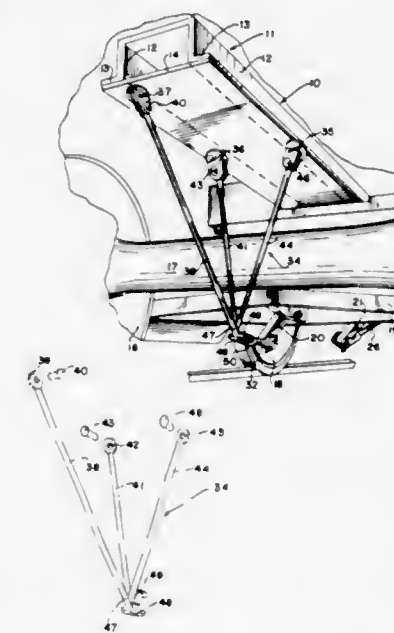
An elevator system is provided to operate between two

levels which are capable of relative movement with respect to each other.

**3,693,762**  
**ANCHORING ROD BRACKET ASSEMBLY FOR**  
**RAILWAY CAR BRAKE RIGGING**  
 Donald B. Yates, Park Forrest, Ill., assignor to Pullman Incorporated, Chicago, Ill.  
 Filed June 21, 1971, Ser. No. 154,971  
 Int. Cl. B61h 13/38

U.S. Cl. 188-52

6 Claims

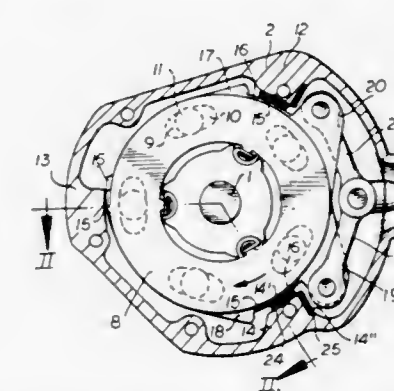


A foundation brake rigging for railway cars includes a connecting rod and an anchoring rod which are disposed beneath the axles of the wheels of a railway car truck. The connecting rod is connected to a fulcrum rod which actuates the connecting rod to apply the brakes. The anchoring rod is removably anchored on a bracket assembly of tripodal design which is removably connected to the center sill of the railway car.

**3,693,763**  
**SELF-ENERGIZING DISK BRAKE FOR AUTOMOTIVE**  
**VEHICLES**  
 Hansherger Powilleit, Erkrath-Unterbach, Germany, assignor  
 to International Harvester Company, Chicago, Ill.  
 Filed June 11, 1970, Ser. No. 45,454  
 Int. Cl. F16d 55/04

U.S. Cl. 188-71.4

3 Claims



A self-energizing disk brake having a pair of thrust plates positioned within a stationary housing and between brake disks connected to a shaft to be decelerated. An actuating means to rotate the plates relative to each other to cause spherical balls trapped in complementary indentations in the facing surfaces of the plates to push the plates apart against the bias of a spring means into frictional engagement with the brake disks. Centering cams and lugs on the plates are capable of selective engagement with guide surfaces and projections



formed on the housing. The cams and lugs are provided with yieldable vibration dampening elements having a low coefficient of friction to minimize the axially directed forces resisting separation of the plates.

3,693,764

## SPOT-TYPE DISC BRAKE SHOE

Hans Joachim Anders, Frankfurt am Main, Germany, assignor to ITT Industries, Inc., New York, N.Y.

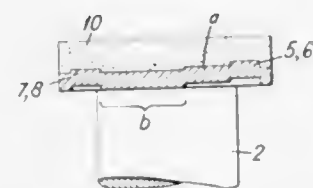
Filed Jan. 21, 1971, Ser. No. 108,649

Claims priority, application Germany, Feb. 21, 1970, P 20 08 057.3

Int. Cl. F16d 65/02

U.S. Cl. 188—73.1

1 Claim



A brake shoe for spot-type disc brakes wherein a backing plate is formed with at least two projections, one extending further than the other, at the opposite lateral edges of the plate to which the friction lining is bonded. As a piston drives the backing plate and lining toward a brake disc, the lining is gradually worn away until the metal of the further extending projection comes into contact with the metal of the disc, thereby providing an audible squeal or warning signal to the vehicle operator while there is still enough brake lining remaining to provide adequate stopping power.

3,693,765

## DISC BRAKE AND SQUEAL PREVENTIVE MEANS THEREFOR

Ryotaro Hikida, and Takeo Ogasawara, both of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Uchi-ken, Japan

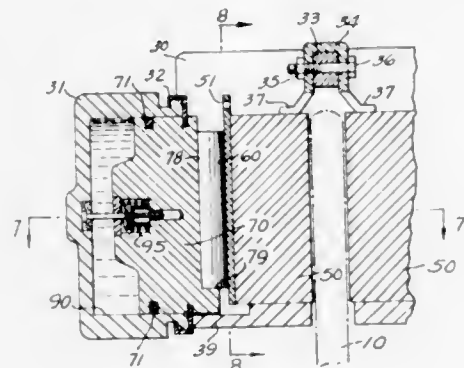
Filed May 1, 1970, Ser. No. 33,824

Claims priority, application Japan, May 8, 1969, 44/35857

Int. Cl. F16d 55/228

U.S. Cl. 188—73.5

7 Claims



The invention relates to disc brakes wherein antifriction intermediate members such as rollers, or balls, are provided between the friction pad and the piston reducing the contact area to lines or dots, thereby reducing the frictional force between opposed surfaces of the pad and the piston, to prevent brake squeal.

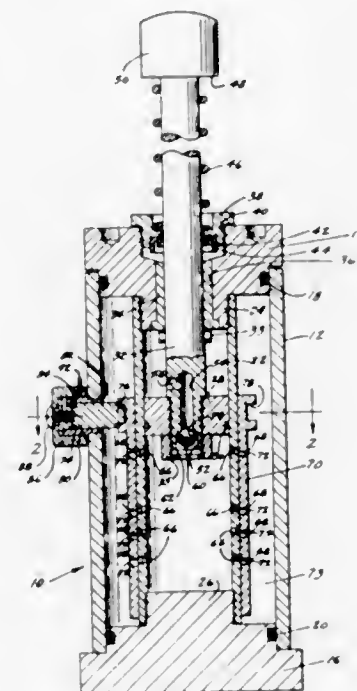
3,693,766

## Patent Not Issued For This Number

3,693,767  
ADJUSTABLE HYDRAULIC SHOCK ABSORBER  
Kermit B. Johnson, Jamestown, N.Y., assignor to Hydraulic Products Corporation, Jamestown, N.Y.  
Filed Nov. 5, 1970, Ser. No. 87,224  
Int. Cl. F16f 9/48

U.S. Cl. 188—285

9 Claims



A shock absorber comprising a housing, a cylinder mounted within the housing, and a metering sleeve surrounding the cylinder. The cylinder wall is provided with longitudinally spaced openings communicating with annular grooves formed in the exterior of the cylinder wall. The metering sleeve is provided with longitudinally spaced openings adapted to register with the grooves of the cylinder wall to form composite orifices for the egress of fluid from within the cylinder to an annular reservoir in the housing upon the application of a load to the piston rod. The metering sleeve is adjustably slidable relative to the cylinder to vary the effective size of the orifices. The annular grooves take various cross-sectional shapes to control the flow characteristics of the fluid through the orifices.

3,693,768

## IMPACT ABSORBER FOR RAILROAD CARS

Hans Erdmann, Schonbornring, Germany, assignor to ITT Industries, Inc., New York, N.Y.

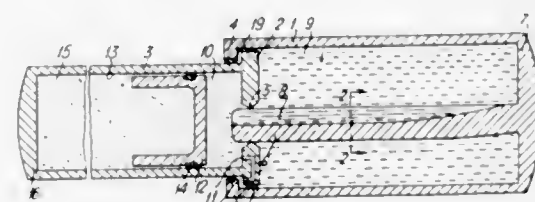
Filed Oct. 14, 1970, Ser. No. 80,546

Claims priority, application Germany, Oct. 29, 1969, P 19 54 331.8

Int. Cl. F16f 9/342

U.S. Cl. 188—289

1 Claim



A railroad car impact absorber having a fluid filled cylinder with a matching piston movable in the cylinder to force fluid through an orifice in the piston, the area of the orifice varying with the piston position by means of a grooved throttle rod attached to the cylinder and extending into the orifice. A floating piston in the chamber on the other side of the piston forms a gas return spring. The throttle rod causes a lower deceleration during the first part of the piston displacement than during the second part of the displacement.

3,693,769

## Patent Not Issued For This Number

3,693,770

## ANTI-REVERSE CLUTCH SAFETY DEVICE

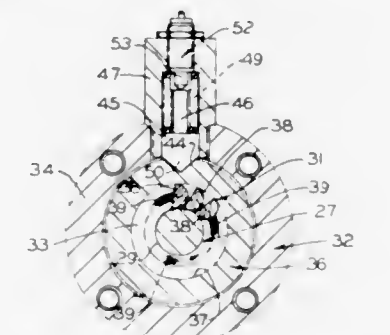
Loris J. Charchian, Royal Oak, and Thaddeus Lech, Warren, both of Mich., assignors to Formspray Company, Warren, Mich.

Filed Dec. 9, 1970, Ser. No. 96,359

Int. Cl. G08b 21/00; F16d 41/07; H01h 3/16

U.S. Cl. 192—30 W

11 Claims



A conventional over-running clutch-type "no back" mechanism normally backstops or grounds out a drive shaft in the event of a load thereon tending to cause reverse wind-up at clutch elements of the mechanism; and the latter is equipped with a safety device which signals the presence of excessive wind up or slip condition. The device is applied coaxially to the mechanism's drive shaft, and includes a sprag assembly torqued reversely in response to such undue slip or wind-up. The assembly is interposed radially between an outer rotatable race, and a cylindrical stud providing an inner race, both races being coaxial with the shaft; and the stud is coupled to rotate with the latter in its driving phase, in which the stud over-runs relative to the outer race. When shaft backstopping is in effect the sprag assembly transmits that torque to the outer race; and in response the excessive wind-up or slip, as picked up by the sprag assembly, the latter causes the outer race to rotate a bit. This minor rotation enables a part of the outer race to cammingly close an electric limit switch, thus originating a signal to audibly or visibly alert an attendant.

3,693,771

## CENTRIFUGAL CLUTCH

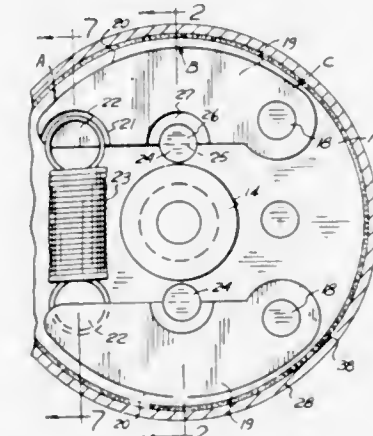
Warren H. De Lancey, Elyria, Ohio, assignor to Pioneer Products Company, Elyria, Ohio

Division of Ser. No. 761,931, Sept. 24, 1968. This application Sept. 8, 1970, Ser. No. 70,007

Int. Cl. F16d 23/10

U.S. Cl. 192—105 CD

1 Claim



A centrifugal clutch having drive and driven members, the former including a disc and hub, a pair of weights with arcuate outer surfaces pivotally mounted at their adjacent one ends

upon said disc and constrained to radial movements, a spring interconnecting their adjacent other ends in tension maintaining the weights in a radial inward "release" position, the driven member including a drum overlying and spaced from the disc and weights, and having a hub journaled on the disc hub, and a sleeve of friction material mounted upon and around the interior of said drum normally spaced from the weights.

And a modified clutch wherein the weight pivots are diametrically opposed, and spring interconnect the respective opposite ends of the weights.

3,693,772

## CENTRIFUGAL CLUTCH

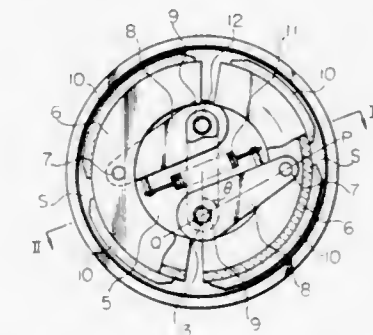
Eiji Tani, No. 6,4,4-chome Hannancho, Abeno-ku, Osaka, Japan

Filed Dec. 29, 1970, Ser. No. 102,457

Int. Cl. F16d 43/24

U.S. Cl. 192—105 CD

11 Claims



A centrifugal clutch is provided for transmitting power smoothly and stably from a drive shaft to a follower drum by shoes contacting the inside surface of the drum via lever members pivotally fixed at one end to a shoe and at the other end to the drive shaft or to a base plate fixed to the shaft.

The pivots of the levers on the shoes are disposed on the leading portion of the shoes in the direction of rotation. The angle between a radius passing through the pivots on the shaft or the base plate and the axes of the lever connecting both pivots of the lever is arranged to be acute at all times.

The above features in combination serve to prevent wear of all parts conventionally caused by a pendulum motion of the shoes during acceleration and deceleration and thus serve to extend the life of the clutch.

3,693,773

## CARRIAGE STOP FOR RADIAL ARM SAW

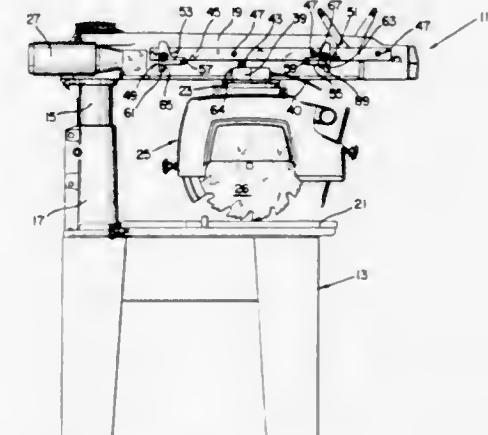
John L. Wickham, Glen Arm, and Erik J. De Witt, Lutherville, both of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed Aug. 21, 1970, Ser. No. 65,952

Int. Cl. F16d 71/00; B23g 5/00; H01h 21/28

U.S. Cl. 192—142 R

15 Claims



A radial arm saw including a base frame having an upstanding post supported thereon. An arm is pivoted to the post and



extends over a work table supported upon the base frame. A powered circular saw and saw carriage is suspended from the arm and is movable therealong to cut a workpiece on the table. The carriage is moved along the arm by motor means which is automatically reversed or turned off by switch means on the carriage engageable with actuator means on the arm. The actuator means is incrementally adjustable along the arm and includes positive stop means for the carriage should the switch means fail to operate.

3,693,774

## MATERIAL UNLOADING SYSTEM

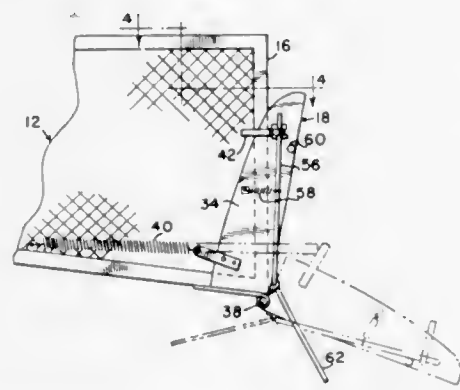
Harold G. Meitl, Clarendon Hills, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Jan. 22, 1971, Ser. No. 108,835

Int. Cl. B65g 11/12

U.S. Cl. 193-17

2 Claims



A collection bin on a mobile fruit harvester wherein a chute is pivotally mounted on the bin to close a discharge opening when the chute is in an upright position. A latch releasably holds the chute in the closed position. An actuator assembly is mounted on the chute in operative connection with the latch and includes a panel projecting beneath the chute so as to be engageable by a receiving bucket mounted on a vehicle. As the bucket is moved into engagement with the panel, the latch is released and the chute is pivoted to a downwardly inclined position for emptying the contents of the bin into the bucket.

3,693,775

## ACTUATOR FOR ELASTIC DIAPHRAGM SWITCH KEYBOARD

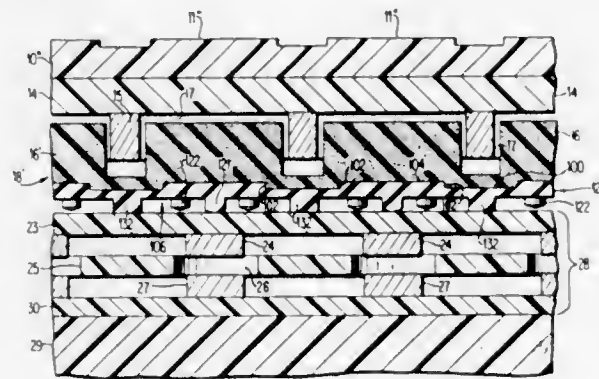
Kenneth A. Brooks, Cary; Lawrence L. Johnson, and James A. Mathewson, both of Raleigh, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1970, Ser. No. 51,284

Int. Cl. B41j 5/08

U.S. Cl. 197-98

6 Claims



An actuator sheet carries clusters of switch actuating projections aligned with openings which receive deflectable contacts of an array of diaphragm switches. Intersecting ribs are carried on the same side of the actuator sheet as the switch actuating projections, to define isolation zones for the projections corresponding directly to the individual key areas of the

keyboard. Integral, raised pressure pads for each key area are formed on the upper surface of the actuator sheet to enhance even pressure distribution over the pertinent switch contact area.

3,693,776

## PUSHER LOADING MEANS FOR CONVEYORS

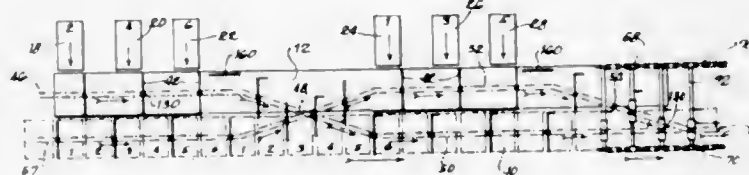
John Harrison, Lincolnwood, Ill., assignor to The Spra-Con Company, Chicago, Ill.

Filed Sept. 30, 1971, Ser. No. 185,311

Int. Cl. B65g 19/10, 47/04

U.S. Cl. 198-23

10 Claims



A system for loading articles on a conveyor which includes a plurality of article carrying areas and having a loading platform positioned alongside the path of conveyor movement. The system includes pusher means which are mounted on a separate conveyor and which engage articles positioned on the platform. The pusher means are guided by track means so that the articles move longitudinally in the direction of conveyor movement and transversely toward the conveyor so that the articles can be deposited on the conveyor in an extremely smooth but rapid fashion. The pusher means include automatically operated and pivotally mounted end paddles which corner articles engaged by the pusher means to insure transfer movement over the platform and toward the conveyor.

3,693,777

## APPARATUS FOR LAYING DOWN ARTICLES ON A CONVEYOR

Marcel Beauchemin, Le Havre, France, assignor to Sidel, Societe Anonyme, Le Havre, France

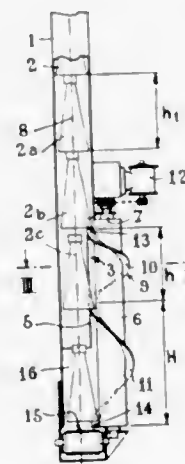
Filed June 7, 1971, Ser. No. 150,662

Claims priority, application France, July 29, 1970, 7027975

Int. Cl. B65g 47/26, 59/06

U.S. Cl. 198-26

3 Claims



This apparatus for depositing separately on a conveyor a plurality of articles having a predetermined and same height and a greater diameter at the top than at the base, comprises a descending conduit in which the articles are stacked; this conduit has a lateral aperture through which projects only the thread portion of a screw revolving about an axis parallel to the conduit, the pitch of said screw increasing in the downward direction from a value inferior to the predetermined height of said articles to a value greater than said height.

3,693,778

## ASSEMBLY FOR USE WITH CONVEYOR SYSTEM FOR SEPARATING AND DIVERTING OBJECTS

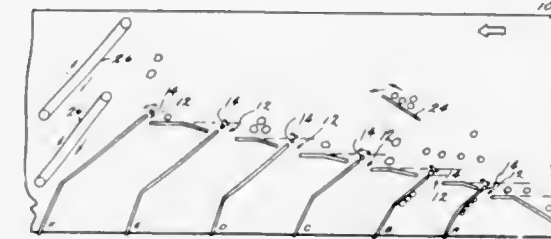
Frank J. Halm, III, South Windsor, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed Dec. 30, 1970, Ser. No. 102,872

Int. Cl. B65g 47/22

U.S. Cl. 198-29

5 Claims



A guiding frame assembly is provided with a series of gates for receiving and diverting individual objects moving along a conveyor system. The frame assembly is constructed to be mounted over existing conveyor equipment without modification of the conveyor equipment, and the series of gates are progressively staggered from an upstream area to a downstream area of the conveyor system so as to intercept and receive objects from a desired width of the conveyor system. The gates are of special design to handle a variety of shapes and sizes of objects.

3,693,779

## ROLL FOR DISPLACEMENT OF BAR-LIKE PRODUCTS

Georges L. P. Tavernier, and Robert L. Dubois, both of Maubeuge, France, assignors to Usinor

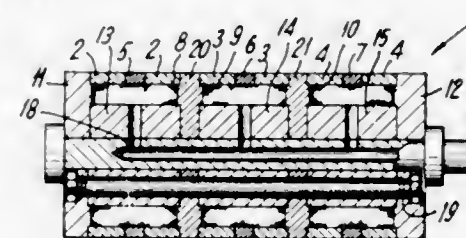
Continuation-in-part of Ser. No. 793,081, Jan. 22, 1969, Pat. No. 3,610,402. This application July 22, 1971, Ser. No. 165,242

Claims priority, application France, Jan. 22, 1968, 68136931

Int. Cl. B65g 17/46

U.S. Cl. 198-41

9 Claims



A roll for transporting elongated ferro-magnetic bar-like products, includes a series of axially aligned magnetizing coils, and a magnetic circuit around each coil. Each magnetic circuit comprises an annular magnetic core within the coil, magnetic elements extending from the core on each side of the coil, and ring means surrounding the coil. The ring means includes a non-magnetic portion of less width than that of the magnetic portion. The coils are supplied with direct current, and the roll is mounted on a non-magnetic shaft.

3,693,780

## LATERAL-BEND ENDLESS CHAIN BELT CONVEYOR ASSEMBLY

Joseph Fraioli, Sr., 300 Martine Ave., White Plains, N.Y.

Filed June 29, 1971, Ser. No. 157,992

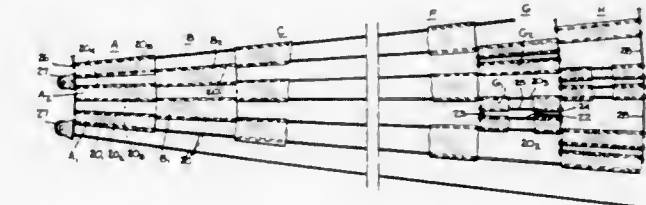
Int. Cl. B65g 15/00

U.S. Cl. 198-182

8 Claims

An endless chain belt conveyor assembly for transporting articles along an arcuate path. The assembly includes a trackway defined by concentrically-arranged curved inner and outer rails. Operating within the rails is an endless belt supported between a driven roll and an idler roll, the belt being constituted by a continuous train of inter-linked cross rods,

the rods diverging one degree from each other so that the spacing between adjoining rods increases progressively from the inner rail ends of the rods to the outer rail ends thereof. Pivotaly connected to the cross rods are several curved rows of slat-like links, the rows being concentrically arranged between the inner and outer rails to create a supporting surface extending across the rods. The first row of links, which



lies adjacent the inner rail, is formed by links each bridging a respective pair of rods and having a tapered width to match the spacing between the rods joined thereby. The succeeding rows of links which extend toward the outer rail, are formed by links that are staggered with respect to those in the preceding row and are pivotally joined to alternate pairs of rods, the links in the succeeding rows having a tapered width to match the spacing between the rods joined thereby.

3,693,781

## TRAINING APPARATUS FOR DRIVEN BELTS

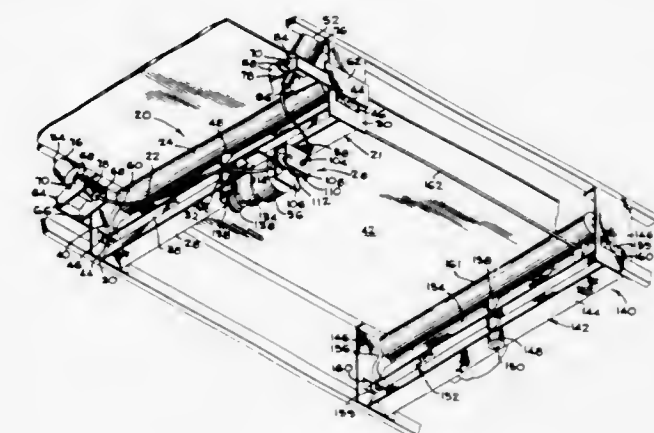
Ronald F. Homeier, Plainfield, Ind., assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 8, 1971, Ser. No. 113,535

Int. Cl. B65g 15/62

U.S. Cl. 198-202

12 Claims



An apparatus for training the carrying or return run of a conveyor belt supported on a plurality of spaced idler roller assemblies, includes a pair of rotatably mounted actuating rolls disposed adjacent the edges of the belt in a position to be contacted by the belt when the belt becomes off-centered. One end of a flexible shaft is operatively connected to each actuating roll to turn in unison therewith while the other end of the flexible shaft is operatively connected to the input shaft of a planetary gear reducing unit. The output shaft from the reducing unit is connected through bevel gears to a pivoting vertical shaft upon which an idler roller supporting frame is mounted. Pivotal movement of the supporting frame angularly displaces a belt supporting idler roller mounted thereon to urge the belt toward a centered position between the actuating rolls where it is out of contact with either roll.

In an alternative embodiment the actuating rolls upon a predetermined pivotal movement, contact limit switches to actuate a reversible electric motor that drives the planetary gear reducing unit. The reducing unit is linked to an idler roller supporting frame just as in the first embodiment to pivot the idler roller about a vertical axis. Over-travel limit switches are also provided to shut the motor off in the event the supporting frame is pivoted to its pivotal limit.

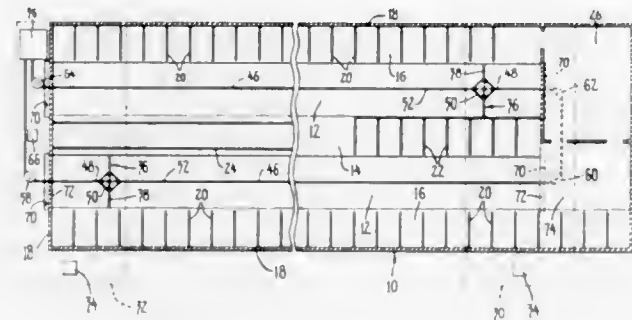


### 3,693,782 LIVESTOCK CONFINEMENT AREA

Edward R. Thoenes, Parkers Prairie, Minn.  
Filed June 22, 1970, Ser. No. 48,394  
Int. Cl. B65g 25/08

U.S. Cl. 198—224

7 Claims U.S. Cl. 206—52 W



A mechanized self-cleaning livestock confinement area including a pair of spaced longitudinally extending livestock areas and a depressed flat alley extending between the livestock areas. An opening is provided at each end of the alley to form a manure drop. A scraper extends across the width of the alley between the livestock areas. The scraper includes a guide member which is perpendicular to the scraper blade and runs in a groove in the bottom of the alley. A continuous chain runs in the groove and is attached to the guide member. The chain is driven to reciprocate the scraper back and forth to first scrape manure into the manure drop at one end of the alley and then into the manure drop at the other end of the alley. The scraper can be reciprocated back and forth continuously or a control circuit with a timer can be provided to energize the scraper drive motor at predetermined times.

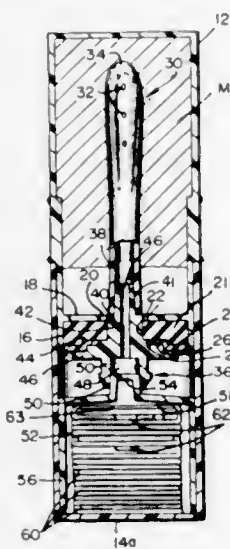
### 3,693,783

#### VAGINAL SYRINGE PACKAGE INCLUDING A SUPPLY OF DISPOSABLE DISPENSING CONTAINERS AND INTEGRAL MEANS FOR STORING SAME

Stephen N. Hart, Belleville, N.J., assignor to Fancort Industries, Inc., New York, N.Y.  
Filed Nov. 16, 1970, Ser. No. 89,864  
Int. Cl. B65d 85/54; A61m 7/02

U.S. Cl. 206—17.5

14 Claims

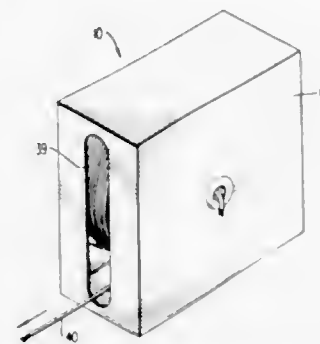


A two part housing that is small enough to be carried in a woman's handbag contains a plurality of compactly folded, disposable, concentrated-medicament-containing, thin-walled, flexible, limp plastic bags. The housing also contains a hollow elongated bone having a plurality of orifices at the distal end thereof. The concentrated medicament can dissolve or disperse in water. The housing further contains a viscous germicidal mass in which the bone is stored when not in use.

### 3,693,784 WIRE PACKAGE

William T. Holmes, 219 Spring St., Carrollton, Ga.  
Filed Jan. 8, 1971, Ser. No. 104,904  
Int. Cl. B65d 83/00, 85/04

9 Claims



A package for cable or the like wherein a reel wound with insulated multiple conductor cable is enclosed in a container. The container includes recesses in its sidewalls which receive the end flanges of the reel and circular openings in its sidewalls which receive end protrusions or bosses of the reel spindle. The inner end of the cable on the reel is inserted through a passageway in the spindle which opens through the end of the spindle so that both the inner and outer ends of the cable are accessible for electrically testing the conductors. The wire can be pulled from the container and the reel will rotate inside the container to pay out the wire.

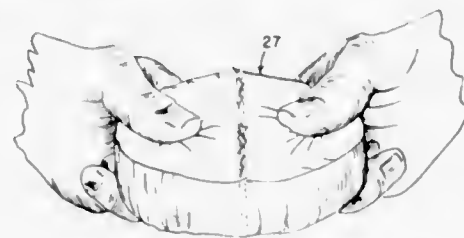
### 3,693,785

#### FRANGIBLE PACKAGE

Joseph T. Sincavage, Knowltonwood, Pa.; Carl R. Pepmeier, Fredericksburg, Va., and Louis E. Stoffregen, Springfield, Pa., assignors to FMC Corporation, Philadelphia, Pa.  
Division of Ser. No. 714,281, March 19, 1968, Pat. No. 3,577,258. This application June 1, 1970, Ser. No. 54,053  
Int. Cl. B65d 75/58, 85/72, 65/26

U.S. Cl. 206—56 AA

3 Claims



A package within which is encased a moisture-containing product encased within a wrapping material formed of a non-fibrous, hydrophilic regenerated cellulose sheet having a coating of moistureproof material on at least one side thereof, with the coated side having a selected area of lower moistureproof properties than the remainder thereof whereby the portion of the regenerated cellulose sheet adjacent to such selected area of a coated side is more receptive to moisture and thus more frangible and easily ruptured, as by bending of the package.

### 3,693,786

Patent Not Issued For This Number

### 3,693,787

#### COVER OF CONTAINER PACKAGE

Joseph W. Duerr, Flushing, N.Y., assignor to Continental Can Company, Inc., New York, N.Y.  
Filed Nov. 6, 1970, Ser. No. 87,374  
Int. Cl. B65d 85/62

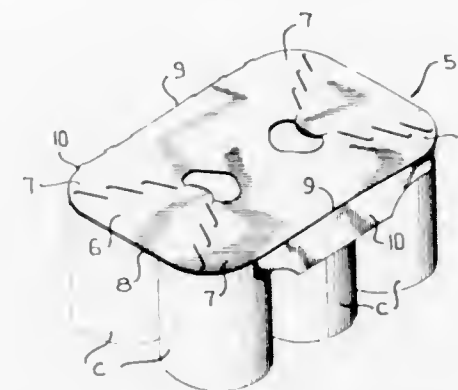
U.S. Cl. 206—65 C

5 Claims

This disclosure relates to a cover for a group of containers adapted to be formed into a package by wrapping sheet

material thereabout. The cover is formed of paperboard having grain with the cover being naturally warpable about the grain axis. The cover further has flaps connected to opposite

therefrom onto adjoining chutes located below the opening, the angle of divergence of the opening being greater above



sides thereof and extending normal to the grain axis with the flaps being foldable out of the plane of the cover to provide the cover with beam strength sufficient to overcome warping of the cover.

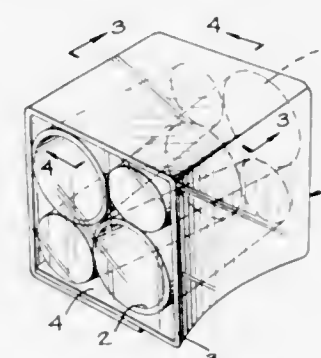
### 3,693,788

#### SLEEVE PACKAGE

Richard K. Oglesbee, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio  
Filed Dec. 16, 1970, Ser. No. 98,823  
Int. Cl. B65d 75/38, 65/16

U.S. Cl. 206—65 S

3 Claims



An improved package is described to pack and distribute articles such as glass tumblers or a variety of other articles having an inner paperboard sleeve and an outer envelope such as a shrink film envelope. The sleeve is formed by cutting and scoring flat paperboard forming a foldable wrap-around sleeve to initially group and contain the packaged articles. The improved sleeve has one or more curved flexible article gripping panels formed by the use of curved score lines the sleeve blank. The sleeve with the gripping panel is wrapped around the articles or may be pre-formed and loaded with the articles. After application, the sleeve grips the articles providing a stable package as an outer wrapper is slipped over the filled sleeve and is shrunk or otherwise drawn tightly against the articles and the sleeve.

### 3,693,789

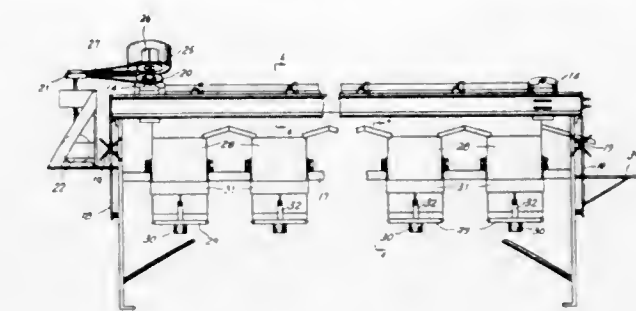
#### PRAWN SORTING MACHINE

George Powell, Fremantle, Australia, assignor to E. M. S. Holdings Pty. Ltd., Western Australia, Australia  
Continuation-in-part of Ser. No. 815,427, April 11, 1969, abandoned. This application Oct. 20, 1970, Ser. No. 82,263  
Int. Cl. B07b 13/04

U.S. Cl. 209—73

6 Claims

A prawn sorting machine having a pair of conveyor members mounted adjacent each other so as to carry prawns therebetween, the conveyor members having a diverging opening therebetween in the direction of travel thereof, to allow prawns carried between the conveyor members to fall



any one chute than that above an adjacent chute preceding it in the direction of travel.

### 3,693,790

Patent Not Issued For This Number

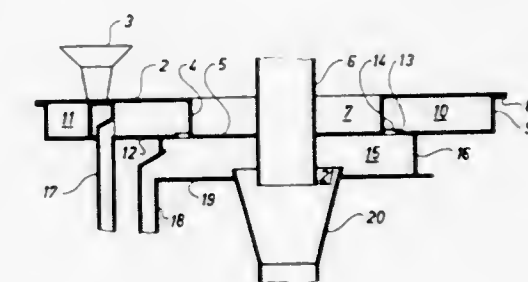
### 3,693,791

#### METHOD OF, AND APPARATUS FOR, SPIRAL AIR CLASSIFICATION OF SOLID PARTICLES IN A GASEOUS CARRIER

Erich Beck, Worms-Weinsheim, Germany, assignor to Ingenieurbureau Dr. Brehm AG, Zurich, Switzerland  
Filed Feb. 6, 1970, Ser. No. 9,270  
Int. Cl. B04c 1/00

U.S. Cl. 209—144

13 Claims



A multi-stage spiral air classification method and apparatus for dividing into at least three fractions solid particles suspended in a gaseous carrier, in which a spiral flow of additional carrier gas is introduced to the flow of the suspension at the entry into each subsequent stage.

### 3,693,792

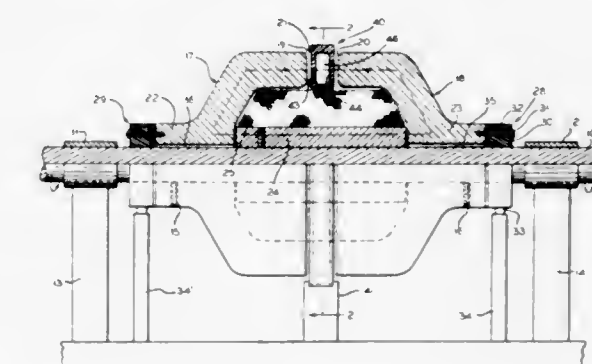
#### ELECTRODYNAMIC PARTICLE SEPARATOR

James I. Lang, Oneida, Wis., assignor to John F. Sylvester, Green Bay, Wis.

Filed May 5, 1971, Ser. No. 140,443  
Int. Cl. B03c 1/12; B01d 35/06

U.S. Cl. 209—212

20 Claims



Charged particles such as ions in solution or suspended solids having a natural or induced electric charge are



separated from or concentrated in the fluid medium in which they are contained. The fluid medium is conducted through a non-magnetic duct through which an intense magnetic flux rotating at high velocity is directed. Particles having opposite polarity charges are deflected in opposite directions and concentrated under the influence of Lorentz forces which are defined as  $F = q \times V \times B$ , where  $F$  is the deflecting force vector,  $q$  is the magnitude of the charge on a particle,  $V$  is the velocity vector of the particle and  $B$  is the magnetic flux vector. A multiported analyzer near the duct exit divides the streams which contain the concentrates from the dilute stream. Means are provided for regulating the flow volume through the ports.

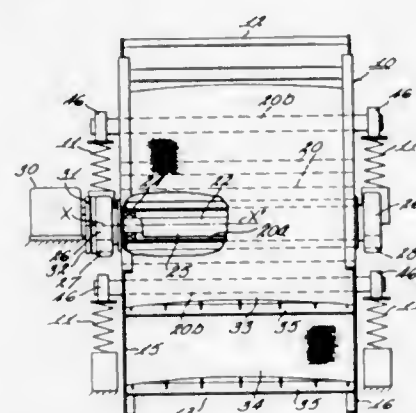
3,693,793

## UNIT BODY VIBRATING SCREEN

Mathew P. Hahn, Wauwatosa, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.  
Filed Aug. 28, 1970, Ser. No. 67,831  
Int. Cl. B07b 1/36

U.S. Cl. 209—326

3 Claims



A vibrating screen is disclosed which moves by gyrating in a circular path about a horizontal axis. The screen has an inclined body with an elevated feed end defined between a pair of side walls spaced apart by a plurality of rigid tubular cross members. One of the tubular cross members, centrally located, has a diameter large enough for a drive shaft and associated bearings to be mounted therein. Each of the tubular cross members projects on each end into an aperture cut in the adjacent side wall where each is joined to the adjacent side wall by a weld around the entire circumference thereof to provide an integral unitary assembly of light weight, great strength, high natural frequency and with the weld path joining the cross members to the side walls having a configuration which is the same, i.e., circular, as the path of motion of the screen in vertical planes defined by the weld paths.

3,693,794

## METHOD AND APPARATUS FOR SEPARATING GRANULAR GOODS

Hans Oetiker, Gallen, Switzerland, assignor to Gebrüder Buhler AG, Gallen, Switzerland

Filed April 17, 1969, Ser. No. 817,127

Claims priority, application Switzerland, April 17, 1968, 5678/68; Nov. 17, 1968, 16799/68

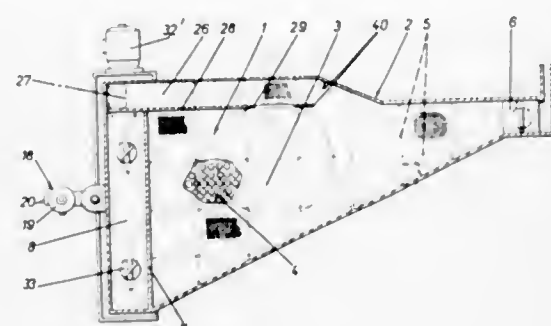
Int. Cl. B07b 3/10

U.S. Cl. 209—467

30 Claims

In a method of separating granular goods of different specific gravity, by separating the goods, by a forced air flow therethrough while the goods are on a goods support subjected to a vibration, into a layer of heavier fractions and a layer of lighter fractions, separating the layers and separately discharging the layers, the goods are pre-sorted, in advance of charging thereof onto the support, into a bottom layer, enriched with the heavy fractions, and a superposed layer, free of the heavy fractions. The two layers, while in such superposed relation, are then charged onto the goods support. The apparatus includes a goods feeding device, for pre-sorting of the goods, in the form of a vibrating duct having a gas permeable

bottom wall. The duct forms an initial sedimentation path of the heavy fraction of the goods, and the discharge end of



the duct is spaced from the outlet for the heavy fraction to form a succeeding sedimentation path of the heavy fraction charged onto the goods support.

3,693,795

## METHOD AND APPARATUS FOR LOADING SLURRIES INTO VESSELS AND ELIMINATING THE SUSPENDING LIQUID

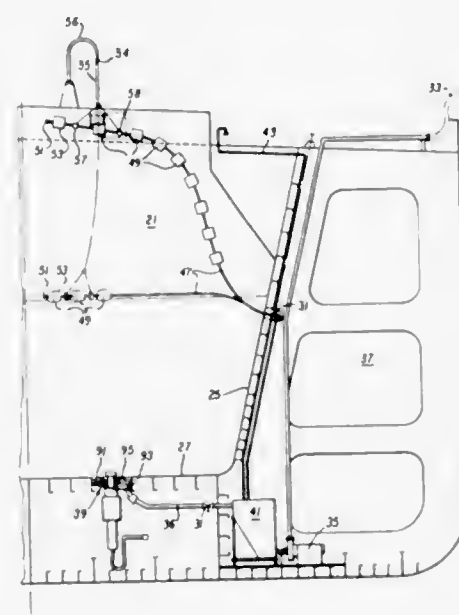
Charles W. Robinson, San Francisco; Kenneth E. Merklin, Tiburon, and Francis D. Finlayson, Orinda, all of Calif., assignors to Marcona Corporation, San Francisco, Calif.

Filed May 22, 1970, Ser. No. 39,667

Int. Cl. B01d 21/24

U.S. Cl. 210—83

17 Claims



Method and apparatus for loading the holds of vessels with discrete ore or mineral solids characterized by a high settling rate in which the solids are introduced into the hold as a slurry to partially load the same. The slurry is then allowed to settle by gravity under quiescent conditions to form a settled zone of solids in the lower region of the hold above which are settling zones and an essentially clear layer of supernatant liquid. The supernatant liquid is withdrawn after which additional slurry is introduced into the hold to substantially fill the same. Again, the contents of the hold are allowed to settle to form a deeper zone of settled and settling solids with an overlying layer of supernatant liquid which is again withdrawn. Apparatus is disclosed for withdrawing the supernatant liquid and includes discharge conduit having an inlet head and flotation collar adapted to be submerged in and to float beneath the surface of the liquid so that the same can be withdrawn through the conduit either by gravity or by pumping action.

3,693,796

## METHOD AND APPARATUS FOR REMOVAL OF PARTICLES FROM SUSPENSION

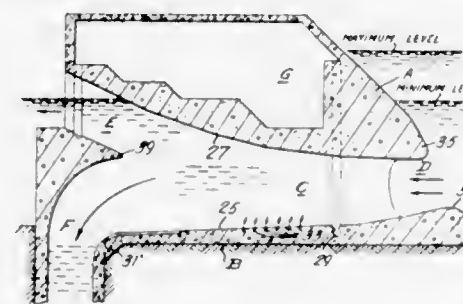
Bernard Michel, 793 Des Vignes St., St. Foy, Quebec, and J. Allison Delaney, 625 Milton St., Montreal, Quebec, both of Canada

Filed Aug. 21, 1969, Ser. No. 851,963

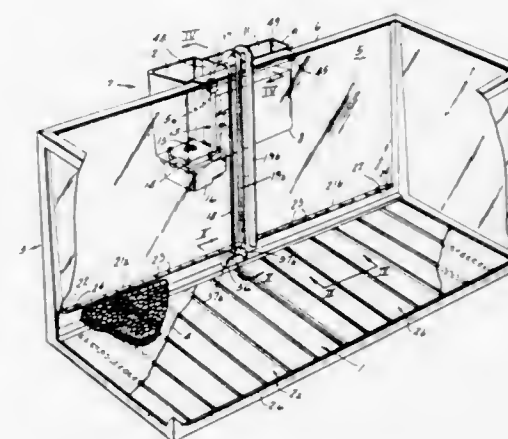
Int. Cl. B01d 21/00

U.S. Cl. 210—84

13 Claims



Method and apparatus comprising an intake of bridge pier like concrete construction for water-works located in a flowing stream of water. The intake has a passage leading from a submerged inlet upstream to upper and lower downstream outlets. The passage widens in a vertical plane from the inlet towards the outlets and has a shape to cause the overall velocity of the stream to be slowed and the upper part to move faster than the lower part thereby to entrain frazil ice or other particulate material entering the passage and to carry it through the upper outlet while water free from such material passes through the lower outlet. Means is provided for injecting air near the inlet to form a curtain of air bubbles to further slow down the stream and to enhance the differential velocity between its lower and upper parts.



3,693,799

Patent Not Issued For This Number

3,693,800

## FLOATING SURFACE SKIMMER

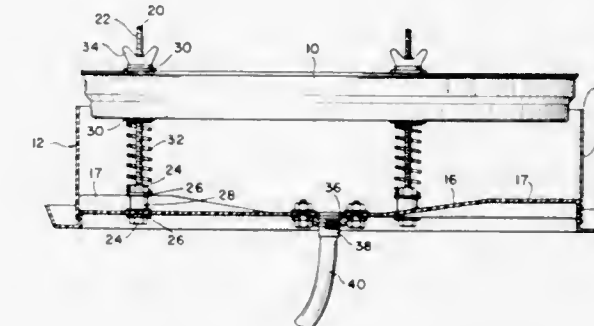
Howard E. Stanfield; Gary W. Stanfield, and George F. Camp, all of Tulsa, Okla., assignors to Acme Products Incorporated, Tulsa, Okla.

Continuation-in-part of Ser. No. 880,594, Nov. 28, 1969, Pat. No. 3,598,501. This application Dec. 14, 1970, Ser. No. 97,875. The portion of the term of this patent subsequent to Aug. 10, 1988, has been disclaimed.

Int. Cl. E04h 3/20

U.S. Cl. 210—242

4 Claims



A floating surface skimmer having a hollow bowl and a disc-shaped float member for supporting the bowl slightly below the surface of a liquid; the bowl has a substantially closed bottom and a substantially continuous vertical side portion, the upper edge of which forms a substantially continuous horizontal side edge constituting a weir; adjustment means are provided to adjust the position of the bowl vertically with respect to the float member which, in turn, creates the adjustment of the weir relative to the surface of the liquid; the skimmer is provided with an exhaust means which communicates, at one end, with the interior of the bowl and at its other end with a source of suction.

3,693,798

## AQUARIUM FILTER DEVICE

Eugene B. White, Oak Park, Ill., assignor to Ken-Flo Products Corporation, Palos Heights, Ill.

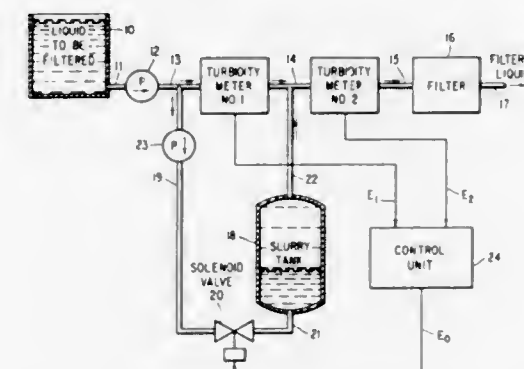
Filed Dec. 1, 1969, Ser. No. 881,110

Int. Cl. E04h 3/20

U.S. Cl. 210—169

9 Claims

A method and system for the treatment of water in aquariums and the like utilizing aerobic action in which the water is





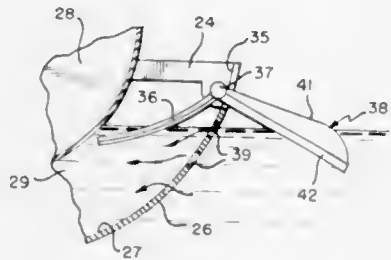
3,693,801

**WATER SURFACE SKIMMER WITH CHECK VALVE**  
Ivo C. Pogonowski, Houston, Tex., assignor to Texaco Inc.,  
New York, N.Y.

Filed June 25, 1971, Ser. No. 156,739  
Int. Cl. C02b 9/02

U.S. Cl. 210—242

10 Claims



The invention relates to a skimmer device for use on the surface of a body of water. The skimmer is actuated by a vacuum source to promote a flow of a lighter than water coating material floating at the water's surface, through the skimmer by way of a submerged inlet. Valve means provided in the skimmer is so positioned to assure unidirectional flow through the skimmer to maintain the integrity of the vacuum source even though the skimmer be inadvertently raised from the water such that air would otherwise enter the vacuum system, and cause fluids to drain.

3,693,802

**Patent Not Issued For This Number**

3,693,803  
**FILTER DEVICE**

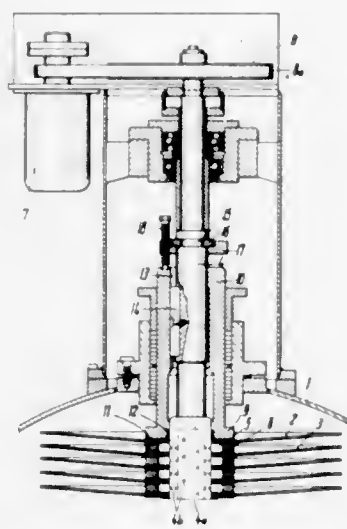
Bruno Guazzone, Rapperswil, Germany, assignor to Dr. Ing. Hans Muller Chemie-Apparatebau, Zurich, Switzerland  
Filed Nov. 23, 1970, Ser. No. 92,083

Claims priority, application Switzerland, Dec. 1, 1969, 489263/69

Int. Cl. B01d 33/06

U.S. Cl. 210—330

9 Claims



A housing has a peripheral wall provided with an opening in which a shaft is rotatably journaled with an end portion thereof extending through the opening to the exterior of the housing. Disc-shaped filter elements are mounted in axial succession on the shaft for rotation therewith. A sleeve surrounds the end portion of the shaft extending into the interior of the housing where it abuts against a terminal one of the filter elements. The sleeve is slidable axially of the shaft and a pressure-exerting arrangement is provided exteriorly of the housing for exerting pressure on the sleeve in a sense displacing it deeper into the housing and thereby exerting pressure upon and squeezing the filter elements on the shaft.

3,693,804  
**PRESSURE DIFFERENTIAL FILTERING APPARATUS AND METHOD**

Douglas U. Grover, 2910 Jerome Road, Fulton, Ga.  
Continuation-in-part of Ser. No. 865,588, Oct. 13, 1969, abandoned. This application April 29, 1971, Ser. No. 138,571  
Int. Cl. B01d 33/00

U.S. Cl. 210—359

9 Claims



Pressure differential sampling and filtering apparatus and method of use. The apparatus includes a tubular sampling member open at both ends, one end having a resilient piston with a flexible lip which engages and wipes the inside surface of a test tube during insertion and withdrawal. The piston has an open bore containing a filter which has a porous structure with open cells forming a plurality of fluid flow channels. Filtrate emanating from the filter flow channels enters directly into the interior of the sampling member, thereby minimizing plugging.

3,693,805

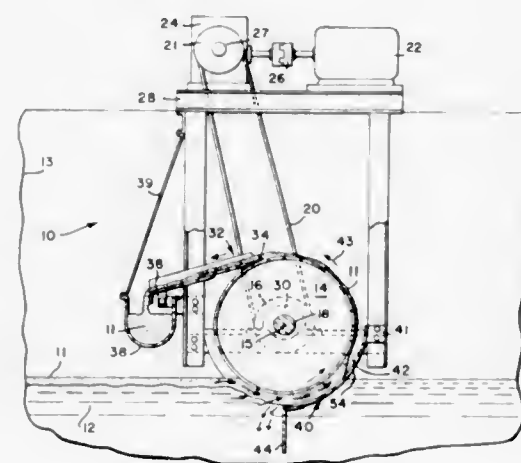
**SHROUDED DRUM SKIMMER**

Thomas J. Tillett, Ambler, and Barry Straus, Lansdale, both of Pa., assignors to FMC Corporation, San Jose, Calif.

Filed April 22, 1970, Ser. No. 30,734  
Int. Cl. E02b 15/04; B01d 21/18

U.S. Cl. 210—519

2 Claims



A drum-type skimmer for separating a surface layer of material from a body of liquid comprising a rotating drum disposed for partial submersion within the liquid and a shroud with a depending baffle positioned radially from and adjacent to the lower portion of the drum to improve the skimming action between the drum and the material to be skimmed.

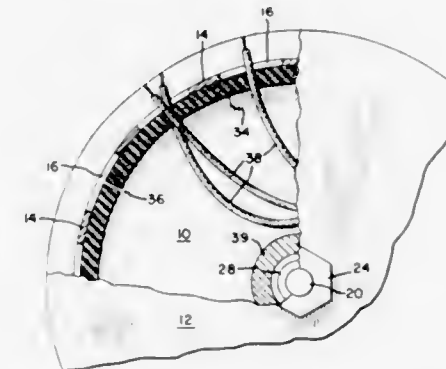
3,693,806

**ROTATABLE DISPENSER FOR PRECUT LENGTHS OF WIRE**

Harry B. Lit, Peabody, and James H. Hosker, Danvers, both of Mass., assignors to General Electric Company  
Filed Feb. 25, 1970, Ser. No. 14,037  
Int. Cl. A47f 7/00, 13/04

U.S. Cl. 211—70

5 Claims



A rotatable dispenser for lengths of wire used in the manufacture of electronic or electrical equipment. The dispenser includes a holder comprising a pair of discs spaced apart by a perpendicular circumferential wall preferably either integral with or permanently secured to one of the discs. When the other of the discs is set aside, precut lengths of wire may be loaded in bundles into the cavity defined by the first disc and the circumferential wall. Each bundle is loaded with one end of each of its wires protruding through a dispensing opening formed in the circumferential wall. With the second disc in place, the holder is rotatably mounted on a work bench mount or a floor mount adjacent a work bench. Each dispensing opening in the circumferential wall would preferably be labeled with the type and length of wire so that a worker could easily select each individual wire as he needs it.

3,693,807

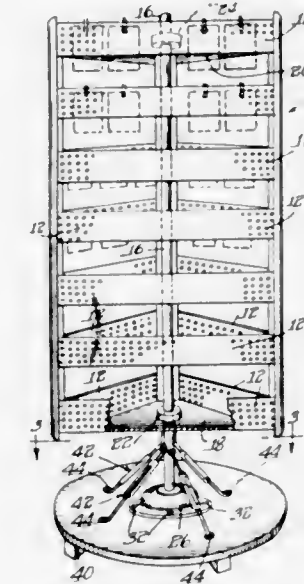
**DISPLAY STAND**

Charles O. Larson, Sterling, Ill., assignor to Chas. O. Larson Co., Sterling, Ill.

Filed Dec. 28, 1970, Ser. No. 101,491  
Int. Cl. A47f 5/02, 5/04

U.S. Cl. 211—163

4 Claims



The present invention relates generally to improvements in stands for displaying articles for sale and more particularly to improvements in article display stands of the rotary type. Embodiments of the invention disclosed herein contemplate a horizontal display stand base and a novel post accommodating means associated therewith. Vertically disposed post means is fixed at its lower extremity to and extends upwardly from said accommodating means. An article display device is positioned

above the base and is rotatable about the vertical axis of the post means, said device including a frame and a plurality of vertically spaced article display racks or panels supported by the frame.

3,693,808

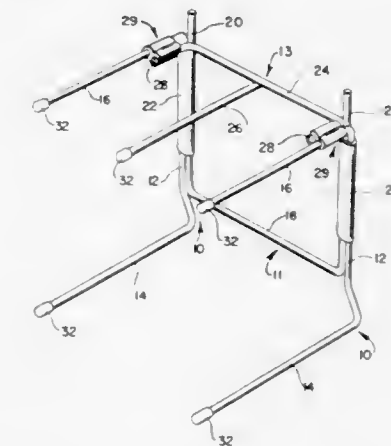
**DISPLAY RACK**

David Rauch, Worcester, Mass., assignor to Van Brode Milling Co., Inc., Clinton, Mass.

Filed June 1, 1971, Ser. No. 148,694  
Int. Cl. A47f 5/14

U.S. Cl. 211—181

4 Claims



A collapsible knock-down wire display rack including a base supporting member and a removable T-shaped member, the base member being formed of three U-shaped members pivoted together to be positioned in horizontal supporting position and collapsed position, the T-shaped member being removably slidable on a portion of the base member; the upper horizontal legs of the base member and the base portion of the T-shaped member being adapted to support packages of merchandise.

3,693,809

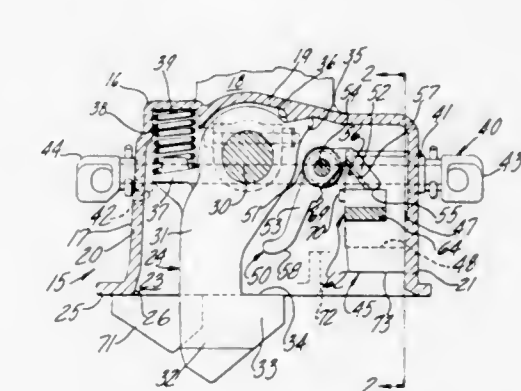
**RAILWAY CAR COUPLER**

William J. Metzger, East Cleveland, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Dec. 14, 1970, Ser. No. 97,506  
Int. Cl. B61g 3/10

U.S. Cl. 213—100 R

15 Claims



An automatic hook-type railway car coupler having a spring biased coupling hook mounted in its head for horizontal pivotal movement and adapted for interlocking engagement with the hook of an opposed similar coupler when the couplers are in a coupled position. The coupler is of the rotary bottom operated type having an uncoupling rod connected to each end of the coupler rotor member for actuation of the locking mechanism from either side of the coupler. More particularly, the coupler includes lock-set mechanism for maintaining the opposed hook of a mated coupled coupler in an uncoupled position in preparation for coupler separation.



3,693,810

**APPARATUS FOR FEEDING BARS OR THE LIKE IN MACHINE TOOLS**

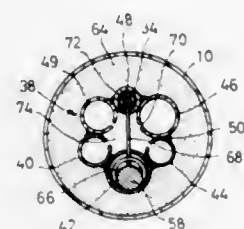
Gunther Gumhold, Esslingen/Neckar, Germany, assignor to Index-Werke KG Hahn & Tessky, Esslingen/Neckar, Germany

Filed Jan. 20, 1971, Ser. No. 108,101

Int. Cl. B65H 5/16

U.S. Cl. 214—1.5

8 Claims



Apparatus for feeding bars in machine tools has a cylindrical housing for a group of parallel cylindrical guides which are rotatable in the housing as a unit to place a selected guide into a feeding position in which a workpiece which is inserted into the selected guide can be fed lengthwise to enter a machine tool. The group of guides is surrounded by a jacket consisting of soundproofing material and the guides are disposed in pairs with the guides of each pair located diametrically opposite each other with reference to the axis of the housing and having different internal diameters. The advancing mechanism for moving a bar in the selected guide lengthwise has a pusher which is introduced into the selected guide behind an inserted bar and is urged forwardly by a cable which is connected to a weight.

3,693,811

**SLIDE CONVEYOR SYSTEM AND METHOD**

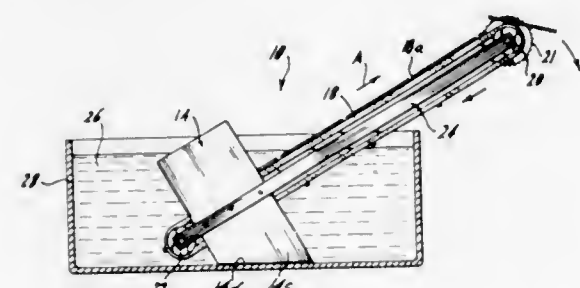
James C. White, Rutherford, N.J., assignor to Propper Manufacturing Co., Inc.

Filed Dec. 1, 1970, Ser. No. 94,092

Int. Cl. B65G 59/06

U.S. Cl. 214—8.5 G

5 Claims



A conveyor system for use in the manufacture of glass microscope slides for feeding slides from a storage bin where they are stacked face-to-face to a work station for individual processing includes an endless conveyor belt positioned beneath the storage bin, with the bin and adjacent portions of the conveyor being submerged in a liquid. The liquid creates a film between adjacent slides, permitting slides to slip easily one with respect to another from the bin to the conveyor.

3,693,812

**FURNACE CHARGING APPARATUS**

Rene N. Mahr, and Edouard Legille, both of Luxembourg, Grand Ducy of Luxembourg, assignors to S. A. Des Anciens Etablissements Paul Wurth, Luxembourg, Grand Ducy of Luxembourg

Filed July 28, 1970, Ser. No. 58,816

Claims priority, application Luxembourg, July 31, 1969, 59.207

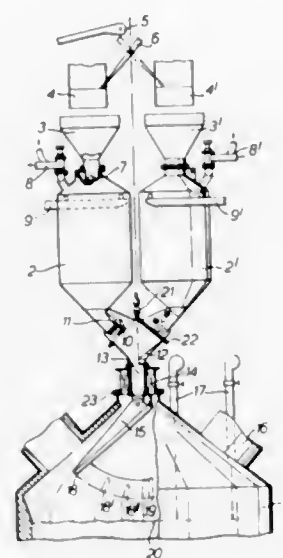
Int. Cl. F27b 1/12

U.S. Cl. 214—35 R

22 Claims

A furnace charging apparatus which includes an adjustable chute for distributing the load of charging materials evenly

within the furnace. The load of charging materials passes through a plurality of translatable sluices connected above the



3,693,813

**ROLLER ASSEMBLY FOR BOAT TRAILER**

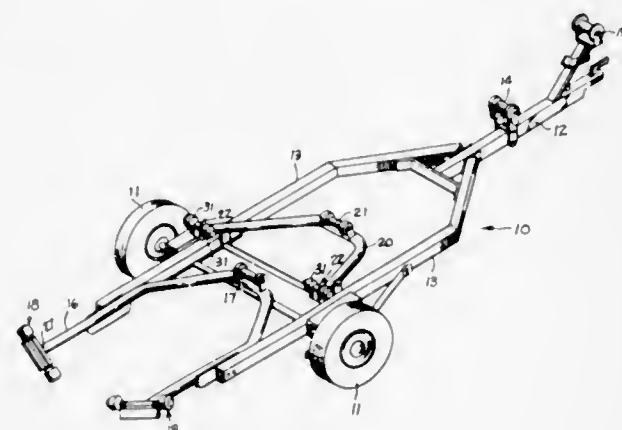
Oscar C. Calkins, Spokane, Wash., assignor to Calkins Manufacturing Company, Spokane, Wash.

Filed Jan. 25, 1971, Ser. No. 109,325

Int. Cl. B60p 3/10

U.S. Cl. 214—84

6 Claims



A roller assembly designed specifically to assist in the loading of straked, molded boat hulls onto a trailer. The roller assembly comprises a support bracket pivotable about a longitudinal axis along the trailer. The bracket supports a straight transverse axle having identical rolls mounted at opposite ends thereof. The spaced rolls are specially formed to accommodate the strakes of a boat hull. Each include a cylindrical portion and conical end surfaces. The difference in diameter between the rollers and the intermediate axle is greater than the protrusion of the strake on the hulls engaged by the rolls.

3,693,814

Patent Not Issued For This Number

3,693,815

**METHOD FOR ORIENTING A ROD OR TUBE HAVING A BEVELED END**

Wilbert William Redmer, Boca Raton, Fla., assignor to Redmer Sons Co., Franklin Park, Ill.

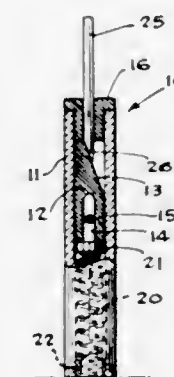
Division of Ser. No. 49,482, June 24, 1970, Pat. No. 3,631,990.

This application Dec. 28, 1971, Ser. No. 217,694

Int. Cl. B65g 47/24

U.S. Cl. 214—152

1 Claim



Disclosed is a method for orienting a rod or tube having a beveled end. An example is the needle in an intravenous needle assembly which includes a grip for manipulation of the assembly during venipuncture. Basically, the apparatus comprises a tubular orienting cartridge including a beveled insert within the cartridge. A needle is inserted into the cartridge from a hopper and feeding device. After the needle is inserted in a horizontal position the tubular cartridge is rotated into an upright position and gently vibrated in order to align the beveled needle point on the corresponding beveled surface of the insert within the cartridge to thereby orient it. The orienting cartridge containing the properly oriented needle is thereupon rotated back to a horizontal position to deposit the needle within a mold with the beveled point thereof in proper alignment. The plastic hub, grip or wings are then molded in place about the needle. The beveled needle point of the resultant device is accordingly in proper alignment with the grip or wings for subsequent venipuncture.

3,693,816

Patent Not Issued For This Number

3,693,817

**VEHICLE TOP BOAT LOADER AND CARRIER**

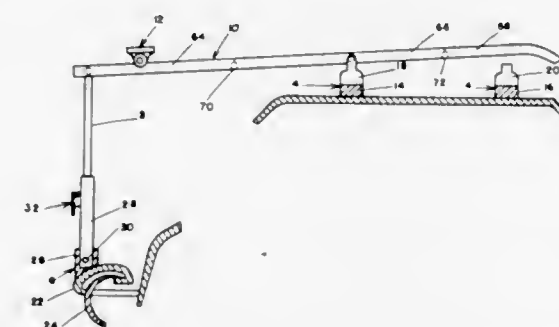
Francis M. Van de Water, 2330 Lantana Road, Box 9A, Lantana, Fla.

Filed Dec. 4, 1970, Ser. No. 95,279

Int. Cl. B60r 9/00

U.S. Cl. 214—450

4 Claims



An improved non-complex device for aiding a single operator desiring to load and unload a boat onto and from the top of an auto. The device includes a detachable roof anchor means with a transverse boat support and tie down means, a rest post, a detachable bumper support for holding the vertically movable rest post at various elevated positions, a track member connected to the rest post and the roof anchor means, and a

roller means for supporting the boat as it moves along the track member. The front of the boat is placed on the track member adjacent the rest post with the roller means therebetween. The rear of the boat is then lifted and moved toward the rest post while pushing the front of the boat up the track member onto the transverse boat support. Thereafter the rest post is elevated step by step to raise the rear of the boat upward to the height of the transverse boat support. The boat is then secured to the auto roof or removed in a reverse manner.

3,693,818

**TRAILER STAND FOR INSTALLING AUTOMOBILE MUFFLER**

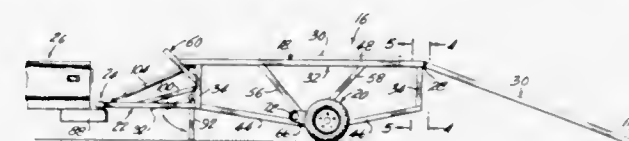
Raymond E. Teagarden, 6237 Nogales St., Riverside, Calif.

Filed July 27, 1971, Ser. No. 166,526

Int. Cl. B60p 1/28

U.S. Cl. 214—506

6 Claims



A portable rack for supporting an automobile at an elevated height to facilitate working on the underside thereof, consisting of a wheel-supported frame having a pair of laterally spaced, elevated tracks, and an inclined ramp hinged to its rear end for driving the car on and off. The frame tilts about its centrally located wheels between an inclined drive-on position and a level working position. At the front end of the trailer is a jack-knifing draft connection for attachment to a towing vehicle, which includes a hydraulic cylinder that slows and cushions the change from one position to the other. Except for transverse frame members at the front and rear ends, the space below and between the tracks is entirely clear, so that a workman can get at the muffler without interference from the trailer structure.

3,693,819

Patent Not Issued For This Number

3,693,820

**SAFETY CLOSURE CAP**

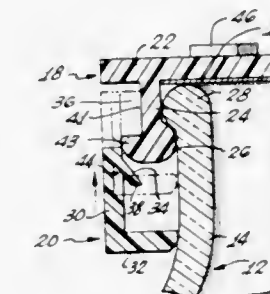
Robert P. Linkletter, 875 Comstock Avenue, Los Angeles, Calif.

Filed June 3, 1971, Ser. No. 149,553

Int. Cl. A61j 1/00

U.S. Cl. 215—9

16 Claims



A safety closure having a snap-on cap which is held in place on a container by a rotary safety ring and which cannot be removed without first removing the ring from the cap. The ring is locked to the cap by a plurality of flexible fingers which prevent the ring from being removed from the cap unless the ring is first precisely aligned in a preselected position relative to the cap, but which allows the ring to be repositioned around



the cap and locked thereto without first prepositioning the ring in any particular rotary position relative to the cap.

3,693,821

Patent Not Issued For This Number

3,693,822

# RECEPTACLE DESIGNED TO WITHSTAND AN INTERNAL PRESSURE

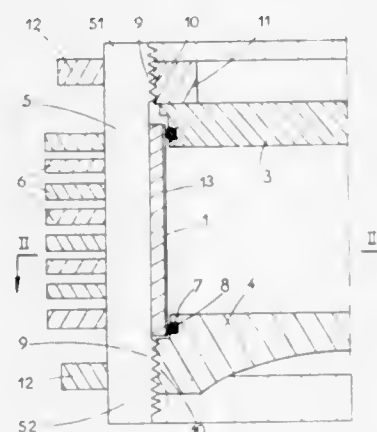
Georges Thillet, 26 Avenue Edouard Vaillant, Grenoble, France

Filed Jan. 12, 1971, Ser. No. 105,901

Int. Cl. B65d 53/02

U.S. Cl. 220—3

8 Claims



A receptacle for withstanding internal pressure and including a barrel, tie bars outside the barrel, end-plates for the barrel secured by the tie bars and external hoops restraining the tie bars against radial outward displacement.

3,693,823

# REPAIRABLE PLASTIC AND WIRE CRATE

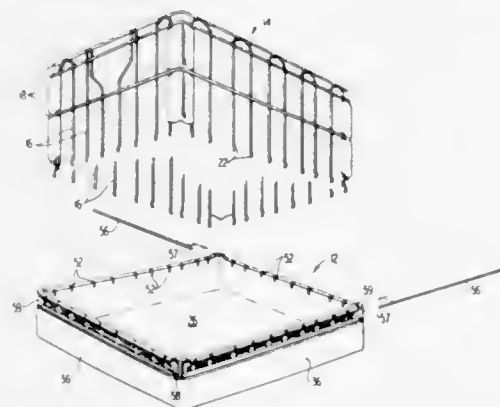
Houston Rehrig, 3730 East 26th St., Los Angeles, Calif.

Filed April 24, 1970, Ser. No. 31,497

Int. Cl. B65d 7/14, 7/32, 7/20

U.S. Cl. 220—4 R

14 Claims



A material handling crate having a molded plastic bottom panel portion and a body portion formed from a plurality of rod-like metallic members rigidly joined in fixed relation with an improved means for securing the bottom portion and the body portion together to permit assembly and disassembly of the structure to facilitate repair of a damaged crate.

3,693,824  
BAKERY PAN

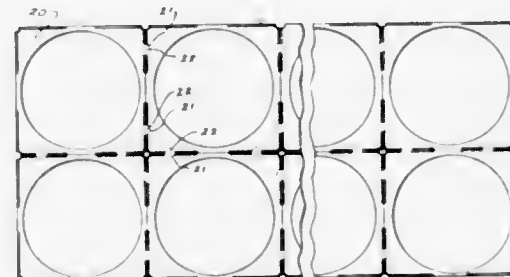
Charles E. Phillips, Cincinnati, Ohio, assignor to Lockwood Manufacturing Company, Cincinnati, Ohio

Filed Aug. 5, 1970, Ser. No. 61,346

Int. Cl. B65d 21/02

U.S. Cl. 220—23.2

3 Claims



A bakery pan comprising a series of cups drawn from rectangular sheet metal plates. The lateral edges of each plate are bent downwardly at right angles to the plane of the plate to provide welding and reinforcing edge flanges, which flanges are vertically spot welded to flanges of adjacent plates to form a pan from a matrix or array of plates. The resulting pan or array of cups are reinforced in the plane of the plate (horizontally) by the abutting vertical flanges of the plates, only small portions of which are consumed by the spot welds.

3,693,825

# FUEL TANK HAVING BELLOWS FOR CONTROL OF FUEL EVAPORATION

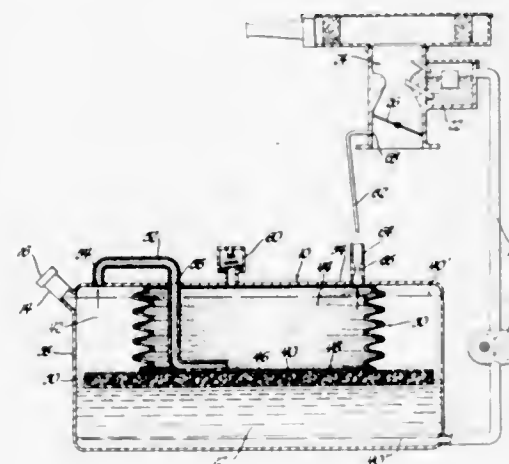
Douglas A. Richman, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 28, 1971, Ser. No. 157,225

Int. Cl. B65d 25/00

U.S. Cl. 220—26 R

3 Claims



The exterior and interior of bellows expandable with the level of fuel in an automotive fuel tank divide the space in the tank above the fuel into a vapor space and a trap space. One end of the bellows is affixed to the roof of the tank and the other end to an insulator that covers substantially the entire surface of the fuel and floats on it. A conduit connects the vapor space to the trap space and has a flow restriction sufficient to retard diffusion between the spaces. Purge means are connected to communicate with the trap space.

3,693,826

Patent Not Issued For This Number

3,693,827

# PACKAGING CONTAINERS MADE OF SHEET METAL WITH TEAR-OPEN DEVICE

Martin Baumeier, and Luebeck Wilhelm Neben, both of Hamburg, Germany, assignors to Schmalbach-Lubeca-Werke, Braunschweig, Germany

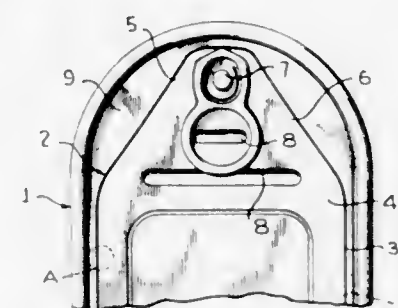
Filed Feb. 19, 1971, Ser. No. 116,823

Claims priority, application Germany, Feb. 21, 1970, P 20 08 090.4

Int. Cl. B65d 17/24

U.S. Cl. 220—54

1 Claim



This disclosure relates to the formation of a weakening line defining an opening panel part of a container, the weakening line being formed by configured dies having opposed portions which are aligned and other portions which are transversely misaligned whereby when the dies strike a panel, offsetting of a portion of the panel occurs together with a reduction in thickness of the panel in the area of die alignment. The die construction is one which is not readily subject to wear or damage.

3,693,828

# SEAMLESS STEEL CONTAINERS

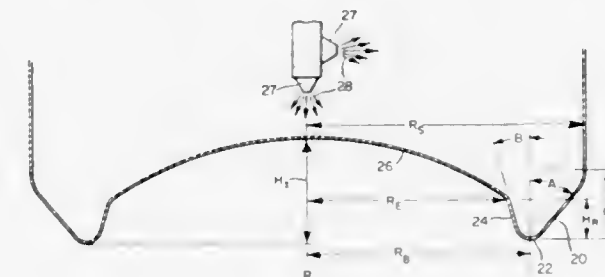
Raymond H. P. Kneusel, Flourtown, Pa., and Vinson S. Potts, Cherry Hill, N.J., assignors to Crown Corp. & Seal Company, Inc.

Filed July 22, 1970, Ser. No. 57,124

Int. Cl. B65d 7/42

U.S. Cl. 220—66

6 Claims



A steel beverage or beer can of the seamless type having a unitary body including seamless side walls and an integral bottom with an end double seamed to the top of the side walls. The bottom comprises an outer frustoconical surface extending downwardly and inwardly from the side walls, an annular bead for supporting the can, an inner frustoconical surface extending upwardly and inwardly from the annular supporting bead, and a recessed domed central panel extending inwardly and upwardly along the axis of the can from the second frustoconical surface.

3,693,829

# PROTECTIVE APRON FOR CONTAINER

Rita L. Price, Box 966 Wintucket Cove, Edgartown, Mass.

Filed May 1, 1970, Ser. No. 33,668

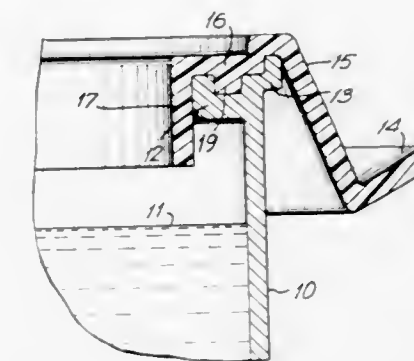
Int. Cl. B65d 25/00

U.S. Cl. 220—90

4 Claims

A protective apron for disposal on the top of a container such as a paint can, having a funnel-shaped internal portion

opened to the contents of the container, a mid portion serving as a connector for detachably mounting to the rim of the can,



and an external portion forming a catch basin or well, and extending over the outside of the container.

3,693,830

# PACKAGE FOR TUMBLERS AND THE LIKE

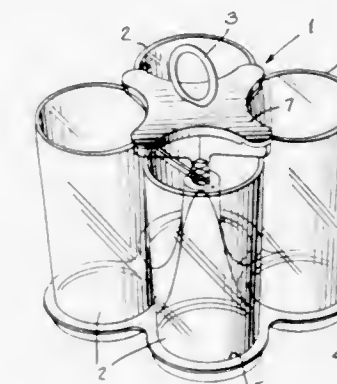
Richard K. Oglesbee, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed Nov. 12, 1970, Ser. No. 88,811

Int. Cl. B65d 75/00

U.S. Cl. 220—102

8 Claims



An improved package for storing, transporting, and displaying articles such as tumblers is disclosed. The package has a shaped bottom tray preferably formed of thin plastic sheeting having spaced cups or nests for receiving the bottoms of the tumblers. A vertically extending pedestal forms the central portion of the bottom tray which extends upwardly between the tumblers. An adjustable top preferably formed of molded plastic, has a flat cover and a central downwardly extending toothed spike for adjustably engaging the bottom tray pedestal. The package top includes several vertical tumbler separating members and curved tumbler rim grips which also extend downwardly from the flat top cover to hold the tumblers spaced from one another and firmly positioned on the bottom tray.

3,693,831

# CLOSURE FOR OPEN-MOUTH VESSELS

Denny M. West, Trussville, Ala., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed July 30, 1970, Ser. No. 59,494

Int. Cl. B65d 39/12

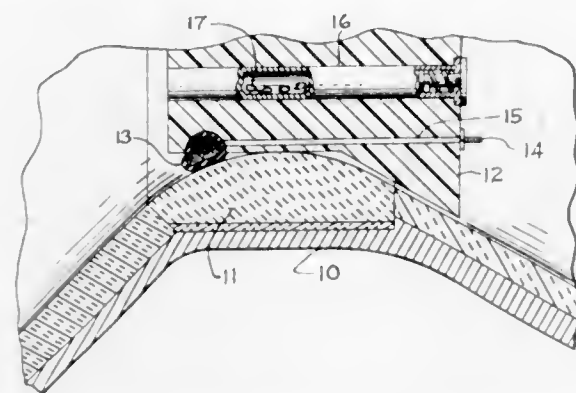
U.S. Cl. 220—24.5

5 Claims

A closure for the opening in open-mouth vessels such as bottles, jars, rocket motor nozzles, casks and the like in-



cludes a plug member and an inflatable ring located near the inner end of the plug. The plug is slid in place in the usual



manner and the ring is then inflated to both hold the plug in place in a positive manner and to provide a very effective seal where the ring bears upon the vessel.

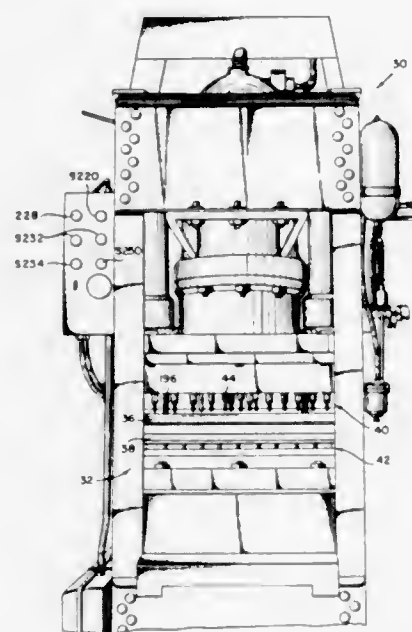
3,693,832

## MULTIPLE RIVETING MACHINE

George Adolphi, La Mesa, Calif., assignor to Ametek, Inc.  
Division of Ser. No. 740,508, June 27, 1968, Pat. No.  
3,543,985. This application April 24, 1970, Ser. No. 31,568  
Int. Cl. B65h 3/44

U.S. Cl. 221-93

8 Claims



A multiple riveting machine having an arrangement for feeding a predetermined number of rivets into a workpiece to be riveted and then heading said rivets.

3,693,833

SOWING DEVICE WITH PNEUMATIC SEED SEPARATOR  
Otto Weitz, Butzbach, Hessen, Germany, assignor to A. J.  
Troster, Butzbach/Hessen, Germany  
Filed Dec. 10, 1970, Ser. No. 96,748

Claims priority, application Germany, Dec. 11, 1969, P 19  
62 150.2; April 22, 1970, P 20 19 394.6; Oct. 26, 1970, P 20  
52 468.9

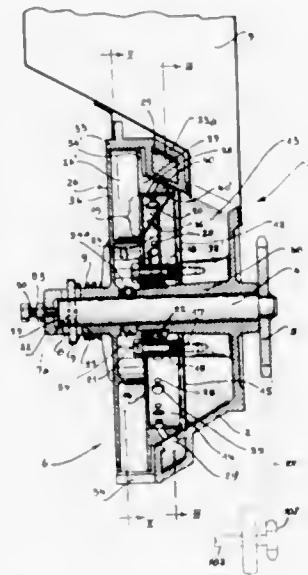
Int. Cl. B23q 7/04

U.S. Cl. 221-211

26 Claims

A vehicle-mounted sowing device includes a continuously rotating drum, centered on a horizontal shaft, axially divided into a pick-up chamber and a distributing chamber, the latter being peripherally subdivided into a multiplicity of outwardly open compartments which communicate with the pick-up chamber at the zenith of the drum and with an outlet at the nadir thereof. The peripheral wall of the pick-up chamber has a multiplicity of generally radial bores leading to a suction manifold via an arcuate slot which surrounds the drum over

about half its circumference, terminating at the zenith where seeds or kernels introduced into this chamber at its bottom and carried by the suction in respective bores to the top are released from their seats to drop through a connecting chute into respective compartments of the pick-up chamber. Stationary strippers sweep the peripheral wall of the pick-up chamber in the vicinity of the bores just ahead of the point of



release to dislodge supernumerary kernels; a brush and/or a scraper beyond the zenith serve to detach seed fragments from their seats or push them deeper into the bores which preferably widen toward the suction manifold. The slot of this manifold is formed on a beveled peripheral face of the drum housing juxtaposed with a similar face on the drum provided with the inlets to the seat-forming bores of the pick-up chamber.

3,693,834

Patent Not Issued For This Number

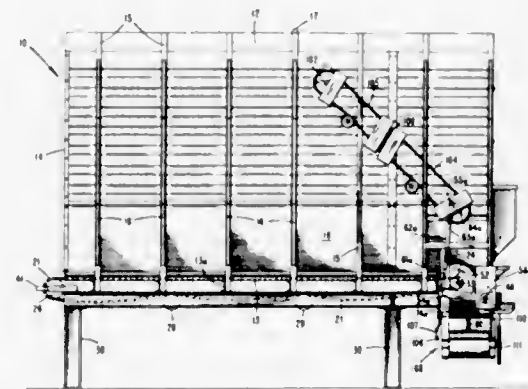
3,693,835

## CONVEYOR

Oliver K. Hobbs, 120 Elm St., Suffolk, Va.  
Filed July 16, 1971, Ser. No. 163,355  
Int. Cl. B67d 5/08

U.S. Cl. 222-55

10 Claims



An apparatus is provided for distributing a comminuted material, especially tree bark, over a moving surface in a substantially uniform depth comprising a bin, drag bars which discharge the material from the bin and a ratchet assembly responsive to the depth of material on the moving surface for determining the rate at which the drag bars are moved.

3,693,836

## FILLING MACHINE

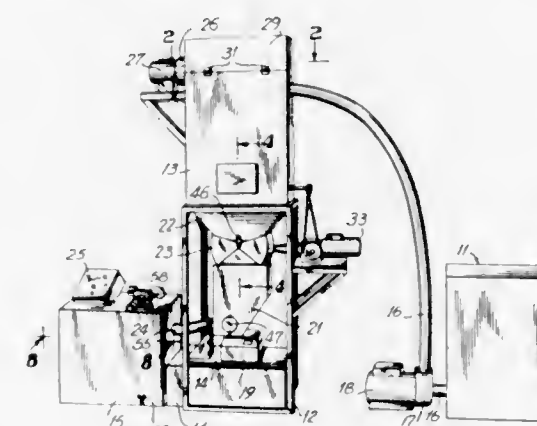
Nathan A. Eisner, Lawrence, N.Y., assignor to York Feather &  
Down Corp., Brooklyn, N.Y.

Filed Nov. 10, 1970, Ser. No. 88,357

Int. Cl. G01g 13/00

U.S. Cl. 222-77

13 Claims



A filling machine for separating feathers and down supplied in bulk, measuring a finite quantity thereof and delivering same to a pocket defined in a garment or other article for the filling of the pocket.

3,693,837

## STRIPED PRODUCT AEROSOL DISPENSER

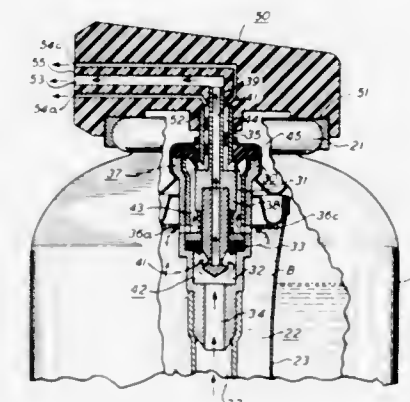
Edward R. Yuhas, Yonkers, N.Y., assignor to Fluid Chemical  
Company, Inc., Newark, N.J.

Filed April 23, 1970, Ser. No. 31,154

Int. Cl. B65d 35/22

U.S. Cl. 222-94

3 Claims



A striped product aerosol dispenser, adapted to provide the separate drawing of separately-contained materials therethrough, to be co-dispensed in striped product form.

3,693,838

## MATERIAL APPLICATION RATE INDICATOR

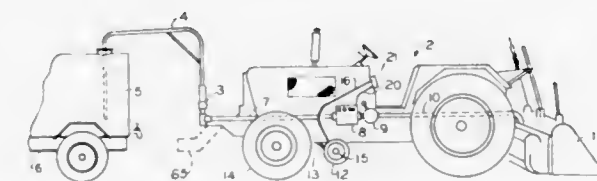
Edwin J. Haker, Elm Grove, and Norman L. Peterson, Wau-  
watosa, both of Wis., assignors to Rex Chainbelt Inc.,  
Milwaukee, Wis.

Filed March 12, 1970, Ser. No. 18,845

Int. Cl. A01c 15/00

U.S. Cl. 222-178

4 Claims



A mobile processing machine that processes and adds a liquid to the material over which it travels is provided with a

pair of pulse type electrical tachometers, one driven by a liquid flow meter and the other by a machine part that rotates in proportion to the travel of the machine. The outputs of the tachometers are differentially applied to a milliammeter, a contact making milliammeter or a sensitive polarized relay which indicates the departure from the selected flow rate or which, through suitable solenoid operated valves controls the flow of the liquid to maintain a selected flow rate with respect to machine speed or to maintain a selected machine speed relative to flow rate.

3,693,839

## PNEUMATIC DISCHARGE ARRANGEMENT FOR RAILWAY CAR HOPPERS

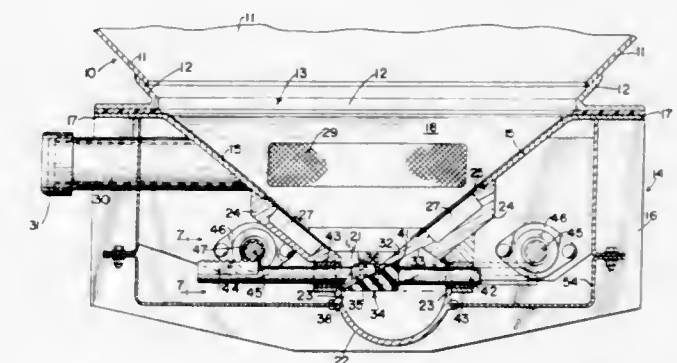
William R. Shaver, Munster, Ind., and James J. Schuller, Dol-  
ton, Ill., assignors to Pullman Incorporated, Chicago, Ill.

Filed March 5, 1971, Ser. No. 121,379

Int. Cl. B65d 5/54

U.S. Cl. 222-193

2 Claims



A pneumatic discharge arrangement for railway hopper cars comprises a housing divided into a plurality of discharge chambers each including an elongated opening. The openings are regulated by means of slide valves disposed underneath the opening within a trough which is adapted to be connected to a pneumatic conveyer. Movement of the valves between open and closed positions is regulated by means of rotatable shafts respectively connected to the valves and positioned to project out from opposite ends of the housing so the valves can be operated from opposite sides of a railway car. The shafts include rack and pinion arrangements for moving the valves to their respective positions.

3,693,840

## DISPENSING DEVICE FOR SALT AND THE LIKE

George N. Starr, 1034 Craigwood Drive, Memphis, Tenn.

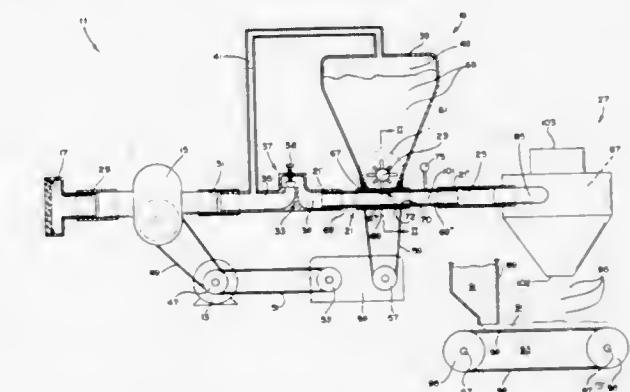
Continuation-in-part of Ser. No. 15,463, March 2, 1970,

abandoned. This application Dec. 18, 1970, Ser. No. 99,531

Int. Cl. A47f 1/03

U.S. Cl. 222-193

10 Claims



A machine used to automatically dispense a regulated quantity of hygroscopic granular substances as salt or the like onto a continuously moving processed food product, e.g., dough or cheese, while in a phase of preparation. The machine includes a prime mover which drives an air blower and an agitator, a



pressurized hopper including a unique co-acting valve agitator assembly, a pneumatic conveyor and a cyclonic separator.

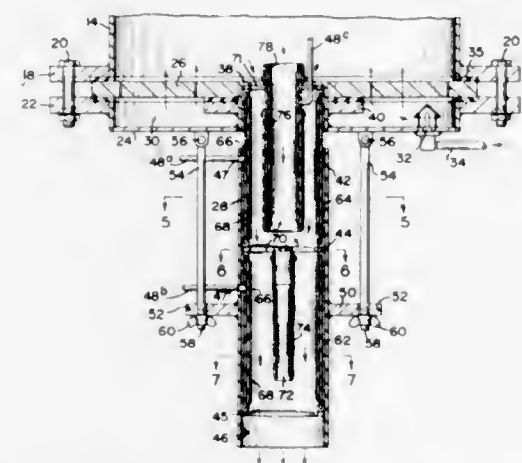
An alternate embodiment is also included which comprises substituting one type restrictor orifice fitting with a second type. Each of the two type restrictor fittings includes a variable restrictor orifice, i.e., the one for the principal embodiment is a globe valve while the alternate one is a sliding action piston or divider valve.

### 3,693,841 DISPENSER

Henry H. Hansen, P.O. Box 16366, Temple Terrace, Fla.  
Filed June 1, 1970, Ser. No. 42,225  
Int. Cl. B65g 69/06

U.S. Cl. 222—195

9 Claims



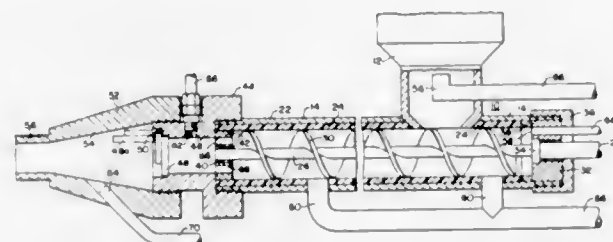
A sleeve valve structure for accurately dispensing particulate material which comprises a unique arrangement of a plurality of concentric tubes. Each tube is lined with an elastomeric web and is so associated with the other tubes that when pressurized air is selectively introduced behind each web, the web is inflated, thereby blocking that tube. By successively blocking the tubes, the flow rate through the valve is very accurately regulated.

### 3,693,842 AERATED POWDER PUMP

Virgil J. Cozzarin, Clarence; Francis C. Kappermann, Buffalo, both of N.Y., and Harry P. Kipple, Penn Hills, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.  
Filed Aug. 17, 1970, Ser. No. 64,443  
Int. Cl. B65g 3/12

U.S. Cl. 222—195

5 Claims



A pump for handling dry powdered material and including a stator forming a pump chamber, a rotor within the chamber and having an external helical fin thereon, the chamber having a material inlet and an outlet and gas inlet means at spaced intervals along the stator for injecting pressurized gas into the chamber, whereby the powdered material is aerated as the material moves through the chamber from the inlet to the outlet. The internal wall of the stator is preferably provided with a coating of polytetrafluoroethylene to minimize adhesion of the material to the stator wall.

### 3,693,843 SLITTED RESILIENT CLOSURE HAVING SUBSTANTIALLY RIGID CAP

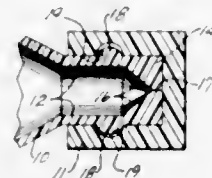
Robert D. O. Perry, 645 E. Micheltorena St., Santa Barbara, Calif., and Joseph F. Markiewicz, 58 Mendicino Drive, Goleta, Calif.

Filed Jan. 6, 1971, Ser. No. 104,243

Int. Cl. B65d 35/08

U.S. Cl. 222—212

10 Claims



A dispenser tube having an elastically resilient closure at one end is described. This closure has a normally closed slit that elastically deforms into a marquise shape in response to internal pressure in the container to permit a viscous fluid therein to be dispensed through the slit. A rigid removable cap is provided over the closure. Detents on the side walls of the closure adjacent the slit hold the cap in place. The walls on which the detents are mounted are elastically resilient so as to be forced outwardly in response to internal pressure in the container for tightly retaining the cap, and are elastically deformable inwardly to permit cap removal when desired.

### 3,693,844 DISCHARGE MEANS FOR PARTICULATE MATTER DISPENSER

William Henry Willeke, 822 Franklin Ave., Lancaster, Ohio  
Filed June 11, 1971, Ser. No. 152,331  
Int. Cl. B65d 37/00

U.S. Cl. 222—213

12 Claims



A resiliently flexible outlet closure is molded to a container lid. The closure is hingedly connected at its edge and resiliently biased to seat in and block an outlet opening in the lid. A rotatably mounted crank member extends through the lid edges and carries a butterfly member which is rotatable into engagement with the closure by means of the crank member. Rotation of the crank member engages the butterfly member with the closure to push the closure open and permit discharge of particulate matter. Further rotation of the crank member releases the closure and sweeps the particulate matter away from the outlet opening to permit the closure to return to its closed position.

3,693,845

Patent Not Issued For This Number

### 3,693,846 PNEUMATIC DISCHARGE ARRANGEMENT FOR RAILWAY CAR HOPPERS

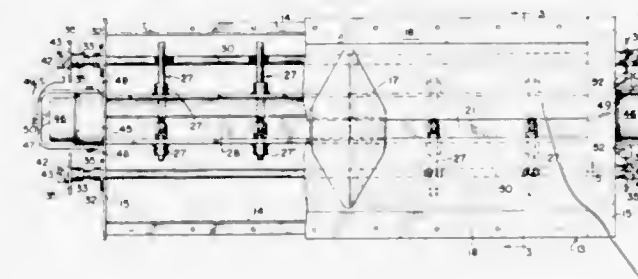
James J. Schuller, Dolton, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed March 5, 1971, Ser. No. 121,380

Int. Cl. B65d 47/20

U.S. Cl. 222—506

4 Claims



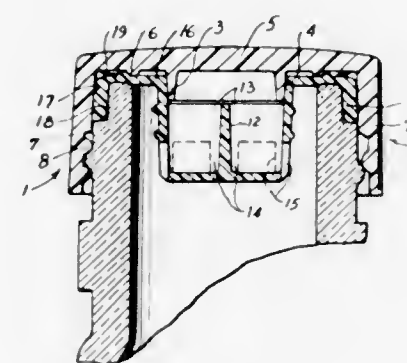
A pneumatic discharge arrangement for railway hopper cars comprises a housing divided into separate discharge chambers having valve openings and control means located therein for selectively discharging from said chambers. The openings are regulated by means of valves which are individually operable by a plurality of operating shafts projecting outwardly from opposite ends of the housings. The improvement includes locking elements for locking the valves in a closed position said locking elements being associated with removable cap locking means provided at opposite ends of a discharge trough which is adapted to be connected to a pneumatic discharge conveyor.

### 3,693,847 BOTTLE CAP AND POURING FITMENT ASSEMBLY

Royal H. Gibson, 94 W. River Road, Rumson, N.J.  
Filed Jan. 6, 1971, Ser. No. 104,423  
Int. Cl. B65d 47/00

U.S. Cl. 222—546

1 Claim



A bottle cap and pouring fitment is assembled before being attached to a bottle. When the cap is removed from the bottle, the fitment remains in the neck of the bottle. Meanwhile the cap and fitment cooperate to provide protection against leakage even when the cap is not seated securely.

### 3,693,848 WIG FORM

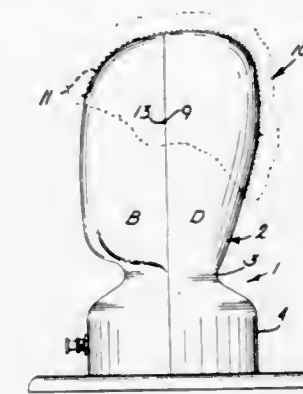
Irwin G. Breitbach, 825 N. Tenth St., Breckenridge, Minn.  
Filed Aug. 23, 1971, Ser. No. 173,785  
Int. Cl. D06c 15/00; A41g 5/00

U.S. Cl. 223—66

4 Claims

A wig form in the shape of a human head having passages therein terminating in circumferentially spaced openings in

the head, and elongated flexible members longitudinally movable in the passages and having sharp pointed ends mov-



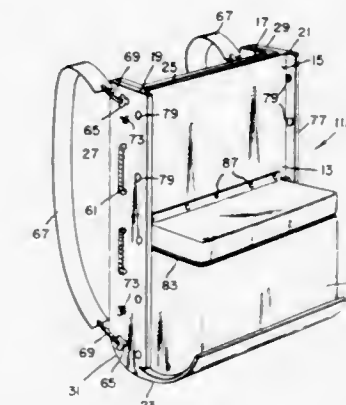
ing inwardly and outwardly through the openings and through a wig placed on the form to releasably anchor the wig thereon.

### 3,693,849 COMBINATION BACK PACK AND PACK SLED

Melvin K. Knabenbauer, 4573 W. 154th St., Lawndale, Calif.  
Filed Sept. 30, 1971, Ser. No. 185,124  
Int. Cl. A45f 3/00

U.S. Cl. 224—9

8 Claims



A structure including telescoping sections each having sled-like side rails and a flat center portion, one of which sections has an upwardly curved toboggan-like front end with a curvature corresponding with the curvature of the leading edges of the side rails, the structure being adapted to be carried on a person's back by use of shoulder straps when in a closed configuration, and to be used to carry a load in the form of a sled through snow and ice when in an open configuration.

### 3,693,850 FIBRILLATION BY OPPOSED BEATER BARS

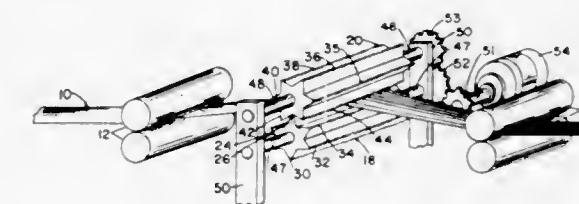
George B. Feild, Stone Harbor, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Filed Aug. 3, 1970, Ser. No. 60,444

Int. Cl. B26f 3/02

U.S. Cl. 225—3

9 Claims



A striated film is fibrillated by passing the film between a pair of opposing rotating beater bars. In this manner uniform tension is maintained across the film urging the film in engagement with serrated edges which may be on one or both of the beater bars. This system permits higher film linear speed than can be achieved in previous prior art beater bar systems.



3,693,851

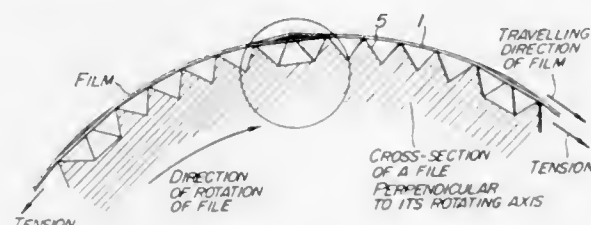
**METHOD FOR FIBRILLATING STRETCHED FILM**  
Masahide Yazawa, Tokyo, Japan, assignor to Polymer Processing Research Institute, Ltd., Tokyo, Japan  
Continuation-in-part of Ser. No. 510,546, Nov. 30, 1965, abandoned, and a continuation-in-part of Ser. No. 569,714, Aug. 2, 1966, abandoned. This application April 23, 1969, Ser. No. 818,529

Claims priority, application Japan, June 5, 1965, 40/33241; April 14, 1966, 41/23966

Int. Cl. B26f 3/02

U.S. Cl. 225—3

13 Claims



The present disclosure is directed to a method and apparatus for manufacturing split-fibers from a uniaxially oriented film obtained from a fiber-forming polymer which comprises slide-rubbing at least one side of the oriented film in the oriented direction under an effective longitudinal tension on at least one rough surface rotating at a peripheral speed different from that of the running speed of the film and having many tiny and rigid projections thereon, said film contacting, in succession, a plurality of said rigid projections which do not pierce the film, thereby fibrillating the film into many fibrils as a result of the shearing stress between film portions passing along the projected portions of the rotating rough surface and those portions passing along the recessed portions of the rotating surface.

3,693,852

# **METHOD AND APPARATUS FOR CUTTING SHEET GLASS**

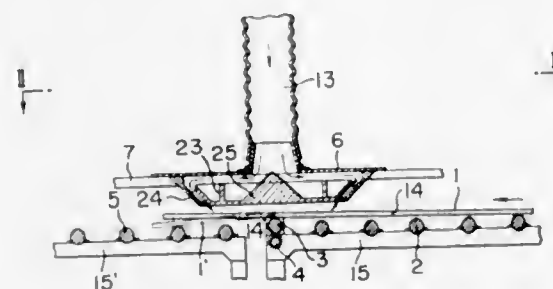
Katsuyasu Simomura, Mieken, Japan, assignor to Central Glass Co., Ltd., Ube-shi, Yamaguchi-ken, Japan  
Filed Oct. 30, 1970, Ser. No. 85,542

Claims priority, application Japan, Dec. 1, 1969, 44/96406

Int. Cl. B26f 3/00

U.S. Cl. 225—4

5 Claims



The present invention relates to a method of cutting a sheet glass wherein the surface of a sheet glass is scored in advance with cutting lines on the surface thereof and is carried by a first conveyor system. The sheet is subjected to an almost uniform fluid pressure applied thereto in front and in the rear of a cutting roll disposed adjacent to and at a level not lower than the terminal end of the first conveyor system. When a cutting line scored on said sheet glass is positioned adjacent the top of the periphery of said cutting roll, a part of the sheet glass in front of the cutting roll, which works as a fulcrum, is bent downwardly by the pressure and broken along said cutting line. The pressure fluid is supplied from a fluid supply source via a supply pipe and is jetted from jet-nozzles opening at the bottom of a fluid-jetting device connected to one end of said supply pipe.

3,693,853

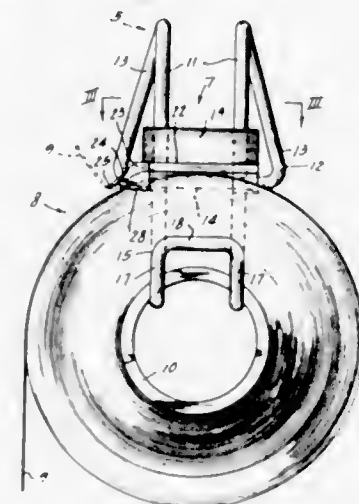
# **FLAGGING ROLL HOLDER AND DISPENSER**

Burton L. Slegel, Chicago, Ill., assignor to American Cutting & Binding Co., Chicago, Ill.  
Filed Aug. 20, 1970, Ser. No. 65,598

Int. Cl. B26f 3/02

U.S. Cl. 225—58

12 Claims



A holder and dispenser especially suitable for supporting a roll of flagging strip comprises a roll-supporting bracket having means to receive and support the roll rotatably, enabling paying out of the strip wound on the roll while a roll-retaining means carried by the bracket in outer perimeter opposition to the roll presents a cutting edge to facilitate severance of paid out flagging strip from the roll. The device is especially adapted to be made up of just two parts, the bracket and the retaining means in the form of a frictionally held sliding presser and cut-off member which adjusts to the changing roll diameter.

3,693,854

# **Patent Not Issued For This Number**

3,693,855

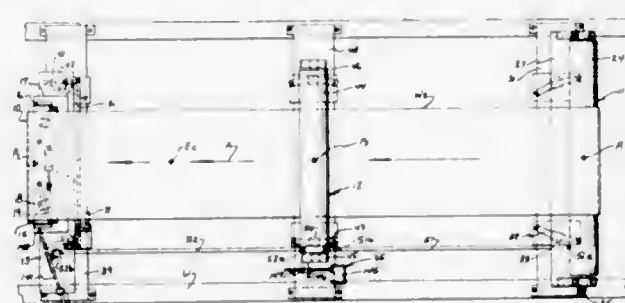
# **WEB GUIDE APPARATUS**

William A. Bonner, Appleton, Wis., assignor to Rockford Servo Corporation, Rockford, Ill.  
Filed Aug. 25, 1971, Ser. No. 174,686

Int. Cl. B65h 25/08

U.S. Cl. 226—19

19 Claims



A web guide apparatus wherein a web passes from an entrance web guide roller over an exit web guide roller in which the exit web guide roller is mounted on an exit roller mounting base for movement relative thereto in a direction crosswise of the path of web travel to effect correction of misalignment of the web under the control of a web position detector and in which the exit roller mounting base and the entrance roller are mounted for pivotal movement relative to the path of web travel and are pivoted in unison about their respective pivot axes when the movement of the exit roller relative to the exit roller mounting base exceeds a preselected value.

3,693,856

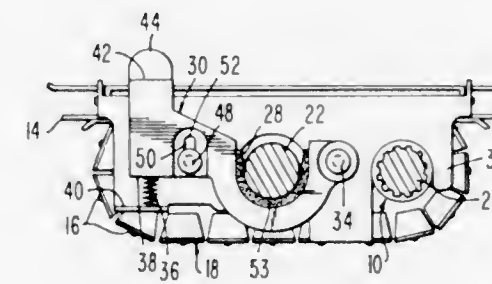
# **RELEASABLE CLAMP FOR A DRIVING MEMBER OF A STRIP-LIKE MEDIUM**

Joseph W. Funk, Dearborn, Mich., assignor to Burroughs Corporation, Detroit, Mich.  
Filed Jan. 4, 1971, Ser. No. 103,729

Int. Cl. G03b 1/30

U.S. Cl. 226—74

5 Claims



A device for releasably clamping a driving member of a strip-like medium in a desired transverse position with respect to a feed direction where the driving member is axially slidable along a transverse shaft. A pivotal clamping member with a friction surface abutable against the shaft is biased in abutment therewith by a resilient biasing means. Pivotal displacement of the clamping member is opposition to the biasing means serves to free the driving member for axial adjustment along the shaft.

3,693,857

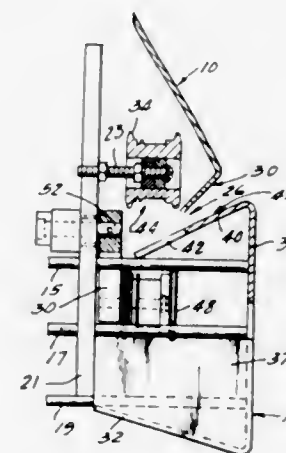
# **LOADING DEVICE**

Ray L. Short, Jr., Glenview; Howard Bowen, Wilmette, and David L. Henderson, Mundelein, all of Ill., assignors to Research Technology Incorporated, Skokie, Ill.  
Filed July 16, 1971, Ser. No. 163,244

Int. Cl. G03b 1/58

U.S. Cl. 226—91

12 Claims



This invention provides an improvement for loading a strip, film, tape and the like, in a transport mechanism which includes a spaced pair of relatively movable rollers and a predetermined pathway between the rollers. The improvement comprises means for positioning the rollers relative to one another, an inclined plane surface canted downwardly toward the space between the rollers and lying in a plane parallel to the film pathway between the rollers, and a casing part extending over at least one of the rollers and displaced rearwardly from the outer edge of the inclined plane surface to provide a shoulder on the outer edge of the surface having free access vertically above it to facilitate positioning film on the surface.

3,693,858

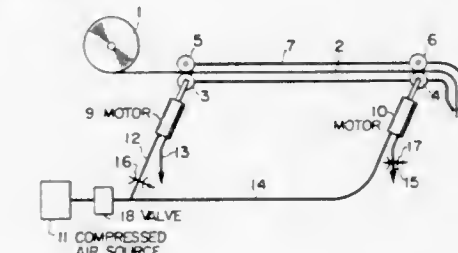
# **DEVICE FOR FEEDING A CONSUMABLE WIRE ELECTRODE TO AN ARC WELDING TORCH**

Takeshi Araya, Tokyo, and Tsugio Udagawa, Kawaguchi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
Filed July 20, 1971, Ser. No. 164,288

Claims priority, application Japan, July 24, 1970, 45/64281  
Int. Cl. B65h 17/20

U.S. Cl. 226—108

5 Claims



A device for feeding a consumable wire electrode to an arc welding torch from a wire reel through a flexible conduit tube by means of two wire feeding means of the push and pull types. The wire feeding means of the push type is driven by a motor having a substantially constant torque characteristic, while the wire feeding means of the pull type is driven by a motor having a substantially constant speed characteristic. Specifically, the driving motor for the feeding means of the pull type takes the form of a compressed-air driven motor which, by regulating the flow rate of exhaust air, has a desired constant speed characteristic.

3,693,859

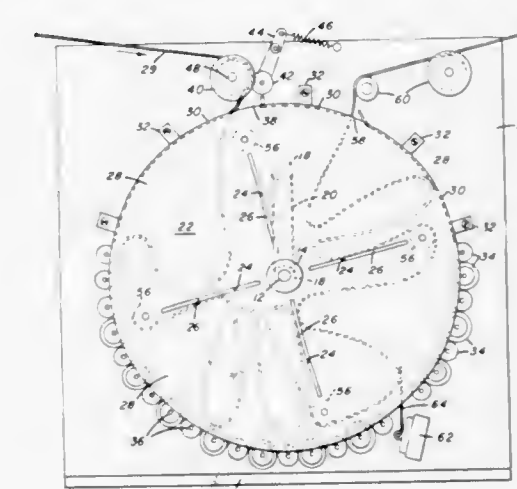
# **WEB SLACK BOX HAVING A ROTATABLE WEB ACCUMULATOR**

LeRoy C. Nielsen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.  
Filed Aug. 4, 1971, Ser. No. 169,020

Int. Cl. B65h 17/42

U.S. Cl. 226—118

14 Claims



A slack box having a rotatable web accumulator comprising a hub and radially extending partitions mounted for rotation in a vertical plane. The hub and partitions cooperate with side walls or discs to form quadrantal compartments for receiving a web in succession upon rotation of the hub by a hub drive mechanism. A web feeding mechanism gravity feeds the web in random looped fashion successively into each of the compartments as the hub is rotated, and the web feeding rate and hub speed rotation are selected such that each compartment is substantially filled with coils and loops of the web before it is fed into the next adjacent compartment. The web is successively withdrawn from the filled compartments and preferably fed continuously into a web processing device or the like. A sensing mechanism senses the amount of web or the web-filled condition of each of the compartments as it is moved past the sensing mechanism, and in response to a web-filled condition that is higher or greater than a predetermined web-filled con-



dition, stops or disables the hub drive and web-feeding mechanisms for discontinuing web feed into the web accumulator. When sufficient web has been withdrawn from the web-filled compartment so that its web-filled condition is lower or less than the predetermined web-filled condition, the sensing mechanism enables or actuates the web feeding and hub drive mechanisms for feeding web into the rotating web accumulator.

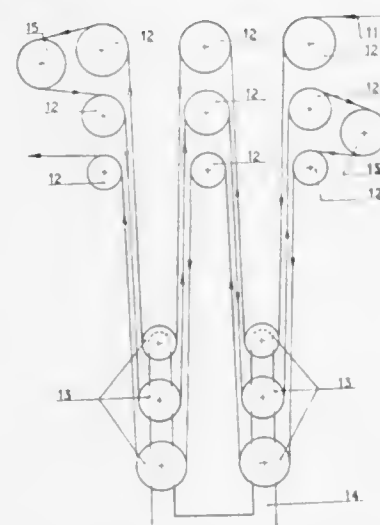
3,693,860

## STRIP ACCUMULATOR

Pierre Gay, La Tour-En-Jarez, Loire, France  
Filed April 21, 1971, Ser. No. 135,921  
Int. Cl. B65h 17/42

U.S. Cl. 226-119

3 Claims



A strip accumulator comprises a group of fixed rollers and a group of vertically movable rollers, the fixed and movable rollers being arranged in tiers with the same number of fixed tiers as movable tiers, and a number of return rollers equal to one less than the number of tiers, the strip passes over the rollers of one fixed tier and one movable tier, passing from a roller of one tier to a roller of the other tier, then over a return roller to the next pair of fixed and movable tiers.

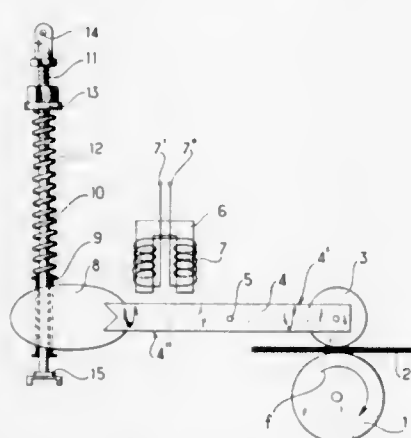
3,693,861

## VIBRATION DAMPING SYSTEM FOR PINCH ROLLER

Marcel-Louis Boyer, 23 rue Leonard Mafrand, 92-Chatillon, France  
Filed June 1, 1971, Ser. No. 148,549  
Int. Cl. B65h 17/22

U.S. Cl. 226-177

8 Claims



Drum for a tape reader where the tape speed reaches several hundreds of characters per second concerning more particularly the mounting of a roller which, pressing the tape on the sprocket of the drum which is in continual motion, gives the tape a jerky motion, driving it at the required rate. High-speed operation is improved by a double vibration damping system.

3,693,862  
EXPLOSIVELY ACTUATED TOOL WITH MAGNETIC HEAD

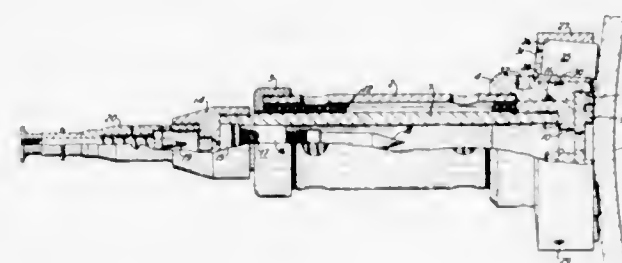
Joseph L. Glebel, Pittsburgh, and Ernest E. Temple, Murrysville, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Nov. 13, 1970, Ser. No. 89,198

Int. Cl. B25c 1/18

U.S. Cl. 227-11

4 Claims



An explosively actuated tool for driving a stud into a metal object includes a collar secured to the front end of a sleeve containing the barrel of the tool. Disposed around the collar is a plurality of magnets that are rigidly connected to it. The magnets project forward for engagement with a metal object in order to hold the front end of the tool against it during firing of the tool.

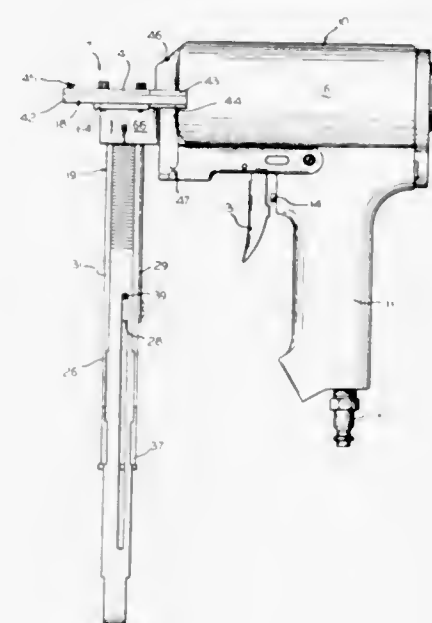
3,693,863

## TOOL ATTACHMENT AND METHOD FOR AUTOMATICALLY APPLYING FASTENERS

Hugh Black, 225 41st St., Downers Grove, Ill.  
Filed Oct. 27, 1969, Ser. No. 869,837  
Int. Cl. B25c 1/04

U.S. Cl. 227-127

11 Claims



An attachment arrangement for use with driving tools, such as air guns, or the like. The attachment facilitates driving a series of separate fasteners that are held on a carrier to fasten contiguous pieces of wood together. The attachment arrangement includes a characterized nose structure having an aperture therethrough to enable the carrier to pass through the nose structure and permit the automatic application of the separate fasteners in the fabrication of furniture, or the like.

3,693,864

## SLIDABLE LOCKING CLOSURE

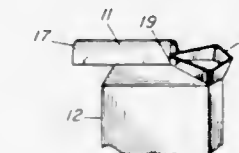
Howard Wilkins, Elmhurst, Ill., assignor to General Foods Corporation, White Plains, N.Y.

Filed Nov. 12, 1970, Ser. No. 88,894

Int. Cl. B65d 5/74

U.S. Cl. 229-17 G

7 Claims



A slidable closure device is positioned on a top ridge of a milk-type carton container and moves in a horizontal direction to permit opening and resealing of the container. A breakaway tab on the clip prevents container opening unless the tab is removed.

3,693,865

## END LOADED TOP OPENING CARTON

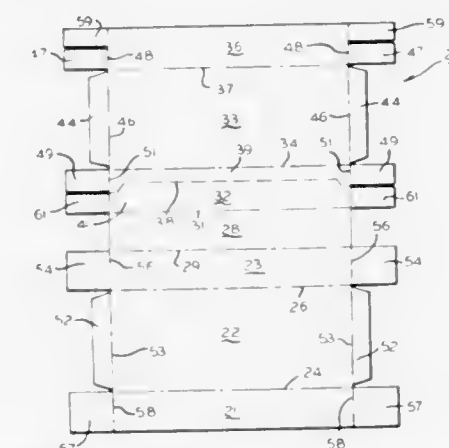
John D. Desmond, and Joseph J. Hart, both of Philadelphia, Pa., assignors to Container Corporation of America, Chicago, Ill.

Filed April 13, 1971, Ser. No. 133,502

Int. Cl. B65d 5/22

U.S. Cl. 229-33

11 Claims



An end loaded top opening carton is formed from a unitary cut and scored blank of paperboard, and is folded to define integral body and cover portions having single-ply top and bottom walls and double-ply front, rear and end walls. The rear wall includes an inner panel folded from said body portion wall and an outer panel formed from said cover portion, there being an intermediate panel hinged to the rear wall inner panel and the rear wall outer panel. The front and end walls each include an inner portion folded from said body portion and an outer portion folded from said cover portion. The front and end walls are separable into upper and lower sections, so that when the carton is opened, upper portions of the front, end and rear inner panels project above the lower sections of the front and end outer panels to form a collar for the articles, the collar being telescopically received within the front, end and rear outer panel upper sections.

3,693,866

## SHIPPING CARTON FOR FRAGILE ARTICLES AND BLANK FOR PRODUCING THE SAME

Glenn E. Struble, Fairfield, Ohio, assignor to Diamond International Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 881,996, Dec. 4, 1969, abandoned. This application Oct. 27, 1971, Ser. No. 193,037

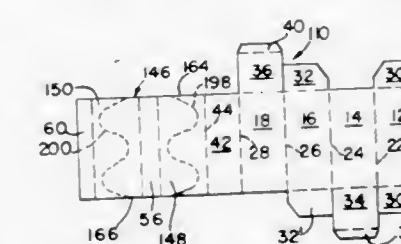
Int. Cl. B65d 5/10

U.S. Cl. 229-39 B

3 Claims

This disclosure relates to improvements in tubular cartons and blanks for accommodating and protecting different sized

fragile articles in which a one-piece blank is cut, scored and assembled to provide a rectangular sleeve incorporating therein longitudinally extending generally parallel cushioning



walls having formed therein weakened or perforated rupture sections which are progressively severed as an article is inserted in the sleeve to conform and protectively accommodate the article.

3,693,867

## HANDLE-TYPE CARRYING BAG MADE OF PLASTICS MATERIAL SHEETING

August Schwarzkopf, Heinestrasse 2, 454 Lengerich of Westphalia, Germany

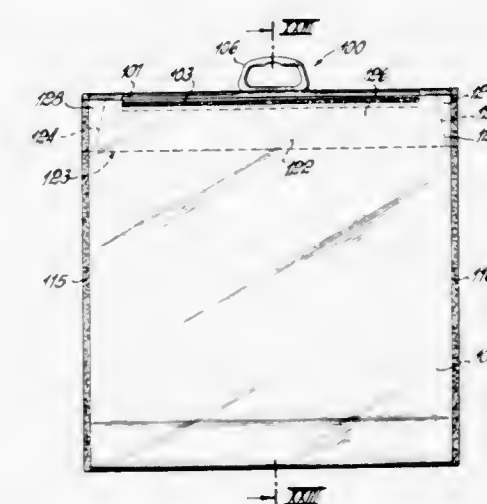
Filed June 23, 1970, Ser. No. 49,084

Claims priority, application Germany, June 24, 1969, P 19 32 047.9

Int. Cl. B65d 33/06

U.S. Cl. 229-54 R

3 Claims



Only one wall of the bag is provided with a heat-sealed carrying handle made of stiff synthetic thermoplastics. The other wall of the bag is provided with a lead-out slot on the level of the lower end of the handle and has a reversely foldable portion extending beyond said lead-out slot.

3,693,868

## ANTI-LITTER PEANUT SALES BAG

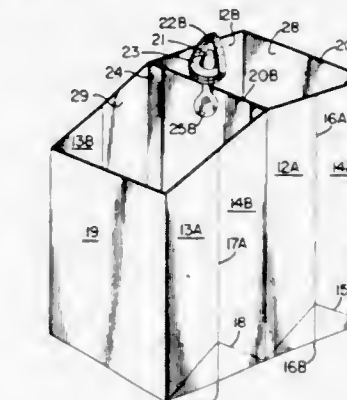
Archie G. Rich, 2350 Venetian Drive, S.W., Atlanta, Ga.

Filed Dec. 31, 1970, Ser. No. 103,032

Int. Cl. B65d 31/12, 25/28

U.S. Cl. 229-56

2 Claims



A suitable paper bag for containing peanuts, or other marketable items usually shelled, peeled, stripped or unwrapped



by the purchaser or other consumer during the process of consuming, with an attached collapsible hull-receptacle-compartment in which the peanut hulls and/or other waste material may be deposited by the purchaser, or other consumer, which is accomplished by severing with finger a quarter-inch wide strip of paper which is fastened across the bottom of the hull-receptacle-compartment and appropriately attached to the adjacent bottom of the main compartment of the bag by the manufacturer to maintain the folded position of the receptacle-compartment against one side of the main compartment for containing peanuts or other items, and unfolding by inserting fingers in the top opening and pushing sides and bottom in place. The bag also has a pivotal-loop-handle for carrying it on finger while shelling the peanuts, or other items, the shaft of which is firmly attached to the top mid-area of the center dividing wall of the bag to afford easy rotation and accessibility of the appropriate compartment during the process. Said handle is made of pliable material and can be easily flexed downward against the inner wall to which attached when not in use.

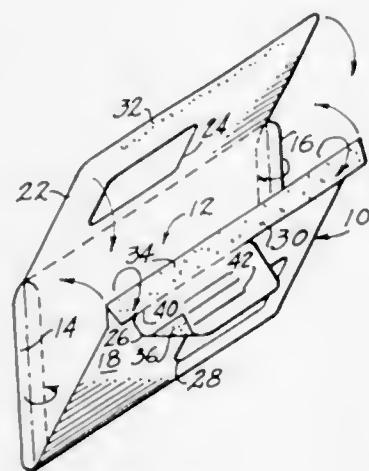
3,693,869

## REMAILABLE MAILING ENVELOPE

Robert F. Eaves, Jr., 2390 Main St., Tucker, Ga.  
Filed March 24, 1970, Ser. No. 24,049  
Int. Cl. B65d 27/06, 27/04

U.S. Cl. 229—73

4 Claims



A window envelope arrangement with the original sender's return address label removable by recipient and replaceable to cover the window which had originally exposed the recipient's address so that the same envelope may be returned in the mail by the recipient with an enclosure, such as a check, back to the original sender. Capable of expression in several different forms, the envelope body itself resembles the usual window arrangement but a top sealing flap with the return address incorporates a detachable remailable sender's label flap with either self-stick or wettable glue, perforated on the remailable return address label so that it is torn away and stuck in place over the window without the remailing recipient having to do any alignment, addressing or writing on the envelope.

3,693,870

## CASH ACCEPTANCE RECEPTACLE

George G. Dominick, Hoffman Estates, Ill.; Rinaldo Sciacero, Arlington Heights, Ill.; Leonard J. Weber, Broadview, Ill.; George I. Wimpffen, Wheaton, Ill., and Theodore Louis Kardos, Chicago, Ill., assignors to Gonaar Corporation, Elk Grove Village, Ill.

Filed May 27, 1971, Ser. No. 147,360

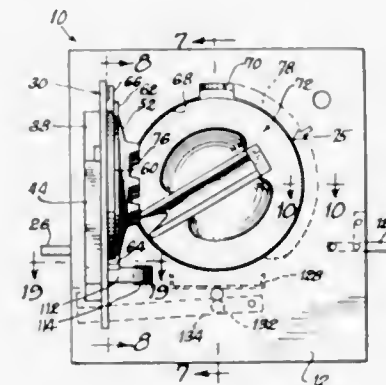
Int. Cl. E05g 1/00

U.S. Cl. 232—16

14 Claims

A collection receptacle or vault for receiving valuables from a cash box. The cash box is of the type including a discharge opening and a movable wall normally covering the discharge

opening. The receptacle includes a door providing access to an area receiving the cash box. A handle is located on the exterior of the door, and when the door is closed and the handle turned, the cash box is actuated for dumping the valuables through the discharge opening of the cash box into a vault area. Locking mechanisms are provided so that once the rota-



tion is commenced, access to the cash box cannot be obtained until after the dumping of the valuables has occurred. The locking mechanisms include a pawl and ratchet mounted on the door of the receptacle, the pawl and ratchet preventing return movement of the cash box and rotating mechanisms until dumping is completed.

3,693,871

## APPARATUS FOR PREVENTING PRINTING OF ZEROS ABOVE THE HIGHEST ORDER OF A PRINTED NUMBER

Paul Thevis, Oberndorf, and Adolf Schneider, Altoberndorf, both of Germany, assignors to Olympia Werke A.G., Wilhelmshaven, Germany

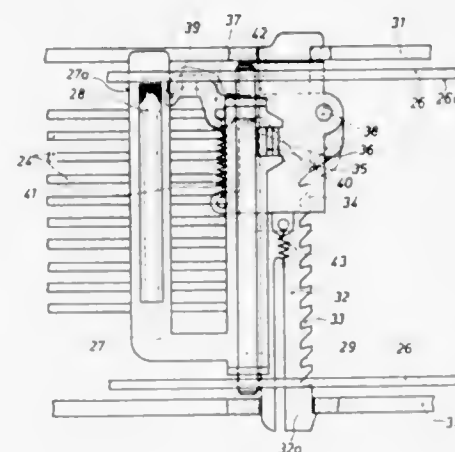
Filed June 22, 1971, Ser. No. 155,468

Claims priority, application Germany, June 23, 1970, P 20 36 548.4

Int. Cl. G06c 11/04

U.S. Cl. 235—60.28

10 Claims



A slide moving toward the lowest order of an ordinal series of digital printing elements, carries a coupling feeler which is displaced by the printing element of the highest order of a number represented by the printing elements, to couple the slide with stationary arresting means so that the slide is stopped in a position in which a control means thereof separates the printing elements of orders above the highest order of the number, from other printing means so that no zeros are printed by the printing elements of orders above the highest order of the printed number.

3,693,872

## ACRONAV: AN INTEGRATED FLIGHT DATA AIR NAVIGATION COMPUTER SYSTEM

Jack B. Titus, 132 Elliott Drive, Mather AFB, Calif.

Filed Sept. 9, 1971, Ser. No. 178,987

Int. Cl. G06c 27/00

U.S. Cl. 235—78

10 Claims



An air navigation computer having a calculator side consisting of a lower disc inscribed with log-distance, compressibility, Mach number and temperature error scales; a central disc inscribed with "TRUE AIR SPEED/GROUND SPEED" and having log-time, density altitude and temperature scales, and a Mach number and temperature error window; and an upper disc having a density altitude window, a pressure altitude scale and an equivalent-calibrated air speed cursor assembly. A computer-wind side includes a relative bearing-cursor assembly disc that is laminated to the reverse side of the calculator side-lower disc and is inscribed with "TRUE AIR SPEED/GROUND SPEED" and radially-aligned wind drift and course indices at the 180° relative bearing value with a radial cursor line extending between the wind drift and true air speed/ground speed indices. A trig-log scale-inscribed disc is interposed between the relative bearing-cursor assembly disc and the calculator-lower disc, and a compass indicator disc is mounted on the relative bearing-cursor assembly disc.

3,693,873

## FLIGHT PATH CALCULATOR

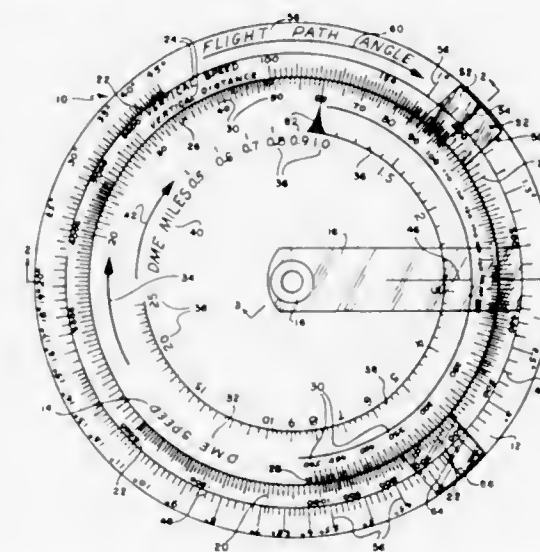
Walter G. H. Otte, 1721 Windsor, Wichita, Kans.

Filed July 8, 1971, Ser. No. 160,830

Int. Cl. G06c 3/00

U.S. Cl. 235—88

12 Claims



A flight path calculator in the nature of a circular slide rule having first and second relatively movable scale bearing members. The first of such members is logarithmically scaled with numerical indicia interpretable either as having the dimension of vertical distance (feet) or the dimension of vertical speed (feet per minute) for respectively reading the same relative to a first logarithmic scale on the second member that carries numerical indicia of slope distance (nautical miles) and to a second logarithmic scale on the second member that carries numerical indicia of slope speed (knots). Means is provided for indicating the relative positions of the scale bearing members in terms of the slope angle appropriate to the relative settings of the vertical distance — slope distance scales or the vertical speed — slope speed scales. Index markers and a cursor are provided to facilitate reading the indicia of the various scales.

3,693,874

## FUEL CONTROL SYSTEM AND CONTROL DEVICE THEREFOR OR THE LIKE

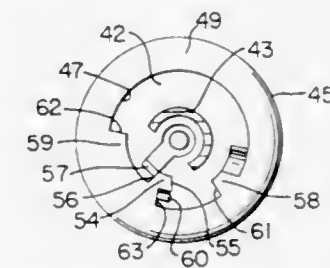
Raymond J. Fox, Irwin, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 27, 1970, Ser. No. 93,238

Int. Cl. F23n 5/24; F16k 35/02

U.S. Cl. 236—15 A

20 Claims



A control device for directing fuel from a source thereof to pilot burner means and to main burner means, the control device having a movable selector which is adapted to be moved in one direction from an "off" position thereof through a "cooking range" thereof to a "pilot off" position thereof. The control device has stop means for preventing uninterrupted movement of the selector from the "cooking range" thereof into the "pilot off" position thereof to prevent accidental pilot outage whereby the operator must axially move the selector before he can move the same from the "cooking range" thereof into the "pilot off" position thereof.

3,693,875

## ROCKET BURNER WITH FLAME PATTERN CONTROL

Thomas L. Shepard, 203 Roseland Ave., Essex Fells, N.J.

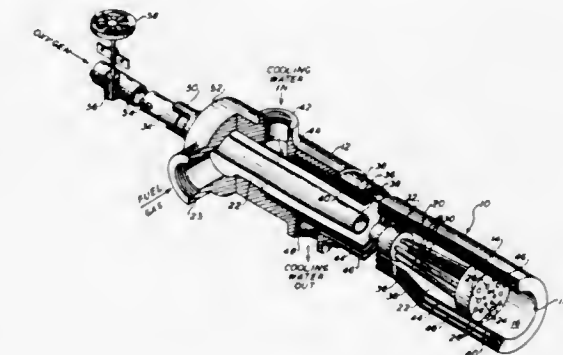
Division of Ser. No. 872,171, Oct. 29, 1969. This application

Nov. 29, 1971, Ser. No. 203,072

Int. Cl. A01n 17/02; A62c 1/12

U.S. Cl. 239—8

5 Claims



An oxygen-fuel burner of the rocket burner type comprising a cylindrical combustion chamber having an open discharge end and a burner plate with separate oxygen and fuel ports constituting the opposite end of the chamber; the projected longitudinal axes of the oxygen ports extending in converging directions towards the longitudinal axis of the chamber but in off-set, non-intersecting relation thereto, so that points on the respective axes that most closely approach the chamber axis define a transversely positioned plane between the burner plate and the chamber exhaust; the projected longitudinal axes of the fuel ports being substantially parallel to the chamber axis for mixing of oxygen and fuel at and beyond the plane of closest approach, and means for adjusting the longitudinal position of the burner plate on the chamber axis and thereby locating the plane of closest approach in relation to the chamber exhaust for determining the pattern of the burner discharge flames.

3,693,876

Patent Not Issued For This Number

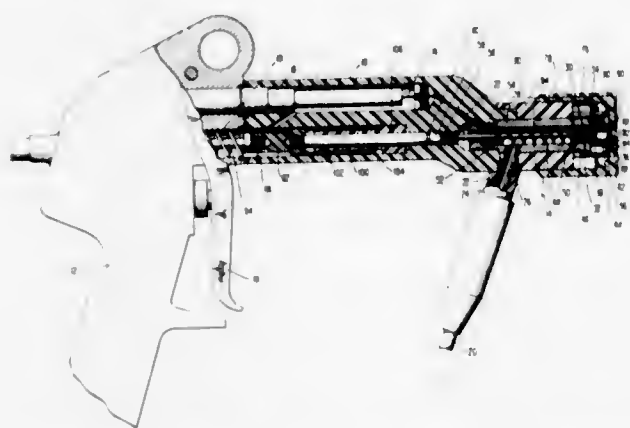


3,693,877

**ELECTROSTATIC SPRAY COATING APPARATUS**  
Philip L. Cowan, Basking Ridge, N.J., assignor to Electrogas Dynamics, Inc., Hanover, N.J.  
Filed May 6, 1970, Ser. No. 35,145  
Int. Cl. B05b 5/00

U.S. Cl. 239—15

9 Claims



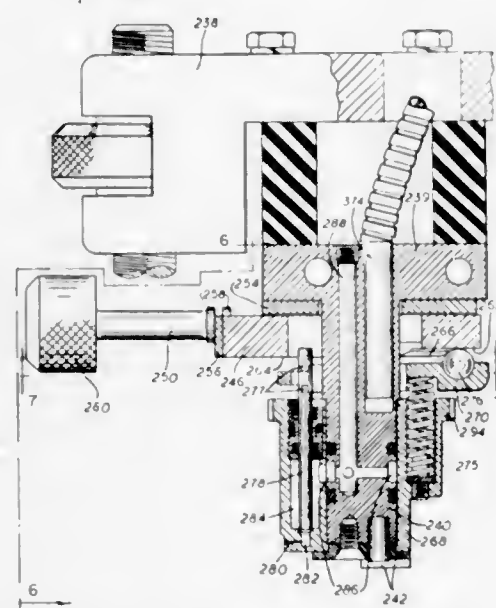
Improved methods and apparatus for charging atomized coating materials and maintaining an electrostatic depositing field in the electrostatic deposition of coating materials. Improved charging is effected by the selectively directed passage of corona discharge current from a primary source thereof through emitted coating material intermediate its point of emission and its locus of atomization to an electrically floating electrode element whose collection potential is maintained by a corona discharge emanating from an exposed end thereof.

3,693,878

**SWINGING CEMENT APPLYING MECHANISM**  
Karl F. Vornberger, Tewksbury, Mass., assignor to Jacob S. Kamborian, West Newton, Mass.  
Division of Ser. No. 41,500, May 28, 1970, Pat. No. 3,609,785.  
This application March 16, 1971, Ser. No. 124,891  
Int. Cl. B05b 3/00

U.S. Cl. 239—97

3 Claims



A cement spraying nozzle that is swingable through a prescribed arc and is effective to spray cement while swinging through an adjustable angle after it has begun to swing and before it terminates its swinging.

3,693,879

Patent Not Issued For This Number

3,693,880

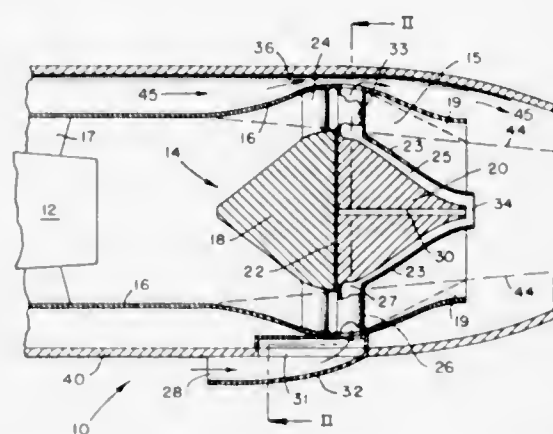
**INFRARED SUPPRESSOR MEANS**  
Edward F. Versaw, La Canada; Herbert C. Moe, Los Angeles, and Jerry L. Reed, China Lake, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 2, 1970, Ser. No. 90,208

Int. Cl. B64d 33/04

U.S. Cl. 239—127.3

2 Claims



An air-cooled contoured plug fitted within the exhaust pipe of a gas turbine engine is designed also for use with an afterburning turbojet type having variable position nozzle leaves. The plug is large enough in diameter to hide from view hot engine parts forward of the plug, such as the turbine wheel, exhaust cone, flameholders, and the exhaust pipe wall. By reducing the intensity of radiation from a turbojet engine when operating in non-afterburning power, the detection of a turbojet-powered aircraft by a heat-seeking missile is minimized.

3,693,881

Patent Not Issued For This Number

3,693,882

**DEVICE FOR SPRAYING LIQUID**  
Tamotsu Watanabe, Tokyo; Yasuo Vando, Naka-gun, and Kozaburo Tsurugi, Tokyo, all of Japan, assignors to Nippon Kogei Koggo Co., Ltd.

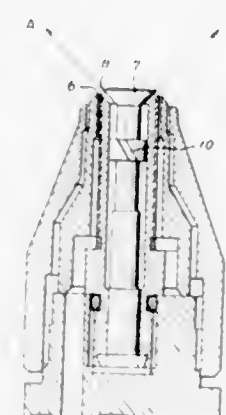
Filed Dec. 18, 1969, Ser. No. 886,296

Claims priority, application Japan, Aug. 7, 1969, 44/62014.

Int. Cl. B05b 1/28

U.S. Cl. 239—296

12 Claims



A method of spraying liquid in a flattened, conical shape through a spray gun having a circular air slit for injecting compressed air and a circular liquid slit disposed adjacent to and around the circular air slit for atomizing the liquid by injecting compressed air from one or more pairs of air jets from outside of the slits and from opposite dispositions with respect to the axis of the spray stream in the inward and tangential direction to the sectional circle of the spray stream of the liquid, thereby expanding the spray of conical liquid particles in one diametrical direction of the sectional circle of the spray stream so as to

flatten the sectional circle. This method is accomplished by a spraying gun having one or more air jets disposed outside the central spraying portion of the liquid and opposite with each other with respect to the center of the spraying portion which is formed with a circular air slit for injecting the compressed air and a circular liquid slit disposed adjacent to and around the air slit for atomizing the liquid.

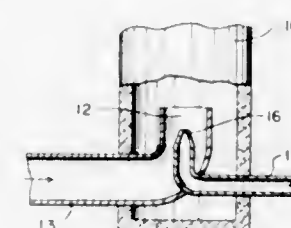
3,693,883

**POLLUTION CONTROL DEVICE**

Earl K. Stigger, 202 S. Reuter Drive, 202 S. Reuter Drive, Ill.  
Filed July 20, 1970, Ser. No. 56,446  
Int. Cl. F23d 11/10

U.S. Cl. 239—423

7 Claims



An apparatus and method for using the same are disclosed wherein smoke is dispersed by forcing the smoke out of a smoke stack in the form of smoke rings.

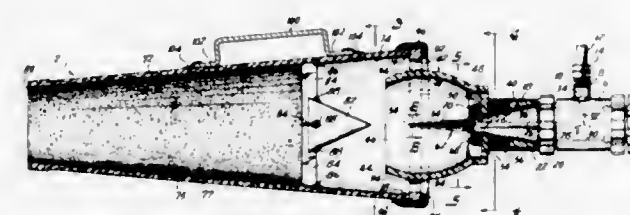
3,693,884

**FIRE FOAM NOZZLE**

Duane S. Snodgrass, 434 Shelby St., Kingsport, Tenn., and William H. Lauderback, 112 W. Edgefield, Longview, Tex.  
Filed Feb. 5, 1971, Ser. No. 113,028  
Int. Cl. B05b 7/06

U.S. Cl. 239—427.5

27 Claims



A fire foam nozzle assembly that produces large flakes for extinguishing fires caused by the burning of vapors of inflammable liquids. The nozzle assembly has a coupling for connecting it with a fire hose and includes an expansion chamber into which water and foam concentrate are introduced by an injector at high velocity and forced through a cone-shaped, wire stream divider. Air inlet openings at the inlet end of the expansion chamber allow entry of primary air by eduction for mixture with the divided, expanding streams of water and foam concentrate. A discharge nozzle receives the flow from the expansion chamber and contains a conical deflector mounted upon radial vanes. The deflector splits and transversely directs the flow against the inner surface of the discharge nozzle. A relatively larger and greater number of air inlet openings at the inlet end of the discharge nozzle surrounds the exterior of the expansion chamber for admitting a large volume of secondary air, by eduction, to be mixed with the water and expanding foam concentrate in the discharge nozzle. The interior surface of the discharge nozzle, beyond the conical deflector, has formations that provide a rough surface designed to retard flow and to induce violent turbulence within the discharge nozzle, causing the water and foam concentrate to be mixed with a great volume of air prior to being discharged from the nozzle. The discharge nozzle delivers a stream of foam at very high velocity, the stream being substantially free from drip and eventually feathering out as the force of the stream becomes spent, the foam then falling gently in the form of large flakes similar to snow flakes. The nozzle as-

sembly is non-metallic except for the hose coupling and the wire divider, and is preferably made from epoxy resin components reinforced with fiberglass, the components being secured together by laminated strips of fiberglass cloth saturated with an epoxy resin and allowed to cure, thereby providing a nozzle structure that is very strong but light in weight.

3,693,885

Patent Not Issued For This Number

3,693,886

**SWIRL AIR NOZZLE**

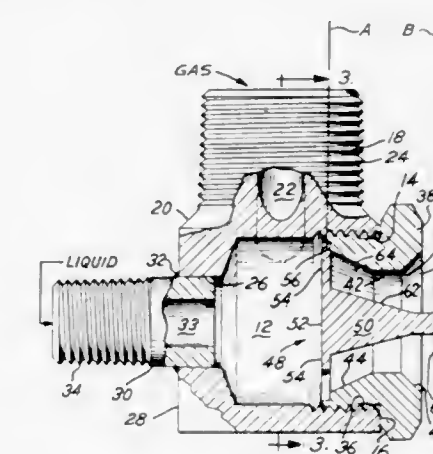
Sherman E. Conrad, Des Moines, Iowa, assignor to Delavan Manufacturing Co.

Filed Oct. 27, 1971, Ser. No. 193,023

Int. Cl. B05b 7/06

U.S. Cl. 239—432

14 Claims



A nozzle for discharging a swirling atomized fluid includes a vortex chamber defined in the nozzle body, a gas inlet tangentially communicating with the chamber and a liquid inlet axially communicating with the chamber wherein the liquid is mixed with the swirling gas in the chamber. An impingement member is positioned in the path of fluid flowing from the chamber having a primary impact surface in the chamber upon which the swirling mixture impinges and a secondary impact surface adjacent to, but spaced from, the swirling mixture also impinges as it is being discharged from the nozzle.

3,693,887

**METHOD AND APPARATUS FOR GASIFYING LIQUID FUELS AND EFFECTING A COMPLETE COMBUSTION THEREOF**

Wilhelm Genannt Willi Brodlin, Radolfzellerstrasse 56, 7753 Allensbach, and Siegfried Weishaupt, Max-Weishauptstrasse, 7959 Schwendi, both of Germany

Filed Oct. 14, 1970, Ser. No. 80,715

Claims priority, application Germany, Oct. 14, 1969, P 19 57 752.3; Aug. 11, 1970, P 20 39 872.5

Int. Cl. B05b 1/26

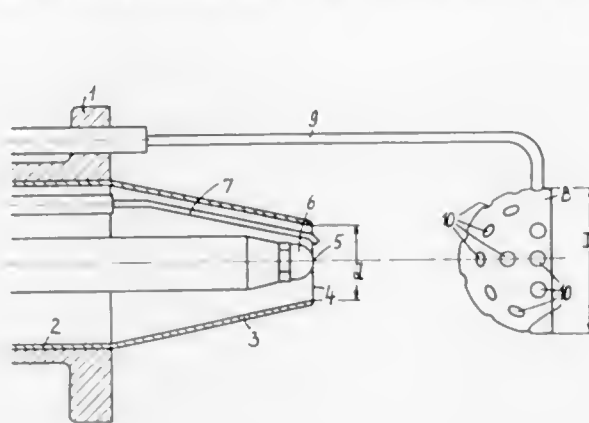
U.S. Cl. 239—500

9 Claims

An oil burner comprising a fuel nozzle for ejecting the liquid fuel under pressure in a forwardly diverging spray, and a conical air nozzle coaxially with and surrounding the fuel nozzle for passing a forwardly converging jet of air at a high velocity into the fuel spray so that the air particles will intersect the fuel particles to produce an intimate gaseous mixture which is then propelled against a preferably convex wall of one side of a mixture distributor which is spaced at an adjustable distance from the fuel and air nozzles and is provided with a plurality of bores through which the gaseous mixture passes to the other



side of the distributor where the mixture after being ignited will burn with a blue flame. The mouths of the fuel and air nozzles are disposed within a common plane and the mouth of the air nozzle has a smaller diameter than the distributor.



nozzles are disposed within a common plane and the mouth of the air nozzle has a smaller diameter than the distributor.

### 3,693,888 FLUID EMITTER

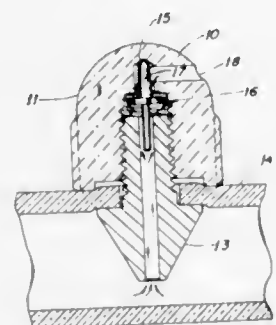
Ivan V. Rondas, Mission Viejo, and Mark H. Christy, Balboa, both of Calif., assignors to Sub Terrain Irrigation Co., Anaheim, Calif.

Continuation-in-part of Ser. No. 833,634, June 16, 1969, abandoned. This application Dec. 10, 1970, Ser. No. 96,690

Int. Cl. B05b 1/32

U.S. Cl. 239—535

6 Claims



An emitter valve having a flow regulating diaphragm which cooperates with fluid pressure to maintain valve orifices free of foreign materials. Such diaphragm is delayed in seating in response to fluid pressure to provide for preliminary purging of the valve orifices.

In one embodiment of this invention, after the time delay allowed for orifice cleansing, an annular section of the diaphragm is forced against an annular seat having an irregular opposing surface to provide a controlled seepage of fluid between the diaphragm and annular seat surrounding the outlet leading to the valve orifices. In another embodiment, the diaphragm is so supported that the fluid pressure causes it to vibrate, thus ensuring continual cleaning action.

### 3,693,889 FUEL INJECTION NOZZLE

Gregor Schuster, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 4, 1971, Ser. No. 169,030

Claims priority, application Germany, Aug. 4, 1970, P 20 38 643.0

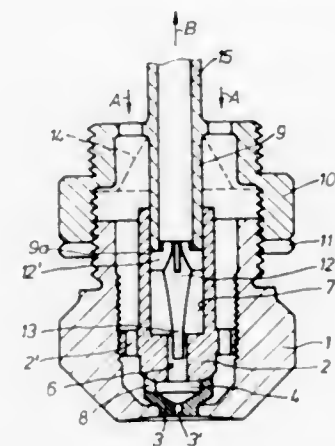
Int. Cl. B05b 1/30

U.S. Cl. 239—533

5 Claims

In a fuel injection nozzle, for varying the fuel quantities injected thereby, there is provided a movable throttle member

tion and thus the throttling effect of the throttle member is determined by the axial distance between two threaded interengaging components of the fuel injection nozzle.



### 3,693,890 MATERIAL SPREADER ATTACHMENT FOR TRUCKS

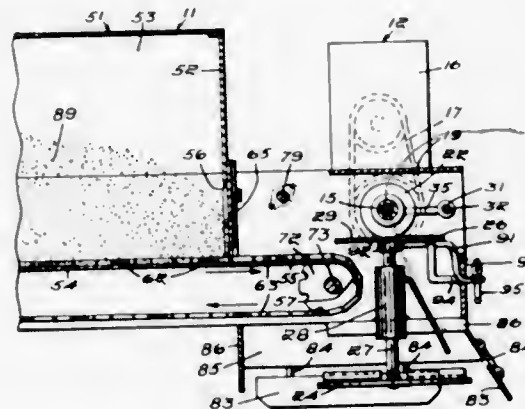
Anthony J. Torrey, 874 Edgell Road, Framingham Center, Mass.

Filed July 2, 1970, Ser. No. 51,994

Int. Cl. A01c 17/00, 19/00

U.S. Cl. 239—668

12 Claims



Disclosed is a material spreader attachment for mounting on the bed of a conventional truck. Particulate material retained in a hopper is moved by a conveyor onto a rotating distributor disc and discharged therefrom by centrifugal force. The distribution disc is driven by a friction wheel in turn rotated by a constant speed engine also used to drive the material conveyor. Longitudinal adjustment of the friction wheel along its rotational axis alters the speed transmission ratio to the distribution disc and thereby controls the material discharge pattern. By utilizing an independent constant speed engine to drive both the conveyor and the adjustable friction wheel, a selective material discharge pattern can be maintained regardless of the speed at which the supporting vehicle moves.

### 3,693,891 WOOD GRINDING

Norton S. Remmer, 98 Coolidge Road, Worcester, Mass.

Filed June 24, 1971, Ser. No. 156,328

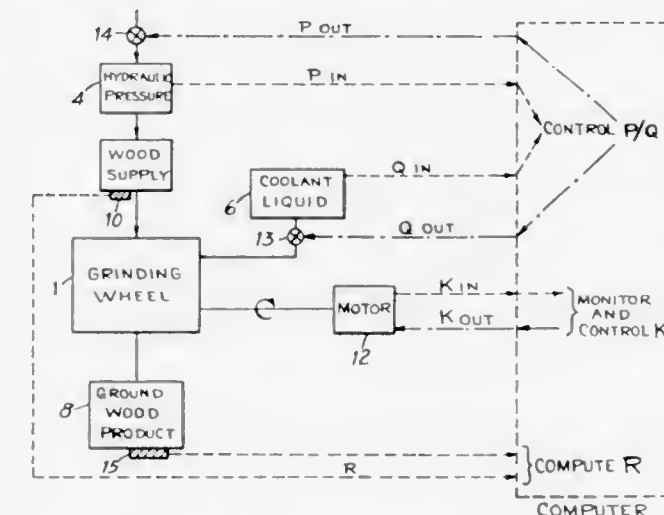
Int. Cl. B02c 25/00

U.S. Cl. 241—15

37 Claims

The invention is concerned with the grinding of wood, and in particular to the production of wood pulp in the paper-making industry. The invention provides a method for the grinding of wood which includes the steps of: (a) urging wood against a grinding surface which is adapted for rotation by a source of power, (b) applying to the grinding surface a flow of cooling liquid, (c) maintaining the ratio of the pressure of the wood

against the grinding surface to the rate of flow of coolant liquid at a substantially constant value, and (d) maintaining the energy supplied by the source of power per unit weight of ground wood produced at a substantially constant level. The invention also contemplates the provision of apparatus for the grinding of wood which comprises: (a) a grinding surface adapted to be rotated by a source of power, (b) means for urging



ing wood against the grinding surface, (c) means for applying to the grinding surface a flow of cooling liquid, (d) means for maintaining the ratio of the pressure of the wood against the grinding surface to the rate of flow of coolant liquid at a substantially constant value, and (e) means for maintaining the energy supplied by the source of power per unit weight of ground wood produced at a substantially constant level.

### 3,693,892 DISPOSER SPLASH GUARD

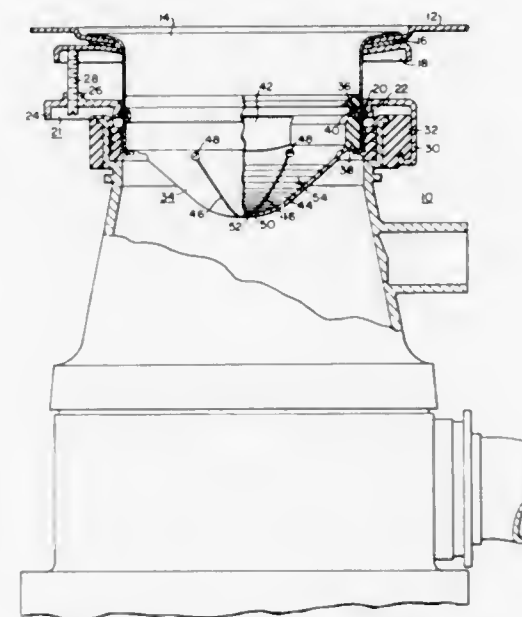
Raiq S. Musa, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 8, 1971, Ser. No. 160,592

Int. Cl. B02c 23/02, 18/42

U.S. Cl. 241—100.5

8 Claims



The invention provides a splash guard for use in a food disposer, with the same situated in a kitchen sink and providing the means through which the housewife passes food waste to the food disposer, proper. The splash guard is made of an elastomer material having a series of split segments, each having the general configuration of a sector of a circle or triangle and providing, in totality, the splash guard section. The elastomer material insures that there is no tendency for food being comminuted to kick back upwardly into the sink area. Further, the elastomer material also provides a sound attenuating and sound barrier means to prevent noise which is generated by the comminution of food waste from passing out-

wardly through the sink opening. In accordance with the principles of the invention, in order to provide sufficient rigidity to the elastomer material and prevent kickback and provide a sound barrier, each of the portions of the elastomer material includes a series of relief portions on its upper face, with these relief portions so formed that they tend to come together if the elastomer material is urged upwardly. At the same time, bending of the elastomer material downwardly, such as would be done in placing of food waste within the food disposer, tends to move the relieved portions further apart. Thus, the effective cross sectional area of elastomer material, through which bending takes place, is increased for upward bending and decreased for downward bending.

### 3,693,893 GRANULATOR

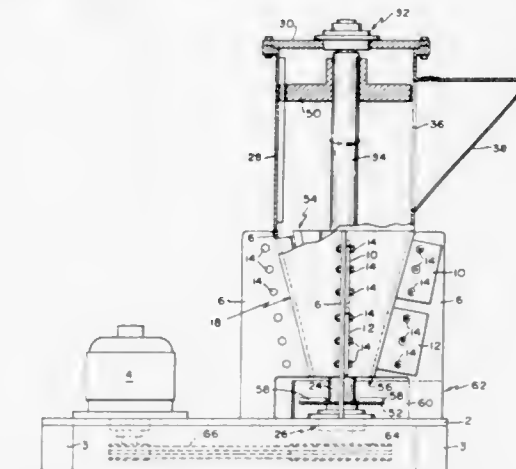
John W. McIntyre, 17 Mechanic St., Attleboro, Mass.

Filed Jan. 14, 1971, Ser. No. 106,433

Int. Cl. B02c 13/18

U.S. Cl. 241—258

7 Claims



Apparatus for granulating materials, having fly knives on a vertical rotor which cooperate with vertical stationary knives within a cone-shaped cutting chamber, the rotor being spaced from the wall of the chamber a greater distance at the top thereof than at the bottom, so that the entrance at the top of the chamber for material is larger than the exit throat at the bottom of the chamber, and both the stationary and fly knives extend into the cutting chamber further at the top thereof than at the bottom.

### 3,693,894 TIRE SHREDDER

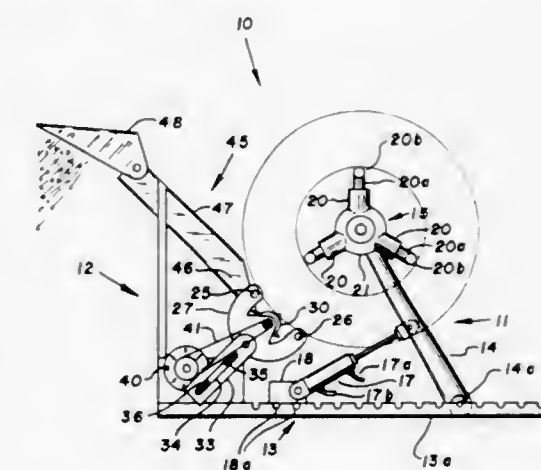
Raymond W. Willette, 923 Dodd Road, St. Paul, Minn.

Filed Nov. 30, 1970, Ser. No. 93,558

Int. Cl. B02c 18/06

U.S. Cl. 241—279

4 Claims



A device directed to shredding rubber tires and the like including a tire holding member for gripping the interior bead of



various sized tires with means for rotating said member, a rotating cutting member for engaging the exterior of the tires and cutting the same into relatively small particles and means for transporting the particles from the cutting member. The unit includes means for properly feeding the tires into the cutting member with means for properly positioning the cutter member for proper cutting of the tire such that various sized tires may be shredded including the sidewalls thereof.

3,693,895

Patent Not Issued For This Number

3,693,896

# APPARATUS FOR WINDING STRANDS OF THERMOPLASTIC MATERIAL, PARTICULARLY OF GLASS FILAMENTS IN THE COURSE OF THEIR PRODUCTION

Wilhelm Brauweiler, Ellendorf, and Gunther Winand Mager, Stolberg, both of Germany, assignors to Compagnie De Saint-Gobain-Pont-A-Mousson, Neuilly-sur-Seine, France

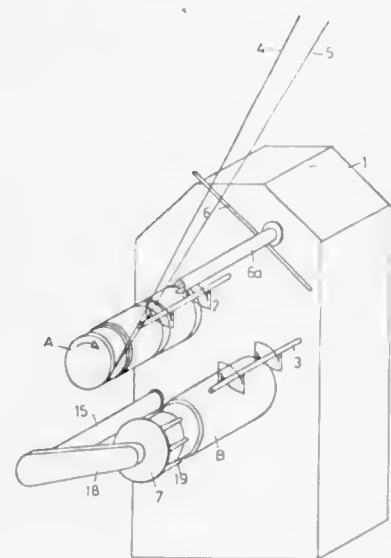
Filed Aug. 17, 1970, Ser. No. 64,358

Claims priority, application France, Aug. 22, 1969, 6928825

Int. Cl. B65h 54/02

U.S. Cl. 242—18 A

6 Claims



A winding apparatus for newly formed strands of thermoplastic material, constituted by filaments issuing from a plurality of spinning nozzles of a spinneret containing said material in liquid form, such as molten glass, disposed below the latter. Two winding drums on fixed axes extend in parallel to each other in a plane inclined to the horizontal, onto which are adapted to be mounted empty spools, and with which cooperate strand traverse mechanisms which serve to lay up the strands on the spools in crossing relation while the rotary movement of the latter effects a drawing-out of the filaments. The specific disposition of the winding drums permits a convenient transfer of the strands issuing from the spinneret, from the filled bobbins on one drum to the empty bobbins on the other drum without interrupting the drawing-out of the filaments. This transfer may be executed in a non-automatic, semi-automatic, or fully automatic manner. In the last-mentioned case, the completion of a predetermined number of revolutions of the active winding drum, automatically positions an auxiliary rotary winding cage onto the end of the last-mentioned drum by means of a pivotal movement followed by an axial movement of the cage. A deflecting bar shifts the strands from the bobbins being wound on the winding drum onto the winding cage whereat the drawing out of the filaments continues. The rotary cage is then moved axially from the end of the active winding drum, rotated into coaxial position with the heretofore idle winding drum and axially shifted

onto the end thereof, without any interruption of the drawing out of the filaments. When the last-mentioned drum reaches its proper rotary speed, the strands are moved back from the winding cage to their winding positions governed by the strand traverse device associated with the last-mentioned drum, for filling up the spools which had been mounted on the last-mentioned drum. The first drum is braked, unloaded and charged with empty spools in readiness for the next transfer of the strands thereto, during the winding operation on the second drum.

3,693,897

## PULL SKEIN WINDER

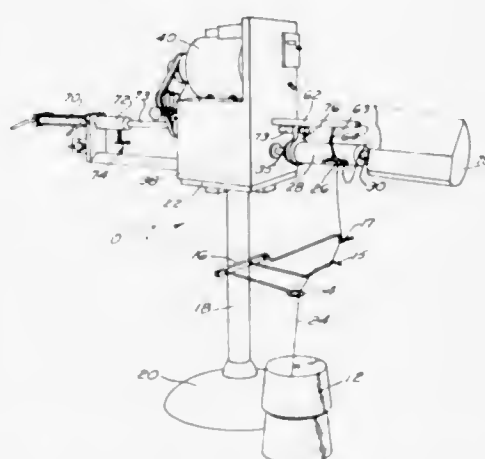
Miron Davidson, c/o Russell A. Edwards, Esq. 56 Ainslie Street N., Galt, Ontario, Canada

Filed Dec. 30, 1972, Ser. No. 102,864

Int. Cl. B65h 54/02

U.S. Cl. 242—18 R

4 Claims



An electro-mechanical pull skein winder which automatically and sequentially operates 1) the winding mechanism that winds you on a spindle, 2) the doffing means that pushes the wound skein off the spindle, 3) the clamping means that grip the tail end of the skein of yarn just doffed, 4) the cutting means that severs the wound skein from the continuous length of yarn and 5) the ejecting means that deposit the skein at a particular point, and then automatically starts the cycle over again.

3,693,898

## APPARATUS FOR CONTINUOUSLY WINDING UP A LINEAR PRODUCT SUCH AS WIRE

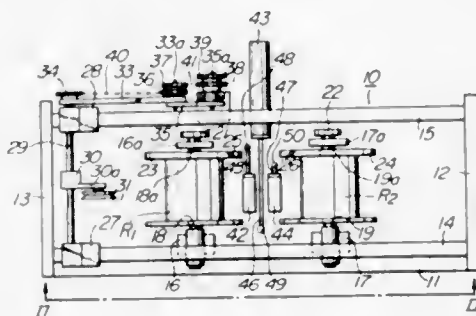
Yashuhiko Otani, Kobe, Japan, assignor to Kobe Steel, Ltd., Kobe-shi, Japan

Filed March 18, 1970, Ser. No. 20,755

Int. Cl. B65h 54/02

U.S. Cl. 242—25 A

3 Claims



A continuous take-up apparatus for wire having upright reel supporting frames rigidly mounted on a base. A sheave is provided above the take-up reels to guide the wire to one of the reels. A plurality of upwardly extending rods are provided and are movable between the reels axially thereof so as to shift the wire beyond one ends of the reels when said one reel has

become almost full of the wire. Discs are rotatably mounted adjacent said one ends of the reels. The discs have claws which engage the thus shifted wire and arrest it on the discs whereby the wire is cut between the claws. The cut end of the wire arrested on the disc associated with the other empty reel causes a further continuous length of the wire to be wound up on the empty reel for thereby completing transfer of the wire from the full reel to the empty one.

3,693,899

## THREAD GUIDING MEANS FOR YARN WINDING

John Leslie Burgess, Penzance, Cornwall, and Joseph Eric Harvey, Camborne, Cornwall, both of England, assignors to Maxam Power Limited, Camborne, Cornwall, England

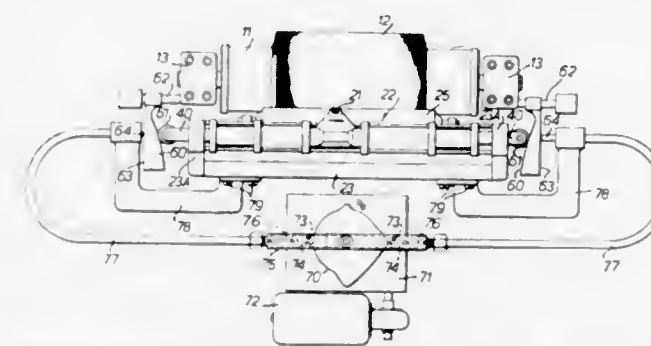
Filed Aug. 19, 1970, Ser. No. 65,296

Claims priority, application Great Britain, June 22, 1970, 30,207/70

Int. Cl. B65h 54/28

U.S. Cl. 242—43

14 Claims



A thread guide for a yarn winding machine, which comprises a reciprocating shuttle slidably mounted on a fixed track and means for subjecting the shuttle to timed blasts of compressed air to cause its reciprocating movement along the track. The shuttle is a double-acting cylinder member having opposed open-ended cylinders which cooperate with fixed pistons mounted in adjustable positions at opposite ends of the track. The fixed pistons contain poppet valves arranged to be actuated by the engagement of the shuttle with their actuating members at the ends of the reciprocating movements of the shuttle along the track. Each actuating member protrudes from the crown of one of the fixed pistons for engagement by the end wall of the opposed cylinder of the shuttle and when so engaged opens the valve to deliver a blast of compressed air into the cylinder to propel the shuttle in the reverse direction along the track.

3,693,900

## FILM CARTRIDGE LOADER

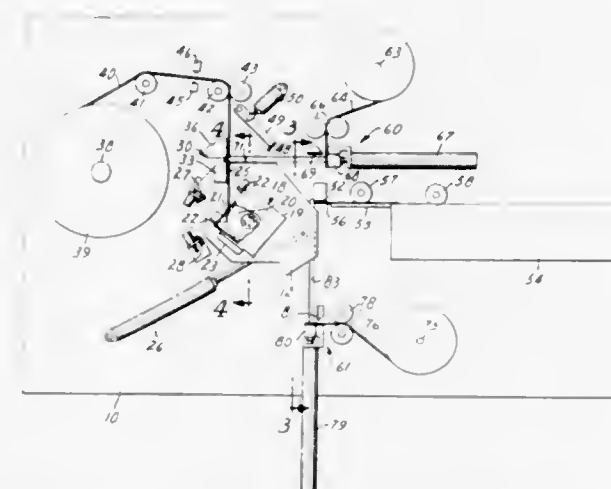
Arlin L. Bohn, Blaine, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed April 7, 1971, Ser. No. 131,876

Int. Cl. B65h 19/20

U.S. Cl. 242—56 R

5 Claims



Apparatus for automatically loading a length of film into a cartridge having a rotatable reel disposed within the cartridge

shell. The film is fed from a supply, its free end is connected to the cartridge reel at a first station and the cartridge reel is driven to wind a predetermined length of film onto the reel. The film is severed between the supply and the cartridge so that a free film end extends from the cartridge. The cartridge is then moved to a second station at which the free film end is spliced to one end of a film leader. The film and a major portion of the leader are then wound into the cartridge.

3,693,901

## QUICK-CHANGE CARTRIDGE SPOOL

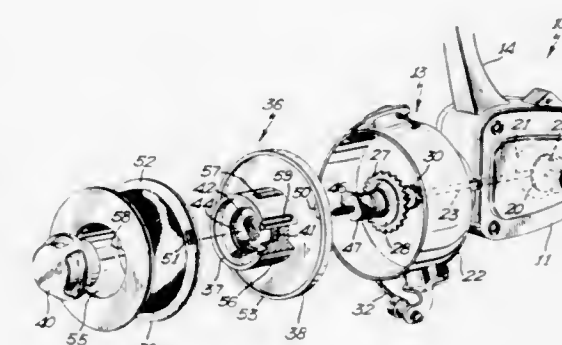
Larry L. Lillard, and James T. Rumbaugh, both of Spirit Lake, Iowa, assignors to Berkley & Company, Inc., Spirit Lake, Iowa

Continuation-in-part of Ser. No. 727,832, May 9, 1968, abandoned. This application Nov. 1, 1968, Ser. No. 778,913

Int. Cl. A01k 89/00

U.S. Cl. 242—84.2 R

5 Claims



An adapting arbor for use in combination with a spinning reel having a housing, a spindle or shaft mounted within said housing, and means for rotating a line engaging bail device relative to said shaft, with the line engaging means being arranged for axial rotation within said housing. The adapting arbor is arranged for receiving a line spool and consists of a boss with a flange disposed rearwardly of the boss, and is arranged to be universally received along the spindle or shaft of a wide variety of reel devices and is also adapted to receive and releasably retain a line-receiving spool thereon. The boss of the arbor preferably has a keyway along one surface and the flange portion preferably has a locking lug to engage the spool, the spool having a locking key formed along the inner portion of the center sleeve and a lug-receiving bore formed on the rear flange. The outer periphery of the boss has a plurality of pads to engage the interior of the spool, each pad comprising a resilient member protruding from the surface of the boss to provide firm contact with the core of the spool. In addition, drag brake means are provided for mounting along the core of the arbor for controlling relative rotation between the spindle and the line spool.

3,693,902

Patent Not Issued For This Number

3,693,903

## WIRE REEL FOR A COIL OF WIRE

Carlis E. Cassel, and Donald S. Krueger, both of Niles, Mich., assignors to National-Standard Company, Niles, Mich.

Continuation of Ser. No. 60,294, Aug. 3, 1970, abandoned.

This application Aug. 19, 1971, Ser. No. 173,232

Int. Cl. B65h 49/00

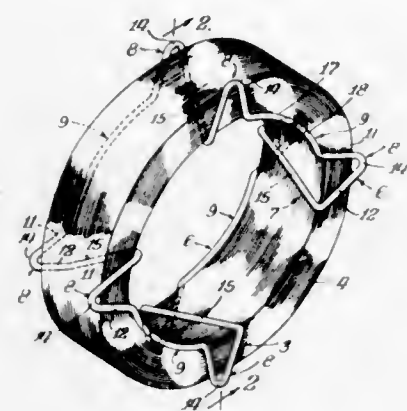
U.S. Cl. 242—129.8

5 Claims

A wire reel formed from a length of wire to provide opposed axially spaced apart reel sides and a core, each side being defined by the formation in the wire of circumferentially



spaced apart radially outwardly extending side projections, with successive side projections at each side of the reel being connected by circumferentially extending connecting side



portions, and in which the core is defined by diagonal cross-over portions extending between axially opposed side projections.

3,693,904

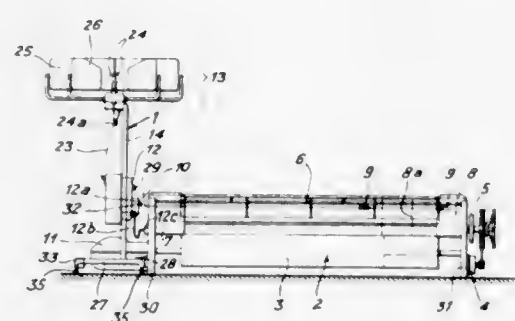
## WEFT BOBBIN STAND

Robert Bucher, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland  
Continuation of Ser. No. 756,900, Sept. 3, 1968, abandoned.  
This application Dec. 4, 1970, Ser. No. 95,396  
Claims priority, application Switzerland, Sept. 6, 1967, 12479/67

Int. Cl. B65h 49/02; D02h 1/00; D03j 5/08

U.S. Cl. 242-131

3 Claims



There is disclosed, for use with looms in which the weft supply remains outside the shed, a wheeled weft bobbin stand including a weft bobbin creel, weft thread brakes, and intermediate weft thread storage devices.

3,693,905

## DISPLAY FOR FILAMENTARY PRODUCT WITH MUTUALLY ADJACENT SEGMENTS HAVING CONTRASTING COLORS

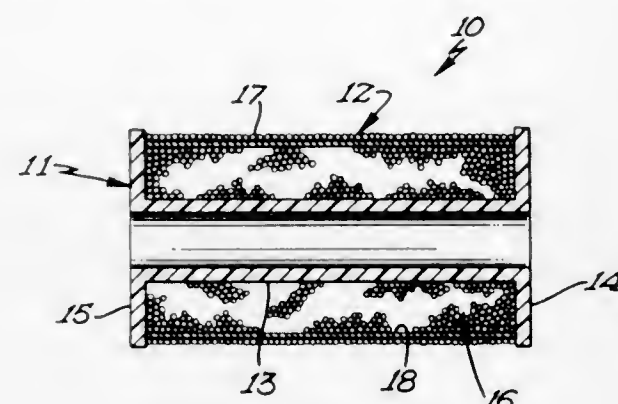
Paul C. Johnson, Spirit Lake, Iowa, assignor to Berkley & Company Inc., Spirit Lake, Iowa  
Filed July 26, 1971, Ser. No. 166,133  
Int. Cl. B65h 55/00

U.S. Cl. 242-159

4 Claims

Means for winding and displaying a portion of a continuous elongated translucent filament with mutually adjacent segments having contrasting colors upon the core of a laterally flanged spool structure comprising winding an initial predetermined portion of the elongated filament upon the core to a substantially completed extent of fill, and then enveloping the outer cylindrical surface of said substantially completely filled spool with an opaque film having a highly reflective outer surface. Thereafter, the winding of the elongated filament is continued, with the filament being wound helically about the

outer surface of the opaque film until the core surface between the inner opposed surfaces of the lateral flanges is



substantially covered with a single winding layer only of the elongated filament, thus presenting striations of contrasting color between the inner surfaces of the lateral flanges.

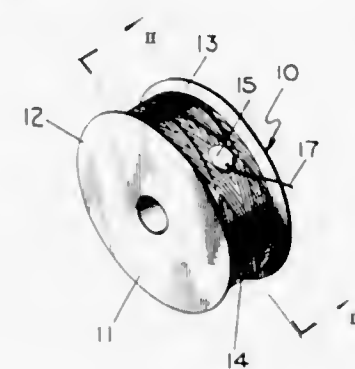
3,693,906

## BOBBIN

Stuart A. Robinson, Paxton, Mass., assignor to The Robinson Thread Co., Inc., Worcester, Mass.  
Filed Aug. 2, 1971, Ser. No. 168,142  
Int. Cl. B65h 55/00

U.S. Cl. 242-159

5 Claims



A bobbin in which the free end of a coil of thread is held in place by a body of thermoplastic material.

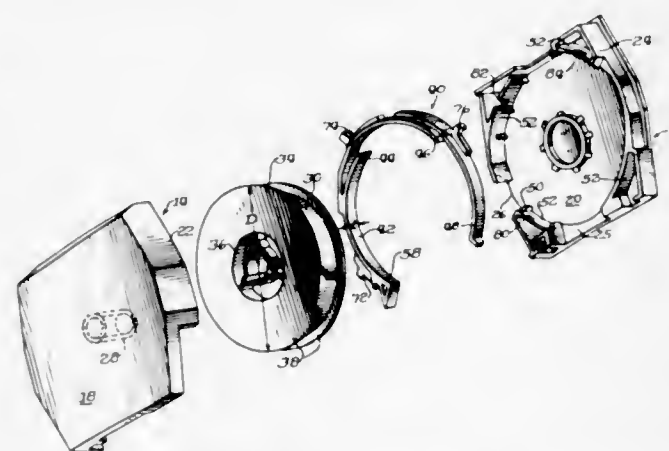
3,693,907

## FILM CONVOLUTION RETAINING DEVICE

Edward R. Prelletz, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.  
Filed Feb. 2, 1970, Ser. No. 7,715  
Int. Cl. G11b 23/04

U.S. Cl. 242-197

24 Claims



An anti-unwrapping device usable in a cartridge accepting a reel containing film wound in convolutions about the reel hub, the outer film convolutions having a tendency to unwrap, the

device having a base member from which a plurality of yieldable fingers extend with the free ends thereof arranged to engage the outermost convolution of the film.

3,693,908

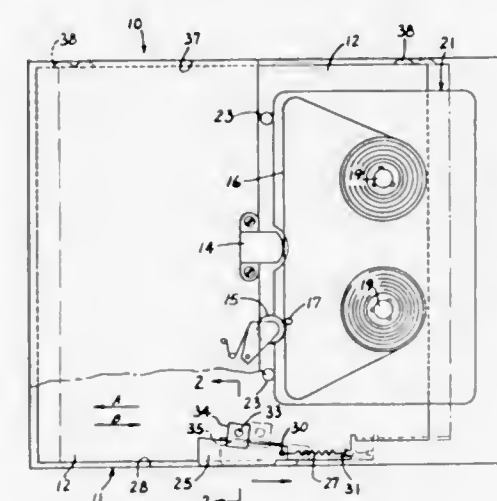
## ANTI-VIBRATION DEVICE FOR TAPE TRANSPORTS

Theophil Clement Jozef Lodewijk Staar, Kraainem, Belgium, assignor to Starr, S. A., Brussels, Belgium  
Filed March 10, 1971, Ser. No. 122,694  
Claims priority, application Belgium, March 13, 1970, 86,368

Int. Cl. G03b 1/04; G11b 15/32, 23/04

U.S. Cl. 242-198

6 Claims



An anti-vibration device for a tape deck of the type having a main frame and a movable plate carrying the tape transport elements. The movable plate is restrained from vibrating against the supporting main frame by a wedge held resiliently between the plate and frame and engageable with the plate through a pivotally supported bearing member having a wedge retaining groove therein.

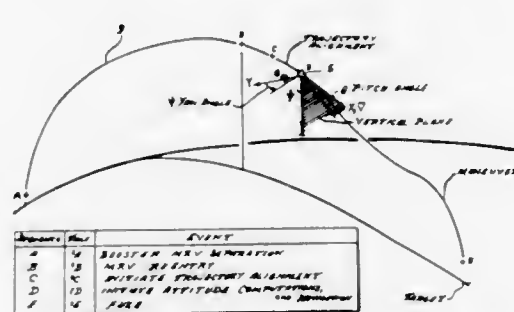
3,693,909

## GUIDED MISSILE TRAJECTORY ALIGNMENT METHOD

James R. Hall, St. Charles, Mo., assignor to The United States of America as represented by the Secretary of the United States Air Force  
Filed Feb. 18, 1970, Ser. No. 14,825  
Int. Cl. F41g 7/00, 9/00, 11/00

U.S. Cl. 244-3.2

1 Claim



Method aligning a guided missile with its velocity vector at the beginning of post exoatmospheric flight. This missile velocity vector data is established during preexoatmospheric flight. At re-entry, the outputs of normal and axial accelerometers and the missile velocity vector data are used to determine the difference angle existing between the missile's major longitudinal axis and the missile velocity vector. When the difference angle is less than 0.5° pitch and yaw integration functions are initiated. The integration functions are based upon a value of roll attitude that makes the pitch angle equal to 0 and the yaw angle equal to the difference angle. System roll attitude data is then used to transform the reference to a frame in which the local horizontal frame is known.

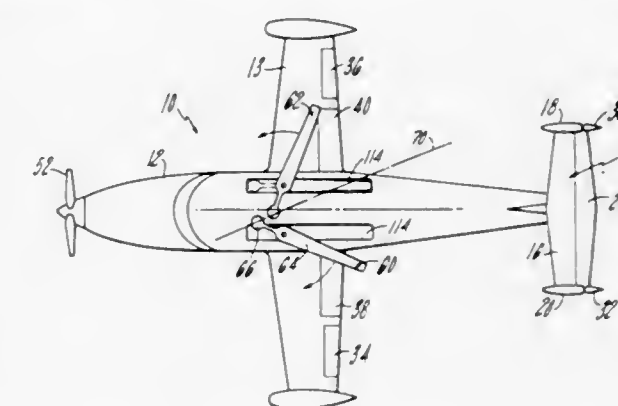
3,693,910

## AIRCRAFT ROTOR BLADE MECHANISM

Angelo J. Aldi, 190 Brook Lane, Cheshire, Conn.  
Filed Dec. 14, 1970, Ser. No. 97,508  
Int. Cl. B64c 27/22

U.S. Cl. 244-7 A

12 Claims



A STOL aircraft having a fixed wing and a rotor blade mechanism with a rotor support mounted on the aircraft fuselage for pivotal movement about a laterally extending axis, a pair of laterally spaced upwardly extending and laterally outwardly inclined rotor drive shafts mounted on the pivotal rotor support, and single bladed rotors mounted on the drive shafts for rotation in opposite angular directions in noninterfering synchronism. The rotor drive shafts comprise telescoping shaft portions for shifting the rotors between an extended operating position overhead the aircraft fuselage and a retracted stowed position received within longitudinally extending pockets in the fuselage.

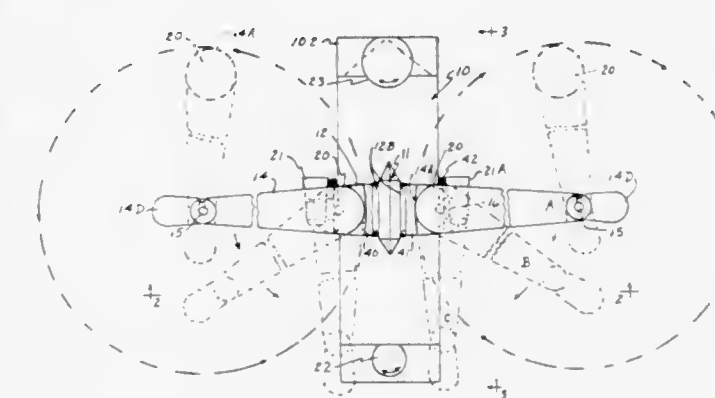
3,693,911

## AIRCRAFT FOR VERTICAL FLIGHT AND TRANSITION TO AND FROM HORIZONTAL FLIGHT

Henry S. Bacon, 745 W. Front St., Red Bank, N.J.  
Continuation-in-part of Ser. No. 51,601, July 1, 1970, abandoned. This application Oct. 18, 1971, Ser. No. 190,076  
Int. Cl. B64c 27/22

U.S. Cl. 244-7 A

21 Claims



This invention is particularly concerned with an aircraft capable of both horizontal and vertical flight and at any required angle and supported by powered wing-rotors that are rotationally synchronized for stability while producing a desired vertical lift as the aircraft ascends and is propelled forward by means of auxiliary engines, and in addition, means are provided to convert said wing-rotors into stationary wing airfoils for normal horizontal flight at greater speed and reconversion to wing-rotors for vertical landing.

3,693,912

Patent Not Issued For This Number



3,693,913

## FLUID FLOW CONTROL DEVICE

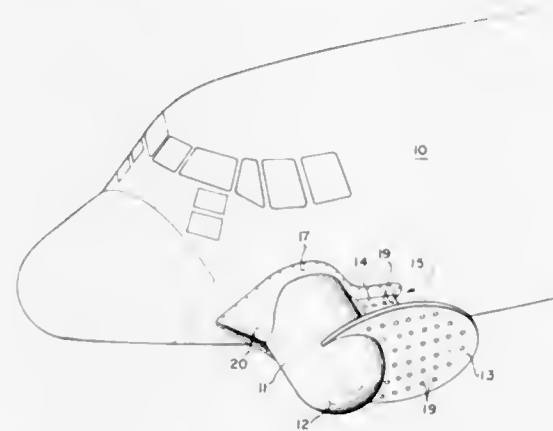
Edwin S. Barland, Sr.; Joseph J. Cornish, III, and Grady B. Henrich, all of Marietta, Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Aug. 24, 1970, Ser. No. 66,301

Int. Cl. B64c 7/00

U.S. Cl. 244-130

9 Claims



A fluid flow control device deals with undesirable aerodynamic characteristics associated with cylinder-plus-hemisphere shaped airborne radar housings when positioned in a generally lateral projecting location from an aircraft. The device consists of a rectangular plate mounted horizontally to the downstream side of the housing and extending radially from the fuselage and an end plate mounted perpendicular to the first plate. This end plate has an upstream edge that conforms to the cylindrical portion of the housing adjacent the outer end thereof and extends downstream a distance equal to about one and one-fourth times the diameter of the cylindrical housing. The width of this end plate is at least equal to the diameter of the cylindrical housing. Vortices that shed in the streamwise direction from the housing are entrained by the end plate/horizontal plate channel while the air flow over the hemispherical end of the housing is prevented from mixing with these shedded vortices resulting in substantially eliminating aircraft drag and buffeting. The plates contain perforations which serve to neutralize any destabilizing influences that may result due to the mounting of the device on the aircraft.

3,693,914

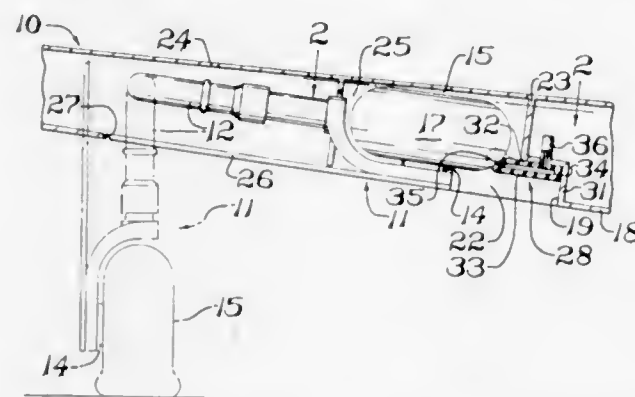
## INFLATABLE CLOSURE

Gerald L. May, 1871 Canton Road, Akron, Ohio  
Filed Oct. 19, 1970, Ser. No. 81,793

Int. Cl. B64c 25/16

U.S. Cl. 244-102 R

11 Claims



An inflatable cover of fabric reinforced resilient elastomeric material having overlapping, flat walls in the deflated condition. A portion of one of the walls is fixedly attached to a support and upon inflation of the cover the fabric reinforced walls expand and swell around the attached portion drawing the other portions of the walls toward the attached portion to an uncovered condition in opposition to the resiliency of the

elastomeric material which returns the walls to the covered flat condition upon deflation of the cover.

3,693,915

## INERTING SYSTEM FOR FUEL TANKS AND THE LIKE

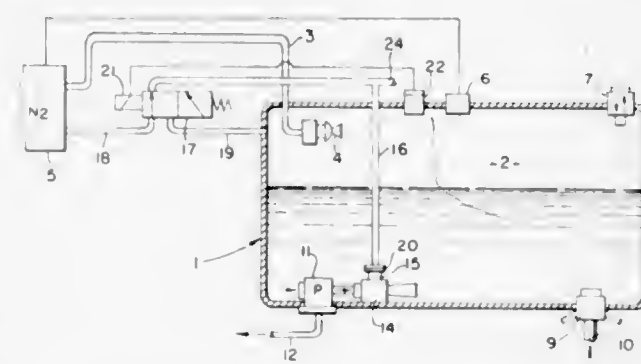
Jack M. Ulanovsky, Newport Beach, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jan. 28, 1971, Ser. No. 110,536

Int. Cl. B64d 37/00

U.S. Cl. 244-135 R

14 Claims



An inerting system which prevents fire and explosion within an aircraft fuel tank by maintaining the O<sub>2</sub> concentration in the vapor space thereof at less than 10 percent by volume which is below the flammable limit. This system is in addition to the known inerting system wherein an inert gas such as N<sub>2</sub> in the fuel tank vapor space dilutes and vents O<sub>2</sub> liberated from the fuel as during ascent of the aircraft and pressurizes the tank a during descent of the aircraft to prevent entry of air. The present inerting system contemplates scrubbing of the fuel in the tank during flight of the aircraft by circulating the fuel through a mixing nozzle having its suction port communicated with a source of supply of inert gas such as N<sub>2</sub> thus to liberate O<sub>2</sub> dissolved in the fuel for venting through the tank vent.

3,693,916

## VALVE MECHANISM FOR ICE REMOVAL SYSTEM

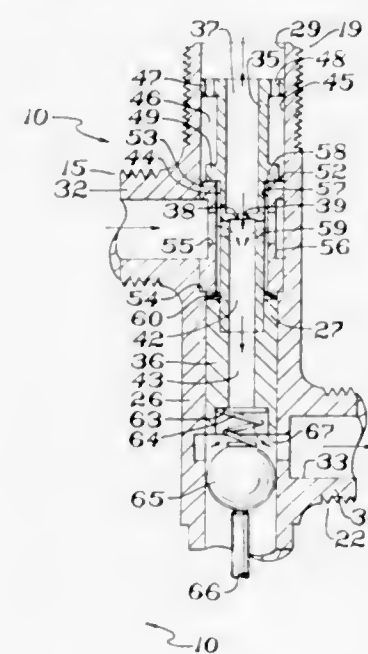
Paul G. Tritt, 4666 Roop Ave., Barberton, Ohio, and Michael J. Buza, 2371 Woodpark Road, Akron, Ohio

Filed Oct. 29, 1970, Ser. No. 85,086

Int. Cl. B64d 15/16

U.S. Cl. 244-134 A

7 Claims



A valve having inlet, outlet and exhaust ports for inflating and evacuating air from pneumatic ice removal tubes in which air is evacuated from the tubes through an exhaust port while

3,693,919

## CARGO HANDLING SYSTEM AUTOMATIC CENTER

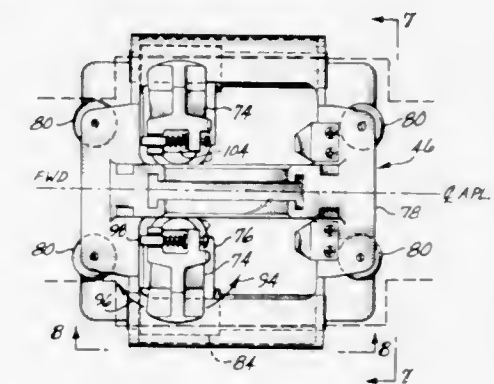
John Alberti, and Franz Weber, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 6, 1971, Ser. No. 140,773

Int. Cl. B61d 45/00

U.S. Cl. 248-119 R

7 Claims



A cargo handling system for carriers but specifically for aircraft incorporating an automatic guide and restraint device which is utilized in cooperation with a side manually adjustable fore/aft locking device with a slaved vertical restraint device.

3,693,920

## RETRACTABLE CARGO SECURING DEVICE

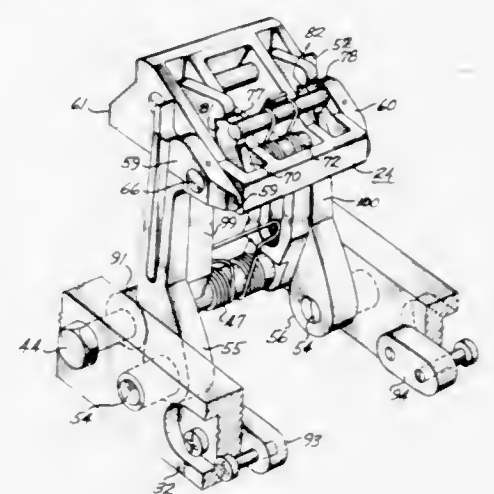
Robert D. Trautman, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 9, 1970, Ser. No. 96,393

Int. Cl. B65d 45/00; B61d 45/00

U.S. Cl. 248-119 R

5 Claims



A cargo securing device which can be positioned in a retracted position flush with an associated floor level and then raised to a cargo securing position. The device carries a cargo engaging lug member pivotally connected to two linking members which are swing mounted to the cargo securing device base frame.

3,693,921

## QUICK RELEASE MOUNTING APPARATUS

George J. Beaucher, Anaheim, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 26, 1970, Ser. No. 84,030

Int. Cl. A47g 29/00

U.S. Cl. 248-187

11 Claims

A quick release mounting apparatus for mounting a device, such as a TV camera, to a support which has a pair of laterally spaced upstanding members comprising: a base plate adapted to rest upon said support and having a pair of apertures for receiving the upstanding members; a plate adapted to slidably

a reduced amount of high pressure air from the inlet port is directed through an orifice to provide subambient pressure in the tubes in the deflated condition. High pressure air is rapidly injected into the tubes through the above-mentioned orifice supplemented by an additional valve opening provided by movement of a valve sleeve in response to closing of the exhaust port of the valve.

3,693,917

## PARACHUTES

Henri Collec, 92-Meudon-la-Forêt, France, assignor to Aerazur Constructions Aeronautiques Societe Anonyme, Issy-les-Moulineaux, France

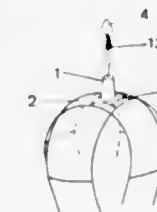
Filed Aug. 12, 1970, Ser. No. 63,225

Claims priority, application France, Aug. 12, 1969, 6927750

Int. Cl. B64d 17/68

U.S. Cl. 244-149

7 Claims



A container-stored parachute which comprises a tubular member consisting of a slightly porous material and a cable system to connect the extractor device with the canopy of the parachute, the tubular member and cable system constituting a protection device which, when inflated by air upon unfurling of the parachute, keeps away the extractor device so as to prevent it from damaging the canopy of the parachute.

3,693,918

## SUPPORT OR STAND FOR TREES

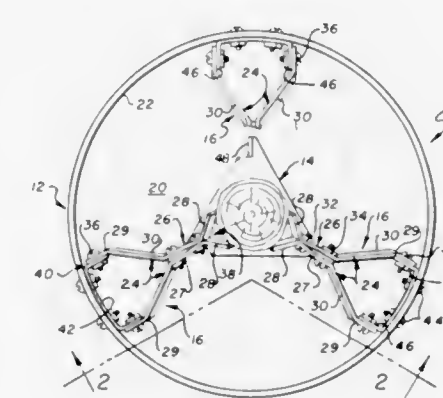
James E. Fisher; Jack L. Mitchell, and Gerald F. Wisdom, all of Sterling, Colo., assignors to Tiger Products, Inc., Sterling, Colo.

Continuation-in-part of Ser. No. 783,871, Dec. 16, 1968, abandoned. This application July 29, 1970, Ser. No. 59,162

Int. Cl. A47g 33/12

U.S. Cl. 248-46

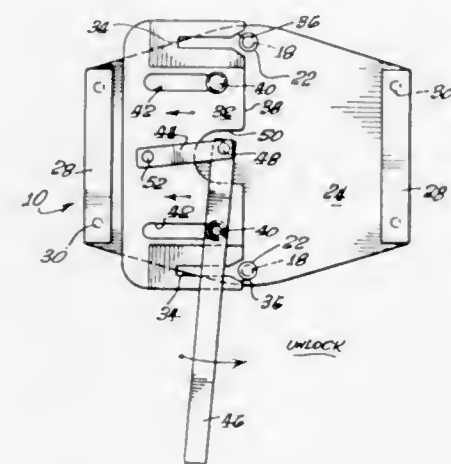
9 Claims



A tree support or stand of the general type employing a trunk watering container, a base member engaging the bottom of the tree trunk, trunk engaging jaws pivoted to the container, and pivoted links extending between the base member and the trunk engaging jaws, characterized by a construction in which the water in the container is distributed to provide optimum stability with minimum height, and economies of manufacture are effected through use of identical reversible and simplified parts which reduce costs of manufacturing equipment, such as dies, and reduction of scrap material and assembly time.



rest on the base plate; means for guiding fore and aft movements of the slidable plate on the base plate; the slidable plate having a pair of fore and aft laterally spaced slots for receiving the upstanding members and wedging with said members to



lock the base plate to the support when the slidable plate is slid in one direction and unlocking the base plate from the support when the slidable plate is slid in an opposite direction; and lever means pivoted to the slidable plate and the base plate for sliding the slidable plate in fore and aft directions.

3,693,922

## SUPPORT FOR ANTENNA DEVICE

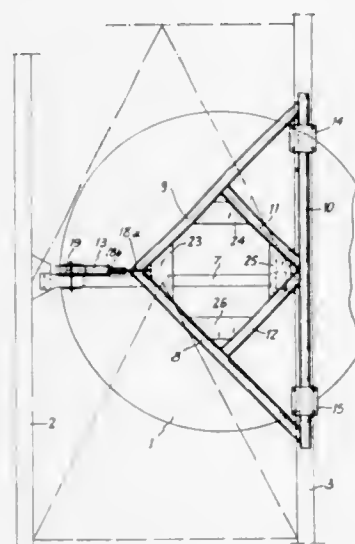
Michel M. F. Gueguen, 78 Saint-nom-la-Breteche, France

Filed March 2, 1970, Ser. No. 15,786

Int. Cl. E04h 12/08

U.S. Cl. 248—221

2 Claims



A support comprising a triangular frame pivotally mounted on a tower for supporting an antenna or reflector and means for locking said frame in an adjusted position.

3,693,923

## SUSPENSION DEVICE FOR A CAKE OF SOAP

Theodore A. Ayoub, 10 Lenox Ave., Pompton Lakes, N.J., and Alfred Ayoub, 91 Wilson Ave., Preakness, N.J.

Filed April 16, 1970, Ser. No. 29,182

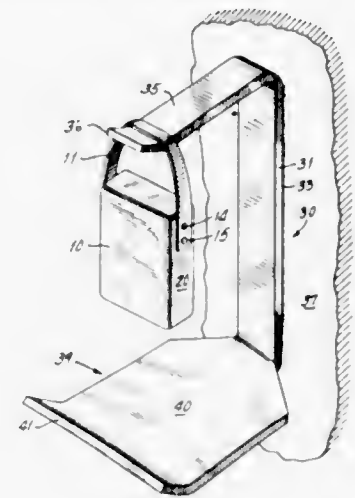
Int. Cl. F16m 13/02

U.S. Cl. 248—360

5 Claims

The present invention provides a suspension device for a cake of soap in the form of an elongated, flexible, polyethylene molded strip, which has pin engaging apertures at its outer ends and collars formed integrally therewith, and

pins or inserts of acrylic resin for engaging in said apertures and for insertion into the side faces of the soap cake for retaining said cake soap and suspension loop in relative non-rotational position; and a wall bracket of polymerized methylmethacrylate having an upright portion adapted to be adhe-



sively attached to a wall over a wash basin or the like, such wall bracket having an upper, outwardly projecting hook arm and a lower, outwardly projecting drip pan, such hook when the suspension loop is hung therefrom holding such soap cake over said drip pan, in air, and out of contact with a moisture or water collecting vessel or surface.

3,693,924

## PLATEN FOR VACUUM HOLDING OF SHEET MATERIAL

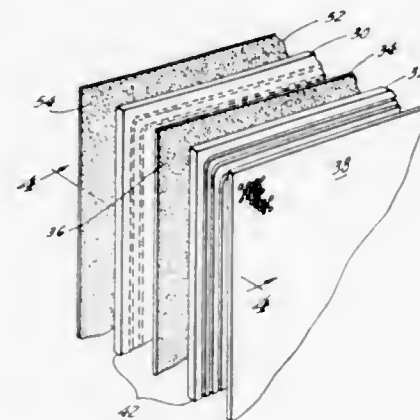
Delbert T. Blatherwick, 726 Camino Grove Ave., Arcadia, Calif.

Filed June 7, 1971, Ser. No. 150,388

Int. Cl. F16b 47/00; G03b 27/60

U.S. Cl. 248—363

6 Claims



A vacuum holding platen is constructed as a lamination comprised of a thin center aluminum sheet to each side of which is adhered a Masonite sheet, the outward face of which has been routed to provide desired channel patterns through which air may be exhausted by connection to ducts leading from an air exhausting pump. The routed Masonite on the side of the platen upon which the sheet material is to be held, is adhesively covered with a perforated sheet. The other Masonite sheet is similarly covered with an unperforated thin sheet of aluminum. All of the unperforated sheets are appropriately orificed to enable the channels to be selectively connected, depending upon the size of the film or other sheet material to be held by the platen, through a valve block, movably disposed on the back of the platen, to the air exhausting pump. The orificed metal sheets may be of aluminum and punched to provide perforations or passage orifices. The Masonite sheets are routed and all contacting surfaces of the sheets are coated with epoxy and compressed between granite blocks which are hydraulically separable to permit insertion in between them of

the sheets to be compressed and removal therefrom of the compressed platen.

3,693,925

## TILTING CHAIR MECHANISM

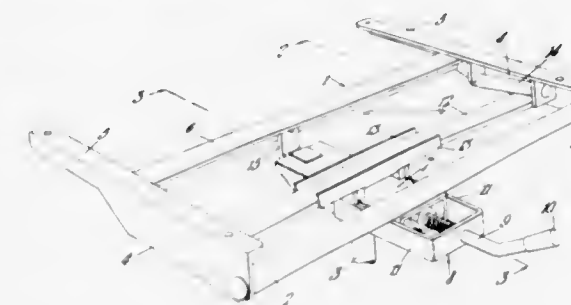
Daniel Weinstein, 29 Middleway, London NW. 11, England

Filed Nov. 4, 1970, Ser. No. 86,827

Int. Cl. B60n 1/02

U.S. Cl. 248—378

6 Claims



A tiltable chair mechanism in which a seat supporting portion of the chair frame is pivotable relative to the rest of the chair frame, the pivotal movement being cushioned by a leaf spring means acting between the seat supporting frame portion and the rest of the chair frame.

3,693,926

## DISPLAY STRUCTURE

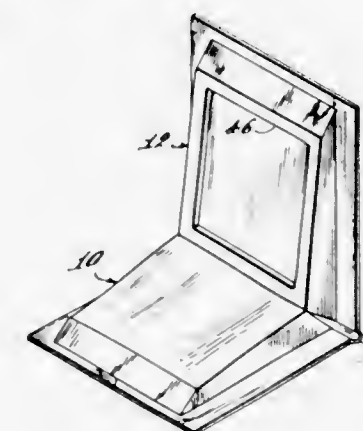
Frank L. Carter, Chicopee, Mass., assignor to Pioneer Packaging, Inc., Chicago, Ill.

Filed June 25, 1970, Ser. No. 49,860

Int. Cl. A47b 97/00

U.S. Cl. 248—460

3 Claims



A display structure of the type used to support and highlight merchandise with advertising and decorative material. The display structure is of generally L-shaped configuration and is constructed from a sheet of plastic material vacuum molded into a base portion, an upstanding back portion, and a hinge portion connecting the base and back portions. Adjacent the hinge portion, the base and back portions have formed therein frictional catch means interengageable to hold the base and back portions together in a L-shape. The base and back portions each have a central display surface and four peripheral side walls. Two of the side walls extend from the hinge portion and substantially touch when the base and back portions are fastened together; the remaining side walls terminate in an outwardly extending flange connecting with the hinge portion. The frictional catch means are formed on the two side walls extending from the hinge, with a pair of protuberances formed on one wall being frictionally received in a pair of recesses provided in the other wall. The protuberances and recesses have parallel lateral walls perpendicular to the hinge line which frictionally engage, the protuberances each being provided with a raised portion which fits behind the opposite side wall and latches the base and back portions together.

3,693,927

## RELEASE PLATE FOR A COLLAPSIBLE CULVERT FORM

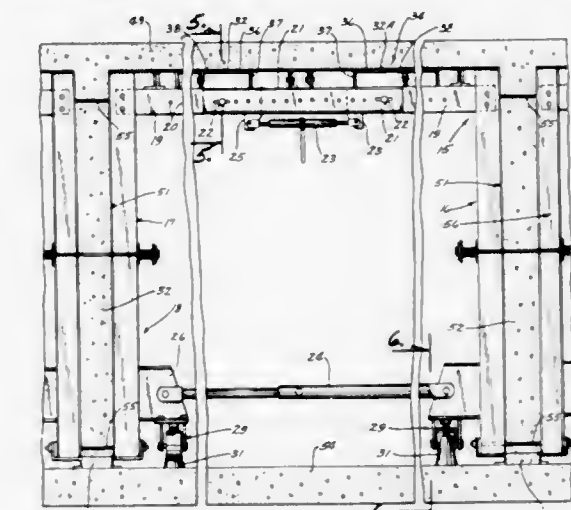
Ralph L. Jennings, Des Moines, Iowa, assignor to Economy Forms Corporation, Des Moines, Iowa

Filed Feb. 24, 1970, Ser. No. 13,678

Int. Cl. B28b 7/30

U.S. Cl. 249—11

2 Claims



The form is used in the construction of box culverts or in buildings having linearly aligned rooms to provide for a progressive forming of the room side walls and ceiling. A pair of frame units are connected together for relative expandable and contractible movement and for vertical movement. A metal form assembly for laying the ceiling is supported on each frame unit, a first one of which assemblies carries a release plate that extends between the two form assemblies with its upper surface in the plane of the top surfaces of the form assemblies and its free end in abutting engagement with the second one of the form assemblies when the frame units are in their expanded positions. Coacting wedge members on the frame units and/or on the form assemblies facilitate the movement of the release plate to a position overlying the second one of the form assemblies when the frame units are in their contracted positions.

3,693,928

## CONCRETE WALL FORM WITH ADJUSTABLE BULKHEAD

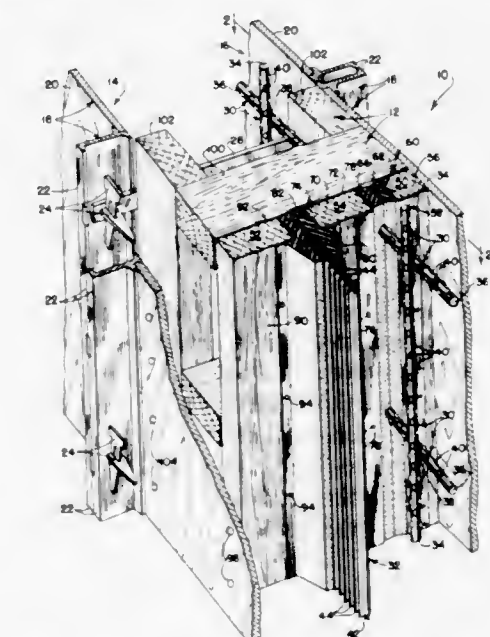
James C. Shoemaker, Hampshire, Ill., assignor to Synions Corporation, Des Plaines, Ill.

Filed Nov. 4, 1970, Ser. No. 86,729

Int. Cl. E04g 11/38

U.S. Cl. 249—18

6 Claims



A concrete wall form having an adjustable bulkhead in which a variety of bulkhead components cooperate with one



another in sealing relationship to exclude the passage of concrete past any reinforcing rods, water seals, conduits or other residual concrete-embedded members which traverse or bridge the interfacial surfaces between adjacent concrete pourings.

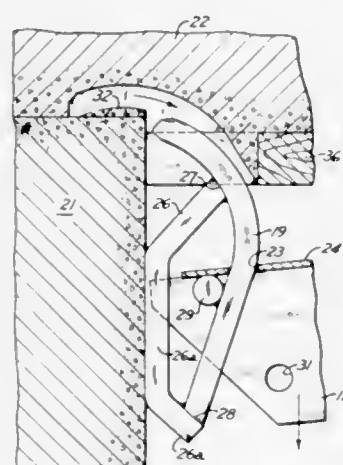
3,693,929

# HANGER DEVICE USEFUL IN FORMING CONCRETE STRUCTURAL SLABS

Sidney L. Martin, 6520 S.W. 79th Court, Miami, Fla.  
Continuation-in-part of Ser. No. 850,735, Aug. 18, 1969,  
abandoned. This application Jan. 18, 1971, Ser. No. 107,059  
Int. Cl. E04g 11/38

U.S. Cl. 249—25

5 Claims



A hanger device useful in conjunction with temporary decking or forms for pouring concrete structural slabs, such as roofs or floors, is constructed of a channel bearing a curved, pivoting tongue-shaped member. The channel is adapted to hold a joist for supporting the temporary decks on which the concrete is poured. The tongue-shaped member protrudes upwardly through a slot in the top of the channel and rests at its downwardly curved end on a preformed support, such as a joist or beam. Rotational movement of the tongue-shaped member is prevented by a locking pin cooperating therewith. In forming the slab, the poured concrete covers the protruding portion of the tongue-shaped member, the preformed support and the form decking. After hardening of the concrete, the hanger device carrying the supporting joist is readily removed by withdrawing the locking pin and applying a downward force on the channel in the vicinity of the tongue shaped member, resulting in a slight vertical displacement of the tongue-shaped member from the concrete contiguous thereto and rotation thereof out of the concrete without binding. The device may then be reused in forming another slab.

3,693,930

# PRE-CAST CONCRETE PANELS

Norman Wakefield, Leatherhead; Stuart John Alexander, London; James Francis Morrish, Gerrards Cross; William Beck, Warlingham; Raymond Sturgis Groves, Fetcham, and Michael J. Harvey, Orpington, all of England, assignors to Wates Limited, London, England

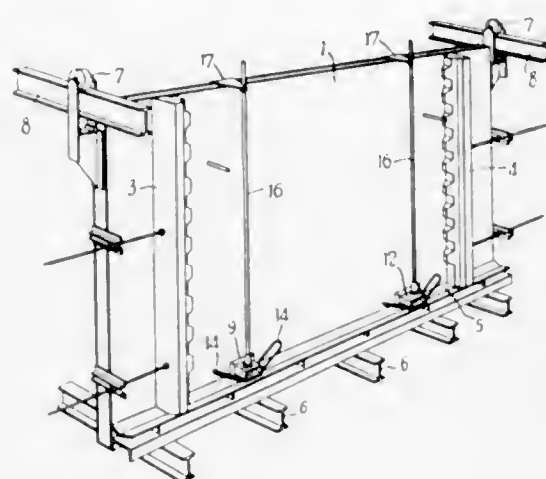
Division of Ser. No. 799,164, Feb. 14, 1969, Pat. No. 3,566,560. This application Sept. 8, 1970, Ser. No. 70,436  
Int. Cl. B22d 19/04

U.S. Cl. 249—83

7 Claims

Two similar, rectangular, pre-cast, concrete, vertical wall panels disposed one above the other are joined together by a joint including a horizontal plate and a vertical attachment bar. The plate is the bottom wall of a short tube extending widthwise of the lower horizontal edge of the upper panel and

is anchored in this panel by means of two oblique anchoring members fixed to the plate and embedded in the panel. The bar is embedded in the lower panel and its upper end zone



projects through a central aperture in the plate. A nut screwed on this zone bears downwardly on the plate via a radially slotted washer.

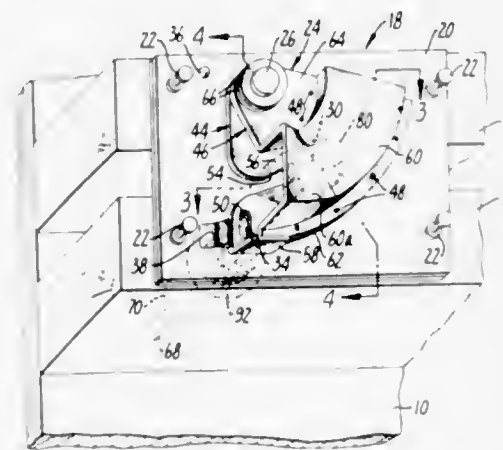
3,693,931

# APPARATUS FOR CONSTRUCTING CONCRETE FORMS

Jack A. Holt, San Bruno, Calif., assignor to Burke Concrete Accessories, Inc., Burlingame, Calif.  
Continuation-in-part of Ser. No. 683,558, Nov. 16, 1967,  
abandoned. This application April 30, 1969, Ser. No. 824,359  
Int. Cl. E04g 17/08

U.S. Cl. 249—219 W

3 Claims



An apparatus for constructing a concrete form comprised of a pair of form panels arranged in opposed spaced relationship and secured against movement relative to each other by tie rods extending therebetween. The apparatus comprises conical grouting cores secured to the panels independently of the rods to slidably receive the rods and permit their extension through the panels from the outer side of one of the panels, and waler brackets mounted on each of the panels for selective gripping engagement with the ends of the rods to prevent movement of the panels toward and away from each other. The brackets are provided with hinged jaw-like elements which are movable to effect selective engagement and disengagement of the brackets with the rods. When disengaged, these elements permit free slidable movement of the rods relative to the brackets. The method is directed to the construction of a concrete form by a "feed through system" wherein tie rods are fed through a pair of opposed panels and grouting cores secured thereto from the outer side of one of the panels. In the method, once the rods are fed through the panels, they are secured against axial movement relative thereto to maintain the panels in opposed spaced relationship.

In an alternative embodiment, the apparatus is concerned with an arrangement wherein bushing inserts are secured to the panels in place of the conical grouting cores and cores or

other sealing elements carried by the tie rods are cooperable with these inserts.

3,693,932

# COMPRESSIBLE TUBE VALVE

William A. Blohm, 34 Azalea Court, Plainview, N.Y.  
Filed Dec. 9, 1970, Ser. No. 96,368  
Int. Cl. F16k 7/06

U.S. Cl. 251—6

1 Claim U.S. Cl. 251—305

8 Claims



A valve for pressurized fluent material incorporating a safety shield for the operator. A piece of compressible tubing is mounted in a box safety shield which is open on one side. A roller is mounted on an arm which is operated by a handle mounted on the protected side of the safety shield. The roller is positioned slightly off center in the closed position so that it is locked in closed position by pressure within said tubing.

3,693,933

# Patent Not Issued For This Number

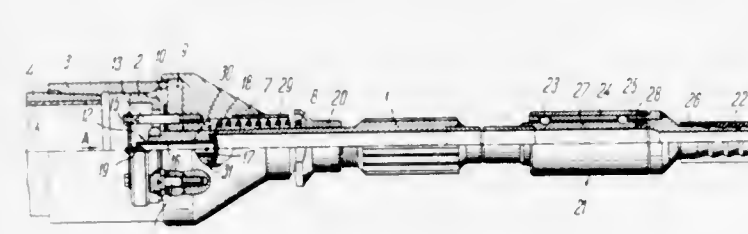
3,693,934

# VALVE MECHANISM

Mansur Abdulloevich Zalyaliev, ulitsa Shevchenko, 53, kv. 43; Khalim Akhmetovich Asfandiyarov, ulitsa Tukaeva, 73a, kv. 48; Yakov Fedorovich Gubarev, ulitsa Gogolya, 51, kv. 8, and Filipp Grigorievich Arzamastsev, ulitsa Shevchenko, 55, kv. 48, all of Bugulma Tatarskoi ASSR, U.S.S.R.  
Filed May 1, 1970, Ser. No. 33,740  
Int. Cl. F16l 29/00

U.S. Cl. 251—149.5

3 Claims



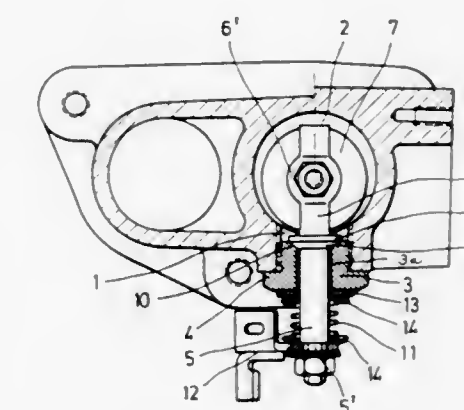
A valve mechanism for supplying pressurized gas into a pipe and controlling pressure therein in the process of vitrification thereof, used preferably at oil extraction, comprising a pipe branch being connected to a hose for supplying pressurized gas, the pipe branch having a member for a connection to the pipe; a spring loaded cap seated on the pipe branch, the cap sealing the joint of the pipe branch to the pipe, and a valve shutting off the discharge of the pressurized gas from the device when disconnecting from the pipe as well as a pivot mechanism arranged between the pipe branch and the hose, the pivot mechanism preventing the twisting of the hose.

3,693,935

# THROTTLE VALVE MOUNTING FOR EXHAUST GAS LINE

Peter Thauer, Neuhaus, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany  
Filed Jan. 13, 1971, Ser. No. 97,415  
Claims priority, application Germany, Feb. 4, 1970, P 20 04 990.5

Int. Cl. F16k 1/22



An exhaust pipe for an internal combustion engine is formed through its side-wall with an internally threaded opening for reception of an externally threaded bearing having a bore therethrough in which the throttle valve shaft is rotatably mounted with clearance, with the throttle valve carried at its inner end within the exhaust pipe and with an operating lever at its outer end. The shaft is formed with a radially projecting collar having an outwardly converging conical surface and the shaft is spring loaded to urge such surface into flush sealing engagement with a conformingly shaped conical bearing face of the bearing, which functions both to seal the bore and to center the valve shaft therein.

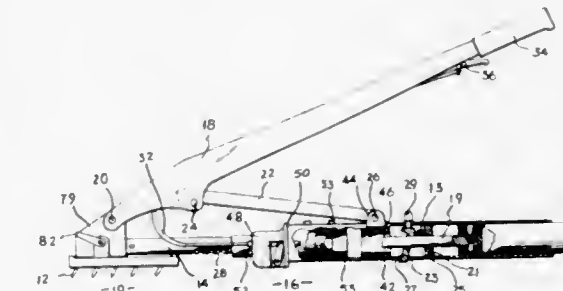
3,693,936

# CARPET STRETCHER IMPROVEMENTS

Buford L. Payson, Garden Grove, Calif., assignor to Robert E. Strauss, Orange, Calif., a part interest  
Filed Aug. 23, 1971, Ser. No. 173,779  
Int. Cl. A47g 27/04

U.S. Cl. 254—62

12 Claims



A hand powered carpet stretcher is provided with the improvement of ratchet means to permit locking of the stretcher head at any of a plurality of extensions with remote actuation means to lock the ratchet so that the stretcher can be operated with a single handed motion. In one of the embodiments, the ratchet lock means is automatically engaged or disengaged upon movement of the handle of the stretcher.



3,693,937

## LOAD LIFTING MECHANISM

Shinichiro Yamazaki, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan

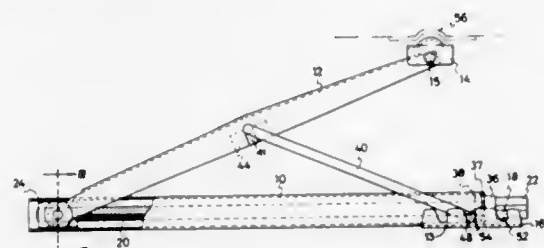
Filed Jan. 12, 1970, Ser. No. 2,319

Claims priority, application Japan, Jan. 17, 1969, 44/004638

Int. Cl. B66f 33/00

U.S. Cl. 254—126

6 Claims



A load lifting jack comprising a support member, a screw shaft rotatably located within the support member, a lifting arm supported at the substantially middle portion by a link and connected at its end to a threaded nut engaged with the screw, the nut being adapted to be displaced along the length of the screw shaft in order to raise or lower the lifting arm, the link being pivotally connected to the lifting arm at one end and having means for engaging the other end with any selected one of a plurality of recesses provided on the support member so that engagement thereof easily and quickly locates the lifting arm in its desired position. A rotatable jack base may be provided for lifting inclined loads to prevent undesired lateral movement of the load lifting jack.

3,693,938

## VEHICLE LIFT

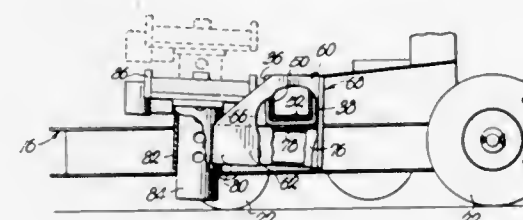
Frank D. Freudenthal, and Gary L. Kincaid, both of St. Joseph, Mo., assignors to Gray Manufacturing Company, Inc., St. Joseph, Mo.

Filed April 21, 1971, Ser. No. 135,985

Int. Cl. B66f 3/00; B60p 1/00

U.S. Cl. 254—134

9 Claims



A vehicle lift having a shiftable, vehicle elevating framework, the framework including a cross frame, there being means carried by the cross frame for engaging the vehicle to be lifted, the means including extensible arms telescoped within each end of the cross frame, and laterally extending reach pieces connected to the outer ends of each of the arms by an L-shaped connecting bracket whereby to position the reach pieces below the outer end of the corresponding arm, the bracket being configured in such a manner as to permit full retraction of the reach pieces within the confines of the cross frame. Each of the reach pieces carries a tubular socket at its free end, the sockets each carrying a vehicle engaging saddle assembly which is adjustable in a vertical path and swingable in a horizontal plane to permit maximum utilization of the saddle assemblies to engage the vehicle and to present an unobstructed space therebetween when the same are used.

3,693,939

## TENSION CONTROL SYSTEM

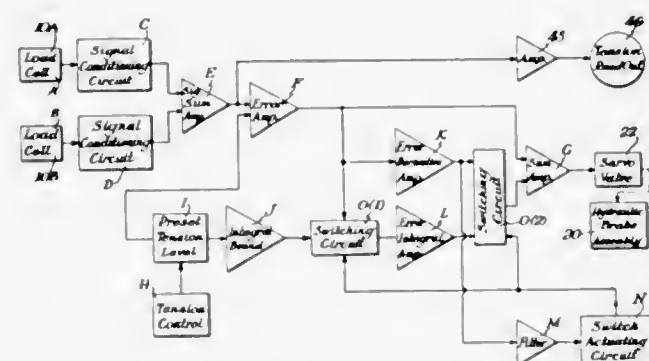
Wilson C. Buckson, Wilmington, Del., assignor to All American Industries, Inc., Wilmington, Del.

Filed April 22, 1971, Ser. No. 136,475

Int. Cl. B66d 1/48

U.S. Cl. 254—172

7 Claims



The brake on an energy absorbing winch is controlled to maintain a predetermined tension in its line during payout by an electronic control circuit having a summing amplifier which operates the brake in response to several signals in various combinations. A signal corresponding to the deviation between the actual line tension and the preset tension is generated by a differential amplifier having inputs of actual and desired tension. Preliminarily and during initial payout, a derivative amplifier modulates the deviation and applies a corrective signal to the summing amplifier, which corresponds to the derivative of the tension deviation with respect to time. The derivative corrective signal immediately releases the brake on capture and initiation of payout. A switch removes the derivative signal from the summing amplifier as soon as the derivative changes polarity from negative to positive, and connects an error integral amplifier between the differential amplifier and the summing amplifier to stably control the braking pressure to obtain the predetermined tension. The standard source binds the error integral amplifier to the predetermined tension before the error integral amplifier is switched into the control circuit. The switching is accomplished by a modified Schmidt-Trigger, which is originally in the neutral state. The derivative amplifier is operatively connected to the Schmidt-Trigger circuit. When the derivative of the deviation originally goes negative, it cocks the trigger circuit. The trigger is actuated when the derivative becomes slightly positive to operate a relay, which disconnects the deviation derivative amplifier from the summing amplifier and replaces it by the deviation integral amplifier. At the end of the arrestment when the actual drag load is below the predetermined tension, the integral amplifier is driven to saturation which applies the full brake pressure during reeling in of the line.

3,693,940

## ENERGY ABSORBING BARRIER POST ASSEMBLY

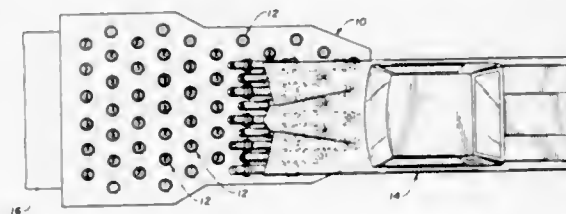
Giles A. Kendall, Burbank, and Harish K. Bhutani, Downey, both of Calif., assignors to Menasco Manufacturing Company, Burbank, Calif.

Filed Dec. 8, 1970, Ser. No. 96,103

Int. Cl. E01f 13/00

U.S. Cl. 256—1

21 Claims



A barrier post which is angularly movable at a predetermined angle from vertical upon impact at any angle, the point

of the angular movement is damped by movement of a viscous material past a piston within a cylinder. The exterior surface of the post is formed to frictionally restrain the impacting object against upper sliding movement along the post. A group of such posts are to be employed to effect complete absorption of the impact force.

tional flattening device upstream of a product recuperating device.

3,693,943

## SHAKER

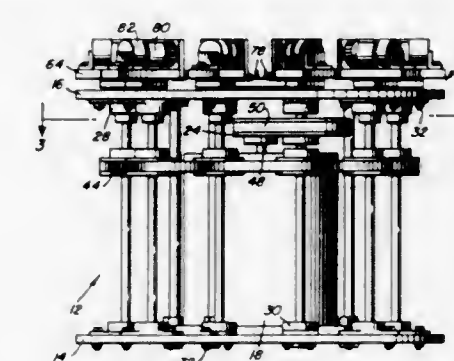
Rudolph P. Vester, 23 Carlisia Drive, Jeffersonville, Ind.

Filed Jan. 15, 1971, Ser. No. 106,719

Int. Cl. B01f 11/00

U.S. Cl. 259—56

12 Claims



## ELECTROMAGNETICALLY PROPELLED STIRRER AND SHAKER

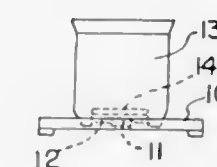
Jan S. Suchy, 14435 Superior Road, Cleveland Heights, Ohio

Filed Aug. 23, 1971, Ser. No. 173,925

Int. Cl. B01f 9/00

U.S. Cl. 259—1

5 Claims



A motorless laboratory magnetic stirrer is composed from two fixed electromagnets whose magnetic poles lie in a common plane and are perpendicular to each other. Both electromagnets are supplied by alternating currents of adjustable, but equal, low frequency mutually phase-shifted by 90°, which are produced by a controlled switching of the network current. The angular velocity of the rotating magnetic field produced in this way equals the frequency of the supplying current and acts to rotate a magnetic rod in a liquid.

In a similar way a magnetically propelled shaker is constructed. Two permanent magnets perpendicular to each other are fixed to a tray and placed close to the electromagnets mentioned above. The tray is attached to a base in a manner which permits its free movement in the plane of the tray without rotation of the tray. The tray then exercises an orbital movement and acts to shake a liquid in a vessel placed on the tray. To obtain higher force for shaking, the principles of attracting two permanent magnets by stationary electromagnets is replaced by solenoids, attracting ferromagnetic cores.

A shaker for mixing or blending the components of fluent mixtures. The shaker includes a base defining a center about which a plurality of shafts are circumferentially generally evenly spaced and each of the shafts is journaled from the base and includes an eccentric portion journaled in a corresponding holder for materials to be blended or mixed with each holder anchored to the base by means of an expansion spring anchored to the corresponding holder at a point spaced laterally of the associated eccentric portion. Further, the eccentric portions of the various shafts are disposed relative to each other and the base whereby the imbalance forces acting thereon by the holder all act to cancel out each other during rotation of the shafts at the same angular speed.

3,693,944

## GRAIN STIRRING APPARATUS

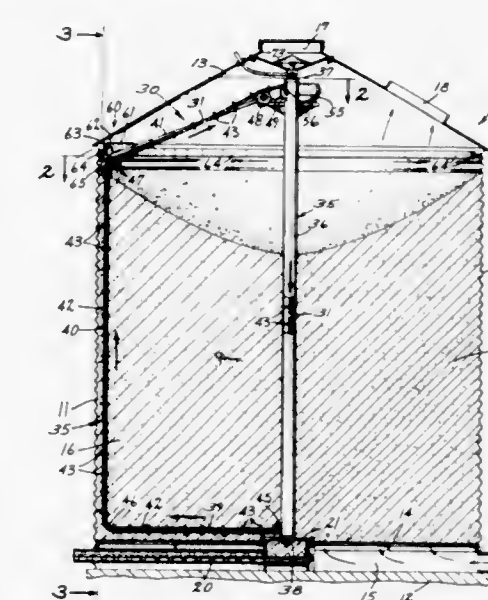
David M. Murphy, RFD #4, Mason City, Iowa

Filed Aug. 13, 1971, Ser. No. 171,421

Int. Cl. B01f 5/26

U.S. Cl. 259—114

7 Claims



## MIXING PLANT FOR PREPARING MATERIALS COMPRISING COATED ELEMENTS

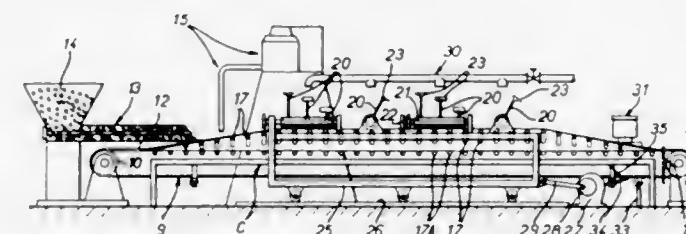
Pierre Foucault, P.O. 12, Avenue des Vesinet, 78 Croissy-sur-Seine, France

Filed Aug. 23, 1971, Ser. No. 174,107

Int. Cl. B01f 15/00

U.S. Cl. 259—2

10 Claims



A continuously operated mixing plant for making coated elements, comprising an endless belt passing round end rollers with a substantially horizontal upper run, part of which is formed into a trough by shaping means, and which passes in succession in vertical alignment with a feeder for granulated elements, a binder, a battery of beaters and at least one op-

A grain stirring device includes an endless flexible conveyor which is mounted on a supporting structure for movements about a circuitous path and for rotation of the circuitous path on a vertical axis within a circular grain drying bin and power means is provided to impart the circuitous and rotational movements upon proper energization of the power means.



3,693,945

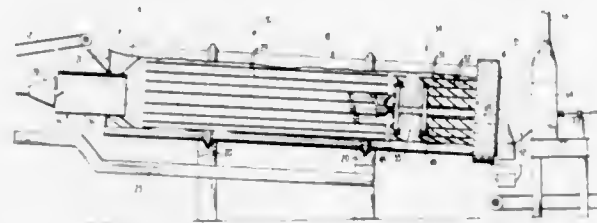
## ASPHALT PREPARATION PLANT

James Donald Brock, Chattanooga, Tenn., assignor to CMI Corporation, Oklahoma City, Okla.  
Continuation-in-part of Ser. No. 41,145, May 25, 1970, Pat. No. 3,614,071. This application Jan. 20, 1971, Ser. No. 108,024

Int. Cl. B28c 5/06

U.S. Cl. 259—146

22 Claims



An asphalt plant wherein heated air flows through an aggregate dryer and the dust from the aggregate in the dryer is carried in a flow of air from the dryer. The flow of air is subsequently sprayed with bituminous liquid so that dust is combined with the liquid and removed from the flow of air.

3,693,946

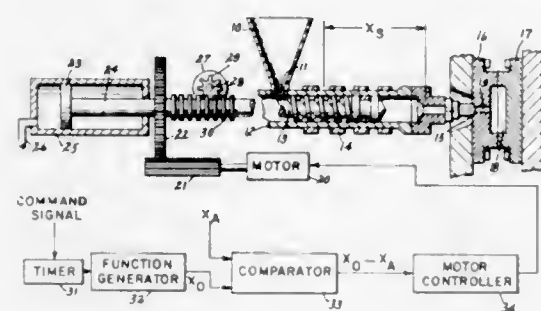
## PLASTICATION CONTROL FOR INJECTION MOLDING MACHINES

Herbert E. Merritt, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio  
Filed May 10, 1971, Ser. No. 141,535

Int. Cl. B29f 3/02

U.S. Cl. 259—191

5 Claims



A system for continuously controlling the plastication time and shot size of an injection molding machine to predetermined limits and along a predetermined path of screw axial position versus plastication time. The system includes means for providing a schedule of desired screw positions versus plastication time, a direct indication of actual screw positions, and a comparator to compare the actual and desired screw position for any given plastication time and to provide an error signal representative of the difference between the desired and actual screw positions to control the motor which rotates the screw. The control system also stops the rotation of the screw when the desired shot size is achieved.

3,693,947

## CARBURETTOR

Kenji Masaki, Yokosuka, and Sinzo Kato, Tokyo, both of Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan  
Filed Sept. 3, 1970, Ser. No. 69,392

Claims priority, application Japan, Sept. 9, 1969, 44/71375

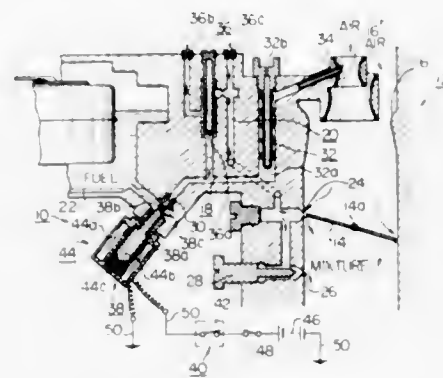
Int. Cl. F02m 1/10

U.S. Cl. 261—39 B

2 Claims

A mixture supply control system for an internal combustion engine of a motor vehicle, comprising valve means for controlling the effective area of the main fuel jet of the main mix-

ture circuit, and temperature sensing means for controlling the operation of the valve means in response to the temperature of the engine. The mixture supply control system supplies



to the engine an appropriate amount of enriched mixture for the initial cold engine and subsequent warming-up operations so as to improve the drivability of the vehicle.

3,693,948

## BUBBLE CAPS FOR BUBBLE COLUMNS

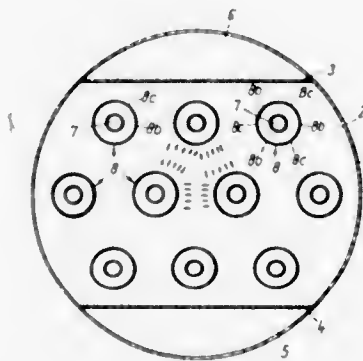
Hans-Joachim Kloss, Hilden, Germany, assignor to Julius Montz GmbH, Hilden, Germany  
Filed April 2, 1970, Ser. No. 29,347

Claims priority, application Germany, April 5, 1969, P 19 17 536.1

Int. Cl. B01d 3/20

U.S. Cl. 261—114 A

12 Claims



Bubble cap tray for bubble cap columns, comprising a plurality of bubble caps, each bubble cap having a top and a skirt extending downwardly from the top, openings for discharge of gas through the bubble cap at spaced intervals along the skirt, dividing the skirt into gas discharge openings and closed areas intermediate with the gas discharge openings, the openings of each cap confronting closed areas of the adjacent caps, so that gas streams issuing from the cap openings are not directed against one another.

3,693,949

## Patent Not Issued For This Number

3,693,950

## DISCHARGE MECHANISM FOR A WALKING BEAM FURNACE

Albert T. Enk, Toledo, Ohio, assignor to Midland-Ross Corporation, Toledo, Ohio  
Filed Dec. 17, 1970, Ser. No. 99,068

Int. Cl. F27d 3/00

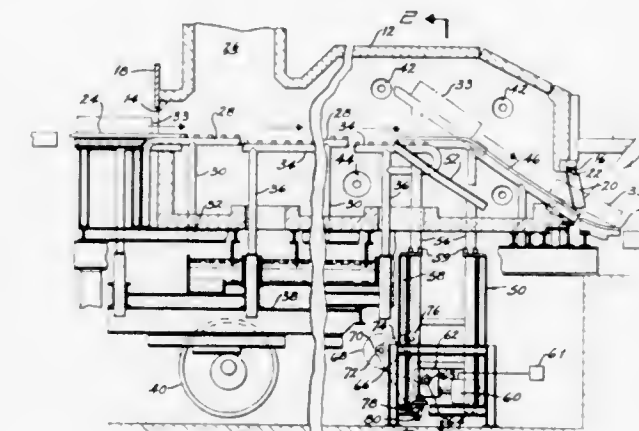
U.S. Cl. 263—6 A

4 Claims

A discharge mechanism is provided for a furnace having means to convey work therethrough wherein the work is removed from the furnace by contact with a supporting

member having an inclined plane. An example of such a furnace is a walking beam furnace wherein the end portion of the stationary rails of the walking beam furnace is inclined

are secured to one drive arrangement while the segments in the outer row are secured to another but similar drive arrangement. The two drive arrangements are controlled for moving



3,693,951

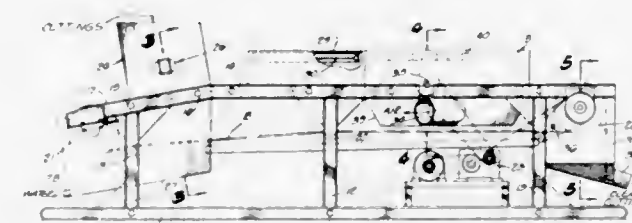
## PROCESS AND APPARATUS FOR THE TREATMENT OF WELL CUTTINGS

Charles P. Lawhon, Houston; Kenneth O. Taylor, Pasadena, both of Tex., and Jerry A. Brock, Commerce, Calif., assignors to NL Industries, Inc., New York, N.Y.  
Filed Dec. 30, 1970, Ser. No. 102,630

Int. Cl. F27b 9/24

U.S. Cl. 263—8 R

8 Claims



A method and apparatus for the treatment of well cuttings especially adapted for offshore use provides a conveyor belt moving the cuttings through a preheater for partial drying and then to a high-intensity infrared heating chamber in which all volatile material is expelled from the cuttings at a surface temperature higher than the combustion point of petroleum, so that non-polluting, oil-free cuttings are discharged.

3,693,952

## ADJUSTABLE IMPACT CASING FOR A SHAFT FURNACE

Gunter Schwerdtfeger, Falkensteinstr. 148, 42 Oberhausen Rhineland, and Bruno Kammerling, Rossbachstr. 38, 42 Oberhausen-Sterkrade, both of Germany  
Filed May 17, 1971, Ser. No. 144,978

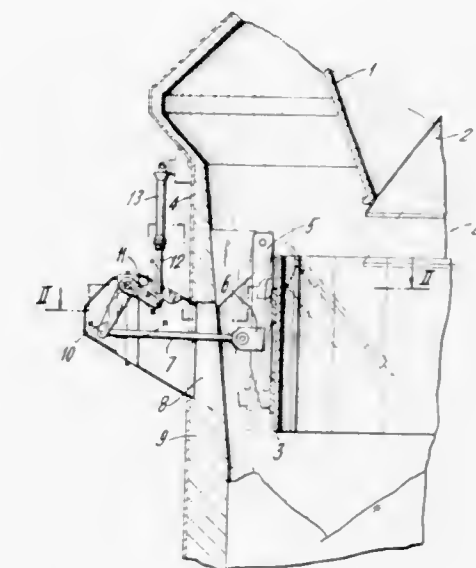
Claims priority, application Germany, May 16, 1970, P 20 24 190.1

Int. Cl. F27b 1/12

U.S. Cl. 263—29

6 Claims

An adjustable impact casing for use in a shaft furnace is formed of a plurality of upwardly extending segments. The segments are arranged into an inner circular row enclosed by an outer circular row. In each row, the segments are spaced angularly apart and are offset to the segments in the other row with their upwardly extending edges arranged in overlapping and substantially contacting relationship. The segments are pivotally supported about axes arranged transversely of the upright axis of the casing and the segments in the inner row



the segments so that a time delay is provided between the movement of the segments in the inner row and the movement of the segments in the outer row.

3,693,953

## APPARATUS AND METHOD OF FORMING A LIQUID CURTAIN AND THERMAL GRADIENT CONTROL SYSTEM

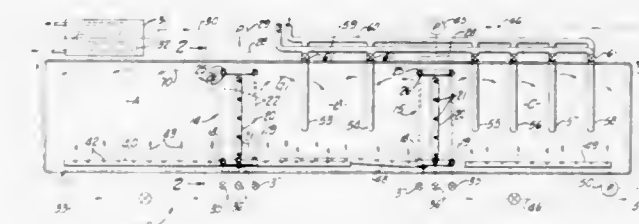
George H. Michel, Glendora, Calif., assignor to Armolite Lens Company, Inc., Burbank, Calif.

Filed May 27, 1971, Ser. No. 147,509

Int. Cl. F27d 23/00

U.S. Cl. 263—50

42 Claims



Apparatus and method of forming a liquid curtain and of utilizing the same to segregate a body of fluid into distinct zones and utilize the same to provide a thermal gradient control system. Items undergoing processing can be conveyed in succession from zone to zone through the liquid curtains without interfering with the integrity of the thermal gradient. In one typical embodiment the chamber comprises a long tank of liquid portions of which are withdrawn from one edge of the curtains and returned under pressure to rows of jets along curtain edges remote from the first mentioned edge. The liquid curtains provide simple, highly effective means for isolating zones of the liquid from one another and permitting these zones to be maintained at different desired temperatures while in use to process items conveyed therethrough. The liquid may be readily maintained at different temperature gradients of both a linear and non-linear nature by appropriate use of the invention principles.



3,693,954

## COOLING BED

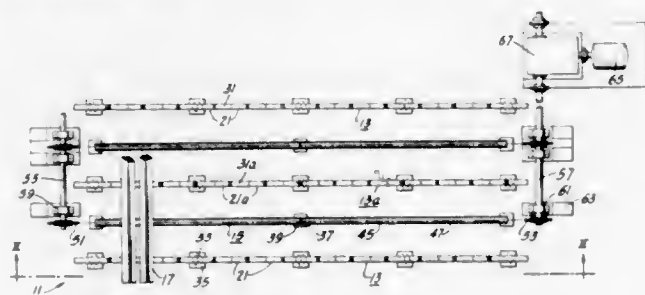
John W. Toperzer; Shibendra P. Neogi, both of Pittsburgh, and Dale K. Beachy, Finleyville, all of Pa., assignors to Koppers Company Inc.

Filed April 5, 1971, Ser. No. 131,179

Int. Cl. C21d 1/00

U.S. Cl. 266—2 R

10 Claims



A plurality of bed rails are disposed in spaced apart, horizontal, parallel arrangement and each includes a plurality of regularly arranged cooling bed contours on which elongate members rest while cooling. A plurality of power operated dogs are disposed between adjacent bed rails and the dogs engage the elongate members and move them along the contours of the bed rails, turning the members over.

3,693,955

## COMPONENT ANNEALING BASE

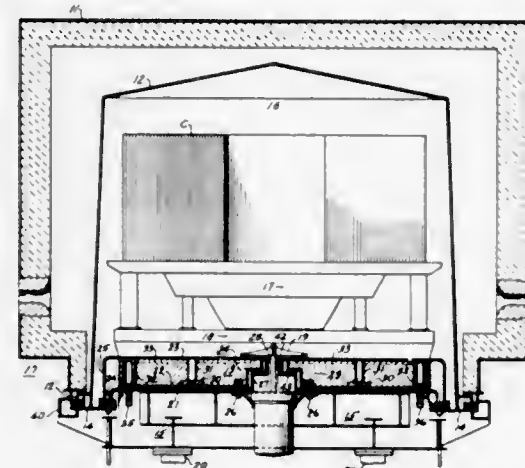
Herbert Wald; Harold K. Young, and William O. Blanch, all of Baltimore, Md., assignors to Bethlehem Steel Corporation

Filed March 15, 1971, Ser. No. 124,090

Int. Cl. C21d 1/06

U.S. Cl. 266—5 B

10 Claims



Apparatus for supporting a charge in a high temperature annealing furnace which comprises a plurality of components arranged in combination for easy replacement of any component or the entire assembly. The apparatus includes a refractory tray which is sealed from the gaseous atmosphere of the heating chamber by a unique arrangement of the component parts of the base assembly including separable top and bottom plates and a compartmented seal trough.

3,693,956

## CHARGING DEVICE FOR A METALLURGICAL FURNACE

Peter Hendrik Nieboer, Kapellen/Moers, Germany, assignor to Demag Aktiengesellschaft, Duisburg, Germany

Filed May 1, 1970, Ser. No. 33,541

Claims priority, application Germany, Sept. 5, 1969, P 19 45 132.2

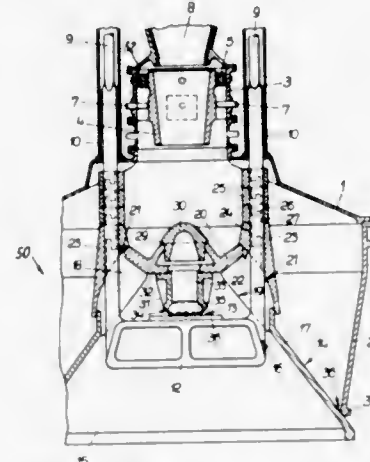
Int. Cl. F27b 11/12

U.S. Cl. 266—27

9 Claims

A charging device for a metallurgical furnace includes a hopper and bell assembly which are positionable in a furnace head. The hopper is pivotally mounted below a storage bin

and it may be oriented by push rods to drop the charged material in any desired direction. A distributor bell is mounted within the furnace head on supporting rods in a position such that the outer periphery thereof may be engaged with a top pan portion of the furnace to provide a seal for preventing the further downflow of the charging material but not for the purpose of providing a pressure gas seal. A feature of the construction is the suspension of the bell which is by two suspen-



sion rods which pass through side openings in the distributor bell and which connect to a central supporting bridge extending therebetween. The bridge has a universal pivotal connection between the bridges and the distributor bell. Universal pivotal movement is permitted by the bell on the suspension rods and the passage of the rods through the bell walls is effected in the area of a spherical projecting portion of the bell having a spherical outer generating surface which may slide within a generating surface of contoured flow bodies which are arranged around the supporting rods or coverings.

3,693,957

Patent Not Issued For This Number

3,693,958

Patent Not Issued For This Number

3,693,959

## COLD TRAPS FOR LIQUID METAL

Ronald Swinhoe, Knutsford, and Allan Norman Hamer, Culcheth, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

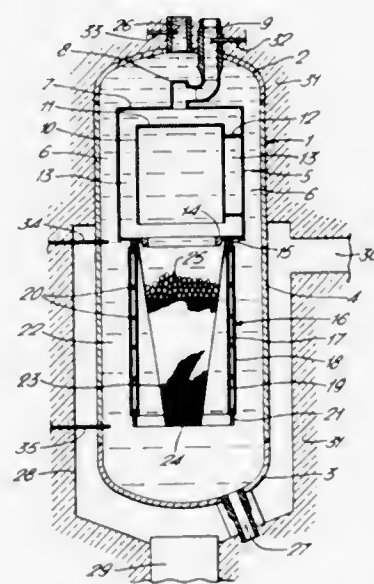
Filed Dec. 9, 1970, Ser. No. 96,436

Claims priority, application Great Britain, Dec. 18, 1969, 61,826/69

Int. Cl. C22b 9/02

U.S. Cl. 266—37

2 Claims



A cold trap for liquid metal comprises a vessel, a cylindrical duct member being arranged concentrically in the vessel.

Flow of liquid metal from inlet into the vessel is downwardly along the annular interspace defined between the duct member and the inner wall of the vessel and then into the lower end of the vessel and upwardly through the duct member. The upper length of the duct member from the liquid metal inlet and of the vessel is of a thermally conducting nature, while the remaining length of the duct member towards the lower end of the vessel is of double walled construction so as to be of a thermally insulating nature.

guided by a flow guide installed between the two jacket walls, so that the cooling fluid flows over the inner surfaces of the two jacket walls around the guide. The flow guide occupies substantially the whole of the space between the inner and outer jacket walls adjacent to the nozzle mouth, leaving only a narrow gap through which the cooling fluid can flow.

3,693,962

Patent Not Issued For This Number

3,693,960

## TURRET FOR CASTING LADLES

Karl-Heinz Golde, Ratingen, and Willi Simons, Dusseldorf, both of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

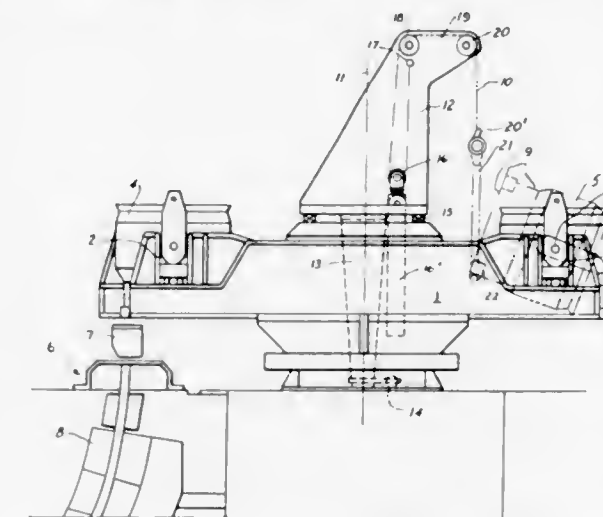
Filed June 4, 1971, Ser. No. 150,082

Claims priority, application Germany, June 8, 1970, P 20 28 078.8

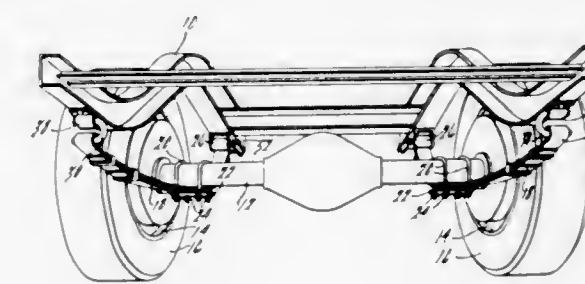
Int. Cl. B22d 11/10; F27d 3/14

U.S. Cl. 266—38

4 Claims



For continuous casting machines, a ladle turret is provided with a cantilever arm mounted for rotation above the usual tundish and casting mold. A ladle is carried on each end of the arm. A column carrying hoisting gear is also mounted for independent rotation on the turret above the cantilever arm. While molten metal is being poured into a casting mold from a ladle on one end of the arm, the ladle on the other end may be tilted by the hoisting gear to discharge slag.



A leaf spring suspension for an automotive vehicle. The rear ends of the leaf springs are connected to the vehicle body by rubber bushed U-shackles.

3,693,964

## TRAILER SPRING SUSPENSION

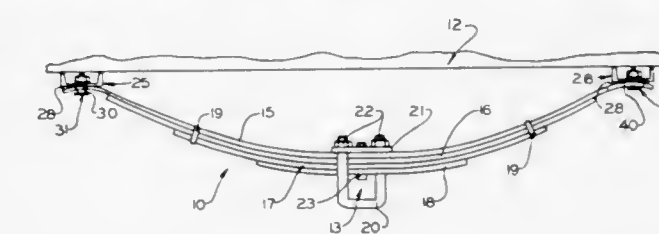
Donald J. McGee, Troy, Mich., assignor to H & H Equipment Co., Troy, Mich.

Filed Dec. 16, 1970, Ser. No. 98,605

Int. Cl. B60g 11/04

U.S. Cl. 267—56

10 Claims



A longitudinal, semi-elliptic type leaf spring assembly, clamped at its midpoint to a vehicle axle, is connected at one end to a vehicle frame by a shoulder bolt or stud unit extending upwardly with slight clearance through a hole in the longest leaf of the assembly, the latter in effect having a non-binding hinging action in the zone of the stud unit as the spring deflects. A similar stud unit connects the opposite end of the assembly to the frame, but in this case it extends through elongated slot in the longest spring leaf, affording a combined hinging and laterally confined longitudinal sliding action at this zone in relation to the frame as the spring assembly elongates during flexure. Conventional spring eyes and shackles are eliminated.

3,693,961

## BLAST FURNACE TUYERE

Hans Preisendanz, Moltkestrasse 37, Willich; Georg Schnegelsberg, Saarner Strasse 497, Mulheim-Speldorf; Peter Schuler, Cracauerstr. 75, Krefeld, and Hans Krause, Jordinstrasse 2, Duisburg-Ruhrort, all of Germany

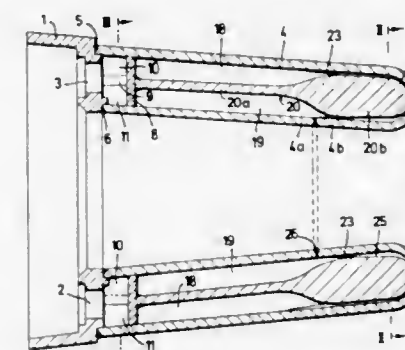
Filed Nov. 4, 1970, Ser. No. 86,648

Claims priority, application Germany, Nov. 5, 1969, P 19 55 547.6; July 25, 1970, P 20 37 011.0

Int. Cl. C21b 7/16

U.S. Cl. 266—41

21 Claims



A blast furnace tuyere has a nozzle with a double tubular jacket wall between which there flows a cooling fluid which is



3,693,965

**TURNTABLE FOR FASTENING WORKPIECES DURING MACHINING**

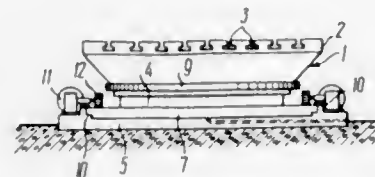
Iosif Salamonovich Mitsengendler, Sverdlovsk, U.S.S.R., assignor to Uralsky Zavod Tyazhelo mashinostroeniya imeni S. Ordzhonikidze, U.S.S.R.

Filed Nov. 3, 1970, Ser. No. 86,556

Int. Cl. B23q 3/00; B25b 39/06

U.S. Cl. 269—20

3 Claims



A turntable for fastening workpieces during machining in which the work table holding the workpiece can be lifted above the bed and be turned and moved with relation thereto on a gas or liquid cushion.

3,693,966

**LAPPING AND ALIGNING OF PROFILED SHEETS**

Martin S. Bloom, Stockton-on-Tee, England, assignor to Imperial Chemical Industries Limited, London, England

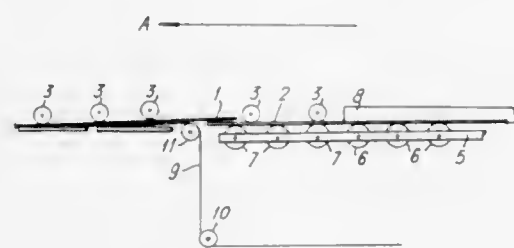
Filed June 21, 1971, Ser. No. 154,844

Claims priority, application Great Britain, July 6, 1970, 32,670/70

Int. Cl. B65h 5/00; B65c 9/00

U.S. Cl. 271—1

10 Claims



Method for aligning and lapping moving profiled sheets fed successively to a roller conveyor, including automatically aligning each successive sheet on the conveyor and maintaining the alignment by downwardly pressing guide rollers, accelerating each sheet in succession off the conveyor onto an adjacent carrier substrate located higher than the conveyor so that the leading end of any succeeding sheet is lapped by the trailing end of the immediately preceding sheet to a predetermined extent.

3,693,967

**CARD READER**

Robert G. Bower, Concord, Mass.; Baisel L. Eveland, Brookside, N.J.; Ivan N. Markowitz, Framingham, Mass., and Earl E. Masterson, Ashley Green, Bucks, England, assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 29, 1970, Ser. No. 76,413

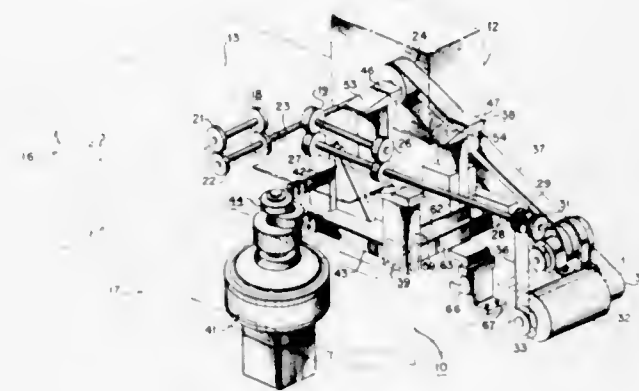
Int. Cl. B65h 3/24, 5/16

U.S. Cl. 271—10

9 Claims

Card feeding apparatus for transferring a single card from a stack to a processing station, wherein the cards are transferred to a visible "wait" station along a path, and from the wait sta-

tion to the operating station along a transverse path. A flexure mounted picker device transfers a card to a first set of roller means which is effective to move the card into the wait sta-



tion, and a pusher arm transfers the card into a second set of roller means which is effective to move the card into the processing station, the picker device and pusher arm being operated by a single motor through an eccentric coupling.

3,693,968

Patent Not Issued For This Number

3,693,969

**ELECTROPHOTOGRAPHIC APPARATUS**

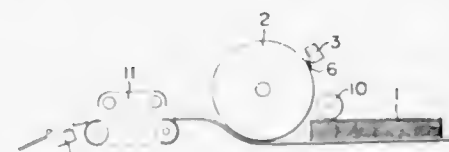
Hisashi Sakamaki, Yokohama; Yoshimasa Kimura; Osamu Sawamura, both of Tokyo, and Susumo Suglura, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1971, Ser. No. 109,214

Int. Cl. B65h 7/12

U.S. Cl. 271—57

5 Claims



A device for detecting the jamming of copy material in a photocopying machine or the like is provided which can detect not only jamming of copy material occurred at any portion of the whole path thereof but also jamming occurred in a particular device or station where the jamming tends to occur or causes a serious dangerous condition. The actual time intervals required for copy material to pass through the whole path and through the particular station are compared with the reference time intervals respectively so that when the actual time intervals are longer than the reference time intervals, a warning signal is generated. The warning signal may be used to automatically stop the operation of the photocopying machine or its particular station such as a fixing station in order to prevent a fire hazard.

3,693,970

**SHEET HANDLING APPARATUS**

William Grobman, Philadelphia, Pa., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Oct. 13, 1970, Ser. No. 80,370

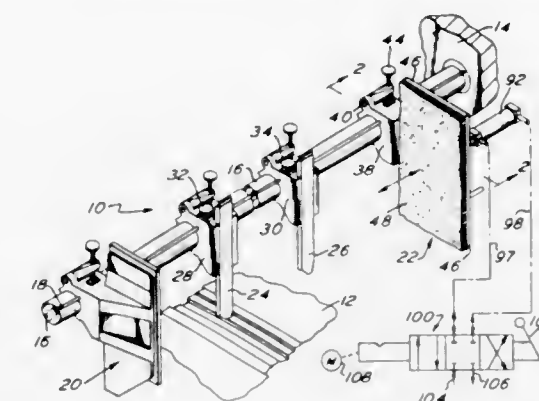
Int. Cl. B65h 9/04

U.S. Cl. 271—59

4 Claims

Side gauge for sheet handling apparatus such as a printer

slotter which has a pneumatically operable auxiliary gauge



member to allow for quick processing of oversized paperboard blanks with remote control.

3,693,971

**MECHANISM FOR LATERAL ORIENTING OF PAPER SHEETS**

Josef Jurny, Sebranice, and Jaroslav Janeczek, Brno, both of Czechoslovakia, assignors to Adamovske strojirny, narodni podnik, Adamov, Czechoslovakia

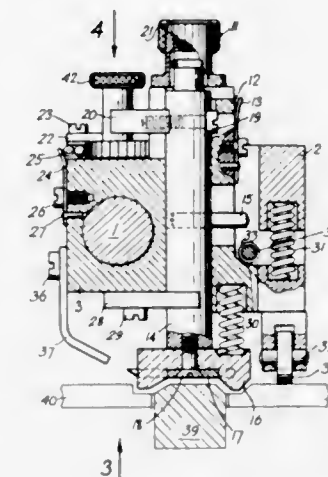
Filed April 18, 1969, Ser. No. 817,402

Claims priority, application Czechoslovakia, April 19, 1968, 2870 68

Int. Cl. B65h 7/10

U.S. Cl. 271—59

6 Claims



A mechanism for laterally orienting paper sheets in a printing machine having a pair of supporting bars and a reciprocable slidable plate located therebetween. The apparatus includes an oscillating shaft on which is freely mounted a body having pressure rollers depending therefrom in contact with the paper on the slidable plate and an end stop engaging the edge of the paper. The shaft also mounts a fixed member adapted to engage one of the supporting bars. As the shafts oscillate the body and member move in opposite relative directions. Means are provided interconnecting the member with the roller and end stop means whereby the roller and end stops are lifted out of contact with the paper during the period of oscillation.

3,693,972

**TETHER BALL**

Kenneth R. Minchin, 1118 West Coronado Rd., Phoenix, Ariz.

Filed May 19, 1971, Ser. No. 144,984

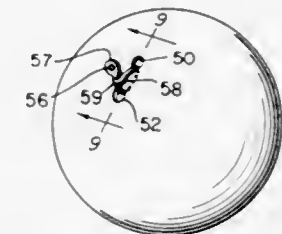
Int. Cl. A63b 43/02, 69/38

U.S. Cl. 273—58 C

2 Claims

A ball is provided having a tether fastening device, such as a ring plate, affixed to the surface of the ball by a pair of orthogonally oriented fastening strips. Each of the fastening strips has an opening therein, and the strips are located over the ring plate. A portion of the ring plate extends through the

openings, and the fastening strips are bonded to the ball body. The fastening strips are preferably oriented at substantially 90° with respect to each other, and at least one cover is positioned over the ball body and over the fastening strips. At least one cover also has an opening therein positioned with the ring plate extending through the cover opening, and the cover is bonded to the ball body to provide a strong and uniformly resilient tether ball. Other embodiments involve either the use of a pair of intersecting nylon cords which partially encircle the ball body and have tethering loop portions extending



through the strip and cover openings or a plug threaded into the ball body and having an integral tethering eyelet in alignment with the opening in the strip and cover openings. In yet another embodiment, the ball body includes an outer jute lining having all but a predetermined portion thereof bonded to the ball body. Spaced apart openings in the unbonded portion of the lining receive an elongated flexible stem having an aperture at each end thereof, with one of the apertured ends passing through the other apertured end adjacent the outer surface of the lining. The ball may be used as a sewer ball, boat bumper, float for fish nets, or in games and athletic events.

3,693,973

**TENNIS STROKE TRAINING DEVICE**

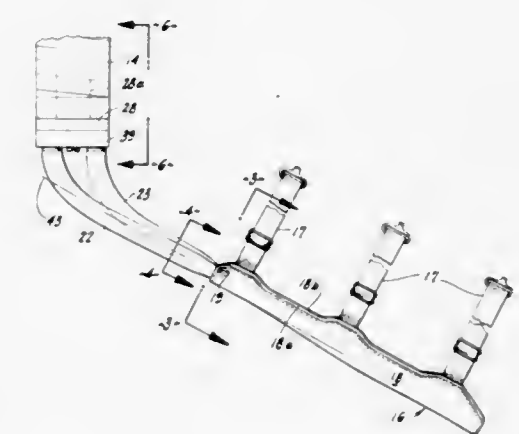
Willard Harvey Wattenburg, 11 Idyll Court, Orinda, Calif.

Filed Aug. 20, 1970, Ser. No. 65,536

Int. Cl. A63b 69/38

U.S. Cl. 273—73 R

11 Claims



A tennis stroke training device comprising a cuff member adapted to be strapped tightly about the forearm of a player, rigid elements extending from the cuff member to a tennis racket and mounted in the base of the tennis racket in a manner to permit limited rotational movement of the racket about its longitudinal axis while maintaining fixed or rigid the angle defined between the forearm and the axis of the racket handle and lying in the plane defined by the forearm and racket handle.

3,693,974

Patent Not Issued For This Number

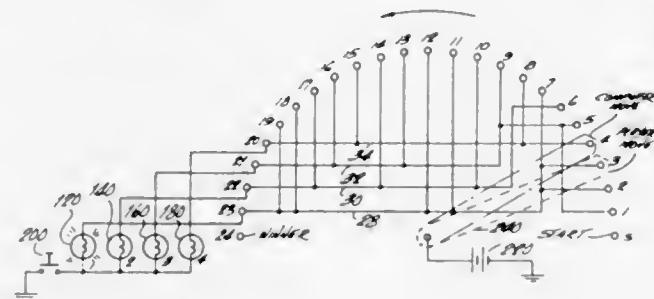


### 3,693,975 COMPUTER GAME

John J. Ruggiero, Bronx, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest  
Filed Nov. 16, 1970, Ser. No. 89,849  
Int. Cl. A63f 3/00

U.S. Cl. 273—130 AB

4 Claims



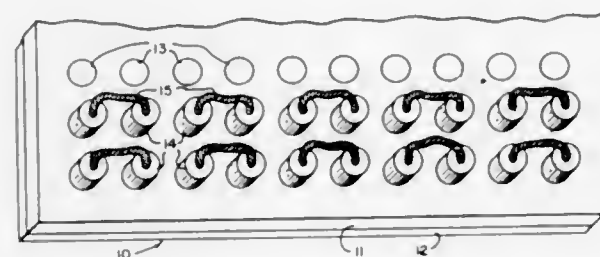
A plurality of electrical contacts other than the first and last one each connected to any one of a second plurality of bus bars. Each bar is connected through a corresponding lamp to one end of a common switch. The other end of the switch is connected to one side of a power supply. The other side of the power supply is connected to a contact arm manually movable to any one of the contacts. The user plays against a built in program to win or lose in accordance with specified rules.

### 3,693,976 PEG-BOARD GAME APPARATUS

Walter Flack, P.O. Box 331, Martins Ferry, Ohio  
Filed March 18, 1971, Ser. No. 125,768  
Int. Cl. A63f 3/00

U.S. Cl. 273—131 BA

1 Claim



Game apparatus comprising a board having a rectangular configuration with rows of uniformly spaced holes located at the intersection of lines forming a pattern of squares. The game is played by each player using a plurality of pieces, each piece consisting of two pegs fitting in the holes of the board and joined by a flexible inextensible link. The flexible link limits the ambit of movement of one peg relative to the other to the distance between alternate holes on a diagonal line. At the start of the game each player's pieces are assembled in the first two rows of holes along opposite edges of the board. The objective of the game is for a player to move his pieces, one peg at a time across the board and to reassemble them similarly to the starting arrangement in the two rows of holes adjacent the opposite edge of the board.

### 3,693,977 BOARD GAME APPARATUS

David Guy de Keller, The East India & Sports Club, St. James Square, London, S.W. 1, England  
Filed Aug. 28, 1970, Ser. No. 67,906  
Claims priority, application Great Britain, Sept. 2, 1969, 43,332/69

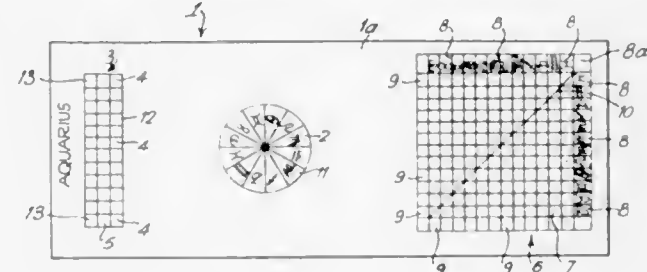
Int. Cl. A63f 3/00

U.S. Cl. 273—134 E

4 Claims

Game apparatus comprising a playing surface and a random result selector consisting of a roulette wheel, said surface

being marked out with a first area constituted by 2 to 12 columns each comprising 1 to 5 places for the reception of chips, along which columns chips may be advanced place by place in dependence on the results selected by the selector, and a second area comprising a grid of 13x13 places for the reception of further chips to indicate the result or results bet

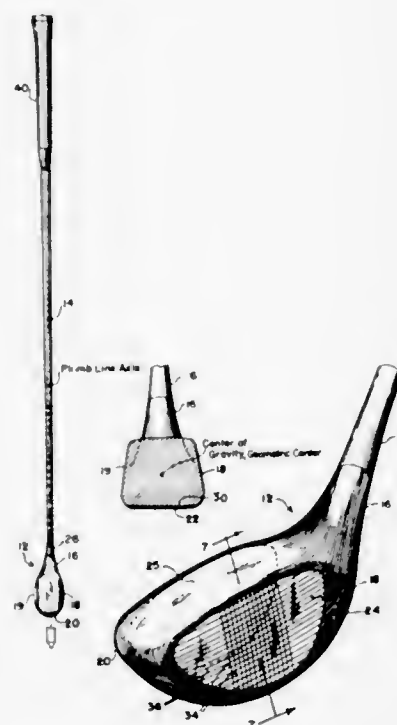


### 3,693,978 SYMMETRICAL GOLF CLUB HEAD WITH CENTER OF GRAVITY COINCIDENT WITH GEOMETRIC CENTER

Victor East, 443 Ridge Avenue, Evanston, Ill.  
Filed Nov. 13, 1969, Ser. No. 876,489  
Int. Cl. A63b 53/04

U.S. Cl. 273—167 F

3 Claims



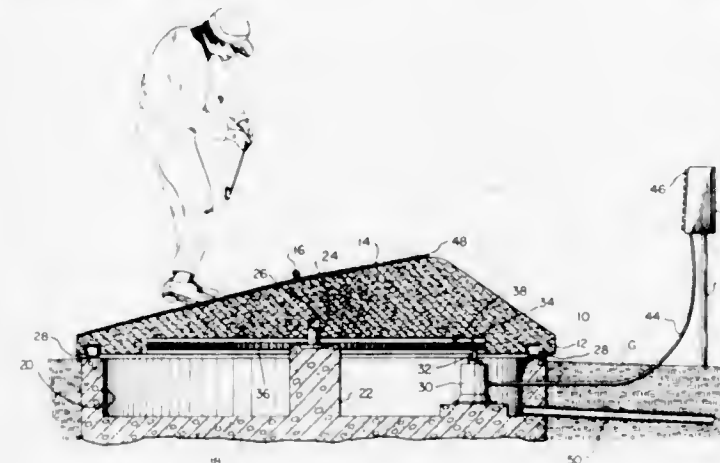
A wood type golf club in which the head is comprised of a molded, high impact, plastic material of uniform density and is homogenous throughout, both as regards density and weight, embodies similarly lofted front and rear faces, has its geometric center coinciding with its center of gravity, is symmetrical with respect to a vertical plane passing centrally and longitudinally therethrough and also through the axis of the shaft, and is so constructed, dimensioned, shaped and proportioned that when the club is supported in pendulum fashion from the proximate end of the club shaft, the plumb line axis passes through the common or coincident geometric center and center of gravity of the head.

### 3,693,979 GOLF PRACTICE DEVICE

Lee E. Koett, 901 Cardinal Road, Virginia Beach, Va.  
Filed Aug. 6, 1970, Ser. No. 61,662  
Int. Cl. A63b 69/36, 67/02

U.S. Cl. 273—195 B

8 Claims



A golf practice device is disclosed which incorporates a wedge-shaped member having an inclined upper surface from which a golf ball may be driven. The wedge-shaped member may be stationary or may be rotatable relative to a remote target, either rotatable manually or by means of a suitable drive means, thereby providing a variety of lies of the ball, including uphill, downhill, sidehill and crosshill. In an alternate embodiment of the invention the device comprises a pair of vertically superimposed wedge-shaped members, each of which may be rotated relative to the other and a remote target, whereby the top surface of the upper wedge may assume a variety of angles ranging from the horizontal to a maximum inclination, as determined by the maximum angle of the individual wedges. In a preferred embodiment, an electric motor is provided for effecting rotation of the wedge-shaped member, and control means are provided to energize the motor and to stop the motor when the wedge-shaped member has reached a desired rotational position. The control means may include a control box having a plurality of push-buttons to select a desired rotational position of the wedge-shaped member, a plurality of micro-switches associated with an underlying base upon which the wedge-shaped member is disposed controlling the operation of the motor, each of the micro-switches corresponding to a single rotational position of the wedge-shaped member. A plurality of cam members may be disposed about the periphery of the wedge-shaped member, each of the cam members contacting one of the micro-switches to thereby stop rotation of the wedge-shaped member when a pre-selected one of the cam members contacts its corresponding micro-switch.

3,693,980

Patent Not Issued For This Number

### 3,693,981 TAPE PLAYING APPARATUS FOR USE WITH PLURALITY OF ENDLESS MAGNETIC TAPE CARTRIDGES

Itsuki Ban, 829 Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan  
Filed Aug. 18, 1970, Ser. No. 64,743

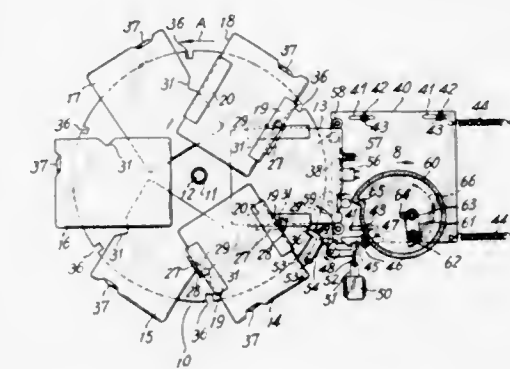
Claims priority, application Japan, Aug. 20, 1969, 44/78509  
Int. Cl. G11b 23/12

U.S. Cl. 274—4 F

10 Claims

A tape playing apparatus for use with a plurality of endless magnetic tape cartridges which comprises a rotatable carriage provided with a holding device for radially holding two groups of cartridges in a manner such that one group is laid over the other group and offset to one another, a device for rotatably

driving said carriage, a driving device for moving up and down the upper cartridges and the lower cartridges by a distance corresponding to the difference in level of the cartridges, first latch device for arresting rotation of the carriage to hold one of the cartridges in a predetermined position, a reciprocally movable deck provided with reproducing members such as a



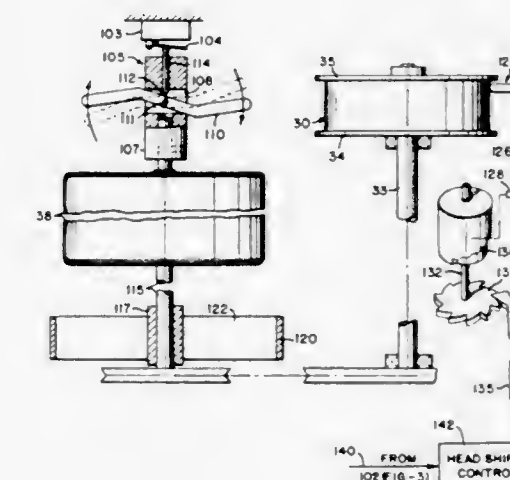
capstan, a magnetic head and the like for reproducing the cartridge in the play position, driving device for moving the deck into and from a reproducing station where the reproducing members play the cartridge in the play position and a non-reproducing station where the reproducing members are away from the cartridge, and a second latch device for holding the deck in the reproducing station.

### 3,693,982 REVERSIBLE TAPE TRANSPORT SYSTEM

Don C. Barnett, Columbus, Ind., and Kingston E. Ganske, Rough and Ready, Calif., assignors to Arvin Industries, Inc., Columbus, Ind.  
Division of Ser. No. 758,061, Sept. 6, 1968, Pat. No. 3,550,985. This application Sept. 4, 1970, Ser. No. 69,546  
Int. Cl. G11b 21/08, 15/44

U.S. Cl. 274—4 A

1 Claim



A transport for flexible tape employs a reversible rotatable capstan with supply and take-up rolls mounted on axes parallel to the axis of rotation of and movable toward and away from the capstan as tape is moved from one roll to the other. Whichever roll is functioning as a take-up is friction driven by the capstan. A synchronous motor drives the capstan and has a resonant damper to minimize velocity changes at running speed. When used as a multitrack longitudinal recorder, the transducer is quickly shifted to follow a different track as a tape direction change occurs when most of the tape is wound on one of the rolls.



3,693,983

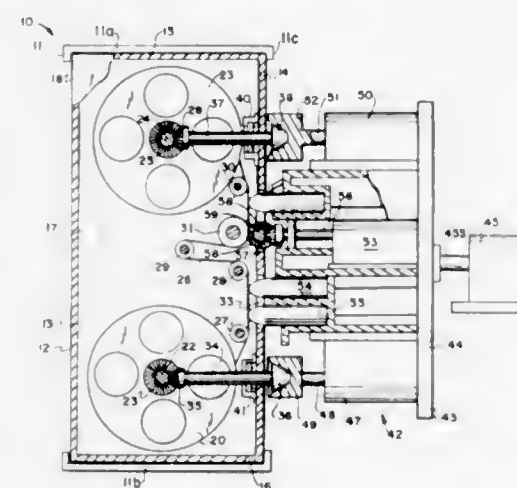
**TAPE CARTRIDGE DRIVE AND TRANSDUCING APPARATUS FOR THE TAPE THEREOF**

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.  
Division of Ser. No. 142,748, Aug. 28, 1961, which is a division of Ser. No. 515,417, June 14, 1955, Pat. No. 3,003,109. This application Nov. 30, 199970, Ser. No. 93,778. The portion of the term of this patent subsequent to May 12, 1987, has been disclaimed.

Int. Cl. G11b 15/24, 15/26, 21/02

U.S. Cl. 274-4 C

2 Claims



A magnetic transducing apparatus is provided employing one or more cartridges or magazines having tape driven between two reels which are rotatably supported within the cartridge. The tape drive and transducing means are supported on a common mount which is movable towards and away from the magazine and is operable to cause the tape drive means and the transducing means to simultaneously engage the tape in the magazine. Means are also provided for power driving either of the reels in the magazine to take up the tape driven past the transducing means by the drive means engaging the tape.

3,693,984

**MINIATURE TAPE RECORDER**

Georg Probst, Munich, and Walter Herterich, Dachau, near Munich, both of Germany, assignors to Compur-werk Gesellschaft mit beschränkter Haftung & Co., Munich, Germany

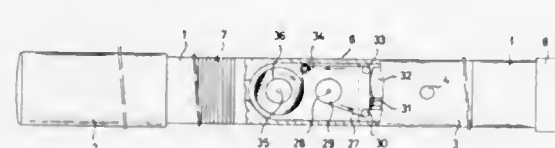
Filed Aug. 26, 1969, Ser. No. 853,115

Claims priority, application Germany, Aug. 26, 1968, P 17 97 181.2

Int. Cl. G11b 15/24

U.S. Cl. 274-4 C

6 Claims



Miniature tape recorder having a recording and play back head and combined microphone-loud-speaker arranged with their axes substantially co-axial with the projected axis of the drive motor to afford size and noise level reduction.

3,693,985

**END FACE FLUID SEAL UNIT**

Arthur M. Dillner, 14321 South Stewart, Riverdale, Ill.

Filed May 12, 1971, Ser. No. 142,695

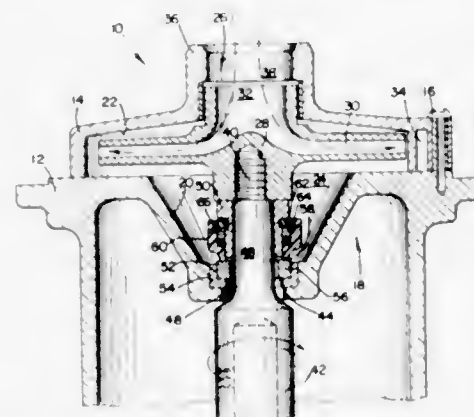
Int. Cl. F16l 17/00; F04d 29/10

U.S. Cl. 277-29

14 Claims

A seal for use between first and second relatively movable elements to retain fluids within a predetermined area of elevated pressure in a pump or other application. The seal is of

the end face type and includes a primary sealing element, means for urging the primary sealing element against a cooperating mating surface to provide a primary seal, single means for transmitting torque from the first element to the sealing ring and for applying a desired axial load to the sealing element, means for preventing the pressure within the elevated pressure area from acting significantly upon the single means to increase the axial load on the sealing element and



a secondary seal to prevent leakage of the fluid to be sealed to an area of reduced pressure by flow between the first element and the primary sealing element. The seal unit provides a number of advantages over similar seal units, including the ability to seal effectively in relatively high pressure environments, while retaining most or all of the advantages of similar prior art seals. The seal assembly is capable of use in a variety of applications, including seals for pumps used in appliances, automotive applications, and elsewhere.

3,693,986

**SEALING DEVICES**

John Walkinshaw Lambie, 13 Cullin Place, Kilmarnock, Ayrshire, Scotland

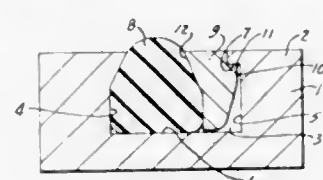
Filed Oct. 26, 1970, Ser. No. 83,829

Claims priority, application Great Britain, Oct. 25, 1969, 52,388/69

Int. Cl. F16j 15/00, 15/32

U.S. Cl. 277-188

6 Claims



A fluid seal for a disc valve or the like wherein a resilient seal is confined within a circumferential recess in the valve body which has a projecting ledge on at least one side of said recess. At least one gib strip is positioned between the seal and the projecting ledge. One side of the gib strip has a stepped portion to present a projecting ledge whereby the strip and seal are retained resiliently between the side wall of the recess and the resilient seal. A second embodiment discloses the use of the gib strips and corresponding ledges on each side of the resilient seal.

3,693,987

**STABILIZERS ENSURING A VERTICAL POSITION TO TWO-WHEELED VEHICLES**

Emile Bobard, P.O. Box 17, Rue de Reon, Beaune, Cote d'Or, and Just Delaunay, L'Etang-Vergy, Cote d'Or, both of France

Filed May 24, 1971, Ser. No. 146,077

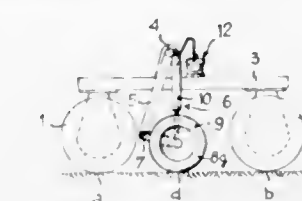
Int. Cl. B60q 17/00

U.S. Cl. 280-6H

6 Claims

Stabilizing device for a two-wheeled vehicle, the device including two stabilizing wheels mounted, on either side of the

bearing line of the wheels of the frame on the ground, on hydraulic supports which are connected to a jack for hydraulic adjustment of their length.



A system of valves permits adjustment of the length of one of said stabilizing wheel supports independently of the length of the other support and of the action of the jack.

3,693,988

**TWO WHEEL ROLLER SKATE**

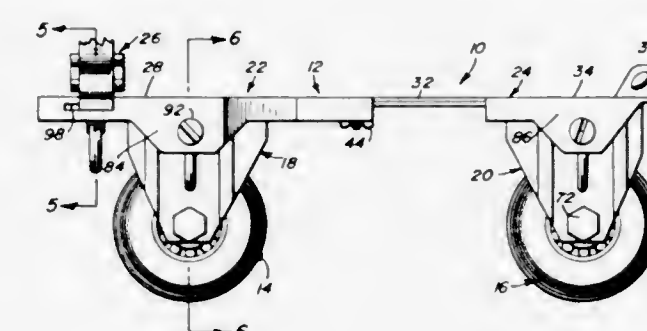
Paul F. Steinhiser, 321 Beverly Court, Michigan City, Ind.

Filed Feb. 10, 1970, Ser. No. 9,472

Int. Cl. A63c 17/06

U.S. Cl. 280-11.23

15 Claims



A roller skate supporting the load of a person on two wheels centrally aligned with the longitudinal axis of the skate body. The wheels are rotatably mounted on axles carried by brackets pivoted to the body in longitudinally spaced relation for tracking a curved path in response to lateral pressure exerted on the wheels by the person attempting to make a turn. The skate is fastened to the toe portion of the shoe by a strap extending from clips on laterally adjustable rack bars.

3,693,989

**SAFETY SKI BINDINGS**

Karl Dieter Forcht, Bad Schachenerstrasse 78, D-8000 Munich 80, Germany

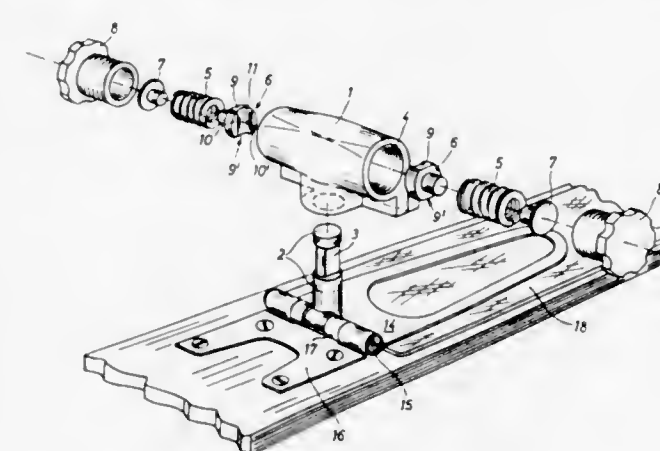
Filed May 1, 1970, Ser. No. 33,779

Claims priority, application Germany, May 6, 1969, P 19 23 038.7

Int. Cl. A63c 91/00

U.S. Cl. 280-11.35 T

9 Claims



A safety ski binding particularly designed to hold the toe of a ski boot properly connected with a ski while automatically releasing the ski boot when required. The binding includes a

pivot whose axis is perpendicular to the upper surface of the ski in at least one position of the pivot. A swing member is swingable about the pivot and carries a toe clamp for engaging the toe of a boot. A spring assembly coacts with the pivot and the swing member to yieldably resist swinging of the latter about the pivot axis from a central neutral position. The spring assembly acts in such a way as to increase the resistance to turning of the swing member from its neutral position only through a predetermined initial angular increment. When the swing member turns beyond the latter increment, the spring assembly does not provide any additional resistance to turning of the swing member.

3,693,990

Patent Not Issued For This Number

3,693,991

Patent Not Issued For This Number

3,693,992

**SNOWMOBILE SKI LEG**

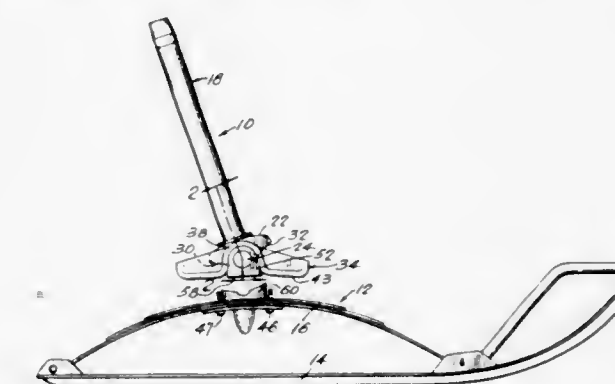
Georges Piedboeuf, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada

Filed Oct. 16, 1970, Ser. No. 81,406

Int. Cl. B62b 13/12

U.S. Cl. 280-26

7 Claims



The disclosure herein describes a ski leg assembly for mounting on a snowmobile and for connecting the ski runner assembly to the steering linkage thereof; the invention overcomes the problems encountered with the standard connection of a bolt in a U-shaped coupling member by providing a strut member with two lateral projections on which are mounted nylon bushings thereby preventing any metal-to-metal contact between the strut member and the coupling member. Also, a cushion member is provided under the strut member to limit the pivotal movement thereof.

3,693,993

**BEACH TOTE CART**

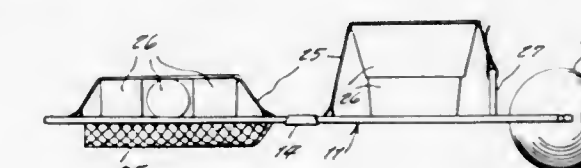
Peter Mazzarelli, and Jean Volpe, both of 476 West Main St., Huntington, N.Y.

Filed Jan. 5, 1971, Ser. No. 104,099

Int. Cl. B62b 1/12

U.S. Cl. 280-30

2 Claims



A convertible cart for beach use, the device including a frame work of a pair of frames hinged together for pivoting in



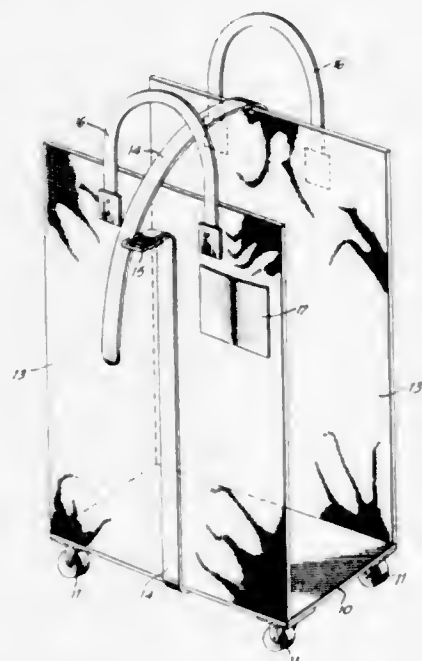
either direction so that the cart can serve either as a cot or lounging chair, the frames supporting webbing areas therein, each of the frames being supportable in elevated position above the ground by downwardly pivotable legs, and one end of the framework forming a convenient pull handle while the other end is supported on a rollable cylinder for travelling over the ground.

3,693,994

## ARTICLE TRANSPORTING DEVICE

Eleanor A. Wilson, 350 W. David Rd., Dayton, Ohio  
Filed June 10, 1970, Ser. No. 45,182  
Int. Cl. B62b 11/00

U.S. Cl. 280—36 R



Article carrying and transporting device includes a platform mounted on casters with side flap members extending upwardly from the platform for engagement with the sides of an article such as luggage, and readily detachable securing means for effecting a connection between the free ends of the flap members and across said article.

3,693,995

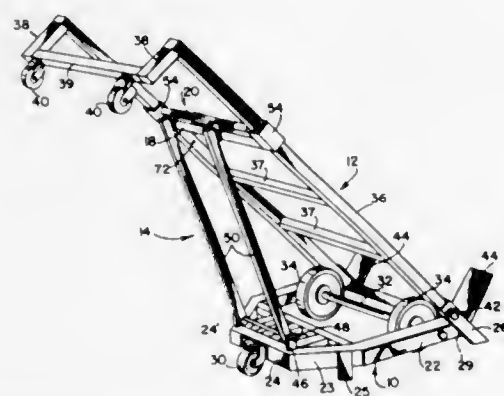
Patent Not Issued For This Number

3,693,996

## PORTABLE HAND TRUCK

Joseph Hardy, 7335 S. Cottage Grove Ave., Chicago, Ill.  
Filed May 13, 1970, Ser. No. 36,712  
Int. Cl. B62b 3/00

U.S. Cl. 280—47.34



A hand truck comprising a base carriage having rollers or wheels, a frame pivotally supported on said base carriage at

the forward end of the base carriage, the frame having a pair of spaced side members, a cross member slidably supported on said side members, locking means on said cross member and engaging said side members for locking said cross member relative to said side members, and bracing means pivotally connected at one end to said base carriage and connected at its other end to said cross member for supporting said frame in any adjusted upright position, said frame member positionable to a horizontal position so that said hand truck may be used as a flat bed truck or dolly.

3,693,997

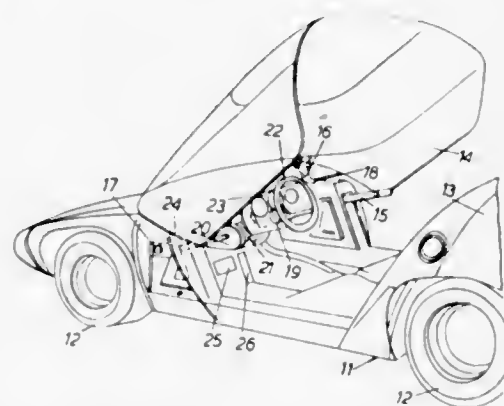
## ADJUSTABLE STEERING COLUMN FOR MOTOR VEHICLES

Hans Dreyer, Russelsheim, Germany, assignor to General Motors Corporation, Detroit, Mich.  
Filed March 5, 1971, Ser. No. 121,349  
Claims priority, application Germany, March 11, 1970, P 20 11 606.7

Int. Cl. B62d 1/18

U.S. Cl. 280—87 A

9 Claims



This invention relates to an adjustable steering column for a motor vehicle in which the position within the vehicle of a steering wheel attached to the upper end of the steering column can be readily adjusted by adjusting the overall length and the inclination of the adjustable steering column.

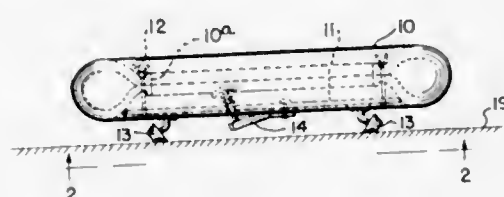
3,693,998

## CASTERED PLATFORM-TYPE PLAY EXERCISER

Alfred B. Cummins, 401 Miles Run, Chagrin Falls, Ohio  
Filed Oct. 2, 1970, Ser. No. 77,636  
Int. Cl. B62b 11/00; B62k 9/00

U.S. Cl. 280—87.01

2 Claims



A play and exerciser attachment for use with a used automobile tire is presented. A generally circular platform of wood, plastic, metal or the like, having a diameter greater than the bead of the tire and less than the outside diameter of the tire is secured thereto, in the present case, by rope laces (for non-wearing yield) passed through holes drilled in the tire. Universal swiveling casters are mounted to the underside of the platform to support the entire device on a flat surface so that it rolls easily in any direction. Preferably a brake is mounted on the platform adapted to be moved into engagement with the flat supporting surface such as a floor by the use of the hand or foot of the operator so as to aid in control of the movement of the exerciser device.

3,693,999

## RACK AND PINION STEERING ASSEMBLY

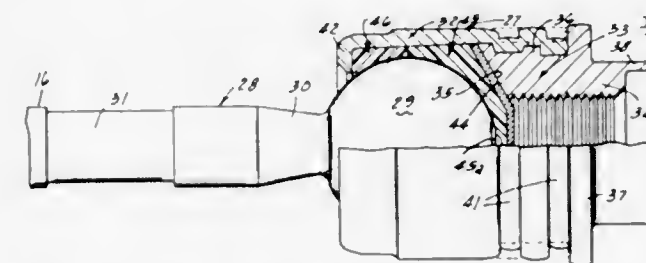
Ruey E. Wood, Jr., Eastlake, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed May 4, 1970, Ser. No. 34,156

Int. Cl. B62d 3/12; F16c 11/08

U.S. Cl. 280—95

12 Claims



A rack and pinion steering assembly for automobiles and the like dirigible wheel equipped vehicles having a longitudinally driven rack bar connected to wheel turning tie rod linkage by plastic bearing ball and socket joints which are greased for life, automatically take-up wear, minimize transfer of road shock to the rack bar, prevent transfer of twisting loads to the rack bar, will maintain a predetermined load torque during articulation, and do not require induction hardened ball studs. The preferred plastic bearing for the ball and socket joint has a plastic cup part between the ball end of the stud and the rack bar composed of a plastic which has a high resilience and a low coefficient of friction. A second bearing part composed of a plastic ring envelopes the ball end of the ball stud opposite the cup bearing and is stiff with a high resistance to flow under load and also having a low coefficient of friction. A housing preloads the two bearing parts around the stud head compressing the resilient bearing cup so that it may expand as wear develops during use thereby preventing looseness in the joint. The joint housing is preferably in the form of a tube which is easily and inexpensively attached to the end of the rack bar.

3,694,000

## REAR AXLE SUSPENSION OF MOTOR VEHICLES

Friedrich H. Van Winsen, Kirchheim/Teck, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

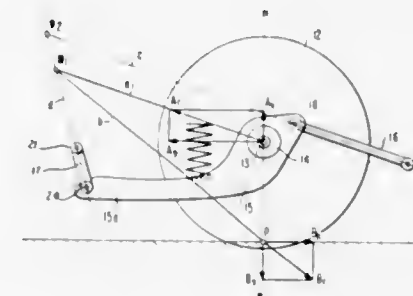
Filed April 17, 1970, Ser. No. 29,483

Claims priority, application Germany, April 23, 1969, P 19 20 705.7

Int. Cl. B60g 3/00

U.S. Cl. 280—124 R

47 Claims



A rear axle suspension of motor vehicles in which a wheel carrier is connected with the vehicle superstructure by way of a lower guide member and an upper guide member whereby the wheel carrier is extended forwardly, particularly in its lower part and the point of pivotal connection of the lower guide member at the wheel carrier is arranged at a relatively large distance forwardly of the vehicle transverse plane passing through the wheel center while the straight line connecting the joints of the lower guide member extends upwardly at a relatively steep incline.

3,694,001

## CONSTANT MOMENT COIL SPRING - AIR BAG SUSPENSION

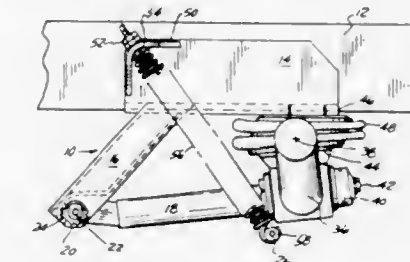
Donald J. McGee, Troy, Mich., assignor to Dura Corporation, Southfield, Mich.

Filed Aug. 31, 1970, Ser. No. 68,387

Int. Cl. B60g 11/56

U.S. Cl. 280—124 F

12 Claims



This invention relates generally to a suspension for motor vehicles. The axle to which the suspension is attached can be raised or lowered by deflating or inflating respectively an air bag between an axle and the frame of the vehicle. A beam fixed to the axle pivots on a bracket attached to the frame. A coil spring, resisting extension thereof, has the ends thereof fixed to the frame and the beam near the axle. The coil spring is arranged with the combination of elements as above set forth in such a manner that the vertical movement of the axle results in a substantially constant moment being exerted by the spring on the beam about its aforementioned pivoting on the bracket.

3,694,002

## CONTROL BELT SYSTEM FOR A VEHICLE BODY OCCUPANT RESTRAINING BELT ARRANGEMENT

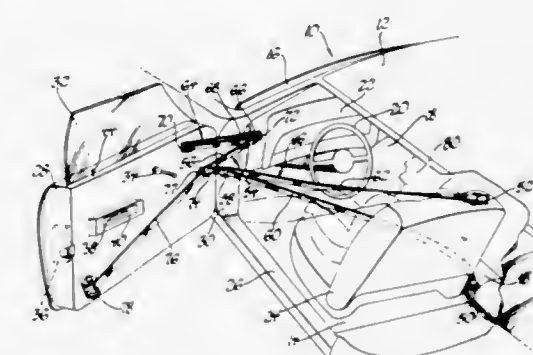
Richard E. Fancy, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 18, 1971, Ser. No. 144,524

Int. Cl. B60r 21/10

U.S. Cl. 280—150 SB

3 Claims



A control belt system for a vehicle body occupant restraining belt arrangement including lap and shoulder belt portions disposed across a vehicle body seat with the outboard ends secured to each other and slidably receiving a first apertured member adjacent a forwardly pivoting vehicle body door. The control belt system includes a first control belt with one end attached to the first apertured member, a plurality of body and door mounted slide members between which intermediate portions of the first control belt extend and slide over in a tackle arrangement to move the first apertured member and the lap and shoulder belt portions forwardly to easy-enter positions during door opening movement, a second control belt with one end secured to a second apertured member slidably received on the first control belt adjacent the first apertured member, and a door mounted retractor with a normally retracting rotatable reel selectively locked against belt extending movement and receiving the other end of the second control belt which is retracted during door closing movement to move the lap and shoulder belt portions rear-



wardly to occupant restraining positions with respect to a seated occupant.

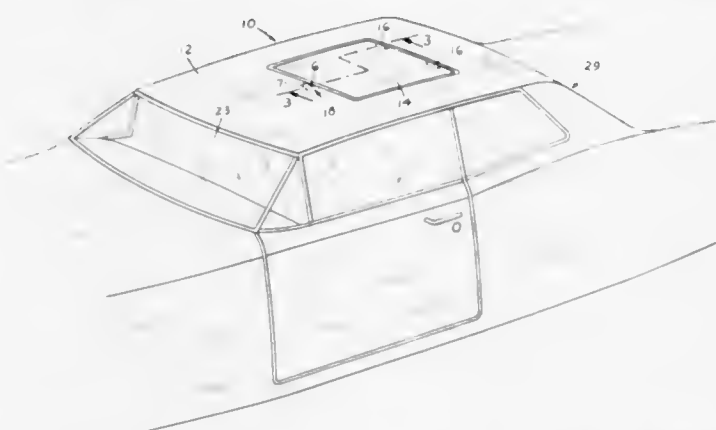
**3,694,003**  
**PRESSURE RELIEF PANELS FOR GAS BAG EQUIPPED VEHICLES**

Donald G. Radke, Troy, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Jan. 11, 1971, Ser. No. 105,443  
Int. Cl. B60r 21/08

U.S. Cl. 280—150 AB

8 Claims



A pressure relief means is provided in a vehicle equipped with a gas bag restraint system for use in the event the vehicle is involved in an impact. A biased panel, in communication with the passenger compartment and the vehicle surroundings, is held down against the bias of the panel, which urges the panel open. Upon impact of the vehicle, the gas bags inflate, tending to increase the pressure in the passenger compartment. Simultaneously, the panel hinges are detonated, causing the panel to open to prevent the buildup of pressure in the passenger compartment of the vehicle.

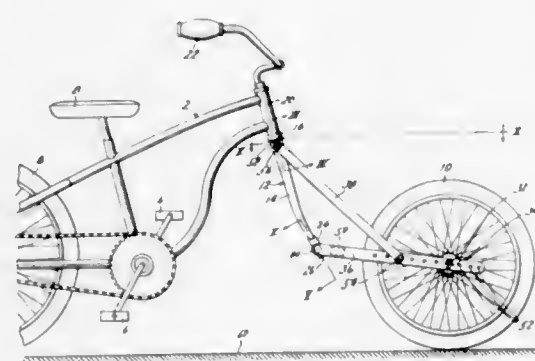
**3,694,004**  
**FRONT WHEEL MOUNTING FOR BICYCLES**

Aloysius F. Siebers, 7632 Robinson St., Overland Park, Kans.

Filed Nov. 18, 1970, Ser. No. 90,561  
Int. Cl. B62k 25/16

U.S. Cl. 280—277

3 Claims



A front wheel mounting for bicycles consisting of a pair of arms adapted to be pivoted at their rearward ends to lower ends of the usual fork legs of the bicycle for vertical pivotal movement, the front cycle wheel being rotatably mounted between said arms at selective points along the lengths thereof, and a pair of angled struts each pivoted at its lower end to one of said arms at selective points along the length thereof, and at its upper end to the associated fork leg in spaced relation above the connection of said arm thereto, said struts being resiliently yieldable in compression whereby to provide a spring mounting for said front cycle wheel.

**3,694,005**  
**Patent Not Issued For This Number**

**3,694,006**  
**HITCH COMBINATION FOR PREVENTING THE COUPLING OF TWO VEHICLES HAVING MISMATCHING VEHICLE CHARACTERISTICS**

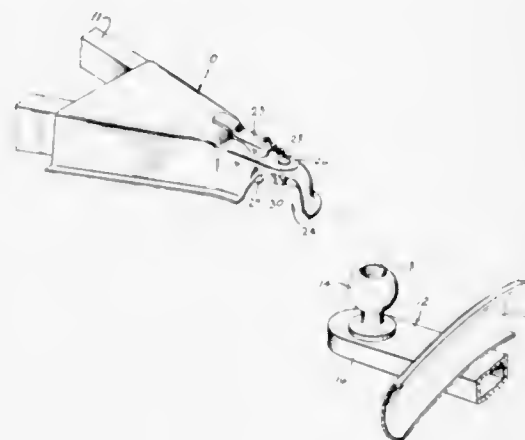
Arthur L. Good, and Robert P. Reese, both of Elkhart, Ind., assignors to Reese Products, Inc., Elkhart, Ind.

Filed Nov. 27, 1970, Ser. No. 93,187

Int. Cl. B60d 1/06

U.S. Cl. 280—507

16 Claims



A hitch combination which includes a hitch constituting a part of one vehicle and a coupler constituting a part of another vehicle. The one vehicle includes a first key device which is correlated to a certain characteristic of the vehicle. The other vehicle includes a second key device which is correlated to a certain characteristic of the other vehicle. The key devices of the vehicles have interfering parts which serve to prevent securement of the coupler to the hitch when there is a mismatch of vehicle characteristics. When there is a match of vehicle characteristics, the key devices of the vehicles cooperate so as to permit the securement of the coupler to the hitch.

**3,694,007**  
**PIPE AND END ATTACHMENT**

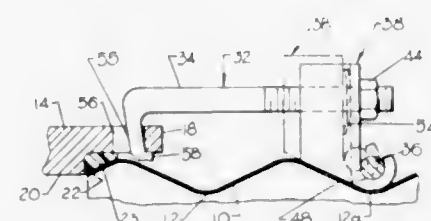
Harold E. Crow; Joseph Moffa, and C. Frederick Berge, all of Middletown, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio

Filed Nov. 23, 1970, Ser. No. 91,821

Int. Cl. F16l 23/00

U.S. Cl. 285—5

13 Claims



An adjustable joint coupling assembly for joining a pipe having an annular corrugation thereabout to an end attachment, such as a gate for controlling the flow of fluid through said pipe, a second pipe in end-to-end relationship, or a cap to stop any fluid flow therethrough, said assembly comprising a plurality of clamping members each having an arm pivotal about one end thereof in a plane substantially parallel to the axis of said pipe, and means for securing said arm to said pipe and restricting its movement to within said plane. The opposite end of said arm is provided with means for engagement with said end attachment to securely hold same against said pipe, whereby to provide a substantially leak resistant joint.

**3,694,008**  
**ROTATING JOINT**

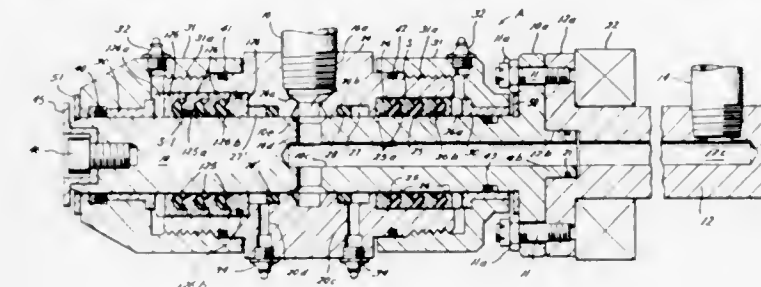
Damon T. Slator, and Albert L. Burns, Jr., both of Houston, Tex., assignors to Bowen Tools, Inc.

Filed Oct. 27, 1970, Ser. No. 84,415

Int. Cl. F16l 27/00

U.S. Cl. 285—94

6 Claims



A rotating joint for connecting a fixed pipe to a rotating pipe and for providing a fluid seal for fluid flowing through the joint, wherein the joint has a pair of spaced seals which are subjected to fluid pressure acting in the joint in opposite directions to substantially equalize the thrust on the joint by the fluid flowing therethrough.

**3,694,009**  
**PIPE SADDLE**

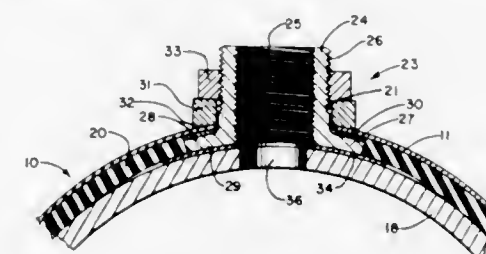
Robert F. Phillips, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Filed Dec. 28, 1970, Ser. No. 102,017

Int. Cl. F16l 41/00

U.S. Cl. 285—197

5 Claims



A pipe saddle for attaching service lines to large-diameter pipelines or service mains. The saddle includes a split, flexible, cylindrical strap adapted to be clamped around the pipeline. The strap provides a generally cylindrical opening therein in which is received a coupling fitting which accommodates a standard corporation stop valve for subsequent connection of the service line thereto.

**3,694,010**  
**TUBE COUPLING FOR LARGE DIAMETER TUBES**

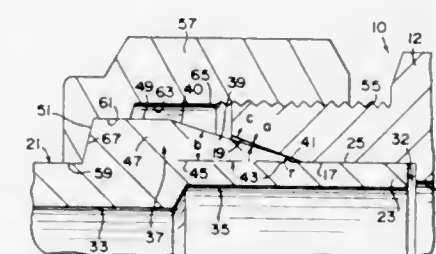
Francis J. Callahan, Jr., Chagrin Falls, Ohio, assignor to Crawford Fitting Company, Solon, Ohio

Filed Oct. 5, 1970, Ser. No. 78,052

Int. Cl. F16l 25/00

U.S. Cl. 285—334.4

13 Claims



A tube coupling for large diameter tubes is comprised of a coupling body having a camming mouth, a tube stub with an integral ferrule, and a coupling nut adapted to retain the ferrule of the tube stub in sealing engagement with the camming

mouth. The tube stub is adapted to be interconnected into a fluid line by welding or otherwise securing the free end of the tube stub to a tube or other conduit.

**3,694,011**  
**COUPLING**

Arthur A. Silverman, 2245 Harman Road, Pittsburgh, Pa.

Filed Nov. 23, 1970, Ser. No. 91,834

Int. Cl. F16d 1/00

U.S. Cl. 287—104

8 Claims



A coupling particularly adaptable for readily connecting and disconnecting sections of sewer snake having a male member and a female member wherein the former is slidable within a transverse slot provided in the latter. Rotatable locking means is mounted on the female member which is capable in one position to permit the reception of the connecting end of the male member in the female transverse slot end in a second position to retain the male member in locked engagement within the female member transverse slot. Means is provided to releasably retain the rotatable locking means in the second mentioned position.

**3,694,012**  
**REINFORCING BAR COUPLING**

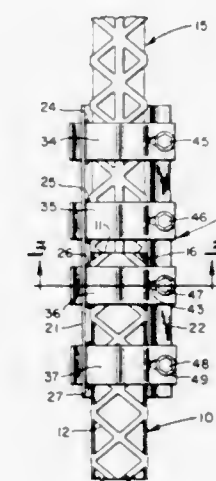
Leonard Gelfand, Chagrin Falls, Ohio, assignor to Erico Products, Inc., Cleveland, Ohio

Filed Nov. 4, 1969, Ser. No. 873,834

Int. Cl. F16b 2/08

U.S. Cl. 287—110

8 Claims



A coupling for concrete reinforcing and like bar particularly suitable for compressive loading which comprises a generally U-shape element adapted to embrace the butted ends of such bar with transverse clamp straps extending between the legs of such element being individually tightenable so that the coupling can be secured first to one bar and then the other.



3,694,013

## SCREW CONNECTIONS FOR STRUCTURES SUCH AS ROOF SKYLIGHTS

Alfred Heitner, Buttgen, Germany, assignor to Klaus Esser KG, Norf, Germany

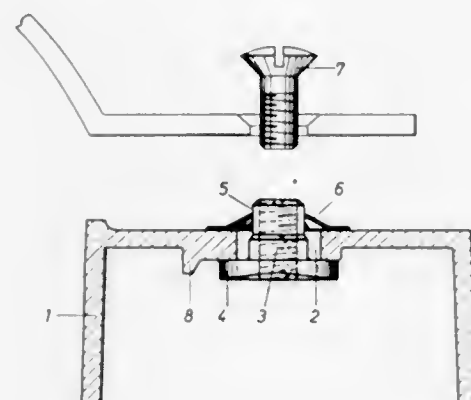
Filed Jan. 22, 1971, Ser. No. 108,737

Claims priority, application Germany, Jan. 23, 1970, G 70 02 316.4

Int. Cl. F16b 5/02

U.S. Cl. 287—189.36 F

1 Claim



A screw connection for a roof skylight comprises a screw which passes through a shell forming a light dome and through a shell mounting frame. Carried in the frame is a nut with a head on the side of the frame remote from the dome, the head preventing the nut from rotating in the frame as the screw is turned by co-operating with a portion of the frame. A locking plate is fitted onto the nut on the side of the frame remote from the nut head, to hold the nut in position in the frame while the nut and screw are not interengaged.

3,694,014  
FISHING TOOLS

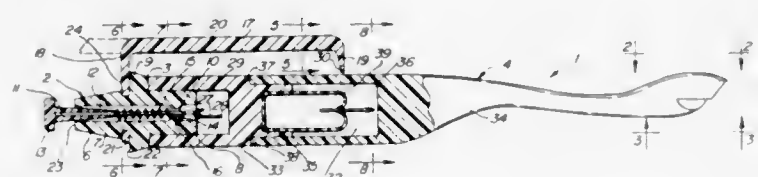
Donald W. Rossbach, La Grange Park, and Donald E. Etes, Crystal Lake, both of Ill., assignors to Zoo-Lab, Inc., Crystal Lake, Ill.

Filed July 9, 1971, Ser. No. 161,234

Int. Cl. D03j 3/00

U.S. Cl. 289—17

10 Claims



A fishing tool embodying a knot tier with an elongated member extending therefrom in position relative to a portion of the knot tier effective to clampingly engage a carrying member.

3,694,015  
TOUCH LATCH

Paul R. Gley, Hillsdale, N.J., assignor to Rex Chainbelt Inc., Milwaukee, Wis.

Filed Sept. 25, 1970, Ser. No. 75,405

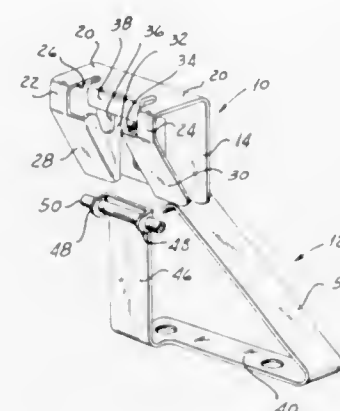
Int. Cl. E05c 1/00

U.S. Cl. 292—80

6 Claims

A touch latch assembly for releasably holding a member such as a cabinet door or a lighting fixture lens structure latched in an axis opening in a frame on the cabinet or fixture

wherein all the parts of the assembly normally are concealed and in operation of which the door or lens structure is latched



closed in response to a first movement thereof into the opening and in which the latch is released in response to a second movement of the door or lens structure in the same direction.

3,694,016  
COVER-LOCK FOR CONTAINERS

John Patrick Scallan, 84 Killarney Drive, Killarney Heights, New South Wales, Australia

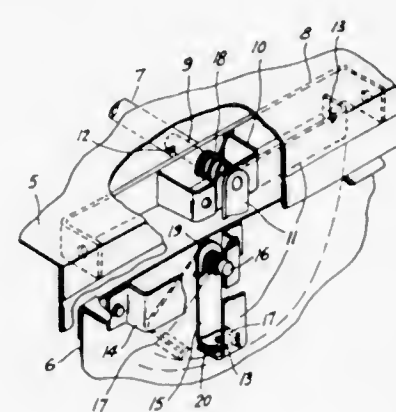
Filed Aug. 31, 1970, Ser. No. 68,334

Claims priority, application Australia, Sept. 1, 1969, 60316/69

Int. Cl. E05c 3/04

U.S. Cl. 292—200

11 Claims



A container has a self-locking assembly for its cover. The locking assembly has a first arm pivoted about a point near one end of a shaft mounted within the container and a second arm pivoted about the exterior surface of a container wall. The second arm has an abutment affixed to its end. On closing the container, the two arms are swung to a position where the first arm is moved underneath the abutment of the second arm, following which the release of the arms allows them to move under the action of spring biases to a position where the second arm is stationary and the first arm bears against the abutment. The container cover is then locked in position.

3,694,017  
REMOTE CONTROL LATCH AND RECESSED BAIL FOR THE SAME

Miner S. Keeler, II, and William Doyle Watt, Jr., both of Grand Rapids, Mich., assignors to Keeler Brass Company, Grand Rapids, Mich.

Filed Sept. 30, 1970, Ser. No. 76,727

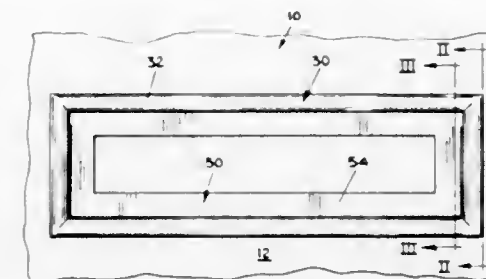
Int. Cl. E05c 1/12

U.S. Cl. 292—336.3

17 Claims

Recessed pull in which the bail is installed by dropping it

into position from above the assembly. The assembly also in-



cludes a latching means actuated by pivoting the bail outwardly while in assembled position.

3,694,018  
ELASTOMERIC IMPACT ENERGY DISSIPATOR

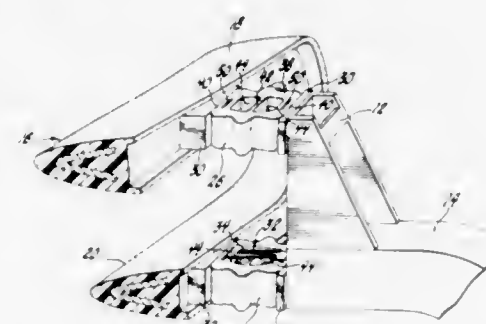
David R. Levering, Cincinnati, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed July 22, 1970, Ser. No. 57,214

Int. Cl. B60r 19/06; F60f 1/36

U.S. Cl. 293—88

4 Claims



The illustrative exemplary embodiment incorporates the elastomeric impact energy dissipating body as a bumper mount connecting an automotive vehicle collision bumper bar to the vehicle frame. The dissipator is constructed of high density polyurethane or like material having the properties of high modulus of elasticity and high tensile elongation. The dissipator has a cross sectional shape generally of rectangular tubular configuration including elongated columnar wall elements adapted to undergo laterally outward buckling under impact compression loading therein and a tensile web extending laterally between the columnar elements operative to resist the buckling up to a predetermined value, to provide large amounts of energy dissipation along with the remainder of the body during the buckling, and to elastically return the body and the supported bumper bar to its original condition following release of the impact forces.

3,694,019  
SINGLE USE INERTIA ABSORBING DEVICE

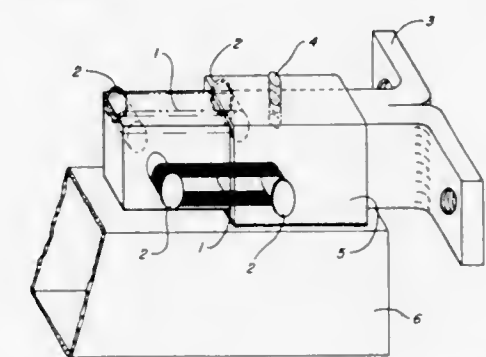
John Ed Carter, Columbia, S.C., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Nov. 23, 1970, Ser. No. 91,705

Int. Cl. F16f 7/12

U.S. Cl. 293—101

10 Claims



An inertia absorbing device is disclosed to absorb relatively large amounts of inertial energy on a one shot or single use basis. Energy is absorbed by elongating or stretching a thermoplastic structure, such as nylon yarn. One example of an

end use would be an energy absorbing system for automobile bumpers to prevent low speed (5-10 mph) collision damage. Nylon yarn is attached to pins between a movable bumper mount and the automobile frame, to be stretched on collision.

3,694,020  
SYPHON OR SOLIDS HAVING A PISTON WHICH IS CONNECTED WITH A SUSPENSION ARRANGEMENT

Klaus Becker, Volmarstein, and Karlheinz Wolski, Bochum-Langendreer, both of Germany, assignors to DEMAG Aktiengesellschaft, Duisburg, Germany

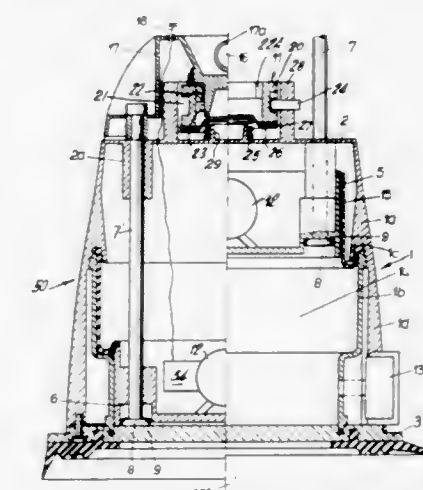
Filed May 11, 1970, Ser. No. 36,320

Claims priority, application Germany, May 13, 1969, P 19 24 293.4; July 4, 1969, P 19 34 033.1; Sept. 29, 1969, P 19 49 065.4; Sept. 29, 1969, P 19 49 064.3; Dec. 12, 1969, P 19 62 273.2

Int. Cl. B66c 1/02

U.S. Cl. 294—64 R

13 Claims



A syphon for solids includes a piston movable in a cylinder to produce an underpressure which is communicated to an attachment for the cylinder in order to permit the attachment to engage the solid material to be lifted. The syphon includes a locking mechanism which connects the cylinder space with the piston during every second stroke of the piston to prevent the formation of a vacuum. The arrangement includes an auxiliary vacuum pump which is connected with the suction space of the cylinder and which is driven by a motor both of which are advantageously carried within the piston.

3,694,021  
MECHANICAL HAND

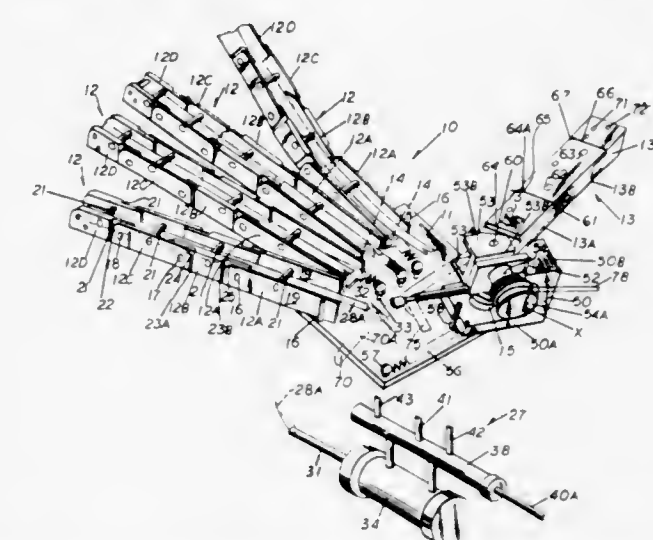
James F. Mullen, First Nat'l Bank Bldg., 22 W. First St., Mt. Vernon, N.Y.

Filed July 31, 1970, Ser. No. 60,030

Int. Cl. A61f 1/06

U.S. Cl. 294—106

22 Claims



This disclosure is directed to a mechanical hand constructed to simulate the articulated movements of a human hand. The mechanical hand comprises a base member simu-



lating the palm portion of a human hand with a plurality of finger digits and a thumb digit articulated to the base portion. Each finger and thumb digit includes pivotally connected segments or joints to simulate or duplicate the finger and thumb movements of a human hand. Tendons are operatively connected to each of the respective digits to effect the flexing thereof, and an actuator is operatively associated with each of the respective tendons to effect either independent and/or simultaneous actuation of the respective digits for movement between operative and inoperative positions.

3,694,022

**FOLDING CAMPER TRAILER**

Rene Dontigny, 1006 Vanier Boulevard St., St. Vincent Des Paul, Quebec, Canada

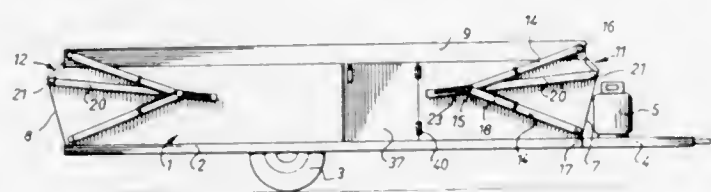
Filed Oct. 23, 1970, Ser. No. 83,373

Claims priority, application Canada, Oct. 24, 1969, 065817

Int. Cl. B60p 3/34

U.S. Cl. 296—23 R

17 Claims



A camper trailer entirely made of rigid panels and in which certain panels are pivotally connected to the box like base and to the top of the camper trailer to automatically take a straightened position upon raising the top. Said camper trailer has at least one drawer slidable in and out of the base and mechanism connected to the base and to the top for raising the latter and operable by movement of the drawer.

3,694,023

**MOBILE NURSERY**

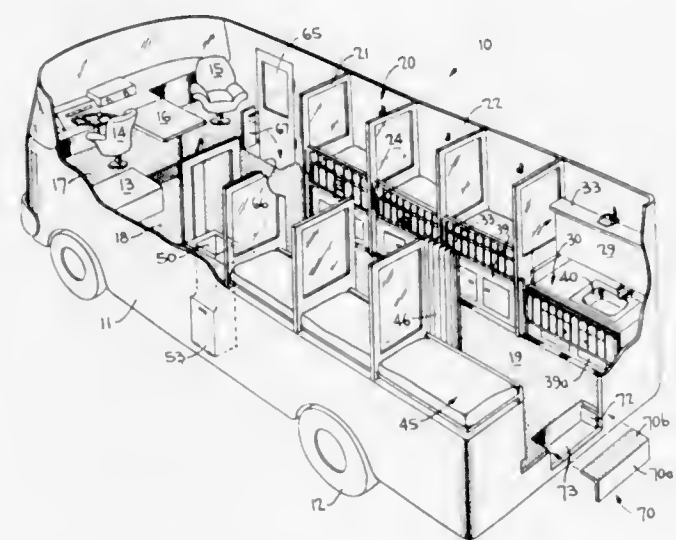
Linda C. Burgess, 3525 Davenport St. N.W., Washington, D.C.

Filed Dec. 23, 1970, Ser. No. 101,045

Int. Cl. B60r 15/02

U.S. Cl. 296—24 R

15 Claims



A motor home is converted for infant care by providing a plurality of longitudinally spaced partitions extending transversely of the body of the vehicle and only partially across the vehicle to define a plurality of infant care areas. Each care area includes a raised support platform with mattress at normal crib height; the floor space between the care areas defining a walkway for access to the care areas. The partitions are transparent and a safety belt and lowerable side are provided in each crib to restrain the infant. Each platform is pivotally supported to expose a work surface when raised; individual basins and water supply means being provided on each work surface. A stationary ledge is provided to accommodate the

mattress on the platform in the raised position and a longitudinally extending vertical panel holds access side of the support platform above the work surface and provides an upwardly extending shoulder to maintain the mattress in position. Individualized storage subcompartments are located below each work surface. At least one of the care areas may include an isolation curtain and exhaust fan for preventing transfer of germs from a sick infant. A driver and attendant area is provided at the front of the vehicle body with the infant care areas extending from the rear of the vehicle forwardly. An open floor space provides extended crawl space for the infants to play. Hatch means is provided for covering the step wells for the doors. A chute is provided for receipt of soiled articles of clothing with a storage bin positioned at the bottom of the chute and having an access door opening from the outside of the vehicle.

3,694,024

**VERTICALLY EXPANSIBLE CARGO VEHICLE BODY**

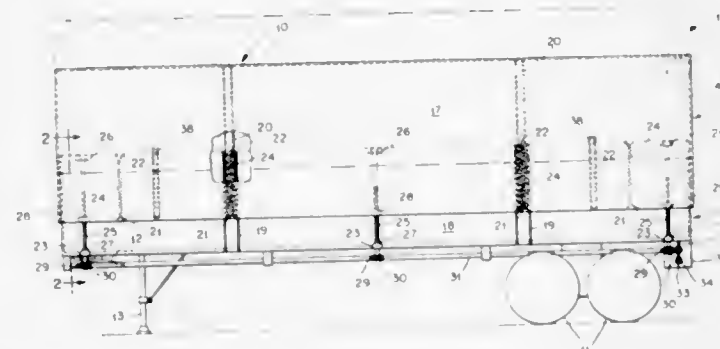
Richard O. Linville, Warren, Mich., assignor to the Budd Company, Philadelphia, Pa.

Filed Dec. 24, 1970, Ser. No. 101,351

Int. Cl. B60p 9/00

U.S. Cl. 296—26

1 Claim



This application discloses a cargo vehicle body which is vertically expansible, having a fixed lower part or portion carried on a chassis and a vertically shiftable upper part or portion in spaced guided telescopic relationship with the lower portion, with elevating and guide means disposed in the space between the telescopic sides and, when desired, resilient or spring means to assist in supporting the upper portion at least in certain positions and latch means for assisting in holding the upper body portion in raised positions and releasable for lowering it. A plurality of lift, guide, spring, and latch means are provided on each side in an effective arrangement to promote smooth even balanced operation. A door is provided which is effective to close its opening in all adjusted positions of the body.

3,694,025

**AUTOMOBILE**

Gordon M. Buehrig, Laguna Hills, Calif., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 19, 1970, Ser. No. 64,985

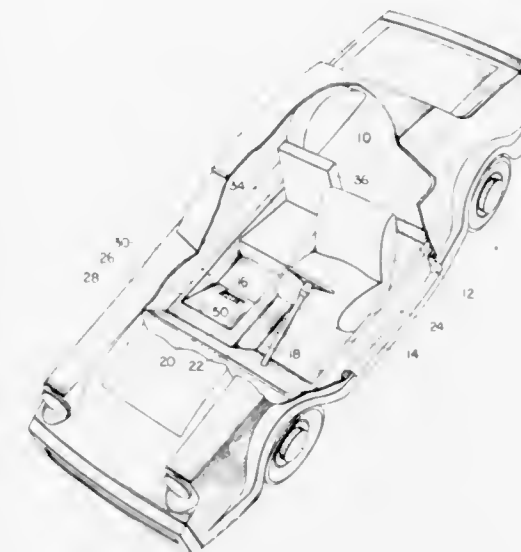
Int. Cl. B60n 1/10

U.S. Cl. 296—64

2 Claims

The invention provides an automobile capable of production in very small size without sacrificing driver comfort while retaining capability of carrying a passenger or, alternatively, a large load or a substantial quantity of belongings by omitting a dividing wall between the driver and passenger compartment and the trunk compartment of the vehicle, by providing those compartments with a common and generally level floor in which a driver's seat well is formed utilizing an area as large as necessary to insure his maximum comfort and which, in the small sized vehicle, extends halfway or more of the distance across the interior of the driver and passenger compartment.

The floor over the passenger position covers a second well in which a passenger's seat is installed at a position rearward of the most rearward driving position of the driver's seat. In the



preferred embodiment, the floor over the passenger's seat well is formed in part by a convertible toeboard and by elements of the passenger's seat.

3,694,026

**Patent Not Issued For This Number**

3,694,027

**SEAT ASSEMBLY WITH COPLANAR PARALLELOGRAM LINKAGE**

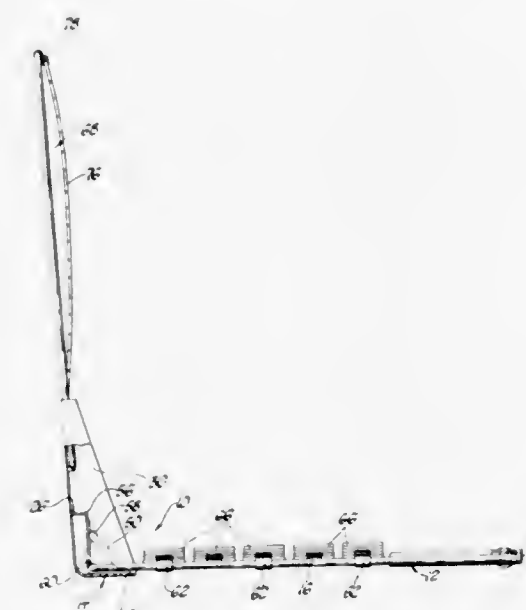
Hyland C. Flint, 3551 Walnut Lake Road, Orchard Lake, Mich.

Filed Feb. 19, 1971, Ser. No. 116,848

Int. Cl. A47b 3/10, 3/025

U.S. Cl. 297—309

17 Claims



A spring seat assembly comprising a transversely extending seat support member, a transversely extending backrest support member spaced rearwardly therefrom, and sets of parallelogram arms on opposite sides of the assembly to interconnect the members. The assembly provides a unison action on displacement under load. The parallelogram arms lie in a common horizontal plane over the greater portion of their longitudinal lengths.

3,694,028

**ANCHORING ARRANGEMENT OF A SAFETY BELT IN A MOTOR VEHICLE**

Rudolf Andres, Sindelfingen, and Guntram Huber, Dachtel, Wurttemberg, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

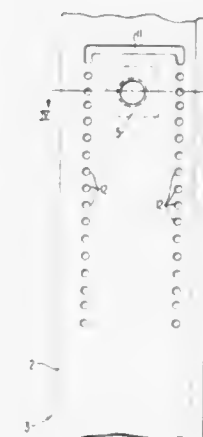
Filed Dec. 4, 1970, Ser. No. 95,136

Claims priority, application Germany, Dec. 6, 1969, P 19 61 381.1

Int. Cl. A62b 35/60

U.S. Cl. 297—386

21 Claims



A fastening arrangement for a safety belt in a motor vehicle in which the place of fastening of the safety belt is so constructed that it yields, beginning with a predetermined tensional force at the safety belt, while producing at the same time deformation work.

3,694,029

**AIRCRAFT SEAT RESTRAINT TENSIONING MECHANISM**

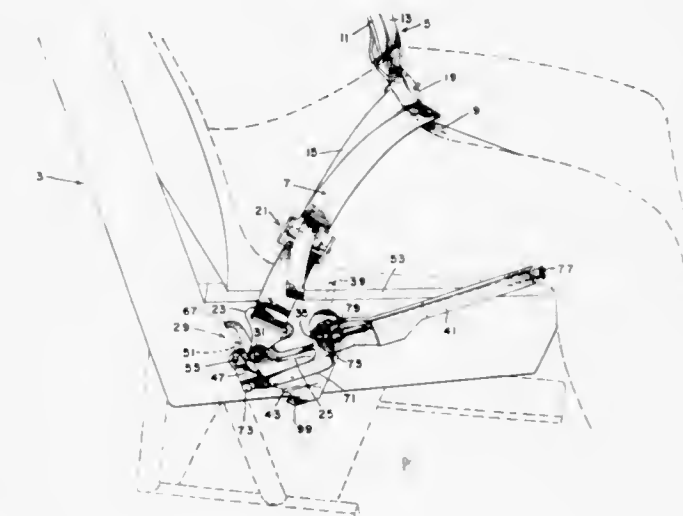
Herman Noble, Havertown, and Edward H. Hartel, Secane, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed Sept. 22, 1971, Ser. No. 182,601

Int. Cl. A62b 35/60; B60r 21/00

U.S. Cl. 297—389

6 Claims



Subject disclosure relates to a novel and improved system for restraining the pilot or occupant in a seat during an emergency situation. The improved system includes a lever assembly which, when operated, draws opposite ends of a lap belt downwardly and forwardly so as to minimize the tendency of the pilot to submarine under the belt.



3,694,030  
CHAIRS

Raymond E. Grosfillex, Arrent, France, assignor to Grosfillex S.A.R.L., Arrent, France

Filed Feb. 8, 1971, Ser. No. 113,349

Claims priority, application France, Feb. 11, 1970, 7004854

Int. Cl. A47c 7/00, 7/20

U.S. Cl. 297—445

5 Claims



This invention relates to chairs of the kind comprising a rigid base and a combined seat and back member of roughly hemispherical shape that is detachably securable to the base. According to this invention, the seat and back member comprises a layer of plastics material which is moulded in the flat to a generally circular shape to consist of a plurality of panels radiating from a central area to which they are secured. These panels are separated from each other by slots and, on the underside of each member, there is one or more clips arranged to engage over a circular supporting member on the base. The panels may have a radially outwardly located rib to hide the clip or clips. In one particular embodiment, the radiating panels are formed like the petals of a flower; the plain central area is eccentric with respect to the circle circumscribing the peripheries of the panels and forms the seat portion.

3,694,031

Patent Not Issued For This Number

3,694,032  
RAMP PLATE AND LOADER FOR MINERAL CONVEYORS

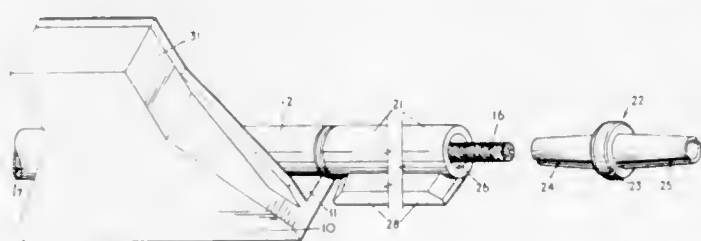
Terrence Ronald Bingham, Doncaster, England, assignor to Green & Bingham Limited, Yorkshire, England

Filed Nov. 2, 1970, Ser. No. 85,907

Int. Cl. E21c 27/35

U.S. Cl. 299—34

14 Claims



The invention discloses space-clearing means for use particularly in long-wall mining, comprising a train of ploughs mounted for movement along a guide ramp on the face side of a conveyor. The ploughs are linked by means transmitting both tension and compression and means are provided whereby a cutting machine can engage any selected plough of

the train to push or pull the ploughs in any combination, in either direction of the machine.

3,694,033

ROADWAY PAINT STRIPE GROOVING MACHINE

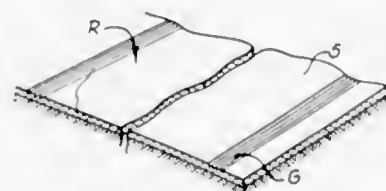
David S. Rowley, and William A. Lapp, both of Salt Lake City, Utah, assignors to Christensen Diamond Products Company, Salt Lake City, Utah

Filed Nov. 9, 1970, Ser. No. 87,685

Int. Cl. E01c 23/09

U.S. Cl. 299—39

22 Claims



A machine for cutting grooves and intervening ridges in a roadway to receive a reflective paint and function as lane dividers. A self-propelled vehicle has a power transmission for rotating a cutter to cut the grooves to a predetermined depth as the vehicle moves along the roadway at a relatively slow speed, the cuttings being flushed from the roadway surface by water which cools and cleans the cutter, vacuum apparatus sucking the water and cuttings from the roadway surface to a separator tank for separation of the air and slurry, a slurry pump transferring the slurry to a tank for separation of the cuttings from the water. A prime mover and power transmission separate from the normal vehicle power train can drive the vehicle at a relatively slow but variable speed during the cutting operation, and at a faster speed when the vehicle motion is reversed with the cutter disengaged from the roadway surface or the cutter is otherwise disengaged. The separate prime mover and transmission are ineffective with the cutter elevated from the roadway surface when the normal vehicle power train is operative to permit highway travel of the vehicle at normal traffic speeds.

3,694,034

Patent Not Issued For This Number

3,694,035

Patent Not Issued For This Number

3,694,036

Patent Not Issued For This Number

3,694,037

CLOSED CIRCUIT PNEUMATIC CONVEYING

Friedhelm R. Feder, Memphis, Tenn., assignor to Wedco, Inc., Garwood, N.J.

Filed April 30, 1970, Ser. No. 33,468

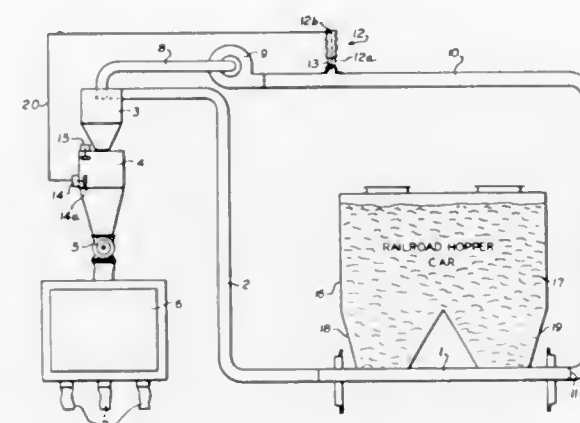
Int. Cl. B65g 53/06, 53/28, 53/66

U.S. Cl. 302—22

3 Claims

A closed circuit pneumatic conveying systems for conveying finely divided solids comprising, in a loop, a pick-up station, separator, air pump, and a return air conduit vented to

the atmosphere. A throttle valve is interposed between the return air line and the vent. By adjusting the throttle valve, the



rate of pick up can be varied according to demand. The system is useful for unloading semi-free flowing material, e.g. polypropylene flake, from a railroad hopper car.

3,694,038

ACTUATOR ASSEMBLIES FOR HYDRAULIC BRAKING SYSTEMS

Brian Ingram, Balsall Common; David Anthony Harries, Solihull, and Lancelot Phoenix, Hardsworth, Birmingham, 20, all of England, assignors to Girling Limited, Tyseley, Birmingham, England

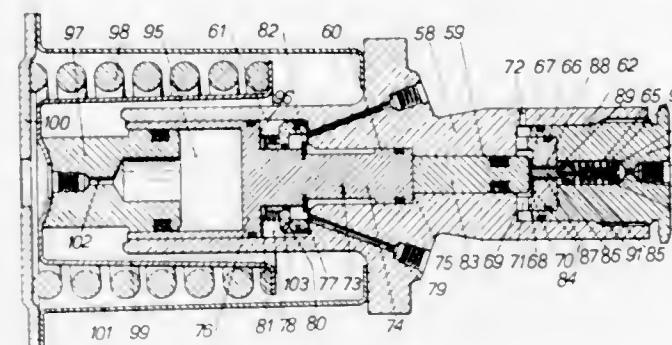
Filed Sept. 17, 1970, Ser. No. 73,202

Claims priority, application Great Britain, Sept. 17, 1969, 45,705/69; Jan. 6, 1970, 531/70; March 18, 1970, 13,117/70

Int. Cl. B60t 8/06, 8/12

U.S. Cl. 303—21 F

16 Claims



In an actuator assembly for an hydraulic braking system the effective volume of a chamber through which hydraulic fluid under pressure is supplied to a wheel brake is adapted to be varied between a minimum and a maximum value by movement of a piston assembly working in a bore in communication with the chamber. An actuator piston having first and second different faces of different areas normally holds the piston assembly in a position in which the effective volume of the chamber is at a minimum until equal hydraulic pressures are applied to the areas of the actuator piston to cause the actuator piston to retract and permit the piston assembly to be withdrawn whereby the effective volume of the chamber is increased.

3,694,039

SAFETY MECHANISM FOR BRAKE HOLDER OF AUTOMOTIVE HYDRAULIC BRAKE SYSTEM

Tsuneo Kawabe, Naoji Sakakibara, and Yasuhiro Kawahata, all of c/o Aisin Seiki Company Limited 1, Tenno, Takaokashinmachi, Toyota-shi, Aichi-ken, Japan

Filed Dec. 31, 1969, Ser. No. 889,576

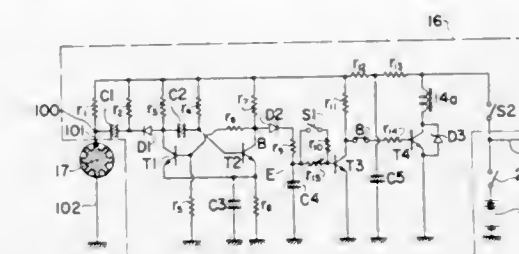
Int. Cl. B60t 8/08; F16d 67/02

U.S. Cl. 303—21 CF

7 Claims

A hydraulic brake system including a brake holder for holding a vehicle still after it has stopped is improved by using a signal generator producing pulses proportional to the rotation

of one of the wheels, a circuit for integrating the pulses to a corresponding voltage, and apparatus for delaying the actuation of the control valve until the integrated voltage drops to a



predetermined value to delay the brake holder for longer times at higher vehicle speeds to allow the driver time to release the brake pressure for wheel-locking or skidding at higher speeds.

3,694,040

TRACTION BELT

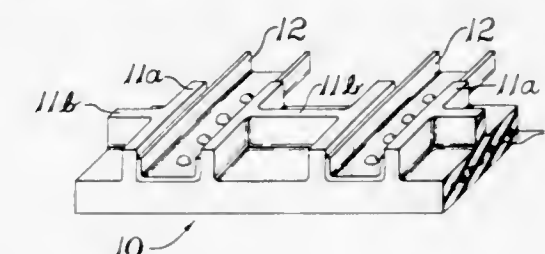
Allan D. Hallaman, 1156 Dietz Ave., Akron, Ohio

Filed Aug. 19, 1970, Ser. No. 65,060

Int. Cl. B62d 55/24

U.S. Cl. 305—38

2 Claims



An endless traction belt for vehicles having at least two endless bands laterally spaced, the bands being transversely interconnected by grouser bars attached to the outer surface of the bands. The grouser bars are longitudinally spaced on the bands with the region laterally intermediate the bands adapted to be contacted by driving-sprocket teeth. Transverse lugs of elastomeric material are formed on the outer periphery of the bands to a greater height than the grouser bars and the lugs are disposed closely adjacent opposite sides of each grouser bar such that the grouser bars are recessed between and supported by the lugs to prevent shearing of the grouser attaching means.

3,694,041

ELECTRIC MOTIVE MACHINE INCLUDING MAGNETIC BEARING

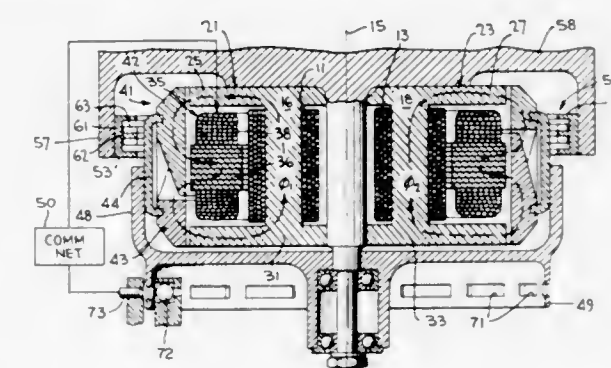
Philip A. Studer, Silver Spring, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Jan. 8, 1971, Ser. No. 104,884

Int. Cl. F16c 39/06

U.S. Cl. 308—10

17 Claims



A d.c. motor includes a plurality of stationary field windings and a stationary armature winding. Magnetic fluxes derived from the field windings interact with currents in the armature winding to produce a torque that rotatably drives a rotor



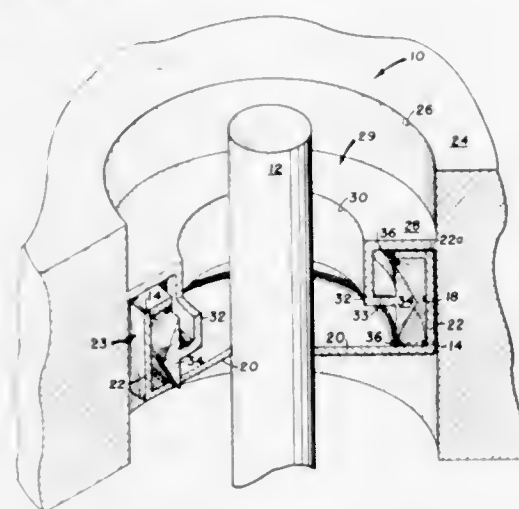
about an axis that has a tendency to coincide with a common longitudinal axis for the armature and field windings. The displacement of the rotor axis relative to the common axis is sensed to provide a signal for controlling the currents in the field windings. The currents in the field windings displace the rotor so that the rotor axis has a tendency to coincide with the common axis. The rotor is thereby magnetically suspended, without mechanical or air bearings, by the same forces that rotate it. To maintain the rotor speed constant, the total current in the field windings is maintained constant.

### 3,694,042 RADIAL FLUID BEARING

David W. Rabenhorst, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.  
Filed March 1, 1971, Ser. No. 119,501  
Int. Cl. F16c 33/72

U.S. Cl. 308—36.3

7 Claims



The invention comprises related embodiments of a basic rotary bearing having primarily effective sealing and either radial loading or thrust loading. Journaling capability is realized by holding a stationary annular member having a substantially triangular cross-sectional flange within a high density fluid centrifugally retained within a rotary annular cavity. Imposition of a radial load on the structure biases the stationary annular member into the fluid until the buoyant force exerted on said member by the fluid equals the imposed load. In another embodiment having thrust loading capability, the stationary member comprises a disc-like thrust plate held within a rotating cavity, the outer annular edges of the plate being immersed in a fluid held along the inner periphery of the cavity by the rotary motion thereof.

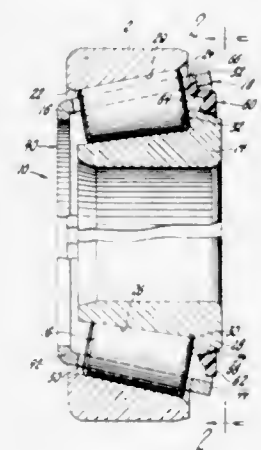
### 3,694,043 RETAINING RING AND CAGE FOR UNIT ASSEMBLY OF TAPERED BEARING COMPONENTS

Joseph W. Tellson, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed July 26, 1971, Ser. No. 165,954  
Int. Cl. F16c 33/00, 33/46

U.S. Cl. 308—214

4 Claims



A tapered roller bearing having a non-shouldered outer race, an inner race with a shoulder at its large diameter end, a

cage having roller pockets to receive rollers and a ring having radially projecting tangs thereon extending from an annular skirt with the tangs positioned to snap into locking engagement with suitable notches located at the large end of the roller pockets in the cage.

### 3,694,044 DISPENSING APPARATUS

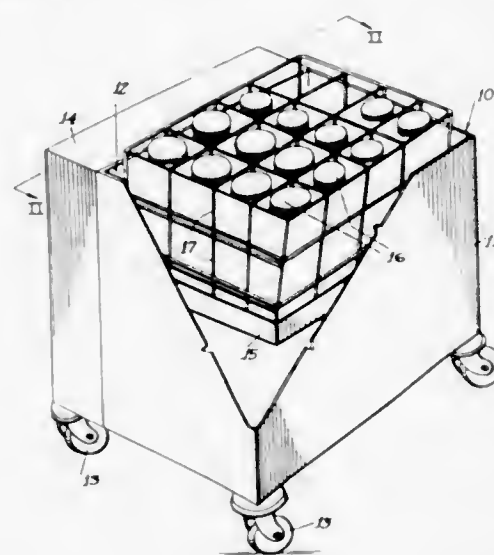
Gilbert A. Cummings, Winter Lake, Norwell, Mass.

Continuation-in-part of Ser. No. 1,379, Jan. 8, 1970. This application March 29, 1971, Ser. No. 128,708

Int. Cl. A47f

U.S. Cl. 312—71

15 Claims



This invention has to do with a dispensing apparatus of the self-leveling balanced beam or lever type in which one load, an elevator, is balanced by another load, a spring, and in which a mechanism is interposed between the spring and the elevator to permit adjustment for stacks of different masses on the elevator. The embodiment shown consists of a second-degree lever in which the points of fulcrum action and force application can be changed. Illustrated are: a curved lever and a follower adjustable therealong to vary the point of attachment of a load, in particular the spring load, in a system where both loads are attached through elongated flexible elements; a fulcrum for a lever adjustable in space to vary the moment arm for at least one of the loads, thereby to vary the dynamic range; adjusting a fulcrum by moving a swingable arm, mounting a lever on a swingable arm and connecting a load to the lever at a distance from this connection corresponding to the arm length by means of an elongated flexible element that passes about a pulley near the mounting of the swingable arm, thence to the load; and a system of stationary axis pulleys with any of the above, permitting straight line movement of the loads while permitting rotation of the lever assembly.

### 3,694,045 MAGAZINE FOR CARD RETRIEVAL

Takeshi Okano, Mishinomiya, Japan, assignor to Fuji Shashin Film Kabushiki Kaisha, Kanagawa-ken, Japan

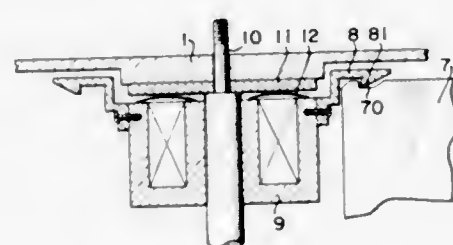
Filed April 20, 1971, Ser. No. 135,650

Claims priority, application Japan, May 18, 1970, 45/41887

Int. Cl. B42f 17/16

U.S. Cl. 312—186

8 Claims



A cylindrical magazine body loaded with a number of radially disposed cards is provided with a retainer ring for retain-

ing the cards by engagement with a notch formed in the inner upper edge of each card. The retainer ring retains the cards by gravity and releases the same when moved upwards by electromagnet.

### 3,694,046 SPACE SAVING KITCHEN UNIT

Hasso Gehrmann, Bregenz, Austria, assignor to Elektra-Bregenz GmbH, Bregenz, Austria

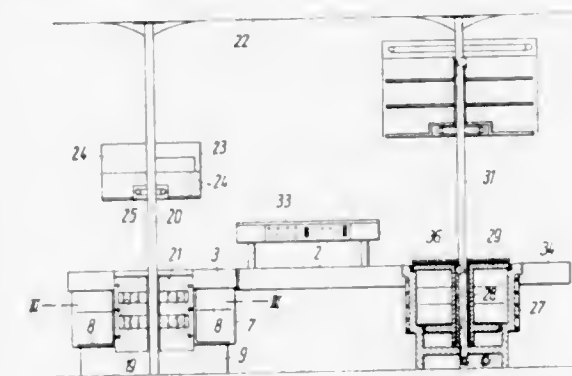
Filed Jan. 26, 1971, Ser. No. 109,803

Claims priority, application Austria, Jan. 26, 1970, 7670

Int. Cl. A47b 17/00, 19/00, 77/08

U.S. Cl. 312—196

10 Claims



A space saving kitchen unit incorporating kitchen appliances and equipment with a working and an eating surface, includes a table member providing a support surface into one end of which a horizontally arranged rotatable disc is fitted with a refrigerator unit built into the other end and a working station being located at one side of the support surface between its ends. The rotatable disc includes heating elements for cooking, a sink, a garbage disposal container, and compartments for appliances. Further, storage shelves are secured to and below the disc within an enclosing shell to which an access opening is formed. A dishwasher can be provided centrally within the shell extending downwardly from the upper surface of the disc. Support columns with lifting mechanisms are associated with the dishwasher and refrigerator unit for lifting inserts within these units to a position above the support surface where they are accessible from the working station. Additional storage shelves can be located within casings at the upper ends of the support columns so that they can be lowered for access from the working station.

### 3,694,047 CABINET CONSTRUCTION

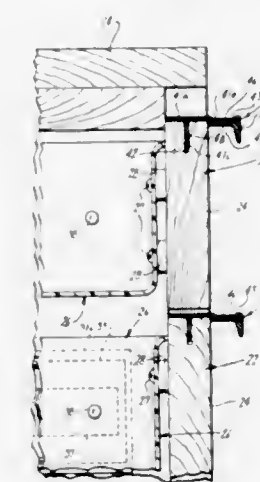
Allen E. Inhelder, Palo Alto, Calif., assignor to J. W. Cross Co., Palo Alto, Calif.

Filed Sept. 8, 1970, Ser. No. 70,241

Int. Cl. A47b 81/00; B42f 21/00

U.S. Cl. 312—234

10 Claims



A cabinet construction formed of an enclosure having a pair of spaced parallel side walls, spaced parallel top and bottom walls, a rear wall and an open front side. At least one drawer is

slidably mounted in the enclosure for movement through the front side. The drawer has a generally vertical front wall. A drawer pull is mounted on the front wall of the door and extends laterally of the drawer. The drawer pull has a forwardly extending portion extending forwardly from the front surface of the front wall and a downwardly depending portion adjoining the forward extremity of the forwardly extending portion. A forwardly extending portion has a recess formed therein extending transversely of the drawer. An insert is mounted in the recess and has printed indicia thereon. A decorative trim is mounted on the frontal portions of the side walls. The decorative trim has a base portion and a forwardly extending portion. The base portion has a vertical planar portion flush with the surface of the wall on which it is mounted. The forwardly extending portion has a planar vertical surface extending at right angles to the vertical surfaces on said base portion. The forwardly extending portion has an arcuate surface extending from said planar vertical surface on said base portion to the planar vertical surface of the forwardly extending portion.

### 3,694,048 MOVABLE COMPARTMENT

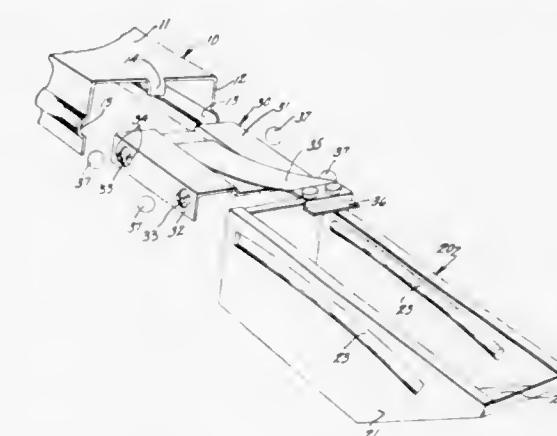
Forest L. Middleton, Middleville, Mich., assignor to Lesco, Inc., Grand Rapids, Mich.

Filed Sept. 28, 1970, Ser. No. 75,978

Int. Cl. A47b 88/14

U.S. Cl. 312—246

3 Claims



A movable compartment having a pair of mounting members spaced laterally from each other, each one having a pair of tracks at its sides, a pair of supports associated with the mounting members, each support having a pair of tracks at its sides, a box secured at each of its sides to one of the supports, ball bearings positioned between the mounting members and the supports lying in the tracks therein and means retaining the ball bearings in that position whereby the box is movable with respect to the mounting members through the ball bearings rolling in the tracks in the mounting members and the supports.

### 3,694,049 DRAWER SLIDE STRUCTURE

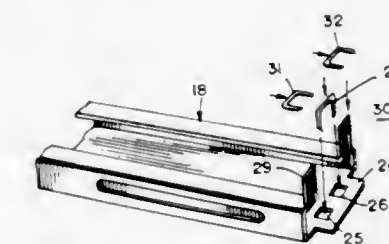
Kenneth H. Gutner, 3285 Dato, Highland Park, Ill.

Filed Aug. 3, 1971, Ser. No. 168,695

Int. Cl. A47f 5/08

U.S. Cl. 312—347

5 Claims



A channel-shaped slide for the under side of a drawer having securing means at each end and additional tab means for stabilizing the slide in place against detachment.



3,694,050

**METHOD OF FABRICATING A SCAN CONVERSION DEVICE**

Harry E. Smithgall, and Elmer O. Stone, both of Seneca Falls, N.Y., assignors to Sylvania Electric Products Inc.

Division of Ser. No. 886,109, Dec. 18, 1969, Pat. No. 3,624,442. This application Aug. 4, 1971, Ser. No. 168,996

Int. Cl. H01j 9/18

U.S. Cl. 316-19

8 Claims

3,694,052

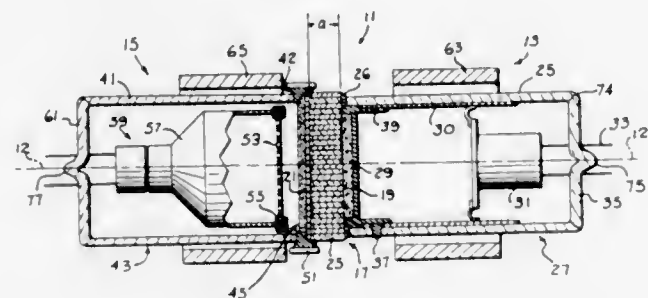
**ELECTROOPTIC MODULATOR UTILIZING PHASE RETARDATION EFFECT OF INTERNAL REFLECTIONS**

William Charles Gormley Ortel, New York, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 1, 1971, Ser. No. 111,258

Int. Cl. G02f 1/26

10 Claims



A method is provided for fabricating an improved scan-conversion device formed as a combination of two separate cathode ray tube sections utilizing a common faceplate portion therebetween. The method of fabrication embodies peripherally sealing an envelope funnel to a first surface of the common faceplate, whereupon a cathodoluminescent screen is formed. Upon positioning and sealing an electron gun in the funnel portion of the first envelope, the envelope is evacuated, sealed and processed to provide a display-forming section. A target electrode is then formed on the outer surface of the common faceplate, and a second envelope funnel, having an electron gun positioned and sealed therein, is peripherally bonded thereto; whereupon the second envelope is evacuated, sealed and processed to provide a display-reading section oriented to directly cooperate with the display-forming section.

3,694,051

**BICYCLE REFLECTOR AND HANGER THEREFOR**

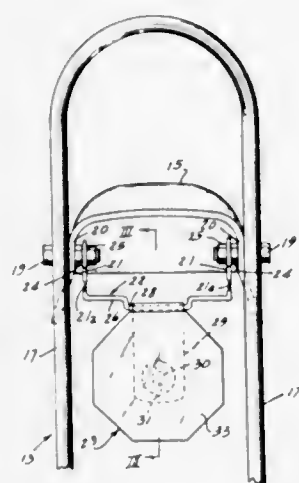
Walter Dian, Downers Grove, Ill., assignor to Excel, Incorporated, Franklin Park, Ill.

Filed Dec. 30, 1970, Ser. No. 102,646

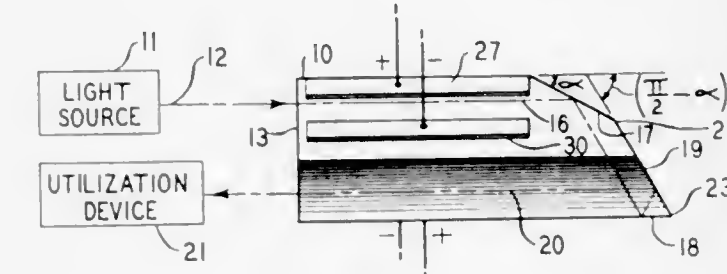
Int. Cl. G02b 5/12

U.S. Cl. 350-157

3 Claims



Bicycle reflector and hanger, hanging the reflector from the seat of a bicycle to maintain the reflective face of the reflector in a generally vertical position regardless of the angle of bicycle and seat relative to the vertical.



A lithium tantalate crystal is configured to have plural surfaces for producing sufficient internal reflection of a light beam to effect approximately a complete phase reversal of one component of the electric vector, which vector is transverse to the direction of propagation, of the beam within the crystal between two separate electrooptic modulation operations on the same beam within that crystal.

3,694,053

**NEMATIC LIQUID CRYSTAL DEVICE**

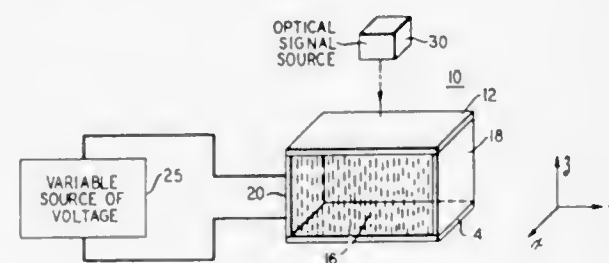
Frederic Jay Kahn, Madison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 22, 1971, Ser. No. 155,435

Int. Cl. G02f 1/16

U.S. Cl. 350-150

9 Claims



A device characterized by an electronically-tunable optical birefringence over the range of 0.0 to 0.2 for applied voltages below 25 volts rms includes a thin film of a nematic liquid crystal. The tunable birefringence occurs below the threshold for dynamic scattering and is the result of electric-field-induced spatially-uniform molecular reorientation in a well-aligned nematic liquid crystal. Applications for such a cell include display elements, tunable retarders, color modulators and variable density filters.

3,694,054

**COLOR DISPLAY SYSTEM UTILIZING PLURAL BIREFRINGENT ELEMENTS HAVING DIFFERENT RETARDANCES**

Jordan Kirsch, 78 Huron Ave., Cambridge, Mass.

Filed Nov. 27, 1970, Ser. No. 93,051

Int. Cl. G02b 1/24

U.S. Cl. 350-157

9 Claims

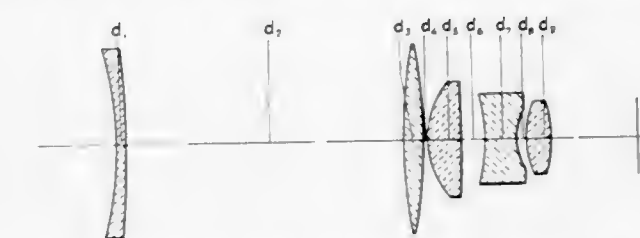
A color-display system embodied in a clock mechanism wherein the face of the clock constantly changes color. A pair of transparent, light-polarizing sheets are arranged parallel to one another with one of the sheets forming the face of the

clock. A pair of birefringent sheets are positioned between the polarizing sheets with one of the sheets having a greater retardance than the other. This one sheet is arranged with one of the principal axes at a fixed 45° angle relative to each of the

lens elements are arranged along the optical axis in the order stated. The main lens unit meets the condition

$$2d_6 < d_4 < 4d_6$$

wherein  $d_6$  is the vertex distance between the adjacent surfaces of said third and fourth lens elements and  $d_4$  is the vertex



distance between the adjacent surfaces of said fourth and final lens elements. For each of the lens units

$$1.62 \quad n_d \quad 1.67$$

$$33 \quad v \quad 61$$

wherein  $n_d$  is the index of refraction for the yellow helium line and  $v$  is the Abbe number.

3,694,057

**MODIFIED TRIPLETS WITH REDUCED SECONDARY SPECTRUM**

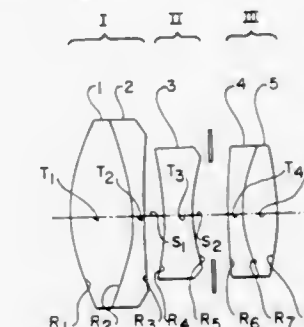
William H. Price, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,496

Int. Cl. G02b 9/26

U.S. Cl. 350-227

6 Claims



3,694,055

**THIN FILM, BIAXIALLY BIREFRINGENT NONLINEAR DEVICES**

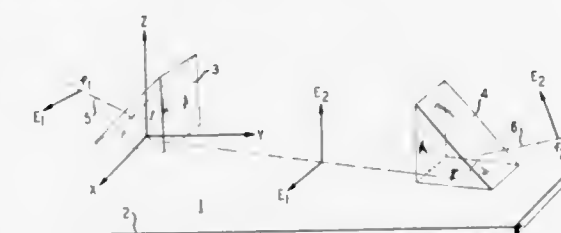
John George Bergman, Jr., Morganville; James Hoffman McFee, Colts Neck, and Ping King Tien, Chatham Township, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed March 12, 1971, Ser. No. 123,679

Int. Cl. H03f 7/00

U.S. Cl. 350-157

13 Claims



Phase matching for different frequency waves of electromagnetic energy is accomplished within a thin film of nonlinear material in which the index of refraction for a wave polarized orthogonal to the plane of the film is lower than that for a wave to which it is coupled which is polarized parallel to the plane of the film, and in which the index of refraction for waves polarized parallel to the plane of the film differs depending upon beam direction. An exemplary material is polyvinylidene fluoride which is mechanically oriented by biaxial stressing and which is electrically poled.

A lens, particularly usable in a printer, consists of a middle negative component surrounded by two positive doublets. Secondary spectrum is reduced by choosing refractive materials and element focal lengths to minimize the expression  $(P_m - P_3/V_3 - V_m)$ , where  $P_3$  and  $V_3$  are the partial dispersion and Abbe number for the negative component and  $P_m$  and  $V_m$  are the mean equivalent partial dispersion and mean equivalent Abbe number for the doublets.

3,694,058

**MODIFIED TRIPLETS WITH REDUCED SECONDARY SPECTRUM**

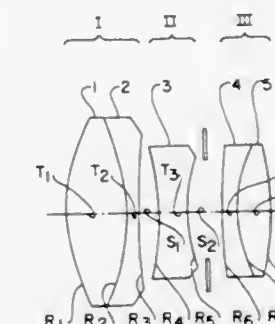
Wesley H. Vangraafeiland, 901 Elm Grove Road, Rochester, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,602

Int. Cl. G02b 9/26

U.S. Cl. 350-227

8 Claims



3,694,056

**PANCRATIC PROJECTION LENS**

Trude Muszumanski, Vienna, and Gunter Kurz, Vosendorf, both of Austria, assignors to Karl Vockenhuber and Raimund Hauser, Vienna, Austria

Filed Aug. 4, 1970, Ser. No. 60,841

Claims priority, application Austria, Aug. 14, 1969, 7865/69

Int. Cl. G02b 15/14

U.S. Cl. 350-184

1 Claim

The lens comprises a negative first unit consisting of a first lens element having a convex rear surface, a positive second lens unit consisting of a biconvex second lens element, which is displaceable along the optical axis of the lens, and a positive main lens unit consisting of a positive third lens element, a negative fourth lens element, and a final lens element. Said

A printer lens consists of a middle negative biconcave com-



ponent surrounded by two positive doublets, with the lens parameters being selected to reduce secondary spectrum.

3,694,059

## LIGHTWEIGHT COMPOSITE REFLECTOR DISH

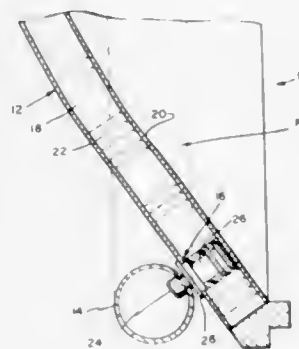
William B. J. Shakespeare, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Sept. 30, 1970, Ser. No. 76,741

Int. Cl. G02b 7/18

U.S. Cl. 350—310

2 Claims



A lightweight precision dish structure for reflectors, particularly large parabolic microwave reflectors for space applications. The dish structure has a laminated reflector dish with a central core and bonded facing sheets of differing coefficients of thermal expansion, and a rigid reinforcing ring secured by adjustable fastening means to the rear convex side of the reflector dish and having a coefficient of thermal expansion closely approximating the resultant coefficient of the dish. The reinforcing ring and its adjustable fastening means permit initial adjustment of the dish to a precise parabolic or other configuration and prevent later thermal distortion of the dish as a consequence of the differing coefficients of its core and facing sheets in an adverse, asymmetric thermal environment.

3,694,060

## MOTION-PICTURES PROJECTION DEVICE

Andre Francis Tadie, 19, rue Galilee, 75 Paris (16 eme), France

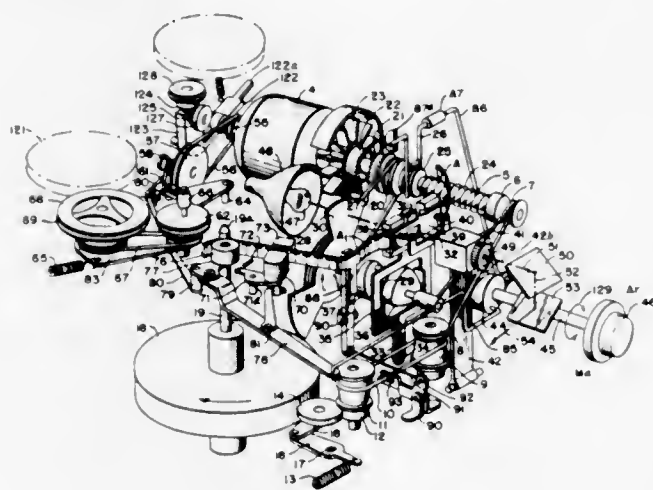
Filed March 24, 1970, Ser. No. 24,050

Claims priority, application France, March 27, 1969, 6909121

Int. Cl. G03b 31/02, 1/48

U.S. Cl. 352—14

10 Claims



Simplification of handling operations necessary for motion-picture projection and especially that of sound films. The film with its reels is carried in a magazine positioned flat-wise on the projector. This positioning operation engages the film in the clawed channel and in the sound-track reproduction device. A constant length of loop between the projection gate and the sound-head is ensured by regulating the film's unwind-

ing motion obtained by means of a follower controlling the level of the belt interconnecting a set of opposite truncated pulleys inset in the transmission of the rotating motion to a friction type supply-roller of film.

3,694,061

## AUDIO-VISUAL APPARATUS

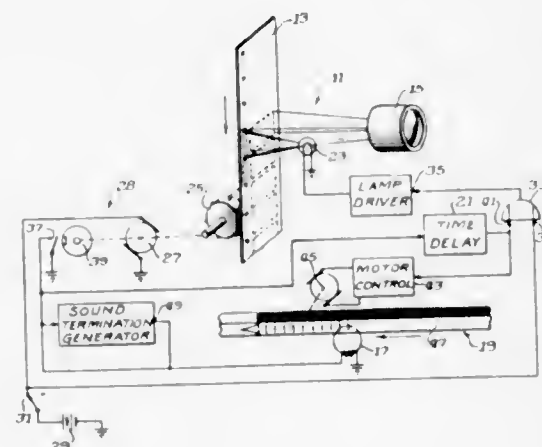
Robert S. John, Jr., Deerfield, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed April 16, 1971, Ser. No. 134,774

Int. Cl. G03b 31/04

U.S. Cl. 352—20

6 Claims



An apparatus for synchronizing an audio presentation with a visual display. During camera operation, the sprocket side of the film is exposed by a lamp which is energized upon actuation of the camera. After a predetermined amount of the film has been exposed, the lamp is extinguished and a tape recorder is started. During playback, the commencement of an opaque area along the sprocket margin of the film is sensed and utilized to actuate the recorder providing a synchronized sound accompaniment with the visual presentation.

3,694,062

## STROBOSCOPIC DISPLAY

Wolf M. Koenig, Montreal, Quebec, Canada, assignor to Roman Kroitor, Montreal, Quebec and A. Bram Appl., Westmont, Quebec, Canada

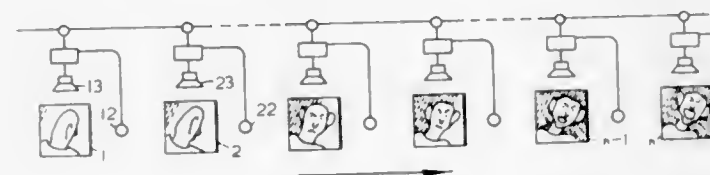
Filed Oct. 30, 1969, Ser. No. 872,636

Claims priority, application Canada, March 31, 1969, 47,335

Int. Cl. G03b 25/00

U.S. Cl. 352—100

1 Claim



There is provided an advertising system for use in railway tunnels and elevator shafts, etc., whereby a succession of pictures having incremental differences are fixed to a wall outside the passenger vehicles. The movement of the vehicle gives to the pictures an animated appearance to a viewer within the vehicle. The system is substantially operable at any vehicle speed above a certain minimum and is not dependent on the spacing of windows in the vehicle.

3,694,063

Patent Not Issued For This Number

3,694,064

## FRAMING ADJUSTER FOR SINGLE FRAME FILMSTRIP PROJECTOR

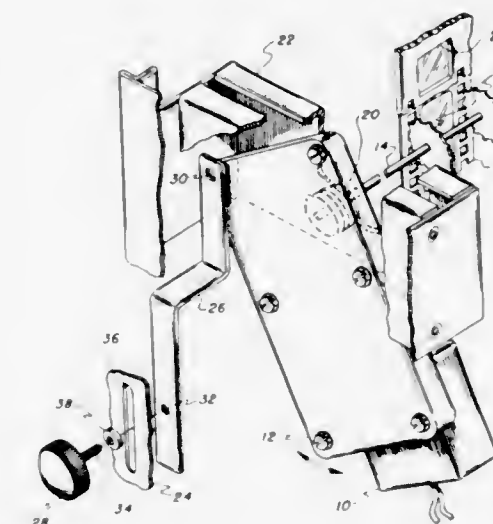
William R. Hirth, Warminster, Pa., assignor to Optisonics Corporation, Montgomeryville, Pa.

Filed Aug. 23, 1971, Ser. No. 173,949

Int. Cl. G03b 21/46

U.S. Cl. 352—163

3 Claims



An indexing or framing adjuster for a shutterless projector of the type which projects the frames of filmstrip sequentially and non-continuously onto a viewing screen, usually in synchronism with an audio presentation. The filmstrip is advanced by means of a motor mechanism which rotates a pair of sprocket wheels in engagement with the filmstrip a fixed angular increment each time the mechanism is actuated. The entire motor mechanism is pivotally mounted on an axis coincident with the mechanism's output shaft (the shaft which drives the sprocket wheels) such that rotation of the motor mechanism adjusts the position of the filmstrip. This enables the projected frame thereof to be symmetrically positioned (centered) on the viewing screen, whereby subsequently projected frames also will be properly centered. Rotation of the mechanism is accomplished by linearly adjusting a knob on the outside of the projector. The shaft of the knob extends through an elongated aperture in the housing of the projector into threaded engagement with one end of an arm, and other end of which is pivotally connected to the motor mechanism at a point spaced from its axis of rotation.

3,694,065

## TRANSPORTING MECHANISM FOR MOTION PICTURE FILM

Johann Roth, Schwabhausen, Germany, assignor to Niezoldi & Kramer GmbH, Munich-Allach, Germany

Continuation-in-part of Ser. No. 872,087, Oct. 29, 1969, Pat. No. 3,583,801. This application Nov. 2, 1970, Ser. No. 86,171

Claims priority, application Germany, Nov. 6, 1969, P 19 55 756.3

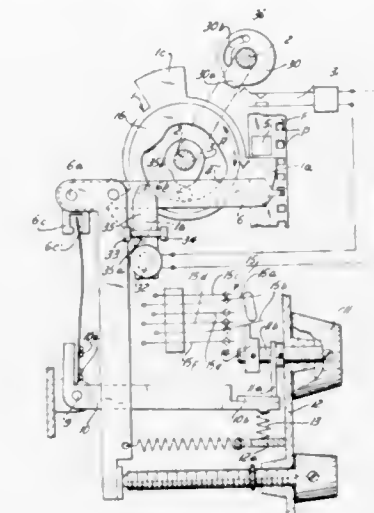
Int. Cl. G03b 1/22

U.S. Cl. 352—195

17 Claims

Transporting mechanism for film in motion picture projectors wherein the in-out cam is replaced with an electromagnet which is energized and deenergized in synchronism with the operation of that one of two transporting cams which move the shuttle lengthwise of the film, whereby the armature of the electromagnet causes the claw of the shuttle to enter into or to

move out of the adjacent perforation. One of the transporting cams is operative when the film is transported forwardly, and



the other cam moves the shuttle when the film is to move rearwardly.

3,694,066

Patent Not Issued For This Number

3,694,067

## PRODUCTION AND REPRODUCTION SYSTEMS WITH ENDLESS FILM OR TAPE CARTRIDGE

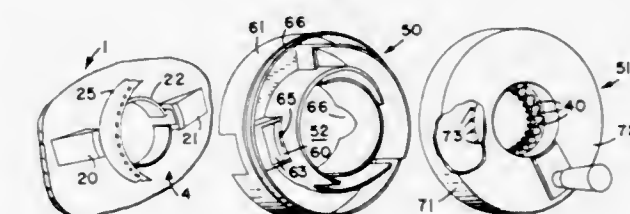
Carl J. Clement, Palo Alto, Calif., assignor to The Woodson Enterprises, Inc. c/o Becker and Savin, Chicago, Ill.

Filed Oct. 27, 1969, Ser. No. 869,772

Int. Cl. G03b 21/28, 23/17

U.S. Cl. 353—78

2 Claims



A camera, projector, viewer, sound recording or reproducing system using a continuous film or tape cartridge permitting such systems to be made with as few as one or two moving parts and which can be made by simple molding or die casting techniques. In an optical system, the film cartridge comprises a rotor and a stator which includes the means for driving the film and prism in synchronism. In a viewer, light is projected externally from a source within the viewer, through the film, an aperture in a centrally disposed interior surface of the stator and back into the viewer proper to a frosted screen for viewing. The cartridge permits manual or motor driven motion of the film in either a forward or a reverse direction and the central location of the aperture permits cartridges of relatively unlimited film capacity.

3,694,068

## ROLLER RETRACTION MECHANISM IN A MULTIPLE ROLLER BELT ASSEMBLY

William E. Jordan, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 29, 1970, Ser. No. 102,463

Int. Cl. G03g 15/00; B65g 15/00

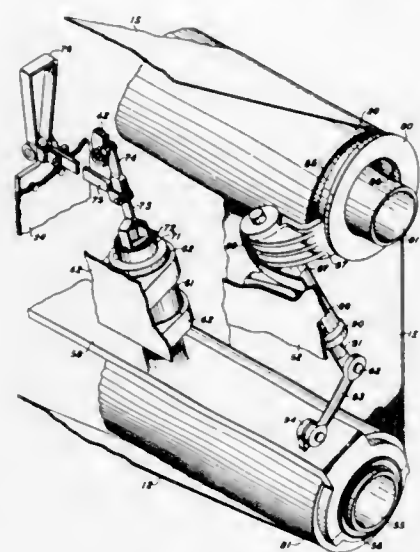
U.S. Cl. 355—3

4 Claims

A roller retraction mechanism for a belt assembly module of the type employing an endless photoconductive belt around a plurality of rollers. One of the rollers is mounted for rotation



in a yoke which is pivotally mounted on an axis normal to its axis of rotation, and a toggle leakage arrangement is con-



nected to the yoke for relatively moving the yoke axially along said pivotal axis.

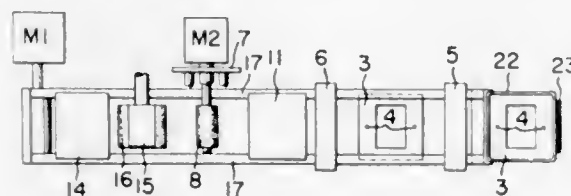
### 3,694,069 COPYING APPARATUS

Keizo Yamaji, and Akira Kurahashi, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan  
Filed March 12, 1970, Ser. No. 18,850

Claims priority, application Japan, March 15, 1969, 44/23318; March 15, 1969, 44/23320; March 15, 1969, 44/48231; March 15, 1969, 44/48232  
Int. Cl. G03g 15/00

U.S. Cl. 355-4

16 Claims



An electrophotographic copying apparatus for making a slide or microfilm record of an original image on a photosensitive member defined by a flexible photoconductive sheet and a relatively rigid frame supporting the photoconductive sheet. The copying apparatus includes a conveyor for supporting the relatively rigid frame of the photosensitive member and conveying same along a predetermined path. Charging, original image exposure and developing elements are disposed serially along the predetermined path in the direction in which the conveyor moves the photosensitive member and cooperate to form an electrophotographic image of the original image. A positioning arrangement, cooperable with the conveyor, is provided for selectively positioning the photosensitive member relative to the exposure element. A control arrangement for multicolor reproduction is also provided by which the conveyor is controlled to move the photosensitive member relative to the charging, exposure and developing elements a number of times corresponding to the number of color separation images utilized in the reproduction of said original image.

### 3,694,070 COPYING SYSTEM FEATURING SCANNING ILLUMINATION ELEMENTS

Edwin L. Libby, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.  
Filed Aug. 24, 1970, Ser. No. 66,326

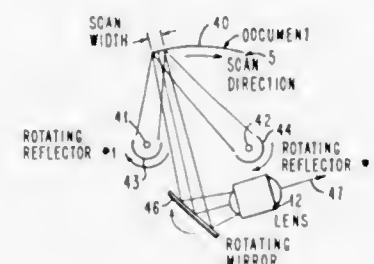
Int. Cl. G03g 15/04

U.S. Cl. 355-8

2 Claims

A copying system includes scanning illumination elements that focus the light only on the area of the original document

that is actually being optically scanned by the system. A first embodiment has rotating reflectors cooperating with stationary lamp elements to project a line of light onto an original document and a rotating mirror receiving image information from the original document and transmitting the same through



a lens element to an image plane. A second embodiment has a rotating mirror that receives light from stationary lamp elements in a first portion of the mirror, reflects a line of light to the original document and receives image information from the original document in a second portion of the mirror for transmission through a lens element to an image plane.

### 3,694,071 APPARATUS FOR PREWETTING PHOTOELECTROSTATIC OFFSET MASTERS

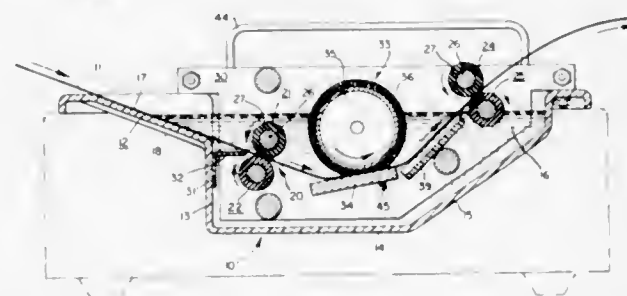
Albert Francis Touchette, Hadley, Mass., assignor to The Plastic Coating Corporation, Hampshire Co., Mass.

Filed Nov. 12, 1969, Ser. No. 875,835

Int. Cl. G03g 15/00

U.S. Cl. 355-15

17 Claims



Apparatus for applying a prewetting solution to an image-bearing surface of a photoelectrostatic master sheet, which apparatus includes a scrubber roll rotatably disposed in pressure contact with the bearing surface of a guide plate which is submerged in a prewetting solution contained in a reservoir, and two spaced sets of rotatably mounted rolls arranged to advance a photoelectrostatic master sheet from an input position where the sheet is submerged, through the nip formed by the scrubber roll against the bearing surface where the image-bearing surface of the master sheet is lightly scrubbed to remove loose toner particles and to prepare it for reproduction, and to an exit position where excess prewetting solution is removed from the surface of the master sheet.

### 3,694,072 METHOD AND APPARATUS FOR MAKING ORTHOPHOTOS USING A FIXED FILM BED

Joseph O. Danko, Jr., Baltimore, Md., and Clinton J. T. Young, Alexandria, Va., assignors to Danko Arlington, Inc., Baltimore, Md.

Filed Aug. 25, 1971, Ser. No. 174,635

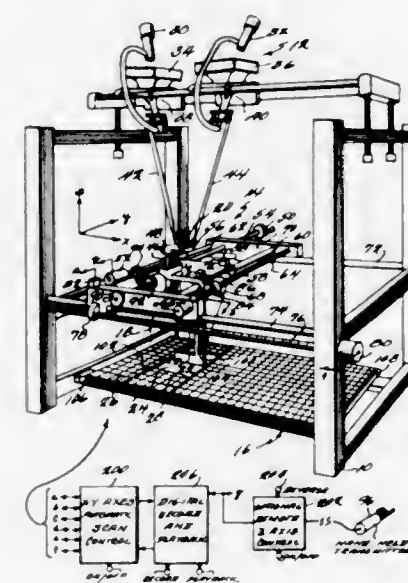
Int. Cl. G03b 27/32

U.S. Cl. 355-22

23 Claims

Method and apparatus for making substantially orthographic photo images from an optically projected stereo model of three dimensional terrain without necessitating quick precision movements of a relatively massive high inertia and precision machined film bed. A flexible fiber optic bundle is used to transmit light images from a first end to a second end. The first end is scanned in three dimensions over and

upon the surfaces of the three dimensional stereo model while the second end is synchronously scanned in two dimensions over photo-sensitive material held in a relatively fixed and relatively cheaply constructed film bed. In a further embodiment, a first pseudo-scanning cycle may be performed to obtain corresponding three dimensional digital scanning data for



the first end of the fiber optic bundle which data are recorded and subsequently used to control a second automated real-scanning cycle where the film is actually exposed to either produce special effects such as color orthophotos or to merely permit more relaxed discontinuous operator control (including the ability to erase errors) during the first manually controlled pseudo-scanning cycle.

### 3,694,073 METHOD FOR DUPLEXING

Gopal C. Bhagat, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

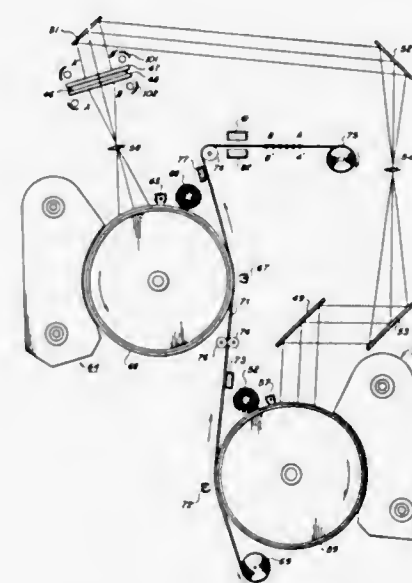
Division of Ser. No. 751,986, Aug. 12, 1968, Pat. No.

3,580,670. This application July 20, 1970, Ser. No. 56,559

Int. Cl. G03b 15/00

U.S. Cl. 355-24

1 Claim



A method for duplex printing by forming on the surface of a first plate an electrostatic latent image conforming to the information to be placed on the first side of a support material, then forming on the surface of a second plate an electrostatic latent image conforming to the information to be placed on the opposite side of the support material, developing the latent images, and transferring the developed image on each plate to its respective side of support material.

### 3,694,074 PHOTOGRAPHIC PRINTING SYSTEM

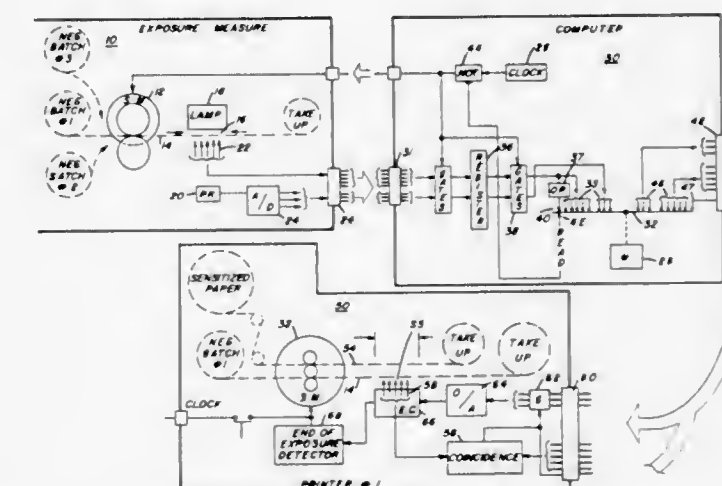
Robert W. Huboi, 1220 Woodhull Road, Webster, N.Y.; Terry E. Riley, 58 Cor-Mar Lane, Rochester, N.Y., and Bradley D. Rising, 311 Mill Road, Rochester, N.Y.

Filed March 5, 1970, Ser. No. 16,775

Int. Cl. G03b 27/78

U.S. Cl. 355-38

1 Claim



Photographic printer apparatus is a building block arrangement of printer components. An exposure determining device, which produces printer control signals derived from photographic negatives, applies such signals to a computer; and a photographic printer draws such printer control signals from the computer independently of the operation of the exposure determining device. Such an arrangement permits a plurality of printers to cooperate with a common exposure determining device; and further permits photofinishers to avoid equipment redundancies.

### 3,694,075 Patent Not Issued For This Number

### 3,694,076 MULTIPLE LENSLET COPIER

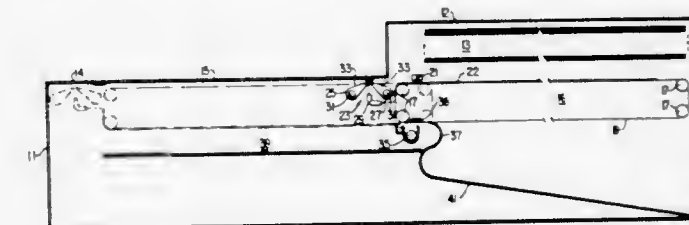
Paul E. Weber, 921 Bartlett Terrace, Libertyville, Ill.

Filed Aug. 31, 1970, Ser. No. 68,212

Int. Cl. G03b 27/48, 27/50

U.S. Cl. 355-50

46 Claims



This disclosure describes a multiple lenslet copier wherein a plurality of pairs of lenslets are aligned along a common axis. Each pair of lenslets include a first and a second lenslet separated by an air space. The air space forms a field lens that images light rays from the outer surface of the first lenslet onto the outer surface of the second lenslet to reduce vignetting. An optical field stop is located in the air space between the lenslets to limit the size of the image projected by each pair of lenslets. In addition, a baffle is located along the optical axis of each pair of lenslets to prevent cross-talk. The pairs of lenslet are moved at right angles to their common axis across the surface of an original document so as to project an image onto a sheet of copy paper. The copy paper is either moved to a stationary position prior to movement of the pairs of lenslets or moved as the pairs of lenslets are moved. Alternatively, the



copy paper and the original document may move while the pairs of lenslets remain stationary.

3,694,077

Patent Not Issued For This Number

3,694,078

# QUICK RELEASE MAGNETIC LATCH FOR COPIER EXPOSURE STATION

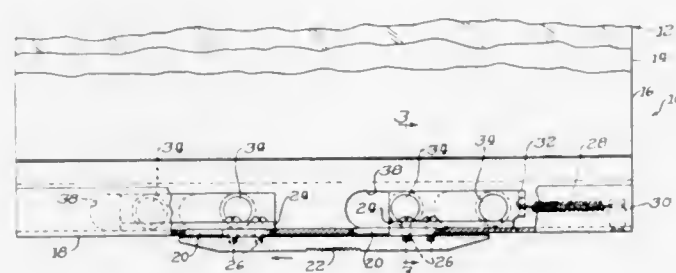
George W. Bookless, Franklin Park, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Nov. 27, 1970, Ser. No. 93,211

Int. Cl. G03b 27/62

U.S. Cl. 355—75

3 Claims



A latch for a copier exposure station including laterally slideable ferromagnetic members that coact with underlying stationary ferromagnetic members. The latch finds particular utility in a dual-blanket exposure station.

3,694,079

# PHOTOGRAPHIC PRINTING APPARATUS AND METHOD FOR REPRODUCING AN ORIGINAL HAVING SEPARATE MAJOR AREAS OF RESPECTIVELY DIFFERENT DENSITIES

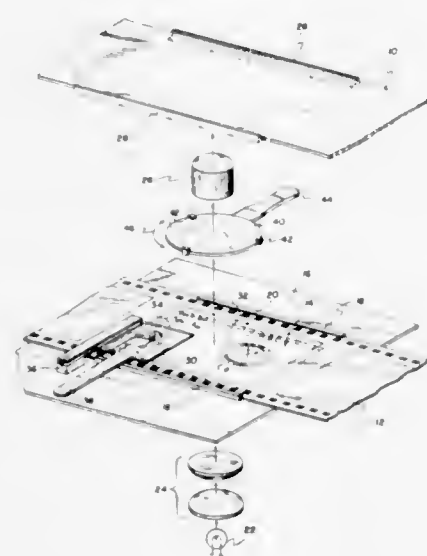
James Edward Harvey, 901 Elmgrove Road, Rochester, N.Y.

Filed Oct. 7, 1969, Ser. No. 864,419

Int. Cl. G03b 7/00

U.S. Cl. 355—77

9 Claims



An apparatus and method for producing, by a single exposure a print of a film transparency having separate major areas of respectively different densities. The exposure of a lower density area is variably reduced or dodged with respect to an adjacent or surrounding high density area through the use of polarizer filters. The apparatus is particularly suited for printing identification card film negatives having a portrait area of low density and a data area of high density.

# 3,694,080 METHOD OF AND APPARATUS FOR PHOTOPRINTING CONDUCTOR PATTERNS ON THE CURVED SURFACES OF TRANSDUCERS

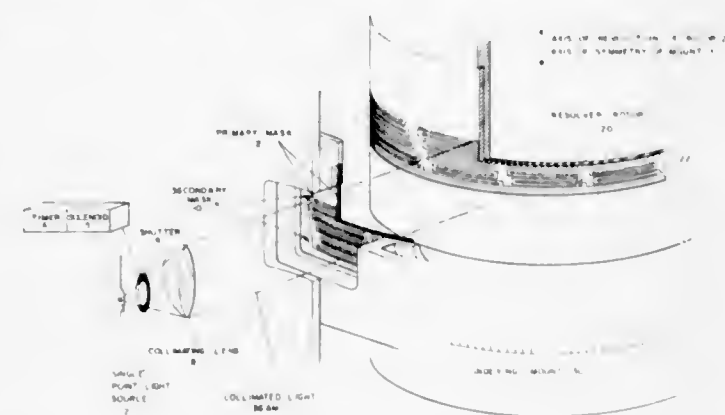
Herbert Malsky, Belmont, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed March 9, 1970, Ser. No. 17,691

Int. Cl. G03b 27/00

U.S. Cl. 355—86

7 Claims



Method of and apparatus for positioning and photoprinting with high accuracy a magnetic or electrically conducting pattern of repeatable units on the curved surfaces of revolution of a transducer. The curved surface is placed on an indexing mount, and a mask of one unit of the pattern and conforming to the curved surface is located as close as possible to, but not in contact with the curved surface. Light is directed through the mask, projecting the image of the unit on the photoresist-coated surface. The surface is then rotated relative to the mask through an angular displacement corresponding to the desired distance between units of the pattern. The light again impinges through the mask, and another unit is exposed. The process is continued until a full revolution is achieved, and a complete pattern of repeatable units is formed. Where the mask is mounted on an indexing mount, the process is as aforementioned, except that the mask is rotated relative to the mount.

3,694,081

# METHOD AND APPARATUS FOR CONTACT PRINTING

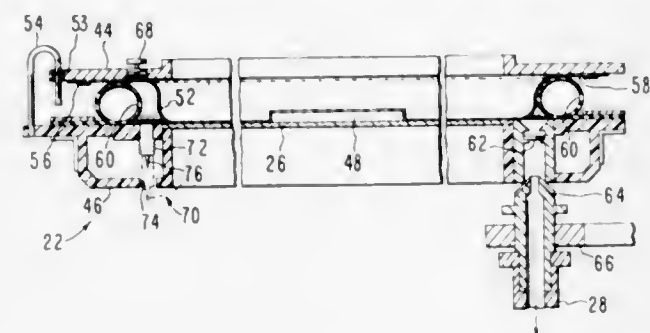
Charles H. Keller, Sunnyvale, Calif., assignor to Pek, Inc., Sunnyvale, Calif.

Filed Feb. 11, 1970, Ser. No. 10,348

Int. Cl. G03b 27/20, 27/2

U.S. Cl. 355—91

35 Claims



A contact printing system and a process for contact printing using independent transportable, vacuum-frame, workpiece-holding assemblies. The workpiece to be exposed is inserted within a transportable vacuum frame which is then evacuated of substantially all of the air therein. The transportable frame, which automatically maintains itself in the evacuated state is then manually and/or automatically transported to a radiation station where the workpiece is exposed to radiation such as light or ultraviolet radiation. After being exposed the vacuum frame may be manually or automatically removed from the ex-

posure station for further processing. Desirably each vacuum frame includes two transparent plates one for each side of the vacuum frame so that both sides of the vacuum frame can be exposed simultaneously to the radiation.

3,694,082

# PHOTOGRAPHIC PRINTER

Walter Knapp, and Kurt Ramsauer, both of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

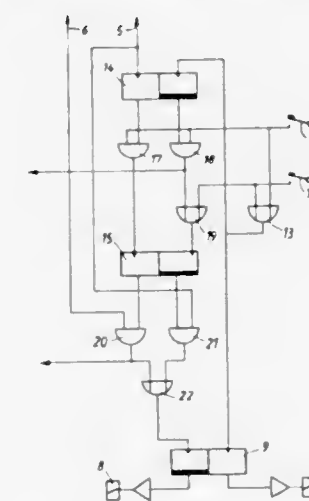
Filed Dec. 28, 1970, Ser. No. 102,011

Claims priority, application Germany, Dec. 29, 1969, P 19 65 244.9

Int. Cl. G03b 27/04

U.S. Cl. 355—97

14 Claims



Printable negatives are provided with notches that are detected, the resulting "notch" signals being sent to a logic circuit that controls the movement of the film through the scanning and printing stations. A first "notch" signal from a scanning station stops the corresponding negative in the scanning station. The succeeding "notch" signal from a scanning station do not, the film being stopped by the "notch" signal from the printing station. If the negative has no notch, the omission of the "notch" signal from the scanning station prevents printing of the un-notched negative.

3,694,083

# METHOD AND APPARATUS FOR EXPOSING A PORTION OF A PHOTOGRAPHIC STRIP

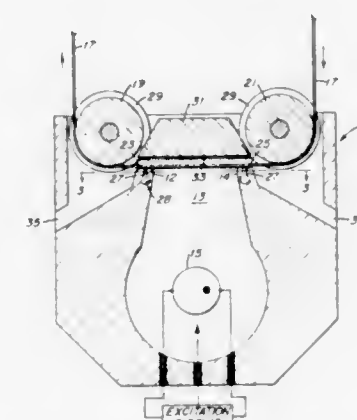
Neil S. White; David E. Wenschhof, and Richard R. Mosman, all of 1669 Lake Ave., Rochester, N.Y.

Filed April 26, 1971, Ser. No. 137,425

Int. Cl. G03b

U.S. Cl. 355—133

8 Claims



A method and apparatus are disclosed for controlling the exposure of a portion of a photographic film strip so that sharp lines of demarcation are formed between exposed and nonexposed areas of the strip. During exposure of a portion of the film strip, the film strip is forced to cooperate with the

periphery of an exposure aperture to form a light-seal that substantially prevents light from leaking to areas of the strip adjacent to the portion being exposed. Air jets positioned at the periphery of the aperture are used to create a pressure differential across the strip which tends to draw the strip towards the periphery of the aperture to form the light-seal and also guide the web in a precise path over the aperture.

3,694,084

# STROBOSCOPIC SPEED DISPLAY MEANS FOR MOVING VEHICLES

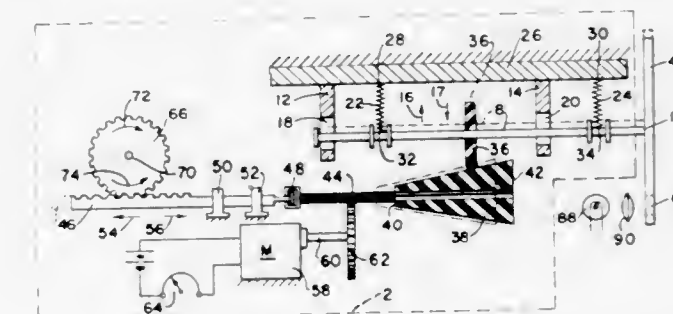
Joel P. Citron, 3252 Stanley Road, Akron, Ohio

Continuation-in-part of Ser. No. 606,495, Nov. 30, 1966, abandoned. This application March 23, 1970, Ser. No. 21,930

Int. Cl. G01p 3/40

U.S. Cl. 356—25

18 Claims



This invention relates generally to relative speed-indicating means and more particularly to a visual display system for enabling an abstract visual comparison of the relative speed of one moving vehicle with respect to another and further to means capable of presenting an abstract visual display to the operator of a moving vehicle of the required desirable vehicle speed, said latter presentation being dictated remotely from a fixed station situated externally of the moving vehicle or directly to the operator from means within the vehicle.

3,694,085

# MIXING TYPE CONDENSATION NUCLEI METER

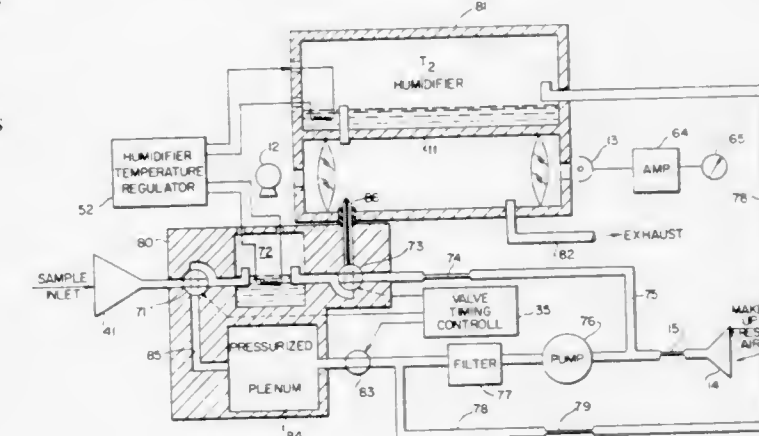
Theodore A. Rich, Scotia, N.Y., assignor to Environment/One Corporation, Schenectady, N.Y.

Filed Sept. 10, 1970, Ser. No. 71,060

Int. Cl. G01n 1/10, 21/26

U.S. Cl. 356—37

17 Claims



A condensation nuclei meter for deriving a count of the condensation nuclei particles entrained in a sample atmosphere. The meter comprises a condensation chamber having a light source and photocell disposed at opposite ends for projecting a light beam through the condensation chamber and deriving an output electric signal from the photocell which is representative of the light modifying effects on the light beam of liquid droplets formed in the condensation chamber. A first filtered gas at a first temperature value and 100 percent relative humidity is introduced in the condensa-

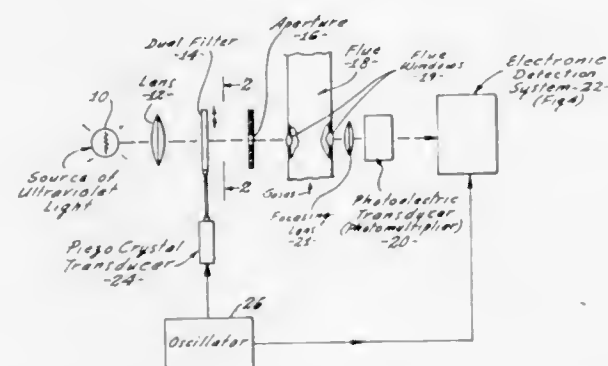


tion chamber with the condensation chamber maintained at the first temperature value. A second condensation nuclei particle bearing sample gas to be monitored is then introduced at a second temperature value different from the first temperature and at 100 percent relative humidity at the second temperature. The second gas is rapidly injected and turbulently intermixed with the first gas within the condensation chamber in a manner to assure rapid mixing at the confluence of the two gases whereby supersaturation occurs and condensation takes place about the condensation nuclei particles as centers of condensation.

3,694,086

## CORRELATION SPECTROMETER

Donald L. May, Manhattan Beach, Calif., assignor to Centron Engineering, Inc., Gardena, Calif.  
Filed April 12, 1971, Ser. No. 133,192  
Int. Cl. G01n 21/34; G01j 3/42; G01n 21/22  
U.S. Cl. 356—51 2 Claims

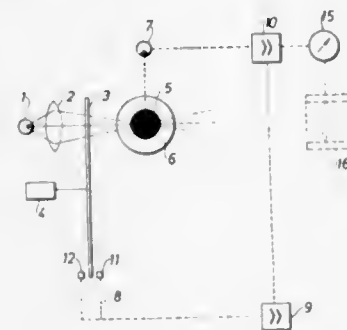


An improved correlation spectrometer is provided which may be used for the quantitative measurement of the amounts of such gases as  $\text{SO}_2$ ,  $\text{CO}_2$ ,  $\text{NO}$ ,  $\text{NO}_2$ , and  $\text{N}_2\text{O}_3$  in a gaseous discharge. The invention has particular utility, for example, in the measurement of sulphur dioxide ( $\text{SO}_2$ ) in a flue discharge so that the sulphur dioxide level may at all times be maintained below acceptable ecological thresholds. The correlation spectrometer of the invention includes a piezoelectric transducer which effectively causes filters to be selectively and cyclically introduced into the optical path between an ultraviolet light source and a photoelectric transducer, so that the percent transmittance may be measured successively and repeatedly at two distinct wavelengths. The two wavelengths respectively correspond to an absorption line of the particular gas being measured, and to a wavelength displaced from the absorption line to provide a reference.

3,694,087

## SUSPENDED PARTICLE LIGHT REFLECTION MEASUREMENT METHOD AND APPARATUS

Arne Robert Lindberg, Slingergatan 18, 431-39 Molndal, Sweden  
Filed Nov. 5, 1970, Ser. No. 87,078  
Int. Cl. G01n 21/26  
U.S. Cl. 356—103 4 Claims



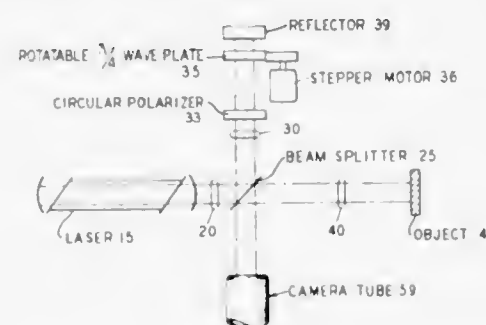
An apparatus and method for measuring the content of material suspended in liquids or the turbidity of liquids by illuminating the liquid with a light source and measuring the reflected light.

minating the liquid with a light source and a photo-electrical registration of the intensity of the reflected light comprising a tubular nozzle arranged to provide a jet of liquid. Said jet of liquid being illuminated through a gap substantially perpendicularly to said jet, whereupon the intensity of the light reflected from particles in said jet is measured at an angle to that at which the light falls.

3,694,088

## WAVEFRONT MEASUREMENT

John Everett Gallagher, Scotch Plains, and Donald Richard Herriott, Morris Twp., Morris Cty., both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed Jan. 25, 1971, Ser. No. 109,220  
Int. Cl. G01b 9/02  
U.S. Cl. 356—106 17 Claims



A conventional interferometer has been modified so that amplitude and phase information contained in an interference pattern may be calculated from intensities read out by a television camera and phase shifts introduced by rotation of a quarter-wave plate. To operate the device, reference light at a first phase is interfered on the television camera with light from the object being tested. Such an object might be a lens. The camera samples the intensity of the interference pattern at an array of points; and these values of intensity are stored in a computer. Next, a known phase shift is introduced into the reference beam by rotating the quarter-wave plate; and the intensity in the resulting interference fringe pattern is again sampled at the same points in the array and stored. This process is again repeated for a second known phase shift. Because the three values of intensity obtained at each point in the array are interrelated by the fact that the intensity at any point in the interferogram is a sinusoidal function of phase, simultaneous solution at each point of three equations corresponding to the three values of intensity produces phase and amplitude plots of the wavefront from the object under study. Alternatively, by making several measurements of the intensity over phase angles from zero to  $2\pi$ , it is possible to form phase and amplitude plots by determining Fourier coefficients.

3,694,089

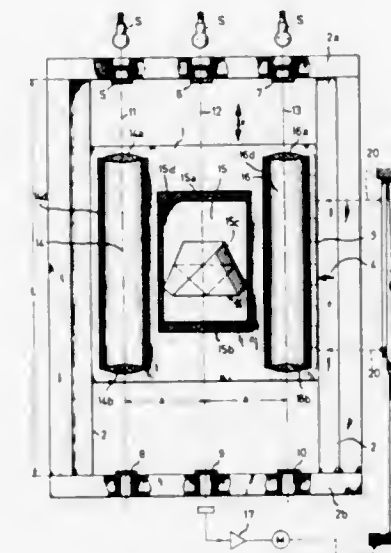
## DEVICE FOR DETERMINING GUIDANCE ERRORS

Kurt Rantsch, Heidenheim, Germany, assignor to Carl Zeiss-Stiftung, Oberkochen/Wuerttemberg, Germany  
Filed Dec. 17, 1970, Ser. No. 99,220  
Claims priority, application Germany, Dec. 23, 1969, P 19 64 470.3  
Int. Cl. G01b 21/46, 11/26, 11/26 18 Claims

In applications where a movable body is to be precisely displaced and oriented over a range of movement with respect to a relatively fixed body, as for example, to maintain the movable body on a precise axial alignment (free of tilt and lateral offsets) over a range of axial displacement of the movable body, the invention contemplates a combination of optical systems, particularly afocal systems having imaging characteristics  $\beta' = +1$  and  $\beta' = -1$ . These afocal systems include component elements so disposed on the moving and fixed

bodies that wide-based fixed optical reference axes may be continuously observed and tracked.

The invention is described in the illustrative context (a) of a

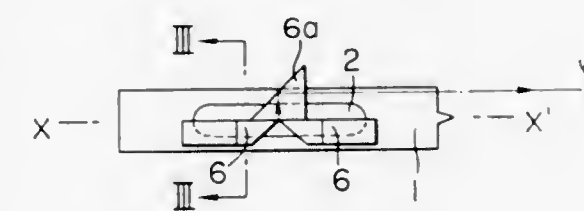


single-axis guided slide movement and (b) of a multiple-axis system, exemplified by the two-component motion of a machine-tool cross-slide on its main slide.

3,694,090

## INSTRUMENT FOR OBSERVING COLORED BUBBLE IMAGE

Hideki Ohyama, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan  
Filed Oct. 6, 1970, Ser. No. 78,399  
Claims priority, application Japan, Oct. 6, 1969, 44/94587  
Int. Cl. G01c 9/24  
U.S. Cl. 356—148 1 Claim

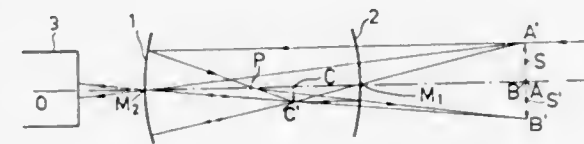


A coincidence type bubble image observation instrument including a coincidence prism, a bubble tube and a reflecting plate for confirming the coincidence of the bubble image. A color filter of a colored reflecting plate is placed on one side of the split line in opposed relation with a coincidence prism between a reflecting plate and a bubble tube to coloring only the bubble image.

3,694,091

## OPTICAL DEVICE FOR ALIGNING OBJECTS LOCATED AT AN ARBITRARY DISTANCE THEREFROM

Hendrik de Lang, Klein Vrijenban 1, Delft, Netherlands  
Continuation of Ser. No. 780,926, Oct. 22, 1968, abandoned.  
This application July 19, 1971, Ser. No. 164,096  
Claims priority, application Netherlands, Oct. 25, 1967, 6714459  
Int. Cl. G01b 11/26  
U.S. Cl. 356—172 6 Claims



An alignment device employing two substantially identical aligned concave partially reflective mirrors where the center

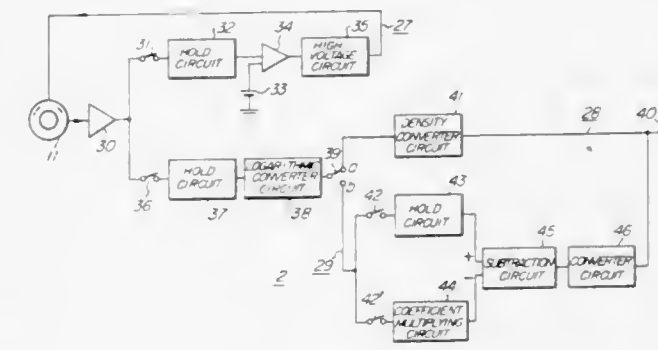
of curvature of each mirror is contained by the other mirror.

The device will form an inverted image of any object placed substantially along a line formed by the centers of curvature of the two mirrors. Any part of the object lying exactly in alignment with the line formed by the centers of curvature will be overlapped by a corresponding part of the image.

3,694,092

## PHOTOMETER

Hiroshi Hashimoto, Naka-gun; Takehide Satou, Katsuta; Kengo Sudo, Katsuta, and Naoya Ono, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
Filed March 3, 1970, Ser. No. 16,052  
Claims priority, application Japan, March 7, 1969, 44/16860  
Int. Cl. G01j 3/48, 3/46  
U.S. Cl. 356—188 8 Claims



A photometer which is used to test a sample by the use of two different wavelengths  $\lambda_1$  and  $\lambda_2$ , multiplying the test result of the sample for the wavelengths  $\lambda_2$  by a certain coefficient, and subtracting the value obtained by the said multiplication from the test result of the sample for the wavelength  $\lambda_1$ , thereby quantitatively analyzing the sample.

3,694,093

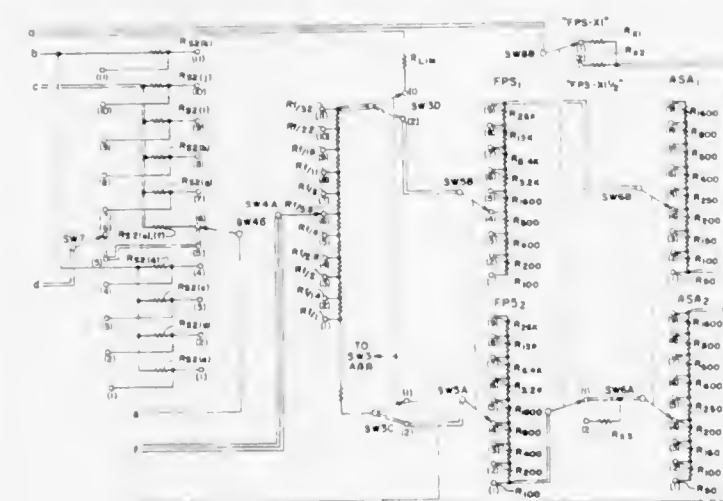
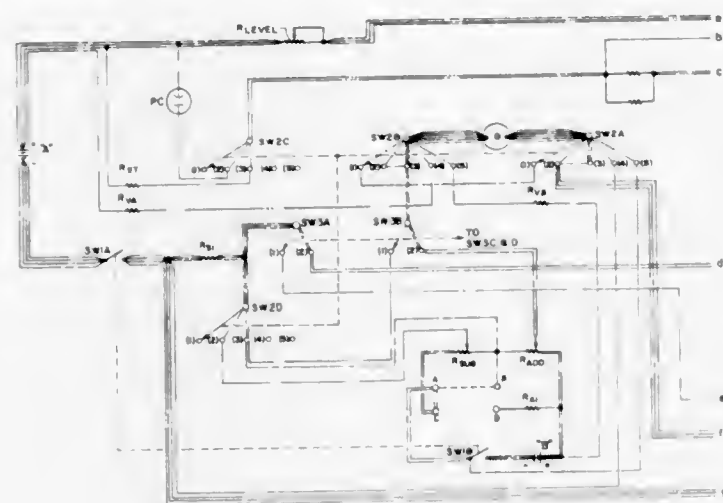
## EXPOSURE METER

Charles A. Jantzen, 190 Alps Road, Wayne, N.J., and Victor J. Canziani, 1145 E. 21 St., Brooklyn, N.Y.  
Filed Aug. 30, 1971, Ser. No. 175,838  
Int. Cl. G01j 1/44, 1/42  
U.S. Cl. 356—226 8 Claims

An exposure meter which includes a Wheatstone Bridge circuit having first and second house sides. One house side includes a photoconductive cell and a plurality of resistors which can be selectively and individually connected in series with the photoconductive cell at any of a series of illumination values of light incident thereon so that the normally nonlinear relationship between the resistance of a photoconductive cell and the illumination of light incident thereon can be converted to a useable relationship for that specific series. The second house side includes a resistance size (increasing  $f$ /stop number) as the ladder is climbed, and two pairs of resistance ladders, one pair representing the increasing camera speed (FPS or frames per second) as the ladders are climbed and one pair representing the increasing film sensitivity (ASA rating) as the ladders are climbed. The individual ladders of each pair are identical, have a preselected number of steps and are conjointly set to the same setting or position so that when one ladder of each pair is interconnected and each so connected pair is respectively connected to the top or bottom of the first resistance ladder a constant total resistance will be maintained, for all possible settings, on the second house side. The Bridge can be standardized so that the photoconductive cell can be calibrated and compensated for any deviation from a standard set of resistance values for the specific illumination



series. Also provided is means for multiplying each of the camera speed (FPS) setting by a predetermined multiple so



that a wide range of FPS settings can be conveniently provided.

3,694,094

## BORESCOPE WITH VARIABLE ANGLE SCOPE

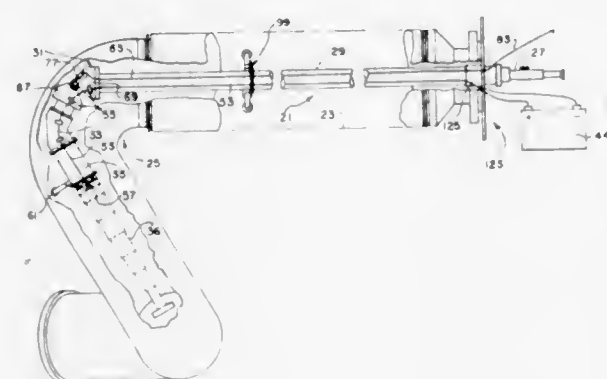
George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Drury K. Mitchell, 3543 Chowning Court, Columbus, Ohio

Filed Dec. 22, 1970, Ser. No. 100,639

Int. Cl. G01n 21/16; G02b 7/22

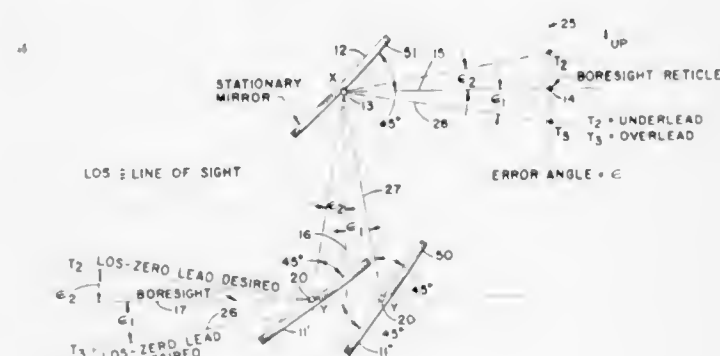
U.S. Cl. 356—241

6 Claims



A borescope with an adjustable hinged telescoping optical system which will permit visual inspection of bore surfaces at angles greater than 90°.

3,694,095  
FIRE CONTROL SYSTEM  
John D. Louthan, Dallas, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.  
Filed Aug. 5, 1970, Ser. No. 61,133  
Int. Cl. G02b 27/32; F41g 3/08; G02b 5/08  
U.S. Cl. 356—255 4 Claims



A first, fixed mirror is placed in the path of light passing to a boresight reticle and inclined at an angle to the boresight axis. A second mirror is positioned transversely to said boresight axis and reflects the image of a target to the first mirror and thence along the boresight axis to the boresight reticle. The second mirror is rotatable about two axes, the first axis lying in the plane of the first mirror and intersecting said boresight axis at a right angle, and the second axis lying in the plane of the second mirror and parallel to the first axis. Computing means are provided to determine the desired (correct) lead angle, the actual lead angle and the lead angle error between the intercepting aircraft and the target, and to produce signals indicative of the error. Means are provided for receiving the error signals and for responding thereto to rotate said second mirror about its second axis to center the target image on the boresight reticle when the actual lead angle is equal to the correct lead angle and to rotate said second mirror about its first axis to displace the target image with respect to the boresight reticle to indicate the amount and direction of the lead angle error.

3,694,096

## POWDER OR CREAM DISPENSER WITH SELF-CONTAINED APPLICATOR

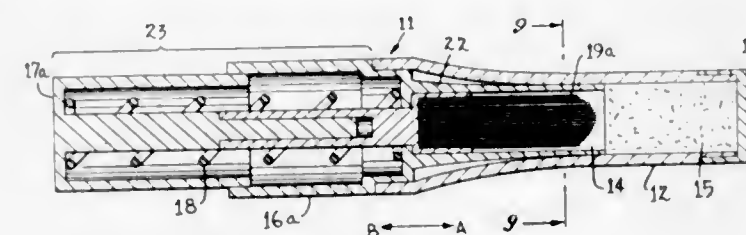
David Seidler, Forest Hills, N.Y., assignor to Menley & James Laboratories, Philadelphia, Pa.

Filed Sept. 23, 1970, Ser. No. 74,596

Int. Cl. A45d 33/00

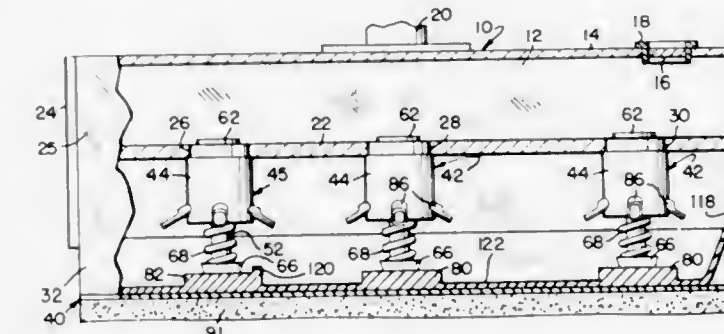
U.S. Cl. 401—127

4 Claims



A powder or cream dispenser with a self-contained applicator is comprised of a casing having a reservoir adapted to receive a dispensable material, a holder movably mounted on the casing and including a reciprocally movable plunger attached to the holder; an applicator disposed at one end of the plunger is movable therewith when the holder is mounted on the casing. The applicator as well as the plunger are movable in opposite directions between a projected position wherein the applicator projects into the reservoir and thereby makes contact with the dispensable material and, respectively, a retracted position in which the applicator is clear of the reservoir.

3,694,097  
LIQUID WAX APPLICATOR  
John M. Fedorek, 1034 Surrey Road, Summerdale, N.J.  
Filed March 22, 1971, Ser. No. 126,660  
Int. Cl. A471 13/312  
U.S. Cl. 401—206 10 Claims



A liquid wax applicator including a wax reservoir and a plunger assembly operable through the bottom of the reservoir to deposit liquid wax by gravity upon floor contacting pads. The plungers are spring biased to close openings in the reservoir bottom to prevent escape of liquid wax from the reservoir. Pressure may be applied upon the plungers by pressing upon the applicator handle to depress the plunger springs and urge the applicator pads against the plungers to allow wax to flow from the reservoir onto the applicator pads during the time pressure is applied. Each plunger incorporates a plurality of nozzles which are so positioned as to assure even distribution of the wax across the entire applicator pad area.

3,694,098

Patent Not Issued For This Number

3,694,099

## BORING TOOL

George C. Nicholas, 141 Austin St., Worcester, Mass.

Filed Oct. 23, 1970, Ser. No. 83,462

Int. Cl. B23b 29/03

U.S. Cl. 408—58

6 Claims



In general, this invention relates to a tool for forming bores in material, wherein the tool has a shaft, a cutting element mounted on one end of the shaft, and a suction passage in the shaft to remove chips.

3,694,100

## ADJUSTABLE DRILL JIG

Lesley W. Blair, 605 - Third Ave., N.W., Pocahontas, Iowa

Filed March 22, 1971, Ser. No. 126,592

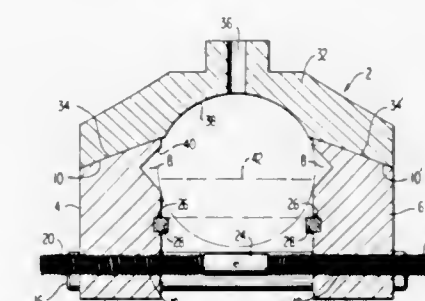
Int. Cl. B27g 23/00

U.S. Cl. 408—105

5 Claims

A drill jig has spaced opposed jaws defining a space within which a round workpiece is clamped. The upper surfaces of

the jaws slope along planes which converge at a line running midway above the space occupied by the workpiece. A saddle



having sloped bottom surfaces complementary with the upper surfaces of the jaws rests on the jaw tops. At the center of the saddle is a guide hole for a center punch.

3,694,101

## REENTRY CENTRIFUGAL PUMP/MIXERS

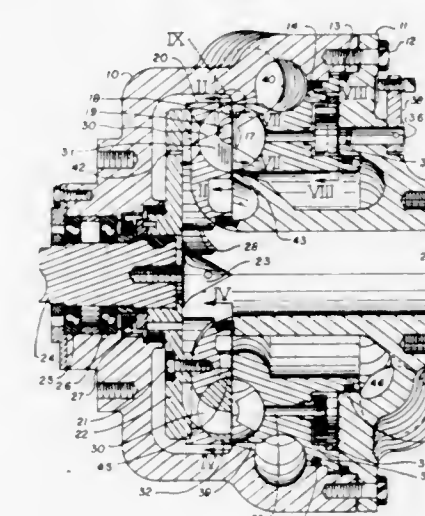
Rollin Douglas Rumsey, 148 Summer St., Buffalo, N.Y.

Filed Feb. 5, 1971, Ser. No. 112,865

Int. Cl. F01d 1/12

U.S. Cl. 415—52

12 Claims



A reentry centrifugal pump has within its housing a toroidal working chamber one-half of which is stationary and the other half of which is blade filled and contained in a rotor coupled to a shaft. Fluid inlet to the working chamber is along the inside periphery on one version and from the blades at the centerline of the toroid (the fluid vortex center) on another or both. When more than one inlet is employed, extremely efficient mixing of the fluids results. Provision is made to prerotate the inlet fluid using a conventional centrifugal pump runner in order to avoid inlet shock. Fluid outlet from the working chamber is provided along the outside periphery to a diffuser on one embodiment and through the stationary casing adjacent to an abutment dam blocking the stationary housing portion of the toroidal working chamber on another.

3,694,102

## GUIDE BLADES OF AXIAL COMPRESSORS

Oswald Conrad, Schmiden, Wurttemberg, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed July 7, 1970, Ser. No. 52,832

Claims priority, application Germany, July 26, 1969, P 19 38 132.9

Int. Cl. F01d 5/14

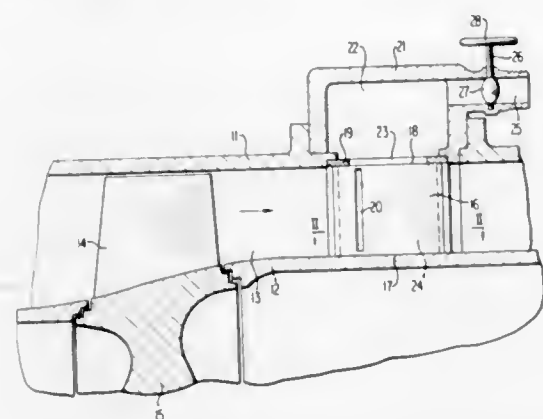
U.S. Cl. 415—115

21 Claims

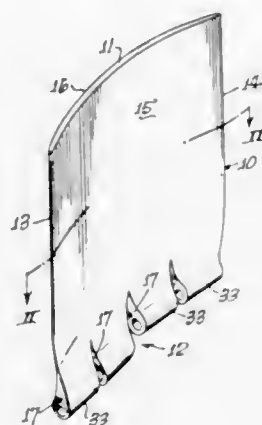
A guide blade arrangement of axial compressors in which the guide blades are provided with openings for sucking off



the boundary layer, which are in communication by way of the blades are retained in the hub or on a rotor disc. When the blades are assembled with a disc to form a rotor, suitable



hollow spaces provided in the blades with a space of relatively low pressure.



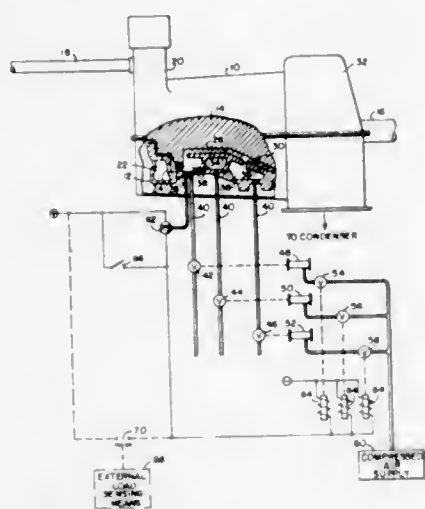
spacers are inserted between them to provide the platforms or inner boundaries for the air or gas passages.

**3,694,103**  
**PROTECTIVE SYSTEM FOR AUTOMATIC ACTUATION OF STEAM TURBINE DRAIN VALVES**  
Albert Cohen, and Frank O. Burckhalter, both of Wallingford, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 9, 1971, Ser. No. 114,000  
Int. Cl. F01d 1/00, 25/24

U.S. Cl. 415—168

6 Claims



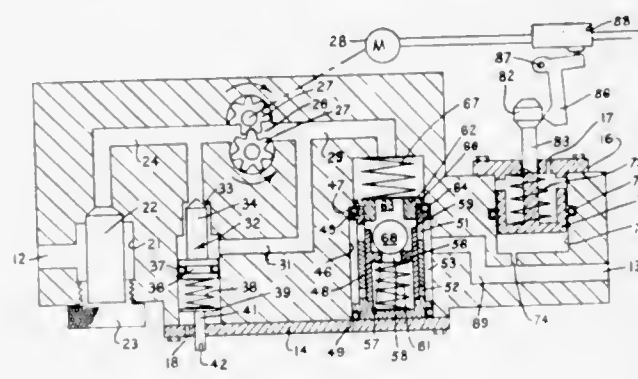
System for automatically opening drain valves to drain condensate from a steam turbine when the load on the turbine falls below a predetermined limit beyond which condensate within the turbine casing is likely to occur. Preferably, load conditions are sensed by a pressure switch actuable in response to a low pressure-low load condition within the turbine casing. This switch then closes electrical circuitry for opening the drain valves when the pressure falls below the aforesaid predetermined limit.

**3,694,105**  
**FLUID PRESSURE SYSTEM**  
Thomas B. Martin, Micro-Pump Corp., 1021 Shary Court, Concord, Calif.

Filed Oct. 2, 1970, Ser. No. 77,527  
Int. Cl. F04b 49/00, 49/08

U.S. Cl. 417—26

8 Claims



A system of valves used in conjunction with a constant-speed pump provides a rate-of-flow-pressure relationship which commences with a high pressure at about zero flow, drops off rapidly to a point of very low flow, then flattens to an approximately straight line, gradually declining pressure to about maximum flow, then drops rapidly to zero pressure at maximum flow. The system includes co-axial, closely spaced and related check valve, pressure relief valve and control valves. The system also includes an adjustable pump by-pass valve and a discharge valve which inactivates the pump motor when discharge pressure exceeds a maximum or falls below a minimum.

**3,694,104**  
**TURBOMACHINERY BLADE**  
John R. Erwin, Paradise Valley, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Oct. 7, 1970, Ser. No. 78,714  
Int. Cl. F01d 5/14

U.S. Cl. 416—217

18 Claims

This turbomachinery blade has an internal frame or strut made of plastic-impregnated fibers and covered with a thin metal sheath. The frame has sections extending spanwise with the fiber rovings wound under tension which is maintained while the plastic is being cured. The sheath may be made in one or more sections to receive the assembled frame structure the parts being adhesively or otherwise joined into a unit. The frame sections have the fibers passed around mandrels to form loop type openings at the hub end for receiving pins by which

**3,694,106**  
**AIR-LIFT PUMP WITH SCALLOPED AIR-LIBERATION RINGS, AT TWO LEVELS**  
James Donald Walker, Aurora, Ill., assignor to Chicago Bridge & Iron Company

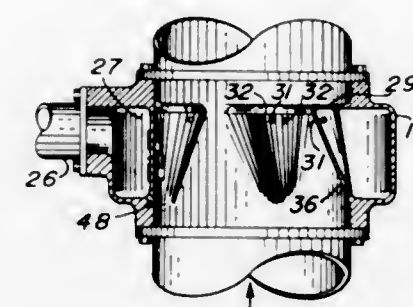
Filed June 8, 1970, Ser. No. 44,234  
Int. Cl. F04f 1/18

U.S. Cl. 417—109

2 Claims

Efficiency for a large diameter air-lift pump is achieved with a scalloped air liberation ring, inwardly projecting portions having orifices to liberate air with good distribution through the liquid flow area. The under sides of the projections slope steeply toward the tips and are gently rounded to avoid catching elongated strands. Liberation of air at near the lowest

level possible, for efficiency, is achieved by first liberating air at a higher level until flow causes dropped liquid head pressure, whereby the power output of the pump can be maintained at a predeterminate value. The device can be used with two pumps



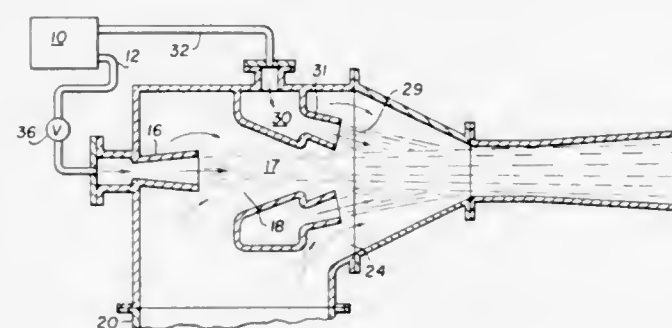
sure, permitting the same air pressure to be used for the deeper liberation.

**3,694,107**  
**EJECTOR APPARATUS AND METHOD OF UTILIZING SAME**

Robert Stein, Rego Park, N.Y., assignor to Nash Engineering Company, South Norwalk, Conn.  
Continuation-in-part of Ser. No. 44,962, June 10, 1970, abandoned. This application Nov. 19, 1970, Ser. No. 90,975  
Int. Cl. F04f 5/22, 5/46

U.S. Cl. 417—167

3 Claims



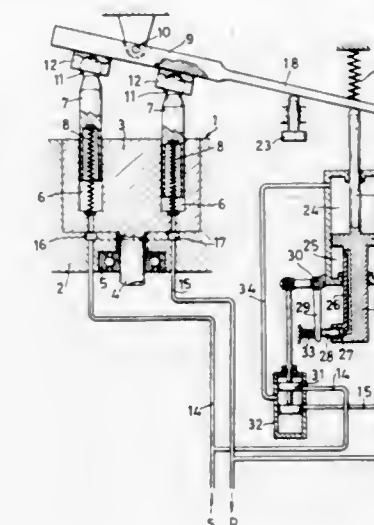
A compound ejector apparatus comprising a primary nozzle, primary mixing chamber, secondary nozzle, secondary mixing chamber and diffuser, the primary nozzle functioning mainly as a super charger and the secondary nozzle functioning mainly as a mixer and which furnishes a major portion of the kinetic energy for the compression work taking place in the diffuser, each nozzle being supplied with a part of the motive fluid, wherein the motive fluid supplied to the secondary nozzle has a higher pressure than that supplied to the primary nozzle and wherein the amount of motive fluid supplied to the primary nozzle is only a small part of the total motive fluid supplied to the apparatus.

**3,694,108**  
**HYDRAULIC APPARATUS FOR REGULATING THE FLOW OF ONE OR MORE PUMPS**  
Carlo Pensa, Via S. Carlo, Esino Lario (Como), Italy  
Filed April 14, 1970, Ser. No. 28,425  
Claims priority, application Italy, April 23, 1969, 15873 A/69

Int. Cl. F04b 1/26, 23/04, 41/00  
U.S. Cl. 417—222

12 Claims

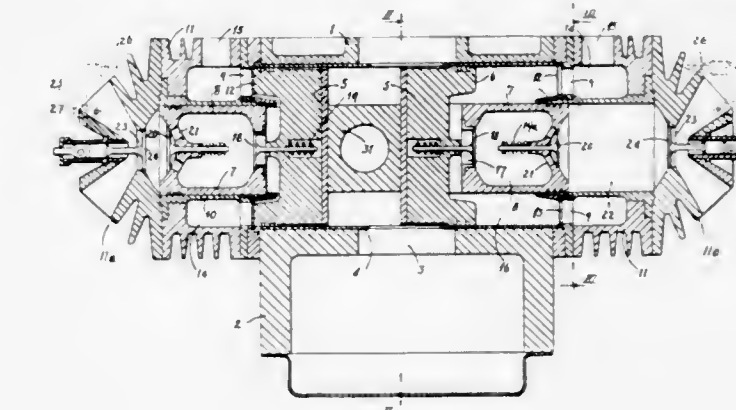
In combination with a pump having a variable rate of flow, a device for varying such rate of flow is governed by the pressure generated by the pumps through a variable transmission mechanism the ratio of which depends on the said rate of flow,



for limiting the total power output of both pumps, as being governed by the average of the two pressures.

**3,694,109**  
**INTERNAL COMBUSTION ENGINE OR COMPRESSOR**  
Patrick Joseph Walls, Rosemount Glandore Road, Dublin 9, Ireland

Filed Dec. 9, 1970, Ser. No. 96,330  
Int. Cl. F04b 3/00, 5/00, 25/00, 7/00; F01b 1/00  
U.S. Cl. 417—261



The invention concerns a double acting engine which may be either an internal combustion engine or a compressor, the construction being characterized by the combination of a main cylinder, a double-acting type piston reciprocatably mounted therein, a cylinder head detachably mounted on each end of the main cylinder and carrying a cylindrical sleeve of smaller diameter than the main cylinder and extending coaxially towards the main cylinder, a hollow portion of reduced diameter extending coaxially from each end of the main piston to slidably fit within said cylindrical sleeve extending towards it, valve means to control the admission of air to the annular main cylinder space surrounding said hollow reduced portion, inlet valve means mounted on said piston to control the admission of air from said annular cylinder space into said hollow portion of the piston, outlet valve means mounted on said piston to control the transfer of air from said hollow piston portion into the interior of said sleeve, and exhaust valve means in the cylinder head to control the discharge of exhaust gas from said sleeve. The construction may also incorporate an auxiliary piston slidable in each of the aforesaid sleeves, the movements of the auxiliary pistons being constrained so that for the major part of their travel they move in opposition to the main piston. The latter is operatively connected directly to a crank shaft without the intermediary of a connecting rod and the movements of the auxiliary pistons are co-ordinated from the crankshaft through the intermediary of



suitable connecting links, the arrangement permitting fine adjustment. The construction and arrangement of the valves is such that, when used as an internal combustion engine, air passes into the engine by way of an outer annular air chest and after its initial compression progresses through the engine interior in a generally axial direction to final exhaust. This not only greatly simplifies the flow of the motive fluids but facilitates cooling and gives ample cylinder strength at all parts, resulting in overall efficiency and economy in production.

3,694,110

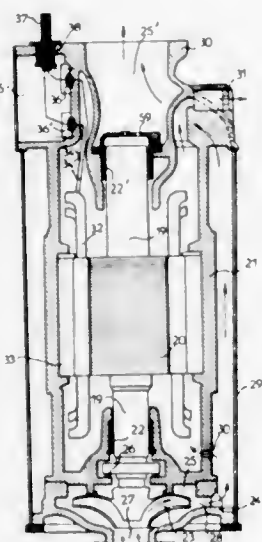
**IMMERSIBLE ELECTRIC PUMP ARRANGEMENTS**  
Paul Andre Guinard, 7 rue Pozzie di Borgo, 92 Saint Cloud, France

Continuation-in-part of Ser. No. 10,258, Feb. 10, 1972. This application Dec. 22, 1971, Ser. No. 210,740

Claims priority, application France, Feb. 21, 1969, 6904413  
Int. Cl. F04b 17/00; F01d 11/00; 25/16; F16c 7/00, 35/00

U.S. Cl. 417-424

3 Claims



This invention relates to an electric pump assembly for use in pumping explosives or dangerous liquids in containers, the assembly comprising a motor, which has a winding submerged in the pumped liquid, wherein the wires of the winding are completely insulated by a covering which resists this liquid, and are extended without a break, at their two ends and guided through sealing means to a junction box, outside the container, in which the electric pump arrangement is suspended in known manner and in a way in which a complete seal is obtained. The preceding characteristic enables the electric pump-motor to be perfectly sealed against the exterior, so that it is possible to circulate the liquid under pressure in the interior of this motor without difficulty, so as to ensure, on the one hand, cooling of the motor and, on the other, feeding of the hydrostatic bearings and a stop for the shaft of the rotor of the electric pump.

3,694,111

**FREE PISTON ENGINE BOUNCE COMPRESSOR**  
Anton Braun, 6421 Warren Ave., Minneapolis, Minn.

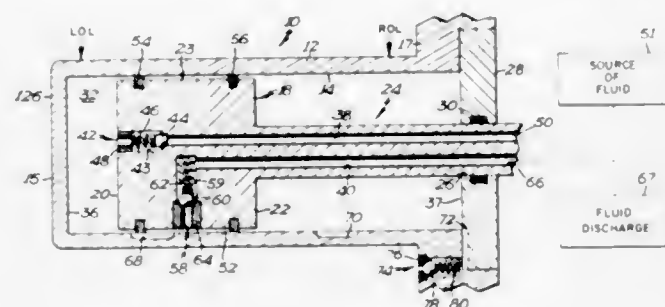
Filed March 4, 1970, Ser. No. 16,377  
Int. Cl. F02b 71/00; F04b 7/04, 21/94

U.S. Cl. 417-491

18 Claims

An improved free piston engine is disclosed with an improved bounce compressor which includes a bounce compressor cylinder and a bounce compressor piston reciprocally movable with respect to each other. The engine includes venting means for the bounce compressor cylinder which provides a limited high velocity ejection of fluid from such cylinder at a location and in a manner adapted to insure regular periodic removal of contaminants from a bounce chamber within said cylinder.

In one embodiment, passage means formed in the bounce compressor piston and bounce compressor cylinder, and check valves positioned in the bounce compressor piston, allow the controlled venting of the air contained within the bounce compressor chamber during a portion of the bounce



compressor cycle and allow uncontaminated air to be introduced into the bounce chamber during another portion of the bounce compressor cycle, so as to minimize the contaminants in the bounce chamber. Alternate embodiments are also shown which similarly permit contaminants or contaminated air in the bounce chamber to be vented.

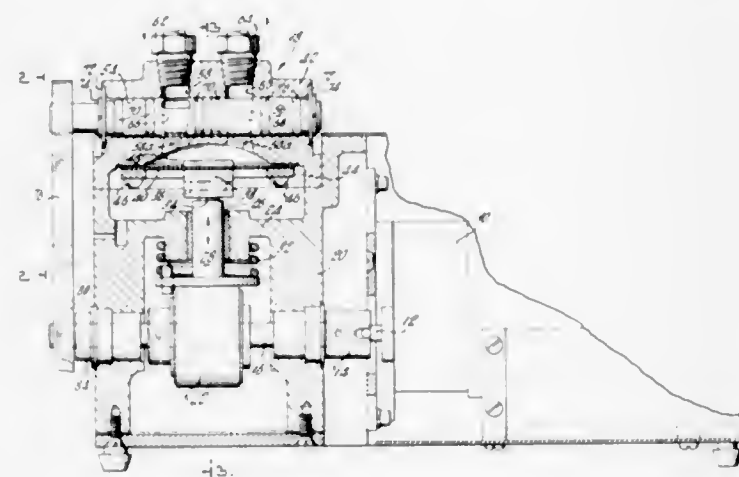
3,694,112

**ROTARY VALVE PUMP**  
David Freedman, Highland Park, N.J., assignor to New Brunswick Scientific Co., Inc.

Filed Oct. 15, 1970, Ser. No. 80,873  
Int. Cl. F04b 7/00; 15/02; 17/00; 35/00

U.S. Cl. 417-519

5 Claims



A positive displacement pump capable of pumping liquids in which solids are suspended. The pump has a pump housing provided in its interior with a pump chamber which expands during each suction stroke and contracts during each pressure stroke. A housing wall defines part of the pumping chamber and is formed with inlet and outlet ports through which the pump material flows. A valve body oscillates with respect to the latter housing wall for opening and closing each of the ports in the sequence required to achieve the pumping action. A surface of the housing wall at the ports thereof slidably engages the oscillating valve body so that the latter achieves a shearing action to facilitate pumping of liquids in which solids are suspended.

3,694,113

**MULTI-UNIT ROTARY MECHANISM**  
Charles Jones, Hillsdale, and Murray Berkowitz, Woodcliff Lake, both of N.J., assignors to Curtis-Wright Corporation

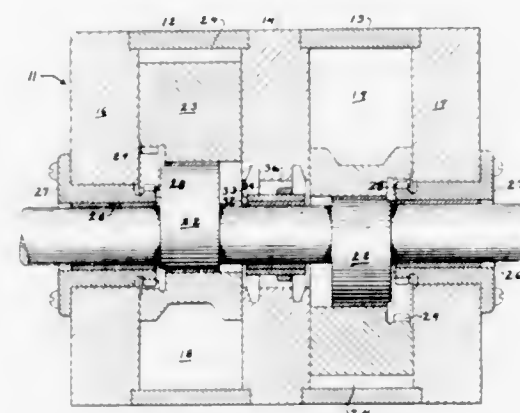
Filed Jan. 12, 1971, Ser. No. 105,905  
Int. Cl. F01c 1/02; F03c 3/00; F04c 1/02

U.S. Cl. 418-60

3 Claims

A rotary mechanism of the trochoidal type, having a plurality of operating cavities and a one-piece crankshaft bearing a

plurality of eccentric portions, one for the rotor in each operating cavity. The intermediate wall between adjacent operating cavities of such a mechanism has an aperture through which an eccentric may be passed for assembly of the



mechanism, and a simple and inexpensive split bearing member assembled around the journal of the shaft in the aperture of the intermediate wall, which is then shrunk into fit to hold and support the bearing member.

3,694,114

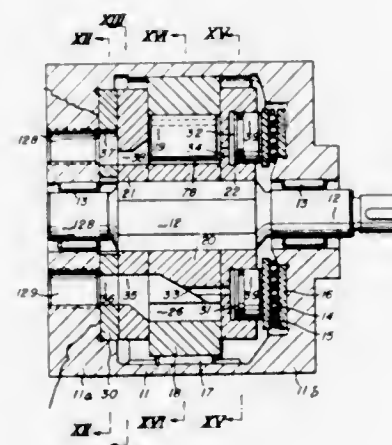
**FLUID FLOW MACHINE WITH AXIALLY BIASED ROTOR ASSEMBLY**

Karl Eickmann, 2420 Isshiki Hayama-machi, Kanagawa-ken, Japan

Filed Dec. 30, 1970, Ser. No. 102,614  
Claims priority, application Austria, Jan. 15, 1970, A 386/70

Int. Cl. F01c 19/08; F03c 3/00; F04c 15/00  
U.S. Cl. 418-82

10 Claims



The rotor assembly of a pump, compressor, or like fluid flow machine, is provided with first passages connecting expanding and contracting working chambers successively with the high pressure and low pressure ports of a stationary valve plate at one end of the rotor assembly, and also with cylinder chambers at the other end of the rotor assembly, provided with pistons pressed against a rotary ring of a thrust bearing so that the rotor assembly is compressed, and pressed against the valve plate to reduce leakage. Other passages connect the high pressure and low pressure ports, and also additional control ports, successively with the inner ends of slot chambers for balancing the inward pressure exerted by the fluid in the working chambers on vanes in the slot chambers.

3,694,115

**MOLDING APPARATUS FOR MAKING ANISOTROPIC RING-SHAPED MAGNETS WITH ZONES HAVING A PREFERRED RADIAL DIRECTION**

Eric Steingrover, Bonn, Germany, assignor to Magnetfabrik Bonn GmbH, vorm. Gewerkschaft, Windhorst, Postfach, Germany

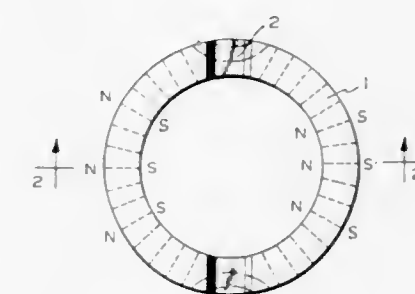
Division of Ser. No. 759,393, Sept. 12, 1968, abandoned. This application March 30, 1970, Ser. No. 29,311

Claims priority, application Germany, Nov. 9, 1967, P 16 13 319.0

Int. Cl. B30b 11/04

U.S. Cl. 425-3

5 Claims



Apparatus for the production of ring-shaped permanent magnets having radial lines of force from permanent magnet powder and a binder comprises a die holder provided with a liner of hard having high mechanical strength and/or abrasion resistance magnetic material for cooperation with a center ram and opposed end wall rams.

3,694,116

**APPARATUS FOR THE PRODUCTION OF FOAMED RESINS**

John Gerald McCoy, Newport, and William Rees Foster, Cwmbran, both of England, assignors to Monsanto Chemicals Limited, London, England

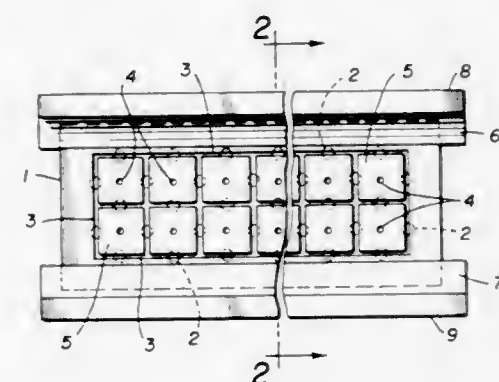
Division of Ser. No. 726,857, May 6, 1968, Pat. No. 3,624,192. This application Aug. 17, 1970, Ser. No. 64,554

Claims priority, application Great Britain, May 19, 1967, 23,303/67

Int. Cl. B29f 3/04

U.S. Cl. 425-4

5 Claims



Die assemblies and processes for extruding a foamable thermoplastic polyvinylaromatic resin through a rectangular die orifice into a zone of lower pressure such that foaming of the resin occurs as it moves through the zone, said zone being defined by a pair of opposing concave surfaces maintained at a temperature lower than the extrusion temperature and curved so that they substantially conform to the corresponding surfaces of the freely expanding resin without exerting a substantial compressive force thereon. The die assemblies and processes are particularly useful for the production of low density foamed boards having smooth surfaces.

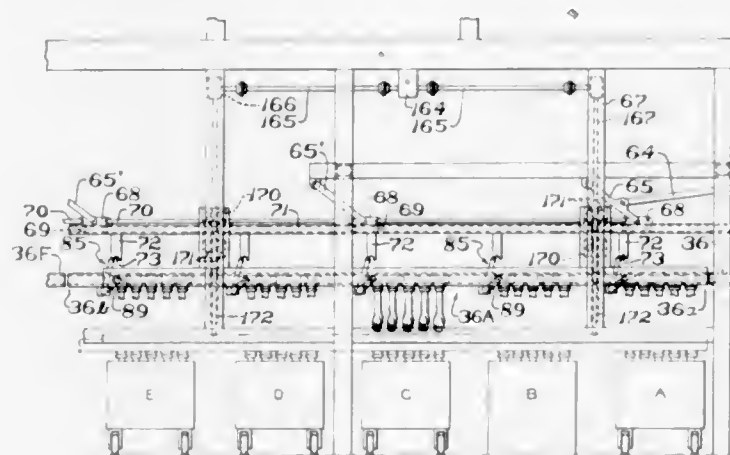


3,694,117

## GLOVE MANUFACTURING

Joseph C. Gould, Route 2, Box 251G, and Robert L. Hayes, Francis St., Rt. 2, both of Honea Path, S.C.  
 Filed Dec. 2, 1970, Ser. No. 94,482  
 Int. Cl. B29h 3/044; B29c 13/04  
 U.S. Cl. 425-93

21 Claims



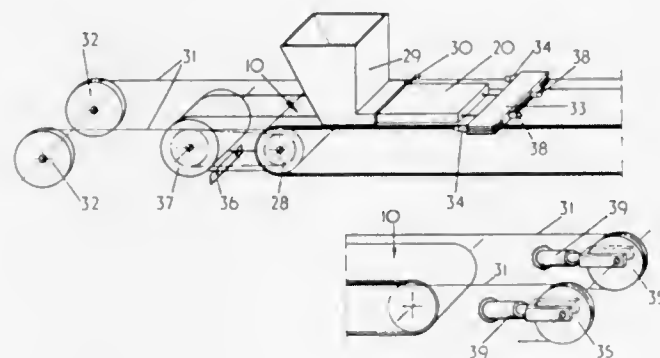
A manufacturing process and apparatus for making surgeon gloves utilizing a plurality of pallets, each pallet with a plurality of glove forms thereon, moving sequentially through a plurality of stations which form a closed loop. The pallets and glove forms are removably mounted to facilitate substitution of other pallets with other sizes of forms.

3,694,118

## PRODUCTION OF PRESTRESSED CONCRETE

David Bickerton Crowder, Barkway, Hertfordshire, England, assignor to Flowcrete Limited, Derby, England  
 Filed Sept. 29, 1970, Ser. No. 76,377  
 Claims priority, application Great Britain, Sept. 30, 1969, 47,975/69  
 Int. Cl. B28b 23/04  
 U.S. Cl. 425-111

5 Claims



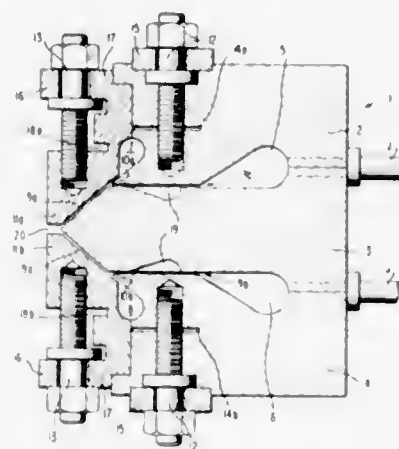
The production of prestressed concrete is effected by feeding pretensioned reinforcing wires through a station at which fluent concrete is supplied. The fluent concrete is deposited on and around the reinforcing wires and is conveyed along with the wires to a desired location such as a station at which the prestressed concrete product is cut up into sections of appropriate length. The rate of feeding of the concrete and pretensioned reinforcing wires is such that the concrete is either cured or set before, on reaching or after said location.

3,694,119

## SLOT DIE FOR THE PRODUCTION OF MULTI-LAYER LAMINATES

Robert Scheibling, Cap D'Ail, France, assignor to Siamp-Cedap, Societe anonyme monegasque  
 Filed Feb. 11, 1969, Ser. No. 798,404  
 Claims priority, application France, Feb. 13, 1968, 68139702. The portion of the term of this patent subsequent to Oct. 12, 1988, has been disclaimed.  
 Int. Cl. B29f 3/00  
 U.S. Cl. 425-131

4 Claims



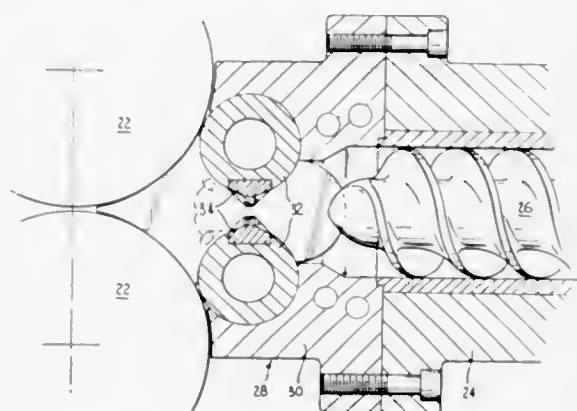
An extrusion nozzle with a discharge slot has a body with a central tongue separating two passages terminating at that slot, each passage consisting of an inner channel and an adjoining outer channel supplied with synthetic-resin material from respective distributing chambers to form a pair of superposed layers on each side of the tongue. The width of each layer is independently controllable by a pair of resiliently deflectable inner lips, remote from the discharge slot, and a pair of resiliently deflectable outer lips, proximal to that slot, whose distance from the tongue is adjustable by respective screws.

3,694,120

## APPARATUS FOR THE PRODUCTION OF SHEETS OF PLASTICS OR LIKE MATERIALS

George N. Walton, Lancashire, England, assignor to David Bridge & Company Limited  
 Filed Feb. 6, 1970, Ser. No. 9,363  
 Claims priority, application Great Britain, Feb. 7, 1969, 6,775/69  
 Int. Cl. B29f 3/012, 3/06  
 U.S. Cl. 425-145

8 Claims



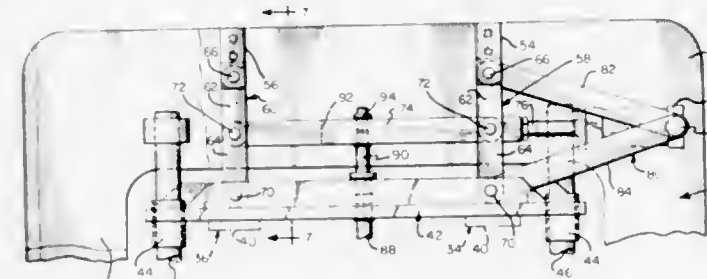
A roller die for use in producing sheets of plastics or like material comprises an extruder having a variable extrusion orifice which may be adjusted to maintain the pressure distribution across the nip of the calender rolls substantially constant. The orifice is at least in part defined by two orifice forms carried by two members which may be rotated to vary the extrusion orifice.

3,694,121

## MULTIPLE INJECTION BLOW MOLDING MACHINE

Joseph A. Johnson, Brigantine, N.J., assignor to Jomar Industries, Inc., South Brigantine, N.J.  
 Filed July 7, 1970, Ser. No. 52,811  
 Int. Cl. B29f 1/00; B29d 23/03  
 U.S. Cl. 425-168

6 Claims



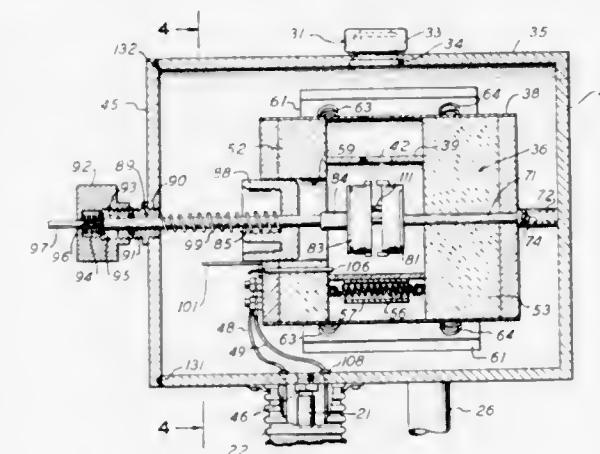
In an injection blow molding machine wherein an elevatable and rotatable turret that carries distinct sets of parison pins on its side faces is surrounded at angularly spaced points by parison mold stations, blow mold stations and ejection stations, the parison clamps at the parison mold stations are mechanically linked together for equalized operation and the turret is so connected to the linkage that it is lifted with the synchronized raising movement of the movable upper halves of the separable parison molds but only one-half the vertical distance thereof whereby the parison pins are equidistant of the part line between the partible halves of the parison molds and also the blow molds when the molds are open so that the pins clear the mold halves as the turret is indexed around the stations.

3,694,122

## APPARATUS FOR MOLDING AND FIRING DENTAL PORCELAIN

Ronald F. MacDonald, deceased, late of Orange, Calif., and by Albert J. MacDonald, executor, Van Nuys, Calif., assignors to Joseph L. MacDonald, Medfield, Mass.  
 Filed Sept. 8, 1970, Ser. No. 70,154  
 Int. Cl. B29c 3/00  
 U.S. Cl. 425-171

9 Claims



Method and apparatus whereby powdered porcelain or plastic material is charged in the opposing cavities of half flasks, which cavities have been formed about a pattern within the investment of each flask half and wherein the flasks are placed in separated condition within the muffle of a furnace and such separation is maintained until furnace heat is achieved slightly in excess of the liquefying temperature of the powder in the flask and then said flask halves are joined to compress the charge to fill all parts of the molded cavity. Refractory spacer means sensitive to temperature maintain separation between the flasks until the critical temperature is reached. The flask halves may thereafter be compressed together either manually or mechanically. The apparatus includes a tiltable furnace and visual observation of the spacer from the furnace exterior.

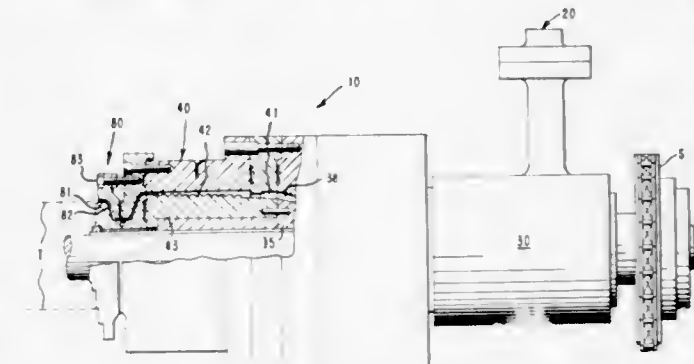
3,694,123

## APPARATUS FOR MAKING A TUBE OF PLASTIC FILM

Richard Erwin Cook, Richmond, Va.; Donald Lewis Fitzhugh, Topeka, Kans., and George Wilson Lucky, Richmond, Va., assignors to E. I. duPont de Nemours and Company, Wilmington, Del.  
 Continuation of Ser. No. 867,750, Oct. 20, 1969, abandoned.  
 Filed Nov. 11, 1971, Ser. No. 197,801  
 Int. Cl. B29f 3/02

U.S. Cl. 425-207

5 Claims



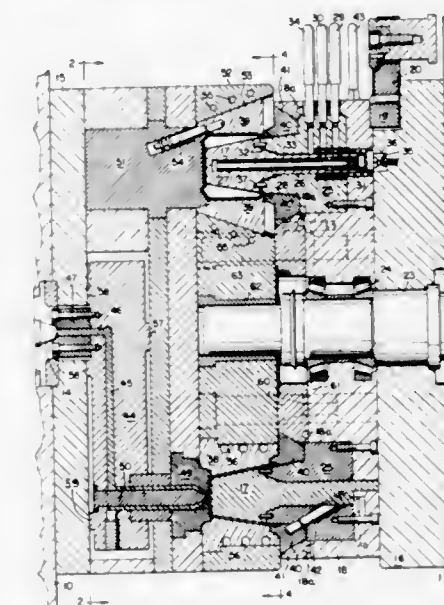
An apparatus for making plastic film wherein flowable polymeric material is extruded through an extrusion die in the form of a tube of film. A die adapter is provided for interrupting the tubular flow of the polymeric material as it moves from an infeed means to the extrusion die and for forcing the flow into a flow path having a single inlet to form an intermediate stream flow whereby to obtain improved flow characteristics.

3,694,124

## INJECTION BLOW MOLDING EQUIPMENT

Robert W. Saumsiegle, Meadow Lane, 28, Needham, Mass., and Bruno J. Segmuller, Stein am Rhine, Switzerland, assignors to said Saumsiegle, by said Segmuller  
 Filed Oct. 16, 1970, Ser. No. 81,248  
 Int. Cl. B29d 23/03  
 U.S. Cl. 425-242

22 Claims



An arrangement of injection blow molding equipment which is in the form of an adapter or tool insertable into and removable from a conventional injection molding machine having a stationary platen with a centrally located plasticizing device and having a reciprocable platen, the tool being adapted to be inserted and removed substantially without modification of the injection molding machine. The equipment includes an annular series of cores mounted upon a turntable which in turn is adapted to be secured to the reciprocable platen of an injection molding machine, and further includes an annular series of molds adapted to be mounted upon the stationary platen, alternate molds in the annular series comprising preform injection molds and blow



molds. Mechanism is provided for angularly oscillating the core supporting turntable so as to alternately insert each core into a preform injection mold and a blow mold.

3,694,125

Patent Not Issued For This Number

3,694,126

# APPARATUS FOR THE AUTOMATIC CONTINUOUS MANUFACTURE OF FILLED AND CLOSED CONTAINERS

Heinz Pechthold, Walldurn, Germany, assignor to Etablissement Bonatex, Vaduz, Liechtenstein

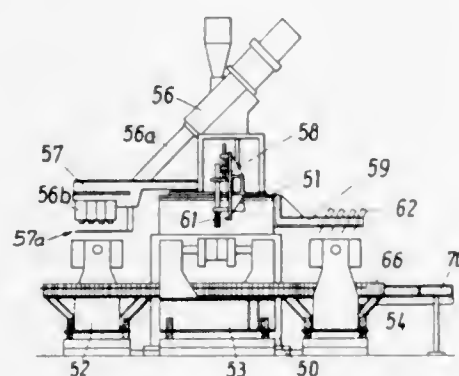
Filed May 4, 1970, Ser. No. 34,048

Claims priority, application Germany, May 9, 1969, P 19 23 690.9

Int. Cl. B29d 23/03; B29c 17/00

U.S. Cl. 425—326

8 Claims



An apparatus for the automatic continuous production of filled and sealed containers formed by hollow bodies of thermoplastic material inserted in a mold in moldable condition, which bodies are expanded by the pressure filling method and filled, thereafter sealed and removed from the mold, which comprises at least one tube extruder rotatable about a vertical axis. A plurality of stationary working stations each with molding units and transportation devices, are provided. A rotary carrier is rotatably mounted about its vertical axis and includes at least two arms set off relative to each other and projecting beyond the working stations. The devices and parts thereof, respectively, at least for molding, filling and sealing, cooperate with the molding units, in accordance with the working succession, and are disposed in the arms.

3,694,127

# POWDER COMPACTING DEVICE FOR FORMING HELICAL GEAR COMPACT

Mitsuo Takahashi; Koji Ito, and Sadao Kaga, all of Chiba, Japan, assignors to Hitachi Powdered Metals Co., Ltd., Matsudo-shi, Japan

Filed Nov. 30, 1970, Ser. No. 93,712

Claims priority, application Japan, Dec. 1, 1969, 44/95699; Jan. 14, 1970, 45/3475

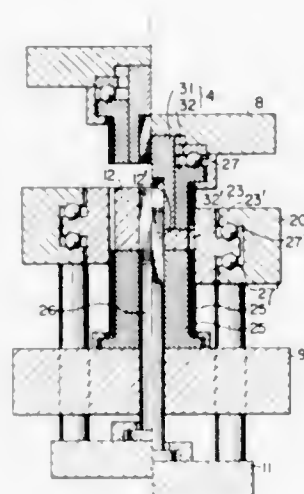
Int. Cl. B30b 11/02

U.S. Cl. 425—352

10 Claims

A powder compacting device for forming a helical gear compact including a die formed with a bore therein, an upper punch adapted to be closely intruded into said bore from one end of said bore, a lower punch closely fitted into said bore from the other end of said bore and, if required, a core rod axially extending through said upper and lower punches, and being adapted to compact a powder material and form it into a helical gear compact within the space defined by said die, said upper and lower punches and said core rod, wherein at least one of said upper and lower punches consists of at least two punch portions, each being contiguous to each other at a coaxially cylindrical surface, and, among these tools inclusive

of said die, all of said punch portions and said core rod, each of at least three of selected tools being formed with a helical



3,694,128

# BLOCK MOLDING APPARATUS

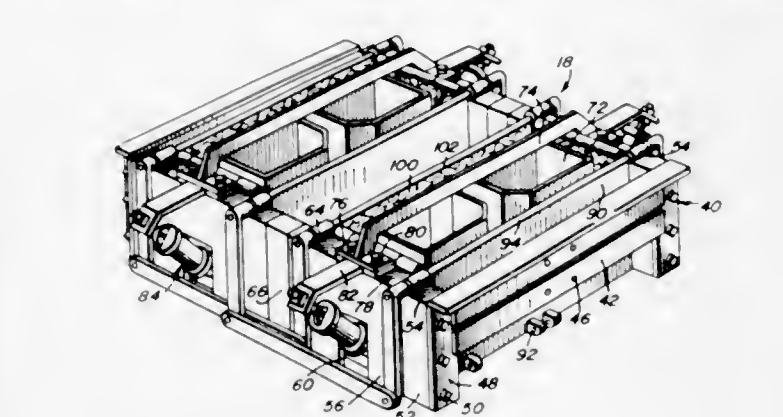
Benjamin F. Foxen, 1515 Sharon Drive, Carson City, Nev.

Filed May 6, 1970, Ser. No. 34,996

Int. Cl. B28b 7/04

U.S. Cl. 425—412

2 Claims



The side form panels of a concrete block mold, pivot outwardly to downwardly eject a molded block under the force of a pressure head within an automatic block molding machine. The mold frame while supported on a pallet, is vibrated and the concrete is compacted by the pressure head.

3,694,129

# APPARATUS FOR CASTING PLASTIC SHEET

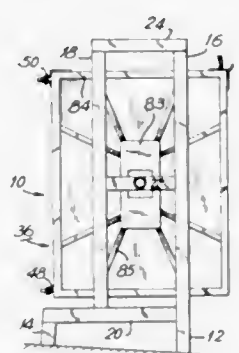
Paul R. Daddona, Burning Tree Road, Greenwich, Conn.

Filed Aug. 24, 1970, Ser. No. 66,357

Int. Cl. B29d 7/08

U.S. Cl. 425—405

17 Claims



An apparatus for casting sheets of plastic is shown. It includes a casting zone defined by two glass surfaces and a margin

ginal sealing gasket, and an adjacent temperature control cell. The cell is an enclosed chamber comprised of a rigid frame having two extended, semi-rigid sides which may be of sheet metal or glass and which are flexible and responsive to pressures acting upon them. In one embodiment, the cell frame has a rigid brace attached within it, positioned adjacent to the inner surface of its sheet metal or glass side. The brace prevents inward deflection of that side so that the casting zone adjacent to that side is not distorted by the hydrostatic pressure of the liquid charged to it. In this embodiment, there is no need for charge measuring apparatus, the side of the casting zone is free to deflect outwardly and follow the cast sheet as it shrinks during polymerization and higher temperature and higher pressure media can be used in the temperature control cell. In the preferred embodiment the side of the temperature control cell is glass bonded to the sides of the frame at a series of novel bonding zones. The amount of liquid plastic charged to the casting zone is controlled by first adjusting the head of temperature control liquid in the adjacent control cell to a height which just balances the head of liquid plastic in the full casting zone.

3,694,130

Patent Not Issued For This Number

3,694,131

# DIE FOR IMPREGNATING AND COATING FILAMENTARY MATERIAL

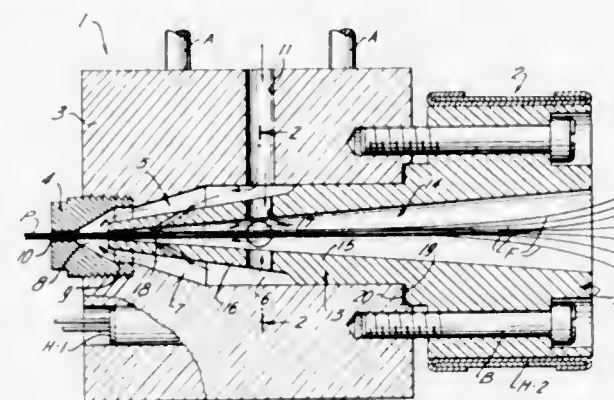
James L. Stuart, Evansville, Ind., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed March 25, 1971, Ser. No. 127,909

Int. Cl. B28b 23/00

U.S. Cl. 425—461

9 Claims



A die is described comprising a die body having passage means extending therethrough and a resin inlet communicating therewith; said passage means including first and second coaxial frusto-conical passage sections tapering in the same direction, a cylindrical passage section coaxial with the frusto-conical passage sections and disposed between them connecting the smallest diameter end of the first frusto-conical passage section with the largest diameter end of the second frusto-conical passage section, and a cylindrical sizing passage section communicating with the smallest diameter end of the second frusto-conical passage section and forming the outlet of said passage means from said die body; a pilot member having a flange portion, a nose portion and a guide passage means extending therethrough having an inlet end in the flange portion and a tapered outlet end in the nose portion; said pilot member being mounted on said die body in a manner whereby said nose portion of the pilot member extends into the passage means of the die body forming an annular chamber extending at least from the resin inlet of the die body to the interior region of the second frusto-conical passage section spaced from the cylindrical sizing passage section; said nose portion including a frusto-conical section tapering toward and terminating at the outlet end of said guide passage means and having a plurality of orifices therein connecting said annular chamber with

said guide passage means; and a first heating means for said die body and a second heating means for said pilot member.

3,694,132

# EXTRUSION DIE DECKLE MEANS

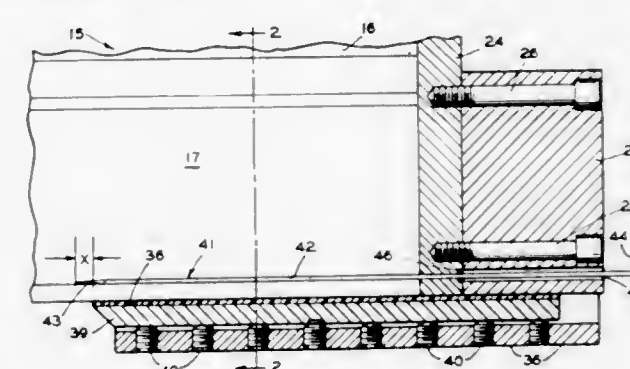
William S. Bunte, Somerville, and Lino E. De Gasperis, Clinton, both of N.J., assignors to Egan Machinery Company

Filed Jan. 21, 1971, Ser. No. 108,459

Int. Cl. B29d 11/04

U.S. Cl. 425—466

12 Claims



An extrusion die having a discharge orifice in the form of a relatively long narrow slot and adapted to extrude a film or sheet of a flowable plastic material. The die is equipped with external deckle means adjustably positioned along the outer end of the discharge orifice and internal deckle means adjustably positioned along the inner end of the discharge orifice. The die and the external and internal deckle means are so constructed and arranged as to effectively regulate and control both the width and the thickness of a plastic film or sheet that is extruded from the die.

3,694,133

# FUEL BURNER CROSSOVER ARRANGEMENT

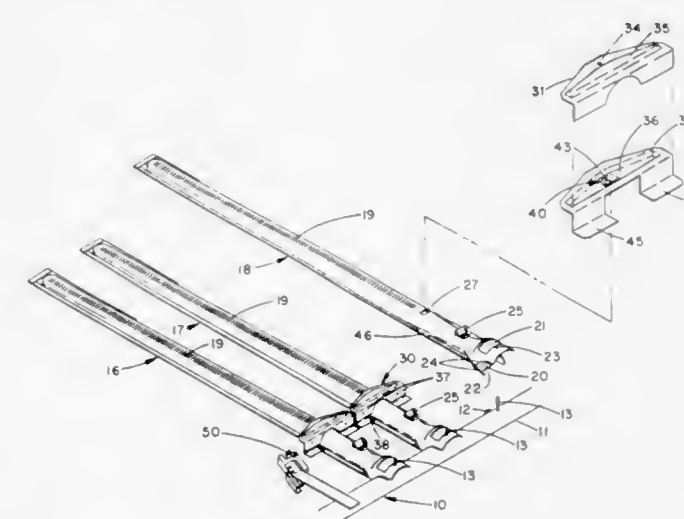
Herman W. Wilkerson, 500 Cliff Drive, Pasadena, Calif.

Filed June 3, 1971, Ser. No. 149,426

Int. Cl. F23d 13/02

U.S. Cl. 431—191

6 Claims



An elongated burner body having a series of fuel ports extending along the axis of the burner body is provided with a crossover fuel aperture adjacent the fuel inlet end of the burner. A crossover body comprising a hollow transversely extending member is provided with a crossover fuel inlet aperture from the downstream edge of which extends a depending scoop element. The crossover body is assembled on the burner body so that the crossover fuel apertures are in registration with each other. The scoop serves as a means for locating the crossover body with respect to the burner body and to direct fuel from the burner into the crossover. The scoop element is provided with an opening which allows a portion of the fuel



mixture to pass through the opening to directly supply gas to the burner fuel ports most closely adjacent to the crossover and thereby to provide a dependable source of fuel for smooth ignition by the crossover.

3,694,134

# ELECTRICALLY IGNITED GAS TORCH WITH SHUT-OFF VALVE AND LATCH THEREFOR

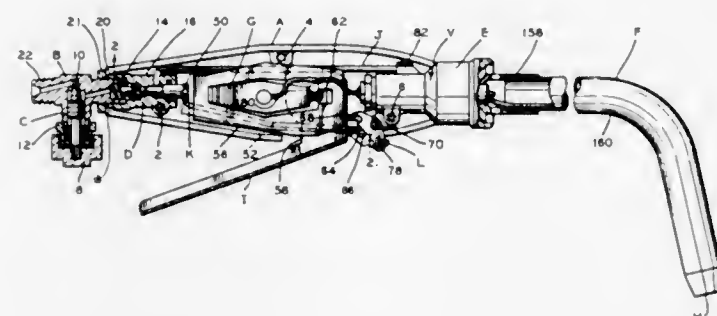
Albert Ross, Willowick, Ohio, assignor to Harris Calorific Company, Cleveland, Ohio

Filed Sept. 18, 1970, Ser. No. 73,576

Int. Cl. F23q 3/00

U.S. Cl. 431—255

6 Claims



A plumber's gas torch has a conventional flame-adjustment valve, in series with that valve, an on-off valve is lever operated and is latched open automatically on operation of the lever. A piezoelectric igniter is actuated by the lever to ignite the torch simultaneous with opening of the on-off valve. Another series valve is automatically closed when the torch tip is unscrewed and is reopened as another tip is attached. A trigger releases the latch and allows the on-off valve to close under spring pressure.

3,694,135

# FLAME RETENTION BURNER HEAD

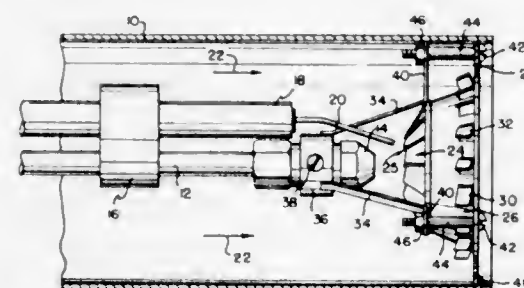
Julian H. Dancy, and John A. Morrison, both of Richmond, Va., assignors to Texaco Inc., New York, N.Y.

Filed July 20, 1970, Ser. No. 56,599

Int. Cl. F23q 3/00

U.S. Cl. 431—265

3 Claims



A flame retention burner head in which the flame retention baffle carries an annular ring on its outer periphery which extends downstream sufficiently to elongate the stationary vortices formed thereby. The atomizing nozzle of the burner is arranged to inject the fuel particles into the vortices, and peripherally spaced louvers on the ring are arranged to direct streams of air inwardly into the flame at the downstream end of the elongated vortices.

3,694,136  
OIL BURNER

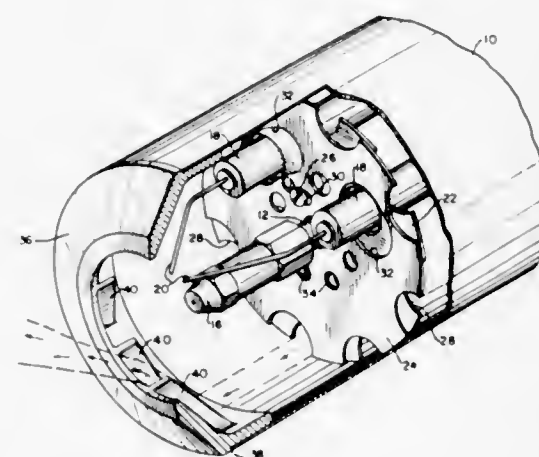
Norman E. Flournoy; Julian H. Dancy, both of Richmond, and Raymond Trippet, Highland Springs, all of Va., assignors to Texaco Inc.

Filed Oct. 5, 1970, Ser. No. 78,069

Int. Cl. F23q 3/00

U.S. Cl. 431—265

4 Claims



A gun type oil burner having a metering plate with adjustable orifices arranged between the burner tip and the burner fan in which the adjustable orifices are peripherally disposed along the inner surface of the blast tube and are axially lined with radial and spirally arranged channels on the inside of the frusto conical tip of the burner.

3,694,137

# SEQUENTIALLY FIRED SINGLE SECTION PILOT MULTI-SECTION GAS BURNER AND AIR SUPPLY STRUCTURE

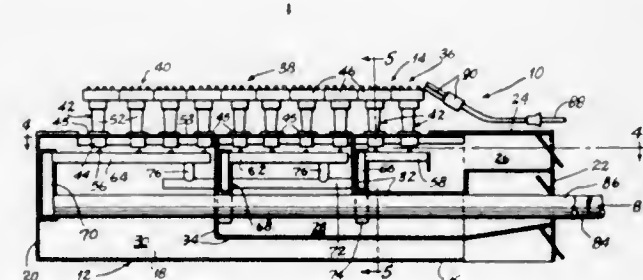
Charles R. Fichter, 1212 Kilgore Drive, St. Louis, Mo., and Lloyd P. Hunt, 2100 Filmore, Buffalo, N.Y.

Filed Oct. 26, 1970, Ser. No. 83,859

Int. Cl. F23q 9/08

U.S. Cl. 431—283

2 Claims



There is disclosed an integral three section gas burner construction and controls including automatic sequential lighting of the sections on demand and air supply structure. A pilot unit ignites a first burner section when gas is supplied. The first burner section includes some burners adjacent to a second and a third burner section, said second burner section and said third burner section being ignited from said respective adjacent burners of said first burner section on demand for more heat and supply of gas. Each burner section has a separate compartment for the supply of secondary air to the burners.

## CHEMICAL

3,694,138

# DYEING HUMAN HAIR WITH N,N-DIARYL ALKYLENEDIAMINE OXIDATION DYE COMPOSITIONS

Gregoire Kalopissis, Paris, and Andree Bugaut, Bologne-sur-Seine, France, assignors to Société Anonyme dite: LOREAL, Paris, France

No Drawing. Filed July 31, 1969, Ser. No. 846,577  
Claims priority, application Luxembourg, Aug. 2, 1968, 56,631

Int. Cl. A61k 7/12

U.S. Cl. 8—10.2 3 Claims  
N,N'-diaryl alkylenediamine oxidation dye compositions that are suitable for dyeing live human hair are disclosed.

3,694,139

Patent Not Issued For This Number

3,694,140

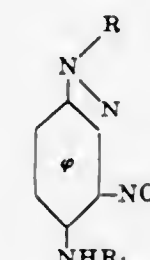
# METHOD AND COMPOSITION CONTAINING NITROPARAPHENYLENE DYES FOR DYEING KERATINIC FIBERS

Gregoire Kalopissis, Paris, Andree Bugaut, Bologne-sur-Seine, and Vahan Zorayan, Enghien-les-Bains, France, assignors to L'Oreal, Paris, France

No Drawing. Filed May 16, 1968, Ser. No. 729,499  
Claims priority, application France, May 16, 1967, 53,676

The portion of the term of the patent subsequent to Nov. 2, 1988, has been disclaimed  
Int. Cl. A61k 7/12; D06p 3/02

U.S. Cl. 8—10 5 Claims  
Composition containing nitroparaphenylene diamine derivatives for dyeing keratinic fibers and method of applying said composition to the hair, wherein said diamine derivatives have the formula:

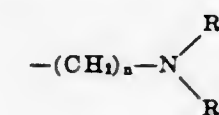


in which:

R represents H or a lower alkyl;  
Z represents H, an



radical in which R' represents H, methyl, or NO<sub>2</sub>, or an OC—R'' radical in which R'' represents a lower alkyl; and at least one of R and Z is H;  
R<sub>1</sub> represents a lower alkyl, lower hydroxyalkyl, lower alkoxyalkyl or



in which n is a whole number between two and six inclusive, while R<sub>2</sub> and R<sub>3</sub> represent H, a lower alkyl, or a lower hydroxy alkyl, and the alkyl portion of R, R'', R<sub>1</sub>, R<sub>2</sub> and R<sub>4</sub> having 1 to 6 carbon atoms.

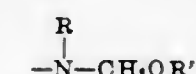
3,694,141

# METHOD OF HAIR CONDITIONING

Gregorie Kalopissis, Paris, Jean-Louis Abegg, Le Perreux, and Guillian Ghilardi and Henri Philippe de Beaulieu, Paris, France, assignors to Société Anonyme dite: l'Oreal

No Drawing. Filed Aug. 1, 1968, Ser. No. 749,278  
Int. Cl. A61k 7/10, 7/06

U.S. Cl. 8—127.51 3 Claims  
Cosmetic composition comprising, in a suitable carrier, at least one active compound including both at least one disulfide function and at least one group responding to the formula:



in which:

R is selected from the group consisting of hydrogen, a lower alkyl, a hydroxy-methyl or an alkoxy methyl radical;  
R' is selected from the group consisting of hydrogen, and a lower alkyl radical;

the nitrogen atom in said group being attached to a remainder which is sufficiently electrophile to prevent the immediate release of formol.

3,694,142

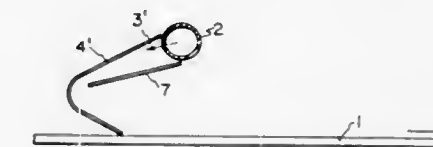
# APPARATUS AND METHODS FOR APPLYING LIQUIDS TO FABRICS

Manfred Schulerer, Erbach, Odenwald, Germany, assignor to Bruckner-Apparatebau Michelstadt G.m.b.H., Erbach, Odenwald, Germany

Filed Dec. 21, 1970, Ser. No. 99,927  
Claims priority, application Germany, Dec. 23, 1969, P 19 64 594.4  
Int. Cl. B05c 5/00

U.S. Cl. 8—151

10 Claims



Apparatus and methods for applying liquids to a continuously movable fabric web wherein the liquid to be applied is sprayed onto a distributing plate overlying the fabric web and having its lower edge in contact with the fabric web. A reciprocable brush may engage the distributing plate to assure uniform dispersion of the liquid over the surface of the plate. The distributing plate may be vibrated to effect uniform dispersion of the liquid over the surface of the plate.

3,694,143

# SPINNING PROCESS FOR HAIR GOODS

Lala B. McCurry, 5286B Trail Lake Drive, Fort Worth, Tex. 76133

Filed May 1, 1971, Ser. No. 148,660  
Int. Cl. D06p 7/00

U.S. Cl. 8—158 4 Claims  
The specification discloses a process and machine for removing moisture from hair goods such as wigs or hair pieces when they are being serviced following cleaning







crystalline zeolite forms. Faujasite is prepared by treating each of pulverized pumice and a synthetic glass having the composition  $3\text{Na}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 4\text{SiO}_2$  with a sodium hydroxide solution at an elevated temperature.

3,694,153

# LIQUID-LIQUID EXTRACTION PROCESS FOR THE PURIFICATION OF PHOSPHORIC ACID

Kenneth A. Williams, La Mirada, Calif., and David R. Stern, deceased, late of Fullerton, Calif., by Audrey E. Stern, executrix, Fullerton, Calif., assignors to Occidental Petroleum Corporation, Los Angeles, Calif. No Drawing. Filed Oct. 30, 1970, Ser. No. 85,807

Int. Cl. C01b 25/18, 25/22

U.S. Cl. 423—321

15 Claims

Liquid water immiscible organic sulfonic acids are used to extract metallic impurities from crude phosphoric acid solutions containing up to 54% by weight  $\text{P}_2\text{O}_5$ , by a liquid-liquid extraction.

3,694,154

# PRODUCTION OF HYDROGEN PEROXIDE FROM AQUEOUS ACIDIC SOLUTION OBTAINED BY HYDROLYSIS

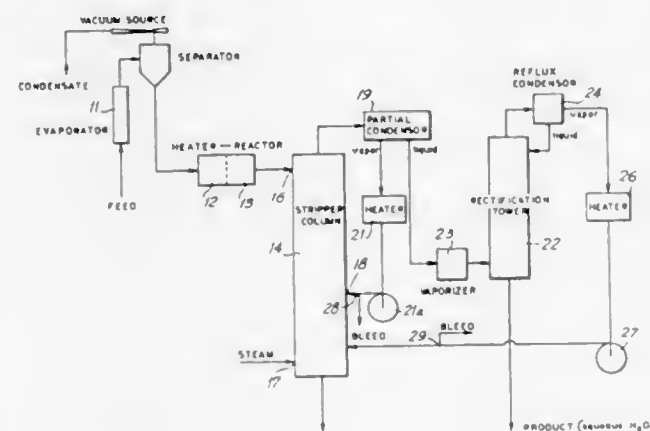
William Sheridan Harper, Williamsville, and David Wayne Daigler, East Aurora, N.Y., assignors to FMC Corporation, New York, N.Y.

Filed Jan. 23, 1968, Ser. No. 699,958

Int. Cl. C01b 15/02; B01d 3/38, 1/00

U.S. Cl. 423—585

5 Claims



Process for making  $\text{H}_2\text{O}_2$  from the solution obtained by electrolysis of an aqueous ammonium sulfate-sulfuric acid mixture. After an initial step of partial concentration under vacuum, the solution is then treated at about atmospheric pressure (or higher), using successive steps of heat treating to effect hydrolysis, steam stripping, partial condensation to form a liquid enriched in  $\text{H}_2\text{O}_2$ , and rectification, to produce about 35%  $\text{H}_2\text{O}_2$ .

3,694,155

Patent Not Issued For This Number

3,694,156

# PREPARATION OF Si

James O. Huml, Leigh B. Bangs, and Gilbert S. Layne, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 798,174, Feb. 10, 1969. This application Oct. 19, 1970, Ser. No. 82,150

Int. Cl. C01b 33/02; B01j 17/00

U.S. Cl. 423—349

2 Claims

A process is provided for producing pure Si or Ge in powdered form. A solid mixture of Si or Ge and a sulfide is contacted with a sulfide dissociating reagent which selectively reacts with the sulfide compound to form

at least two physical phases comprising powdered Ge or Si and a fluid phase, gaseous and/or liquid, and the phases are separated from each other.

3,694,157

# METHOD OF AND APPARATUS FOR FORMING GASEOUS ANALYSIS PRODUCTS FROM SOLID SAMPLES

Walter Koch, 29 Im Grund, 4000 Dusseldorf-Lohausen, Germany, Helmut Lemm, 19 Birkenweg, 4231 Blumenkamp, Germany, and Eitel Voss, Duisburg-Hamborn, and Peter Hospital, Walsum, Germany; said Voss and said Hospital assignors to said Koch and said Lemm

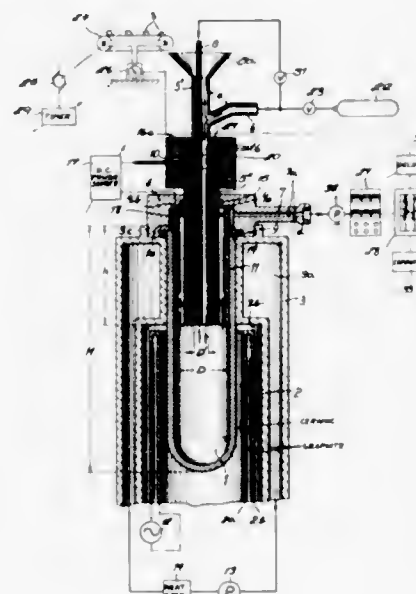
Filed Feb. 9, 1970, Ser. No. 9,568

Claims priority, application Germany, Mar. 12, 1969, P 19 12 526.9

Int. Cl. G01n 31/12

U.S. Cl. 23—230 PC

6 Claims



A test apparatus for forming gaseous analysis products from a series of solid samples has a relatively tall upright crucible open at the top and a conduit extending with clearance into the crucible. This conduit has a lateral inlet into which a carrier and/or reaction gas, e.g.  $\text{O}_2$ , is fed and the crucible has an upper outlet, above and around the lower end of the conduit, which is connected to a chemical-analysis instrument such as a mass spectrometer. The lower end of the crucible is heated and the heater element and entire crucible are cooled by a double-walled jacket. The inflowing carrier forms a gas barrier to the influx of air. Samples are introduced, one after another at short intervals (e.g. 30 seconds or less), into the conduit, without interrupting the gas supply or the heating of the crucible.

3,694,158

# PROCESS FOR THE SIMULTANEOUS DETERMINATION OF GLUCOSE AND FRUCTOSE

Karl Lauer, Strahlenburg, Schriesheim, Helmut Spingler, Mannheim, Karl-Erhard Wallach, Lampertheim, Hesse, and Georg Stoeck, Mannheim-Waldhof, Germany, assignors to C. F. Boehringer & Soehne GmbH, Mannheim-Waldhof, Germany

Continuation of application Ser. No. 569,327, Aug. 1, 1966. This application Feb. 20, 1970, Ser. No. 14,706

Claims priority, application Germany, Dec. 15, 1965, B 84,982

Int. Cl. G01n 21/40, 21/46

U.S. Cl. 23—230 R

7 Claims

Process for the simultaneous determination of glucose and fructose in aqueous solutions thereof, having a temperature between 50 and 75° C., such as the warm eluates recovered from an ion exchange apparatus used to separate an invert sugar solution into its components, which

involves measuring the optical rotation and refractive index of the warm solutions and relating the measurements to the glucose and fructose concentrations in the solutions.

3,694,159

Patent Not Issued For This Number

3,694,160

# PROCESS FOR ANALYSIS OF AMINO ACIDS BY LIQUID CHROMATOGRAPHY AND COLOR DEVELOPING MEDIUM ADAPTED THEREFOR

Hisayuki Sagusa, Katsuta, and Seiji Takeuchi and Yoshiji Arikawa, Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

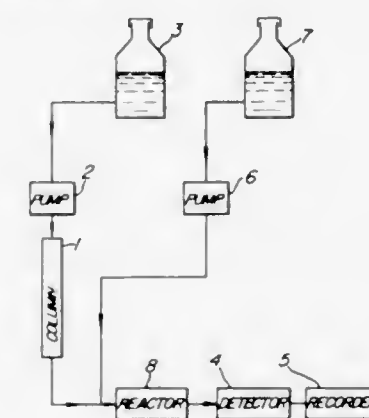
Filed Mar. 9, 1971, Ser. No. 122,356

Claims priority, application Japan, Mar. 11, 1970, 45/20,132

Int. Cl. G01n 31/08, 31/22

U.S. Cl. 23—230 R

7 Claims



A method of chromatography comprising passing amino acids together with an eluting solution through a separator column packed with ion exchange resins, separating the amino acids into their respective amino acid components by differences in migration speeds of the amino acids in the column, allowing the separated amino acids to react with a color-developing solution containing ninhydrine and its reducing agent by heating thereby to obtain colored substances and analyzing the amino acids by hues of the colored substances. The color-developing solution contains a naphthenic diaminotetraacetic acid for masking heavy metals.

3,694,161

# METHOD FOR MEASURING PLATELET AGGREGATION

Richard Raymond Kleszynski and James Winslow Bastian, Park Forest, Ill., assignors to Armour Pharmaceutical Company, Chicago, Ill.

No Drawing. Filed Apr. 14, 1971, Ser. No. 134,026

Int. Cl. G01n 33/16

U.S. Cl. 23—230 B

6 Claims

A method for rapidly and accurately measuring platelet aggregation in which prior to counting, aliquot samples of whole blood are treated with anticoagulate, then an aggregating agent, shaken, and centrifuged. Method allows measurement of multiple samples simultaneously and the results obtained therefrom are statistically reproducible.

3,694,162

# APPARATUS FOR ABSORBING GASES IN LIQUIDS

Gunter Kurz, Oberglatt, Karlheinz Otto Laube, Effretikon, and Alfred Adalbert Martinelli, Zurich, Switzerland, assignors to Zellweger Ltd., Uster, Switzerland

Filed Mar. 19, 1970, Ser. No. 21,031

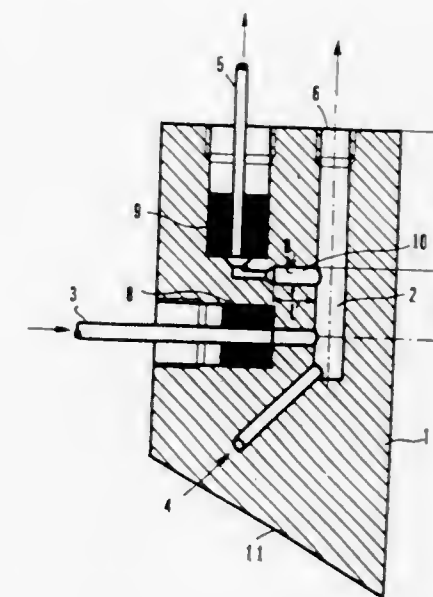
Int. Cl. G01n 31/06

U.S. Cl. 23—253 R

10 Claims

Apparatus for absorbing gases in liquids and more particularly the measurement of a constituent of gas mix-

ture for continuous process control and for controlling high-velocity reactions. The apparatus comprises a mixing absorption chamber disposed in a housing, first and second inlet conduit means communicating with said mixing absorption chamber, first and second outlet conduit



means communication with said mixing absorption chamber and measuring cell means associated with the first inlet conduit means and the first outlet conduit means for continuously analyzing a sample before it is introduced to and after it is removed from the mixing absorption chamber.

3,694,163

# TEST SYSTEM FOR THE DETERMINATION OF SUBSTANCES IN TEST FLUIDS AND PROCESS FOR THE PREPARATION THEREOF

Robert Thomas Sherellis, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,104

Int. Cl. C12k 1/10; G01n 31/06, 33/16

U.S. Cl. 23—253 TP

10 Claims

A test system and device for the determination of substances in test fluids which utilizes a novel cellulose derivative membrane in conjunction with a test reagent specifically reactable with the substance being detected and sensing means for detecting electrical, chemical or physical changes in the membrane when the test reagent contacts the substance being detected. The membrane is prepared using a controlled organic phase evaporation: aqueous inversion process from a solvent solution of polymeric cellulose derivative and an interacting swelling agent, preferably formamide, said test reagent contained in said solution and the resulting membrane in either dissolved or dispersed form.

3,694,164

# CARBON DIOXIDE SENSORS

Karl R. Guenther, Middleton, Wis., assignor to Bjorksten Research Laboratories, Inc.

Filed Dec. 11, 1970, Ser. No. 97,072

Int. Cl. G01n 21/26, 25/48, 27/12

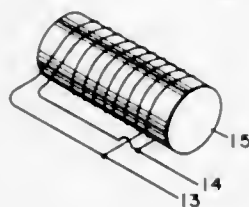
U.S. Cl. 23—254 R

5 Claims

A system for sensing carbon dioxide content of a gas, in which the surface changes in properties reversibly when in contact with said gas. This is employed together with a means for effecting said contact and a means used for measuring the change in composition. This change



in the surface can be chemical, as for example a complex comprising an amine which reversibly absorbs carbon dioxide; or a condition of temperature, in which case the heating effect of an infra red radiation source placed at some distance from the sensing surface, causes a warm-



ing of this surface, and a differential thermometer arrangement measures the temperature of this surface in comparison with a standard in which the same infra red source irradiates another surface similarly, except that the light does not go through any gas cell of changeable composition.

3,694,165

### CRUCIBLE APPARATUS FOR A SEMICONDUCTOR CRYSTAL PULLER

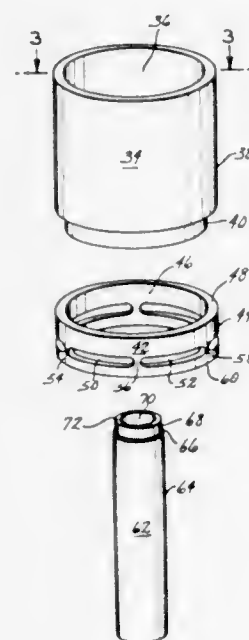
Horst G. Kramer, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 11, 1970, Ser. No. 62,938

Int. Cl. B01j 11/18

U.S. Cl. 23—273 SP

12 Claims



Crucible apparatus for a semiconductor crystal puller and including a main crucible for housing a molten charge of semiconductor material to be pulled. A hollow crucible base or support member is mounted between the main crucible and an elongated crucible support pedestal, and a portion of the main crucible bottom is suspended in the crucible base member to reduce conductive heat losses therefrom. The crucible base member shields heat radiated from the main crucible and couples into the RF heater coil therefor to even further reduce heat losses from the main crucible. The crucible base member thus minimizes temperature gradients in the main crucible

and thereby eliminates an undesirable cooling of the molten semiconductor material during a crystal pulling operation.

3,694,166

### CRYSTAL GROWTH TUBE

Nanse R. Kyle, Long Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Application May 22, 1967, Ser. No. 640,303, now Patent No. 3,519,399, dated July 7, 1970, which is a continuation of application Ser. No. 400,723, Oct. 1, 1964. Divided and this application Nov. 20, 1969, Ser. No. 878,498

Int. Cl. B01j 17/30

U.S. Cl. 23—273 R

10 Claims



A method of simultaneous purification and growth of semiconductor material into a single stoichiometrically pure crystal by sublimation and condensation of the material. The tube, which is useful for crystal growth for example by either a Bridgman process or by a vapor growth process, comprises a single body having a small container is secured in the upper tube part to contain the charge and a nucleation point in the lower tube part for growth of a single crystal.

3,694,167

### DEVICE FOR THE CRYSTALLIZATION BY HEAT EXCHANGE OF A SOLUTE IN SOLUTION IN A LIQUOR

Alphonse Gaillard, Levallois, and Francois Laurenty, Le Touquet, France, assignors to Francois Laurenty, Le Touquet, France

Filed Dec. 30, 1969, Ser. No. 889,082

Claims priority, application France, Oct. 31, 1968, 182,652

Int. Cl. B01d 9/02, 9/04

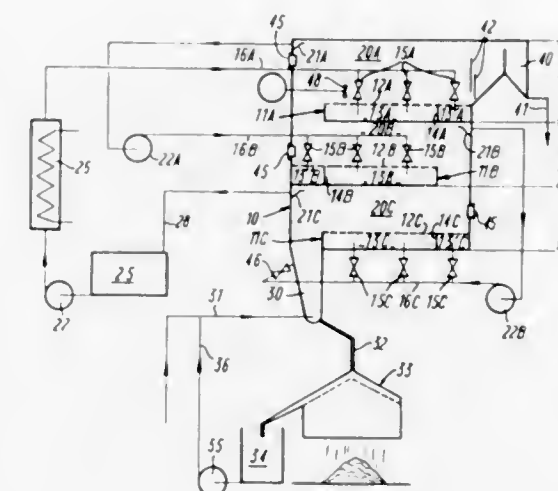
U.S. Cl. 23—273 R

5 Claims

A crystallization device is provided having a crystallization enclosure which is divided into a plurality of vertical stages by a plurality of fluidization containers. Liquor for treatment is introduced at the lower portion of the enclosure and exhausted liquor is removed at the upper portion of the enclosure. A heat exchange fluid, for example a coolant, is circulated in the enclosure which

is chosen for its immiscibility and chemical non-reactivity with the liquor. Fully grown crystals are used to

gases being initiated by feeding the several gases from a tubular burner assembly into contact with a rotating relatively cold body within the reaction chamber said cold body rotating at speeds at least 50 times terrestrial acceleration whereby the several gases are thoroughly mixed at reaction and the  $TiO_2$  reaction product precluded from adhering to surfaces of the burner assembly.



3,694,169

### LOW PRESSURE-DROP CATALYTIC REACTOR

Richard Fawcett, Arthur William Smith, and David Westwood, Norton, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 25, 1970, Ser. No. 40,172

Claims priority, application Great Britain, May 28, 1969, 26,926/69

Int. Cl. B01j 1/04; C01c 1/04; C07c 29/16

U.S. Cl. 23—289

5 Claims

cool the coolant before being removed from the enclosure in order to minimize energy losses.

3,694,168

### MEANS FOR PRODUCING PYROGENIC TITANIUM DIOXIDE PIGMENT

Giovanni Hilgers, Hau Post Bechen, Gerhard Hitzemann, Giershofen, Post Dierdorf, and Achim Kulling, Opladen, Germany, assignors to Titangesellschaft mbH, Leverkusen, Germany

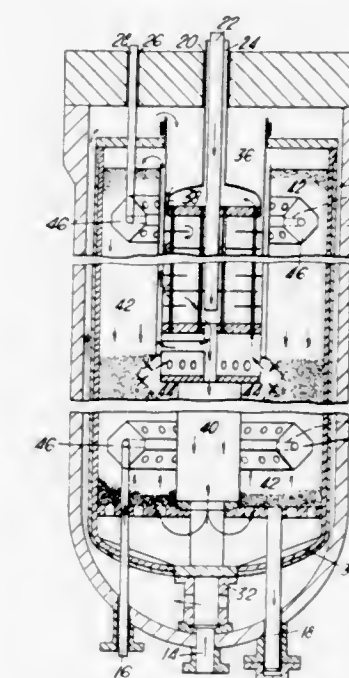
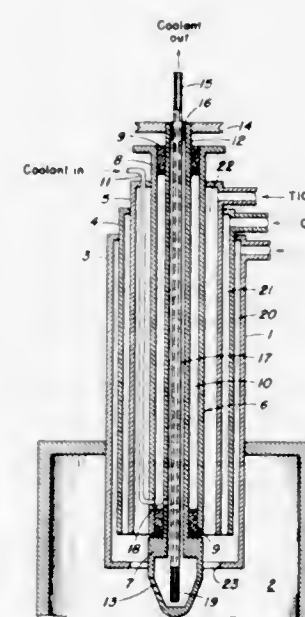
Original application Feb. 12, 1968, Ser. No. 704,895, now Patent No. 3,512,933, dated May 19, 1970. Divided and this application Jan. 28, 1970, Ser. No. 6,384

Claims priority, application Germany, Mar. 6, 1967, T 33,354

Int. Cl. C01g 23/04; F22d 11/04

U.S. Cl. 23—284

4 Claims



A reactor for synthesizing ammonia or methanol comprises a pressure-resisting shell, a catalyst bed of annular section and a short axial heat exchanger. Preferably the reactant gas flows through the catalyst bed convergently towards an outlet near one end of the heat exchanger.

3,694,170

### PROCESS FOR PRODUCTION OF SPHERICAL GRANULES OR LUMPS OF ANHYDROUS ALUMINUM CHLORIDE

Koichi Fujii, Arai, Tomoo Sakai, Takada, and Ichiro Kikuchi, Niigata-ken, Japan, assignors to Nippon Soda Kabushiki Kaisha, Tokyo-to, Japan

Continuation-in-part of application Ser. No. 661,113, Aug. 16, 1967. This application Mar. 30, 1970, Ser. No. 29,328

Int. Cl. B01d 3/08, 9/00; C01f 7/58

U.S. Cl. 23—294

8 Claims

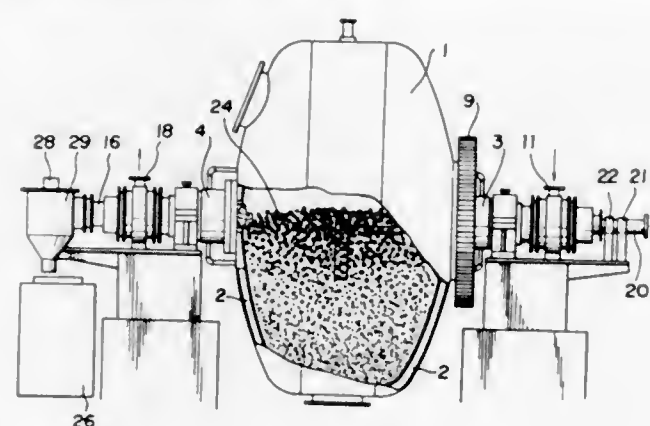
Means for producing pyrogenic titanium dioxide by reaction of gaseous titanium tetrachloride and oxygen in the presence of hot combustion gases produced by the combustion of carbon monoxide the reaction of the several

A process for the production of spherical pieces of anhydrous aluminum chloride having diameters of more than 1 mm., comprising providing a layer of pieces of solid anhydrous aluminum chloride in a zone, continuously mix-



ing the solid aluminum chloride in the zone, feeding pre-heated aluminum chloride vapor into the layer and thereby

the reaction of chlorine perchlorate with elemental bromine.



3,694,171

# METHOD FOR PURIFYING CYCLIC PHOSPHONITRILIC CHLORIDES

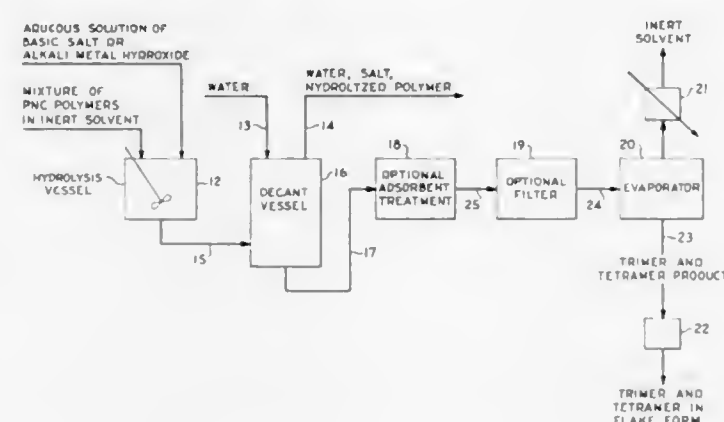
Harry Dreifus, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Feb. 2, 1970, Ser. No. 7,658

Int. Cl. C01b 21/52, 25/10

U.S. Cl. 423—300

15 Claims



In the production of phosphonitrilic chlorides by the reaction of phosphorus pentachloride and ammonium chloride in a solvent inert to chlorination by use of a process involving the slow addition of at least a major proportion of the phosphorus pentachloride to the ammonium chloride during a period of time corresponding to about 50 to 100 percent of the total time during which the reaction takes place, the proportion of trimeric phosphonitrilic chloride is greatly increased by the addition of a solution of alkali metal hydroxide or basic salt to the reaction mixture upon completion of the reaction and decantation of the watery phase prior to removal of solvent by distillation.

3,694,172

# SYNTHESIS OF CHLORINE AND BROMINE PERCHLORATE

Carl J. Schack, Chatsworth, Donald Pilipovich, Agoura, and Richard D. Wilson, Canoga Park, Calif., assignors to North American Rockwell Corporation

No Drawing. Filed May 25, 1970, Ser. No. 40,377

Int. Cl. C01b 11/02, 11/20

U.S. Cl. 423—466

19 Claims

The new oxides chlorine perchlorate ( $\text{ClOClO}_3$ ) and bromine perchlorate ( $\text{BrOClO}_3$ ) are provided. Chlorine perchlorate is prepared by the reaction of cesium perchlorate or nitronium perchlorate with chlorine fluorosulfate or chlorine monofluoride. Bromine perchlorate is prepared by the reaction of cesium perchlorate or nitronium perchlorate with bromine fluorosulfate or by

3,694,173

# FERROUS ALLOYS

Edwin B. Farmer, Terence M. Cadle, and Martyn S. Lane, Coventry, England, assignors to Brico Engineering Limited, Coventry, Warwickshire, England

No Drawing. Filed May 27, 1971, Ser. No. 147,706

Claims priority, application Great Britain, May 28, 1970, 25,654/70

Int. Cl. B22f 1/00

U.S. Cl. 29—182.1

11 Claims

A sintered ferrous alloy has the composition chromium 10.5–15%, carbon 0.5–2.5%, molybdenum 0.25–5.0%, copper 3–25%, the remainder being iron except for usual impurities and trace elements. The alloy can also contain up to a total of 5% titanium, vanadium and/or cobalt. The chromium is introduced in the form of a pre-alloy of 87% iron and 13% chromium, and the copper can be introduced in the form of a pre-alloy of 90% copper, 5% iron and 5% manganese. The alloy is useful for the production, by powder metallurgy, of valve seat inserts for internal combustion engines.

3,694,174

# DUAL PROPERTY STEEL ARMOR

Bill N. Briggs, Santa Ana, Calif., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed May 13, 1971, Ser. No. 143,233

Int. Cl. B32b 15/00

U.S. Cl. 29—196.1

4 Claims

Disclosed is a dual property steel armor material in the form of a composite, roll-bonded structure having an outer or impact layer of an improved alloy of steel capable of shattering hardened steel armor piercing projectiles and a high toughness backing layer of an improved alloy of steel to achieve multiple strike integrity. The outer or impact layer is a low carbon steel alloy containing the carbide forming elements chromium, molybdenum, and vanadium along with manganese, silicon, and nickel. The high toughness backing layer is comprised of a lower carbon content of a low carbon steel alloy than the steel alloy used for outer impact material. The composite structure is provided with improved ballistic performance through thermal-mechanical processing of a properly constituted alloy system.

3,694,175

# OVERBASED BARIUM ADDITIVE AND FUEL OIL COMPOSITION

Charles E. Marble, Troy, Mich., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Sept. 16, 1968, Ser. No. 762,369

Int. Cl. C10I 1/32; C10m 1/40

U.S. Cl. 44—51

10 Claims

A process for preparing overbased barium hydrocarbon sulfonate featuring the use of barium sulfide as the barium source. The product obtained from this process and diesel fuel containing a smoke reducing quantity of this product are described.

3,694,176

# POLYMERS COMPRISING ETHYLENE AND ETHYLENICALLY UNSATURATED DICARBOXYLIC ACIDS OR ESTERS THEREOF, AND OIL COMPOSITIONS CONTAINING SAID POLYMERS

Harold N. Miller, Millington, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed Apr. 1, 1968, Ser. No. 717,916

Int. Cl. C10I 1/18

U.S. Cl. 44—62

4 Claims

Polymers comprising a major molar amount of ethylene and a minor molar amount of an alpha-beta ethylenically

unsaturated dicarboxylic type monomer such as: dicarboxylic acid, or its anhydride, or a mono or diester thereof, having a number average molecular weight of about 500 to 50,000 are useful as wax crystal modifiers in petroleum oil.

3,694,177

# METHOD FOR MAKING ABRASIVE TOOLS

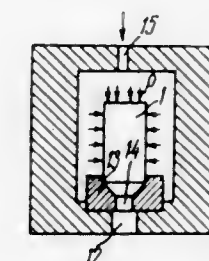
Leonid Fedorovich Vereschagin, Kutuzovskiy prospekt 2/1, kv. 231; Evgeny Nikolaevich Yakovlev, Rusakovskaya ulitsa 4, kv. 63; Jury Sergeevich Konyaev, ulitsa Fersmana 11, kv. 26; and Evgeny Valentinovich Polyakov, Belyaev-Bogorodskoe 46, kvartal 39, kv. 73, all of Moscow, U.S.S.R.; Albert Pavlovich Novikov, Podolsky raion, p/o Akademgorodok, ulitsa Tsentralnaya 10, kv. 59, Moskovskaya Oblast, U.S.S.R.; and Valentin Nikolaevich Bakul, ulitsa Kirova 34-a, kv. 12; Gely Fomich Skripko, ulitsa Vishgorodskaya 33, kv. 13; and Nekhemian Veniaminovich Tsylin, ulitsa Dorogobitskaya 26, kv. 59, all of Kiev, U.S.S.R.

Filed May 1, 1970, Ser. No. 33,738

Int. Cl. B24d 3/00

U.S. Cl. 51—293

2 Claims



The invention relates to a method of making abrasive tools which is characterized in that the spaces of the blank filled with abrasive filler are tightly closed and the blank is placed into a chamber with a shaping hole after which said chamber is filled with a fluid medium, and a pressure is built up in said medium for extruding the blank through the shaping hole.

3,694,178

# SHAPING HOLLOW GLASS BODIES BY PLURALITY OF JETS

Francois Maurice Hennequin, Le Vesinet, France, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France

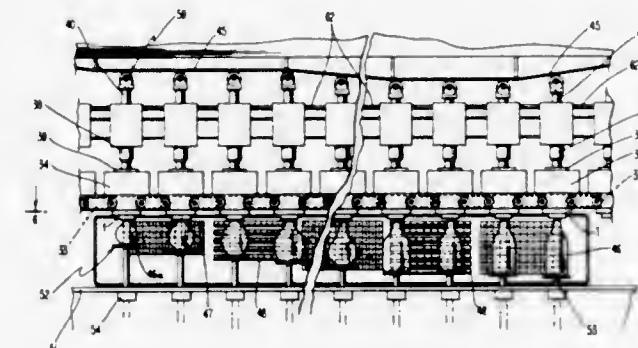
Filed Dec. 17, 1969, Ser. No. 885,935

Claims priority, application France, Dec. 17, 1968, 128,618; June 18, 1969, 6920315

Int. Cl. C03b 9/00, 21/00

U.S. Cl. 65—84

20 Claims



Thermoplastic material such as glass is shaped as a paste or parison having an entry for blowing. It is in-

ternally blown while its outer surface is shaped by successive effects of local gaseous counterpressures accompanied by heat.

3,694,179

# METHOD FOR PRODUCING PHOSPHATE OPTICAL GLASSES

Emil W. Deeg and Robert W. Young, Woodstock, Conn., assignors to American Optical Corporation, Southbridge, Mass.

No Drawing. Filed Mar. 3, 1971, Ser. No. 120,779

Int. Cl. C03b 5/08

U.S. Cl. 65—136

5 Claims

Phosphate glasses for optical applications are produced by an improved method in which the ceramic utensils utilized in the production of the glass are formed of tin oxide.

3,694,180

# GLASS ROLLING APPARATUS AND METHOD

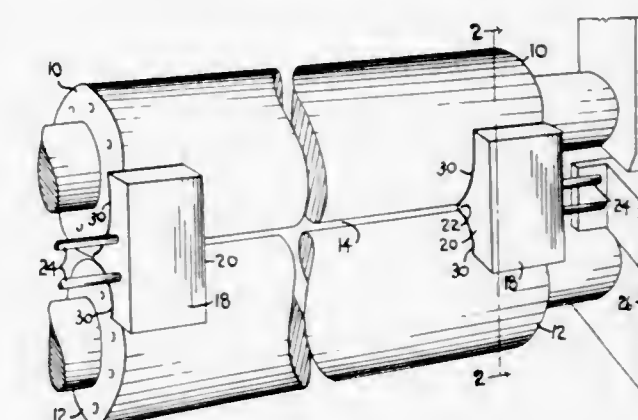
Henry M. Demarest, Jr., Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 796,713, Feb. 5, 1969. This application Apr. 15, 1971, Ser. No. 134,161

Int. Cl. C03b 13/16

U.S. Cl. 65—101

10 Claims



A shaping member or gun for controlling the width of a rolled glass ribbon is constructed of a refractory material which will operate at temperatures on the order of about 2800 degrees Fahrenheit to 2900 degrees Fahrenheit, such as refractories containing high alumina or high silica. The use of such a gun for the rolling of a high-temperature glass, vitrifying at about 2800 degrees to 2900 degrees Fahrenheit, is considered essential for the practical rolling of such glass.

3,694,181

# APPARATUS FOR CONTROLLING GLASS FRACTURES

Terrence A. Dear, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of abandoned application Ser. No. 779,730, Nov. 29, 1968. This application June 1, 1971, Ser. No. 149,019

Int. Cl. C03b 29/00

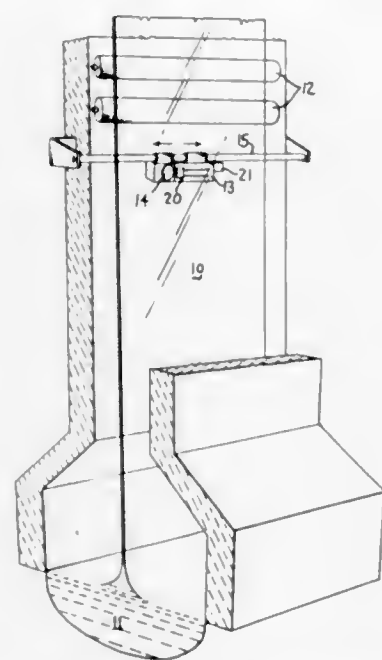
U.S. Cl. 65—158

4 Claims

This invention relates to apparatus for arresting a developing fracture in a ribbon of glass by the application of heat of about 950° F. to the area of the fracture and inducing temporary thermal stresses which place the glass in compression, thus arresting and eventually controlling the fracture. The apparatus comprises a crack-sensing device, a control means and a high-intensity heat source which are mounted so as to scan continuously the moving ribbon, and with the heat source being activated in re-



sponse to the presence of a developing crack. Circuits may be used to move the heat source across the width of



the glass ribbon to direct the fracture toward an edge of the ribbon.

3,694,182

## GLASS TEMPERING DIE CONSTRUCTION

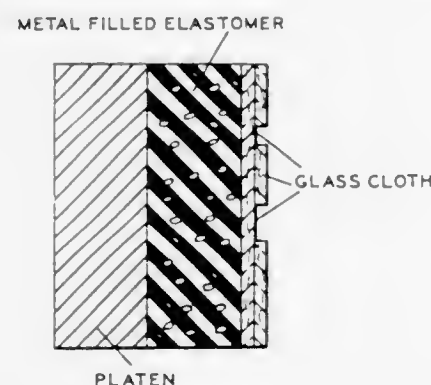
John C. Akirat, Dearborn, and Robert Gardon, Farmington, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of abandoned application Ser. No. 777,883, Nov. 21, 1968. This application Apr. 20, 1971, Ser. No. 135,770

Int. Cl. C03b 27/00

U.S. Cl. 65—288

14 Claims



A die used for a glass tempering apparatus in which the die is brought into contact with the glass to be tempered has at least the following structural components. A rigid supporting platen forms a portion of the glass tempering apparatus. This platen has a layer of metal-filled, relatively deformable elastomeric material secured thereto. A thin glass cloth fabric covers the surface of the elastomeric material which is brought into contact with the glass during the tempering operation.

3,694,183

## PROCESS FOR CORRECTING IRON CHLOROSIS IN PLANTS

Kenneth Russell Gray, Shelton, Wash., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 71,630, Sept. 11, 1970. This application Dec. 6, 1971, Ser. No. 205,305

Int. Cl. C05 9/02

U.S. Cl. 71—1

6 Claims

Processes are provided for the correction of iron chlorosis in plants. These processes comprise treating the plants

with iron complexed red cedar wood extracts from the group consisting of potassium plicatate-iron complexes, complexes, sodium plicatate-iron complexes and mixtures thereof.

3,694,184

## BIS-(POLYHALOHYDROCARBYL) TRISULFIDES AS ALGICIDES

Gustave K. Kohn, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Original application Nov. 29, 1968, Ser. No. 780,292, now Patent No. 3,574,767, dated Apr. 13, 1971. Divided and this application Sept. 8, 1970, Ser. No. 73,607

Int. Cl. A01h 11/00; A01n 9/12

U.S. Cl. 71—67

2 Claims

Bis-(tetrahaloethyl) trisulfides and bis-(trihalovinyl) trisulfides. These trisulfides are prepared by reacting tetrahaloethylsulfenyl chloride or trihalovinylsulfenyl chloride, respectively, with hydrogen sulfide. The tetrahaloethyl compounds are useful as seed disinfectants; whereas the trihalovinyl materials are algicidal.

3,694,185

## PRODUCTION OF METAL POWDER BY DIRECT REDUCTION FROM AQUEOUS SOLUTIONS

Wasyi Kunda, Fort Saskatchewan, Alberta, and Finlay Campbell, Edmonton, Alberta, Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Filed May 28, 1971, Ser. No. 147,888

Int. Cl. B22f 9/00

U.S. Cl. 75—5 A

5 Claims



In the production of copper, cobalt and nickel by gas reduction from solutions or slurries in which the metal is present as a salt, a very small amount, e.g. between 0.01 and 0.005 gram per litre, of ethylene maleic anhydride is provided in the reduction charge to control the physical characteristics, particularly surface texture, of the powder product.

3,694,186

## THERMAL DECOMPOSITION OF NICKEL CARBONYL

David Myers Llewellyn, Clydach, Swansea, Wales, assignor to The International Nickel Company, Inc., New York, N.Y.

No Drawing. Filed July 2, 1971, Ser. No. 159,471. Claims priority, application Great Britain, July 7, 1970, 32,961/70

Int. Cl. B22f 9/00

U.S. Cl. 75—5 AA

7 Claims

The carbon content of nickel formed by the thermal decomposition of nickel carbonyl is reduced by carrying out the decomposition in the presence of nitrous oxide ( $N_2O$ ), advantageously at  $260^\circ C$ . or above. Advanta-

geously a decomposer with nitrated steel walls is used. The presence of  $N_2O$  during the decomposition of nickel carbonyl also inhibits the contamination of the nickel produced with iron.

3,694,187

## PRODUCTION OF CARBONYL IRON

David Myers Llewellyn, Clydach, Swansea, Wales, assignor to The International Nickel Company, Inc., New York, N.Y.

No Drawing. Filed July 2, 1971, Ser. No. 159,472. Claims priority, application United Kingdom, July 7, 1970, 32,962/70

Int. Cl. B22f 9/00

U.S. Cl. 75—5 AA

12 Claims

Thermal decomposition of iron carbonyl vapour to carbonyl iron powder is catalysed by carrying out the decomposition in the presence of nitric oxide ( $NO$ ), nitrogen trioxide ( $N_2O_3$ ) or nitrogen peroxide ( $NO_2$ ). The presence of these gases also enables the carbon content of powder of a given particle size to be reduced.

3,694,188

## THERMAL DECOMPOSITION OF IRON CARBONYL

David Myers Llewellyn, Clydach, Swansea, Wales, assignor to The International Nickel Company, Inc., New York, N.Y.

No Drawing. Filed July 2, 1971, Ser. No. 159,474. Claims priority, application Great Britain, July 7, 1970, 32,960/70

Int. Cl. B22f 9/00

U.S. Cl. 75—5 AA

10 Claims

The carbon content of iron powder formed by the thermal decomposition of iron carbonyl is lowered and the rate of conversion of iron carbonyl to carbonyl iron is increased by carrying out the reaction at a temperature of at least about  $270^\circ C$ . in the presence of nitrous oxide ( $N_2O$ ).

3,694,189

## REDUCTION PROCESS FOR REMOVING IRON FROM SPODUMENE

Charles A. Salotti, 660 Riverhill Drive, Athens, Ga. 30601

No Drawing. Filed Oct. 20, 1969, Ser. No. 867,923. Int. Cl. C22b 27/00; C01d 11/02

U.S. Cl. 75—21

3 Claims

The process for purifying spodumene by removing iron from the crystal structure comprising heating the spodumene to a temperature in a predetermined range in the presence of a reducing gas under pressure for a predetermined time period so as to convert the iron to its elemental form, in which form it can readily be mechanically, magnetically, or chemically separated from the purified spodumene.

3,694,190

## PROCESS FOR RECOVERING ALUMINUM FROM DROSS

Benny Langston, Crown Point, Ind., assignor to U.S. Reduction Co.

No Drawing. Filed Mar. 18, 1970, Ser. No. 20,804. Int. Cl. C22b 7/00, 21/00

U.S. Cl. 75—68 R

3 Claims

A method of reclaiming aluminum from dross by heating a mixture of a flux and dross to produce a bath consisting of a lower layer of molten aluminum, an intermediate layer of oxides and other impurities and an upper layer of raw materials and withdrawing the intermediate layer of oxides and other impurities at the interface between the aluminum layer and the intermediate layers so as to remove higher density materials and prevent the formation of a barrier between the upper and lower layers.

3,694,191

## PROCESS FOR DE-COPPERIZING LEAD

Yurii E. Lebedeff, Edison, and William C. Klein, Menlo Park, N.J., assignors to American Smelting and Refining Company, New York, N.Y.

Filed Sept. 11, 1970, Ser. No. 71,603

Int. Cl. C22b 13/06

U.S. Cl. 75—78

1 Claim

Lead containing a residual small amount of copper is de-copperized by a process involving adding caustic alkali to the copper-containing molten lead, adding pyrite to the copper-containing molten lead, the pyrite being added in an amount sufficient to substantially remove the copper from the lead, and mixing the pyrite and the caustic alkali with the copper-containing molten lead. The pyrite and caustic alkali are maintained mixed with the copper-containing molten lead at least until the pyrite reacts with the copper to form a sulfur compound or compounds of copper. Subsequently a dross containing the sulfur compound of copper is separated from the thus-obtained molten lead of reduced copper content.

3,694,192

## FERRITIC STAINLESS STEELS WITH IMPROVED COLD-HEADING CHARACTERISTICS

Kenneth G. Brickner, O'Hara Township, Allegheny County, Pa., assignor to United States Steel Corporation

Filed Aug. 11, 1970, Ser. No. 62,977

Int. Cl. C22c 39/14

U.S. Cl. 75—126 B

13 Claims

A method for improving the cold-heading characteristics of ferritic stainless steels. A complex equation shows the interrelation of the various alloying elements. Within a compositional range similar to that of Type 430 steel, the cold-heading character, as represented by lowered  $\bar{n}$  values, may be improved by increased amounts of Mn and Mo and decreased amounts of Si. Due to the interaction between C and Cr, it is beneficial to employ either high C in combination with low Cr or low C in combination with high Cr.

3,694,193

## METHOD OF MANUFACTURING LAMELLAR COMPOSITES

Franciscus Marinus Anna Carpay and Adrianus Martinus Jacobus Gerardus van Run, both of Emmasingel, Eindhoven, Netherlands

No Drawing. Filed Oct. 6, 1970, Ser. No. 78,575. Claims priority, application Netherlands, Aug. 15, 1970, 7012088

Int. Cl. C22c 33/00, 1/02

U.S. Cl. 75—129

2 Claims

A method of manufacturing lamellar composites by means of directionally demixing solid materials having a eutectoid composition, or solid solutions. The starting materials must have a grain size of more than approximately 0.1 mm. The materials are directionally demixed while using a temperature gradient of at least  $10^\circ C$ . per cm. which is passed through the body at a rate which is less than or equal to the maximum demixing rate.

3,694,194

## METHOD FOR THE MANUFACTURE OF CENTRIFUGAL CASTINGS

Milorad Mirjanic, Fellbach, Wurttemberg, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Sept. 15, 1969, Ser. No. 857,815. Claims priority, application Germany, Sept. 14, 1968, P 17 83 002.3

Int. Cl. B22d 13/02; C22c 37/00

U.S. Cl. 75—130 R

6 Claims

A method for the manufacture of centrifugal castings in which the melt contains more than 4 percent by weight of carbon and the casting takes place at increased temperatures and/or centrifugal velocities.

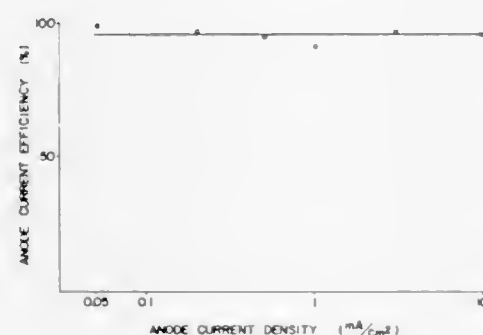


**3,694,195**  
**HEAT-RESISTANT ALUMINUM ALLOYS FOR ELECTRIC CONDUCTORS**  
 Minoru Yokota, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan  
 No Drawing. Filed Oct. 16, 1970, Ser. No. 81,550  
 Int. Cl. C22c 21/00

**U.S. Cl. 75—138** 5 Claims  
 A heat-resistant aluminum alloy for electrical conductors which consists of 0.01 to 0.5% (by weight, as now and hereinafter referred to) zirconium, 0.0005 to 0.08% yttrium and/or 0.0003 to 0.08% erbium and the balance of which is essentially aluminum.

**3,694,196**  
**ALUMINUM ALLOY FOR GALVANIC ANODE**  
 Kazuo Toda and Tosuke Murai, Urawa, and Chikatoshi Miura and Yuichi Tamura, Tokyo, Japan, assignors to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha and Nihon Boshoku Kogyo Kabushiki Kaisha, both of Tokyo-to, Japan  
 Filed Oct. 4, 1971, Ser. No. 186,218  
 Claims priority, application Japan, Oct. 7, 1970, 45/87,521  
 Int. Cl. C22c 21/00

**U.S. Cl. 75—146** 15 Claims



Aluminum alloy for galvanic anode having improved anode potential and anode current efficiency which consists of aluminum base and specific quantities of zinc, tin, bismuth, gallium capable of imparting to the base aluminum these required galvanic anode characteristics.

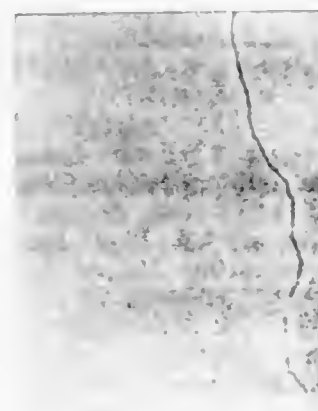
**3,694,197**  
**ELECTRICAL CONTACT MATERIALS OF SILVER-CADMIUM OXIDE CONTAINING ADDITIVES**  
 Edward J. Zdanuk, Burlington, Richard H. Krock, Weston, and Yuan Shou Shen, Reading, Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.  
 Filed Nov. 12, 1970, Ser. No. 88,620  
 Int. Cl. C22c 5/00

**U.S. Cl. 75—173 R** 44 Claims  
 Improved properties including reduced arc erosion rate are obtained in silver-cadmium oxide alloys by adding at least one additive selected from the group consisting of beryllium, cerium, scandium, antimony, gallium, indium, strontium, yttrium and thallium metals in an amount from 0.001 up to 5%, and optionally tin.

**3,694,198**  
**SILVER-CADMIUM OXIDE ALLOYS HAVING PERIODIC PRECIPITATION**  
 Richard H. Krock, Weston, Yuan Shou Shen, Reading, and Edward J. Zdanuk, Burlington, Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.  
 Filed Feb. 19, 1971, Ser. No. 116,820  
 Int. Cl. C22c 5/00

**U.S. Cl. 75—173 R** 27 Claims  
 In accordance with the present invention, it has been found that if at least one additive selected from the group consisting of beryllium, magnesium, aluminum, scandium,

yttrium, lanthanum and neodymium is added to a silver cadmium alloy in an amount from about 0.005 to about 1 weight percent, precipitation of the cadmium oxide oc-



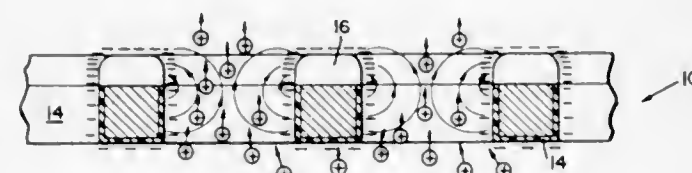
curs in layers which are parallel to the oxidation front. This results in directional properties being achieved in the material, including electrical conductivity and mechanical properties.

**3,694,199**  
**METHOD OF PRODUCING ZINC ALLOY**  
 Robert Francis Redden, Fruitvale, British Columbia, Canada, assignor to Cominco Ltd., Montreal, Quebec, Canada  
 Filed Aug. 17, 1970, Ser. No. 64,459  
 Claims priority, application Canada, July 27, 1970, 089,184  
 Int. Cl. C22c 17/00

**U.S. Cl. 75—178 C** 6 Claims  
 A method of preparing a zinc-base alloy containing copper and titanium or copper, titanium and manganese, substantially free of intermetallic crystals of zinc-titanium intermetallic compounds, in which a master alloy is formed in molten form in a first vessel and said master alloy added to molten zinc in a second vessel to form the final desired alloy composition, said master alloy and final alloy being continuously agitated during their respective formations.

**3,694,200**  
**ELECTROSTATIC MODULATOR FOR CONTROLLING FLOW OF CHARGED PARTICLES**  
 Gerald L. Pressman, San Jose, Calif., assignor to Electroprint, Inc., Palo Alto, Calif.  
 Filed Oct. 29, 1970, Ser. No. 85,070  
 Int. Cl. G03g 5/00, 13/00

**U.S. Cl. 96—1 R** 8 Claims



A system for controlling the flow of charged particles and for modulated aperture electrostatic printing. An apertured screen having substantially the entire surfaces formed of a dielectric material is charged with like charges over substantially all its surfaces to develop fringing fields in the apertures. The charge distributed across one side of the screen is selectively dissipated in accordance with a pattern to be reproduced thereby establishing a bipolar electrostatic latent image as a modification of the fringing fields for density control of a flow of charged particles directed through the screen. The screen may be formed with dielectric thicker on one face than the other to initially carry a higher potential and provide a uniform charge inequality or potential difference through the screen aper-

tures, oriented to enhance the flow of charged particles through the screen. Full modulation control of particle flow is therefore possible with a single selective charge dissipation. For electrostatic reproduction a print-receiving medium is interposed in the modulated particle flow passing through the screen.

**3,694,201**  
**METHOD FOR PHOTOCONDUCTIVE POWDER**  
 Arthur J. Behringer, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.  
 Filed Jan. 6, 1971, Ser. No. 104,335  
 Int. Cl. G03g 5/08

**U.S. Cl. 96—1.5** 5 Claims  
 Method of preparing copper-chlorine activated cadmium sulfide, cadmium selenide or cadmium sulfoselenide with a small percentage of cadmium chloride or zinc chloride to inhibit grain growth.

**3,694,202**  
**PAPER CONTAINING ELECTROCONDUCTIVE PIGMENT AND USE THEREOF**  
 Edgar W. Sawyer, Jr., 22 Nottingham Road, Edison, N.J. 08817, and Frank J. Dzierzanowski, 2 Norfolk Road, Somerset, N.J. 08873  
 No Drawing. Filed June 5, 1970, Ser. No. 43,951  
 Int. Cl. G03g 7/00; D21h 3/66

**U.S. Cl. 96—1.8** 8 Claims  
 The conductivity of paper is increased by incorporating a conductive zeolitic aluminosilicate with the paper as a coating or as a filler. The resulting paper is useful in various nonimpact printing processes. For example, when provided with a surface coating of photosensitive material such as zinc oxide, the paper is employed in direct electrophotographic copying.

**3,694,203**  
**REPRODUCTION PROCESS BY POWDER DEVELOPMENT AND FIXATION OF TRANSFERRED IMAGE**  
 Kinji Okubo, 210 Nakanuma, Minami-Ashigara Machi, Ashigara-Kamigun, Kanagawa, Japan, and Toshibaiko Nagai, deceased, late of Tokyo, Japan, by Kenichi Nagai, legal representative, 5-10, 4-chome, Yakumo, Meguro-ku, Tokyo, Japan  
 No Drawing. Original application Feb. 10, 1966, Ser. No. 529,909, now Patent No. 3,539,342. Divided and this application Apr. 2, 1970, Ser. No. 29,357  
 Claims priority, application Japan, Feb. 10, 1965, 40/7,155  
 Int. Cl. G03c 5/04

**U.S. Cl. 96—27** 3 Claims  
 A process for the producing of a number of reproductions on ordinary paper. The reproduction process comprises exposing an intermediate sheet coated with a light-sensitive or heat sensitive material to radiation to form a metastable liquid when its melt is cooled on the intermediate sheet in areas corresponding to the location of the images on the original sheet, transferring a part of the image onto a receiving sheet, and then subjecting the transferred image to powder development and fixation.

**3,694,204**  
**DIFFUSION TRANSFER PRODUCT HAVING HEAT ACTIVATABLE PROCESSING SYSTEM AND AN OPACITY PROVIDING LAYER**  
 Leonard C. Farney, Melrose, and Carole L. Groncki, Lynnfield, Mass., assignors to Polaroid Corporation, Cambridge, Mass.  
 Filed Dec. 28, 1970, Ser. No. 101,630  
 Int. Cl. G03c 5/54

**U.S. Cl. 96—29 R** 25 Claims  
 Photographic products for providing diffusion transfer image patterns and having the capability of being devel-

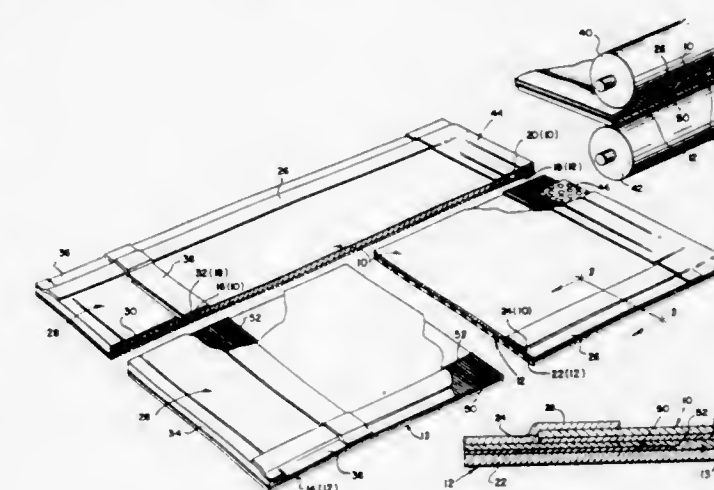
oped by heat. Essential elements of the preferred products of the present invention are a heat activatable processing system integrated with a pellucid, diffusion transfer image pattern receiving layer, a layer comprising an opacification system which can provide a reflective background for viewing the diffusion transfer image pattern and at the same time effectively mask a developed image pattern in an underlying layer comprising a photosensitive system.

**3,694,205**  
**PHOTOGRAPHIC METHOD OF DESIGN SYNTHESIS AND EVALUATION**  
 Thomas F. Richardson, Jr., 45 Summit Road, Riverside, Conn. 06878  
 Filed May 28, 1970, Ser. No. 41,468  
 Int. Cl. G03c 5/04

**U.S. Cl. 96—27 R** 9 Claims  
 A direct method of producing photographic representations of surface ornamentation on physical objects in which the image of a proposed pattern of ornamentation is projected onto the surface of each object, and then photographically recorded as it appears thereon for a permanent record. The projected image may come from a single projector or be synthesized from images from several projectors. The patterns may be widely varied for purposes of evaluation by changing the focus, color, pattern, position, size, etc. of the projected images. The permanent record is made either by directly photographing each object or by covering each object with emulsion and exposing it to the projected image.

**3,694,206**  
**PHOTOGRAPHIC FILM UNIT**  
 Rogers B. Downey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.  
 Filed Dec. 29, 1970, Ser. No. 102,447  
 Int. Cl. G03c 5/54

**U.S. Cl. 96—29 R** 27 Claims



A self-developing, photographic film unit including a pair of rectangular support sheets, one of which is transparent, secured in face-to-face relation at their lateral margins and at one end by binding strips. The margins of the transparent support sheet extend beyond the edges of the other sheet and the binding strips are secured to and overlap the lateral margins and one end margin of both sheets. A photosensitive image-recording layer and an image-receptive layer are sandwiched between the sheets, preferably with the image-receptive layer closest the transparent sheet. A container of a liquid processing agent adapted to initiate formation of a visible transfer image in the image-receptive layer when distributed between the sheets for permeation into the photosensitive layer following exposure thereof, is coupled to the sheets at the other end edge of the smaller sheet so as to dispense its liquid contents between the sheets in response to the ap-



plication of compressive pressure. A masking layer including a reflective pigment carried in a binder is coated on the side of the transparent sheet facing the smaller sheet and extends to the edges of the transparent sheet. The masking layer is formed with a rectangular opening smaller than the smaller sheet and is located between the photosensitive and image-recording layers or between the latter and the transparent sheet to provide a reflective border surrounding the visible image formed in the image-recording layer. The sheets and layers of the film unit may be laminated to one another to form an integral unit or the two support sheets and the layers carried thereon may be secured to one another only at their margins.

3,694,207

**TREATMENT OF IMAGEWISE EXPOSED CATALASE ACTIVE OR PEROXIDASE ACTIVE ENZYME CONTAINING LAYER WITH PEROXIDE**  
Reinhart Matejec and Erwin Ranz, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany  
No Drawing. Filed Oct. 26, 1970, Ser. No. 84,195  
Claims priority, application Germany, Nov. 6, 1969, P 19 55 901.4  
Int. Cl. G03c 5/24

**U.S. Cl. 96—48 6 Claims**  
For the production of positive photographic images are used layers containing catalase active and/or peroxidase active enzymes, which are inactivated on exposure to light, thus becoming incapable of decomposing peroxide compounds. The peroxide compounds are used either to form an image of gas bubbles in the layer or to produce a dye image by a color-forming oxidation reaction. The sensitivity can largely be increased by substances which on exposure to light liberate halogen or cyanide, which latter products act as poisons for the enzymes.

3,694,208

**PRODUCTION OF PHOTOGRAPHIC IMAGES OR PRINTING PLATES UTILIZING POLYIMIDES**  
Erwin Ranz, Harald von Rintelen, Heinz-Dieter Schutz, Gerhard Muller, and Wolfram Neumann, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany  
No Drawing. Filed Oct. 30, 1970, Ser. No. 85,811  
Claims priority, application Germany, Nov. 6, 1969, P 19 55 751.8  
Int. Cl. G03c 3/24

**U.S. Cl. 96—48 HD 5 Claims**  
Process for the production of photographic images or printing forms using light sensitive layers which are free from silver halide and contain cyclic polyamides according to German patent (P 15 22 385.5) wherein the photographic material is imagewise exposed and heated to a temperature of between 100° C. and 200° C. and then is uniformly exposed. The process is based on the finding that the coloured radical image substance formed by imagewise exposure is irreversibly converted into colourless or almost colourless compounds by heating them to 100° C. to 200° C.

3,694,209

**PROCESS FOR THE DEVELOPMENT OF EXPOSED PHOTOGRAPHIC MATERIAL CONTAINING SILVER HALIDE**  
Georg Schwienbacher, Zurich, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland  
No Drawing. Filed Mar. 9, 1970, Ser. No. 17,967  
Claims priority, application Switzerland, Mar. 14, 1969, 3,879/69  
Int. Cl. G03c 5/26

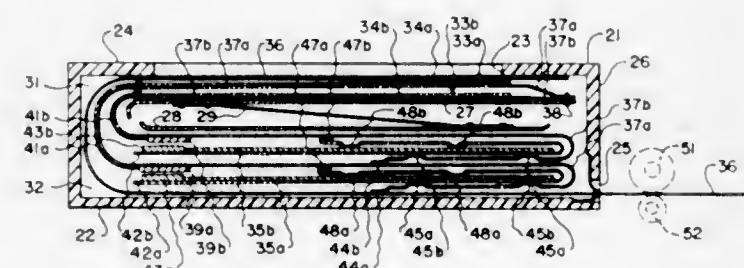
**U.S. Cl. 96—50 8 Claims**  
A process for rapid developing of exposed photographic silver halide material, especially X-ray fibers is provided. The process consists in first treating the material with a

strong alkali metal hydroxide solution and then with the developer solution and afterwards carrying out the processing steps required for finishing the photograph. The developing bath may be followed by a second alkaline bath. This process makes it possible to obtain stable immediately visible picture shortly, e.g. 14 seconds, after exposure.

3,694,210

**PHOTOGRAPHIC FILM ASSEMBLAGE**  
Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.  
Filed Nov. 27, 1970, Ser. No. 93,196  
Int. Cl. G03c 1/48

**U.S. Cl. 96—76 C 5 Claims**

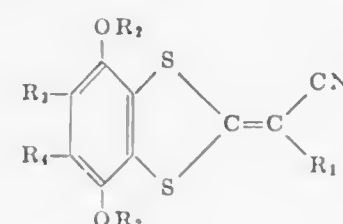


An assemblage of self-processing photographic film units initially arranged in stacked relation with interleaved transporting and connecting leaders. Certain of the leaders initially are releasably bonded or tacked to portions of their respective film units so that the withdrawal of such leaders develops a moving transverse fold in the leader that moves longitudinally in a smooth and predictable fashion to prevent jamming or binding.

3,694,211

**ORGANIC MATERIALS CONTAINING UV-ABSORBERS**  
Shui Sato, Tomio Nakajima, Masashi Nakano, Ken-ichi Kishi, Tokyo, and Sadao Sugita, Hanno, Japan, assignors to Konishiroku Photo Industry Co., Ltd.  
No Drawing. Filed Apr. 13, 1971, Ser. No. 133,703  
Claims priority, application Japan, Apr. 17, 1970, 45/32,370  
Int. Cl. F21v 9/06; C07d 71/00

**U.S. Cl. 96—84 3 Claims**  
The compounds used in the present invention are represented by the general formula,



wherein R<sub>1</sub> is a nitrile, alkoxycarbonyl or carbamoyl group; R<sub>2</sub> is a hydrogen atom or a substituted or unsubstituted and saturated or unsaturated aliphatic group; and R<sub>3</sub> and R<sub>4</sub> are individually a hydrogen atom or an alkyl or alkoxyl group.

A compound of the general formula is used as an ultraviolet light absorber in organic materials such as shaped synthetic resin materials, synthetic and natural fiber materials, oils, paints, printing inks and photographic materials.

3,694,212

**FILM SUPPORT COATED WITH POLYESTER AND GELATIN-SILVER HALIDE EMULSION**  
Lothar Richter, Seelenbinderstrasse 138, and Georg Eichhorn, Hoernle Strasse 3, both of Berlin-Kopenick, Germany  
No Drawing. Continuation of application Ser. No. 630,840, Apr. 14, 1967. This application Aug. 3, 1970, Ser. No. 60,632  
Int. Cl. G03c 1/80

**U.S. Cl. 96—87 R 3 Claims**  
An article comprising a cellulose ester- or polyethylene terephthalate-based substrate, overlying and in contact with the substrate an adhesive coating consisting of the reaction product of glycerine with an aliphatic or aromatic dicarboxylic acid or acid anhydride containing up to 10 carbon atoms in its molecule in molar proportions of the glycerine to the dicarboxylic acid or acid anhydride of about 1:2, and overlying and in contact with the adhesive coating a coating of a photographic emulsion.

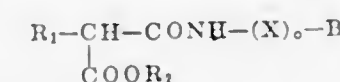
3,694,213

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3,694,214

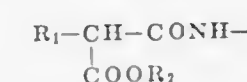
**LIGHT-SENSITIVE COLOR-GRAPHIC EMULSIONS**  
Masakumi Iwama, Isaburo Inoue, Teruo Hanzawa, Kenro Sakamoto, and Takaya Endo, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd.  
No Drawing. Continuation-in-part of abandoned application Ser. No. 778,774, Nov. 25, 1968. This application Oct. 14, 1970, Ser. No. 80,749  
Int. Cl. G03c 1/40

**U.S. Cl. 96—100 7 Claims**  
A light-sensitive color photographic silver halide emulsion which comprises a coupler of the general formula



wherein

R<sub>1</sub> represents an aliphatic hydrocarbon radical having 8–20 carbon atoms,  
R<sub>2</sub> represents hydrogen or a lower alkyl group,  
B represents yellow or magenta coupler residue,  
X represents a radical connecting B and



n is 0 or 1.

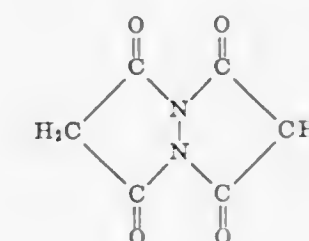
3,694,215

**LIQUID SHORTENING CONTAINING BRASSIDOYL PROPYLENE GLYCOL HYDROGEN SUCCINATE**  
Paul Seiden, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio  
No Drawing. Filed Dec. 29, 1970, Ser. No. 102,525  
Int. Cl. A23d 5/00

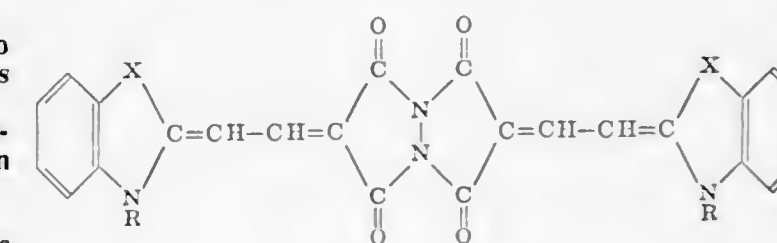
**U.S. Cl. 99—118 F 8 Claims**  
The novel compound brassidoyl propylene glycol hydrogen succinate (BSPGHS) having use as a shortening composition additive is produced. A novel liquid shortening composition is also produced by mixing a glyceride base oil, BSPGHS, propylene glycol fatty monoester and mono- and diglycerides, desmoking the mixture and winterizing the desmoked mixture. The shortening composition is clear at temperatures above 60° F., pourable at refrigerator temperatures, rapidly recovers its clarity when removed from refrigerator temperatures to temperatures above 60° F., has minimal smoking tendencies, and possesses excellent cake baking properties.

**3,694,216**  
**SILVER HALIDE EMULSIONS CONTAINING METHINE DYES WITH 1H,5H-PYRAZOLO-[1,2-a]PYRAZOLE - 1,3(2H),5,7(6H) - TETRONE NUCLEUS**  
Philip W. Jenkins, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.  
No Drawing. Filed June 29, 1970, Ser. No. 50,988  
Int. Cl. G03c 1/10, 1/22

**U.S. Cl. 96—128 7 Claims**  
The novel compound 1H,5H-pyrazolo[1,2-a]pyrazole-1,3(2H),5,7(6H)-tetrone



can be prepared by the reaction of hydrazine dihydrochloride with a dialkyl malonate in the presence of sodium alkoxide and is useful as an intermediate for novel dyes including merocyanine dyes such as

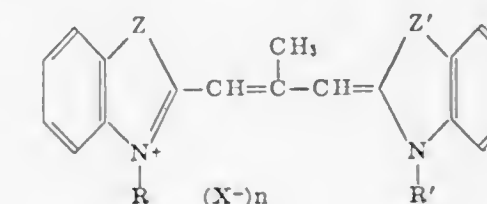


wherein R is alkyl and X is O, S, NH, Se or the like, the dyes being useful as photographic spectral sensitizing dyes or filter dyes.

3,694,217

**SILVER HALIDE PHOTOGRAPHIC EMULSION**  
Yoshikata Sakaguchi, Masakado Sakai, Masanaga Ohki, Yashuharu Nakamura, Motohiko Tsubota, and Akira Sato, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan  
Filed Sept. 12, 1969, Ser. No. 865,545  
Claims priority, application Japan, Sept. 12, 1968, 43/65,704  
Int. Cl. C09b 23/06; G03c 1/18

**U.S. Cl. 96—130 9 Claims**  
A silver halide photographic emulsion having therein at least one sensitizing dye represented by the following formula:



wherein Z and Z' are individually selected from the group consisting of a sulfur and a selenium atom, R is selected from the group consisting of an ethyl group, an n-propyl group, an n-butyl group and an allyl group, R' is selected from the group consisting of a γ-sulfopropyl group, a γ-sulfobutyl group, a δ-sulfobutyl group, a δ-carboxybutyl group and an ω-carboxypentyl group, X represents an anion, and n is 0 or 1, n being 0 when the dye is an intramolecular salt.



3,694,218

**METHOD OF HOLOGRAM RECORDING**

John D. Margerum, Woodland Hills, and Alexander D. Jacobson, Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.  
No Drawing. Filed Mar. 3, 1970, Ser. No. 16,210  
Int. Cl. G03c 5/00

U.S. Cl. 96—35.1 4 Claims

Method of holographic photopolymer recording by an optical system of the interference pattern between wavefronts emanating from an object illuminated with laser radiation and a coherent reference wavefront.

3,694,219

**SPREADABLE FOOD COMPOSITION AND PROCESS OF MAKING SAME**

Kaete Glandorf, Mannheim, and Guenter Scheurer, Hassloch, Germany, assignors to Benckiser-Knapsack GmbH, Ludwigshafen, Rhine, Germany  
No Drawing. Filed Apr. 3, 1970, Ser. No. 25,560  
Claims priority, application Germany, Apr. 5, 1969, P 19 17 687.5  
Int. Cl. A23c 19/12; A23l 1/00

U.S. Cl. 99—1 12 Claims

A spreadable food composition is obtained by subjecting soybean flour, if desired, with the addition of rennet casein or ripened cheese in the presence of processing salts to a short time heat treatment at a temperature between about 75° C. and about 105° C. and preferably at a temperature of about 90° C.

3,694,220

**INFRARED RADIATION OF SEED**

Chardo W. Pierce, Lubbock, Tex., assignor to Chardo Pierce Micronizing Company, Amarillo, Tex.  
Continuation-in-part of application Ser. No. 576,353, Aug. 31, 1966. This application Sept. 2, 1969, Ser. No. 854,693  
Int. Cl. A23k 1/00; A23l 1/18

U.S. Cl. 99—2 8 Claims

Seeds from grain or legumes are prepared for animal or human consumption by first heating with infrared radiation until soft, turgid, malleable and plastic. Then the seed are extruded by a roll to form a wafer or flake from each seed, which wafer or flake is suitable for storage and is readily digestible.

3,694,221

**ENZYMES MODIFIED PROTEIN PROCESS**

Ralph A. Hoer, Ballwin, Christopher W. Frederiksen, St. Louis, and Robert L. Hawley, Webster Groves, Mo., assignors to Ralston Purina Company, St. Louis, Mo.  
No Drawing. Continuation-in-part of application Ser. No. 625,980, Mar. 27, 1967. This application Jan. 30, 1970, Ser. No. 7,224  
Int. Cl. A23j 1/14

U.S. Cl. 99—17 44 Claims

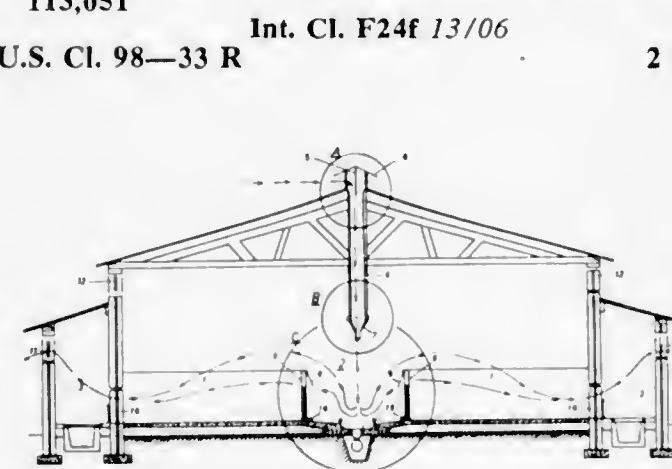
A method of preparing a vegetable protein product having excellent wettability in aqueous solutions and improved drop in and stir in characteristics is disclosed. The product exhibits a greatly improved texture, mouthfeel, and wettability over known materials and can be incorporated in a wide variety of food materials to form superior protein fortified foods. The process involves subjecting aqueous protein material to a rapid heating and physical working step, such as by steam injection, reacting the protein in the presence of a proteolytic enzyme for a short time to hydrolyze and modify the protein, and heating the protein to inactivate the enzyme and stop the reaction. The aqueous protein can be dried and a dry, powdered protein product is recovered which is highly dispersible in water, has high drop in and stir in characteristics, and which has excellent smooth texture and mouthfeel.

3,694,222

**APPARATUS FOR AERATING CATTLE SHEDS, PARTICULARLY PIGSTIES**

Machiel Pardoel, Vlerdseweg E 211, Bruchem, Netherlands, and Lodewijk Oosterveen, Teisterbandstraat 48-B, Kerckdriel, Netherlands  
Continuation of abandoned application Ser. No. 725,718, May 1, 1968. This application Feb. 5, 1971, Ser. No. 113,051  
Int. Cl. F24f 13/06

U.S. Cl. 98—33 R 2 Claims



A method and apparatus for aerating a cattle shed wherein fresh air is drawn into the shed from an inlet above the floor, conducted downwardly from the inlet through a conduit and accelerated at a distance above the floor, and drawn across the floor at a desired level thereabove toward an outlet in a sidewall of the shed. A constricted passage at the lower end of the conduit effects acceleration of the fresh air as it is drawn therethrough toward the floor, and three species of the apparatus embody alternative inlet constructions and locations therefor.

3,694,223

Patent Not Issued For This Number

3,694,224

**TORTILLA AND PROCESS USING POLYCARBOXYLIC ACIDS AND THEIR ANHYDRIDES**

Manuel Jesus Rubio, Bridgeport, Conn., assignor to Roberto Gonzalez Barrera, Monterrey, Mexico  
No Drawing. Filed July 24, 1970, Ser. No. 58,139  
Int. Cl. A23l 1/10, 1/00

U.S. Cl. 99—80 R 18 Claims

To retard the staling and retard microbiological spoilage of tortillas, which are an unleavened unshortened food product made from nixtamalized corn or corn flour by incorporating an additive in making the tortilla dough. The additive is an aliphatic polycarboxylic acid or its anhydride having 3 to 6 carbon atoms in its carbon chain.

3,694,225

Patent Not Issued For This Number

3,694,226

**QUICK-COOKING RICE PRODUCT AND PROCESS FOR PREPARING SAME**

Robert F. Howland, Dover, Joseph B. Haigh II, Milford, and Robert W. Fusi, Dover, Del., assignors to General Foods Corporation, White Plains, N.Y.  
No Drawing. Filed June 11, 1968, Ser. No. 736,020  
Int. Cl. A23l 1/10

U.S. Cl. 99—80 PS 5 Claims

A quick-cooking rice product is prepared by gelatinizing the rice in stages, controlling the increase in moisture content of the rice during each stage, and drying the rice under conditions whereby a desired bulk volume of the product is attained.

3,694,227

**METHOD FOR MAKING DOUGH**

Pompeo Vezzani, Via Moncalvo 60, Milan, Italy  
Filed Mar. 11, 1970, Ser. No. 18,588

Claims priority, application Italy, Mar. 15, 1969, 51,012/69; June 30, 1969, 52,441/69; Oct. 14, 1969, 23,319/69; Feb. 17, 1970, 67,523/70; Feb. 18, 1970, 67,537/70, 67,538/70  
Int. Cl. A21d 8/00

U.S. Cl. 99—90 CB 7 Claims

Dough for bread products and "pasta" is continuously produced within 1 minute or less by contacting together the powdery and liquid ingredients in dispersed condition in the inlet section of a tubular continuous mixer and rotating the bladed shaft of the latter at a centrifuging speed thereby to form and maintain in the mixer a tubular liner of dough being furrowed by the tips of the blades. The speed of the shaft advantageously corresponds to a radial acceleration of 40G to 80G at the tips of the blades, G being the constant of gravity.

3,694,228

**FRIED CAKE MIX COMPOSITION**

Arthur Hochhauser, Brooklyn, and Frank Clark, New York, N.Y., assignors to DCA Food Industries, Inc., New York, N.Y.  
No Drawing. Filed May 5, 1970, Ser. No. 34,890  
Int. Cl. A21d 13/08, 2/28

U.S. Cl. 99—92 15 Claims

A coreless fried cake or doughnut product having a specific volume greater than 4.0 cc./gram is formed from a novel mix composition comprising 10–12 wt. percent total proteins of which 50 to 70% are gluten proteins and the balance are dispersible proteins. The composition also includes minor amounts of a sulfhydryl reducing agent and a fatty acid ester of sorbitol as an emulsifier.

3,694,229

**PROCESS FOR PREPARING DRY LAYER CAKE MIX AND THE RESULTING PRODUCT**

Norran E. Norsby, Hopkins, and Robert F. Kozlik and John R. Roach, Minneapolis, Minn., assignors to General Mills, Inc.  
No Drawing. Filed Aug. 21, 1970, Ser. No. 66,133  
Int. Cl. A21d 2/00

U.S. Cl. 99—94 5 Claims

A dry layer cake mix that is shelf stable, rehydrates quickly and is hand mixable. The process for making the mix includes making a moistened mixture of the ingredients, adding previously dried ingredients thereto and air drying the mixture.

3,694,230

**CO-MILLING PROCESS FOR MAKING CULINARY MIXES**

Robert R. Cooke, Evendale, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio  
No Drawing. Continuation of application Ser. No. 759,795, Sept. 13, 1968, and continuation-in-part of application Ser. No. 676,740, Oct. 20, 1967. This application Sept. 17, 1970, Ser. No. 73,173  
Int. Cl. A23l 1/10

U.S. Cl. 99—94 5 Claims

Dry, prepared culinary mixes are made by a process which involves co-milling sugar and flour in a multi-impact mill.

3,694,231

**PROCESS FOR PREPARING SHELF-STABLE, FREE-FLOWING DEHYDRATED CHEESE PRODUCTS IN GRANULATED OR POWDERED FORM**

Henry J. Izzo, Somerset, and Charles O. Burton, Oradell, N.J., assignors to Gentry Corporation, Fair Lawn, N.J.  
No Drawing. Filed Aug. 17, 1970, Ser. No. 64,582  
Int. Cl. A23c 19/02

U.S. Cl. 99—115 9 Claims

Free-flowing dehydrated cheese products in powdered, crumbled or granulated form are prepared by simultaneously introducing chunks of cheese and liquefied cryogenic gas into a comminution chamber so that the cheese is frozen and ground. The resulting comminuted cheese particles are dried from the frozen state in a fluidized bed while maintaining a temperature below about 21° C.

3,694,232

**FLAVORING METHODS AND COMPOSITIONS CONTAINING 3-PHENYL PENTENALS**

John B. Hall, Rumson, and Manfred Vock, West Orange, N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.  
No Drawing. Filed June 4, 1970, Ser. No. 43,555  
Int. Cl. A23l 1/26

U.S. Cl. 99—140 R 21 Claims

Foodstuff flavor augmenting compositions containing a quantity of a 3-phenyl pentenal sufficient to alter the organoleptic characteristics of said compositions and process for preparing the said 3-phenyl pentenals.

3,694,233

**STABILIZATION OF COMBINED FOODS AND LIQUIDS**

Milton Kaplow, White Plains, and Joseph John Halik, Ossining, N.Y., assignors to General Foods Corporation, White Plains, N.Y.  
No Drawing. Continuation-in-part of application Ser. No. 758,679, Sept. 10, 1968. This application July 29, 1970, Ser. No. 59,350  
Int. Cl. A23l 3/34; A23b 7/14, 1/14

U.S. Cl. 99—150 9 Claims

Rectification of the  $A_w$  of food solid and liquid phases is effected until they approximate one another and respectively have  $A_w$ 's less than 0.90 and moisture contents less than 50% which allows novel sauces or gravies to be admixed with food solid while improving shelf stability of both phases and sustaining the desirable textural attributes of the solid components.

3,694,234

**COLLAGEN FOOD COATING COMPOSITION AND METHOD OF PREPARATION**

Howard W. Jones, 49 Pawnee Road, New Britain Borough, Bucks County, Pa. 18901, and Robert A. Whitmore, 705 E. Mermaid Lane, Philadelphia, Pa. 19118  
No Drawing. Application Feb. 27, 1970, Ser. No. 15,304, which is a continuation of application Ser. No. 759,793, Sept. 13, 1968. Divided and this application Jan. 5, 1971, Ser. No. 104,169  
Int. Cl. A23b 1/00

U.S. Cl. 99—169 2 Claims

Ground collagen is mixed with an aqueous mixture of lactic acid and glyceraldehyde, heated to about 75° C.,



and neutralized to pH 7.0 to make a coating for hamburgers capable of withstanding cooking temperatures without melting.

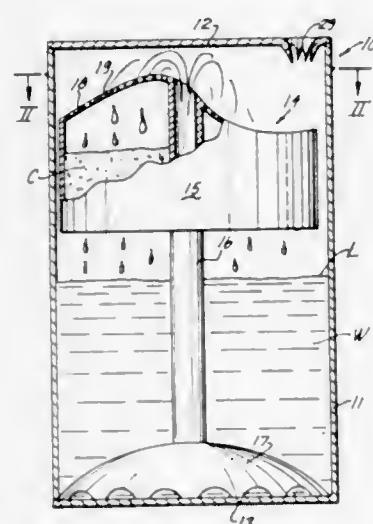
### 3,694,235 DISPOSABLE FOOD-VENDING PACKAGE

Sidney Siegel, 989 Schenectady Ave.,  
Brooklyn, N.Y. 11203

Filed Mar. 20, 1970, Ser. No. 21,286  
Int. Cl. B65b 29/02

U.S. Cl. 99—171 B

4 Claims



A disposable food-vending package for making coffee, tea, soup, or other comestible in which water or other liquid dissolves, extracts, irrigates or treats a liquid, solid or semi-solid foodstuff is disclosed having a hermetically sealed disposable and heatable receptacle or can holding in its upper portion a container with a premeasured charge of the fluid-activatable foodstuff. A riser leads up from the lower portion to the receptacle so that water can be conducted up into this receptacle when the can is heated. The sealed cover of the can may be partially opened to permit cooking of the package and pouring-off the finished food product, whereupon the receptacle or can may be discarded.

### 3,694,236 METHOD OF PRODUCING A DEHYDRATED FOOD PRODUCT

Ray L. Edlin, San Diego, Calif., assignor to  
Kelco Company, San Diego, Calif.

No Drawing. Continuation of application Ser. No. 48,845, June 11, 1970, which is a continuation of application Ser. No. 734,225, June 4, 1968, which in turn is a continuation-in-part of application Ser. No. 397,322, Sept. 17, 1964. This application June 18, 1971, Ser. No. 154,677

Int. Cl. A23b 7/02

U.S. Cl. 99—199

2 Claims

A method of producing a dehydrated food product comprising mixing a Xanthomonas hydrophilic colloid with an aqueous food suspension, the quantity of Xanthomonas colloid ranging from about 0.01 to about 1.5 percent by weight of the aqueous food suspension, and then dehydrating the aqueous food suspension. The dehydrated food product can also be produced by dry mixing a dry Xanthomonas hydrophilic colloid with a dehydrated food product.

### 3,694,237 EDIBLE INK

Chester J. Piotrowski, Royersford, Pa.  
(% Colorcon Inc., Moyer Blvd., West Point, Pa. 19486)  
No Drawing. Filed Mar. 17, 1971, Ser. No. 125,329

Int. Cl. C09d 11/08

U.S. Cl. 106—30

5 Claims

An edible ink composition for applying indicia to a capsule or tablet comprising partially esterified purified

shellac, ethyl alcohol, and a coloring substance selected from edible pigments, lakes, and dyes wherein the partially esterified shellac comprises from about 10% to 50% of the total shellac solids.

### 3,694,238 GRAVURE PRINTING PROCESS AND APPARATUS USING MOISTURE-SETTING INKS

Michael J. Tinghitella, Hightstown, N.J., and Kenneth E. Roon, Conklin, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 4, 1968, Ser. No. 710,272

Int. Cl. C09d 11/06

U.S. Cl. 106—30

1 Claim

A printing process and apparatus wherein a gravure printing press is provided with a pressure drying unit to set a moisture-setting ink that previously has been modified by the addition of glycol and water to the ink formulation to respectively reduce the viscosity of the ink and enhance its sensitivity to water by bringing it substantially to the threshold of precipitation. The drying unit dampens and sets the ink by supplying the additional water necessary to precipitate the resin in the ink formulation and forces the water-glycol blend into the web stock being printed. The advantages of gravure printing are thus obtained without use of the toxic and flammable inks heretofore required with the gravure process.

### 3,694,239 METHOD OF GRINDING PIGMENT

Martin J. Simon, Natrona Heights, Pa., assignor to  
PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Jan. 5, 1971, Ser. No. 104,135

Int. Cl. C09c 1/56, 1/36

U.S. Cl. 106—309

7 Claims

Pigments are dispersed in a dispersant comprising a solvent solution of methyl 12-hydroxystearate. The pigments are ground in the dispersant and used to pigment coating compositions.

### 3,694,240 FINGERPRINT IDENTIFICATION SYSTEM AND METHOD

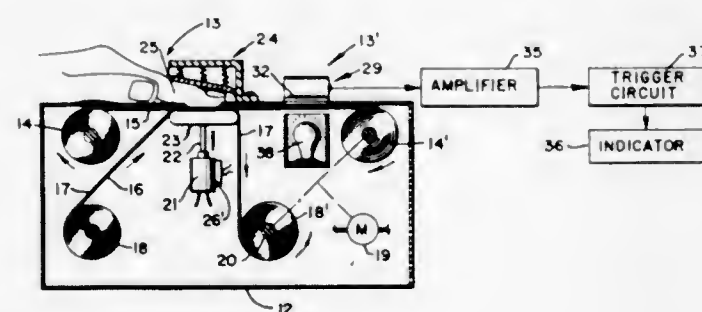
Marvin Miller, Teaneck, N.J.; Robert P. Miller, Spring Valley, N.Y. (both % Sibany Manufacturing Corp., 6 Neil Lane, Riverside, Conn. 06878); and Tibor de Cholnoky, Jr., 70 Hunting Ridge Road, Greenwich, Conn. 06830

Application Sept. 13, 1968, Ser. No. 759,698, which is a continuation-in-part of application Ser. No. 453,440, May 5, 1965. Divided and this application Aug. 14, 1970, Ser. No. 63,888

Int. Cl. A61b 5/10

U.S. Cl. 117—5

31 Claims



Method and apparatus for obtaining an individual's fingerprint including a fingerprint impression conforming sheet material, inking means and a fingerprint receiving surface disposed for movement toward each other upon pressing of the individual's fingerprint against the sheet

material to conform said material to the fingerprint and to transfer a representation thereof, by the inking means, to said fingerprint receiving surface.

### 3,694,241 METHOD FOR CHEMICALLY PRINTING

James L. Guthrie, Ashton, and Francis J. Rendulic, Elliott City, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Apr. 19, 1971, Ser. No. 135,435

Int. Cl. B41c 1/08; B41m 1/24; D06n

U.S. Cl. 117—15

4 Claims

The invention disclosed is directed to a method for printing which includes selectively depositing onto an activator-containing substrate a curable ink composition having as essential ingredients (A) a pigment, (B) a polyene containing at least 2 reactive unsaturated carbon-to-carbon bonds per molecule, and (C) a polythiol containing 2 or more thiol groups per molecule. Optionally, a sensitizer may be included if desired to improve the curing time and efficiency. The activator containing substrate having the ink composition selectively deposited thereon effects cure of the ink composition. The method is particularly useful for high speed printing on absorbent papers such as newsprint. Images thus printed are found to be characterized by high gloss, good color strength, high opacity, and excellent permanence.

### 3,694,242 METHOD FOR ELECTROSTATICALLY COATING THE SURFACES OF ARTICLES WITH PULVERULENT MATERIALS

Max Ofner, Leonberg, near Stuttgart, Germany, assignor to SFB Spezial-Filterbau M. Ofner K.G., Frieolzhelm, Wurttemberg, Germany

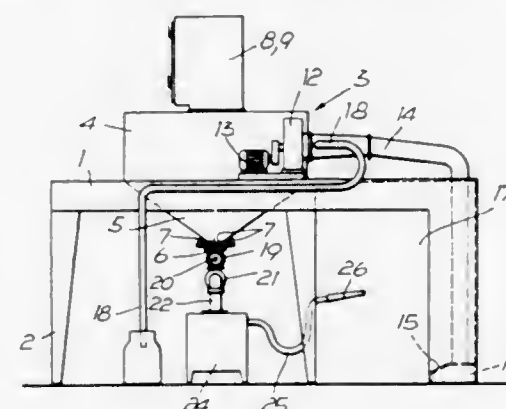
Continuation of abandoned application Ser. No. 656,081, July 26, 1967. This application Jan. 5, 1971, Ser. No. 104,138

Claims priority, application Germany, July 29, 1966, P 16 96 368.1; May 5, 1967, P 16 46 104.4

Int. Cl. B05b 5/02; B44d 1/094

U.S. Cl. 117—17

12 Claims



A method for electrostatically coating the surfaces of articles with pulverulent materials, especially coloring substances, by spraying the material dispersed in an air current upon the article and permitting the recovery of the excessive material which is drawn off by suction from the spray chamber, treated, and then returned to the supply for immediate reuse in the spraying operation.

### 3,694,243 COATING OF PARTICLES AND PROCESS FOR MANUFACTURING SAID COATING

Hugh W. Campbell, Xenia, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Dec. 22, 1969, Ser. No. 886,940

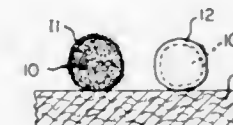
Int. Cl. B44d 1/02

U.S. Cl. 117—27

8 Claims

A process is disclosed for coating small particles onto a substrate surface wherein the particles initially have a

covering of heat softenable material. The particles are coated onto the substrate by being contacted with the substrate while it is at a temperature above that required to cause the heat softenable material to become flowable. The covering on the particles then flows to points of contact between the particles and the substrate and between individual particles themselves. The substrate is cooled to a temperature at which the once-softened material is solid and, perhaps also cross-linked, thereby providing an adhesive binding between the par-



ticles and objects touching the particles. The thus-manufactured particle-coated substrate is also considered to be a part of the present invention. In a preferred embodiment of the present invention, the particles are minute, substantially spherical, capsules having capsule walls of a polymeric film-forming material, and containing a capsule internal phase. In that preferred embodiment, the heat softenable material which covers the minute capsules is present, as a covering, in the form of very finely-divided dust clingly adherent to the capsule walls and is thermosetting after being, initially, heat-softened.

### 3,694,244 THERMOGRAPHIC STENCIL SHEET AND METHOD OF MAKING AN IMAGED STENCIL SHEET

Leonard G. Larson and Bror E. Anderson, Arlington Heights, and Margery L. Schick, Mount Prospect, Ill., assignors to Weber Marking Systems, Inc., Arlington Heights, Ill.

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,341

Int. Cl. B41n 1/24

U.S. Cl. 117—35.5

11 Claims

A finely divided silica gel is dispersed in a heat-flowable thermographic stencil sheet coating composition of cellulose acetate butyrate film-forming material and plasticizing material partially but incompletely compatible with the film-forming material, to improve the oil transfer and blocking characteristics of the stencil sheet. The stencil sheet may be imaged by exposing an original in contact with the sheet to infrared radiation to generate heat in the image areas of the original sufficient to render the composition flowable in the image areas of the stencil sheet, and causing the composition to flow from the image areas to thereby form corresponding ink-transmitting openings in the stencil sheet.

### 3,694,245 THERMOGRAPHIC STENCIL SHEET, MANUFACTURE THEREOF, AND METHOD OF MAKING AN IMAGED STENCIL SHEET

Bror E. Anderson, 7 W. Cedar, Arlington Heights, Ill. 60005, and Margery L. Schick, 810 S. See Gwun, Mount Prospect, Ill. 60056

Continuation-in-part of application Ser. No. 674,153, Oct. 10, 1967. This application Apr. 22, 1971, Ser. No. 136,373

Int. Cl. B41n 1/24

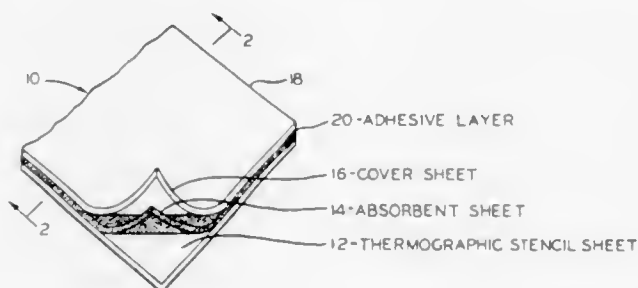
U.S. Cl. 117—35.5

23 Claims

The invention relates to a thermographic stencil sheet which may be imaged by heat generated by infra-red ray absorption and which includes an ink-pervious base sheet and an ink-impervious coating thereon of a heat-flowable composition containing a film-forming thermoplastic cellulose ester and plasticizing material that is partially but



incompletely compatible with the film-former. A radiation absorbing, heat generating material may be incorporated in the stencil sheet for generating the heat necessary for imaging. Certain embodiments of the stencil sheet also may be imaged by pressure. The stencil sheet may be employed in an assembly with a contacting absorbent sheet which absorbs part of the heated portion of the coating composition. The stencil sheet is made by coating the base sheet with a solvent solution of the heat-flowable composition, and removing solvent from the coated base sheet. The sheet is imaged by exposing an original in contact



with the sheet to infra-red radiation to generate heat in the image areas of the original sufficient to render the composition flowable in the image areas of the stencil sheet, and causing the composition to flow from the image areas as by absorption by the absorbent sheet to form corresponding ink-transmitting opening in the stencil sheet. Alternatively, the stencil sheet containing radiation absorbing material is imaged by exposing the sheet to infra-red radiation through a negative original to render the composition flowable in the image areas. The composition is then caused to flow from the image areas.

3,694,246

# METHOD OF USING DISPLAY DEVICE UTILIZING POLYMER-POLYMER MISCIBILITIES

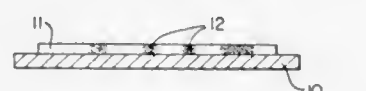
Antoinette M. Purcell, Cranbury, N.J., and Curt Thies, Morris I. Bank, and James W. Leffingwell, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed June 24, 1969, Ser. No. 836,021

Int. Cl. B41m 5/18

U.S. Cl. 117—36.7

7 Claims



A display device is disclosed which comprises a film, coating, or body either supported or unsupported, of a combination of at least two polymeric film-forming materials. The eligible polymeric materials can exist in one of two solid states, either being mutually miscible or being mutually immiscible. In the state of immiscibility, the polymeric materials, when cast, form a hazy body; while, in the miscible state, a cast body is substantially transparent. Imaging is achieved, in a body of initially hazy material, by converting the body to a transparent conformation in the image pattern and; in a body of transparent material, imaging is accomplished by causing a haze to form, that is, by causing the polymers to become immiscible in the image pattern. The change from miscibility to immiscibility and vice versa, in films of the display device of this invention, can be accomplished by any of several means, such as by contacting the films with appropriate solvents, changing or subjecting the films to temperature gradients in the proper ranges, or subjecting the films to pressure gradients such as by writing with a stylus.

## 3,694,247 HEAT-SENSITIVE COPYING MATERIAL

Robert Charles Desjarlais, South Hadley Falls, Mass., assignor to The Plastic Coating Corporation, South Hadley, Mass.

No Drawing. Filed May 11, 1970, Ser. No. 36,440

Int. Cl. B41m 5/18

U.S. Cl. 117—36.9

19 Claims

A heat-sensitive copying material comprising a support having a heat-sensitive layer thereon which comprises a primary aromatic amine, an azo coupling component and a compound which is stable at room temperature but which is capable when heated of providing nitrosonium ion in the heated areas of the copying material in an amount sufficient to diazotize aromatic amine. Thermal imaging processes employing such material are also disclosed.

3,694,248

Patent Not Issued For This Number

3,694,249

# PLATABLE POLYPROPYLENE

Ismat A. Abu-Isa, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

No Drawing. Filed Dec. 23, 1970, Ser. No. 101,093

Int. Cl. B44d 1/092

U.S. Cl. 117—47 A

3 Claims

A process for plating polypropylene which includes uniformly blending a small proportion of an ethylene-propylene terpolymer, such as EPDM, with the polypropylene, forming an article with the blend, and extensively etching the article surface with a strong oxidizing agent as a surface preparation for plating. Very adherent deposits are obtained without pre-etching.

3,694,250

# ELECTROLESS COPPER PLATING

John J. Grunwald, New Haven, Harold L. Rhodenizer, Bethlehem, and Leo J. Slominski, Bristol, Conn., assignors to MacDermid Incorporated, Waterbury, Conn.

No Drawing. Filed Sept. 17, 1969, Ser. No. 858,837

Int. Cl. B44d 1/34; C23c 3/02

U.S. Cl. 117—50

4 Claims

Copper surfaces are plated in a process comprising etching, activating, electroless and/or electrolytic copper deposition, and heating or baking at a temperature of about 150° to about 450° F. for about 10 min. to about 2 hours or more. Substantial improvement in the adhesion between the copper surface and the metal deposited by electroless and/or electrolytic plating is achieved. Processes for plating on copper-clad plastic substrates and for the manufacture of printed circuit boards are also set forth.

3,694,251

# COATED ARTICLE HAVING A LAYER OF BOEHMITE AND ALKYL TITANATE

James F. Houle and Gilden R. Van Norman, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation of application Ser. No. 654,697, July 20, 1967, which is a continuation-in-part of application Ser. No. 505,041, Oct. 24, 1965, now Patent No. 3,486,450, which in turn is a continuation-in-part of application Ser. No. 347,931, Feb. 27, 1964, now Patent No. 3,342,601.

This application Nov. 14, 1969, Ser. No. 871,607

Int. Cl. B44c 3/02; B44d 1/14, 1/44

U.S. Cl. 117—62

6 Claims

A support especially useful for a printing plate or color proofing element carries a hydrophilic layer of a reaction product of a basic metal oxide such as fibrous alumina having the boehmite crystal structure, with an alkyl titanate complex.

3,694,252

# METHOD OF FORMING CAPSULES OF POLYMER COATED SILVER HALIDE GRAINS

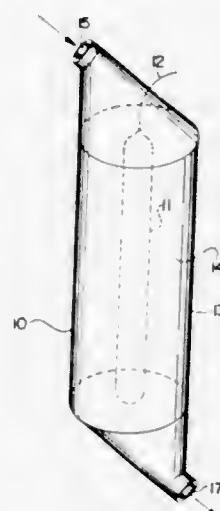
Arthur M. Gerber, Boston, Sybil N. Story, Cambridge, and Vivian K. Walworth, Concord, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 19, 1971, Ser. No. 144,755

Int. Cl. B44d 1/20

U.S. Cl. 117—93

18 Claims



This application is directed to a method for preparing microcapsules comprising a nucleus of silver halide surrounded by a continuous wall of a synthetic polymer, which method comprises subjecting the reactants including monomer and silver halide grains in an electrolyte to an electric field between a pair of electrodes whereby the monomers preferentially polymerize around the silver halide.

3,694,253

# METHOD OF FORMING CAPSULES OF POLYMER COATED SILVER HALIDE GRAINS

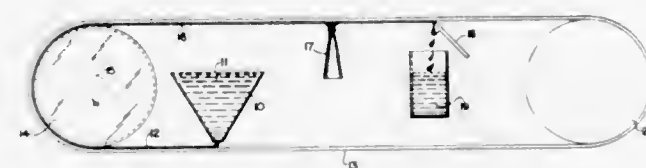
Arthur M. Gerber, Boston, and Vivian K. Walworth, Concord, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 19, 1971, Ser. No. 144,754

Int. Cl. B44d 1/50

U.S. Cl. 117—93.31

17 Claims



This application is directed to a method for preparing microcapsules comprising a nucleus of silver halide surrounded by a continuous wall of a synthetic polymer, which method comprises forming a relatively thin layer of reactants including monomer and silver halide grains and exposing said thin layer to polymerizing radiation whereby the monomers preferentially polymerize around the silver halide.

3,694,254

# METHOD OF PRODUCING AND COATING SILVER POWDER AND THE RESULTANT PRODUCT

Warren B. Blumenthal, North Tonawanda, N.Y., assignor to National Lead Company, New York, N.Y.

No Drawing. Filed Dec. 10, 1970, Ser. No. 96,971

Int. Cl. C22b 11/04; C23f 17/00

U.S. Cl. 117—100

8 Claims

Silver powder of very fine particle size suitable for the manufacture of electroding pastes is produced by the re-

duction of an ammoniacal silver nitrate solution with hydrazine, treatment of the resulting aqueous slurry of silver particles with an aqueous solution of the triethanolamine soap of 2-ethylcaproic acid, and drying to form a coating of the soap on the silver powder.

3,694,255

# METHOD FOR COATING HEAT RESISTANT ALLOYS

Harry W. Brill-Edwards, New York, N.Y., assignor to Chromalloy American Corporation, Orangeburg, N.Y.

Filed June 3, 1970, Ser. No. 43,082

Int. Cl. C23c 11/00, 13/00, 17/02

U.S. Cl. 117—107.2 P

8 Claims



The substrate of a heat resistant alloy is coated by pack cementation with an oxidation resistant coating metal while substantially avoiding the formation of an internally oxidized structure within the coating which comprises, embedding a heat resistant alloy article to be coated in a cementation pack comprising said coating metal (e.g. chromium which has a lower propensity to oxidize than an oxidation resistant solute metal in the alloy (e.g. aluminum), and then subjecting the alloy article to pack cementation at an elevated temperature while maintaining the oxygen in the pack at a partial pressure below the oxygen threshold level at which the alloy is subject to internal oxidation.

3,694,256

# PROCESS FOR RENDERING CELLULOSIC TEXTILES FLAME RETARDANT

Donald J. Daigle and Leon H. Chance, New Orleans, and George J. Drake, Jr., Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Aug. 29, 1969, Ser. No. 854,326, now Patent No. 3,607,944. Divided and this application Jan. 12, 1971, Ser. No. 105,941

Int. Cl. C09k 3/28; D06m 13/28

U.S. Cl. 117—136

4 Claims

Cellulosic textiles are rendered flame retardant by impregnation with aqueous solutions of bis(chloromethyl) phosphorylmethyltriphenyl phosphonium halides.

3,694,257

# POLYESTER COMPOSITIONS AND THEIR USE AS TEXTILE ASSISTANTS

Thomas P. Dumont, Cincinnati, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Filed July 20, 1970, Ser. No. 56,726

Int. Cl. C10m 7/26

U.S. Cl. 117—139.5 F

9 Claims

A textile assistant and method of using same which comprises applying to a textile fabric an aqueous emulsion containing as the textile assistant, a polyester prepared from the reaction of polyols such as glycols with a dibasic or tribasic acid having from about 6 to about 54 carbon atoms, preferably a dimerized fatty acid. When tribasic acids are used, a glycol should be employed and when triols are used, dibasic acids should be employed.



3,694,258

**DIMENSIONAL STABILIZATION OF WOOL**

Edwin J. Vandenberg and William D. Willis, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 872,344, Oct. 29, 1969, now Patent No. 3,594,355. This application Dec. 28, 1970, Ser. No. 102,162

Int. Cl. D06m 3/06; C09d 3/60

U.S. Cl. 117—141

8 Claims

The dimensional stabilization of fabrics containing keratinous fibers such as wool is described using water-soluble isothiuronium salts of epihalohydrin homopolymers or copolymers with one another or with ethylene oxide.

3,694,259

**WELDING ELECTRODE**

Philip J. Chapman, West Hill, Ontario, Canada, assignor to Liquid Carbonic Canadian Corporation Limited, Scarborough, Ontario, Canada

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,116

Int. Cl. B23k 35/36

U.S. Cl. 117—206

4 Claims

A welding electrode coating composition containing, as a gellant, "Benaqua" beneficiated bentonite. The gellant facilitates the extrusion of the coating onto the metal core of the electrode. On baking the extruded coating is characterized by absence of porosity, cracking, splitting and chipping, or flaking off.

3,694,260

**BONDED HEATER, CATHODE, CONTROL ELECTRODE STRUCTURE AND METHOD OF MANUFACTURE**

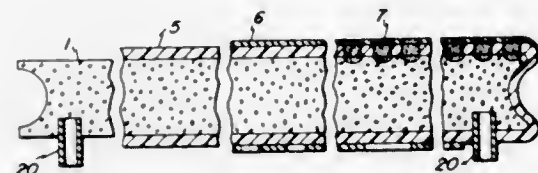
James E. Beggs, 2644 Troy Road, Schenectady, N.Y. 12309

Original application May 21, 1970, Ser. No. 39,463. Divided and this application Mar. 24, 1971, Ser. No. 127,735

Int. Cl. H01j 1/00; B44d 1/18

U.S. Cl. 117—210

8 Claims



A unitary heater, cathode, and control electrode structure for an electron discharge device is formed by coating a disk of a porous refractory metal with an inorganic insulating layer, overcoating the insulating layer with a film of refractory metal, forming a grid pattern in the film on one side of the disk, forming openings in the film and insulating layer corresponding to the pattern, and impregnating the disk with thermionic emissive material.

3,694,261

**COBALT FERRITE MAGNETIC RECORDING TAPE**

Yoshimi Makino, 7-1-110 Nishi-Kaigan 2, Tsujido, Fujisawa-shi, and Higetaka Higuchi, 303-159 Karibacho, Hodogaya-ku, Yokohama-shi, both of Kanagawa, Japan; Iwao Kamiya, 4-15-6 Higashi-jujo, Kita-ku, Tokyo, Japan; and Yoshikazu Masuya, 4-31 Sawai-cho, Kawasaki-shi, Kanagawa, Japan

Continuation-in-part of application Ser. No. 802,031, Feb. 25, 1969. This application Feb. 11, 1971, Ser. No. 114,536

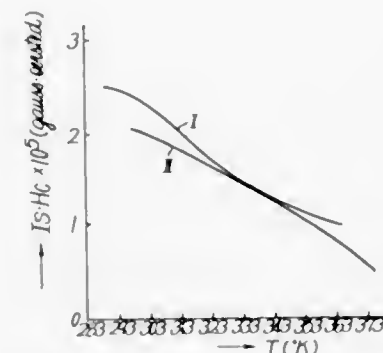
Int. Cl. H01f 10/02

U.S. Cl. 117—235

4 Claims

Magnetic recording tape having improved stability toward storage and elevated temperatures, comprising mag-

netic powder which gives the tape its improved properties, the powder being a cobalt ferrite which is substituted by



means of zinc, magnesium, cadmium, calcium, a mixture of zinc and magnesium, or a mixture of cadmium and calcium.

3,694,262

**METHOD AND COMPOSITION FOR SANITATION OF SUGAR FACTORIES**

John A. Casey, 2804 Brainard Road, Pepper Pike, Ohio 44124

Filed July 31, 1969, Ser. No. 846,498

Int. Cl. A23l 3/34; C13d 1/02

U.S. Cl. 127—44

7 Claims

A method of reducing the loss of sugar in sugar factories due to inversion or other degradation of the raw sugar juices caused by bacteria, enzymes and the like which involves the periodic application of shock doses of a bactericidal material to the incoming sugar cane at the entry end of the extraction equipment. This is accomplished in sugar cane mills by applying a solution of a dual quaternary ammonium composition comprising n-alkyl dimethyl benzyl ammonium chloride and n-alkyl dimethyl ethylbenzyl ammonium chloride, to the crusher and the first one, two or three mills, for periods of five minutes during each half hour of operation.

3,694,263

**SWIMMING POOL CLEANING METHODS AND APPARATUS THEREFOR**

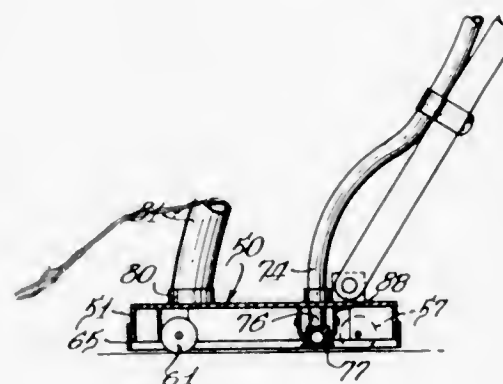
Joseph J. Korn, Sr., 3025 21st Place, North Chicago, Ill. 60064

Filed Oct. 23, 1970, Ser. No. 83,272

Int. Cl. B08b 3/02; E04h 3/20

U.S. Cl. 134—3

7 Claims



A method of cleaning swimming pool surfaces of dirt, algae, mineral stains and other material, without draining the pool, wherein a cleaning head is moved along the

3,694,266

**METHOD OF ASSEMBLING MULTICELL BATTERIES COMPRISING DUPLEX ELECTRODE CONSTRUCTION USING CONTINUOUS ELECTRICALLY CONDUCTIVE PLASTIC CARRIER STRIP**

Bernard C. Bergum, Monona, John M. Bilhorn, Edgerton, and Kenneth H. Kenyon, William R. Macaulay, and John A. Youngquist, Madison, Wis., assignors to ESB Incorporated

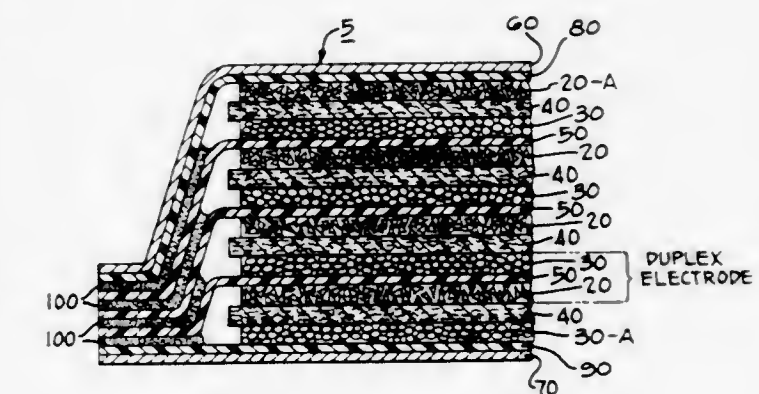
Filed Dec. 21, 1970, Ser. No. 100,257

Int. Cl. H01m 21/00

U.S. Cl. 136—111

5 Claims

pool to define, with the pool surface, a substantially enclosed space and wherein liquid, in the form of a muriatic acid and water mixture, is delivered in the form of high velocity jets inside said head toward the pool surface and said mixture, along with entrained and dissolved materials, is withdrawn from the head by vacuum without substantial intermingling of the mixture with the pool water whereby the pool can be used immediately after cleaning. Apparatus for performing the method involves a base unit provided with motor-driven pumps, valving and a tank to supply water or an acid and water mixture to a portable cleaning head and with a vacuum pump for withdrawing material from the cleaning head. The cleaning head embodies a casing of a height to define a cleaning chamber permitting scrubbing action of the pool surfaces without forcing of material outside the cleaning head including a depending rubber skirt further confining the action to inside the cleaning head but permitting slight inflow of pool water and material as induced by a vacuum line connection to the cleaning head. The shape of the cleaning head coacts with the vacuum outflow line to induce an arcuate sweeping action of the liquid generally parallel to the pool surface for facilitating withdrawal of liquid and entrained and dissolved material from the head.



3,694,264

**CORE REMOVAL**

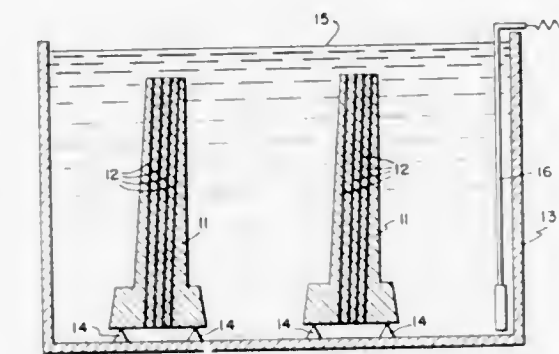
Stuart L. Weinland, Arlington Heights, and Donn K. Coletti, Mundelein, Ill. (both of 250 N. 12th St., Wheeling, Ill. 60090)

Filed Sept. 28, 1970, Ser. No. 56,758

Int. Cl. B08b 9/00

U.S. Cl. 134—22 R

5 Claims



Calcium-based cores in metallic objects, such as cast fluid-coolable turbine blades, are efficiently removed by exposing the cores to the action of aqueous solutions of ammonium salts. It is particularly advantageous to use a 5 molar aqueous solution of ammonium chloride.

3,694,265

**SHEATH FOR LEAD-ACID STORAGE BATTERY**

Erik Gustav Sundberg, Osbacken, Nol, Sweden, assignor to Aktiebolaget Tudor, Stockholm, Sweden

Filed Apr. 14, 1970, Ser. No. 28,436

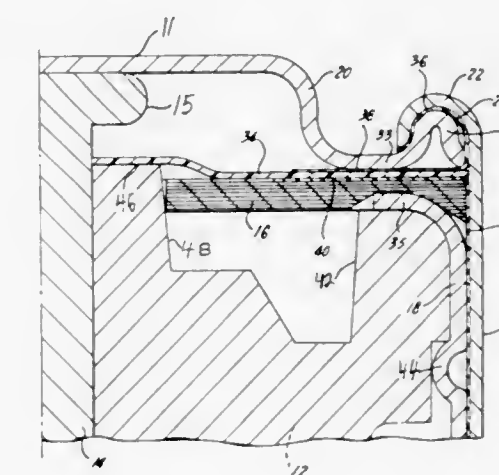
Claims priority, application Sweden, Apr. 14, 1969, 5,207/69

Int. Cl. H01m 35/04

U.S. Cl. 136—63

3 Claims

Method and sheath for lead-acid storage battery electrode comprising a braid of glass fiber threads bonded by stem threads of substantially untwisted glass fibers and highly twisted thermoplastic fibers. The stem threads of glass fibers provide axial strength sufficient to allow the heat treating of the sheath while under tension either in a stationary or continuous process.



The invention comprises the utilization of two separated plastic zones created by upper and lower layers of exudate impervious plastic materials separated by an exudate im-



pervious adhesive backed plastic disc. An annular absorbent washer located in the lower zone traps and holds mobile liquids, vapor, gases, and fluids present in that zone while the adhesive backed plastic disc and the lower plastic layer prevent the absorbent washer from discharging any fluids outside of this zone onto the metal terminals of the battery as exudate where evaporation would create the unwanted deposits. The upper zone is established by the dual pressure clamping of the upper plastic layer between the negative terminal of the cell and an inner metal container wall and an outer metal container wall. The function of the upper zone is to electrically insulate the outer can from the negative terminal plate and to seal the cell against the inward diffusion of contaminants and against the outward creepage of electrolyte exudate.

3,694,268

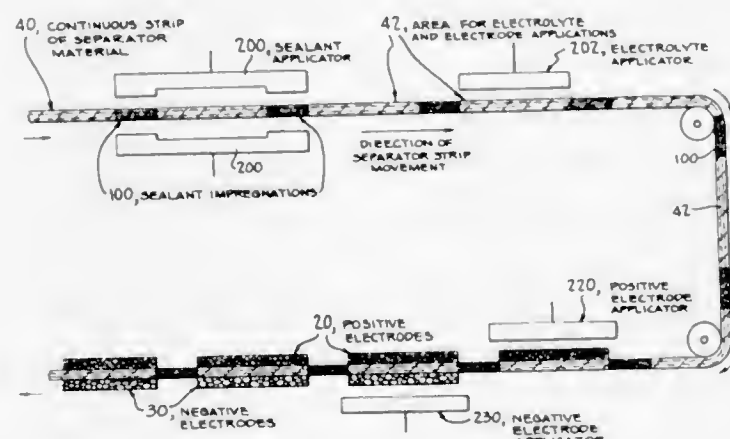
# MULTICELL BATTERY CONSTRUCTION USING CONTINUOUS CARRIER STRIP OF SEPARATOR MATERIAL

Bernard C. Bergum, Monona, Wis., assignor to ESB Incorporated

Filed Dec. 21, 1970, Ser. No. 99,981  
Int. Cl. H01m 1/00, 23/08

U.S. Cl. 136—175

6 Claims



A continuous strip of separator material is used as a carrier of positive and negative electrodes in the construction of multicell batteries. The positive and negative electrodes are first placed on opposite sides of the continuous carrier strip, and subsequently segments of the carrier strip are assembled into batteries, each segment having opposed positive and negative electrodes on the opposite sides thereof. Preferably the assembly of the segment into batteries occurs while the segments are structurally connected together as undivided parts of the continuous carrier strip, but alternatively the carrier strip may be cut into structurally unconnected segments before the segments are assembled into batteries.

3,694,269

# METHOD FOR SOLID STATE GROWTH OF IRON SINGLE CRYSTALS

Donald J. Bailey, Birmingham, and Earl G. Brewer, Warren, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1970, Ser. No. 89,256  
Int. Cl. B01j 17/02; C21c 1/26

U.S. Cl. 148—1.6

3 Claims

Large single crystals of iron are grown from a well annealed, uniformly fine-grained specimen which has been

given a small amount of plastic strain and then heated to induce recrystallization at one site in the specimen. The recrystallization nucleus is enlarged at the expense of adjacent strained, fine-grained crystals by repeatedly heating the specimen to a temperature above about 750° C. but below about 910° C. for a period of minutes and then cooling below 750° C. The duration of heating at the elevated temperature of each cycle is such that substantial crystal growth on the original nucleus occurs but additional nucleation takes place in the rest of the iron specimen.

3,694,270

# HARD SUPERCONDUCTIVE MATERIALS AND METHOD OF PRODUCING THE SAME

Hermann Pfisterer and Isolde Dietrich, Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

No Drawing. Continuation-in-part of application Ser. No. 863,671, Sept. 18, 1969, which is a continuation of application Ser. No. 580,893, Sept. 21, 1966. This application Dec. 21, 1970, Ser. No. 100,430

Int. Cl. C22f 1/02, 1/11; C21d 1/74

U.S. Cl. 148—11.5 R

14 Claims

A relatively ductile hard-superconductive material and a method of producing the same wherein a matrix material (i.e. Cr) containing an embedded material (i.e. Nb) capable of combining with O<sub>2</sub>, N<sub>2</sub> or mixture thereof to form a hard-superconductive compound is annealed in a gas of O<sub>2</sub>, N<sub>2</sub> or a mixture thereof at time-temperature-pressure conditions so that the gas combines with the embedded material to form a hard-superconductive compound within the matrix material.

3,694,271

# METHOD OF PRODUCING ARTICLES OF COMPOSITE MATERIAL, AND RESULTING PRODUCTS

Lennart Oskar Egnell, Sandviken, Sweden, assignor to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden

Filed June 11, 1971, Ser. No. 152,156

Claims priority, application Sweden, June 30, 1970, 9,045/70

Int. Cl. C21d 7/00, 1/00

U.S. Cl. 148—12

10 Claims

A duplex metal article, for high-temperature use, consisting of a high-strength austenitic stainless steel and a layer of ferritic stainless steel having high resistance to stress corrosion is produced by the steps of forming a composite billet of the two metals, heat-treating the billet in the way normal for austenitic steel, cold-working the billet, and heat-treating the resulting article at such a temperature that only the ferritic steel is re-crystallized.

3,694,272

# METHOD FOR FORMING ALUMINUM SHEET

William R. Mohondro, Dublin, and Maurice C. Fetzer, Walnut Creek, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Dec. 24, 1970, Ser. No. 101,239

Int. Cl. C21d 7/14, 9/00

U.S. Cl. 148—12.7

13 Claims

A process for the production of thin Al-Zn-Mg sheet material from relatively thick stock, wherein the sheet material undergoes a substantial reduction in thickness with no tendency for edge cracking or tearing, comprising solution heat treating the relatively thick sheet, cold rolling the sheet so as to produce a reduction in thickness between 40% and 75%, preferably between 50% and 70%, artificially aging the sheet, and cold rolling the sheet to the final desired gauge thickness. According to one embodiment of the invention, the solution heat treat-

ment step comprises controlling the temperatures during hot rolling to effect a dissolution of substantially all of the alloying constituents and then quenching the sheet before it is coiled.

3,694,273

# COPPER BASE ALLOYS

Jacob Crane, 230 Hill St., Hamden, Conn., and James A. Ford, 51 Pool Road, North Haven, Conn. 06473

Continuation of abandoned application Ser. No. 737,110, June 14, 1968. This application Dec. 21, 1970, Ser. No. 100,424

Int. Cl. C22c

U.S. Cl. 148—32

4 Claims

Copper base alloys containing Al, Si and Co; and Al, Ge, Co alloy additions in the temper rolled or temper rolled and annealed conditions. The alloys of the present invention are characterized by excellent work hardening characteristics.

3,694,274

# HIGH-TRANSITION-TEMPERATURE SUPERCONDUCTORS IN THE Nb-Al-Ge SYSTEM

Angelo L. Giorgi and Eugene G. Szklarz, Los Alamos, N. Mex., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Apr. 26, 1971, Ser. No. 137,497

Int. Cl. C22c 27/00; H01v 11/12

U.S. Cl. 148—32

3 Claims

Superconducting materials of the nominal composition Nb<sub>x</sub>Al<sub>y</sub>Ge<sub>(1-y)</sub>, where x is in the range of 1.9 to 2.8 and y is in the range of 0.5 to 0.9, having transition temperatures in the 19°–20° K. range are readily produced by annealing arc-melted compositions, or cold-pressed, heat-treated compositions at moderate temperatures for reasonably long times (~50 hours).

3,694,275

# METHOD OF MAKING LIGHT EMITTING DIODE

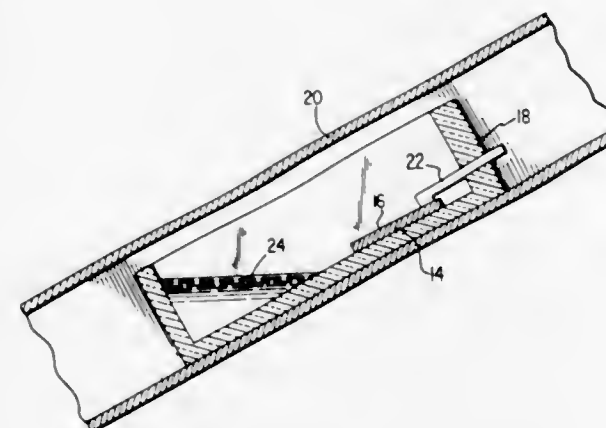
Herbert Nelson, Princeton, N.J., assignor to RCA Corporation

Filed Mar. 12, 1969, Ser. No. 806,425

Int. Cl. H01l 7/38, 3/00; H05b 33/00

U.S. Cl. 148—171

3 Claims



Monocrystalline gallium arsenide of N type conductivity is made by liquid phase growth of a silicon doped epitaxial layer on a gallium arsenide substrate having a (111)-arsenic face as the growth promoting surface.

# METHOD OF MAKING INTEGRATED CIRCUITS EMPLOYING SELECTIVE GOLD DIFFUSION THRU POLYCRYSTALLINE REGIONS

Kinji Wakamiya, Tokyo, and Isamu Kobayashi, Kanagawa-ken, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 25, 1969, Ser. No. 852,819

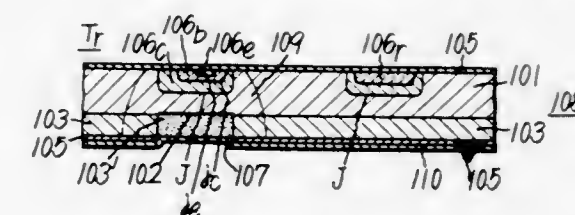
Claims priority, application Japan, Aug. 24, 1968,

43/60,713, 43/60,714

Int. Cl. H01l 7/36, 11/00; C23c 13/00

U.S. Cl. 148—174

4 Claims



A method of making integrated circuits including a step of diffusing gold selectively into a semiconductor substrate through a polycrystalline region of high diffusion velocity.

3,694,277

# POLYURETHANE PROPELLANT COMPOSITION CONTAINING ISODECYL ORTHOFORMATE

David C. Sayles, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Feb. 23, 1967, Ser. No. 619,117

Int. Cl. C06d 5/06

U.S. Cl. 149—19

5 Claims

Isodecyl orthoformate used as an ingredient for removing trace quantities of moisture from propellant compositions.

3,694,278

# PROCESS AND COMPOSITION FOR USE IN MUNITIONS CONTAINING WHITE PHOSPHORUS

Jean P. Picard, Morristown, and H. William Voight, Jr., Stanhope, N.J., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed July 24, 1970, Ser. No. 58,183

Int. Cl. C06d 1/08

U.S. Cl. 149—29

17 Claims

A process wherein a solidified complex of white phosphorus and polyester is dispersed in a polyurethane matrix concurrent with or prior to shaping in the form of a munition.

3,694,279

# METHOD OF MAKING A RETRACTILE CORD

Herbert Rohrig, Schwarzenbruck, and Fritz Loy, Heroldsberg, Germany, assignors to Kabel- und Metallwerke Gutehoffnungshütte Aktiengesellschaft, Hannover, Germany

Filed Dec. 7, 1970, Ser. No. 95,609

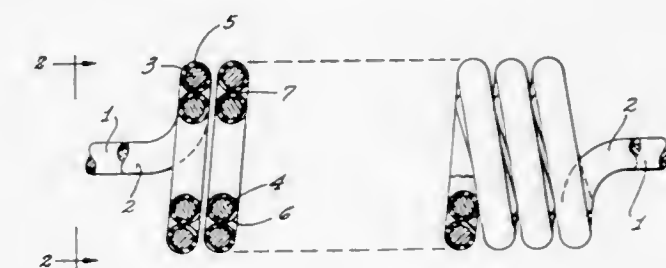
Claims priority, application Germany, Dec. 13, 1969,

P 19 62 536.6

Int. Cl. H01b 7/06, 13/00

U.S. Cl. 156—50

3 Claims



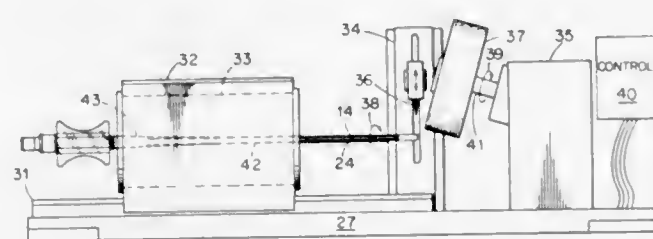
A retractile twin conductor cord of helical configuration is made so that one conductor is disposed radially



displaced on top of the other, and their insulation sheathings are joined along a helix.

### 3,694,280 METHOD OF FORMING AN END TAPER ON PLASTIC TUBING

William A. Hoef, Groton, Conn., assignor to Edward Weck & Company, Inc., Long Island City, N.Y.  
Filed May 1, 1970, Ser. No. 33,690  
Int. Cl. B32b 19/16, 31/26  
U.S. Cl. 156—73 16 Claims



A methods for manufacturing an intravenous needle assembly including a flexible catheter having a smooth surfaced taper at the distal end. In particular, the method concerns forming a smooth surfaced taper at the end of a tube of heat shrinkable plastic material by means of grinding or by the application of heat to the end being tapered, or both.

### 3,694,281 PROCESS FOR FORMING A DIAPHRAGM FOR USE IN AN ELECTROLYTIC CELL

Joseph-Adrien Leduc, Short Hills, N.J., assignor to Pullman Incorporated, Chicago, Ill.  
No Drawing, Continuation-in-part of application Ser. No. 814,821, Apr. 9, 1969. This application Apr. 28, 1969, Ser. No. 819,998  
Int. Cl. B01k 3/10; B32b 5/18; C03c 25/00  
U.S. Cl. 156—77 2 Claims

An improvement in the operation of an electrolytic cell having a diaphragm positioned between an anode and a cathode of the cell is provided by employing a diaphragm comprising an asbestos matrix impregnated with at least one of a group of polymers including synthetic rubbers and thermoplastic and thermosetting polymers and copolymers. A controlled amount of the polymeric impregnant is deposited in the spaces between the asbestos fibers to provide controlled and reproducible permeability and density in a diaphragm having greatly improved wet strength. Because of the superior strength of the impregnated diaphragm, they can be employed in the electrolytic cell without support and can be subjected to the conditions of lamination so as to be combined on an inseparable sheet or layer of wire mesh of a plastic woven fabric or a sintered porous plastic and employed in laminated form as the diaphragm in an electrolytic cell.

### 3,694,282 METHOD FOR THE CONNECTION OF THE ENDS OF BELTS

Hendrik Ribbels, 4 Marinus Naeflaan, Lochem, Netherlands, and Johannes Lefferts, 396 Brinkstraat, Enschede, Netherlands  
Filed Mar. 3, 1969, Ser. No. 803,809  
Claims priority, application Netherlands, Mar. 1, 1968, 6802950  
Int. Cl. B31f 5/00 3 Claims

Ends of the same or different belts are joined together by abutting the ends and temporarily connecting the ends to a rigid support element. The surface of at least one

of the ends is coated with a medium which when heated joins the ends together and the same surface or the surface of the other end or both surfaces are provided with means which generates heat when the surfaces are in abutting relation. Such means may be an electrical resistance element embedded in the medium and connected in circuit with conductive members in the rigid element extending the width of the belt. After the belt ends are joined, the rigid support element is removed.

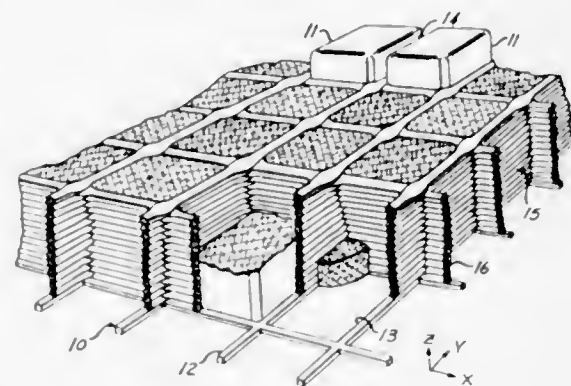
### 3,694,283 WIRE OVERHEAD

Ralph F. Cooper and Charles J. Wagner, Akron, Ohio, assignors to the B. F. Goodrich Company, New York, N.Y.  
Original application July 13, 1966, Ser. No. 564,778, now Patent No. 3,573,135. Divided and this application Oct. 23, 1969, Ser. No. 870,312  
Int. Cl. B31f 5/00 8 Claims

A method for fabricating a continuous web having acute angularly disposed wire strands relative to its longitudinally extending length from narrow strips by passing a plurality of wire strands through an extruder which prepares a narrow width tape with wire strands embedded therein. Such tape is then cut into elongated sections, after which the sections are spliced along their edges so that their respective cut edges form the side edges of a continuous web that may be used as a wire overhead.

### 3,694,284 METHOD OF MAKING HONEYCOMB STRUCTURES

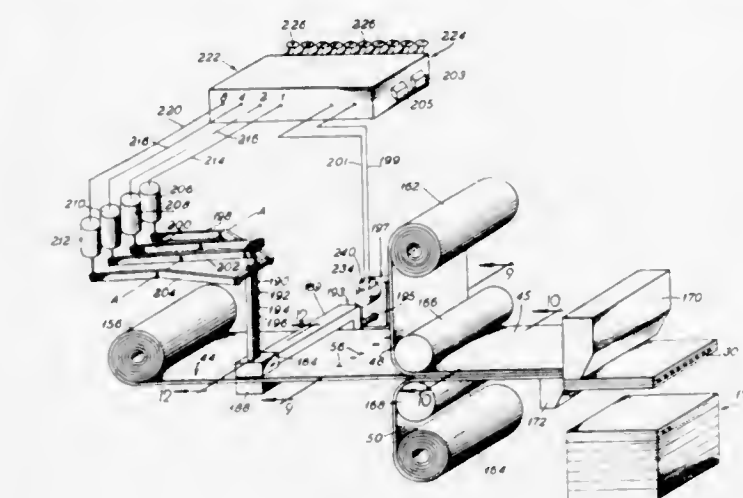
Robert V. Kromrey, Fair Oaks, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.  
Continuation-in-part of application Ser. No. 648,447, June 23, 1967. This application Nov. 10, 1969, Ser. No. 875,433  
Int. Cl. B31c 13/00 8 Claims



A honeycomb structure in accordance with the present disclosure comprises a matrix having a plurality of filament rovings arranged in overlapping relationship to form cellular walls. The overlapping rovings are bonded together by a bonding means. A plurality of dies are formed in a configuration to form a grid of slots corresponding to the walls of the honeycomb structure. The filament rovings are wound into the slots in overlapping relationship to assume the desired configuration. Preferably, the rovings are wrapped so that at the intersection of crossing and overlapping filament rovings, the rovings are flattened into chamfered areas of the cells so as to increase the area of the bond between overlapping and intersecting rovings, thereby increasing the strength of the honeycomb wall structure in a Z or radial direction.

### 3,694,285 METHOD FOR MAKING ENCODED CARDS

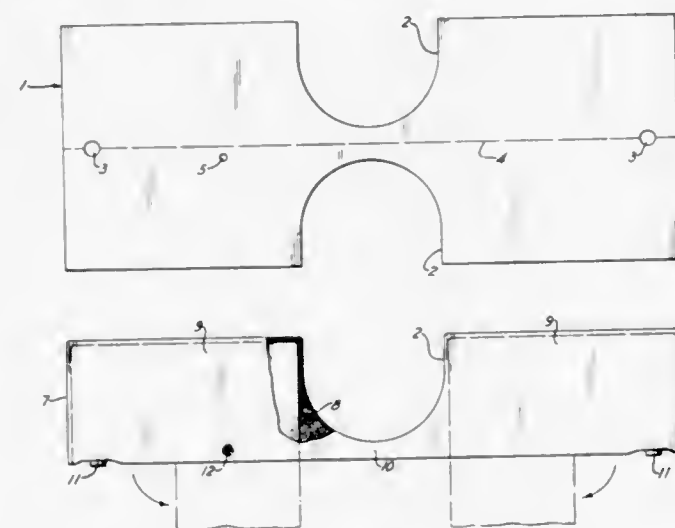
Arthur V. Appel, Chicago, John S. Davis, Evanston, and Donald A. Pontarelli, Chicago, Ill., assignors to Bliss & Laughlin Industries, Incorporated, Oak Brook, Ill.  
Filed Sept. 29, 1970, Ser. No. 76,537  
Int. Cl. B32b 7/00 8 Claims



An elongated core strip having a layer of parallel, light-transmitting fibers, is continuously uncoiled and advanced along a line of movement parallel to the fibers. The core strip is periodically encoded at intervals along its length by cutting, punching, darkening, or otherwise impairing the light-transmitting ability of fibers in selected portions of the layer across the width of the core strip. The remaining unimpaired light transmitting fibers are irregularly-spaced in an information-related array extending across the width of the core strip. A pair of protective cover strips are continuously uncoiled and bonded integrally with opposite sides of the core strip. The resulting three part laminate continues to advance along the line of movement as a continuation of the core strip and is periodically sheared at intervals along a line between the encoded portions to provide individual cards. The fore and aft edges of the cards are ground, if necessary, to expose the ends of at least the unimpaired light-transmitting fibers.

### 3,694,286 METHOD OF MAKING BREATHING BAGS

Layton A. Wise, 292 Franklin Terrace, Washington, Pa. 15301  
Original application Feb. 19, 1970, Ser. No. 12,202, now Patent No. 3,638,648. Divided and this application Mar. 22, 1971, Ser. No. 126,573  
Int. Cl. B31b 49/04 4 Claims

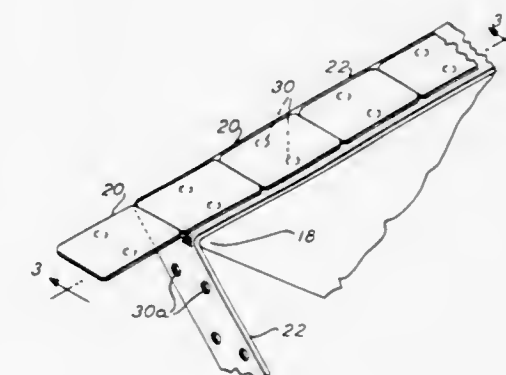


An opening is formed in a strip of impervious flexible material near each end, and an inwardly extending recess

is formed in each side of the strip midway between its ends. The strip then is folded along a longitudinal center line to register the recesses with each other and the edges of the folded strip are sealed together. An area of the strips extending from the recesses to the fold also is sealed, whereby two bags are formed that are connected by a neck band so that the bags can be suspended against the chest with their folds adjacent each other.

### 3,694,287 PRESSURE SENSITIVE LABEL STRIP CONSTRUCTION AND METHOD OF MAKING SAME

Edward C. Marshall, 17 Marion Road, Upper Montclair, N.J. 07043  
Application July 11, 1969, Ser. No. 841,100, now Patent No. 3,501,365, which is a continuation-in-part of application Ser. No. 562,771, July 5, 1966. Divided and this application Jan. 12 1970, Ser. No. 7,435  
Int. Cl. B32b 31/18, 31/16 6 Claims



A plurality of labels with pressure sensitive adhesive thereon are disposed along a supporting material of release paper in either spaced or juxtaposed relationship and with feed holes formed in the release paper so that all the feed holes lie within the peripheral limits of associated labels and so that some release paper also lies within the peripheral limits of the feed holes; said periphery of said feed holes either being formed in a complete geometric shape or an incomplete geometric shape. When the label and supporting material is thereafter fed by a pin feed drum about a stripping edge, in those situations where the feed holes are defined by a complete geometric periphery the portion of the supporting material therewithin travels with the label as it is stripped from support material; while in those situations where the feed holes are defined by an incomplete geometric shape the support material therewithin remains with the web of supporting material and is moved out of the plane thereof when said supporting material coacts with the pin feed drum in a chadless type operation.

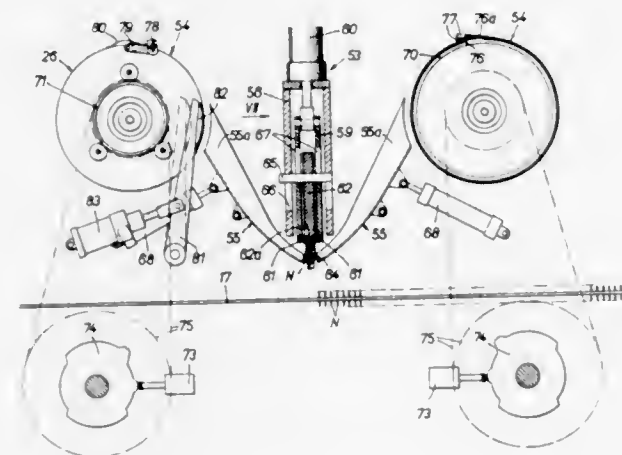
### 3,694,288 METHOD FOR THE FABRICATION OF NAIL PLATES AND APPARATUS FOR THE PERFORMANCE OF THE AFORESAID METHOD

Hans Iseli, Ligerz, Switzerland, assignor to Vereinigte Drahtwerke A.G., Biel, Berne, Switzerland  
Filed Mar. 29, 1971, Ser. No. 128,894  
Claims priority, application Switzerland, Apr. 8, 1970, 5,096/70

Int. Cl. B32b 31/18 16 Claims  
U.S. Cl. 156—269  
A method and apparatus for the fabrication of so-called nail plates, typically used in the construction industry, wherein a carrier web is placed upon a conveyor

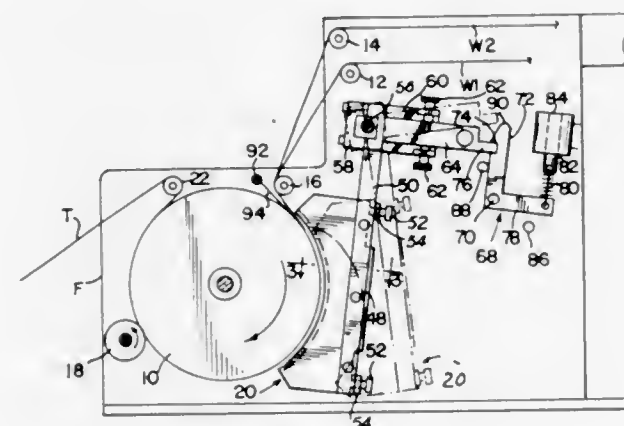


element moving in a substantially horizontal direction, the carrier web being displaced or moved through substantially regular incremental steps. Nail pins pointed at both ends are inserted into a first transverse strip of the carrier web during each period of standstill of the carrier web and a liquid plastic adhesive is also applied in the



**3,694,289**  
**APPARATUS FOR MAKING HEAT SEALED TUBES**  
Thomas E. Piazza, Mount Vernon, Ohio, assignor to Continental Can Company, Inc., New York, N.Y.  
Filed June 22, 1970, Ser. No. 48,331  
Int. Cl. B29c 27/00  
U.S. Cl. 156—380

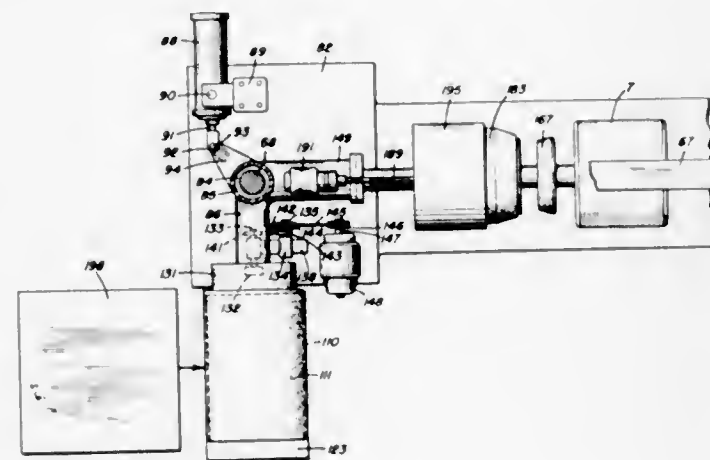
4 Claims



An apparatus for fabricating multiple tubes from heat sealable film material in a continuous operation which comprises a cooling drum, means for guiding webs of the film material from a pair of supply rolls into superimposed relation and about a portion of the periphery of the cooling drum, radiant heat sealing devices spaced in paired relation axially of the drum which form relatively narrow, parallel, axially spaced seams in the superimposed material, and narrow flexible strips of material disposed so as to lie between the film and the peripheral surface of the drum so as to form ribs on the latter at the seam forming areas, the strips serving to hold the seam forming portions of the material in surface engagement while the seal is being formed and also constituting a heat transfer barrier.

**3,694,290**  
**APPARATUS FOR THE MANUFACTURE OF PNEUMATIC TIRES**  
Antonio Pacciarini and Dante Pirovano, Milan, Italy, assignors to Industrie Pirelli S.p.A.  
Continuation of abandoned application Ser. No. 701,585, Jan. 30, 1968. This application Feb. 12, 1971, Ser. No. 115,124  
Claims priority, application Italy, Feb. 8, 1967, 12,402/67  
Int. Cl. B29j 17/10, 17/12  
U.S. Cl. 156—401

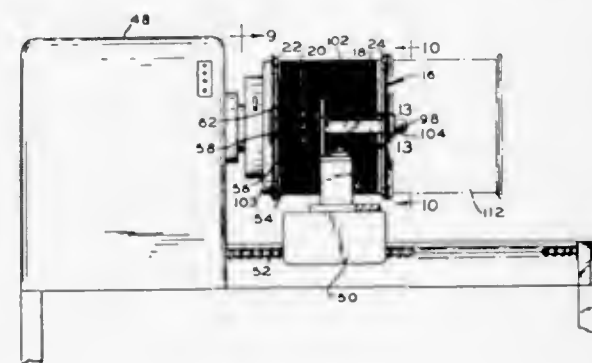
46 Claims



Apparatus for the manufacture of pneumatic tires comprising means for disposing a plurality of carcass plies in the form of a continuous tubular ring around a cylindrical support, means operative with said support to clamp one edge of said ring to said support, means to move the support into coaxial relationship with one side of the building drum with said clamped edge being adjacent said one side, means to turn said plies from said support onto said drum in such a manner that their inner faces are turned towards the outside and means to apply bead cores and filler strips and to turn up the edge of said plies around said beads and filler strips.

**3,694,291**  
**APPARATUS FOR MAKING LIGHT PIPES**  
John H. McAllister, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.  
Original application Mar. 27, 1968, Ser. No. 716,446, now Patent No. 3,544,406. Divided and this application Apr. 2, 1970, Ser. No. 29,354  
Int. Cl. B65h 81/06  
U.S. Cl. 156—431

9 Claims

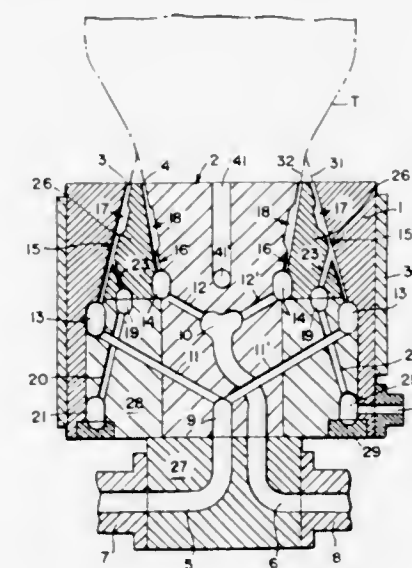


A fiber optic light pipe is formed by winding a first helix comprising contiguous turns of optical fiber material around a mandrel, and winding a plurality of other optical fiber helices over the first in the same helix direction. Successive helices are formed by directing the separate fiber strand forming each helix into

the groove formed between and above turns of the helix immediately thereunder, to provide a closely packed and correctly aligned cross section of optical fibers. The centers of the fibers in successive helices are aligned diagonally with respect to the mandrel axis with each fiber substantially adjoining six others in honeycomb fashion. In a preferred embodiment, the various helices are wound substantially simultaneously with each successive helix being started at least one turn behind the previous helix so as to provide a groove for guiding each successive helix.

**3,694,292**  
**EXTRUSION HEAD FOR PRODUCING A MULTILAYER BLOWN TUBULAR FILM**  
Heinz Schippers, 39 Ringstr., and Friedhelm Hensen, 79 Hohenweg, both of Remscheid-11, Germany; and Reinhold Jung, Pohlhausen, Wermelskirchen, Germany  
Filed June 12, 1970, Ser. No. 45,636  
Claims priority, application Germany, June 19, 1969, P 19 30 987.6  
Int. Cl. B22d 23/04  
U.S. Cl. 156—501

12 Claims

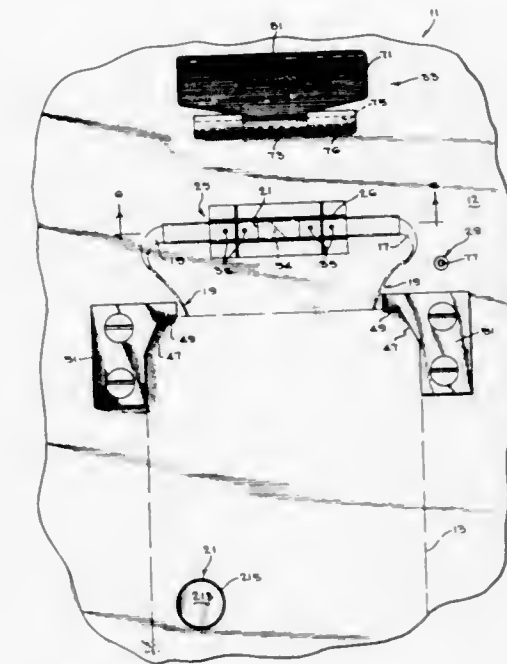


An extrusion head for producing a multilayer blown tubular film from thermoplastic polymer melts with the film layers being adhered by a bonding agent, the extrusion head including at least one annular channel associated with two adjacent melt extrusion passages and in fluid connection with at least one of the two passages to provide an uninterrupted, uniform surface coating of a liquid bonding agent on at least one of the opposing surfaces of the film layers as they are melt extruded. The extrusion head advantageously includes a calibrating block which can be heated or cooled and which serves to join the film layers together.

**3,694,293**  
**APPARATUS FOR SPLICING ENDS OF MAGNETIC TAPE OF A CARTRIDGE WITH A METALLIC SPLICE**  
James Edward Prader, Roselle, and Harless W. King II, Itasca, Ill., assignors to Ampex Corporation, Redwood City, Calif.  
Filed Sept. 28, 1970, Ser. No. 75,810  
Int. Cl. B31f 5/00; G03d 15/04; B32b 7/04  
U.S. Cl. 156—506

11 Claims

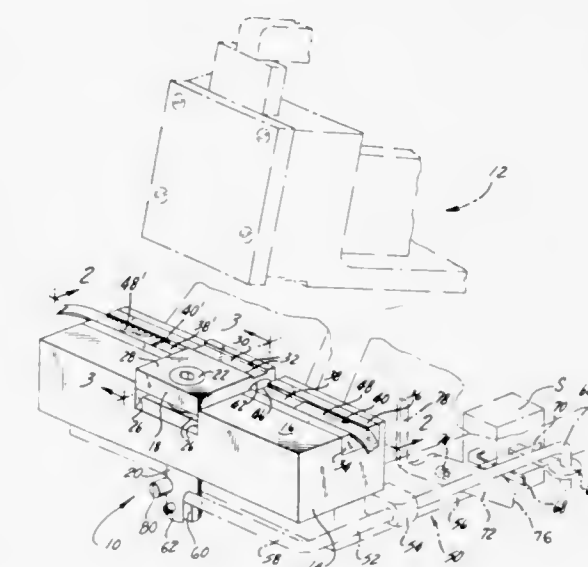
An assembly line device and method are provided for splicing ends of a magnetic tape together by an adhesive bearing splice which is automatically severed from a web transferred to the aligned tape ends and pressed thereagainst. The splice web preferably has a pressure sensitive adhesive on one side thereof covered by a backing



web, severing of the splice and adhering of the splice to the tape ends thereby providing a fast and inexpensive splicing operation.

**3,694,294**  
**SPLICING APPARATUS FOR SPLICING STRIP MATERIAL, AS FILM OR MAGNETIC TAPE**  
Gasper Cafiero, Brooklyn, N.Y., assignor to Metra Electronics Corporation, Brooklyn, N.Y.  
Filed Nov. 27, 1970, Ser. No. 93,100  
Int. Cl. G03d 15/04; B26d 5/08  
U.S. Cl. 156—507

5 Claims



Splicing apparatus for splicing strip material comprises a splicing stage having a longitudinally extending groove therein adapted to holdingly receive the two ends of the strip material to be spliced. The stage is provided with a movable cutting block, which in a first position has its upper surface flush with the operative surface of the stage. The cutting block is provided with a mating groove forming a continuation of the groove on the stationary portion of the stage. Means are provided for lifting the cutting block to a second position in which parallel cutting edges on the lower surface of said cutting block at opposite edges thereof are in raised position and adapted to



receive the non-mating strip ends thereunder. As the block is returned to its flush position strip edges are simultaneously severed to form accurately mated edges on said strip ends whereupon said strip ends may be moved within said groove on said cutting block into substantially contiguous abutting relationship for splicing. In accordance with the method of the present invention the above is carried out in substantially one continuous movement.

3,694,295

# MACHINE FOR SEALING PRINTED CARDS TO FILLED BLISTER CARDS

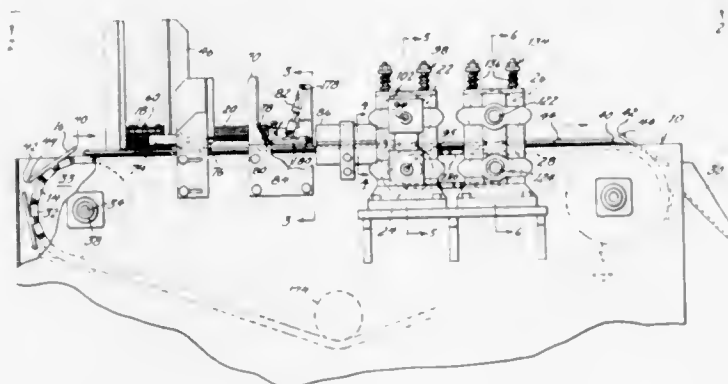
Mathew Nichols, Norristown, Pa., assignor to Sauter Packaging Company, Souderton, Pa.

Filed Nov. 23, 1970, Ser. No. 92,112

Int. Cl. B65h 29/00

U.S. Cl. 156—556

18 Claims



A machine for sealing printed cards to previously filled blister type medicinal tablet containing packages, including a pair of synchronized, horizontally juxtaposed conveyors, one for transporting blister cards and the other for printed cards. Each conveyor carries a plurality of plates which are equipped at the trailing edges thereof with a plurality of projections which contact the rear of each respective card to propel it forwardly. Each conveyor plate is further equipped with adjustable side guides to precisely position the overlapping portions of the printed and blister cards for sealing purposes. The printed card conveyor includes pusher means to urge the printed cards into contact with the conveyor plate projections. A heater block station receives the synchronized blister and printed cards and preheats the previously overlapped marginal areas. Rotary heated rollers receive the pre-heated cards from the heater block station for heat sealing and then feed the cards to a pair of refrigerated rollers which affix the adhesive and deliver the affixed cards to a delivery chute.

3,694,296

# THREE DIMENSIONAL ARTISTIC DESIGN CONSTRUCTION AND METHOD OF PRODUCING SAME

John E. Frontino, 61—35 98th St., Rego Park, N.Y. 11374

Filed Feb. 9, 1970, Ser. No. 9,827

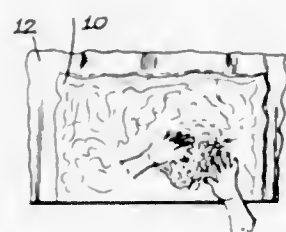
Int. Cl. B44f 7/00

U.S. Cl. 161—18

4 Claims

The invention encompasses a construction and method of production of a three dimensional and irregular design

as an artistic creation and involves utilization of a base panel and a superposing molded panel of moldable sheet material secured to the base panel, said molded panel being in the formation of any haphazard or irregular design. The



design is made from a hand or machine molding of said sheet material and results in at least an outer surface which affords highlighting and shaded areas to create an artistic work. When the design is hand molded, artistic and original creations result.

3,694,297

Patent Not Issued For This Number

3,694,298

# DECORATED GYPSUM BOARD AND METHOD OF MAKING SAME

William C. Veschuroff, Palatine, and Robert M. Mustoe, Winnetka, Ill., assignors to United States Gypsum Company, Chicago, Ill.

No Drawing. Continuation of application Ser. No. 604,647, Dec. 27, 1966. This application May 8, 1970, Ser. No. 35,887

Int. Cl. B32b 29/04; E04c 2/10

U.S. Cl. 161—43

7 Claims

A porous decorated paper is made by first coating and then embossing a paper sheet, and a predecorated gypsum board is made utilizing such paper as one of the cover sheets.

3,694,299

# MULTIPLE GLAZED UNIT AND METHOD OF MANUFACTURE

William E. Wagner, Verona, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Continuation of application Ser. No. 785,790, Dec. 20, 1968. This application May 27, 1971, Ser. No. 147,640

Int. Cl. C03b 23/24, 39/00

U.S. Cl. 161—45

13 Claims

A multiple glazed unit comprising a pair of spaced glass sheets is formed by depositing a metal oxide on the interfacial surface of at least one of the glass sheets, and then fusing the edge portions of the sheets together. The metal oxide film has a water-wetting surface contact angle of from about 40° to about 90°. The metal oxide film can also be produced by depositing an organo-metallic film forming material on the interfacial surface and then heating the organo-metallic material to a temperature sufficient to produce the metal oxide film.

3,694,300

# BASE PRODUCT FOR TEXTILE REPLACEMENT AND METHOD OF PRODUCING THE SAME

Rudolph Ernst Small, Green Bay, Wis., assignor to Paper Converting Machine Company, Inc., Green Bay, Wis.

Filed Aug. 27, 1971, Ser. No. 175,491

Int. Cl. B32b 1/00, 3/02

U.S. Cl. 161—127

8 Claims



A base product for a textile replacement such as paper garments, paper bedsheets, etc. in which a scrim-like material is confined between adjacent webs which are equipped with nested embossments.

3,694,301

# HYDROPHILIC NONWOVEN WEB AND METHOD OF MAKING IT

Larry E. Gruenewald, White Bear Lake, and John F. Kistner, Stillwater, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Jan. 4, 1971, Ser. No. 103,813

Int. Cl. B32b 5/18, 27/04, 27/40; C08g 22/44; D06n 3/14

U.S. Cl. 161—159

14 Claims

The disclosed hydrophilic webs are obtained by impregnating nonwoven webs with an isocyanate-terminated prepolymer and foaming the prepolymer in situ with water or steam. The prepolymer is preferably derived from an aromatic diisocyanate and a polyoxyethylene diol having an OH equivalent weight of 300–2,200. The resulting webs have good strength (adequate for use in leather substitutes), and low stiffness (temper) properties. When the web is moist, the strength properties are substantially retained, and the stiffness is even lower.

3,694,302

Patent Not Issued For This Number

3,694,303

# PACKING BLOCK

Jean Alin Robert Caillas, 29 Rue d'Estienne d'Orves, Viroflay, France

Filed Feb. 2, 1971, Ser. No. 111,888

Claims priority, application France, Feb. 2, 1970, 7003554

Int. Cl. B32b 7/06; B65d 85/30

U.S. Cl. 161—164

6 Claims



The invention relates to a packing block comprising removable layers of foil for regulating the thickness of the block, the foils on one face being of a different thickness from those of the other, and the thickness of the foils on one face being a multiple of the thickness of

the foils on the other, the invention being intended for making packing blocks for arresting play or balancing, particularly in the field of precision equipment.

3,694,304

# COMPRESSED ASBESTOS SHEET PACKING PRODUCTS AND METHOD

Henry Joseph Palumbo, Middlesex, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 727,051, May 6, 1968. This application Apr. 5, 1971, Ser. No. 131,392

Int. Cl. B32b 19/00

U.S. Cl. 161—168

14 Claims

Compressed asbestos sheet packings having the low density and compressibility characteristics of beater sheet packing (ASTM D-1170) but with superior tensile strength and reduced porosity can be produced by combining 3–25% hydrated calcium silicate of low bulk density with 50–75% asbestos fibers, 13–35% rubber binder, 10–50% diatomaceous earth type filler and 2–15% rubber compounding ingredients and forming sheets therefrom by a pressure rolling of the mixture.

3,694,305

# FLAME RETARDANT FIRE BARRIER COMPOSITION AND LAMINANT

Sheikh Mohammad Munawwar, Metuchen, N.J., assignor to Compac Corporation, Newark, N.J.

No Drawing. Filed Jan. 11, 1971, Ser. No. 105,632

Int. Cl. B32b 15/06, 15/08, 15/12, 19/04, 25/06, 27/30, 29/00

U.S. Cl. 161—205

9 Claims

An improved flame retardant fire barrier adhesive composition embodying a novel emulsion type laminant. The emulsion type laminant is not only an inherently non-burning adhesive by itself, but also imparts flame-retardancy to an otherwise combustible outer surface of a combustible fibrous substrate of a laminate of which it is the laminant, or otherwise makes itself available to smother any flame by synergistic effect, created within the laminant structure.

3,694,306

# FIRE-RESISTANT ASBESTOS VAPOR BARRIER SYSTEM

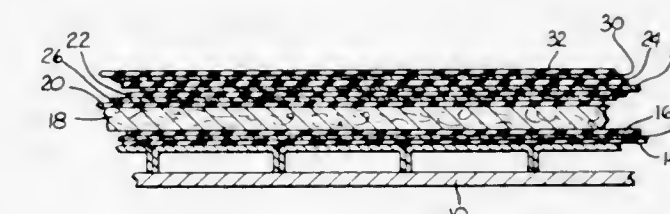
Richard Leon Fricklas, 10 Deerhead Drive, Bound Brook, N.J. 08805

Continuation of abandoned application Ser. No. 711,309, Mar. 7, 1968. This application Mar. 4, 1971, Ser. No. 121,123

Int. Cl. B32b 11/02; E04c 1/40

U.S. Cl. 161—205

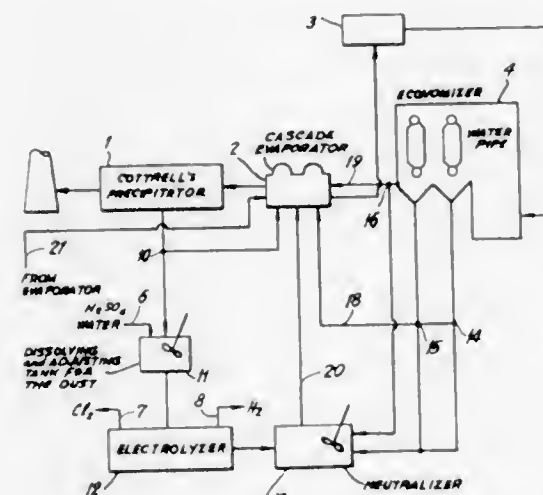
10 Claims



A layer of asphalt impregnated asbestos felt is adhered to a metal roof deck by noncombustible adhesive and a layer of noncombustible insulating boards is adhered to the asbestos felt by mopping asphalt. A conventional built-up roof can be installed over the insulating boards.



**3,694,307**  
**PROCESS FOR REMOVING CHLORINE FROM PULP COOKING AGENTS**  
 Koji Iwahashi, Nagayo-machi, Nishisonogi-gun, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan  
 Filed Aug. 12, 1970, Ser. No. 63,167  
 Claims priority, application Japan, Aug. 13, 1969, 44/64,005  
 Int. Cl. D21c 11/12  
 U.S. Cl. 162—30 10 Claims



Dechlorination of pulp cooking liquors in either continuous or batchwise manner from recovery boiler system in paper pulp manufacture is effected by acidification with sulfuric acid followed by electrolysis using an insoluble anode such as titanium plated with platinum, or lead dioxide, and with cast iron cathode.

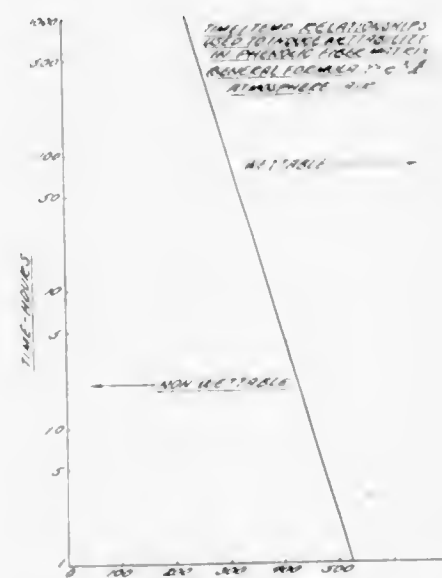
**3,694,308**  
**BAGASSE FIBER PRODUCT AND PROCESS**  
 Roland Botz, San Juan, Puerto Rico, assignor to Plasti-Fiber Formulations, Inc., Mercedita, Puerto Rico  
 Continuation-in-part of application Ser. No. 758,903, Sept. 10, 1958. This application Oct. 9, 1969, Ser. No. 866,123  
 Int. Cl. D21c 9/08  
 U.S. Cl. 162—55 7 Claims

Bagasse is treated with an aqueous solution of alum and defibrated to give a fibrous product suitable for the reinforcement of resin bodies. The fiber can also be pulverized to yield a flour suitable for use as a filler in resin bodies. The treatment also produces a clean, sugar free, moisture resistant, low density cellular pith material suitable for manufacturing insulation and acoustical materials, as a filler for synthetic foam products, and as a filler for animal feed formulations.

**3,694,309**  
**LIGNIN-PRESERVING BLEACHING OF CELLULOSE PULP**  
 Josef Franz Gierer, Lidings, and Carl Torbjorn Norin, Bromma, Sweden, assignors to Svenska Traforskningsinstitutet, Stockholm, Sweden  
 No Drawing. Filed Nov. 10, 1969, Ser. No. 875,564  
 Claims priority, application Sweden, Nov. 22, 1968, 15,966/68  
 Int. Cl. D21c 3 Claims

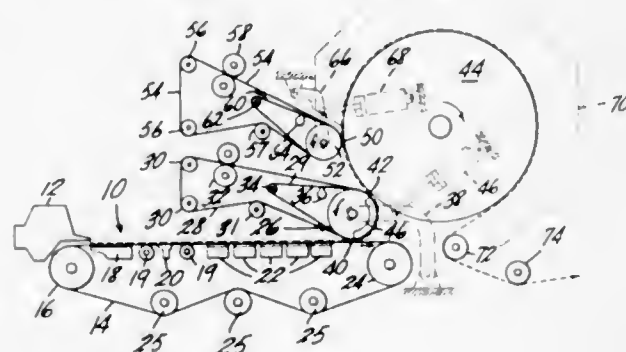
A bleaching process for cellulose pulps and which enables the lignin in the pulp to be preserved comprises bleaching of the pulp in the presence of an organic peroxide, which is produced by contacting a peroxide forming organic compound with air or a gas containing free oxygen.

**3,694,310**  
**FUEL CELL ORGANIC FIBER MATRIX**  
 Roger C. Emanuelson, Glastonbury, Robert C. Stewart, West Suffield, and Raymond W. Vine, Tolland, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.  
 Filed Dec. 16, 1970, Ser. No. 98,791  
 Int. Cl. D21h 3/50; H01m 3/00  
 U.S. Cl. 162—157 R 6 Claims



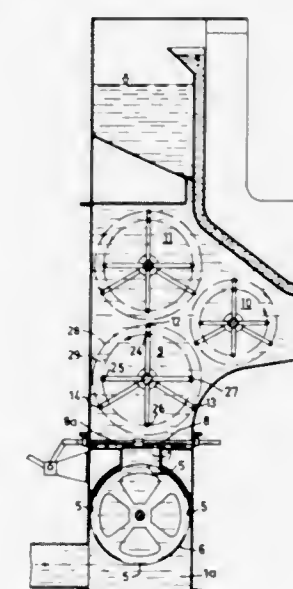
A wettable organic fiber matrix is provided by coating phenolic resin fibers with a phenolic beater addition resin forming the matrix, curing the beater addition resin, and making the matrix wettable by heating the matrix in air or in a partially inert atmosphere.

**3,694,311**  
**MACHINE FOR MAKING THIN PAPER**  
 Nils Petri Skeppstedt, Ulvsby, Sweden, assignor to Aktiebolaget Karstads Mekaniska Werkstad, Karlstad, Sweden  
 Filed Jan. 18, 1971, Ser. No. 107,114  
 Int. Cl. D21f 5/00, 9/00  
 U.S. Cl. 162—290 7 Claims



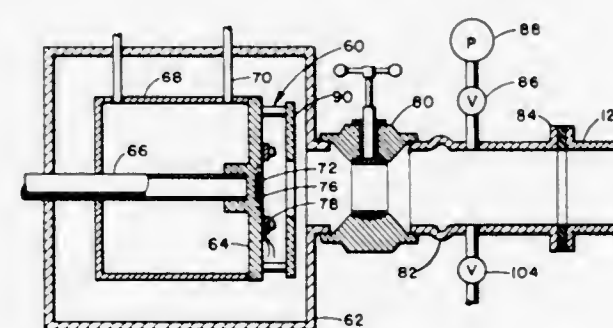
A paper-making machine comprises a forming section, in which a web is formed on a moving foraminous member, a heated, rotating "Yankee" dryer cylinder positioned in proximate, spaced relation to a pick-up location on the foraminous member, and a combination rotating suction pickup, couch, transfer and press roll positioned in light engagement with the foraminous member at the pick-up location and in de-watering pressure engagement against the surface of the Yankee dryer cylinder. The combination roll picks the web off the foraminous member, transfers it to the Yankee dryer cylinder and presses it in a press nip with the Yankee dryer cylinder to further remove liquid prior to drying on the cylinder. One or more additional presses can be used in conjunction with the Yankee dryer cylinder downstream from the combination roll.

**3,694,312**  
**DISINTEGRATING AND DEFLOCCULATING DEVICE IN INLET BOXES OR PAPERMAKING MACHINES**  
 Helge Natanael Sköldkvist, deceased, late of Rundviks-verken, Sweden, by Amy Maria Sköldkvist, Storgatan 28A, Umea, Sweden, Hans Märten Sköldkvist, 910 02, Rundviks-verken, Sweden, and Birgitta Helena Paget, Regngatan 4, Uppsala, Sweden, sole heirs  
 Continuation of application Ser. No. 817,300, Apr. 17, 1969. This application May 25, 1971, Ser. No. 146,841  
 Claims priority, application Sweden, Apr. 25, 1968, 5,577/68  
 Int. Cl. D21f 1/06  
 U.S. Cl. 162—342 7 Claims



Apparatus for disintegrating coagulated fibrous material comprising a chamber, a stirring means therein including a first and second group of parallel spaced stirring bars, a first rotatable shaft, means for mounting the first group of stirring bars for rotation in parallel relation to each other and in parallel relation about the axis of said first shaft, a second rotatable shaft coaxial with said first shaft, means for mounting the second group of stirring bars for rotation in parallel relation to each other and in parallel relation about the axis of said second shaft, and means for rotating said shafts in opposite directions.

**3,694,313**  
**PRODUCTION OF HIGH PURITY <sup>123</sup>I**  
 James W. Blue, Bay Village, Wayne R. Smith, Columbia Station, and Vincent J. Sodd, Cincinnati, Ohio, assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration  
 Filed Oct. 2, 1969, Ser. No. 863,280  
 Int. Cl. G21g 1/00  
 U.S. Cl. 176—11 1 Claim



Bombarding a tellurium target with a beam from an accelerator produces <sup>123</sup>Xe which is carried away by a

flowing gas stream. Contaminants are removed from the gas, and the remaining xenon decays to <sup>123</sup>I which is ready for use as a radiopharmaceutical in which low radiation exposure is desired as in diagnostic studies.

**3,694,314**  
**PROCESS FOR ISOMERIZING GLUCOSE TO FRUCTOSE**  
 Norman E. Lloyd, Leonard T. Lewis, Robert M. Logan, and Dilip N. Patel, Clinton, Iowa, assignors to Standard Brands Incorporated, New York, N.Y.  
 No Drawing. Continuation-in-part of application Ser. No. 55,996, July 17, 1970. This application Nov. 9, 1970, Ser. No. 88,187  
 Int. Cl. C12k 9/00  
 U.S. Cl. 195—31 F 14 Claims

Process of enzymatically converting glucose to fructose wherein a glucose-containing solution is passed, under specific conditions, through a bed of cells of microorganisms containing cell bound glucose isomerase, said bed has a depth to width ratio of less than about 2.

**3,694,315**  
**METHOD FOR PROCESSING PAPAW LATEX (PAPAYA) TO OBTAIN PAPAIN**  
 Roger L. Boudart, 45 Avenue d'Italie, Ixelles, Belgium  
 Filed Nov. 4, 1968, Ser. No. 773,238  
 Claims priority, application Great Britain, Nov. 10, 1967, 51,232/67  
 Int. Cl. C07g 7/022  
 U.S. Cl. 195—66 R 12 Claims

A method for processing the fresh latex extracted from the papaw fruit to obtain papain comprising centrifuging the fresh latex to separate it from its natural biochemical and biological impurities, the latex being present after centrifugation in at least two phases, a solid phase and a liquid phase, at least the liquid phase then being further processed in order to obtain powered papain, is disclosed.

**3,694,316**  
**PROCESS FOR PREPARING PROTEASE BY MICRO-ORGANISM OF THE BASIDIOMYCETES**  
 Masanobu Kawai and Noboru Mukai, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd.,  
 Filed Dec. 31, 1969, Ser. No. 889,659  
 Claims priority, application Japan, Jan. 11, 1969, 44/2,963  
 Int. Cl. C12d 13/10  
 U.S. Cl. 195—66 R 4 Claims

Protease is produced by fermentation of organisms in the class Basidiomycetes. Addition of distillers solubles to the medium improves the yield. Protease having good activity and freedom from undesirable tastes and odors is obtained.

**3,694,317**  
**METHOD OF AND INSTRUMENT FOR MICRO-BIOLOGICAL ANALYSIS**  
 Stanley Scher, 970 Contra Costa Drive, El Cerrito, Calif. 94530  
 Filed May 31, 1968, Ser. No. 733,617  
 Int. Cl. C12k 1/04  
 U.S. Cl. 195—103.5 R 4 Claims

Method of and apparatus for use in distributing, cultivating, treating and investigating microbial materials such as microorganisms and like biological materials. The method includes the steps of introducing into a transparent, flexible plastic tubing in a linear distribution therealong microbial cells suspended within a liquefied agar. The agar is then solidified and the cells cultured to grow colonies from those cells that are viable. The linear distribution of cells or colonies grown therefrom are



then treated as desired and inspected sequentially to monitor the development thereof.

The apparatus includes a reel-type transport mechanism to move the tubing through an inspection station and present the microbial colonies sequentially thereat. An optical sensing system at such station discriminates differences in the optical characteristics of such colonies, and analyzer circuitry responsive to the sensing system provides monitoring information indicative of the detected differences.

### 3,694,318 SUBSTRATE AND METHOD FOR $\alpha$ -AMYLASE ASSAY

Bernard Klein, 129 Patton Blvd., New Hyde Park, N.Y. 11040, and Ronald Loy Searcy, 68 Norwood Ave., Upper Montclair, N.J. 07043  
No Drawing. Continuation-in-part of application Ser. No. 753,748, Aug. 19, 1968. This application Feb. 24, 1969, Ser. No. 801,854

Int. Cl. C12k 1/04  
U.S. Cl. 195—103.5 R  
 $\alpha$ -Amylase activity is determined by measuring the color change effected when an insoluble dye-amylose complex is acted upon by the enzyme.

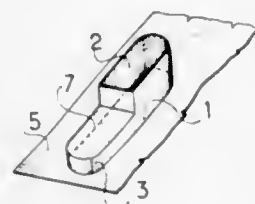
3,694,319

Patent Not Issued For This Number

### 3,694,320 PROCESS FOR STUDYING THE GROWTH AND PHYSIOLOGY OF BACTERIA AND RECEPTACLE FOR CARRYING OUT THIS PROCESS

Jean Buisiere, Lyon, France, assignor to Compagnie Generale d'Automatisme, Paris, France  
Filed Nov. 18, 1969, Ser. No. 877,751  
Claims priority, application France, Nov. 22, 1968, 174,997

Int. Cl. C12b 1/00  
U.S. Cl. 195—144



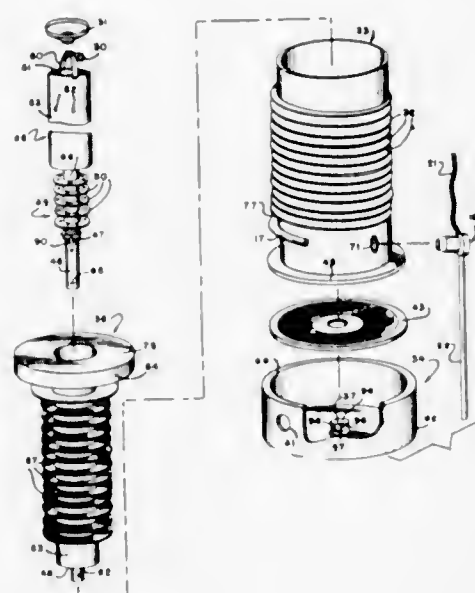
Process for studying the growth and physiology of bacteria, according to which the development of bacteria in aerobic and anaerobic conditions are studied simultaneously, using the same receptacle comprising two communicating parts. Receptacle for carrying out the process having a part clearly open to air, forming a cup, in which the bacteria develop in aerobiotic conditions, a covered part communicating with the base of the cup including a protuberance partially separating the two communicating parts and spaced so as to allow an opening between the two parts.

### 3,694,321 PORTABLE DISTILLATION UNIT

Frank A. Marovich, Hacienda Heights, Jean Bordeaux, Fullerton, and Donald W. Sawtelle, Anaheim, Calif., assignors to the United States of America as represented by the Secretary of the Army

Filed Nov. 3, 1970, Ser. No. 86,579  
Int. Cl. B01d 3/00  
U.S. Cl. 202—83  
A portable stainless steel water distillation unit capable of producing pyrogen-free water in a single distillation. A filtering section permits the use of deionizing resin

or activated charcoal. A series of baffles permit the incoming water to be preheated by a portion of the steam. Another series of baffles filter out particulate matters from the steam on its way to the condensation chamber

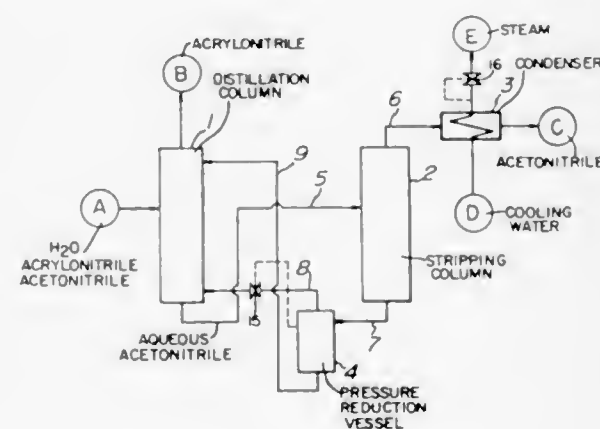


where it is effectively cooled but isolated from the feed water. The relationship of the elements enables the compact, durable unit to function at maximum thermal efficiency.

### 3,694,322 METHOD FOR SEPARATING ACRYLONITRILE AND ACETONITRILE BY EXTRACTIVE DISTILLATION WITH COOLANT VAPOR GENERATION

Yoneichi Ikeda, Tsukasa Takeda, Michio Hattori, Yutaka Kiyomiya, and Takashi Yamamoto, Yokohama, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1968, Ser. No. 774,133  
Claims priority, application Japan, Nov. 8, 1967, 42/71,839; Apr. 30, 1968, 43/28,555  
Int. Cl. B01d 3/40; C07c 121/32  
U.S. Cl. 203—25



Acrylonitrile and acetonitrile are separated individually from an aqueous solution containing acrylonitrile and acetonitrile using a combination of an extractive distillation column for recovery of acrylonitrile using water as an extracting agent and a stripping column for recovery of acetonitrile. The distillation of said stripping column is conducted under pressure, so that, at least one portion of overhead vapours evolved from the top of said strip-

ping column may be condensed in a condenser at a temperature high enough to allow the condensation of said vapours to boil the cooling liquid in the condenser. At least one portion of said cooling liquid is thereby recovered as vapours. Further, vapours are recovered by subjecting a liquid withdrawn from said stripping column to pressure reduction to at most approximately atmospheric pressure to generate vapours from the withdrawn liquid. 70 to 90% of steam consumed in the stripping column when operated under atmospheric pressure can be thereby recovered.

### 3,694,323 SEPARATION OF DISTILLABLE ISOCYANATES FROM THEIR PHOSGENATION MASSES

John Richard Cooper, Hockessin, and Gilbert Thornton Perkins, Landenberg, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

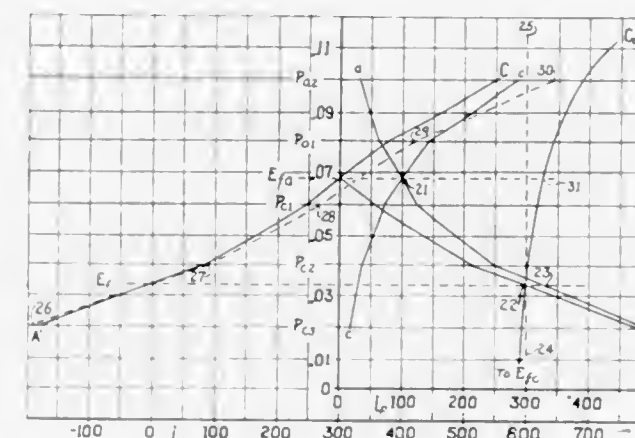
No Drawing. Filed Aug. 5, 1968, Ser. No. 749,930  
Int. Cl. B01d 3/34; C07c 119/04  
U.S. Cl. 203—60

Process for recovering an isocyanate in high yield from its phosgenation mass while fluidizing the distillation residue comprising distilling said isocyanate in the presence of an isocyanate exchange agent.

### 3,694,324 METHOD OF MEASURING ACCELERATED CORROSION RATE

Robert G. Seyl, 1123 Mulford St., Evanston, Ill. 60202

Filed Jan. 16, 1969, Ser. No. 791,653  
Int. Cl. G01n 27/46  
U.S. Cl. 204—1 T



A method for measuring accelerated corrosion rate. The method uses a first measurement of current according to the principle of proportionality of measured current to naturally occurring current and uses the application of a small increment of voltage applied to one or more electrodes as in U.S. Pats. 3,156,631; 3,069,332 and 3,250,689. After measurement of a first current in accordance with the known method, an increment of cathodic polarizing current is applied to the electrode or electrodes. This increment of cathodic polarizing current is varied over a range. The rate determining corrosion current is then determined by the relationship between the first measured current and the minimum current measured in said range.

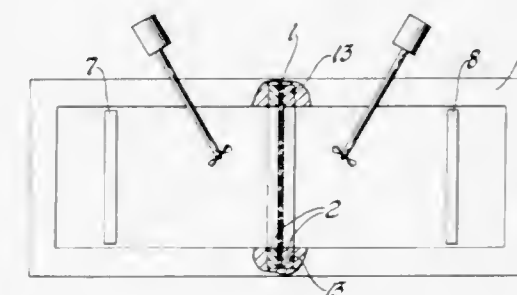
902 O.G.—53

### 3,694,325 PROCESS FOR UNIFORMLY ELECTROFORMING INTRICATE THREE-DIMENSIONAL SUBSTRATES

Seymour Katz and Joseph L. Greene, Royal Oak, Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of application Ser. No. 724,544, Apr. 26, 1968. This application June 21, 1971, Ser. No. 155,160

Int. Cl. C23b 7/00, 5/60; C23f 17/00  
U.S. Cl. 204—11



A process for making a substantially homogeneous, intricate, three-dimensional, reticulated electroform particularly an open cell metal foam.

### 3,694,326 PRETREATMENT OF STAINLESS STEEL FOR ELECTROPLATING

Richard W. McCabe, Freeport, and Mark J. Johnson, Natrona Heights, Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Nov. 3, 1969, Ser. No. 873,227  
Int. Cl. C23b 5/62  
U.S. Cl. 204—29

An improved method of electroplating stainless steel with a dissimilar metal. It encompasses an electrolytic treatment which is performed in an alkaline electrolyte at a current density of between 0.025 amp per square inch and 3 amps per square inch with the stainless steel serving as anode and then as cathode.

### 3,694,327 Patent Not Issued For This Number

### 3,694,328 COMPOSITION AND PROCESS FOR CHROMIUM PLATING

Donald H. Becking, Birmingham, Mich., assignor to Udyllite Corporation, Warren, Mich.

No Drawing. Filed Aug. 24, 1970, Ser. No. 66,640  
Int. Cl. C23b 5/06

U.S. Cl. 204—51  
A composition and process for the electrodeposition of chromium from aqueous acidic hexavalent chromium solutions which contain sulfate ions and saturation concentrations of certain rare earth phosphofluorides. By the use of the phosphofluorides of these rare earths, a self-



regulating chrome plating bath is produced having a higher fluoride ion content than has heretofore been possible. This is particularly desirable in the production of hard chrome plate, in that improved color of the plate is obtained.

3,694,329

**BRIGHT TIN ELECTRODEPOSITING**

Marcis M. Kampe, Brookline, Mass., assignor to Enthone, Incorporated, New Haven, Conn.  
No Drawing. Filed July 30, 1970, Ser. No. 59,749  
Int. Cl. C23b 5/14

U.S. Cl. 204—54 R 23 Claims

Acid tin baths for electrodepositing bright tin comprising tin ions, free acid, a non-ionic surface active agent and as a brightening agent a substantially linear, low molecular weight, soluble polymeric acrolein or methacrolein. The polymeric acrolein or methacrolein is a homopolymer or copolymer. Additive compositions for acid tin electrodepositing baths are also provided by the invention.

3,694,330

**ELECTROPLATING BATH FOR DEPOSITING BRIGHT ZINC PLATES**

Joachim Korpium, 54 Oberbohringer Strasse, and Joachim Steeg, 47 Schultheiss-Schneider-Strasse, both of 734 Geislingen, Germany  
No Drawing. Filed May 23, 1967, Ser. No. 640,512  
Int. Cl. C23b 5/12, 5/46

U.S. Cl. 204—55 R 16 Claims

Semi-bright to fully bright zinc deposits are produced by electroplating articles in an acid electroplating bath containing a non-complex zinc salt and, as brightening and the throwing power increasing additives, an aromatic carbonyl compound, a non-ionogenic, surface active polyoxyethylene compound, and/or a compound selected from the group consisting of ammonium chloride and a compound forming a soluble complex compound with zinc salts within the pH-range between about 2.5 and about 5.5.

Electroplating with such baths is preferably effected at a pH between about 2.5 and about 5.5, a temperature between about 10° C. and about 30° C., and a current density between about 1 amp/sq. dm. and about 5 amp/sq. dm.

The baths are able to replace the heretofore used alkaline electroplating zinc baths and are substantially free of the disadvantages of said baths, especially the difficulties encountered in waste disposal.

3,694,331

**CORROSION RESISTANT BERYLLIUM BODIES**

Louis J. Csontos, Parma, and Albert James Stonehouse, Lyndhurst, Ohio, assignors to Brush Beryllium Company, Cleveland, Ohio  
No Drawing. Continuation of application Ser. No. 670,486, Aug. 11, 1967, which is a division of application Ser. No. 395,012, Sept. 8, 1964. This application Mar. 6, 1970, Ser. No. 7,418  
Int. Cl. C23b 9/00

U.S. Cl. 204—56 R 1 Claim

1. A beryllium body having an electrolytically deposited crystalline beryllium oxide coating adherent to the body surface produced by immersing the uncoated body in a bath consisting essentially of water, sodium chromate in an amount at least 0.4%, by weight, of the bath, and an amount of chromic acid sufficient to adjust the pH of the bath into a range from about 5.5 to about 7.5, the temperature of the said bath being below about 130° F., and passing an electric current to the surface with the surface connected as an anode.

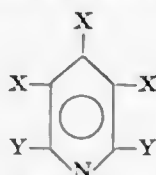
3,694,332

**ELECTROLYTIC REDUCTION OF HALOGENATED PYRIDINES**

Vernon D. Parker, Lawrence, Kans., assignor to The Dow Chemical Company, Midland, Mich.  
No Drawing. Filed Mar. 5, 1971, Ser. No. 121,562  
Int. Cl. C07b 29/06; C08d 31/46, 31/26

U.S. Cl. 204—73 R 4 Claims

Halogenated pyridines of the formula



wherein each X is Cl or Br, and each Y is X or CN are electrolytically reduced to replace the halogen in the 4 position with hydrogen.

3,694,333

**TREATMENT OF ARTICLES HAVING METALLIC CORE WITH BORON COATING**

Alain Jean Edmond Ducrot, l'Haye-les-Roses, Jacques Constant Poulain, Thionville, Miguel Sancho Pavon, Gouvieux, and Michel Louis Turpin, Bourg la Reine, France, assignors to Societe Nationale d'Etude et de Construction DeMoteurs d'Aviation, Paris, France, and Association pour la Recherche et le Developpement des Methodes et Processus Industriels A.R.M.I.N.E.S., Paris, France  
No Drawing. Continuation-in-part of abandoned application Ser. No. 881,875, Dec. 3, 1969. This application Nov. 18, 1971, Ser. No. 200,144

Claims priority, application France, Dec. 5, 1968, 176,867  
Int. Cl. C23b 1/00, 3/06

U.S. Cl. 204—140 5 Claims

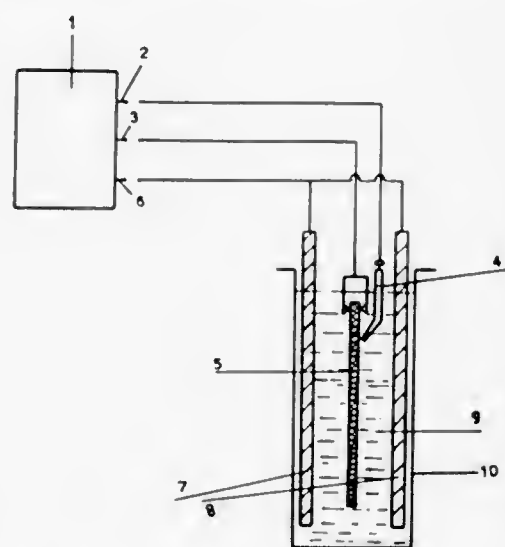
The mechanical properties, particularly the tensile strength, of articles comprising a layer of boron on a metallic, particularly tungsten, core are substantially improved by a treatment comprising immersion in an aqueous acid bath containing hydrogen peroxide and application of a potential difference between a metallic cathode and the article as anode.

3,694,334

**ACID PICKLING OF STAINLESS STEELS**

Giuseppe A. Bombara, Rome, Italy, assignor to Centro Sperimentale Metallurgico S.p.A., Rome, Italy  
Filed Apr. 10, 1969, Ser. No. 815,082  
Int. Cl. B01k 3/02; C23b 1/04

U.S. Cl. 204—145 3 Claims



A process for electrostatically pickling stainless steel having a chromium-depleted layer beneath the scale formed during hot-rolling.

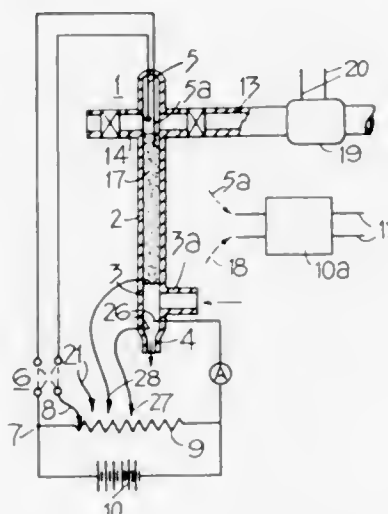
3,694,335

**CHROMATOGRAPHIC SEPARATION**

Victor Pretorius, Klein Waterkloof, Club Ave., Waterkloof, Pretoria, Transvaal, Republic of South Africa, and Hans Helmuth Hahn, 38 Marais St., Bailey's Muckleneuk, Pretoria, Transvaal, Republic of South Africa

Application Aug. 2, 1967, Ser. No. 657,815, which is a continuation-in-part of applications Ser. No. 583,788, Oct. 3, 1966, now Patent No. 3,594,294, and Ser. No. 598,365, Dec. 1, 1966. Divided and this application Apr. 2, 1970, Ser. No. 29,353  
Claims priority, application Republic of South Africa, Oct. 10, 1965, 65/5,409; Dec. 8, 1965, 65/6,633; Aug. 2, 1966, 66/4,568  
Int. Cl. B01k 5/00

U.S. Cl. 204—180 G 10 Claims



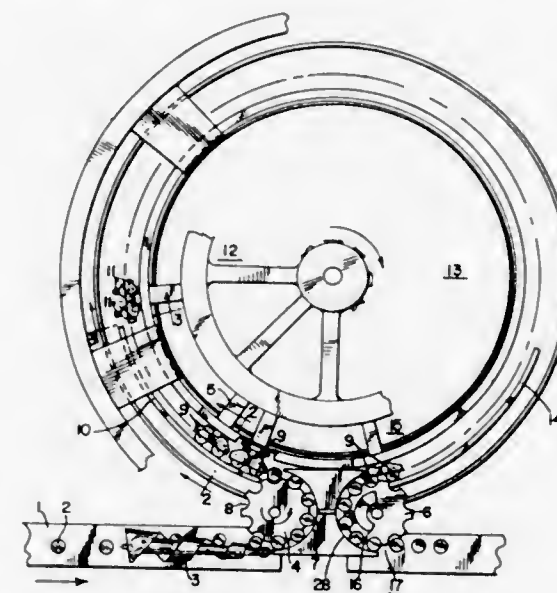
Retention of solutes on the retarding phase is induced by applying to the entire retardation phase an electrical potential, either uniformly or with a gradient. The potential may be DC or AC. In the latter case additional separation effects are attainable. The AC pulse shape, frequency and amplitude is adjusted with a pulse generator.

3,694,336

**METHOD FOR CAN ELECTRODEPOSITION**

Edward J. Fiala, Oak Lawn, Ill., assignor to Continental Can Company, Inc., New York, N.Y.  
Original application June 2, 1969, Ser. No. 829,412, now Patent No. 3,647,675. Divided and this application May 26, 1971, Ser. No. 147,003  
Int. Cl. B01k 5/02; C23b 13/00

U.S. Cl. 204—181 3 Claims



A method for automatic electrodeposition which electro-deposits a coating onto a can body. The can body is passed

along a ring-shaped trough which is filled with coating solution and an electric potential is applied between the solution and the can body to deposit a coating onto the can body. The can body is dipped into the trough and is moved along in the trough a distance sufficient to allow the desired amount of coating to cover the inside and outside of the can body.

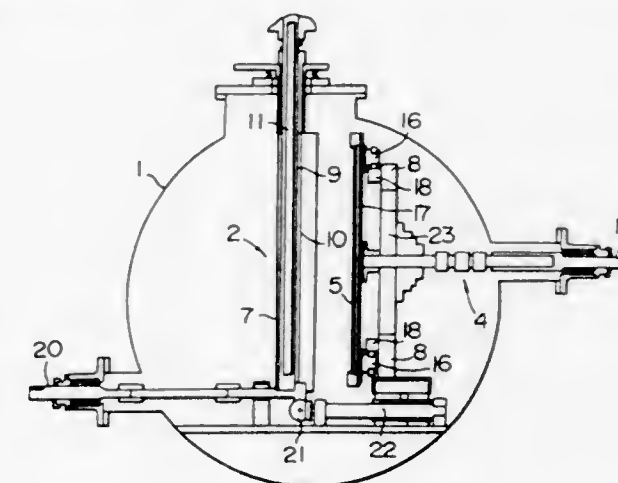
3,694,337

**SPUTTERING METHOD FOR MANUFACTURING TRANSPARENT, HEAT RAY REFLECTING GLASS**

Akira Kushibashi, Nishinomiya, and Seichiro Manabe, Itami, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Jan. 4, 1971, Ser. No. 103,716  
Int. Cl. C23c 15/00

U.S. Cl. 204—192 1 Claim



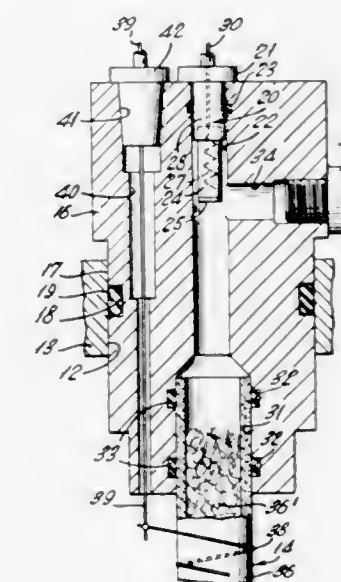
A transparent, heat ray reflecting glass article comprising a glass sheet on at least one surface of which a heat ray reflecting coating is formed, said heat ray reflecting coating comprising a first layer consisting essentially of a copper-nickel alloy containing 5-15% by weight of nickel, and a second layer composed of an oxide of said alloy, which is tightly bonded on said first layer, and a process for preparation of the same.

3,694,338

**CHEMICAL DETECTOR**

Irving R. Weingarten, Bronx, N.Y., assignor to Cambridge Instrument Company, Inc., Ossining, N.Y.  
Filed Apr. 14, 1970, Ser. No. 28,433  
Int. Cl. B01r 3/00; G01n 27/00

U.S. Cl. 204—195 R 10 Claims



A detector for reducing and oxidizing agents carried by fluids which detector includes an electrolyte, a replace-



able first half cell structure containing a metal and a metal salt immersed in said electrolyte and a second half cell structure having an exposed porous member saturated with said electrolyte and an electrode on the outer side of said porous member, the porous member and electrode upon being individually placed in the path of the fluid will cause a potential to be developed between the electrodes which is proportional to the amount of chemical in said fluid. The detector is especially useful for the detection of hydrazine in boiler feed water.

3,694,339

Patent Not Issued For This Number

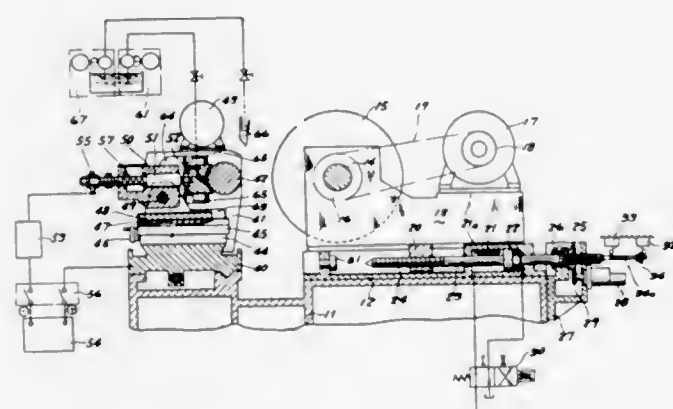
3,694,340

**ELECTROLYTIC GRINDING MACHINE**

Kunio Takahashi, Nagoya, Japan, assignor to Toyoda Koki Kaishiki Kaisha, Kariya-shi, Aichi-ken, Japan  
Filed Nov. 17, 1970, Ser. No. 90,280  
Claims priority, application Japan, Dec. 8, 1969, 44/98,535  
Int. Cl. B23p 1/00

U.S. Cl. 204—224

9 Claims



An electrolytic grinding machine having a grinding wheel comprises an electrolytic grinding device, means for detecting the electrolytic grinding current and a control system for controlling the speed at which the grinding wheel head is advanced toward a workpiece. The workpiece is ordinarily ground by the electrolytic grinding device. However, when the electrolytic grinding current becomes smaller than a predetermined current such that the grinding efficiency decreases, a conventional grinding operation by the grinding wheel is automatically applied on the workpiece in response to a command signal provided by the control system.

3,694,341

**METAL RECOVERY DEVICE**

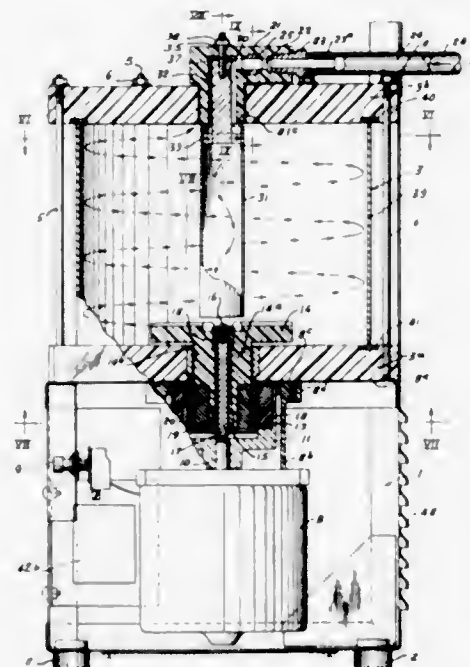
William R. Luck, Jr., 6419 Maple Ave.,  
Dallas, Tex. 75235  
Filed Jan. 27, 1971, Ser. No. 110,181  
Int. Cl. C22d 1/02

U.S. Cl. 204—273

12 Claims

A device for recovering metallic elements from plating solution baths, photographic and radiographic fixing solutions and other related processes to recover such metals from the solution for sale or use, to permit the re-use of fixing solution and to prevent undesirable metallic elements passing into sanitary sewers, contaminating water supplies and streams beyond acceptable levels of human consumption. It consists generally of a container whose outer wall is a cylindrical cathode and having an anode suspended centrally thereof. Electrical current is passed between the anode and the cathode through the

liquid causing silver or other metallic material in solution in the fluid passed through the container to be deposited on the cathode by electrolysis. An impeller is disposed centrally and interiorly of the bottom of the container which is driven by an external motor through a magnetic drive. Fluid is admitted centrally of the upper wall of the container and discharged through the upper



wall of the container outwardly of the center thereof. The impeller draws fluid through the central passage which is at lower pressure and the fluid is discharged through the outer passage which is at higher pressure, thereby eliminating the necessity of a pump to circulate the fluid through. Although the device is primarily designed for recovery of silver from photographic fixer liquid, it may be employed to remove metal from other liquid.

3,694,342

**CATALYTIC LIQUEFACTION OF COAL USING SYNTHESIS GAS**

Frank B. Sprow and John E. Keller, Baytown, Tex., assignors to Esso Research and Engineering Company  
No Drawing. Filed Oct. 26, 1970, Ser. No. 84,127  
Int. Cl. C10g 1/06

U.S. Cl. 208—10

4 Claims

The liquefaction of coal in a hydrogen donor solvent is carried out in the presence of a carbon monoxide sensitive catalyst and a carbon monoxide-containing treat gas under reaction conditions including a temperature from about 750 to about 900° F., a pressure from about 500 to about 4500 p.s.i.g., a treat gas-to-solvent ratio from about 2,000 to about 15,000 s.c.f./b., a solvent-to-coal ratio from about 1.0 to about 2.5 lb./lb., and a slurry/catalyst ratio from 0.25 to 4 w./hr./w. Steam is introduced into the liquefaction zone at a rate from about 1 to about 4 mols of steam per mol of carbon monoxide, whereby said coal is liquified without undue deactivation of said catalyst by said carbon monoxide.

3,694,343

**SEPARATING LIGHT GASES FROM A HYDROCONVERSION PRODUCT**

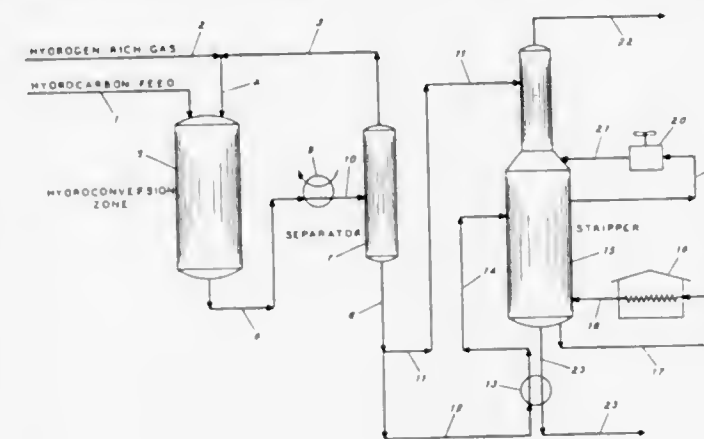
Robert I. Christensen, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.  
Filed Aug. 20, 1970, Ser. No. 65,570  
Int. Cl. C10g 7/00

U.S. Cl. 208—100

11 Claims

A process for separating light gases from heavier hydrocarbons which comprises: (a) feeding a first portion

of a mixture of the light gases and heavier hydrocarbons at a first temperature to a fractionation column near a midpoint along the length of the column, (b) applying heat to the material in the column near the bottom of the column, (c) feeding a relatively cold second portion of the mixture, having a temperature at least 50° F. below the first temperature, to the column near the top of the column, (d) withdrawing a pumparound stream from an



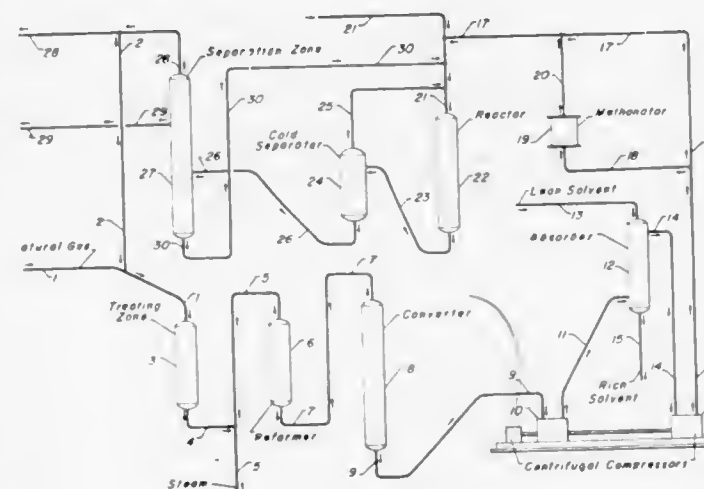
upper portion of the column, cooling the pumparound stream and then returning it to the column, with the withdrawal and return of the pumparound stream being located between the point at which the first and second mixtures are fed to the column, (e) withdrawing light gases from the top of the column, and (f) withdrawing heavier hydrocarbons from the bottom of the column. It is particularly preferred to employ the distillation process in combination with jet fuel hydrogenation.

3,694,344

**HYDROPROCESSING OF HYDROCARBONS**

William H. Munro, Deerfield, Ill.  
(30 Algonquin Road, Des Plaines, Ill. 60016)  
Continuation-in-part of application Ser. No. 774,378, Nov. 8, 1968. This application Sept. 24, 1970, Ser. No. 74,518  
Int. Cl. C10g 13/00; C01b 1/33, 2/18  
U.S. Cl. 208—108

5 Claims



A hydrocarbon hydroprocess wherein the chemical consumption of hydrogen is effected. A combination process in which a hydrocarbonaceous charge stock is reacted with steam to produce an effluent containing hydrogen and carbon oxides. The relatively low pressure effluent is compressed to an intermediate pressure level, at which pressure the hydrogen concentration is increased through the removal of the oxides of carbon. The purified hydrogen stream is then compressed to a higher pressure level and introduced into the hydroprocessing reaction zone. Specific hydroprocesses are directed

toward the hydrogenation of aromatic nuclei, hydrocracking, the ring-opening of cyclic hydrocarbons for producing jet fuel components, desulfurization, denitrification and hydrogenation.

3,694,345

**NICKEL-CONTAINING CRYSTALLINE ALUMINO-SILICATE CATALYST AND HYDROCRACKING PROCESS**

Clarence W. Bittner, Orinda, Calif., assignor to Shell Oil Company, New York, N.Y.  
No Drawing. Filed Dec. 29, 1969, Ser. No. 888,826  
Int. Cl. C10g 13/02

U.S. Cl. 208—111

6 Claims

An improved hydrocracking catalyst is prepared by incorporating 15–30% w. nickel and 0.05–6% w. Group VI-B metal into a crystalline aluminosilicate zeolite base. This catalyst may be used in a hydrocracking process in the presence or absence of nitrogen compounds.

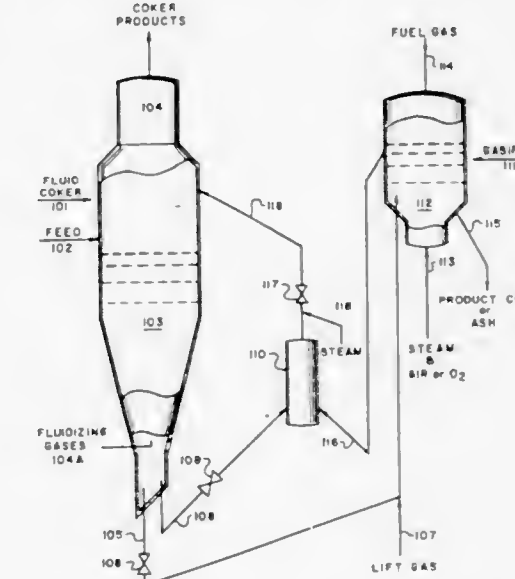
3,694,346

**INTEGRATED FLUID COKING/STEAM GASIFICATION PROCESS**

Don E. Blaser, Dover, and Gerard C. Lahn, Parsippany, N.J., assignors to Esso Research and Engineering Company  
Filed May 6, 1971, Ser. No. 140,702  
Int. Cl. C10g 9/32

U.S. Cl. 208—127

5 Claims



The mixing of hot gasifier coke and cold reactor coke in a dense phase riser to exchange heat to be used in the coking reactor not only eliminates the need for the separate heater vessel, as well as high temperature slide valves, in a conventional fluid coking/steam gasification process, but also results in additional coker hydrocarbon products.

3,694,347

**HYDROCARBON ISOMERIZATION PROCESS WITH A RHENIUM-TIN CATALYST**

Richard E. Rausch, Mundelein, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.  
No Drawing. Application July 2, 1969, Ser. No. 838,683, now Patent No. 3,557,022, dated Jan. 19, 1971, which is a continuation of application Ser. No. 825,084, May 15, 1969. Divided and this application Apr. 23, 1970, Ser. No. 31,402  
Int. Cl. C10g 35/06; C07c 5/30

U.S. Cl. 208—134

16 Claims

Isomerizable hydrocarbons are isomerized using a catalytic composite comprising a combination of a tin component and a rhenium component with a porous carrier material.

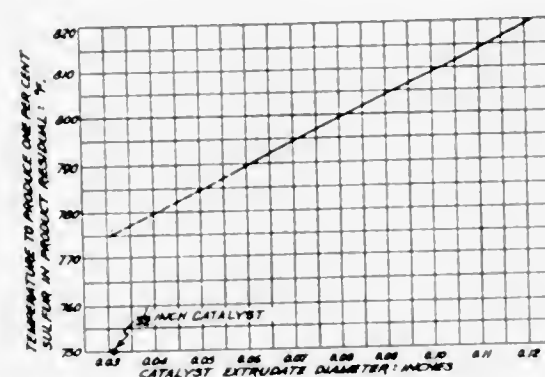


### 3,694,348 PROCESS FOR THE AROMATIZATION OF HYDROCARBONS

Natalia Robertovna Bursian, Moskovskoe shosse 6, kv. 143; Samson Borisovich Kogan, Vasilievsky ostrov, 10 linia 47, kv. 2; and Zinaida Arkadievna Davydova, Prospekt Obukhovskoi oborony 93, kv. 26, all of Leningrad, U.S.S.R.

No Drawing. Filed Sept. 15, 1969, Ser. No. 858,150  
Int. Cl. C10g 35/08

**8 Claims**  
Aromatization of hydrocarbons, such as straight-run gasoline fractions, is effected by passing the hydrocarbons at a temperature of 400–550° C. and a pressure of up to 20 atm. over a platinum alumina catalyst containing 0.1 to 5% by weight of palladium and 0.1 to 5% by weight of at least one element from the scandium subgroup of Group III or the zirconium subgroup of Group IV of the Periodic Table of Elements. A mixture of an element from the scandium sub group and of the zirconium subgroup is particularly effective, e.g. cerium and zirconium.



3,694,349

Patent Not Issued For This Number

### 3,694,350 HYDRODESULFURIZATION WITH A HYDROGEN TRANSFER CATALYST AND AN ALKALINE COMPOSITION

Arnold N. Wennerberg, Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 752,782, Aug. 15, 1968. This application Mar. 18, 1971, Ser. No. 125,797

Int. Cl. C10g 23/02, 23/04, 23/12  
U.S. Cl. 208—212 **17 Claims**

A process for hydrodesulfurizing hydrocarbons with hydrogen, a hydrogen transfer catalyst and an alkaline composition. The H<sub>2</sub>S formed in the reaction is removed by reacting it within the reaction zone with the alkaline composition to form a solid alkaline sulfide product. The alkaline composition may be an oxide, hydroxide, sulfide or carbonate of an alkali metal or an alkaline earth metal. Essentially complete desulfurization of heavy asphaltic hydrocarbons is achieved by this process wherein the resulting oil product consists of highly aromatic components of generally lower molecular weight.

### 3,694,351 CATALYTIC PROCESS INCLUDING CONTINUOUS CATALYST INJECTION WITHOUT CATALYST REMOVAL

Bradford C. White, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 6, 1970, Ser. No. 17,064

Int. Cl. C10g 23/02

U.S. Cl. 208—213 **5 Claims**

The hydrodesulfurization of a crude oil or a reduced crude containing the asphaltene fraction proceeds at unexpectedly low temperatures by utilizing a catalyst comprising a Group VI and Group VIII metal on alumina wherein the catalyst particles are very small and have a diameter between about 1/50 and 1/40 inches, and the feed is passed in downflow operation over a fixed bed of the catalyst. The low temperature advantage depends upon high hydrogen pressure and the process is pressure drop-limited rather than catalyst activity limited. The present invention presents a two pronged attack on pressure drop. First, plugging at the top of the catalyst bed and coincident increase in pressure drop is prevented by starting the reaction with only a portion of the total catalyst required for a full cycle and injecting fresh catalyst to the

top of the catalyst bed while the reaction is in progress without removing any catalyst from the process. Furthermore, disregarding plugging, pressure drop due to the small particle size of the catalyst is retarded since the total catalyst load is not introduced until the catalyst cycle is near an end. In this manner, the smallest amount of catalyst is present when the catalyst is most active and

the greatest amount of catalyst is not present until the catalyst is least active. This invention can be applied to other fixed bed processes wherein fouling at the top of the bed or pressure drop represents a process limitation and wherein freshly injected catalyst can perform as a filtering medium in addition to performing a catalytic function.

### 3,694,352 SLURRY HYDROREFINING OF BLACK OILS WITH MIXED VANADIUM AND MANGANESE SULFIDES

William T. Gleim, Island Lake, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Feb. 24, 1970, Ser. No. 13,837

Int. Cl. C10g 23/02

**3 Claims**  
A catalytic slurry process for hydrorefining a hydrocarbonaceous charge stock containing hydrocarbon-insoluble asphaltene. The process is effected in slurry fashion with the charge stock being admixed with vanadium and manganese components. The slurry is reacted at conditions including a temperature above about 225° C. and a pressure greater than about 500 p.s.i.g., and in the presence of hydrogen containing from 1.0 mol percent to about 20.0 mol percent hydrogen sulfide. A preferred technique involves dissolving organic complexes of vanadium and manganese in the charge stock, whereby the catalytic vanadium and manganese sulfides are produced in situ at the foregoing operating conditions.

### 3,694,353 EXTENDED AERATION WASTEWATER TREATMENT

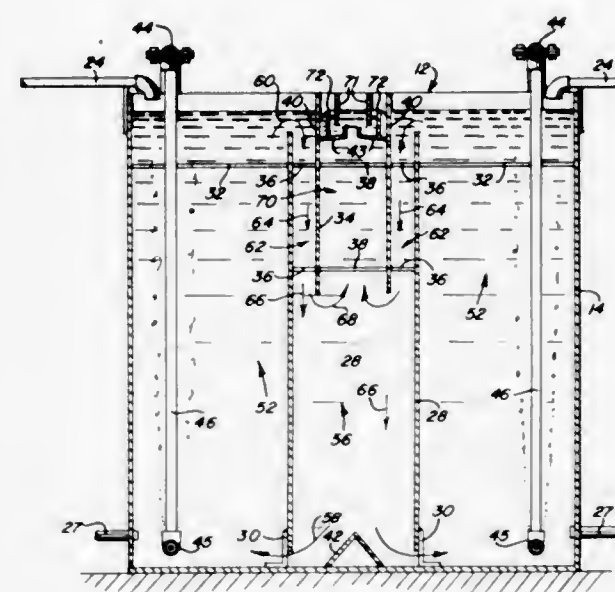
Jen T. Yang and Robert Waller, Columbia, and Charles W. Mallory, Severna Park, Md., assignors to Hittman Associates, Inc., Columbia, Md.

Continuation-in-part of application Ser. No. 98,843, Dec. 16, 1970. This application Nov. 3, 1971, Ser. No. 195,389

Int. Cl. C02c 1/12

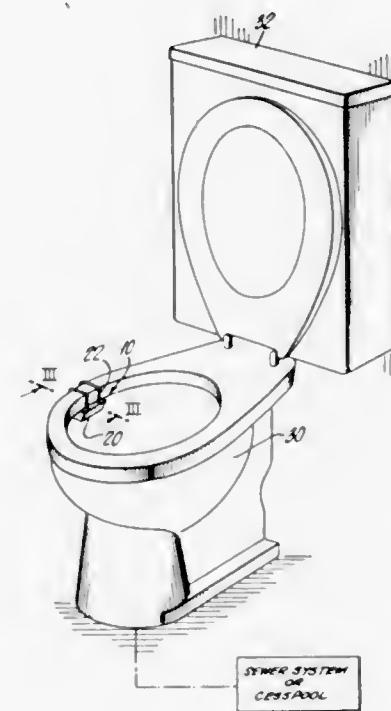
**28 Claims**  
An improved extended aeration process is carried out in a single tank. Wastes are aerated for periods ranging from 12 to 24 hours and are circulated in the tank in a controlled manner to avoid settling and compaction. The concentration of mixed liquor is maintained by the selective removal of clarified effluent. In this manner, the necessity for providing quiescent zones for the settling

of solids and for returning compacted sludge to the aeration process is eliminated. The inventive apparatus is of modular construction, avoids the problems associated



with sludge compaction and in the preferred form is capable of being fabricated from planer elements either as a complete unit or internals for installation in other types of tankage.

**3,694,354  
METHOD FOR TREATING SEWAGE**  
Albert C. Nolte, Jr., Oyster Bay Cove, N.Y., assignor to Elton Industries Corporation, Jericho, N.Y.  
Original application May 15, 1969, Ser. No. 824,999, now Patent No. 3,604,021. Divided and this application Apr. 6, 1971, Ser. No. 131,785  
Int. Cl. C02c 1/02  
U.S. Cl. 210—18 **4 Claims**

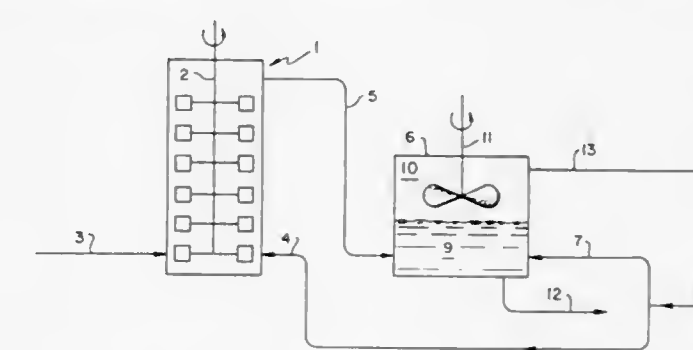


A tablet for use in a toilet, urinal or the like which has an ingredient a substance for increasing the decomposition rate of the waste material in a cesspool sewage system or the like.

**3,694,355  
PROCESS FOR THE REMOVAL OF SOLID  
PARTICLES FROM AQUEOUS SUSPENSIONS**  
Pieter Visser, Amsterdam, and Leonard W. Ter Haar, The Hague, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Sept. 16, 1970, Ser. No. 72,741  
Claims priority, application Netherlands, Oct. 14, 1969, 6915491

Int. Cl. B01d 11/02  
U.S. Cl. 210—21 **4 Claims**



Solid particles such as soot are removed from aqueous suspensions by a two step process, the first step being to agglomerate the particles by contacting them with gentle agitation with a water-immiscible liquid, and then to contact the agglomerate-containing aqueous phase with a continuous phase that is water immiscible under conditions such that the agglomerates enter the non-aqueous phase.

**3,694,356  
ABATEMENT OF WATER POLLUTION**  
Johannes M. A. Vander Horst, Olean, N.Y., assignor to the United States of America  
No Drawing. Filed Mar. 17, 1971, Ser. No. 95,899  
Int. Cl. C02b 1/20 **4 Claims**

A process for the purification of effluent from sewage treatment combined with the simultaneous purification of acidic mine drainage by combining the two streams in suitable proportions so as to precipitate water insoluble iron phosphates.

**3,694,357  
LUBRICATING OIL**  
Edward F. Zaweski, Pleasant Ridge, Mich., assignor to Ethyl Corporation, New York, N.Y.  
No Drawing. Filed Apr. 19, 1971, Ser. No. 135,418  
Int. Cl. C10m 1/38 **5 Claims**

Reaction of hydrogen sulfide with the hemi-quinone of a methylene bisphenol results in a tetranuclear phenol in which two molecules of the methylene bisphenol are bridged at their methylene groups through a sulfur atom. These are thiodimethyldiene tetrakisphenols. The compounds are useful as antioxidants in synthetic and mineral lubricating oil.

**3,694,358  
HYDROCARBON OR SILICONE LUBRICATING OIL  
CONTAINING DIHALOGENOETHYL SUBSTITUTED  
ORGANOSILICON COMPOUNDS**  
Edgar D. Brown, Jr., Schenectady, N.Y., assignor to General Electric Company  
No Drawing. Original application Sept. 11, 1967, Ser. No. 666,946, now Patent No. 3,555,062, dated Dec. 22, 1970. Divided and this application May 11, 1970, Ser. No. 48,717  
Int. Cl. C10m 1/50 **4 Claims**

Mixtures of dihalogenoethyl-substituted organosilicon compositions have been prepared by adding either IBR or



ICI to vinyl-substituted silanes and siloxanes. Lubricating compositions of extreme pressure and high temperature characteristics are prepared by adding the mixtures to oils of lubricating viscosity. The lubricating compositions are especially useful for lubricating high temperature alloys.

3,694,359

**DRY ELECTROSCOPIC TONER COMPOSITIONS**  
Stewart H. Merrill and James R. Olson, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.  
No Drawing. Filed May 4, 1970, Ser. No. 34,557  
Int. Cl. G03g 9/02

U.S. Cl. 252—62.1 13 Claims  
A particulate, electroscopic dry toner composition for use in developing electrostatic charge patterns is prepared from a carbonate polymer having a first recurring unit containing an alkylidenediarylene moiety, a sulfonyl diarylene moiety or an oxydiarylene moiety and a second recurring unit containing an alkylene moiety.

3,694,360

**FERRIMAGNETIC GLASS-CERAMICS**

Edward A. Weaver, Toledo, Ohio, assignor to Owens-Illinois, Inc.

No Drawing. Filed Aug. 12, 1971, Ser. No. 171,345  
Int. Cl. C04b 35/26; C03c 3/04

U.S. Cl. 252—62.59 12 Claims  
Ferrimagnetic glass-ceramics prepared from thermally and spontaneously crystallizable compositions based on a simple ternary glass system  $\text{Fe}_2\text{O}_3\text{-Li}_2\text{O-SiO}_2$ , wherein the predominant crystalline phase is lithium ferrite ( $\text{LiFe}_2\text{O}_4$ ). The addition of minor amounts of modifiers or nucleants, such as  $\text{ZnO}$ , to the basic ternary composition of this invention provides a greater degree of control over the crystallization of the thermally crystallizable compositions and further enhances the development and growth of ferrite crystals and the magnetic properties of the ferrites. The glass-ceramics prepared from the simple glass systems and by the methods of this invention have magnetic properties which make them useful in the manufacture of computer memory cores, radio coils, pulse transformers and other assorted electronic devices which are designed to operate at microwave frequencies.

3,694,361

**LITHIUM TITANIUM BISMUTH COBALT FERRITES**

Jan Smit, Palos Verdes, Paul David Baba, San Carlos, and Giltan Michael Argentina, Belmont, Calif., assignors to Ampex Corporation, Redwood City, Calif.  
Filed Sept. 7, 1971, Ser. No. 178,057  
Int. Cl. C04b 35/26

U.S. Cl. 252—62.59 3 Claims  
Microwave ferrites with high power handling capability, narrow resonance linewidths, good temperature performance, low losses, low costs, and rectangular hysteresis loops are made from a lithium-titanium-bismuth ferrite containing a small amount of cobalt. In addition, small amounts of zinc or manganese can be present in the ferrites.

3,694,362

**AZEOTROPIC COMPOSITION**

Joseph A. Floria, Pennsville, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Filed July 2, 1970, Ser. No. 52,119  
Int. Cl. C09k 3/02

U.S. Cl. 252—67 2 Claims  
An azeotropic composition, useful in the distillative separation of mixtures of dichlorodifluoromethane and chlorine, for extracting heat from articles and for reducing microorganism populations of articles, especially foods, consisting of, on a weight basis, 27 to 37% dichlo-

rodifluoromethane and 73 to 63% chlorine and having a boiling point of  $-37.6$  to  $-37.5^\circ\text{C}$ . at 754 mm. Hg pressure.

3,694,363

**HYDRAULIC OIL COMPOSITION**

John Q. Griffith III, and Edward S. Williams, Claymont, Del., and William H. Reiland, Jr., West Chester, Pa., assignors to Sun Oil Company, Philadelphia, Pa.  
No Drawing. Filed May 5, 1970, Ser. No. 34,899  
Int. Cl. C09k 3/00

U.S. Cl. 252—72 11 Claims  
An improved anti-leak hydraulic oil of the gel-thickened type comprises an effective amount of a lithium soap (e.g. 0.1–1% Li stearate) or an aluminum soap (e.g. 0.5–2% Al stearate), or mixtures of such soaps, and a base oil having a viscosity in the range of 80–800 SUS at  $100^\circ\text{F}$ . and an aniline point in the range of 150–170 $^\circ\text{F}$ ., said base oil comprising at least one hydrorefined naphthenic oil having a viscosity in the range of 40–12,000 SUS at  $100^\circ\text{F}$ . The hydraulic oil can also contain an anti-rust agent (e.g. 0.02–2%) barium petroleum sulfonate, an anti-oxidant (e.g. an amine type) and an anti-wear (e.g. 0.1–5% zinc dialkyl dithiophosphate).

3,694,364

**LAUNDERING AID**

James B. Edwards, Cincinnati, Ohio, assignor to The Procter & Gable Company, Cincinnati, Ohio  
No Drawing. Filed Dec. 28, 1970, Ser. No. 102,200  
Int. Cl. C11d 17/04

U.S. Cl. 252—90 11 Claims  
A laundering aid comprising an amine-coated modified cellulosic substrate in combination with a detergent, said aid providing a means of introducing a detergent into a washing solution and at the same time serving to adsorb dirt and vagrant anionic dyes from the aqueous media, thereby providing an improved laundering process.

3,694,365

**COMPOSITIONS FOR CLEANING AND STERILIZING MILK EQUIPMENT**

Charles S. Castner, Reading, Pa., assignor to Schuyler Development Corporation  
No Drawing. Filed Dec. 21, 1970, Ser. No. 100,537  
Int. Cl. C11d 3/04, 3/48

U.S. Cl. 252—106 4 Claims  
A composition is provided for cleaning and sterilizing milk equipment and the like. The composition is a concentrate for dilution in water and consists of:

	Percent
Isopropanol	20–30
Hexylene glycol	10–15
Ethylene glycol monomethyl ether	5–10
Ammonium chloride	2–5
Disodium tetraborate	3–7
Isooctylphenoxy polyethoxyethanol	2–7
Diethylene glycol monoethyl ether	1–4
Alkali metal hydroxide	1–2
Ammonia	2–5
$\text{C}_8\text{--C}_{15}$ alkyl tolylmethyl trimethyl ammonium chloride	11–22
Eethylene diamine tetra acetate	0.25–1
Water	Balance

3,694,366

**DETERGENT SOLUTIONS**

Colin Harris, Alderley Edge, and Eric Richard Meacham, Sale, England, assignors to Hough, Hoseason & Company Limited, Levenshulme, Manchester, England  
No Drawing. Filed Dec. 28, 1970, Ser. No. 102,119  
Int. Cl. C11d 3/48, 3/26

U.S. Cl. 252—106 4 Claims  
The disinfecting activity of chlorhexidine or derivatives thereof when used in a detergent solution containing a

betaine is maintained by adding urea or a derivative thereof to the detergent/disinfectant solution.

3,694,367

**SUPERFATTED SOAP**

Alfred Peters, Francisco Petrarca 133, Mexico City 5, Mexico, and Salvador Morelos, Calle Cuauhtemoc 57, Atzacotalco, Mexico City 16, Mexico  
No Drawing. Continuation-in-part of application Ser. No. 746,243, July 22, 1968. This application Apr. 23, 1971, Ser. No. 137,073  
Int. Cl. C11d 9/46, 9/48, 11/04

U.S. Cl. 252—121 5 Claims  
New superfatted detergent products and processes for making them are provided. A neutral soap in fluid state is mixed with a detergent-type sulfonic acid to liberate fatty acids in suitable proportion to impart desired superfatting properties to the product, neutralizing at the same time the sulfonic acid, and working up the mixture into finished products such as powder, granules, flakes, ribbons, and preferably milled toilet bars, comprise fatty acid salts of a suitable cation, usually sodium, free fatty acids in suitable proportions to impart the desired superfatting properties to the finished product and a detergent-type sulfonate in the intimate relationship characteristic of in situ formation of the sulfonate by reaction of the sulfonic acid with neutral soap in fluid state. Further novelty of the product and its characteristics are attributable to the difference in the distribution of free fatty acids produced in situ vis-a-vis the distribution of the fatty acids in the neutral soap.

3,694,368

**TERNARY AZEOTROPIC COMPOSITIONS**

Oliver A. Barton, Florham Park, N.J., and Kevin Murphy, Orchard Park, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.  
No Drawing. Filed Feb. 26, 1971, Ser. No. 119,372  
Int. Cl. C11d 3/44

U.S. Cl. 252—171 4 Claims  
Certain ternary mixtures of tetrachlorodifluoroethane (sym., asym., and mixtures thereof) isopropanol and nitromethane are useful as solvents to remove rosin fluxes from printed circuit boards containing the same. These mixtures are useful not only because of their high solvency characteristics but also because they exhibit essentially the constant boiling characteristics of a ternary azeotrope which is formed between these components, thereby facilitating handling and purification of the solvent mixtures without significantly altering their compositions. The ternary mixtures disclosed herein exhibit substantially higher solvency characteristics for rosin fluxes than the pure solvents, tetrachlorodifluoroethane, isopropanol or nitromethane.

3,694,369

**SELECTIVE ION EXCHANGE FOR THE ISOLATION OF CERTAIN ALKALINE EARTHS**

Kent A. Orlandini, West Chicago, Ill., assignor to the United States of America as represented by the United States Atomic Energy Commission  
No Drawing. Filed May 11, 1971, Ser. No. 142,361  
Int. Cl. G21c 19/46

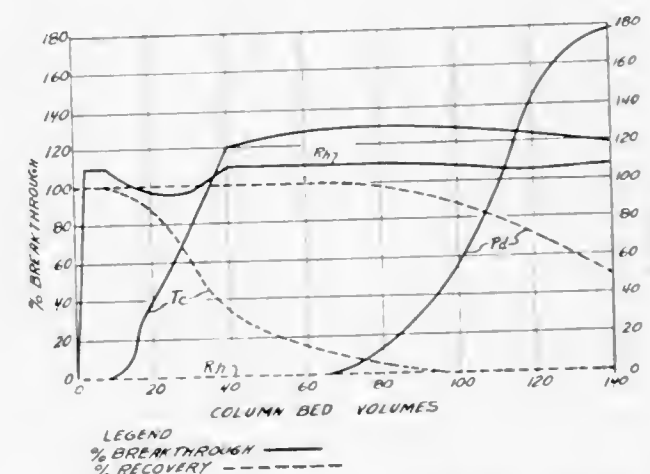
U.S. Cl. 252—301.1 R 9 Claims  
A process for the separation of strontium and barium from other metal values wherein the strontium, barium and other metal values are dissolved in a solvent solution of water, pyridine, acetic acid and glycolic acid and the resulting solution is contacted with a cation exchange resin whereby only the strontium and barium are adsorbed on the resin. Following washing of the resin, the strontium and barium are subsequently eluted therefrom.

3,694,370

**PROCESS FOR PALLADIUM RECOVERY**

John V. Panesko, Richland, Wash., assignor to the United States of America as represented by the United States Atomic Energy Commission  
Filed June 21, 1971, Ser. No. 155,013  
Int. Cl. G21c 19/42

U.S. Cl. 252—301.1 R 6 Claims



Palladium values are recovered from alkaline Purex supernatant waste feed solutions containing palladium, rhodium and technetium values by passing the solution through a bed of activated charcoal which selectively sorbs the palladium while permitting the other values to pass through the bed. The palladium values are recovered by elution with water and then with ammonium hydroxide.

3,694,371

**HOMOGENEOUS PRECIPITATION OF ALKALINE-EARTH METAL HALOPHOSPHATE PHOSPHORS**

Armand J. Panson and Roswell J. Ruka, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.  
No Drawing. Filed Jan. 26, 1971, Ser. No. 109,988  
Int. Cl. C09k 1/26

U.S. Cl. 252—301.4 P 5 Claims  
A method of preparing alkaline-earth metal halophosphate phosphor is detailed. The method comprises first homogeneously precipitating the apatite-structured activator-doped alkaline-earth metal and halogen containing phosphate, and then heating this precipitate to optimize its luminescence. The homogeneous precipitation is effected by incorporating the alkaline-earth metal into solution as an alkaline-earth metal complex which is readily dissociated upon heating, and by heating the resulting solution to dissociate the complex and effect formation of the precipitate.

3,694,372

**MINUTE CAPSULES AND THEIR MANUFACTURE, EN MASSE**

Jerrold L. Anderson and Robert C. Haines, Jr., Dayton, and Thomas C. Powell, West Alexandria, Ohio, assignors to The National Cash Register Company, Dayton, Ohio  
No Drawing. Filed Dec. 8, 1970, Ser. No. 96,233  
Int. Cl. B01j 13/02; B44d 1/02

U.S. Cl. 252—316 9 Claims  
A method is disclosed for preparing, en masse, in a liquid manufacturing vehicle, minute capsules having walls of polymeric materials such as ethyl cellulose and particles of core material such as urea and sodium chloride. Development of the process included the discovery that the particle size of the encapsulated material decreases as the concentration of wall material is increased. Additionally, increasing the concentration of core material also controls the particle size of the capsule. The produced capsule is a unit with a high intra surface area to volume ratio.



3,694,373

**PRODUCTION OF REDUCING GAS**

Warren G. Schlenger, Pasadena, and William L. Slater, La Habra, Calif., and Roger M. Dille, Richmond, Va., assignors to Texaco Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 879,926, Nov. 25, 1969, which is a continuation-in-part of application Ser. No. 732,908, May 29, 1968, now Patent No. 3,528,930, which is a continuation-in-part of application Ser. No. 510,038, Nov. 26, 1965, which in turn is a continuation-in-part of application Ser. No. 285,868, June 6, 1963. This application Apr. 19, 1971, Ser. No. 135,359

Int. Cl. C01b 2/14

U.S. Cl. 252—373

6 Claims

A gas having a reducing ratio (mols of  $\text{CO} + \text{H}_2$  to mols of  $\text{CO}_2 + \text{H}_2\text{O}$ ) of at least 10 is produced by partial combustion of a hydrocarbon oil with oxygen of at least 95% purity, the oil being introduced as a liquid mixture with water into the reaction zone. Temperature in the reaction zone is maintained below about 3000° F. and the product gas contains as free carbon not more than 2 weight percent of the carbon content of the feed.

3,694,374

**ANTIOXIDANT MIXTURE OF AN AMINEBORATE AND A KETONEPHENOL OR ALDEHYDEPHENOL**

Allen K. Sparks, 30 Algonquin Road, Des Plaines, Ill. 60016, and James J. Louvar, 534 Hinman, Evanston, Ill. 60202

No Drawing. Filed May 11, 1970, Ser. No. 36,494

Int. Cl. B01j 1/16

U.S. Cl. 252—400

15 Claims

Synergistic mixture of (1) borate of N,N-dihydrocarbyl-alkanolamine or borate of polyalkyl- or polycycloalkylpolyhydroxyalkyl-alkylenepolyamine and (2) reaction product of a phenol and ketone or aldehyde. In one embodiment the mixture is particularly useful in the stabilization of plastics and resins.

3,694,375

**THIODIALKANOAMIDOPHENOL ANTIOXIDANTS**

Martin Knell, 4 Possum Road, Ossining, N.Y. 10562, and Martin Dexter, 416 Cedar Drive, Briarcliff Manor, N.Y. 10510

No Drawing. Original application Mar. 25, 1969, Ser. No. 810,352. Divided and this application Dec. 21, 1970, Ser. No. 100,497

Int. Cl. C07c 103/38; B01j 1/16

U.S. Cl. 252—402

5 Claims

Novel thiodialkanoamidophenol compounds are provided by a procedure involving the reaction of an alkyl-aminophenol and a thiodialkanoyl chloride. The thiodialkanoamidophenol products are useful as stabilizers of organic materials which are subject to oxidate deterioration.

3,694,376

**OXIDATION-REDUCTION REGENERATION OF NOBLE METAL CATALYSTS USED IN HYDROGEN PEROXIDE PRODUCTION**

Gerhard E. Kabisch, 13 Schillerstrasse, Rheinfelden, Germany, and Siegfried H. Raupach, 24 Talstrasse, Beuggen, Germany

Filed July 13, 1970, Ser. No. 54,237

Claims priority, application Germany, July 12, 1969, P 19 35 478.0

Int. Cl. B01j 11/18

U.S. Cl. 252—413

9 Claims

Palladium alone, or mixed with other metals of the platinum group on a silica containing carrier used in the hydrogenation step of the anthraquinone process for producing hydrogen peroxide is regenerated by an oxidation treatment at a pH below 7 followed by a reduction treatment at a temperature below 200° C., preferably below 150° C.

3,694,377

**BUTYL RUBBER CATALYST SYSTEM**

Joseph P. Kennedy, Akron, Ohio, and Francis P. Baldwin, Summit, N.J., assignors to Esso Research and Engineering Company

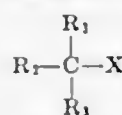
No Drawing. Continuation-in-part of application Ser. No. 712,605, Mar. 13, 1968, now Patent No. 3,560,458. This application Dec. 2, 1970, Ser. No. 94,537

Int. Cl. C08d 3/02

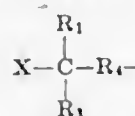
U.S. Cl. 252—431 R

10 Claims

A catalyst system for preparing homopolymers and copolymers of cationically polymerizable monomers wherein the catalyst system comprises an organic halide promoter and a cationic catalyst of the type  $\text{Al}(\text{M})_2\text{R}$ , where M is a branched or straight-chain  $\text{C}_1$  to  $\text{C}_{12}$  alkyl and R is M, hydrogen or halogen. The organic halide may be represented by the general formula



wherein X is a halogen,  $\text{R}_1$  is selected from the group consisting of hydrogen,  $\text{C}_1$  to  $\text{C}_8$  alkyl, phenyl and  $\text{C}_2$  to  $\text{C}_8$  alkenyl,  $\text{R}_2$  is selected from the group consisting of hydrogen,  $\text{C}_1$  to  $\text{C}_8$  alkyl, phenyl,  $\text{C}_2$  to  $\text{C}_8$  alkenyl and phenylalkyl and  $\text{R}_3$  is selected from the group consisting of  $\text{C}_2$  to  $\text{C}_8$  alkyl,  $\text{C}_2$  to  $\text{C}_8$  alkenyl, phenyl, phenylalkyl, alkylphenyl,  $\text{C}_3$  to  $\text{C}_{10}$  cycloalkyl and



wherein  $\text{R}_1$ ,  $\text{R}_3$  and X are as defined above and  $\text{R}_4$  is selected from the group consisting of phenylene, biphenyl,  $\alpha,\omega$ -diphenylalkane and  $-(\text{CH}_2)_n-$ , wherein n is an integer of from 1 to 10.

3,694,378

**PROCESS FOR THE PREPARATION OF CATALYSTS CONTAINING CRYSTALLINE ALUMINOSILICATE ZEOLITES**

Johannes Ebreli, Boomweijdt 15, Heiloo, Netherlands

No Drawing. Filed Mar. 27, 1970, Ser. No. 23,474

Claims priority, application Netherlands, Mar. 31, 1969, 6904913

Int. Cl. B01j 11/36, 11/40

U.S. Cl. 252—451

9 Claims

In the preparation of catalysts containing crystalline aluminosilicate zeolites, a zeolite is introduced into a silicon dioxide sol and/or gel, and/or into a separately prepared co-gel of silicon dioxide and an oxide of at least one metal from Groups III-A and IV-A of the periodic table, such as aluminum oxide, and the co-gel, which may be wet or dried, is mixed with the silicon dioxide sol and/or gel prior to the drying of the latter, whereupon the resulting composition is gelled, if not already fully gelled, and then dried and activated.

3,694,379

**CATALYST FOR CATALYTIC CRACKING OR STEAM REFORMING OF HYDROCARBONS AND PROCESS FOR PRODUCING THE CATALYST**

Goro Yamaguchi, 1554 Tsuda-machi, Kodaria-shi, Tokyo, Japan; and Susumu Komatsu, 1099 Uraimbe; Kazuhiro Yoshizaki, 98 Uraimbe; and Tetsuo Fukumoto, 783 Uraimbe, all of Bizen-cho, Wake-gun, Okayama-ken, Japan

Filed Apr. 1, 1970, Ser. No. 24,543

Claims priority, application Japan, Aug. 28, 1969, 44/67,562

Int. Cl. B01j 11/06, 11/40

U.S. Cl. 252—455 R

8 Claims

A catalyst for catalytic cracking or steam reforming of hydrocarbons and the process for producing the same, in

which said catalyst being of alkali polyaluminates, or 2% or more of alkali polyaluminates supported on refractory carrier, or the above-mentioned catalysts which are added with 0.5% or more of chrome or a metal selected from Group VIII of the Periodic Table, or a mixture thereof.

3,694,380

Patent Not Issued For This Number

3,694,381

Patent Not Issued For This Number

3,694,382

**ESTER LUBRICANT**

Joseph P. Kleiman and Robert E. Malec, Birmingham, and Larry Lonsker, Bloomfield Hills, Mich., assignors to Ethyl Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 840,835, July 10, 1969. This application May 28, 1971, Ser. No. 148,177

Int. Cl. C10m 1/26

U.S. Cl. 252—56 S

9 Claims

A blend of (a) about 1.5–2.5 parts of a trimethylolpropane ester of a mixture of aliphatic monocarboxylic acids containing from 4–12 carbon atoms with (b) about 0.75–2 parts of a dipentaerythritol ester of a mixture of aliphatic monocarboxylic acids containing 4–10 carbon atoms gives an ester blend useful as a synthetic lubricant, especially in turbines and turbojet engines.

3,694,383

**PROCESS FOR THE PRODUCTION OF LIGHT-SENSITIVE POLYMER**

Kyoichiro Azami, Ichikawa, Hiroshi Ohotani, Adachi-machi, and Hiroshi Fukutomi, Urawa, Japan, assignors to Dainippon Ink and Chemicals, Incorporated, Tokyo, Japan

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,196

Int. Cl. C08g 33/00, 33/02

U.S. Cl. 260—2 XA

13 Claims

A process for the production of a light-sensitive polymer which comprises substituting a light-sensitive group for the halogen atom of a polybishalomethyloxetane.

3,694,384

**REDOX POLYMERS**

Arnold Factor, Scotia, and George E. Heinsohn, Ithaca, N.Y., assignors to General Electric Company

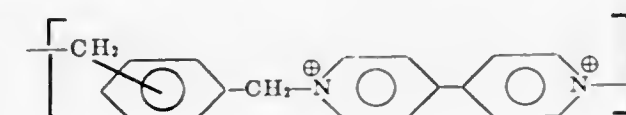
No Drawing. Filed Jan. 11, 1971, Ser. No. 105,642

Int. Cl. C08g 33/06

U.S. Cl. 260—2.2 R

11 Claims

Redox polymers, which, in the oxidized cationic form, contain repeating units of the formula:



are readily reduced, either chemically or electrically, and change color from colorless to intense blue-violet. The reduced form is readily oxidized with oxygen in air or dissolved in solution so that it is useful for deoxygenating gases or liquids with the color change being a self-indicator of the redox state of the polymer. These compositions can be made so that they are soluble or insoluble in aqueous media and form polyelectrolyte complexes with cation exchange resins.

3,694,385

**PROCESS FOR OPEN-CELL RIGID POLYURETHANE FOAMS**

Ival O. Salyer, Dayton, and Robert T. Jefferson, West Carrollton, Ohio, assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Continuation-in-part of application Ser. No. 663,489, Aug. 28, 1967. This application Feb. 19, 1970, Ser. No. 12,834

The portion of the term of the patent subsequent to Jan. 26, 1987, has been disclaimed

Int. Cl. C08g 41/04

U.S. Cl. 260—2.5 A

7 Claims

Open-cell rigid polyurethane foams are prepared from polyether polyols using, as a pneumatogen, cyclopentane-acetone mixtures with water and, as a nucleating agent, finely divided polyethylene particles.

3,694,386

**POLYURETHANE FOAMS PREPARED FROM 2,4-BIS(4-ISOCYANATOCYCLOHEXYLMETHYL)-CYCLOHEXYL ISOCYANATE**

Guenther Kurt Hoeschele, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 741,847, July 2, 1968. This application Sept. 17, 1970, Ser. No. 73,234

Int. Cl. C08g 22/44, 22/24, 22/28

U.S. Cl. 260—2.5 AT

11 Claims

Polyurethanes prepared by reacting the triisocyanate, 2,4-bis(4-isocyanatocyclohexylmethyl)cyclohexyl isocyanate, with at least one active-hydrogen containing compound. The polyurethanes include coatings, foams, adhesives and elastomers. The coatings dry rapidly to a tack-free state and are particularly resistant to weather exposure. The foams generally have improved compression set compared with foams prepared from conventional polyisocyanates. Overall, the polyurethane formulations of this invention exhibit particularly convenient pot lives.

3,694,387

**PHENOLIC RESIN FOAMS**

Hans Junger, Troisdorf, and Franz Weissenfels, Siegburg, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Filed Nov. 17, 1971, Ser. No. 199,771

Claims priority, application Germany, Nov. 28, 1970, P 20 58 663.4

Int. Cl. C08j 1/26

U.S. Cl. 260—2.5 F

9 Claims

A resol-based phenolic resin foam having an improved resistance to heat and fire, having a density of about 20



to 200 kg./m.<sup>3</sup>, a shrinkage of about 0.1 to 2.8% and the absence of any tendency to fissure upon exposure for 30 minutes to a temperature of 450° C. in a muffle furnace, the shrinkage and fissuring tests being made on foam slabs having the dimensions 250 mm. x 130 mm. x 30 mm. The foam is produced by including in a liquid phenol-resol resin having a solid resin content of about 60 to 85% by weight about 2 to 30% by weight based on the resin, of a normally hydrocarbon liquid. Boric acid may also be included in the mix which also contains an acid hardening agent and a gas foaming agent which releases a gas or is a low-boiling organic solvent.

3,694,388

## ACRYLIC POLYMERS

William Connelly, Leonard Sydenham, and John Szilagyi, Toronto, Ontario, Canada, assignors to Canadian Industries Limited, Montreal, Quebec, Canada

No Drawing. Filed July 2, 1970, Ser. No. 52,063

Int. Cl. C08f 27/12

U.S. Cl. 260—23 EP

5 Claims

An acrylic polymeric material consisting of the reaction product of (1) a copolymer of essentially methyl methacrylate and glycidyl acrylate or methacrylate and an aliphatic monocarboxylic acid selected from lauric acid, 4-amino-butyric acid, 11-amino-undecanoic acid, pyruvic acid and dimethoxy-phenylacetic acid.

3,694,389

## THERMOSETTING COATINGS BASED ON OXIME-BLOCKED ISOCYANATES

Jerome F. Levy, Dresher, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Aug. 6, 1970, Ser. No. 61,792

Int. Cl. C08g 22/06

U.S. Cl. 260—23 TN

11 Claims

Thermosetting coating compositions which comprise an oxime-blocked polyisocyanate and a solution copolymer of an active hydrogen-containing monoethylenically unsaturated compound. The curing of these compositions is most effectively catalyzed by an organosoluble zinc salt.

3,694,390

## EPOXIDIZED POLYAMIDE RESIN FORMING STABLE AQUEOUS SOLUTIONS OF HIGH CONCENTRATION

Alfred Edwards Winslow, 60 Main St., Unadilla, Otsego, N.Y. 13849

No Drawing. Original application Apr. 25, 1969, Ser. No. 819,493. Divided and this application Mar. 30, 1970, Ser. No. 29,323

Int. Cl. C08g 20/38

U.S. Cl. 260—29.1 R

12 Claims

This invention relates to a curable low molecular weight cationic epoxidized polyamide, stably dispersible in water at high concentration and low viscosity and in particular to a method of preparing said polyamide comprising reacting a cyclic polycarboxylic acid first with from about 1.8 to about 4.0 molar equivalents of a polyalkylene poly-

amine and then with between about 3.5 and about 16 molar equivalents of an epoxy compound. The invention relates also to a starch dispersion comprising minor quantities of said epoxidized polyamide and to a method of improving the dry strength of paper by incorporating said starch dispersion in the fibrous pulp or web.

3,694,391

Patent Not Issued For This Number

3,694,392

## COATING COMPOSITIONS CONTAINING FLUOROCARBON POLYMER AND LITHIUM POLYSILICATE

Ervin R. Werner, Jr., Levittown, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 778,828, Nov. 25, 1968. This application Dec. 22, 1970, Ser. No. 100,766

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 F

14 Claims

A composition for priming a surface to improve the adhesion of a fluorocarbon polymer topcoat. The composition contains about 10–75% of lithium polysilicate, 25–90% of a fluorocarbon polymer, and a liquid carrier.

3,694,393

## METHOD OF PRODUCING PAPER, AND PAPER OBTAINED

Sheldon N. Lewis, Willow Grove, Richard F. Merritt, Fort Washington, and William D. Emmons, Huntingdon Valley, Pa., assignors to Rohm and Haas Co., Philadelphia, Pa.

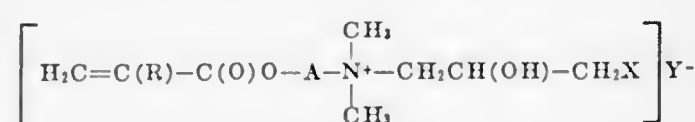
No Drawing. Original application Apr. 4, 1969, Ser. No. 813,724. Divided and this application Sept. 13, 1971, Ser. No. 180,154

Int. Cl. C08f 3/64, 3/66, 15/26

U.S. Cl. 260—29.6

9 Claims

This invention is concerned with the making of paper, including paperboard, which is sized and/or has improved wet strength. For example, there is added to a paper pulp, such as in the beater, a monomer of the formula



wherein X is a chlorine atom,  
R is H or CH<sub>3</sub>,  
A is an alkylene group and  
Y is an anion

or a polymer of such monomer, at a pH of 3 to 10, optionally with an additional aqueous polymer dispersion.

3,694,394

## COATING COMPOSITIONS

Maurice Freeman, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Apr. 4, 1969, Ser. No. 813,738

Claims priority, application Great Britain, Apr. 16, 1968, 17,894/68

Int. Cl. C08d 7/00; C08f 15/40, 37/18

U.S. Cl. 260—29.7 W

8 Claims

Aqueous coating compositions comprising blends of latices, one insoluble in aqueous alkali and the other substantially swellable in said alkali.

3,694,395

## SECONDARY ALKYL ARYL PHOSPHITES

Peter James Stratford Bain, 12 Maesmawr Road, and Ernest Bryson McCall, Penrhos, Dinbren Road, both of Llangollen, Wales

No Drawing. Filed Dec. 15, 1969, Ser. No. 885,259

Claims priority, application Great Britain, June 5, 1969, 28,472/69

Int. Cl. C08d 7/10

U.S. Cl. 260—29.7 P

9 Claims

Novel aryl phosphites with secondary alkyl groups in the benzene ring are disclosed. The phosphites are stabilizers for synthetic rubber and are particularly suited for latex applications. The new stabilizers are low viscosity liquids having excellent hydrolytic stability.

3,694,396

## METHOD FOR PRODUCING A POLYURETHANE SOLUTION

Yasuji Nakahara, Kiyoshi Ichikawa, and Kunio Kondo, Fujishi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Dec. 29, 1970, Ser. No. 102,502

Int. Cl. C08g 22/04

U.S. Cl. 260—30.8 DS

13 Claims

A polyurethane solution suitable for producing polyurethane elastic yarns, films, elastomers, foams or the like having superior, light-fastness and laundry fastness is produced by adding a solution of a prepolymer into a solution of an organic diamine and a pyridine-carboxylic acid hydrazide derivative to cause the reaction between the foregoing reactants. Said prepolymer contains remaining NCO radical and is obtained by reacting (1) a polymer having bifunctional group, terminal active hydrogen at both the ends and a molecular weight of 500–5,000 and (2) an organic diisocyanate.

3,694,397

## HEXACHLOROCYCLOPENTADIENE ADDUCTS OF UNSATURATED AMIDES

Robert R. Mod, Frank C. Magne, and Evald L. Skau, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Nov. 21, 1969, Ser. No. 878,922. Divided and this application Dec. 16, 1971, Ser. No. 208,945

Int. Cl. C08f 45/44

U.S. Cl. 260—32.6 R

1 Claim

A plastic composition comprising a major portion of vinyl chloride-vinyl acetate copolymer resin, the vinyl chloride being in predominant proportion by weight, and

a plasticizer therefor which plasticizer is N,N-dibutyl-8-(1,4,5,6,7-hexachloro-3-octylbicyclo [2.2.1]-5-heptene-2-yl) octanamide.

3,694,398

## SILICA PIGMENTS AND ELASTOMER-SILICA PIGMENT MASTERBATCHES AND PRODUCTION PROCESSES RELATING THERETO

Oliver W. Burke, Jr., 1510 SW. 13th Court, Fort Lauderdale, Fla. 33061

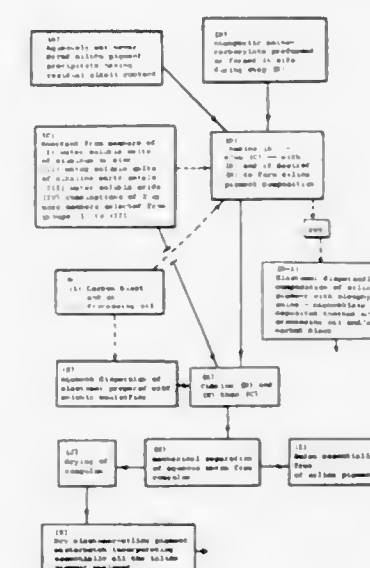
Continuation-in-part of application Ser. No. 798,215, Sept. 16, 1968, which is a division of application Ser. No. 611,250, Jan. 24, 1967, now Patent No. 3,523,096, which in turn is a continuation-in-part of applications Ser. No. 458,379 and Ser. No. 458,420, both May 24, 1965, and Ser. No. 479,806, Aug. 16, 1965, now Patent No. 3,401,017. This application July 16, 1970, Ser. No. 55,479

Int. Cl. C08c 11/10; C08d 9/00

U.S. Cl. 260—33.6 AD

7 Claims

Curbing of silica pigment losses and the promotion of uniformity of product in the preparation of an elastomer-silica pigment masterbatch are effected (a) by combining (1) an aqueously wet hydrated silica pigment precipitate which has a bound alkali content, which has been prepared by precipitation from an aqueous alkali metal silicate solution, and which has been continuously maintained in an aqueously wet state without having been dried therefrom after its precipitation, with (2) a quantity of oleophilic amine carboxylate material, (3) combining the resulting treated wet silica pigment slurry with an aqueous dispersion of the elastomer containing an anionic dispersing agent, with or without (4) carbon black and/or processing oil, and (5) with selected reactant-coagulant, and (b) recovering the resulting coagulum as a masterbatch, the steps prior to (b) having rendered the serum of the aqueous mixture essentially free of silica pigment. Prior to combination with the elastomer dispersion the oleophilic amine carboxylate treated silica pigment may be recovered as a useful dispersible silica pigment product, or the wet silica pigment may be treated with water soluble salts of aluminum and/or zinc and/or alkaline earth metal and/or water soluble acid, together with the oleophilic amine carboxylate, and after such treatment the resulting pigment composition may be recovered from the slurry with or without prior addi-



tion of processing oil to the slurry, as a useful dispersible silica pigment composition, or the so treated wet silica pigment may be combined as in (3), (4) and (5) above, and be recovered as in (b) above in the form of a masterbatch.



3,694,399

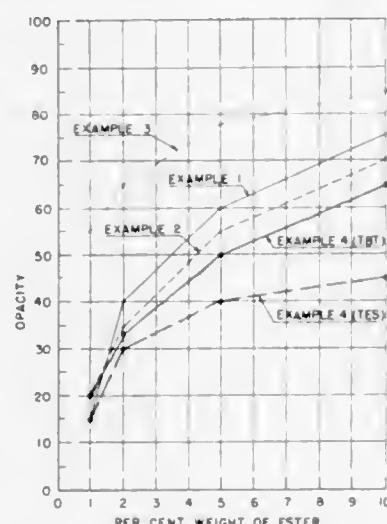
**METHOD OF PRODUCING PAPER-LIKE POLYMER FILM AND THE PRODUCT**

Eckhard C. A. Schwarz, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sept. 25, 1970, Ser. No. 75,629

Int. Cl. B29c 25/00; B29b 7/24; C07f 7/28  
U.S. Cl. 260—41 B 14 Claims

Paper-like films are produced by extruding molten polystyrene or polystyrene/polyolefin mixtures with 1 to 20% based on the weight of the polymer or a hydrolyzable metal alkyl ester of titanium, silicon, or the like and orienting longitudinally in a heated water bath, then stretching



laterally in the presence of steam. After drying, the film is opaque, paper-like, and receptive to conventional inks.

3,694,400

Patent Not Issued For This Number

3,694,401

**NOVEL POLYURETHANE FILMS**

Jürgen Gärtner, 32 Zonser Strasse, 4 Düsseldorf, Germany

No Drawing. Filed Oct. 22, 1970, Ser. No. 83,192

Claims priority, application Germany, Oct. 28, 1969, P 19 54 174.3

Int. Cl. C08g 22/08  
U.S. Cl. 260—37 N 8 Claims

Novel polyurethane polymers formed by reacting a polyisocyanate with a polyepoxide copolymer of 3,3-bis-(chloromethyl)-oxetane and 3-alkyl-3-hydroxymethyl-oxetane and optionally 3-chloromethyl-3-hydroxymethyl-oxetane which are resistant to hydrolysis.

3,694,402

**PROCESS OF INCORPORATING ADDITIVES INTO THERMOPLASTICS**

David Maltby Essam, Harrogate, England, assignor to Imperial Chemical Laboratories Limited, London, England

No Drawing. Filed Mar. 3, 1971, Ser. No. 120,694

Claims priority, application Great Britain, Mar. 4, 1970, 10,422/70

Int. Cl. C08g 51/04; C08f 45/04  
U.S. Cl. 260—40 R 8 Claims

A process is disclosed for the manufacture of extruded articles of a thermoplastic polymer mixed with a minor

proportion of solid additive of melting point lower than that of the thermoplastic polymer, wherein the thermoplastic polymer in granular form is continuously fed to a screw extruder, the required proportion of the additive in the form of granules coated with a thermoplastic polymer of melting point at least 30° C. above that of the additive is continuously fed into the stream of granulated thermoplastic polymer, the screw extruder being so designed and so operated as to effect melting and mixing of the thermoplastic polymer and the additive, and the resultant mixture is extruded to form extruded articles.

3,694,403

**POLYOLEFIN COMPOSITIONS**

Itsuo Aishima, Kurashiki, Yukichi Takashi, Kawasaki, and Toshinori Koseki, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,549

Claims priority, application Japan, Dec. 13, 1969, 44/99,804, 44/99,805

Int. Cl. C08f 45/04  
U.S. Cl. 260—41 R 10 Claims

Polyolefin compositions having excellent transparency and rigidity, said compositions comprising 30-96 parts by weight of polyolefin and 70-4 parts by weight of magnesium carbonate having a number average particle diameter smaller than about 50μ and a maximum particle diameter of about 100μ. An unsaturated carboxylic acid or anhydride may also be added to improve the impact resistance.

3,694,404

**FLUORINATED COMPOUNDS**

Frederick A. Fleming, St. Paul, Robert J. Koshar, Lincoln Township, Washington County, and Charles D. Wright, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Nov. 16, 1964, Ser. No. 412,291

Int. Cl. C07c 119/04  
U.S. Cl. 260—453 AL 3 Claims

1. A compound containing the isocyanate group and otherwise consisting essentially of nitrogen, carbon and fluorine, said compound having from 2 to 3 carbon atoms separated by nitrogen atoms and containing at least 2 nitrogen atoms, at least one of which is fluorinated; having a ratio of nitrogen to carbon atoms ranging from 2:3 to 5:3; and further characterized by containing from about 40 to 60 percent by weight of fluorine.

2. Difluoraminodifluoromethyl isocyanate having the formula:



3,694,405

**REARRANGEMENT OF ORGANOSILOXANES USING MACRORETICULAR SULFONIC ACID CATION EXCHANGE RESIN**

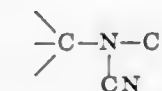
Carl James Litteral, Newport, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Oct. 21, 1970, Ser. No. 82,721

Int. Cl. C08f 11/04  
U.S. Cl. 260—46.5 R 17 Claims

This invention relates to a process for the siloxane bond rearrangement of organosiloxanes to form restructured organosiloxanes by flowing organosiloxanes through a packed bed of macroreticular sulfonic acid cation exchange resin having a specific pore volume of at least

0.01 cc./gm., removing the effluent organosiloxanes having restructured siloxane bond arrangements with attendant molecular weight changes and thereafter recovering the restructured organosiloxanes. The restructured organosiloxanes may range from cyclic to linear structures in a wide range of molecular weights. This invention also relates to a continuous process for the preparation of restructured organosiloxanes as aforesaid in which the organosiloxane effluent is fractionated to recover a desired boiling range product and undesired fractions are recycled into the process. The product organosiloxanes may range from volatiles to oils to gums to nonflowing polymers and are useful as chemical intermediates, coatings, and treating agents.



In particular, the compositions are the products of reaction of an excess of a salt of an organic biscyanamide or polycyanamide with an organic dihalogeno or polyhalogeno compound. The compositions are valuable for the manufacture of coatings, castings, laminates and mouldings.

3,694,409

**EPOXY RESIN CURED WITH A FATTY TETRAAMINE**

Eugene J. Miller, Jr., Wheaton, Ill., Ago Mais, Trenton, N.J., and Donald J. Berenschot, Chicago, and Robert L. Berger, Elmhurst, Ill., assignors to Armour Industrial Chemical Company, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 410,014, Nov. 9, 1964. This application May 8, 1968, Ser. No. 727,675

Int. Cl. C08g 30/14  
U.S. Cl. 260—47 EN 2 Claims

Use of tetraamines as epoxy resin curing agents.

3,694,410

**USE OF CHELATES IN PREPARING POLYCYANURATES**

Richard W. Oehmke, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Mar. 5, 1969, Ser. No. 804,688

Int. Cl. C08g 33/00  
U.S. Cl. 260—47 R 8 Claims

Polycyanates, such as aromatic dicyanates and cyanatomethyl-terminated fluoroaliphatic compounds, are mixed with metal chelate catalysts, such as zinc or ferric acetylacetonate, and heated to form cyanurate polymers. The polymers are useful in the preparation of adhesives, binders, coatings, and tooling compounds.

3,694,411

**LIGHT-SENSITIVE POLYMERS**

John A. Ford, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Aug. 1, 1969, Ser. No. 846,958

Int. Cl. C08g 43/00; C08f 27/00  
U.S. Cl. 260—47 EP 10 Claims

A novel class of light-sensitive polymers and their use in photographic reproduction is described which contains a 1-arylmethyleneindene group or a 5-arylmethylene-2(5H)-furanone group attached to a polymer backbone.

3,694,412

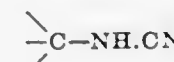
**PROCESS FOR PREPARING INTERPOLYMERS OF CARBON MONOXIDE IN THE PRESENCE OF ARYL PHOSPHINE-PALLADIUM HALIDE COMPLEX**

Kenzie Nozaki, El Cerrito, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Mar. 4, 1971, Ser. No. 121,161

Int. Cl. C08f 1/64, 13/04  
U.S. Cl. 260—63 CQ 6 Claims

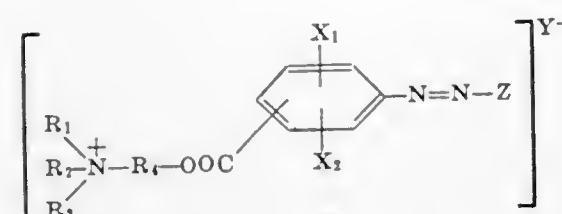
High melting, high molecular weight interpolymers of carbon monoxide with at least one unsaturated compound such as the aliphatic monoolefins, i.e., ethylene, are prepared by reacting carbon monoxide with said unsaturated compounds in the presence of an aryl phosphine complex of a palladium halide and certain inert solvents.











wherein  $R_1$  and  $R_2$  are each lower alkyl which may be substituted by a hydroxy radical,  $R_3$  is a benzyl group, a cyclohexyl group, or a lower alkyl group which may be substituted by a hydroxy radical,  $R_4$  is a normal or branched-chain alkylene radical having two to four carbon atoms,  $X_1$  and  $X_2$  are each hydrogen, chlorine, bromine, lower alkyl or lower alkoxy,  $Z$  is the radical of a coupling component,  $X$  is chlorine or bromine, and wherein  $R_1$ ,  $R_2$  and  $R_3$ , or  $R_4$  and  $R_3$  together with the contiguous nitrogen atom may represent a monocyclic group.

### 3,694,427 CURABLE SILOX ANOL-SILACYCLOBUTANE COMPOSITION

David Andrew Jonas, and William John Owen, both of Glamorgan, Wales, assignors to Dow Corning Limited, London, England

Filed March 12, 1971, Ser. No. 123,862  
Int. Cl. C08f 21/01

U.S. Cl. 260—18 S 9 Claims  
Siloxane polymers containing an average of at least two hydroxyl groups bonded to silicon in each molecule can be cured employing silacyclobutanes of the general formula



where  $R$  is H or alkyl of one to six carbons,  $R'$  and  $R''$  are each hydrocarbyl, halogenohydrocarbyl or a radical reactive with  $\equiv SiOH$ , at least one  $R'$  or  $R''$  being such a reactive radical. The composition can be illustrated by a mixture of hydroxyl end-blocked dimethylpolysiloxane and 1,1-dimethoxy-1-silacyclobutane. The products are useful as silicone rubbers, resins and adhesives.

3,694,428  
STREPTOZOTOCIN AND DERIVATIVES  
Emil Hardegger, 15 Tennried, Gockhausen, Switzerland, and Arthur Josef Johann Meier, 3 Amwell Lane, St. Margarets, Stanstead Abbots, Ware, England  
Filed March 5, 1970, Ser. No. 16,941  
Claims priority, application Switzerland, March 7, 1969, 3502/69

Int. Cl. C07c 95/04 8 Claims  
U.S. Cl. 260—211 R  
Methods of producing streptozotocin and novel derivatives thereof by reacting an N-nitroso-alkylcarbonyl azide with D-glucosamine or an acid addition salt thereof are disclosed. Novel intermediates which are useful in the process are also disclosed. Streptozotocin and its novel derivatives are useful as diabetogenic compounds.

3,694,429  
Patent Not Issued For This Number

3,694,430  
PHOSPHORUS-CONTAINING SUGAR POLYOLS AND  
POLYURETHANE FOAMS THEREFROM  
John S. Heckles, and Edwin J. Quinn, both of Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.  
Filed May 5, 1969, Ser. No. 822,025  
Int. Cl. C07c 69/32

U.S. Cl. 260—234 R 1 Claim  
Phosphono-substituted carboxylic acid esters are ester interchanged with sugar polyols. The resulting phosphorus-con-

taining ester can be reacted in conventional manner with conventional polyisocyanates to form self-extinguishing or flame-retardant polyurethane foams having good stability against hydrolysis.

### 3,694,431 PREPARATION OF 1-(CARBAMOYL)-N- (CARBAMOYLOXY)-THIOFORMIMIDATES FROM ACETOACETAMIDES

Julius J. Fuchs, 1104 Greenway Road, Wilmington, Del., and Harvey M. Loux, 115 Summerset Drive, Hockessin, Del.  
Continuation-in-part of Ser. No. 787,594, Dec. 27, 1968, abandoned. This application Sept. 16, 1970, Ser. No. 72,793  
Int. Cl. C07d 29/22

U.S. Cl. 260—239 A 2 Claims  
1-(Carbamoyl)-N-(carbamoyloxy)thioformimidates such as methyl 1-(carbamoyl)-N-methylcarbamoyloxythioformimidate and methyl 1-(dimethylcarbamoyl)-N-(methylcarbamoyloxy)thioformimidate are prepared by the steps of  
a. reacting diketene with ammonia or an amine to obtain an acetoacetamide;  
b. reacting the product of (a) with a nitrosating agent in the presence of water or an alcohol;  
c. chlorinating the product of (b) at a temperature of  $-10$  to  $75^\circ C$ ;  
d. reacting the product of (c) with an alkyl mercaptan and a base or with a metal salt of an alkyl mercaptan; and  
e. reacting the product of (d) with  
1. a carbamoyl chloride in the presence of a base;  
2. phosgene followed by reaction with an amine; or  
3. an isocyanate, optionally in the presence of a basic catalyst; in water or organic solvents such as acetone, methylene chloride, methyl ethyl ketone, methyl isobutyl ketone, dimethylformamide, dimethylacetamide, dimethylsulfoxide, tetramethylurea or their mixtures.

3,694,432  
2-BENZYLOXYIMINO CYCLIC AMINES  
Fred M. Hershenson, Morton Grove, Ill., assignor to G. D. Searle and Company, Chicago, Ill.  
Filed March 1, 1971, Ser. No. 119,907  
Int. Cl. C07d 27/02, 29/26, 41/04

U.S. Cl. 260—239 B 5 Claims  
Cyclic amines having a benzyloxyimino substituent at the 2-position are described herein. They possess anti-hypertensive, anti-protozoal, anti-fungal, and anti-algal activity. The compounds are prepared from the appropriate 2-alkoxy cyclic amine or 2-hydroxyimino cyclic amine.

3,694,433  
METHOD FOR THE RECOVERY OF CAPROLACTAM  
Leland J. Beckham, Lutz, Fla., assignor to Allied Chemical Corporation, New York, N.Y.  
Filed Aug. 27, 1971, Ser. No. 175,740  
Int. Cl. C07d 41/06

U.S. Cl. 260—239.3 A 5 Claims  
A process comprising the steps of:  
a. contacting at a temperature ranging from about  $40^\circ C$  to about  $90^\circ C$  a rearrangement mass comprising  $\epsilon$ -caprolactam and sulfuric acid with the following reactants:  
(i) substantially water-free ammonium sulfate in an amount ranging from about 0.9 to about 1.1 moles per mole of sulfuric acid present in said rearrangement mass, and  
(ii) an aqueous ammonium bisulfate solution saturated at a temperature within the range of  $20^\circ$  to  $55^\circ C$ , the amount of said aqueous solution being such as to dissolve at the contacting temperature the ammonium bisulfate formed by the reaction of the sulfuric acid component of the rearrangement mass with said ammonium sulfate, to thereby afford an  $\epsilon$ -caprolactam phase and an aqueous ammonium bisulfate phase;  
b. separating said  $\epsilon$ -caprolactam phase;  
c. cooling said aqueous ammonium bisulfate phase to a tem-

perature within the range of  $20^\circ$  to  $55^\circ C$ . to thereby afford crystalline ammonium bisulfate and a saturated aqueous ammonium bisulfate solution;  
d. recovering and recycling said saturated aqueous solution to step a).

3,694,434  
2,6-DIORGANO-1,5-DITHIA-2,6-DIAZACYCLOOCTANE-  
3,4,7,8-TETRAONES AND THEIR MANUFACTURE  
Wendell Gary Phillips, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.  
Filed Oct. 18, 1971, Ser. No. 190,257  
Int. Cl. C07d 93/36

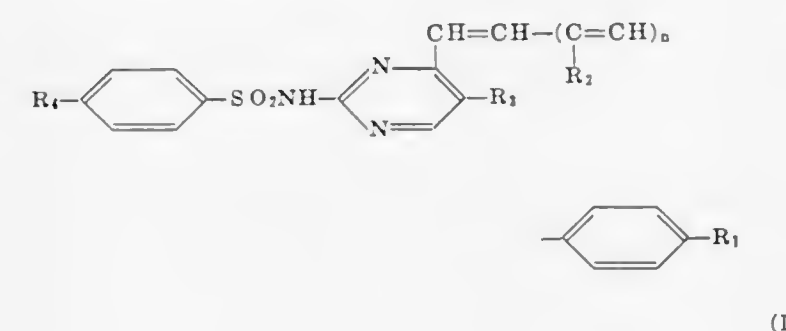
U.S. Cl. 260—239.3 R 16 Claims  
2,6-Diorgano-1,5-dithia-2,6-diazacyclooctane-3,4,7,8-tetranones are prepared from oxamoyl sulfonyl chlorides by elimination of HCl in the presence of an HCl scavenger. These compounds are pesticidally active and particularly useful as pre-emergent herbicides.

3,694,435  
4,4,8,8-TETRACHLORO-2,6-DIORGANO-15-DITHIA-2,6-  
DIAZACYCLO-OCTANE-3,7-DIONES AND THEIR  
MANUFACTURE  
Wendell Gary Phillips, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.  
Filed Oct. 26, 1971, Ser. No. 192,646  
Int. Cl. C07d 93/36

U.S. Cl. 260—239.3 R 17 Claims  
4,4,8,8-Tetrachloro-2,6-diorgano-1,5-dithia-2,6-diazacyclooctane-3,7-diones are prepared from dichloromethane sulfonyl chlorides by elimination of HCl in the presence of an HCl scavenger. These compounds are pesticidally active and particularly useful as selective herbicides.

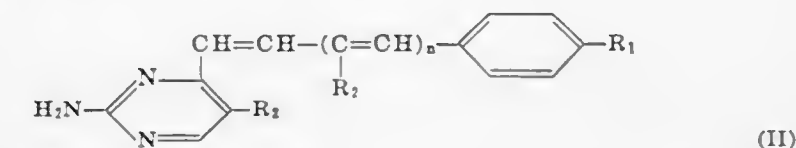
3,694,436  
SUBSTITUTED 2-(BENZENESULFONAMIDO)-  
PYRIMIDINES  
Isamu Saikawa, Yasumasa Matubara, and Takako Hori, all of Toyama, Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan  
Filed March 2, 1970, Ser. No. 15,951  
Int. Cl. C07d 51/42

U.S. Cl. 260—240 D 7 Claims  
Novel sulfonamide derivatives having a pyrimidine ring, represented by the formula (I),

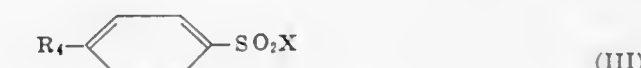


wherein  $R_1$ ,  $R_2$  and  $R_3$  are a hydrogen atom, a lower alkyl group having one to five carbon atoms or a halogen atom;  $R_4$  is a hydrogen atom or a lower alkyl group having one to five car-

bon atoms;  $n$  is 0 or 1. The sulfonamide derivatives have potent blood sugar lowering activity and are prepared by reacting a pyrimidine compound of the formula (II),



wherein  $R_1$ ,  $R_2$ ,  $R_3$  and  $n$  have the same meanings as defined above, with a sulfonamide compound of the formula (III),



wherein  $R_4$  has the same meaning as defined above and  $X$  is a halogen atom or a reactive group capable of forming a  $-SO_2NH-$  group, in the absence or presence of a solvent, and in the presence of an acylation catalyst.

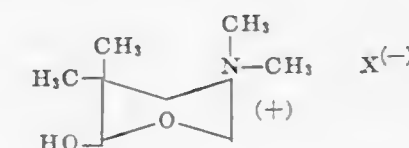
3,694,437  
PROCESS FOR PREPARING CEPHALOSPORIN  
COMPOUNDS  
Billy G. Jackson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.  
Continuation-in-part of Ser. No. 754,992, Aug. 23, 1968, abandoned. This application Aug. 19, 1970, Ser. No. 65,238  
Int. Cl. C07d 99/24

U.S. Cl. 260—243 C 8 Claims  
New silylated cephalosporins from silylamide compounds and an improved process for preparing cephalosporin antibiotics, for example, cephaloglycin, cephalixin, and cephalothin where the acylation of a silylated cephalosporin nucleus is involved.

3,694,438  
Patent Not Issued For This Number

3,694,439  
TETRAHYDRO 1,3-OXAZINIUM COMPOUNDS  
Lloyd D. Taylor, Everett, Mass., assignor to Polaroid Corporation, Cambridge, Mass.  
Division of Ser. No. 687,347, Dec. 1, 1967, Pat. No. 3,576,795.  
This application Aug. 3, 1970, Ser. No. 60,350  
Int. Cl. C07d 87/06

U.S. Cl. 260—244 R 2 Claims  
A compound of the formula



wherein  $X$  is an anion of an acid with an ionization constant of at least  $10^{-2}$ , has been found to provide a hardening function when utilized in conjunction with a polymeric material containing  $-SH$ ,  $-NH_2$ , and/or  $-OH$  functional groups.



3,694,440

**TRIS(HYDROXYALKYLPHENYL) DERIVATIVES OF THIOPROPIONYL HEXAHYDROTRIAZINE**

Martin Knell, Ossining, N.Y., and David H. Steinberg, Bronx, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 1, 1971, Ser. No. 149,048

Int. Cl. C07d 55/12

U.S. Cl. 260—248 NS 5 Claims

Tris(hydroxyalkylphenyl) derivatives of thiopropionyl hexahydrotriazine compounds can be prepared by reacting 1,3,5-tris(hydroxyethylthiopropionyl)-hexahydro-1,3,5-triazine with 4-hydroxy-3,5-dialkylphenylpropionyl chloride or benzoyl chloride. An example of such compounds is 1,3,5-tris(4'-hydroxy-3',5'-di-tert-butylphenylpropionyl)-hexahydro-1,3,5-triazine. These compounds are useful as stabilizers of organic substrates subject to oxidative and thermal degradation.

3,694,441

**FLUOROPYRIMIDINES**

Erich Klauke, Odenthal-Hahnenberg, and Hans-Samuel Bien, Burscheid, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 1, 1967, Ser. No. 679,652

Claims priority, application Germany, Dec. 16, 1966, F 50972

Int. Cl. C07d 51/36

U.S. Cl. 260—251 R 1 Claim

A process of the preparation of fluoro substituted pyrimidines useful as lubricants, dyestuffs, pharmaceutical agents and pesticides which includes the isolated monofluoro-trichloro- and difluoro-dichloropyrimidines by reacting polyhalopyrimidines with hydrofluoric acid under increased temperature and pressure.

3,694,445

Patent Not Issued For This Number

3,694,441

**PYRIMIDOTRIAZINONE COMPOUNDS**

David William Dunwell, 27 Alexandra Ave., Camberley, Surrey, and Delme Evans, 7 Springwoods, Sandhurst, Berkshire, both of England

Filed March 5, 1971, Ser. No. 121,597

Int. Cl. C07d 57/12

U.S. Cl. 260—249.5 10 Claims

Substituted 1H,4H-pyrimido[2,1-c]-[1,2,4]triazin-6-ones are prepared by reacting an appropriately substituted thiazolo- or oxazolo-[3,2-a]pyrimidin-5-one with a hydrazino compound. The resultant pyrimidotriazinones possess antifungal and anthelmintic activity.

3,694,442

**SUBSTITUTED TETRAHYDRO-1H-PYRAZOL[1,2-B]PHthalazines**

William J. Houlihan, 15 Raynold Road, Mountain Lakes, N.J.

Continuation-in-part of Ser. No. 561,745, June 30, 1966, Pat. No. 3,549,620. This application July 28, 1970, Ser. No. 58,987

Int. Cl. C07d 51/06

U.S. Cl. 260—250 A 19 Claims

Substituted tetrahydro-1H-pyrazolo[1,2-b]phthalazine, e.g., 5-p-chlorophenyl-2,3,4,10-tetrahydro-1H-pyrazolo[1,2-b]phthalazine, are prepared by the reduction of the corresponding phthalazinone or by ring closure of the corresponding 2-(3-hydroxypropyl)phthalazine and are useful as central nervous system depressants.

3,694,443

**PROCESS FOR THE PRODUCTION OF 4-CHLORO-6,7-PHTHALOYLQUINAZOLINE DERIVATIVES**

Manfred Ruske, Ludwigshafen, Germany, assignor to Badische Anilin- &amp; Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed March 4, 1970, Ser. No. 16,568

Claims priority, application Germany, March 6, 1969, P 19 11 305.4

Int. Cl. C07d 51/48

U.S. Cl. 260—251 Q 5 Claims

Production of 4-chloro-6,7-phthaloylquinazoline derivatives by reaction of 2-acylamino-3-cyanoanthraquinones with hydrogen chloride and phosgene in the presence of N,N-dialkyl carboxylic amides. The 4-chloro-6,7-phthaloylquinazoline derivatives are valuable dyestuff intermediates.

3,694,448

**1-NITRO-9-(DIALKYLAMINOALKYLAMINO)ACRIDINE N<sup>+</sup> OXIDES**

Andrzej Ledochowski, ul. Politechniczna 171A-2, Gdansk 6, and Barbara Stefanska, ul. Rodakowskiego 1E/17, Gdansk-Oliwa, both of Poland

Filed Sept. 2, 1969, Ser. No. 854,608

Claims priority, application Poland, Aug. 31, 1968, P 128855

Int. Cl. C07d 37/18

U.S. Cl. 260—279 A 2 Claims

The N-oxides of 1-nitro-9-(dialkylaminoalkylamino)-acridine which are antitumor agents having low toxicity are produced by oxidizing the corresponding N<sup>10</sup> of N<sup>10</sup> oxides.

3,694,449

**2-SUBSTITUTED-3A,4,5,6,7,7A-HEXAHYDRO-5A,6,7,8,9,9A-HEXAHYDRO-9 A-HYDROXYPYRIDO (2,1-B) BENZOTHAZOLIUM HALIDES**

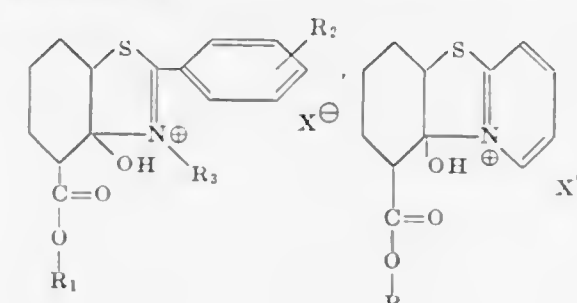
Peter H. L. Wei, 430 Ridge Lane, Springfield, Pa.

Filed March 17, 1971, Ser. No. 125,410

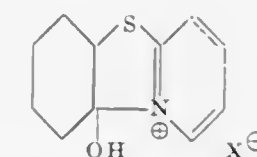
Int. Cl. C07d 31/50

U.S. Cl. 260—294.8 B 3 Claims

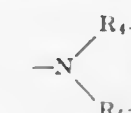
Novel pharmacologically active compounds have been prepared of the formulas



and



wherein R<sub>1</sub> and R<sub>2</sub> are selected from the group consisting of hydrogen and (lower)alkyl; R<sub>3</sub> is selected from the group consisting of hydrogen, (lower)alkyl, nitro, halogen, (lower)alkoxy, hydroxy and



wherein R<sub>4</sub> and R<sub>5</sub> when not concatenated are independently selected from the group consisting of hydrogen and (lower)alkyl and when concatenated form a radical selected from the group consisting of piperazinyl, piperidinyl, pyrrolidinyl and morpholinyl; X is halogen.

3,694,450

**2-SUBSTITUTED-4,5,6,7-TETRAHYDROBENZOTHAZOLE-4-CARBOXYLIC ACIDS AND THEIR ALKYL ESTERS**

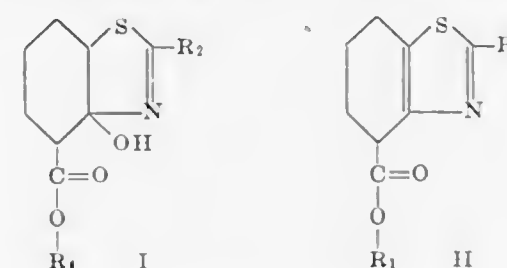
Peter H. L. Wei, Springfield, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed March 17, 1971, Ser. No. 125,413

Int. Cl. C07d 31/50

U.S. Cl. 260—294.8 C 3 Claims

Novel pharmacologically active compounds have been prepared which have the general formulas:



wherein R<sub>1</sub> is selected from the group consisting of hydrogen and (lower)alkyl; R<sub>2</sub> is selected from the group consisting of phenyl, halophenyl and (lower)alkylphenyl; alkylphenyl; R<sub>3</sub> is selected from the group consisting of phenyl, halophenyl, (lower)alkylphenyl, pyridyl, amino, anilino, hydrazino, benzylidenehydrazino, halobenzylidenehydrazino, nitrobenzylidenehydrazino and (lower) alkylbenzylidenehydrazino; R<sub>4</sub> is (lower)alkyl; and the pharmaceutically acceptable salts thereof.

3,694,451

**CERTAIN 2-PHOSPHORYLIMINO-4-THIAZOLINES**

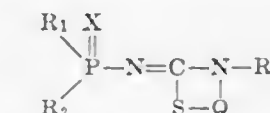
Alexander Mihailovski, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed March 26, 1970, Ser. No. 23,051

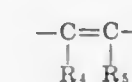
Int. Cl. C07d 91/26

U.S. Cl. 260—306.7 26 Claims

New compounds corresponding to the formula



wherein X is oxygen and sulfur; R<sub>1</sub> is lower alkyl, lower alkoxy, lower alkylthio and chloro; R<sub>2</sub> is lower alkyl, lower alkoxy, lower alkylthio and chloro; R<sub>3</sub> is lower alkyl, benzyl, aryl, lower alkoxyalkyl, alkenyl, chloroalkenyl and alkynyl; Q is



in which R<sub>4</sub> and R<sub>5</sub> are independently hydrogen, lower alkyl, halogen and nitro.

3,694,452

**PROCESS FOR PREPARING A 1-(LOWER ALKYL)-5-NITRO-2-IMIDAZOLECARBOXIMIDATE ESTER**

Christos George Papaioannou, Somerset, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed April 17, 1970, Ser. No. 29,686

Int. Cl. C07d 49/30

U.S. Cl. 260—309 2 Claims

This disclosure describes a multistep process for the preparation of certain 2-amino-5-[1-(lower alkyl)-5-nitro-2-imidazolyl]-1,3,4-thiadiazoles; the products of the process being useful as antibacterial and antiprotozoal agents.

3,694,453

Patent Not Issued For This Number

3,694,454

**1-[1'-CARBOXYLIC ACYLAMINO-2',2',2'-TRICHLORO-ETHYL]-2-(HYDROCARBYLOXYCARBONYL-AMINO)-BENZIMIDAZOLES**

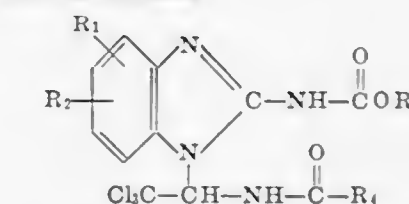
Walter Ost, Klaus Thomas, and Dietrich Jerchel, all of Ingelheim am Rhine, Germany, assignors to C.H. Boehringer Sohn, Ingelheim am Rhine, Germany

Filed July 17, 1970, Ser. No. 55,989

Int. Cl. C07d 49/38

U.S. Cl. 260—309.2 33 Claims

Compounds of the formula



wherein R<sub>1</sub> and R<sub>2</sub> are each hydrogen, chlorine, bromine, alkyl of one to four carbon atoms or alkoxy of one to four carbon atoms, R<sub>3</sub> is alkyl of one to three carbon atoms or allyl, and R<sub>4</sub> is hydrogen, alkyl of one to 17 carbon atoms which may have from one to three halogen substituents or one 2,4-dichlorophenoxy substituent attached thereto, phenyl, alkenyl of two to 17 carbon atoms and 1 to 3 double bonds, or alkoxy of one to 12 carbon atoms; the compounds are useful as prophylactic as well as curative biocidal agents, especially as fungicidal agents against all types



of Levow; Tobias E. fungi, such as mildew, plant rust, Fusaria and the like.

3,694,455

## ACYLOXYALKYL AMIDOBENZIMIDAZOLES

George L. Dunn, Wayne, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

Division of Ser. No. 738,842, June 21, 1968, Pat. No. 3,578,676. This application Nov. 19, 1970, Ser. No. 91,227  
Int. Cl. C07d 49/38

U.S. Cl. 260—309.2

5 Claims

Benzimidazole carbamic acids and amidobenzimidazoles, substituted on the benzene ring with an acyloxyalkyl group, are prepared by esterifying the corresponding hydroxyalkyl compound. The products are anthelmintic agents.

3,694,456

## 1-DISUBSTITUTED AMINOPYRAZOLES

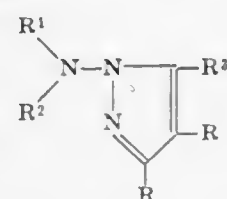
Shunsaku Noguchi; Shoji Kishimoto, both of Osaka, and Kiyohisa Kawai, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

Filed May 8, 1970, Ser. No. 35,926  
Int. Cl. C07d 49/20

U.S. Cl. 260—310 R

10 Claims

1-(Disubstituted-amino)pyrazole compounds are provided herein of the formula:



wherein each of R<sup>1</sup> and R<sup>2</sup> stands for lower alkyl or R<sup>1</sup> and R<sup>2</sup>, taken together with the adjacent N-atom form morpholino, piperidino, pyrrolidino, N-methylpiperazino, N-benzylpiperazino and N-phenylpiperazino, R's, which are the same or different from each other, stand for hydrogen, alkyl having one to ten carbon atoms, phenyl, naphthyl, phenyl or naphthyl substituted by halogen or lower alkyl, respectively, and R<sup>3</sup> stands for hydrogen, lower alkyl, N,N-di-loweralkylaminoethyl, N-morpholinomethyl, N-piperidinomethyl, N-pyrrolidinomethyl, N-methylpiperazinomethyl, N-benzylpiperazinomethyl and N-phenylpiperazinomethyl. The above compounds as well as the pharmaceutically acceptable salts thereof are useful as analgesics, antipyretics and mild muscle relaxants.

3,694,457

Patent Not Issued For This Number

3,694,458

## 1-NITROSOPYRROLIDINES

Grover Cleveland Helsley, Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Filed Aug. 31, 1970, Ser. No. 68,590  
Int. Cl. C07d 27/02

U.S. Cl. 260—326.5 L

7 Claims

1-Nitrosopyrrolidines having anticonvulsant activity are disclosed. The compounds are prepared from 3-(mono- and disubstituted)pyrrolidines by nitrosation. Substituents in the 3-position are selected from a combination of hydroxyl,  $\alpha$ -phenyl- $\alpha$ -hydroxybenzyl,  $\alpha$ -alkyl- $\alpha$ -hydroxybenzyl, phenyl, trifluoromethylphenyl and phenoxy radicals.

3,694,459

Patent Not Issued For This Number

3,694,460

## PREPARATION OF 2,4-BIS(HEXAFLUOROISOPROPYLIDENE) 1, 3-DITHIETANE BY REACTION OF PERFLUOROISOBUTENE WITH SELECTED ALKALI METAL SALTS

David C. England; Maynard S. Raasch, and William Arthur Sheppard, all of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 16, 1971, Ser. No. 115,745  
Int. Cl. C07d 69/00

U.S. Cl. 260—327 M

7 Claims

Disclosed herein is a process for preparing 2,4-bis(hexafluoroisopropylidene)-1,3-dithietane by reacting perfluoroisobutene with alkali metal salts of selected organic sulfur-containing acids at temperatures of about -80° to 150° C.

3,694,461

## CHROMOGENIC COMPOUNDS

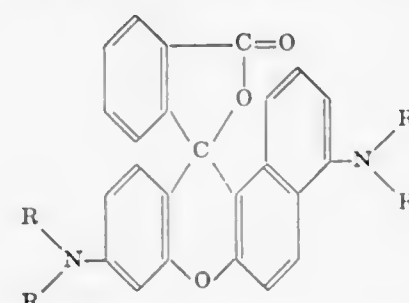
Sheldon Farber, Appleton, Wis., and Arthur J. Wright, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Continuation-in-part of Ser. No. 86,644, Nov. 30, 1970, Pat. No. 3,654,314. This application Feb. 7, 1972, Ser. No. 224,269  
Int. Cl. C07d 5/34

U.S. Cl. 260—335

3 Claims

A chromogenic material of normally colorless form is disclosed having the structural formula:



wherein each R is hydrogen or an alkyl radical having one to four carbon atoms.

3,694,462

## BENZO[b]PYRYLIUM DYE SALTS

Patrick J. Grisdale, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed March 2, 1970, Ser. No. 15,832  
Int. Cl. C07d 7/24

U.S. Cl. 260—345.2

4 Claims

A class of novel benzo[b]pyrylium dye salts having a partially saturated, bicyclic ring system fused thereto is described.

3,694,463

## 3-VINYL-CYCLOPENTA(FM)BENZOPYRANS

David Andrews, 561 Park St., Upper Montclair, N.J., and Gabriel Saucy, 125 Fells Road, Essex Fells, N.J.

Division of Ser. No. 818,142, April 21, 1969. This application April 29, 1971, Ser. No. 139,298  
Int. Cl. C07d 7/20

U.S. Cl. 260—345.2

5 Claims

Multi-step processes for the preparation of tricyclic intermediates useful in the total synthesis of steroids are described. A first process step involves treatment of a dihydroxy, divinyl compound with both manganese dioxide and an amine to produce a Mannich base intermediate. The resulting Mannich base intermediate may be reduced catalytically and then coupled with a cyclic dione to yield a tricyclic keto diene. This compound can be reduced to yield a tricyclic hydroxy compound useful as an intermediate in the total synthesis of steroid compounds having known valuable pharmacological properties. Alternatively, it is possible to directly couple the Mannich base with the cyclic diketone compound followed by reduction and catalytic hydrogenation to yield the tricyclic hydroxy compound.

3,694,464

## PREPARATION OF 1-ACETOXY-3-(ALKYL)-6,6,9-TRIMETHYL-7,8,9,10-TETRAHYDRO-6H-DIBENZO[b, d]PYRAN ISOMERS

Herbert S. Aaron, Baltimore, and Clyde Parker Ferguson, Jr., Bel Air, both of Md., assignors to The United States of America as represented by the Secretary of the Army

Filed July 10, 1968, Ser. No. 743,907  
Int. Cl. C07d 7/04

U.S. Cl. 260—345.3

6 Claims

A novel process and novel intermediates in the synthesis of the novel optically-active isomers of 1-acetoxy-3(alkyl)-9-methyl-7,8,9,10-tetrahydro-6H-dibenzo [b,d]pyran as incapacitating agents. Those intermediates are prepared by reducing a mixture comprising a ketone, an alcohol and borohydride to the carbinol, treating said carbinol with a trihalide and converting the trihalide product to a malonic ester, hydrolyzing said ester and separating the aqueous phase, acidifying said aqueous phase results in the preparation of an isomeric mixture of alkyl-dialkoxyhydrocinnamic acid.

3,694,465

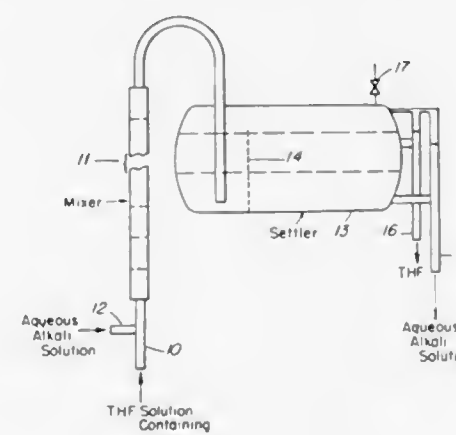
## METHOD FOR CONCENTRATION OF AQUEOUS TETRAHYDROFURAN SOLUTIONS BY EXTRACTION WITH AQUEOUS ALKALI METAL HYDROXIDE

Hisashi Kisaki; Shunsuke Mabuchi, and Toshikatsu Mizuno, all of Yamaguchi, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Tsuno-gun, Yamaguchi-ken, Japan

Filed Aug. 11, 1970, Ser. No. 63,024  
Claims priority, application Japan, Aug. 14, 1969, 44/63840  
Int. Cl. C08d 5/02

U.S. Cl. 260—346.1

6 Claims



A method for producing anhydrous tetrahydrofuran from an aqueous solution of tetrahydrofuran which comprises contacting an aqueous solution of an alkali metal hydroxide with the aqueous solution of tetrahydrofuran to remove the water.

3,694,466

## PROCESS FOR THE PREPARATION OF 2,5-DIMETHYL-4,5-DIHYDROFURAN-3-OL-4-ONE

George H. Buchi, 100 Memorial Drive, Cambridge, Mass.; Edouard Demole, 100, rue de Chancy, Geneva, Switzerland; Albert Eschenmoser, 9, Bergstrasse, Kusnacht, Zurich, Switzerland, and Alan F. Thomas, 16, Ch. de l'Esplanade, Vernier, Geneva, Switzerland

Division of Ser. No. 736,268, June 12, 1968, Pat. No. 3,558,714. This application Feb. 19, 1970, Ser. No. 14,873  
Claims priority, application Switzerland, June 16, 1967, 8620/67

Int. Cl. C07d 5/10

U.S. Cl. 260—347.8

6 Claims

2,5-dimethyl-4,5-dihydrofuran-3-ol-4-one is prepared by catalytic cyclisation of hexane-3,4-diol-2,5-dione.

3,694,467

## ANTHRAQUINONE DYES

Karl Maier, Ludwigshafen am Rhine, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Continuation of Ser. No. 272,233, April 11, 1963, abandoned. This application Feb. 19, 1970, Ser. No. 12,841

Claims priority, application Germany, April 19, 1962, B 66 910

Int. Cl. C09b 1/54

U.S. Cl. 260—380

4 Claims

Anthraquinone dyes of the 1-amino-2-hydroxyalkoxy-4-hydroxyanthraquinone series, wherein the hydroxyalkoxy group contains four to nine carbon atoms, said dyes being useful for dyeing and printing synthetic fibers and plastics.

3,694,468

Patent Not Issued For This Number

3,694,469

Patent Not Issued For This Number

3,694,470

## NOVEL 18-NOR ANDROSTANE DERIVATIVES

Piero Gomasca, and Carlo Scialastico, both of Milan, Italy, assignors to Laboratorio Prodotti Biologici Braglia, Milan, Italy

Filed March 18, 1970, Ser. No. 20,830

Claims priority, application France, Oct. 13, 1969, 6934926  
Int. Cl. C07c 169/22

U.S. Cl. 260—397.45

3 Claims

This invention relates to novel steroids of the androstane series, hydroxylated in position 11.

These steroids are prepared by reacting an  $\alpha$  or  $\beta$ -11-hydroxy-18-Nor-17 $\beta$ -methyl-17 $\alpha$ -alkyl androsta-4,13-diene-3-one with ethyl formate in solution in a solvent, to form the corresponding hydroxymethylene derivative. This latter compound is then reacted with 2,3-dichloro-5,6-dicyanep-benzoquinone in solution in dioxane to obtain the corresponding 2-fornyl- $\Delta^{1,4,13}$ -11-hydroxy-18-Nor-17 $\beta$ -methyl-17 $\alpha$ -alkyl.

The compounds of this invention may be used in particular as medicaments with an anti-androgen action.

3,694,471

17-VALERATE ESTER OF 6 $\alpha$ ,9 $\alpha$ -DIFLUOROHYDROCORTISONE, ITS COMPOSITIONS AND USE AS AN ANTI-INFLAMMATORY AGENT

Alberto Ercoli, Milan, and Rinaldo Gardi, Carate Brianza, both of Italy, assignors to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 707,934, Feb. 26, 1968, abandoned. This application June 8, 1970, Ser. No. 44,574  
Int. Cl. C07c 169/34

U.S. Cl. 260—397.45

1 Claim

There has been prepared the new 6 $\alpha$ ,9 $\alpha$ -difluorohydrocortisone 17-valerate useful as an anti-inflammatory agent. This compound may be incorporated in a topically suitable pharmaceutical carrier to obtain pharmaceutical compositions which may be administered locally as ointments, creams or lotions for the treatment of inflammatory conditions.

3,694,472

## SYNTHESIS OF PYRETHRIC ACID

Jacques Martel, Bondy, and Jean Buendia, Fontenay-Sous-Bois, both of France, assignors to Roussel-Uclaf, Paris, France

Filed May 12, 1970, Ser. No. 36,675

Int. Cl. C07c 69/74

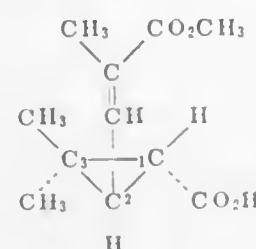
U.S. Cl. 260—468 P

5 Claims

A novel process for the preparation of 3,3-dimethyl-2-(2'-methoxycarbonyl-trans 1'-propenyl)-1-cyclopropane carbox-



ylic (1R,2R) acid or d-trans pyrethric (1R,2R) acid of the formula



by reacting 3,3-dimethyl-2-formyl-1-cyclopropanecarboxylic (1R,2R) acid or a salt thereof with methyl propionate under anhydrous basic conditions.

3,694,473

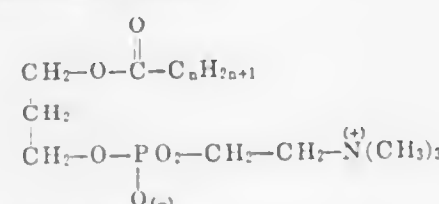
**HIGHER ALKANOYL-PROPANEDIOL-(1,3)-2-TRIMETHYLAMMONIUM-ETHYL PHOSPHATES**  
Hansjorg E. Eibl, Gabelsberger-Strasse 4, and Otto Westphal, In der Rothe 14, both of Freiburg, Breisgau, Germany  
Filed July 2, 1971, Ser. No. 159,524

Claims priority, application Germany, July 6, 1970, P 20 33 359.9

Int. Cl. A23j 7/00

U.S. Cl. 260—403

Compounds of the formula



wherein  $n$  is an integer from 16 to 25, inclusive; the compounds are useful as immunologic adjuvants.

3,694,474

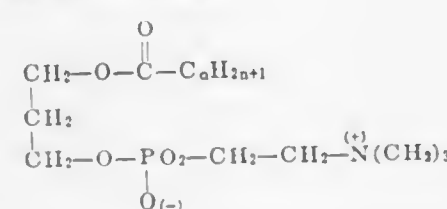
**HIGHER ALKANOYL-PROPANEDIOL-(1,3)-PHOSPHORIC ACID-CHOLINE ESTERS**  
Hansjorg Eibl, and Otto Westphal, both of Freiburg, Breisgau, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim/Rhine, Germany  
Filed July 2, 1971, Ser. No. 159,552

Claims priority, application Germany, July 6, 1970, P 20 33 361.3

Int. Cl. A23j 7/00

U.S. Cl. 260—403

Compounds of the formula



wherein  $n$  is an integer from 7 to 14, inclusive; the compounds are useful as immuno-suppressants.

3,694,475

TITANIUM COMPOUNDS

David Whiteley Brook, Teesside, and Raymond Ward, Coxhoe, both of England, assignors to British Titan Products Company Limited, Durham, England  
Filed March 9, 1970, Ser. No. 17,938

Claims priority, application Great Britain, March 18, 1969, 14,049/69

Int. Cl. C07f 7/28

U.S. Cl. 260—429.5

A titanium chelate useful as a gelling or stabilizing agent for aqueous suspensions which is the reaction product of monoethanolamine, a titanium orthoester and at least one other chelating agent. The other chelating agent is selected

from alkanolamine other than monoethanolamine, a beta-diketone or alpha-hydroxy carboxylic acids.

3,694,476

(6-METHOXY-2-NAPHTHYL) CADMIUM HALIDE

Francisco Alvarez, Sunnyvale, Calif., assignor to Syntex Corporation, Apartado, Panama

Filed Dec. 4, 1970, Ser. No. 95,376

Int. Cl. C07f 3/08

U.S. Cl. 260—429 R

2 Claims

2-(6-Methoxy-2-naphthyl)propionic acid is prepared by reacting di(6-methoxy-2-naphthyl)-cadmium or 6-methoxy-2-naphthylcadmium halide with a lower alkyl 2-halopropionate in a suitable solvent to form a lower alkyl 2-(6-methoxy-2-naphthyl)propionate and hydrolyzing the ester group thereof. The product has anti-inflammatory, analgesic and anti-pyretic activities.

3,694,477

**METHOD FOR MAKING ORGANO(FLUOROMETHYL) MERCURY COMPOUNDS**

Dietmar Seyferth, Lexington; Steven P. Hopper, Cambridge, both of Mass., and Kirk V. Darragh, Nyack, N.Y., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Nov. 3, 1970, Ser. No. 86,637

Int. Cl. C07f 3/12

U.S. Cl. 260—433

11 Claims

Organo(fluorohalomethyl) mercury compounds are prepared by fluorinating with an organomercuric fluoride, a compound of the formula:



wherein  $R$  is an organo radical,  $X$  is chlorine or bromine and the  $X$ 's can be the same or different. Reaction is carried out at a temperature of at least  $0^\circ\text{C}$ . but at a temperature below which substantial dihalocarbene forms. The organo(fluorohalomethyl)-mercury product is useful as a fluorohalocarbene donor and is used in the preparation of gem-difluorocyclopropanes and gem-fluorohalocyclopropanes.

3,694,478

PROCESS FOR GRAFTING ORGANOPOLYSILOXANES

Patrick James Adams, and Richard Newton Lewis, both of Tumcseh, Mich., assignors to Stauffer Chemical Company, New York, N.Y.

Continuation of Ser. No. 789,607, Jan. 7, 1969, abandoned.

This application Nov. 23, 1970, Ser. No. 92,133

Int. Cl. C07f 7/08; C08g 47/10

U.S. Cl. 260—448.2 E

7 Claims

An improved process for grafting organopolysiloxanes which comprises the gradual addition of a free-radical initiator to a heated mixture containing an organopolysiloxane and an unsaturated organic monomer in order to control the temperature. By such gradual addition, the temperature is maintained in the optimum range for the preparation of modified organopolysiloxanes.

3,694,479

BIS (TRIORGANOSILYL) PHOSPHATE COMPOSITIONS

E. D. Groenhof, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 858,886, Sept. 17, 1969, Pat. No.

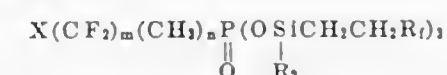
3,639,239. This application March 29, 1971, Ser. No. 129,181

Int. Cl. C07f 7/08

U.S. Cl. 260—488.2 N

3 Claims

Disiloxy derivatives of fluoroalkyl acid phosphates of the general formula



are disclosed as corrosion inhibitors for fluorosilicone lubricants.

3,694,480

**NOVEL ORGANOFUNCTIONAL SILICON COMPOUNDS SUBSTITUTED WITH HALOGEN AND PROCESSES FOR MAKING SAME**

George M. Omietanski, Marietta, Ohio, assignor to Union Carbide Corporation

Filed June 11, 1968, Ser. No. 735,986

Int. Cl. C07f 7/08, 7/10, 7/18

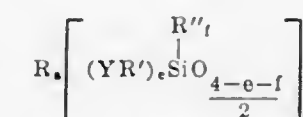
U.S. Cl. 260—448.2 B

26 Claims

Novel organofunctional silicon compounds including silanes of the formula



and siloxane polymers and copolymers containing the unit of the formula



wherein  $R$ ,  $R'$  and  $R''$  are organic groups,  $Y$  is divalent oxygen, divalent sulfur, or divalent nitrogen groups, i.e.,



where  $R'''$  is H or a hydrocarbon radical, and  $R'$  has carbon-bonded halogen attached to the carbon atom adjacent the carbon atom to which said  $Y$  group is attached. These compounds are made by the reaction of an olefinically unsaturated silane or siloxane with an active hydrogen atom containing organic compound and a positive halogen compound. The novel compounds are useful as surfactants, hydraulic fluids, water repellants, lubricants, and intermediates for siloxane gums and elastomers.

3,694,481

NOVEL OXIMECARBAMATES

Roger Williams Addor, Pennington, and Frank Albert Wagner, Jr., Hopewell, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 701,572, Jan. 30, 1968, Pat. No.

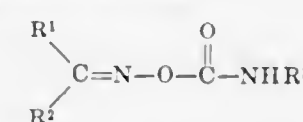
3,632,621. This application March 8, 1971, Ser. No. 122,197

Int. Cl. C07c 119/00

U.S. Cl. 260—453 R

4 Claims

New compounds of the formula:



wherein  $R^1$  is either lower-alkylthio, ar(lower-alkyl)thio, arylthio or lower-alkenylthio;  $R^2$  is  $R^1$  or chloro; and  $R^3$  is lower-alkyl. The compounds are useful as nematocides, insecticides and acaricides.

3,694,482

MALONONITRILE OXIME DERIVATIVES

John E. Engelhart, Westfield, N.J., assignor to Esso Research and Engineering Company

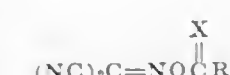
Filed April 15, 1970, Ser. No. 28,982

Int. Cl. C07c 154/00, 154/02

U.S. Cl. 260—455 B

4 Claims

Derivatives of malononitrile oxime characterized by the following structural formula:



wherein  $X$  can be oxygen or sulfur;  $R_1$  is taken from the group consisting of  $OR_2$ ,  $SR_3$ ,  $NR_4R_5$  and  $C_1-C_{10}$  alkyl,  $C_2-C_{10}$  alkenyl,  $C_2-C_{10}$  alkynyl or  $C_3-C_{10}$  cycloalkyl;  $R_2$ ,  $R_3$ ,  $R_4$  and  $R_5$  can be hydrogen or  $C_1-C_{10}$  alkyl,  $C_2-C_{10}$  alkenyl,  $C_2-C_{10}$  alkynyl or  $C_3-C_{10}$  cycloalkyl. The above-mentioned  $C_1-C_{10}$  alkyl,  $C_2-C_{10}$  alkenyl,  $C_2-C_{10}$  alkynyl and  $C_3-C_{10}$  cycloalkyl in  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$  and  $R_5$  may be unsubstituted or substituted by halogen, nitrile, nitro, thiocarbonyl, perhaloalkyl,  $C_1-C_4$  alkoxy and  $C_1-C_4$  thioalkyl. These compounds are useful as soil fungicides.

3,694,483

CARBAMOXYBENZYLIDENEMALONONITRILE

Roger P. Cahoy, and John Sanjean, both of Overland Park, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Sept. 8, 1970, Ser. No. 70,529

Int. Cl. A01n 9/20; C07c 121/70

U.S. Cl. 260—465 D

5 Claims

The carbamyl derivatives of 4-hydroxy-3,5-di-tert.butyl benzylidenemalononitrile are compounds which possess a high order of activity as miticides, insecticides and fungicides. New compounds of this class, for example, 3,5-di-tert.butyl-4-(3-bromophenylcarbamoyloxy)benzylidene-malononitrile, are particularly effective against corn rootworm while possessing less toxicity to warm blooded animals than the most closely related prior art compound.

3,694,484

**PROCESS OF PREPARING 3-AMINO-2-CYANO ACRYLAMIDE**

Ronald M. Cresswell, 34 Walbrooke Road, Scarsdale, N.Y., and Melvin Schnapper, 41 Homcrest Oval, Yonkers, N.Y.

Continuation-in-part of Ser. No. 651,393, July 6, 1967, Pat. No. 3,487,083. This application Sept. 9, 1969, Ser. No.

856,488

Int. Cl. C07c 121/30

U.S. Cl. 260—465.4

5 Claims

This invention relates to a new use of intermediates and an improved method of preparing amino methylene cyano-acetamide by reacting formamidine base with cyano-acetamide. In addition this invention is directed to reacting amino methylene cyano-acetamide with hydrazine to form 3-amino pyrazole-4-carboxamide which may then be converted to Allopurinol. Allopurinol is a drug useful in the treatment of hyperuricemia.

3,694,485

HYDROCYANATION OF OLEFINS

William C. Drinkard, Jr., Wilmington, Del., and Brian William Taylor, Verona, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 857,535, Sept. 12, 1969, Pat. No.

3,551,474, which is a continuation-in-part of Ser. No. 680,947, Nov. 6, 1967, abandoned. This application April 23, 1970, Ser.

No. 43,284

Int. Cl. C07c 121/04, 121/26

U.S. Cl. 260—465.8 R

3 Claims

Process of isomerizing 3-pentenitriles to 4-pentenitrile using compounds of iron, or ruthenium having a valence of +2 or less as a catalyst and of adding hydrogen cyanide to carbon-carbon double bonds such as in 4-pentenitrile at from  $-25^\circ$  to  $200^\circ\text{C}$  using as catalysts ruthenium or iron compounds having a valence of +2 or less.



3,694,486

Patent Not Issued For This Number

3,694,487

Patent Not Issued For This Number

3,694,488

Patent Not Issued For This Number

3,694,489

**PHARMACOLOGICALLY ACTIVE ESTERS AND AMIDES OF N-[3-TRIFLUOROMETHYLPHENYL]-ANTHRANILIC ACID**

Karl-Heinz Boltze, Bensberg-Kippekausen; Otfried Brendler, Cologne-Mulheim, and Dietrich Lorenz, Bensberg, all of Germany, assignors to Troponwerke Dinklage & Co., Cologne-Mulheim, Germany

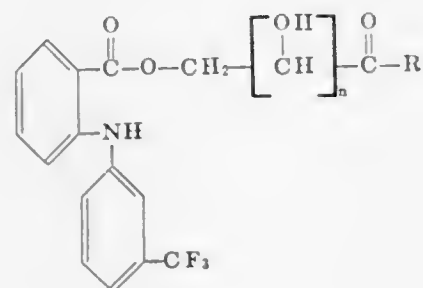
Filed July 16, 1970, Ser. No. 55,564

Claims priority, application Germany, Aug. 1, 1969, P 19 39 111.8

Int. Cl. C07c 103/16

U.S. Cl. 260—471 R

Compounds of the general formula



in which  $n$  is 0, 1 or 2 and  $R$  represents a hydroxyl group, a low molecular weight straight chained or branched alkoxy group in which the alkyl radical may have individual hydrogen atoms replaced by hydroxyl groups, an amino group or a low molecular weight straight chained or branched mono- or dialkylamino group in which individual hydrogen atoms of the alkyl groups may be replaced by hydroxyl groups.

These compounds have a marked antiinflammatory effect and reduced side effects.

3,694,490

**PRODUCTION OF PHENOLIC ESTERS OF AROMATIC ACIDS**

Enrique Roberto Witt, and James Patrick Cave, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Nov. 18, 1969, Ser. No. 877,841

Int. Cl. C07c 69/82

U.S. Cl. 260—475 PN

10 Claims

Process for the esterification of aromatic carboxylic acids with monatomic phenols comprising heating in the liquid phase to a temperature above 275°C. a mixture of the aromatic carboxylic acid with the monatomic phenol. Catalysts are not necessary but acidic catalysts such as phosphoric acid may be utilized if desired. The esters are monomers that can be used to prepare several types of high performance polymers.

3,694,491

**NOVEL DIKETO COLORING AGENTS**

Joseph Donald Surmatis, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 819,520, April 24, 1969, Pat. No.

3,651,145, which is a division of Ser. No. 648,196, June 23, 1967, Pat. No. 3,478,104. This application Sept. 14, 1971, Ser. No. 180,485

Int. Cl. C07c 49/61, 69/14, 69/78

U.S. Cl. 260—488 R

3 Claims

Novel  $C_{40}$  and  $C_{50}$  diketo coloring and pigmenting agents for foodstuffs and the like and a process for their production from hydroxenin including intermediates therein.

3,694,492

Patent Not Issued For This Number

3,694,493

**PROCESS FOR THE PRODUCTION OF METHALLYL SULPHONIC ACID AND SALTS THEREOF**

Gunter Lorenz; Heinrich Rinkler, and Gunter Nischk, all of Dormagen, Germany, assignors to Fabenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 17, 1969, Ser. No. 867,381

Claims priority, application Germany, Oct. 24, 1968, P 18 04 833.4

Int. Cl. C07c 143/16

U.S. Cl. 260—513 R

1 Claim

Process for the production of methallyl sulfonic acid and salts thereof by reaction of isobutylene and a complex of sulfur trioxide and an  $N,N$ -dialkyl substituted amide of an aliphatic carboxylic acid or a  $N$ -alkyl substituted lactam wherein at least 1 mol of isobutylene is used for 1 mol of sulfur trioxide. The methallyl sulfonic acid and their salts are comonomers in the polymerization of olefinic compounds.

3,694,494

**CARBOXYLATION PROCESS**

Edwin L. Patmore, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 784,945, Dec. 18, 1968, Pat. No.

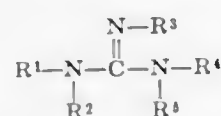
3,591,628. This application Feb. 3, 1971, Ser. No. 119,428

Int. Cl. C07c 51/02, 61/28

U.S. Cl. 260—514 B

5 Claims

A method of carboxylating indene, cyclopentadiene, fluorene and hydrocarbyl cyanide by contacting said compounds with carbon dioxide under substantially anhydrous conditions in the presence of a guanidine of the formula:



where  $R^1$  through  $R^3$  are hydrogen or alkyl of from one to five carbons and acidifying the resultant reaction mixture to form the carboxylic acid derivative and recovering said derivative therefrom.

3,694,495

**PREPARATION OF POLY ALPHA, ALPHA 2,3,5,6-HEXAFLUORO-P-XYLYLENE**

William P. Norris, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Division of Ser. No. 723,908, April 24, 1968, Pat. No.

3,626,032. This application Dec. 2, 1970, Ser. No. 94,539

Int. Cl. C07c 63/52

U.S. Cl. 260—515 A

2 Claims

A method for the preparation of new highly fluorinated p-xylylene monomers and polymers which have excellent chemical and thermal properties.

3,694,496

**CARBOXYLATION PROCESS**

Edwin L. Patmore, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

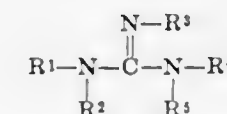
Division of Ser. No. 784,945, Dec. 18, 1968. This application Feb. 3, 1971, Ser. No. 119,427

Int. Cl. C07c 63/44

U.S. Cl. 260—515 R

3 Claims

A method of carboxylating indene, cyclopentadiene, fluorene and hydrocarbyl cyanide by contacting said compounds with carbon dioxide under substantially anhydrous conditions in the presence of a guanidine of the formula:



where  $R^1$  through  $R^3$  are hydrogen or alkyl of from one to five carbons and acidifying the resultant reaction mixture to form the carboxylic acid derivative and recovering said derivative therefrom.

3,694,497

**METHOD OF PREPARING AMMONIUM TEREPHTHALATE BY ISOMERIZATION, OR DISPROPORTIONATION OF POTASSIUM SALTS DERIVED FROM BENZENE-CARBOXYLIC ACIDS**

Vladimir Rod; Vladimír Bazant, and Zdenek Sir, all of Prague, Czechoslovakia, assignors to Československá akademie věd, Prague, Czechoslovakia

Filed Nov. 19, 1969, Ser. No. 878,266

Claims priority, application Czechoslovakia, Nov. 22, 1968, 8000-68

Int. Cl. C07c 63/28

U.S. Cl. 260—515 P

4 Claims

Multiple-stage process of isomerizing, or disproportionating potassium salts derived from benzene-carboxylic acids, and ultimate processing of the reaction product containing more than 40 per cent by weight of the terephthalic component, to obtain ammonium terephthalate, wherein the raw reaction product is extracted by a filtrate left after refining precipitation of ammonium terephthalate by ammonia and carbon dioxide, which filtrate contains free ammonium ions and free ammonia. The thus arisen solid phase containing di-ammonium terephthalate is then separated from the reaction mixture, dissolved in water, the thus arisen solution being used, after separation of an insoluble residue, for the preparation of pure di-ammonium terephthalate.

3,694,498

**ALPHA, ALPHA-DIMETHYL-BETA, BETA-DIMERCAPTO-N-LOWER ALKYL-(PHENYL AND SUBSTITUTED PHENYL) ETHYLAMINES**

Arthur B. Ash, Lathrup Village, and Calvin L. Stevens, Detroit, both of Mich., assignors to Ash Stevens, Inc., Detroit, Mich.

Division of Ser. No. 809,012, March 20, 1969, Pat. No.

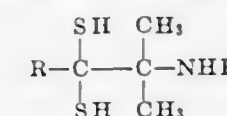
3,578,682. This application Sept. 11, 1970, Ser. No. 71,375

Int. Cl. C07c 87/28

U.S. Cl. 260—570.5 S

5 Claims

Dimercapto compounds characterized as alpha, alpha-dimethyl-beta, beta-dimercapto-N-lower alkyl-(phenyl and substituted phenyl) ethylamines of the structural formula:



where  $R$  is phenyl and substituted phenyl and  $R_1$  is lower alkyl containing one to eight carbon atoms are described. Trithiolane condensation derivatives of the dimercapto compounds (I) prepared by oxidation with the elimination of

hydrogen sulfide are also described. The dimercapto compounds (I) are generally prepared by reacting an alpha, alpha-dimethyl-beta-N-lower alkyl imine-(phenyl and substituted phenyl) ethylamine of the structural formula:



where  $R$  and  $R_1$  are as in the dimercapto compounds (I) and  $R_2$  is a lower alkyl group containing one to eight carbon atoms with hydrogen sulfide in an inert anhydrous polar organic solvent for the imino compounds (III) at temperatures less than the decomposition temperature of the dimercapto compounds (I) and until (I) is formed and precipitates from the reaction mixture. The imino compounds (III) are preferably prepared by reacting a compound of the structural formula:



with a lower alkyl amine ( $R_2-NH_2$ ) containing one to eight carbon atoms. The product dimercapto compounds (I) and trithiolanes are particularly useful as antimalarials in mammals.

3,694,499

**PROCESS FOR PREPARING PERFLUORO 3-PHENOXYPROPYONIC ACID**

Richard W. Quarles, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

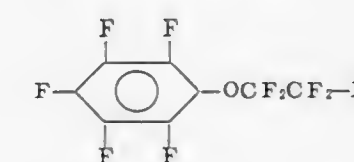
Filed March 18, 1970, Ser. No. 20,806

Int. Cl. C07c 65/02

U.S. Cl. 260—521 A

6 Claims

Novel compounds of the formula



are provided wherein  $X$  is  $-COF$ ,  $-COCl$ ,  $-COOH$ ,  $-COOR$ ,  $-COOM$ ,  $-CONR_2$ , or  $-CN$  wherein  $R$  is an alkyl radical,  $M$  is a metal, and  $R_1$  and  $R_2$  are independently hydrogen or alkyl radicals. Also provided are novel compounds of the formula  $C_6F_5OCF_2CF_2OCF(CF_3)-X$  wherein  $X$  is as defined above. These novel compounds are useful in the preparation of perfluoro(3-phenoxypropyl vinyl ether) monomer, said monomer being useful in the preparation of copolymers having improved oxidative stability.

3,694,500

**CATALYTIC OXIDATION OF POLYMETHYLSTILBENE COMPOUNDS**

Benjamin Weinstein, Morganville, and Burton Maxwell Rein, East Brunswick, both of N.J., assignors to Mobil Oil Corporation

Filed Sept. 26, 1969, Ser. No. 861,451

Int. Cl. C07c 63/02

U.S. Cl. 260—524 R

4 Claims

The catalytic oxidation of a polymethyl-substituted stilbene compound with molecular oxygen in a liquid reaction mixture containing a lower fatty acid (e.g., acetic acid) as the reaction solvent, a soluble cobalt compound as the oxidation catalyst and preferably a reaction activator (e.g., methyl ethyl ketone, etc.) produces a benzene polycarboxylic acid as exemplified by the oxidation of 4,4'-dimethylstilbene to terephthalic acid.



3,694,501

**PROCESS FOR PRODUCING SODIUM GLUCONATE**  
Jack Ziffer, Milwaukee, Wis., assignor to Pabst Brewing Company, Milwaukee, Wis.

Filed March 4, 1971, Ser. No. 121,201  
Int. Cl. C07c 59/06

U.S. Cl. 260—527 R 8 Claims  
The undesirable darkening or discoloration of solid sodium gluconate produced by evaporating water from an aqueous solution thereof is reduced or eliminated by introducing into such a solution a sufficient amount of sodium sulfite to inhibit discoloration of the resultant solid product.

3,694,502

**HYDROCARBOXYLATION PROCESS**  
Kestutis A. Keblys, Southfield, Mich., and Ronald L. Shubkin, Oak Park, Mich., assignors to Ethyl Corporation, New York, N.Y.

Filed Dec. 21, 1970, Ser. No. 100,355  
Int. Cl. C07c 51/14

U.S. Cl. 260—533 A 22 Claims  
A process for preparing carboxylic acids from olefinic compounds having up to seven carbon atoms, CO and H<sub>2</sub>O using a cobalt catalyst in the presence of a ketone or ether, a pyridine promoter, and hydrocarbon is disclosed.

3,694,503

**DIFFERENTIAL HERBICIDAL ACID ANHYDRIDES OF IMIDIC ACIDS AND LOWER ALKANOIC ACIDS**  
Alexander Galat, 1980 South Ocean Drive, Hallandale, Fla.

Filed March 1, 1971, Ser. No. 119,848  
Int. Cl. C07c 119/00

U.S. Cl. 260—545 R 5 Claims  
1-Acyloxy 1-(halophenyl)-imino alkanes, such as 1-propionyloxy 1-((3',4'-dichlorophenyl)-imino) propane, exhibit a strong differential herbicidal effect. While these compounds exhibit an extremely low to zero phytotoxic action when applied to the rice plant, at the same application rate these compounds result in a complete kill of a wide variety of other species of plants commonly found in rice fields as weeds.

3,694,504

**N-(3-CHLOROBENZENESULFONYL) ACETAMIDINES**  
John C. Danilewicz, Sandwich, England; Michael Szelke, Great Mongeham, near Deal Ireland, assignors to Pfizer Inc., New York, N.Y.

Filed May 6, 1970, Ser. No. 35,295

Claims priority, application Great Britain, May 19, 1969, 25,372/69

Int. Cl. C07c 143/78

U.S. Cl. 260—556 AR 6 Claims  
Novel N-(3-chlorobenzene-sulfonyl)acetamidines useful in the treatment of hypertension are disclosed.

3,694,505

**METHOD OF PRODUCING O-AMINOBENZAMIDE**  
Jan Magnus Bakke; Harald Erik Heikman; Christer Lennart Hakanson, all of Karlskoga, and John Martin Nilsson, Solna, all of Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Jan. 26, 1970, Ser. No. 5,921

Claims priority, application Sweden, Jan. 28, 1969, 1081/69  
Int. Cl. C07c 103/28

U.S. Cl. 260—558 A 3 Claims  
o-Aminobenzamide is prepared by the reaction in the gaseous phase of o-nitrotoluene and ammonia at a temperature about 500 to 650°C.

3,694,506

**PROCESS FOR PREPARING N-(2-CARBOXAMIDOETHYL) ACRYLAMIDE**  
Simone Franco; Alvaro Leoni, both of Ferrania/Cario Montenotte, and Manlio Marini, Savona, all of Italy, assignors to Ferrania, s.p.a. Milan, Italy

Division of Ser. No. 585,735, Oct. 11, 1966, abandoned. This application Feb. 17, 1969, Ser. No. 813,363

Claims priority, application Italy, Oct. 23, 1965, 24353  
Int. Cl. C07c 103/00

U.S. Cl. 260—561 N 12 Claims  
This invention relates to a new and efficient process for the preparation of N-(2-carboxamidoethyl) acrylamide and polymers thereof. In general the polymeric products of this invention are relatively high molecular weight polymers.

3,694,507

**PROCESS FOR THE PREPARATION OF PERFLUORO-2,5-DIAZAHEXA-2,4-DIENE**

Hans-Joachim Scholl, Cologne, and Erich Klauke, Odenthal-Hahnenberg, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed March 11, 1971, Ser. No. 123,475

Claims priority, application Germany, March 20, 1970, P 20 13 433.2

Int. Cl. C07c 119/00

U.S. Cl. 260—566 D 4 Claims  
Perfluoro-2,5-diazahexa-2,4-diene (CF<sub>3</sub>-N=CF=CF=N-CF<sub>3</sub>) is prepared by reacting N,N'-bis(trifluoromethyl) tetrafluoroethylene diamine (CF<sub>3</sub>-NH-CF<sub>2</sub>-CF<sub>2</sub>-NH-CF<sub>3</sub>) with sodium fluoride at about 20° to about 70°C.

3,694,508

**PURIFICATION OF P-AMINOPHENOL**  
Frank A. Baron, Short Hills; Roland G. Benner, New Providence, and Alan E. Weinberg, Verona, all of N.J., assignors to Mallinckott Chemical Works, Lodi, N.J.

Filed Oct. 16, 1969, Ser. No. 867,082

Int. Cl. C07c 91/44

U.S. Cl. 260—575 4 Claims  
A process for the purification of crude p-aminophenol comprising admixing the crude p-aminophenol with a water-immiscible solvent which is substantially a non-solvent for p-aminophenol having a boiling point above 40°C. and a melting point below 50°C. and selected from the group consisting of esters or hydrocarbons, and mixtures thereof and subsequently separating purified p-aminophenol from said mixture.

3,694,509

**SELECTIVE HYDROGENATION OF NITROAROMATICS TO THE CORRESPONDING N-ARYLHYDROXYLAMINE**  
Paul N. Rylander, Newark; Irene M. Karpenko, Irvington, and George R. Pond, Newark, all of N.J., assignors to Engelhard Minerals & Chemicals Corporation

Filed April 16, 1970, Ser. No. 29,055

Int. Cl. C07c 87/48

U.S. Cl. 260—578 2 Claims  
Nitroaromatics are selectively hydrogenated in neutral

media in the presence of precious metal catalysts and in the presence of dimethylsulfoxide to produce N-arylhydroxylamines in high yield.

3,694,510

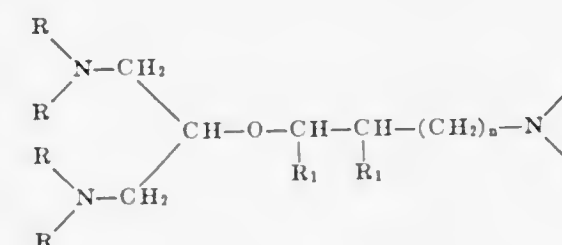
**ALIPHATIC POLYAMINOETHER COMPOUNDS**  
Friedrich Moller; Gunter Hauptmann, both of Leverkusen, Germany, and Heinz-Wolfgang Patzelt, Carnegie, Pa., assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 20, 1969, Ser. No. 867,901

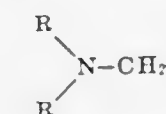
Claims priority, application Germany, Oct. 28, 1968, P 18 04 361.3

Int. Cl. C07c 93/02

U.S. Cl. 260—584 C 4 Claims  
Amino compounds having the formula



wherein n is 0 or 1 and the R substituents, which may be the same or different, represent methyl or ethyl radicals, the R<sub>1</sub> substituents representing hydrogen atoms or a hydrogen atom and a methyl, ethyl or



radical in cases where n is 0 but only hydrogen atoms in cases where n is 1 may be employed in the catalyzed polyurethane forming reaction between compounds containing hydrogen atoms reactive with —NCO groups and organic polyisocyanates.

3,694,511

**PROCESS FOR THE HYDROGENATION OF CYCLOALKANE HYDROPEROXIDES**  
Jacques Nouvel, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Nov. 20, 1969, Ser. No. 878,543

Claims priority, application France, Nov. 21, 1968, 68174736

Int. Cl. C07c 29/00, 45/00

U.S. Cl. 260—586 R 7 Claims  
Cycloalkane hydroperoxides are hydrogenated so that it is possible to avoid the disappearance of group VIII metal catalyst and to maintain the catalyst activity practically indefinitely by periodically rearranging the catalyst bed to transfer zones of low catalyst concentration to the later contacted parts of the catalyst bed.

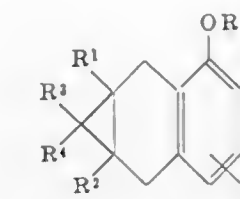
3,694,512

**TETRAHYDRO-CYCLOPROPA NAPHTHALENES**  
Venkatachala L. Narayanan, Hightstown, N.J., assignor to E. R. Squibb and Sons, Inc., New York, N.Y.

Filed Sept. 18, 1970, Ser. No. 73,668

Int. Cl. C07c 39/14

U.S. Cl. 260—619 F 2 Claims  
Compounds are provided having the structure



These compounds are useful as antiparasitic agents, antibacterial agents, and anti-inflammatory agents as well as surfact active agents.

3,694,513

**DIRECT NITRATION OF ALKYLPHENOLS WITH NITRIC ACID**

Stephen W. Tobey, Sudbury, Mass., and Marilyn Z. Lourandos, Ashland, Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 8, 1970, Ser. No. 44,666

Int. Cl. C07c 79/24

U.S. Cl. 260—622 R 8 Claims  
Alkylphenols are nitrated with nitric acid in the presence of a secondary or tertiary alcohol, a secondary alkyl nitrate, an aldehyde or a ketone. Use of such inhibitor decreases the quantity of oxidation products formed, especially quinone formation, and increases the conversion of the starting phenols to the desired nitrated products.

3,694,514

**10-BROMOALKYL-ANTHRACENES**  
Paul N. Craig, Ambler, and Charles L. Zirkle, Berwyn, both of Pa., assignors to Smith, Kline & French Laboratories, Philadelphia, Pa.

Division of Ser. No. 742,171, July 3, 1968, which is a continuation-in-part of Ser. No. 631,584, April 18, 1967, abandoned, which is a continuation-in-part of Ser. No. 526,975, Feb. 14, 1966, abandoned. This application March 5, 1971, Ser. No. 121,540

Int. Cl. C07c 25/00, 25/14

U.S. Cl. 260—649 F 2 Claims  
10-Bromoalkyl-anthracenes wherein the nucleus is substituted by chlorine, methyl, trifluoromethyl, methylthio, methylsulfonyl or N,N-dimethylsulfamyl are useful as intermediates for the preparation of corresponding 10-aminoalkyl-9,10-dihydroanthracenes which have utility as tranquilizers and antidepressants.

3,694,515

**HALPHENYL LITHIUM INITIATORS FOR CONJUGATED DIENE POLYMERIZATION**

William J. Trepka, and Richard J. Sonnenfeld, both of c/o Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 3, 1970, Ser. No. 60,610

Int. Cl. C071 1/02; C08d 3/04

U.S. Cl. 260—665 R 6 Claims  
A method of polymerizing conjugated dienes which employs a halophenyllithium initiator prepared from the inter-reaction of an alkylolithium and a bromiodobenzene is disclosed.

3,694,516

**PREPARATION OF HYDROCARBON SOLVENT SOLUTIONS OF ORGANOLITHIUM COMPOUNDS**

Robert C. Morrison, and Conrad W. Kamienski, both of Gastonia, N.C., assignors to Lithium Corporation of America, New York, N.Y.

Filed Oct. 5, 1970, Ser. No. 78,203

Int. Cl. C071 1/02; C08d 3/04

U.S. Cl. 260—665 R 25 Claims  
Method of preparing hydrocarbon solvent solutions of organolithium compounds in which solutions such as benzene or heptane solutions of di- and poly-lithio adducts of polyisoprenes or polybutadienes containing strongly solvating ethers such as dimethyl ether or tetrahydrofuran are treated



with weakly solvating ethers such as anisole, or weakly solvating tertiary amines such as triethylamine, to effect displacement from said solutions of the dimethyl ether or tetrahydrofuran. The resulting solutions are useful as catalysts in the production of conjugated polyene hydrocarbon polymers or copolymers thereof with vinyl-substituted aromatic hydrocarbons, having high cis-1,4 contents, as well as vinyl-substituted aromatic hydrocarbon polymers.

3,694,517

# ISOMERIZATION OF 5-VINYLBICYCLO[2.2.1]HEPT-2-ENES

Wolfgang Schneider, Brecksville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed June 14, 1971, Ser. No. 153,098. The portion of the term of this patent subsequent to July 20, 1988, has been disclaimed.

Int. Cl. C07c 5/28

U.S. Cl. 260—666 PY

6 Claims

5-Vinylbicyclo[2.2.1]hept-2-enes heated in the presence of a titanium catalyst system are isomerized to 5-ethylidenebicyclo[2.2.1]hept-2-enes. The catalyst system of this invention comprises a titanium compound, a Group IA, IIA or IIIA metal and an aluminum halide. The catalyst system is highly efficient and capable of rapidly isomerizing 5-vinylbicyclo[2.2.1]hept-2-enes. 5-Ethylidenebicyclo[2.2.1]hept-2-enes are useful comonomers for polymerization with  $\alpha$ -olefins such as ethylene and propylene.

3,694,518

# DEHYDROCOUPLING PROCESS

Raymond A. Franz, 463 Goethe, Kirkwood, Mo.; Herbert J. Gebhart, Jr., 433 Adams Avenue, Ferguson, Mo., and Philip D. Montgomery, 20 Graeler Drive, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 393, Jan. 2, 1970, abandoned. This application Dec. 8, 1970, Ser. No. 96,238

Int. Cl. C07c 1/18

U.S. Cl. 260—668 C

13 Claims

A vapor phase process for converting toluene and/or toluene derivatives in the presence of oxygen and a halogen to stilbene and/or stilbene derivatives.

3,694,519

Patent Not Issued For This Number

3,694,520

Patent Not Issued For This Number

3,694,521

# CHLOROSULFONATED BLOCK COPOLYMERS

Alfred W. Shaw, Moraga, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed July 31, 1970, Ser. No. 60,145

Int. Cl. C08f 19/04, 19/08

U.S. Cl. 260—878 B

6 Claims

Block copolymers are provided which have the properties of a vulcanized polymer without chemical crosslinking. These block copolymers comprise chlorosulfonated derivatives of block polymers having alternate monovinyl arene polymer blocks and chlorosulfonated polymer blocks of the group consisting of polyethylene and hydrogenated polybutadiene.

3,694,522

# PROCESS FOR PRODUCING A AROMATIC VINYL POLYMER COMPOSITIONS

Masami Tsuruta, Odawara; Shinji Ito, and Ichiro Otsuka, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Sept. 29, 1970, Ser. No. 76,625

Claims priority, application Japan, Oct. 4, 1969, 44/78953

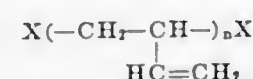
Int. Cl. C08f 15/40, 45/68

U.S. Cl. 260—878 R

10 Claims

Aromatic vinyl polymer compositions are produced by dis-

solving 1 to 20 parts by weight of an ethylene-propylene-non-conjugated diene terpolymer rubber and from 5 to 50 percent by weight based on said terpolymer rubber of a polymer having the general formula:



wherein X is hydrogen,  $\text{C}_2\text{H}_5\text{OH}$  or  $\text{COOH}$  and n is an average polymerization degree of 10 to 100 in 100 parts by weight of an aromatic vinyl monomer, prepolymerizing the solution by bulk-polymerization and then completing the polymerization by bulk-polymerization or suspension polymerization.

3,694,523

# DIAMINE SALTS OF DICARBOXYLIC ACIDS AS ADDITIVES FOR BLOCK POLYMERS

Kent W. Rollmann, and Harold V. Wood, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Jan. 30, 1970, Ser. No. 7,211

Int. Cl. C08f 19/08, 25/00, 45/60

U.S. Cl. 260—880 B

6 Claims

The tensile strength of radial or linear block copolymers containing terminal non-elastomeric blocks and central elastomeric blocks is improved by incorporating into the polymer at least one diamine salt of a dicarboxylic acid.

3,694,524

# BLENDS OF LOW DENSITY POLYETHYLENE AND BUTENE/ETHYLENE COPOLYMERS AND HIGH TEAR STRENGTH BLOWN FILM MADE THEREFROM

Harold G. Tinger, Pittsford, and Edward A. Colombo, Brooklyn, both of N.Y., assignors to Mobil Oil Corporation

Filed May 7, 1971, Ser. No. 141,381

Int. Cl. C08f 29/12

U.S. Cl. 260—897 A

8 Claims

By incorporating low density polyethylene (e.g., above 5 to about 15 weight percent) into a butene-1/ethylene copolymer containing from about 0.25 to about 3 mole percent ethylene, a resin blend is provided that is extrudable at substantially high extrusion rates to a blown tubular film of substantially high tear strength.

3,694,525

# VINYL CHLORIDE POLYMER COMPOSITIONS

Hiroshi Horino, and Masato Matsuo, both of Kawasaki, Japan, assignors to The Japanese Geon Company, Ltd., Tokyo, Japan

Filed June 25, 1971, Ser. No. 156,995

Claims priority, application Japan, June 29, 1970, 45/55938

Int. Cl. C08f 29/24

U.S. Cl. 260—899

4 Claims

A vinyl chloride polymer composition comprising (I) a vinyl chloride polymer and (II) a polymer selected from the group consisting of the homopolymers of tricyclo (5, 2, 1, 0<sup>2,4</sup>) decane-8-yl-methacrylate and the copolymers of tricyclo (5, 2, 1, 0<sup>2,4</sup>) decane-8-yl-methacrylate and methyl methacrylate.

3,694,526

# HYDROCARBON PHOSPHONATES

John B. Siddall, Palo Alto, Calif., and Jean Pierre Calame, Fribourg, Switzerland, assignors to Ziecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 800,267, Feb. 18, 1969,

which is a continuation-in-part of Ser. No. 618,321, Feb. 24,

1967, abandoned. This application July 14, 1969, Ser. No.

841,609

Int. Cl. C07f 9/40; A01n 9/36

U.S. Cl. 260—956

12 Claims

Hydrocarbon phosphonates containing from 12 to 17 carbon atoms in the hydrocarbon backbone chain and lower alkyl

substituents at the C-3,7 and 11 positions and unsaturation or saturation between C-2,3, C-6,7 and C-10, 11 and/or substituents at each of positions C-2,3,6,7,10 and 11 which are arthropod maturation inhibitors.

3,694,527

# PROCESS FOR THE PREPARATION OF BIS (BETHACHLOROETHYL) VINYL PHOSPHONATES

Harold E. Sorstokke, New City, N.Y.; Walter Stamm, Tarrytown, N.Y., and Eugene H. Uhing, Ridgewood, N.J., assignors to Stauffer Chemical Company, New York, N.Y.

Continuation of Ser. No. 629,065, April 7, 1967, Pat. No.

3,548,040. This application Feb. 9, 1970, Ser. No. 14,705

Int. Cl. C07f 9/40

U.S. Cl. 260—986

10 Claims

Olefinically unsaturated alkyl phosphonates suitable for use as copolymerizing agents, terminating agents and crosslinking agents formed by the selected dehydrohalogenation of a beta-halo-alkyl phosphonate corresponding to the product desired through the use of an improved dehydrohalogenation system. This dehydrohalogenation system comprises an alkali metal carbonate present in an amount stoichiometric to the amount of material to be dehydrohalogenated and a phenolic catalyst present in an amount of from about 0.01 to about 0.2 moles per mole of the product to be dehydrohalogenated. The dehydrohalogenation is desirably conducted at a temperature from about 90° to about 130° C. Preferred embodiments of this invention involve the use of sodium carbonate or bicarbonate and a phenolic catalyst, such as nitrophenol, or chlorophenol.

3,694,528

# METHOD FOR MAKING SPHERICAL BEADS

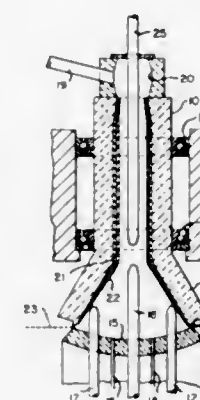
Charles W. Schott, 4769 Barone Drive, Pittsburgh, Pa.

Filed May 11, 1970, Ser. No. 35,962

Int. Cl. B01j 2/12

U.S. Cl. 264—8

5 Claims



A method is provided for pelletizing materials which consists in feeding the material to be pelletized downwardly through a vertical refractory tube through a controlled atmosphere and discharging the same horizontally from a rotating circular edge across the surface of a fluid coolant.

3,694,529

# METHOD FOR MOLDING ARTICLES

Roy C. Josephson, Hillsdale, and Clifford L. Weir, Wayne, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed April 2, 1970, Ser. No. 25,140

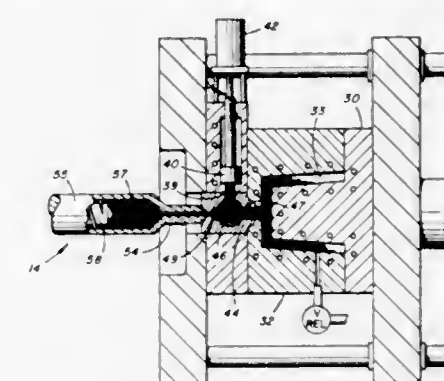
Int. Cl. B29d 27/00; B29f 1/06

U.S. Cl. 264—48

8 Claims

This disclosure is directed to a method for injection molding. Shot capacity of injection molding machines is increased by providing a low pressure accumulator which can receive a first charge of prepared molding material from a preparation chamber so as to store the first charge during the preparation of a second charge in the preparation chamber. Upon the

completion of the preparation of the second charge, both the first charge from the accumulator and the second charge from the preparation chamber are injected into a mold cavity. Molding with foamable molding material is improved by communicating the accumulator with the mold cavity so as to



allow expansion of the foamable molding material into the accumulator from the mold cavity during foaming. Material so received within the accumulator is thereafter recompressed for use as all or part of the first charge for the next subsequent molding cycle.

3,694,530

# METHOD OF PRODUCING AN INTEGRAL SKIN POLYURETHANE FOAM

James D. Wolfe, North Canton, Ohio, assignor to The Good-year Tire & Company, Akron, Ohio

Filed Nov. 17, 1969, Ser. No. 877,464

Int. Cl. B29d 27/04; C08g 22/44

U.S. Cl. 264—48

1 Claim

A method of producing integral skin polyurethane foams having densities as low as 1.0 to 3.0 lbs./ft<sup>3</sup> and surfaces which may simulate grain leather. The mold surface is first coated with a release agent, then a skin forming agent and then the foamable polyurethane reaction mixture is cast in the coated mold. Representative examples of the skin forming agents are polyester polyether and polyhydrocarbon polyols of two to 10 hydroxyls, hydroxyl containing polymers having a hydrocarbon, polyester or polyether backbone. The above skin forming agents may be applied to the mold surface by incorporation in a suitable solvent such as a low boiling liquid hydrocarbon or ketone. Polyurethane catalysts may also be added to the film forming agent solution. Another group of film forming agents which may be used are particulate materials which have the ability to absorb at least 0.5 grams of water per gram of material. Representative examples are sodium chloride, diatomaceous earth and talc.

3,694,531

# METHOD OF MAKING HOLLOW CONCRETE PANELS

John P. Glass, 79 La Grange Ave., Essington, Pa.

Division of Ser. No. 166,566, Jan. 16, 1962, Pat. No.

3,213,512, and a continuation of Ser. No. 382,910, July 15,

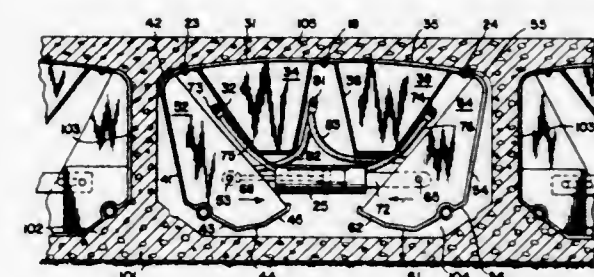
1964, abandoned. This application Oct. 14, 1966, Ser. No.

600,300

Int. Cl. B28b 21/18

U.S. Cl. 264—71

5 Claims



A method of making hollow concrete panels comprising pouring a lower concrete layer, placing thereon a hollow mold



core including a top wall and side walls and an open bottom defined by edges, said top wall having side edges and a center line, sealing along said bottom edges by placing gaskets along said bottom edges and pouring concrete on top of the core to press the gaskets against the bottom to prevent fresh concrete from entering said open bottom and locking the core in place, pouring an upper concrete layer connecting with said lower layer, peeling the side and top walls of the core from the concrete after it has set and collapsing the core, said side walls being first peeled from the bottom up and then the top wall being peeled starting at the top wall side edges and progressing toward the center line of the top wall, and removing the core from the concrete.

3,694,532

Patent Not Issued For This Number

3,694,533

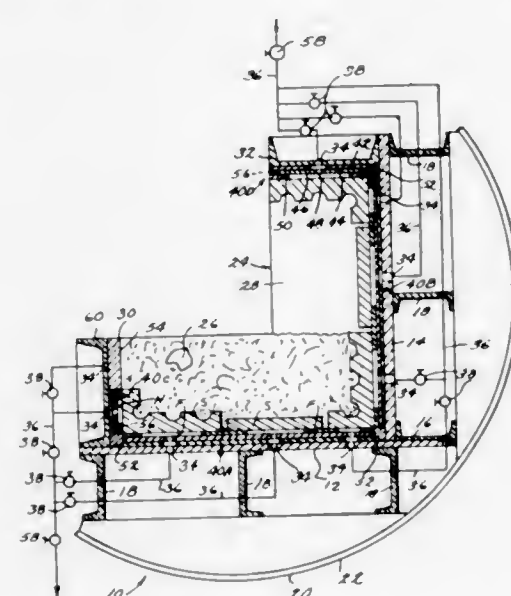
# METHOD FOR MAKING SLAB-FACED AND HEADED PANELS INCLUDING CORNERS OR RETURNS

Paul S. Kelsey, 715 South East 8th St., Delray Beach, Fla.  
Filed June 23, 1970, Ser. No. 49,148

Int. Cl. B32b 31/06

U.S. Cl. 264—90

6 Claims



There is disclosed a system for top pouring and vertical pouring of concrete or other construction material composition panels faced on one side or both sides with slabs (including full brick) wherein each panel includes a corner or a return at least partly faced with slabs. The casting is accomplished in a special, angulated casting box having the surfaces where slabs are to be located covered with vacuum plate inserts which are, in effect, combined resilient gaskets for preventing backing composition soilage of slab faces and means for holding slabs against the mold as the mold is moved or disposed to facilitate backing composition pouring.

3,694,534

# METHOD OF FITTING PRESSURIZED SPRAYING CONTAINERS

Yves Le Troadec, Mont-Saint-Aignon, France, assignor to Rhone-Poulenc S.A., Paris, France

Division of Ser. No. 817,818, April 21, 1969, Pat. No. 3,605,791. This application Nov. 5, 1970, Ser. No. 87,362

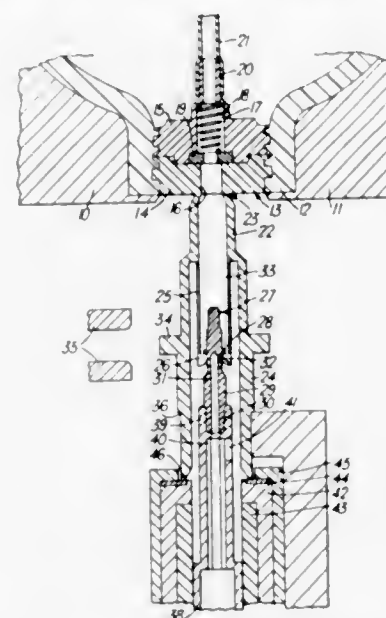
Int. Cl. B29c 17/07; B65b 3/04, 7/28, 43/00

U.S. Cl. 264—98

2 Claims

The specification describes a valve assembly for and a method of manufacturing a pressurized spraying container. The body of the valve is provided with an external tubular extension or sleeve in which is temporarily located the valve member. The sleeve is used to guide fluid under pressure into the container and may also be used during the blow molding of

the container. When the container is filled, the valve member is forced through the sleeve into engagement with its valve



seat, where it is retained by an already positioned spring, and the sleeve is detached.

3,694,535

# PROCESS AND APPARATUS FOR REMOVING VOLATILE SUBSTANCES FROM VISCOUS COMPOSITIONS

Koji Kimoto, Kamakura, Kanagawa-Pref., and Yoshinari Yamagisawa, Yokohama, Kanagawa-Pref., both of Japan, assignors to Toyo Katsui Industries, Incorporated, Tokyo, Japan

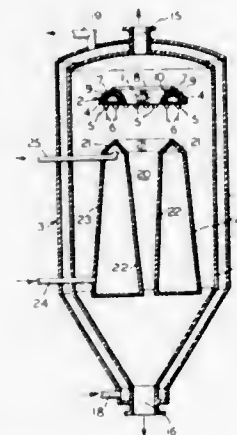
Continuation of Ser. No. 765,890, Oct. 8, 1968, abandoned.

This application Oct. 15, 1970, Ser. No. 90,233

Int. Cl. B01d 1/22; B29c 25/00

U.S. Cl. 264—102

7 Claims



A process for removing volatile substances from viscous compositions, for example, removing volatile solvent and unreacted monomer from polystyrene. The composition is heated to a temperature above the boiling points of the volatile substances at the pressure employed in the operation. The composition is then formed into strands and the strands are impacted against a solid surface. The composition is then caused to flow as a film over a heated surface while the strands and film are exposed to sub-atmospheric pressure.

3,694,536

# METHOD OF PREPARING LEAD ARTICLE

George S. Foerster, Midland, Mich., assignor to Dow Chemical Company, Midland, Mich.

Division of Ser. No. 672,715, Oct. 4, 1967, abandoned. This application Feb. 6, 1970, Ser. No. 9,397

Int. Cl. B22f 3/20

U.S. Cl. 264—111

2 Claims

A solid rigid lead article having improved resistance to creep and comprising a consolidated blended admixture of

particulate lead or lead alloy, and, from about 0.5 to 15 percent by volume of solid particulate non-metallic material so intimately and thoroughly dispersed and embedded throughout the article that inter-particle distances between non-metallic particles are substantially not greater than about 10 microns and preferably are less than about 1 micron. The solid particulate material is further characterized as being finer than about 200 mesh, as being solid-insoluble in lead, as having a melting temperature above about 622°F and as being substantially free from gaseous decomposition or evolution below about 622°F. A method of preparing the article also is disclosed.

3,694,537

# MANUFACTURE OF WEBS HAVING SELECTED ORIENTED PORTIONS

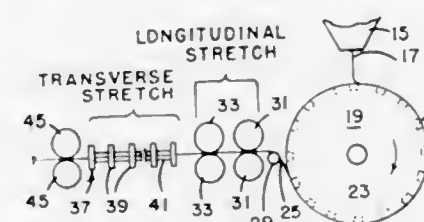
Theodore H. Fairbanks, Liverpool, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 784,383, Dec. 17, 1968, Pat. No. 3,632,716. This application Sept. 18, 1970, Ser. No. 73,435

Int. Cl. B29c 25/00; B29d 7/22, 7/24

U.S. Cl. 264—145

5 Claims



Manufacture of a thermoplastic polymeric web or film having a predetermined pattern of molecularly oriented portions by completely cooling an extruded flat unbroken stream of molten orientable crystallizable, thermoplastic polymeric material to provide an integral web, with selected spaced areas of such stream being cooled more slowly than the regions adjacent thereto, and thereafter stretching the web along biaxial directions.

3,694,538

# METHOD AND APPARATUS FOR COATING WITH PLASTICS

Akio Okamoto, and Taiko Uno, both of Ami-machi, Japan, assignors to Mitsubishi Petrochemical Co. Ltd., Tokyo, Japan

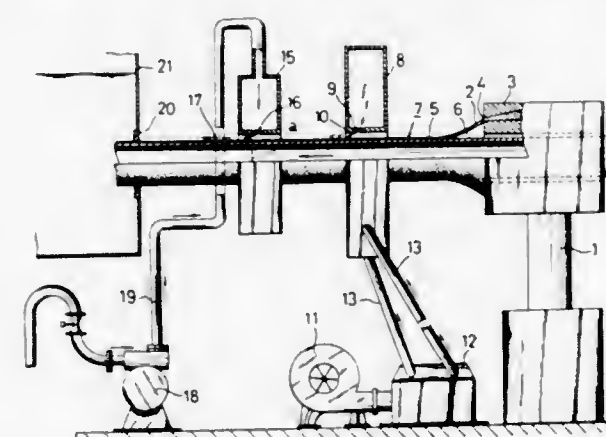
Filed Aug. 17, 1970, Ser. No. 64,254

Claims priority, application Japan, Aug. 18, 1969, 44/64286

Int. Cl. B29c 25/00; B29f 3/10; B44d 1/44

U.S. Cl. 264—173

6 Claims



Molten, thermoplastic resin is extruded from an annular die having a central hole through which an elongated article, such as a pipe is moved axially, so as to coat the article with hot resin. The hot resin coating is then precooled by a uniform stream of air issuing from an annular slot in a ring surrounding the coated article. The slot is inclined in the direction of axial

movement of the article. The article then enters a similar ring also having a second inclined slot for discharging a uniform stream of cooling water onto the coated article. The direction and force of the stream of air deflects the sprayed stream of water so that it contacts the coated article in a substantial axial direction so that the contact line of the water spray is substantially tangential to the surface of the elongated article. Thereafter, the article enters through a gasketed opening in its side wall, of a tank containing a liquid to effect cooling of the coated article by immersion. The coating is free of defects due to prior deflection of cooling water preventing direct impingement and providing substantially tangential contact zones of the water on the article.

3,694,539

# MANUFACTURE OF SYNTHETIC POLYMERIC FILAMENTS

Vincent L. Evans, Abergavenny, and Dennis A. Dyer, Cheltenham, both of England, assignors to British Nylon Spinners Limited, Pontypool, Monmouthshire, England

Filed May 20, 1965, Ser. No. 457,279

Claims priority, application Great Britain, May 28, 1964, 22,054/64

Int. Cl. D01d 7/04

U.S. Cl. 264—210 F

1 Claim



A polyamide yarn and a method of producing a polyamide yarn which is substantially stable to length changes due to expansion and contraction in the presence of moisture and/or heat in a freshly drawn and relaxed condition. The yarn is produced by eliminating steam or other moisture conditioning normally associated with the spinning of polyamide yarns and effecting at least a partial drawing of said yarn in the freshly spun state prior to packaging such yarn. The produced yarn suffers substantially no length change, that is, length changes are limited to less than 1 percent in the presence of moisture and/or heat.

3,694,540

# METHOD FOR APPLYING BUMPER STRIP TO LUGGAGE PIECE

Jack Slan, Toronto, Ontario, Canada, assignor to Dominion Luggage Co. Limited, Toronto, Ontario, Canada

Filed March 2, 1970, Ser. No. 15,804

Int. Cl. B29c 27/20

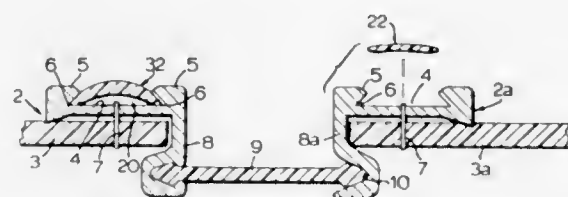
U.S. Cl. 264—230

5 Claims

A method of applying a bumper strip to a luggage piece which has a frame member provided with an outwardly facing groove therein running around the luggage piece, the method comprising heating an initial length of material with a memory which is firm and resistant to compression at room temperature and which when heated is stretchable at the expense of a reduction in thickness and width and when cooled and unrestrained shrinks to its initial size and shape, the initial length



of material having a width and thickness greater than the width and depth of the groove respectively, stretching the heated length of material to reduce its width to less than the groove width, applying the heated material in the groove in a manner to permit a measure of contraction but to preclude contraction to its initial length, and allowing the material to



cool to contract same lengthwise while expanding same in width and thickness to fill the groove. Further the strip is formed of arcuate cross section and on cooling forms an arcuate cap hiding fasteners located in the groove.

A luggage piece provided with a fastener hiding and groove filling bumper strip.

3,694,541

## METHOD FOR FORMING A MOLDED ARTICLE

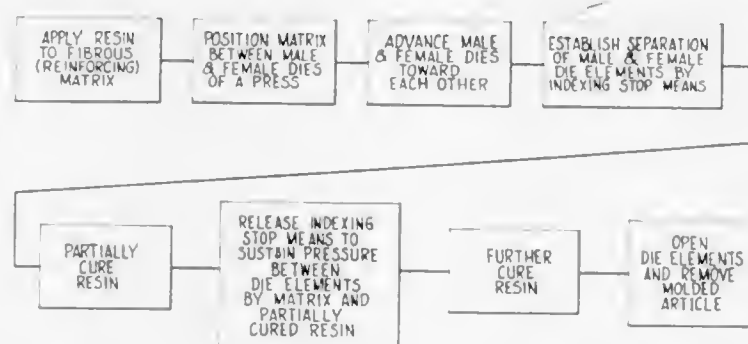
Robert J. Gelin, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation

Division of Ser. No. 686,402, Nov. 29, 1967, Pat. No. 3,531,830. This application July 6, 1970, Ser. No. 52,662

Int. Cl. B29c 3/06

U.S. Cl. 264—294

5 Claims



A method of forming an article of formable material wherein the formable material is positioned between registering die elements of a press. The die elements are advanced toward each other to a point of separation determined by releasable indexing stop means. The die elements are retained in the separated aligned condition determined by the indexing stop means for a predetermined time cycle, after which time the stop means are released allowing the full pressure of the press to be applied to the formable material between the die elements to complete the forming operation. The die elements are then separated and the molded article is removed.

## ERRATA

For Classes 423—53 and 423—366; 423—465 thru 423—349; 423—300 and 423—466 see: Patents Nos. 3,694,147 and 3,694,148; 3,694,150 thru 3,694,156; 3,694,171 and 3,694,172

## ERRATUM

For Class 264—98 see: Patent No. 3,694,424

3,694,542

Patent Not Issued For This Number

3,694,543

## REPELLENT COMPOSITION

Donald G. Needham, Ramona; Howard B. Walker, Bartlesville, and Luther O. Myers, Jr., Pawhuska, all of Okla., assignors to Phillips Petroleum Company

Filed Jan. 4, 1971, Ser. No. 103,889

Int. Cl. A01n 17/00

U.S. Cl. 424—30

18 Claims

Repellent compositions comprising blends of a repellent in copolymers of ethylene and a 1-olefin containing four to six carbon atoms per molecule. Stable repellent concentrate compositions containing up to 20 weight per cent repellent can be prepared.

3,694,544

Patent Not Issued For This Number

3,694,545

## THREE-PHASE AEROSOL SPRAYING SYSTEM

Willi Roth, Strengelbach, Aarau, and Otto Erwin Schenk, Basel, both of Switzerland, assignors to J. R. Geigy A.G., Basel, Switzerland

Filed Sept. 20, 1963, Ser. No. 310,493

Int. Cl. A61k 9/00

U.S. Cl. 424—45

3 Claims

An improvement is provided in a system comprising a pressure vessel and a sprayable mixture contained therein under pressure. The mixture consists essentially of a water-in-oil type emulsion containing the active ingredients to be sprayed, the continuous phase of which emulsion consists of organic solvent containing a propellant which is liquid under pressure. The improvement resides in the fact that the continuous phase of the said emulsion consists essentially of dimethoxymethane.

3,694,546

## TWO-PHASE AEROSOL SPRAYING SYSTEM

Willi Roth, Strengelbach, Kanton Aarau, Cameroon, and Otto Erwin Schenk, Basel, both of Switzerland, assignors to J. R. Geigy A.G., Basel, Switzerland

Filed Sept. 20, 1963, Ser. No. 310,470

Int. Cl. A61k 9/10

U.S. Cl. 424—45

2 Claims

The invention concerns a two-phase system, comprising an aerosol pressure container which contains a sprayable mixture therein, consisting essentially of a liquid phase of active ingredients; a propellant, liquefiable under pressure which may be either carbon dioxide and/or nitrous oxide and a liquid dimethoxymethane as an effective propellant dissolving agent for the carbon dioxide - nitrous oxide propellants.

3,694,547

## ANTI-DANDRUFF HAIR PREPARATION

Ernst Ludwig Forsthoff, Schenefeld, Kries Pinneberg, Germany, assignor to Lever Brothers Company, New York, N.Y.

Filed Nov. 5, 1971, Ser. No. 196,226

Claims priority, application Luxembourg, Nov. 10, 1970, 62030

Int. Cl. A61k 7/06

U.S. Cl. 424—94

7 Claims

This invention relates to hair preparations having activity against dandruff, containing as an anti-dandruff agent the proteolytic enzyme material rennet. One form of the hair preparations is a lotion, for example an aqueous or alcoholic solution or emulsion of rennet having a pH of from 2 to 9. Rennet may also be incorporated in shampoos, creams, sprays and gels.

3,694,548

## ENDURACIDIN DERIVATIVES

Akira Miyake, Nishinomiya; Hidesuke Iwasaki, Itami, and Kenzo Naito, Suita, all of Japan, assignors to Takeda Chemical Industries Ltd., Osaka, Japan

Filed Nov. 22, 1968, Ser. No. 778,300

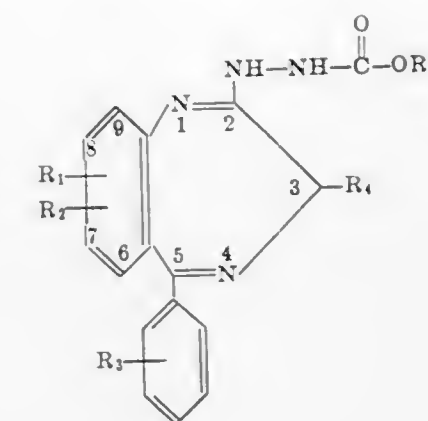
Claims priority, application Japan, Nov. 22, 1967, 42/7524

Int. Cl. A61k 21/00

U.S. Cl. 424—118

4 Claims

Enduracidin derivatives which have anti-microbial activity are produced by catalytic reduction of Enduracidin or a salt thereof.



3,694,549

## NEUTRALIZATION OF THE SYSTEMIC TOXIC PRINCIPLE IN OAK BY FEEDING IRON COMPOUNDS

William H. Livingston, Rte. 1, Box 274, Artesia, N. Mex.

Filed March 16, 1970, Ser. No. 20,074

Int. Cl. A61k 27/00

U.S. Cl. 424—147

1 Claim

This invention relates to the prevention of systemic oak poisoning in cattle by the dietary administration of iron.

3,694,550

Patent Not Issued For This Number

3,694,551

## HYPOGLYCEMIC COMPOSITIONS AND METHODS FOR 1-PHENYLSULFONYL-2-IMINO-IMIDAZOLIDINES AND HEXAHYDROPYRIDINES

Henri Dietrich, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation

Division of Ser. No. 770,102, Oct. 23, 1968, Pat. No.

3,538,085. This application Jan. 30, 1970, Ser. No. 12,483

Int. Cl. A61k 27/00

U.S. Cl. 424—229

8 Claims

1-Phenylsulfonyl-2-imino-imidazolidines and -hexahydropyrimidines, substituted at the heterocyclic ring and substituted or unsubstituted at the phenyl ring are prepared; these compounds and their pharmaceutically acceptable acid addition salts have hypoglycemic activity; pharmaceutical compositions comprising said compounds and methods of producing hypoglycemic effects in mammals are provided; an illustrative embodiment is 1-sulfanilyl-2-imino-3-butyl-imidazolidine.

3,694,553

## A METHOD OF CONTROLLING THE GROWTH OF BACTERIA AND FUNGI USING THE PHENYLHYDRAZINE SALT OF 2-MERCAPTOPYRIDINE-N-OXIDE

Rudiger D. Haugwitz, Highland Park, N.J., and John Uhoch, Jr., Seymour, Conn., assignors to Olin Corporation

Division of Ser. No. 5,914, Jan. 26, 1970, Pat. No. 3,634,438.

This application Oct. 8, 1971, Ser. No. 187,904

Int. Cl. A01n 9/00, 9/22

U.S. Cl. 424—263

1 Claim

The phenylhydrazine salt of 2-mercaptopyridine-N-oxide is a novel composition of matter and is useful as a broad spectrum anti-bacterial and anti-fungal agent, especially against Gram-negative organisms.

3,694,554

Patent Not Issued For This Number

3,694,555

## 3-CARBOXYLIC ACID AMIDO-QUINOXALINE-1,4-DI-N-OXIDES AS ANTIBACTERIAL AGENTS AND PHARMACEUTICAL COMPOSITIONS COMPRISING SAID OXIDES

Kurt Ley, Ulrich Eholzer; Roland Nast, all of c/o Farbenfabriken Bayer AG, Leverkusen; Karl Georg Metzger, and Dieter Fritzsche, both of c/o Farbenfabriken Bayer AG, Wuppertal-Elberfeld, all of Germany

Division of Ser. No. 764,613, Oct. 2, 1968, Pat. No. 3,558,624.

This application Feb. 16, 1970, Ser. No. 889,773

Claims priority, application Germany, Oct. 4, 1967, F 53366

Int. Cl. A61k 27/00

U.S. Cl. 424—250

40 Claims

Pharmaceutical compositions are provided for controlling bacterial infections caused by gram-positive and gram-negative

3,694,552

## 3-(5-PHENYL-3H-1,4-BENZODIAZEPIN-2-YL) CARBAZIC ACID AND ALKYL ESTERS IN THERAPEUTIC COMPOSITIONS AND METHOD

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 852,112, Aug. 21, 1969, Pat.

No. 3,646,055. This application Nov. 18, 1971, Ser. No.

200,203

Int. Cl. A61k 27/00

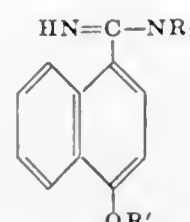
U.S. Cl. 424—244

11 Claims

Therapeutic compositions for treating humans and animals comprising, in unit dosage form, 3-1/4-5-phenyl-3H-1,4-benzodiazepin-2-yl-1/4 carbazic acid and alkyl esters of the formula:



tive bacteria containing a 3-carboxylic acid amido-quinoline-1,4-di-N-oxide as active ingredient, as exemplified by 2-acetoxymethyl-3-carboxylic acid ethylamidoquinoline-di-N-oxide and its congeners. The dosage ranges from 5 mg/kg to 150 mg/kg daily orally or parenterally.



wherein R is alkyl having from three to eight carbon atoms, R' is alkyl having from one to 11 carbon atoms, wherein both the Rs attached to the nitrogen atom are the same, and in which the sum of the carbons in Rs and R' is 12 to 19, and a pharmaceutically acceptable acid addition salt of said base and a therapeutically acceptable carrier therefore.

3,694,556

## ANTI-TAPEWORM INFECTION COMPOSITION

Morton Harfenist, and Richard Baltzly, both of Scarsdale, N.Y., assignors to Burroughs Wellcome & Co.  
Continuation-in-part of Ser. No. 672,984, Oct. 5, 1967, Pat. No. 3,534,142, which is a continuation-in-part of Ser. No. 353,292, March 19, 1964, abandoned. This application May 25, 1970, Ser. No. 40,427

Claims priority, application Great Britain, March 22, 1963, 11,555/63. The portion of the term of this patent subsequent to Oct. 13, 1987, has been disclaimed.

Int. Cl. A61k 27/00

U.S. Cl. 424—326

23 Claims

An orally ingestible anti-tapeworm infection composition for mammals which comprises a therapeutically effective non-toxic amount of a compound selected from the class consisting of a base of Formula (I)

3,694,557

## ANTI-INFLAMMATION COMPOSITIONS CONTAINING TASPINE OR ACID SALTS THEREOF AND METHOD OF USE

Georgia J. Persinos, Rockville, Md., assignor to The Amazon Natural Drug Company, Somerville, N.J.

Filed Oct. 23, 1970, Ser. No. 83,646

Int. Cl. A61k 27/00

U.S. Cl. 424—279

8 Claims

A therapeutic composition and method for the treatment of various forms of inflammation and the like utilizing a therapeutically effective amount of taspine and derivatives thereof as the active ingredient of the composition.

## ELECTRICAL

3,694,558

## NAVIGATION LIGHT SIMULATOR

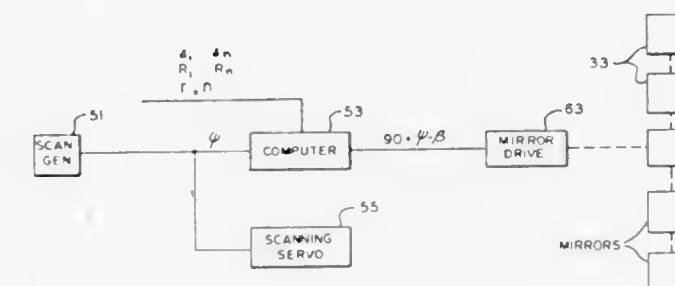
Robert M. Eisenberg, Derwood, and George R. Quick, Silver Spring, both of Md., assignors to The Singer Company, New York, N.Y.

Filed April 14, 1971, Ser. No. 133,890

Int. Cl. G09b 9/06

U.S. Cl. 35—10.2

6 Claims



A navigation light simulator, for use in a ship's bridge simulator, in which a spot is scanned across the screen and the light selectively directed to observers on the bridge along lines of sight to the simulated lights is shown. In one embodiment a plurality of shutters placed between the screen and the observers are used to expose the spot when along the proper lines, and in a second embodiment the screen comprises a plurality of rotatable mirrors to direct the spot along the proper lines of sight as the spot scans.

3,694,559

## ELECTRONIC MUSICAL INSTRUMENT EMPLOYING VARIABLE RESISTOR FINGERBOARDS

Schoichi Suzuki, and Takatosi Okumura, both of Hamamatsu-shi, Shizuoka-ken, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

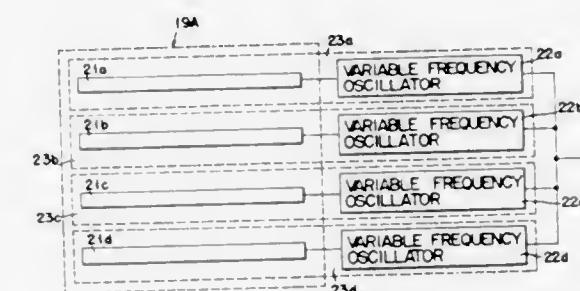
Division of Ser. No. 11,983, Feb. 17, 1970, Pat. No. 3,626,350.

This application Nov. 4, 1970, Ser. No. 86,955

Int. Cl. G10h 1/02

U.S. Cl. 84—1.01

5 Claims



An electronic musical instrument wherein there are several performing units. These performing units are made up of variable resistor fingerboards and variable frequency oscillators acting as tone generators. These oscillators are connected to the respective contact units which determine the frequencies of these oscillators. Tone signals are generated when one or more fingers simultaneously depress the performing units at points on the fingerboards. The relationship between the pressure contact unit and the variable frequency oscillators is so determined as to make the frequencies of the generated tone signals correspond to those of notes which are harmonized into a single chord. By continuously varying the point of finger contact it is possible to produce monophonic chord and portamento signals and to vary the coloring and volume of the musical tone signals on each of them or combinations of them.

3,694,560

## Patent Not Issued For This Number

3,694,561

## ANIMATION CIRCUIT FOR A MUSICAL INSTRUMENT

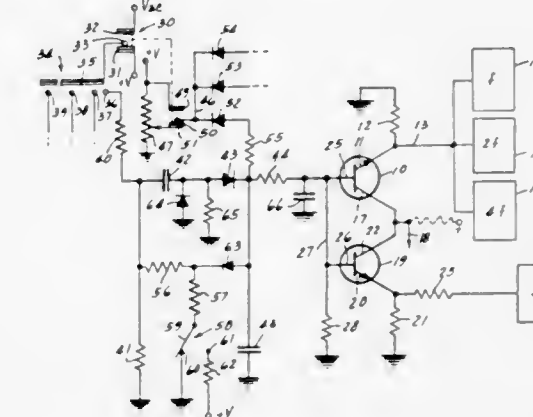
Eugene Stephen Morez, River Grove, Ill., assignor to Chicago Musical Instrument Co., Chicago, Ill.

Filed April 15, 1970, Ser. No. 28,668

Int. Cl. G10h 1/04, 1/06

U.S. Cl. 84—1.13

10 Claims





produced an additional line of melody consisting of tones each being a member of the associated chord, thereby accomplishing harmonization to the original melody. The device comprises:

a first key switch circuit including key switches each having a normally open contact connected to the tone generator of the associated tone, a normally closed contact and a transfer contact, the normally closed contact being connected to the transfer contact of a lower adjacent tone key switch; and

a second key switch circuit including key switches each connected to the transfer contact of the key switch of a major second lower tone in the first key switch circuit and to a succeeding stage such as a tone coloring circuit.

### 3,694,563 CONDUITS

Derek Henry Monds, Windsor, and Brian Charles Wills, Ascot, both of England, assignors to Smith Industries Limited, London, England

Filed May 3, 1971, Ser. No. 139,443

Int. Cl. H02g 3/28

U.S. Cl. 174-97

11 Claims



A conduit having a plurality of bores comprises an indented metal shell which defines the bores and which is corrugated transversely of the bores. The conduit includes a lining for the bores which is both flexible and has physical characteristics selected in accordance with intended use of the conduit. For example, the conduit may be for electric cables and, in such a case, the material constituting the lining is selected so as to provide electrical insulation between the cables and the metal shell, and so as, at least partially, to inhibit ingress of moisture into the bores. The conduit is formed by firstly forming a corrugated tube from a metal strip and thereafter indenting the tube continuously along its length by means of one or more pairs of co-operating profiled rollers.

### 3,694,564

#### ELECTRICAL TERMINAL ASSEMBLY

Edward Henry Pater, Bearwood, Warley, England, assignor to Lilly Industries Limited, London, England

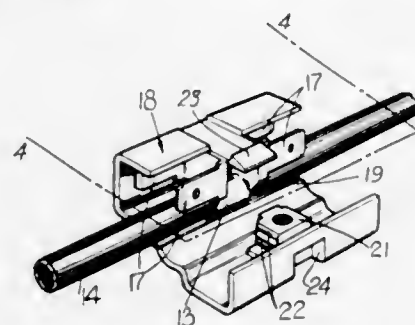
Filed Aug. 25, 1970, Ser. No. 66,698

Claims priority, application Great Britain, Aug. 26, 1969, 42,453/69

Int. Cl. H02g 15/08

U.S. Cl. 174-72 R

3 Claims



An electrical terminal for connection intermediate the ends of a lead includes a conductive member having a first portion which is deformed in use to grip and make electrical connection to a lead, and second and third spaced portions integral

with the first portion and extending generally at right angles to the first portion. The second and third portions are adapted to receive mating connector parts, and the terminal further includes an insulating housing which in use enclosed the conductive member and part of the lead. The insulating housing includes a part which extends between the second and third portions of the conductive member, said part being so shaped that the width of the part increases progressively along the length of the part so that the part wedgingly engages both the second portion and the third portion so as to resist relative movement between the housing and the conductive member.

### 3,694,565

#### B-TYPE INSULATION

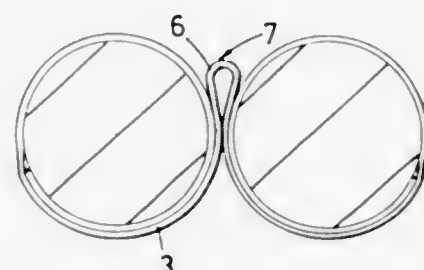
Bernard Edwin Ash, Kent, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 8, 1972, Ser. No. 224,472

Int. Cl. H01b 7/02

U.S. Cl. 174-117 R

6 Claims



A pair of electrical conductors are insulated by a common strip of B-shaped material having two lobes at opposite portions around respective conductors and a web connected between the lobes. The insulation is wrapped in opposite directions around the conductors from the longitudinal edges toward the center. The two lobes are brought close together and sealed to the web by adhesive. A portion of the web extends in a loop between the conductors and may be weakened along the length to facilitate severing the connection without damage to the insulation on either conductor. Undesired separation of pairs during jointing is eliminated.

### 3,694,566

#### PRESSURE EQUALIZING ACCESSORY INSTALLABLE ALONG THE TOP SIDE OF ELECTRICAL CABLES

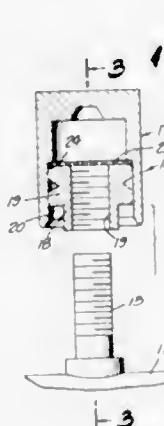
John T. Thompson, 244 Loring St., Los Angeles, Calif., and George W. Gillemot, 2331-20th St., Santa Monica, Calif.

Filed July 1, 1971, Ser. No. 158,727

Int. Cl. H02g 15/00

U.S. Cl. 174-135

3 Claims



A pressure equalizing accessory for electrical cables installable along the upper side of the cable sheath. The accessory includes a tubular fitting anchorable to the sheath at intervals therealong and a downwardly opening U-shaped breather having one leg in communication with the upper end of the tubular fitting and the other end vented to the atmosphere and ef-

fective to safeguard against the admission of moisture and liquids generally while providing for free air flow as necessary to maintain equalized pressure conditions.

### 3,694,567

#### CONSTANT AMPLITUDE PHASE SHIFTER

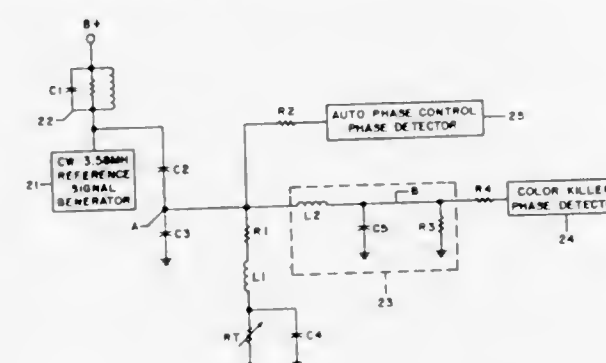
John M. Kresock, Fort Wayne, Ind., assignor to The Magnovox Company, Ft. Wayne, Ind.

Filed May 11, 1970, Ser. No. 36,018

Int. Cl. H04n 9/44, 9/48

U.S. Cl. 178-5.4 CK

3 Claims



In many color television circuitry designs, a 3.58 mHz reference signal is provided to the automatic phase control phase detector and the color killer phase detector, and in a closed loop color synchronization circuit, the reference signal to the color killer detector is shifted in phase 90° relative to the automatic phase control detector. In addition, harmonics of the reference signal and color burst signal must be controlled. Further, in many circuits an adjustable phase section is added to adjust the phase of the reference signal to the automatic phase control detector and the color killer detector for tint control. This invention provides circuitry which will bypass the harmonics to ground and compensate for the impedances of such harmonic bypass circuit and the color killer detector fixed phase shifter and provides a substantially constant amplitude to the phase detectors for all positions of the adjustable phase shift circuit. In a preferred embodiment, an equivalent resistance is uniquely determined and the impedance of a harmonic bypass circuit and the fixed phase shift device of the color killer detector is made substantially equal to this equivalent resistance to provide the constant amplitude signal to the detectors.

### 3,694,568

Patent Not Issued For This Number

### 3,694,569

Patent Not Issued For This Number

### 3,694,570

#### AUTOMATIC ENGRAVING MACHINE

Evgeny Pavlovich Kotov, ulitsa Nedelina, 34, korpus 3, kv. 7; Viktor Vladimirovich Legostov, ulitsa Nedelina, 28, kv. III; Evgeny Alexeevich Stepanov, ulitsa Nedelina, 34, korpus I, kv. III; Alexandr Mikhailovich Chuchalov, Mozhaiskor shosse, 63, kv. 7; Nikolai Kuzmich Maiorov, ulitsa Initsiativnaya, 3, korpus I, kv. 2; Gennady Pavlovich Merezko, ulitsa Kubinka, 16, korpus 2, kv. 4; Anatoly Semenovitch Komarov, ulitsa Veresaeva, 15, and Nikolai Georgievich Sosnitsky, ulitsa Grishina, 6, kv. 4, all of Moscow, U.S.S.R.

Filed July 22, 1970, Ser. No. 57,166

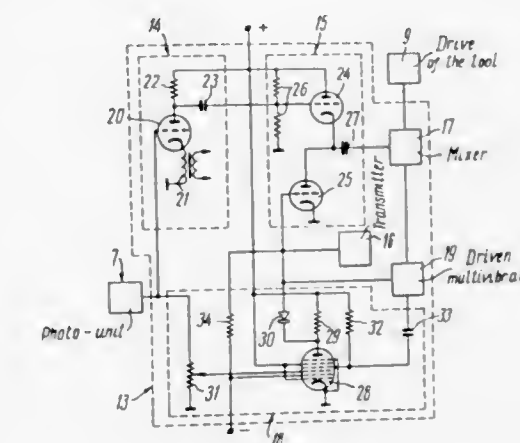
Int. Cl. G01d 15/02; H04n 1/06, 1/24

U.S. Cl. 178-6.6 B

3 Claims

An automatic engraving machine, in which the device, converting the photoelectric current fed from a photo-unit moved

along a rotary shaft with an original into electric signals applied to the drive of a tool engraving the rotating printing shaft while moving therealong comprises two channels. The first channel includes a modulator fed with the photoelectric current corresponding to the original and an electronic switch converting the signals fed from the modulator and acting on the drive of the tool. The second channel includes an electronic relay adjusted for a predetermined level of the



### 3,694,571

#### FACSIMILE RECORDER MARKING CIRCUIT

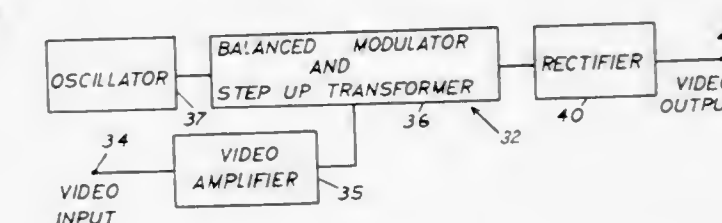
John W. Smith, Whitestone, N.Y., and Roger A. Pinkham, Lake Hiawatha, N.J., assignors to Graphic Transmission Systems, Inc., Hanover, N.J.

Filed Dec. 7, 1970, Ser. No. 95,775

Int. Cl. G03g 15/00; H04n 1/14, 1/16

U.S. Cl. 178-6.6 A

3 Claims



A marking circuit for a facsimile receiver in which a low voltage direct current output signal is passed through a modulator with an alternating current. The modulator output is stepped up in voltage and rectified to provide a desired high voltage for electrostatically charging a suitable recording paper for the marking thereof.

### 3,694,572

Patent Not Issued For This Number

### 3,694,573

Patent Not Issued For This Number



3,694,574

**ELECTROSTATIC FACSIMILE PRINTER**

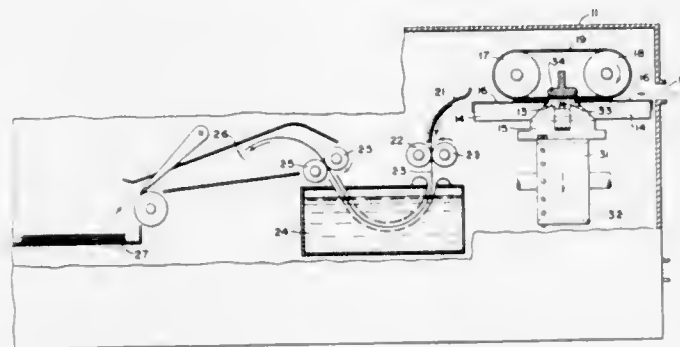
Thomas J. Gray, Halifax, N. S., Canada; John B. Picchiottino, and Kenneth R. Hackett, both of Boulder, Colo., assignors to Phonocopy, Inc., Wilmington, Del.

Filed Sept. 16, 1969, Ser. No. 858,297

Int. Cl. G01d 15/06; H04n 1/14, 1/30

U.S. Cl. 178—6.6 A

2 Claims



A flatbed printer for facsimile reproduction provides a scan line station across which a record sheet moves and one or more scanning styli which scan the record sheet line by line as it moves across the scan line station with substantially rectilinear motion. The stylus is transported by a belt driven on two spaced rotatable pulleys which permits a flatbed configuration with electrodes and supporting structure adapted to permit the formation of a charge image as the styli scan the record sheet and preserve the charge image during subsequent travel to a toner electrostatic developing station where a permanent visible image is produced.

3,694,575

Patent Not Issued For This Number

3,694,576

Patent Not Issued For This Number

3,694,577

Patent Not Issued For This Number

3,694,578

**GROUP COMMUNICATION APPARATUS**

Alexander Arthur Luttrell Reid, London, S.W. 15, England

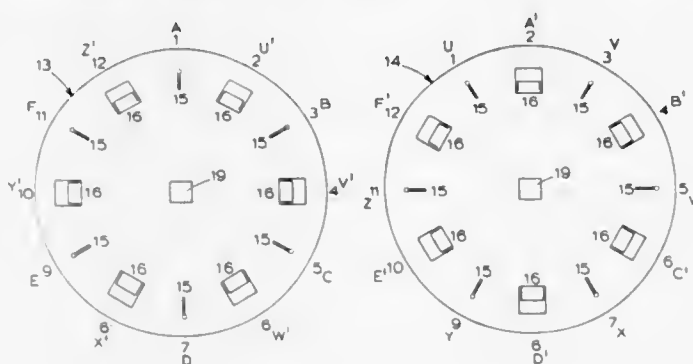
Filed Jan. 20, 1971, Ser. No. 107,888

Claims priority, application Great Britain, Jan. 26, 1970, 3,666/70

Int. Cl. H04m 3/56

U.S. Cl. 179—1 CN

11 Claims



First and second conference tables are provided at separated locations. Each table carried a plurality of outward

facing microphones alternating peripherally of the table with a plurality of inward facing loudspeakers. Participants sit only in front of the microphones and each participant is represented at the remote table by the correspondingly situated loudspeaker. A transmitter control means at each table senses a selected microphone in use and passes a control signal characteristic of that microphone over a communications link. A receiver control means at each table selects, upon receipt of the control signal, the appropriate loudspeaker corresponding to the selected microphone and feeds to that loudspeaker an audio signal from the selected microphone over a telecommunications link. A microphone may be selected on the basis of a push button switch or on the basis of audio signal level or both. Visual indicators at each microphone and loudspeaker indicate when they are in use.

3,694,579

**EMERGENCY REPORTING DIGITAL COMMUNICATIONS SYSTEM**

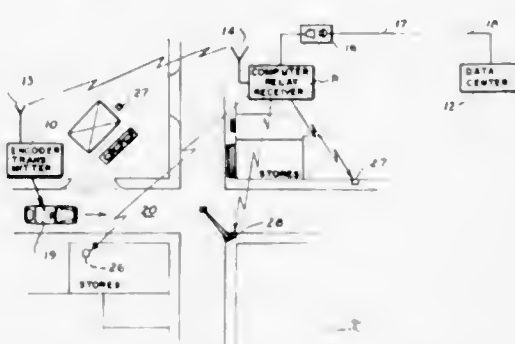
Peter H. McMurray, 161 Bay Ave., Islip, N.Y.

Filed Aug. 6, 1971, Ser. No. 169,737

Int. Cl. H04m 11/04

U.S. Cl. 179—5 R

20 Claims



A digital communications system which can be used for emergency reporting having a transmitting unit which sends out information signals identifying the transmitting unit and identifying the type of emergency. A relay station located within the area receives and stores the signal and in response thereto electronically dials a predetermined telephone number to a data center, transmits an encoded signal identifying the station and then relays the information sent from the transmitting unit. Assistance or corrective action may then be provided by dispatch from the data center.

3,694,580

**TIME DIVISION SWITCHING SYSTEM**

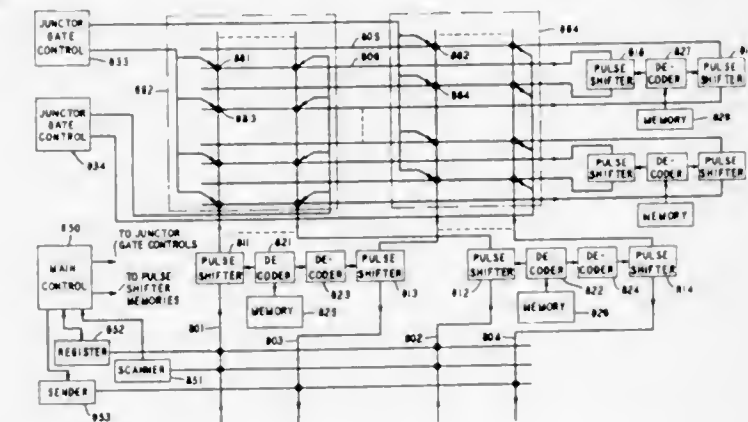
Hiroshi Inose, and Tadao Saito, both of Tokyo, Japan, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 28, 1971, Ser. No. 166,927

Int. Cl. H04j 3/00

U.S. Cl. 179—15 AQ

13 Claims



A time division switching system includes first and second groups of time division buses and a crosspoint network for in-

terconnecting the buses of the first group to the buses of the second group. On each time division bus, interleaved PCM codes are transmitted in a plurality of  $m$  time slots. Each time slot is divided into a plurality of bit intervals and each bit interval is divided into  $n$  positions whereby  $n$  interleaved PCM codes are transmitted in each time slot. A control circuit operates to selectively enable the crosspoint gates to transfer PCM code bits from the first group buses to the second group buses in each position. A control memory is provided for each path of the group having the lesser number of paths. Control codes are stored in the memory, each of which determines the operation of the gates connected to the path associated with the memory during a time slot. Each memory has a capacity corresponding to the number of paths in the group having the greater number of paths multiplied by  $m \cdot n$ .

3,694,581

**DIGITAL SLOPE THRESHOLD DATA COMPRESSOR**

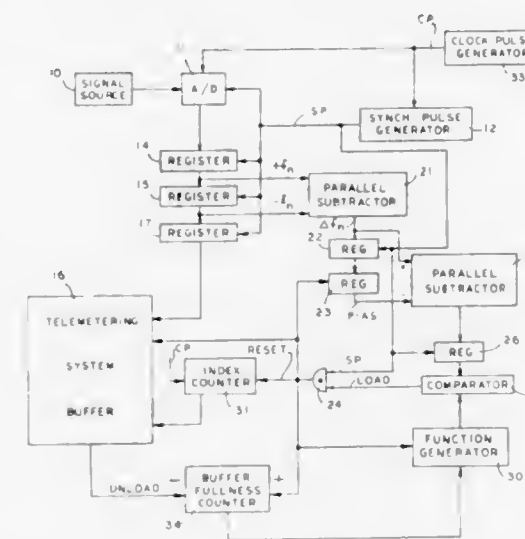
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Tage O. Anderson, 628 Fairview Ave., Arcadia, Calif.

Filed May 13, 1971, Ser. No. 143,078

Int. Cl. H04b 1/66

U.S. Cl. 179—15.55 R

4 Claims



Apparatus is disclosed for data compression by a decreasing slope threshold test using digital techniques in which the data stream through an input register is examined and only those samples of the raw data are selected for transmission which have a first difference (slope) that exceeds an exponentially decaying threshold function relative to a bias. If a sample is transmitted, it becomes the new bias and a generator of the threshold function is reset. For threshold comparison, the bias is first subtracted from each first difference to produce a second difference for direct comparison of its absolute value with the absolute value of the threshold function, thereby allowing the function generator to run from a constant reference to generate a single sided exponentially decaying function.

3,694,582

**CIRCUIT ARRANGEMENT FOR SUPERVISING THE CODED OUTPUT INFORMATION OF A TRANSLATOR IN TELECOMMUNICATION SYSTEMS AND PARTICULARLY TELEPHONE SYSTEMS**

Theodor Burian, Ditzingen, and Bernhard Krause, Ludwigshafen-Eglosheim, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed March 10, 1970, Ser. No. 18,104

Claims priority, application Germany, March 13, 1969, P 19 12 626.2

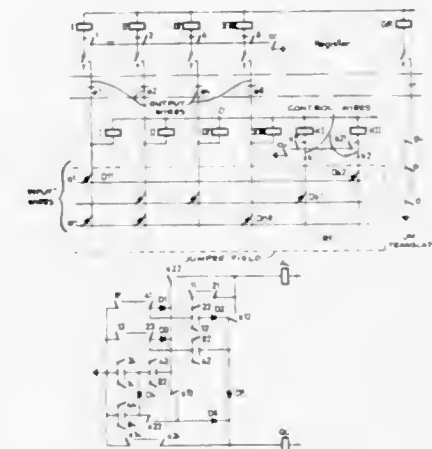
Int. Cl. H04q 3/47

U.S. Cl. 179—18 EB

2 Claims

A translator in a telecommunication system is equipped

with output checking means. The translator is associated with control wires which are jumpered to determine the value on



each output terminal of the translator. A comparison is made to determine when errors are present.

3,694,583

**SPEED CALLING CONTROL AND STORE**

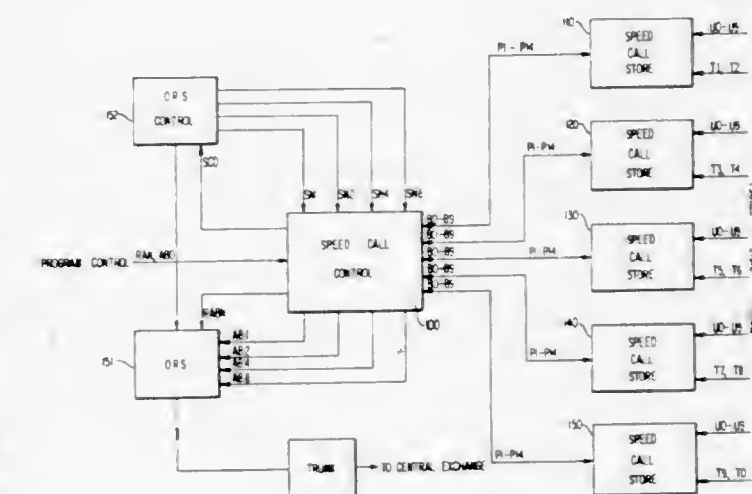
Ignas Budrys, and Ernest O. Lee, Jr., both of Fairport, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Dec. 10, 1970, Ser. No. 96,928

Int. Cl. H04m 3/44

U.S. Cl. 179—18 BA

16 Claims



A speed calling control and store for a PBX wherein the storage facility is time shared by all parties to the system and is capable of storing either a fourteen digit number or two seven digit numbers in each storage location, the fourteen digit and seven digit storage locations being segregated so as to provide for maximum efficiency in storage.

3,694,584

**PREFERRED CUSTOMER COMMUNICATION SYSTEM**

Leon M. Gimbert, 161-Rue de Javel, Paris, France

Filed May 28, 1971, Ser. No. 147,797

Claims priority, application France, May 29, 1970, 7019758

Int. Cl. H04m 3/20, 3/38

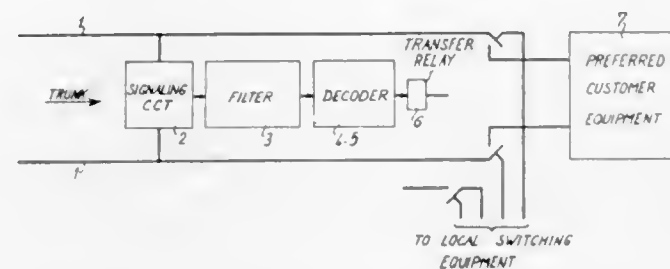
U.S. Cl. 179—18 D

3 Claims

Preferred customer communication system in which trunks available to a regular switching network are selectively con-

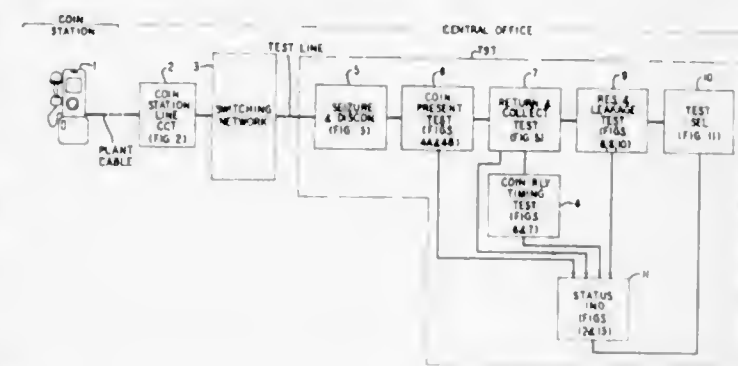


nected to preferred customers whether or not these trunks are engaged on a regular customer call. A commander doubly



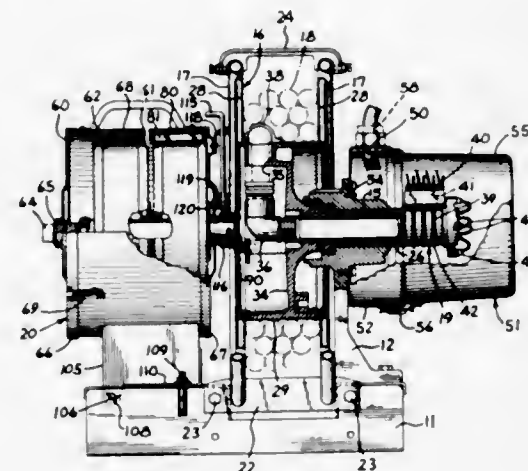
magnetic electrical structure and wherein a single elastomeric damping member is employed to achieve a high degree of lateral compliance and torsional damping.

**3,694,587**  
**COIN STATION CONDUCTOR LEAKAGE TEST ARRANGEMENT**  
James Arthur Grandle, Jr., Marlboro, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed May 26, 1971, Ser. No. 146,944  
Int. Cl. H04m 3/22  
U.S. Cl. 179-175.2 R 11 Claims



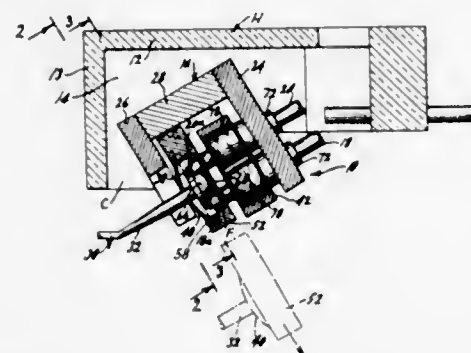
Test equipment connectable to a coin station for performing operational checks of the coin station apparatus is disclosed. The equipment is controlled by dialed signals and is capable of performing conductor leakage tests as well as line-to-line resistance checks on the audio communication path. Excessive leakage values and low line resistance insulation values are indicated by tone signals.

**3,694,588**  
**TAKE-UP REEL**  
Arthur I. Appleton, 1701 Willington Ave., Chicago, Ill.  
Filed May 6, 1970, Ser. No. 35,153  
Int. Cl. H02g 11/02; B65h 75/48  
U.S. Cl. 191-12.2 10 Claims



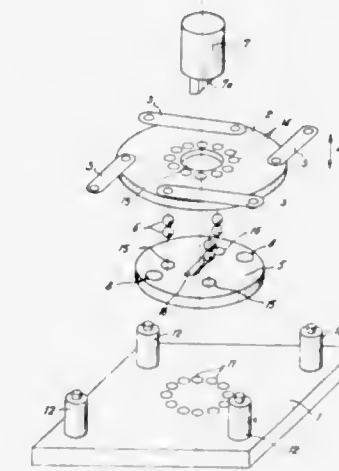
A take-up reel for storing and paying out an electrical cable in which the main components of the reel have a unitized construction to facilitate assembly and disassembly of the reel. A spring motor is hinge mounted on the reel base to permit movement of the motor away from the reel drum for quick access to the drum interior. An overrunning clutch connects the spring motor shaft to the reel drum to provide a positive drive between the motor and drum during normal winding and rewinding operations, while permitting the drum to freely over-run the shaft during rewinding in the event the drum speed exceeds that of the spring motor. The clutch also provides a reliable driving connection between the spring motor and the reel drum regardless of slight errors in their alignment.

**3,694,586**  
**TOROIDAL ARMATURE STEREOPHONIC PICKUP**  
Joseph F. Grado, 4614 Seventh Avenue, Brooklyn, N.Y.  
Filed Nov. 3, 1969, Ser. No. 873,368  
Int. Cl. H04r 11/12  
U.S. Cl. 179-100.41 K 16 Claims



A phonograph pickup for the reproduction of stereophonic and/or monaural sound recordings which is of a balanced and

**3,694,589**  
**ELECTRICAL COMMUTATING SWITCHES WITH BALL BRIDGING CONTACTS**  
Gerard Roland L. Toutain, 24, rue de Valognes, 78 Mantes La Ville, France  
Filed Oct. 22, 1970, Ser. No. 83,001  
Int. Cl. H01h 1/16  
U.S. Cl. 200-11 A 3 Claims

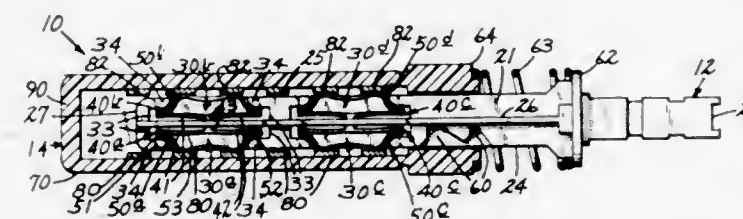


The invention relates to rotary commutation devices and particularly though not exclusively to rotary electrical commutators.

A commutating switch device comprises a rotor capable of turning between two stators which are continuously biased resiliently towards one another. The rotor has a plurality of transverse holes serving to hold locating balls, and the stators each have on their face directed toward the rotor, a plurality of locating holes for the balls, so that the passage from one commutation location in which the balls cooperate with holes of the stators to an intermediate position in which the balls lie against the faces of the stators gives rise to an increased relative spacing of the two stators.

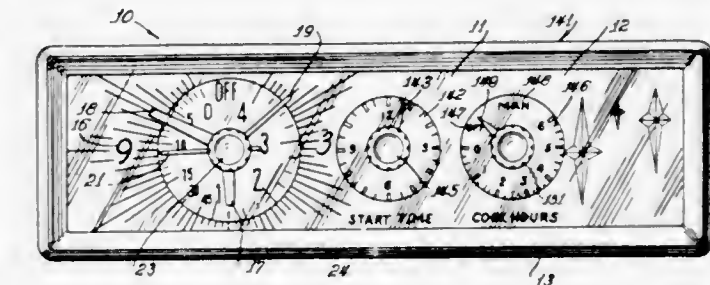
Sensitivity is thus improved while decreasing the moment required for adjusting the control switch.

**3,694,590**  
**SLIDE SWITCH WITH IMPROVED MOVABLE CONTACT ACTUATOR RESILIENT BIASING MEANS**  
Jon L. Otterlei, 4704 Merilane, Edina, Minn.  
Filed Jan. 4, 1971, Ser. No. 103,394  
Int. Cl. H01h 15/06  
U.S. Cl. 200-16 C 5 Claims



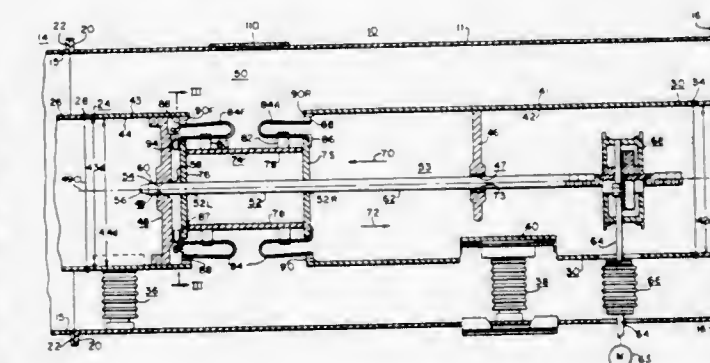
An electrical switch including an insulative casing having fixed contacts and a plunger element movable within the casing having contacts for slideably engaging the fixed contacts so as to provide a plurality of switching positions. The plunger element has a plurality of oppositely disposed recesses in the sidewalls thereof and includes a spring-like portion positioned in each recess and molded integrally with the plunger element. Each spring-like portion has two independently acting spring elements projecting divergently outward from a back wall of the recess toward front wall portions thereof so as to outwardly bias the sliding contact positioned within each recess. An embodiment is also described in which the sliding contact is either plated or vacuum deposited onto an alternative spring configuration.

**3,694,591**  
**MOTOR DRIVEN TIMER WITH CAM OPERATED BUZZER CONSTRUCTION**  
Ronald M. Bassett, and Joseph F. Gluth, both of Chicago, Ill., assignors to P. R. Mallory & Co., Inc.  
Continuation-in-part of Ser. No. 817,500, April 18, 1969, abandoned, Division of Ser. No. 878,618, Nov. 21, 1969, Pat. No. 3,601,973. This application May 14, 1971, Ser. No. 143,653  
Int. Cl. H01h 7/08, 43/10  
U.S. Cl. 200-38 FA 9 Claims



A compact motor driven timer for cooking stoves includes a dial plate carrying time markings with one or more hands rotatable relative thereto on a shaft rotatably mounted on a mechanism plate on which the dial plate is mounted. A plastic mechanism case encloses a gear train interconnecting a synchronous motor mounted on the case and the hand or hands. Shouldered portions of the case extend through the mechanism plate which has deformable ribs to hold the shouldered portions of the case and thereby the case itself in place. Screws extend through the case to secure it and the motor to the mechanism plate. The gear train includes one or more clutches to rotate an interval hand at different speeds. A buzzer arm is released to vibrate in the magnetic field of the motor at the end of the manually preset interval. Time indicating hands are also driven by the motor. The interval hand is concentrically mounted with the time indicating hands or is offset therefrom. A notch is provided in the mechanism case to hold the ends of the leads to the motor temporarily in position. The gear train also operates a range timer which includes contacts that are closed at the beginning of a variable time cycle to start a cooking operation at a preset time of day. The contacts are opened at the end of the preset time cycle. The range timer can be set for manual operation by manual closure of the contacts.

**3,694,592**  
**ISOLATING SWITCH HAVING IMPROVED SEPARABLE CONTACT ASSEMBLY**  
Edmund W. Kuhn, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.  
Filed Feb. 11, 1971, Ser. No. 114,628  
Int. Cl. H01h 31/24  
U.S. Cl. 200-48 R 22 Claims



An isolating switch comprising spaced, cylindrical hollow conductors capable of carrying high electrical currents



mounted within gas filled, sealed concentric cylindrical enclosures. The isolating switch when opened, has a large insulating gap for withstanding high voltages. The switch includes a bridging member which retracts inside of one of the associated hollow poles or conductors when the switch is open, and extends to bridge the gap between the two cylindrical poles when the switch is closed, thus, providing a continuous electrical path from one pole or conductor to the other. The bridging member is actuated by a suitable driving mechanism or means. The means for establishing an electrically conducting path between two conductors is independent from the means for establishing a mechanical connection between said conductors. The bridging member includes electrical contacts which are of the loop type, that is generally U-shaped conductors which may be secured to a movable, electrically conducting drum to engage the inner periphery of both of the associated conductors.

3,694,593

# ELECTRICAL SWITCH FOR USE ON A SEAT BELT REEL WITH DIAMETER SENSING AND SWITCH ACTUATOR MEANS

Winfield Warren Loose, Linglestown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

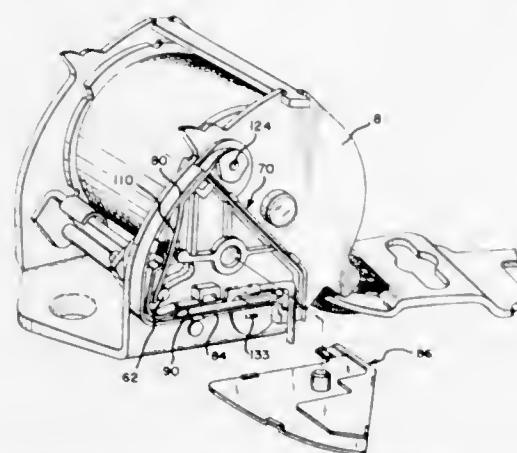
Division of Ser. No. 167,061, Aug. 17, 1971, Pat. No.

3,632,059. This application Dec. 6, 1971, Ser. No. 204,862

Int. Cl. H01h 35/00, 25/14

U.S. Cl. 200—52 R

5 Claims



Electrical switch for use with seat belt reel comprises a low-profile triangular housing having one switch arm extending along one side of housing, around an apex, and along an adjacent side. The other switch arm extends along the adjacent side. The second switch arm is moved against the first switch arm to close the switch by a pin which extends from the reel into the housing.

3,694,594

# LIQUID INTEGRATING ACCELEROMETER

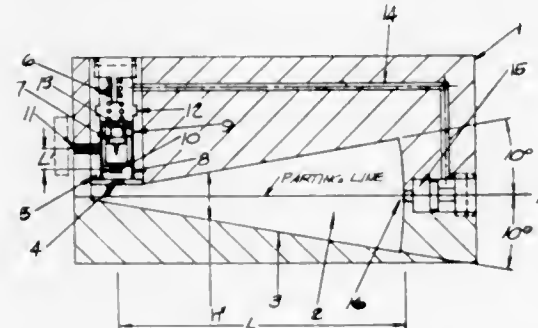
David S. Breed, Box 270, R.D. 2, Boonton, N.J.

Filed Dec. 23, 1970, Ser. No. 100,894

Int. Cl. H01h 35/14

U.S. Cl. 200—61.47

40 Claims



An integrating accelerometer using a liquid which serves both as the sensing mass and the integrator through using the

acceleration acting on the mass of the fluid to create a pressure which forces a small portion of the same fluid through a restriction giving rise to either laminar or turbulent duct flow or inertial flow through an orifice or sharp edge slit.

3,694,595

# DOOR-OPERATED ELECTRIC SWITCH

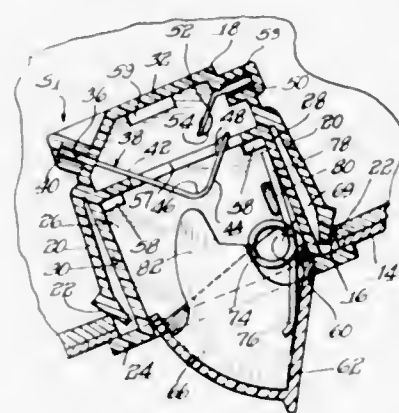
Stanley V. Horecky, Oak Park, Ill., assignor to Molex Incorporated, Downers Grove, Ill.

Filed Jan. 7, 1971, Ser. No. 104,680

Int. Cl. H01h 3/16

U.S. Cl. 200—61.76

10 Claims



A door-operated electric switch for refrigerators and the like comprises a housing for recessed mounting in a door jamb, the housing containing switch contacts that are actuated by a switch button that projects through the housing and is depressed upon closing of the door. The contacts are actuated as a result of a relatively small initial increment of closing movement of the door. Further closing of the door maintains the contacts in their door-closed condition. The housing has a barrier that inhibits passage of water to the switch contacts and also holes that drain water from the housing to prevent accumulation of water and possible short-circuiting of the switch contacts.

3,694,596

# THROTTLE KILL SWITCH

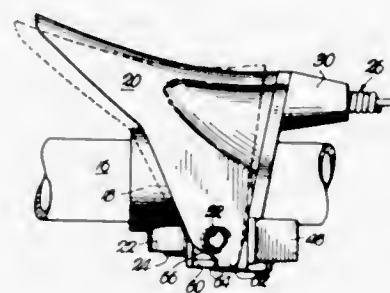
John A. Carlson, Wichita, Kans., assignor to Conchemo, Incorporated, Kansas City, Mo.

Filed Oct. 1, 1971, Ser. No. 185,733

Int. Cl. H01h 9/06

U.S. Cl. 200—61.87

8 Claims



A rotating control lever and electrical switch for mobile vehicles wherein the pivot member for the lever is translationally movable to act as the electrical conducting switch. The pivot member is relatively loosely confined in the lever mounting bracket, and a pair of electrical conduits are secured to the bracket in spaced relation to make selective contact with the pivot member upon its translational movement. A spring engages the pivot to urge it translationally toward one of its switch positions, while selective rotation of the lever overrides the spring bias and moves the pivot translationally to another switch position.

3,694,597

# QUICK-ACTING ELECTRIC SWITCH

Hans Michael Rosch, Oberageri, and Ernst Limberger, Zug, both of Switzerland, assignors to Landis & Gyr, Zug, Switzerland

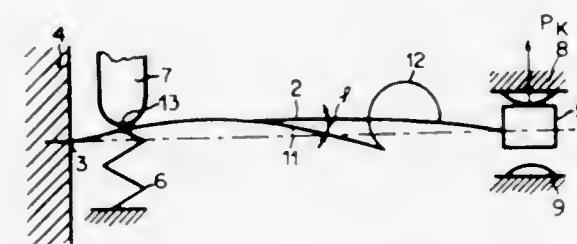
Filed April 27, 1971, Ser. No. 137,826

Claims priority, application Switzerland, May 5, 1970, 6703/70

Int. Cl. H01h 13/36

U.S. Cl. 200—67 D

3 Claims



A quick-acting electric switch with a rocker which is clamped to the switch case at one end and has a contact attached to the free end thereof, which free contact moves between two fixed contacts. The rocker arm is driven by means of a ram and a compression spring in a manner so that the rocker arm accelerates before contact is broken between the free and fixed contacts.

3,694,598

# SEESAW SWITCH

Kikuyoshi Nishikawa; Tadahisa Nakamura, and Kenji Nakakura, all of Kawasaki, Japan, assignors to Fujisoku Electric Co., Ltd., Kanagawa-ken, Japan

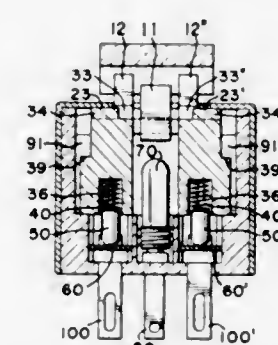
Filed Aug. 4, 1971, Ser. No. 168,844

Claims priority, application Japan, Aug. 13, 1970, 45/80126

Int. Cl. H01h 13/28

U.S. Cl. 200—67 G

7 Claims



A seesaw switch comprises a rocking mechanism which includes concavely curved shoulders provided on both inner sides of the box of the switch, and a pushing rod carrier having convexly curved sliders at both sides of its lower part and fulcrum projections at both sides of its upper part. The pushing rod carrier is incorporated into the switch box so that the convexly curved sliders seat on the concavely curved shoulders of the switch box and the fulcrum projections abut against the receiving stoppers of the frame of the switch. The vertically extending pieces of a button latch onto the upper part of the pushing rod carrier.

3,694,599

# APPARATUS FOR DIGITALLY CONTROLLING THE MAGNITUDE OF A MACHINING GAP IN AN EDM PROCESS

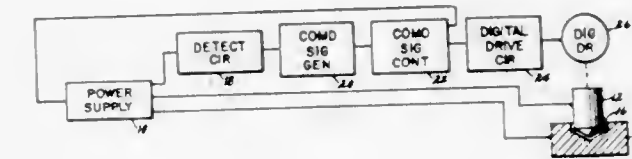
Malcolm F. Davis, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Nov. 8, 1971, Ser. No. 196,272

Int. Cl. B23p 1/08, 1/14

U.S. Cl. 219—69 G

4 Claims



An apparatus is disclosed for detecting the exclusive occurrence of a voltage pulse or a current pulse during an EDM machining process. A machining gap is decreased a predetermined increment in response to a predetermined number of consecutive occurrences of only voltage pulses. Further, the machining gap is increased a number of predetermined increments in response to a predetermined number of consecutive occurrences of only current pulses; and finally, the machining process is terminated in response to the gap increasing in magnitude.

3,694,600

# CUSHION SWITCH MEANS

Robert H. Koenig, Cambria Heights, N.Y., assignor to Tape-switch Corporation of America, Farmingdale, N.Y.

Filed April 5, 1971, Ser. No. 131,083

Int. Cl. H01h 13/16

U.S. Cl. 200—86 R

6 Claims



A ribbon switch is provided for operating on soft surfaces such as cushioned seats; for instance, automobile seats. First and second flexible conductive strips are normally separated by a plurality of insulating members sandwiched between them. The insulating members are spaced so as to hold the conductive strips separated unless the conductive strips are flexed or bowed; as for instance, into a soft cushion by someone sitting on them. The spacing of the insulating members and the flexibility of the strips is chosen so that after a predetermined amount of flexing, the conductive strips will snap together forming a good electrical contact.

3,694,601

# ELECTRIC SWITCHES

Denzil Malcolm Atkinson, 30 Bournehill, Palmers Green, London, N.13, England

Filed Nov. 12, 1970, Ser. No. 88,901

Claims priority, application Great Britain, Nov. 12, 1969, 55,421/69

Int. Cl. H01h 33/66

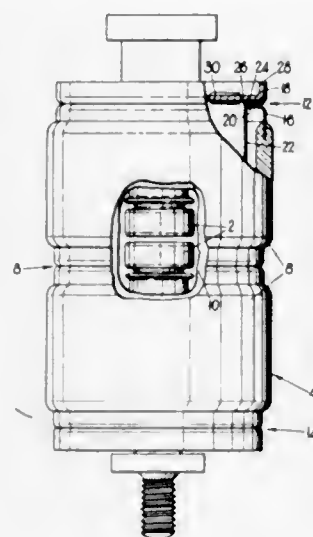
U.S. Cl. 200—144 B

6 Claims

To facilitate batch production of vacuum-type circuit-interrupting devices, the envelope of such a device has an insert formed with one or more holes for gas extraction during



vacuum bake-out and for sealing on completion of bake-out by means of a solder, and possibly also a blanking member,



previously placed in the insert. A gold-indium alloy solder is suitable where the bake-out temperature is limited to about 500°C.

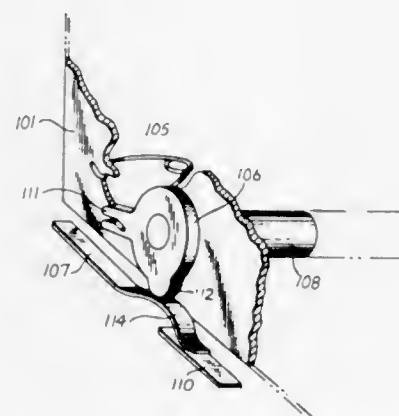
3,694,602

# ROTARY SWITCH HAVING A TORSION SPRING SNAP MECHANISM

Sadayoshi Iwasaki, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan  
Division of Ser. No. 869,717, Oct. 27, 1969, Pat. No. 3,624,582. This application Nov. 19, 1970, Ser. No. 91,150  
Int. Cl. H01h 5/10

U.S. Cl. 200—153 L

6 Claims



A pushbutton controlled rotary switch in which springs move into corners of an appropriately shaped opening in order to hold the switch in its various operative positions.

3,694,603

# PUSH-PUSH SWITCH WITH IMPROVED ALTERNATE MAKE AND BREAK LATCHING MECHANISM

Peter Congelliere, 30636 Palos Verdes Drive, East, Inglewood, Calif., and Horace Buttner, 1501 Palos Verdes Drive, North, Harbor City, Calif.

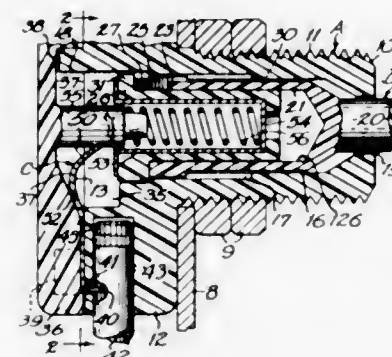
Filed Sept. 29, 1971, Ser. No. 184,884  
Int. Cl. H01h 3/52

U.S. Cl. 200—153 J

10 Claims

A small switch suitable for remote control of a light or other low current electrical device, embodies a bridging contact thimble telescoped over and axially slidable on a guide stud disposed between spaced resilient contact blades which are engaged by the thimble upon projection of the thimble by a floating sleeve which has radial latch dogs alternately rotated by push operation into latching engagement with the ends of circumferentially spaced holding ribs in a surrounding hous-

ing, for latching the thimble in contact with the blades, and, on the next push operation, into position to be received between the ribs for spring-loaded retraction of the thimble and the



floating sleeve by a coil spring enclosed within the thimble under compression between the guide stud and the remote end of the thimble.

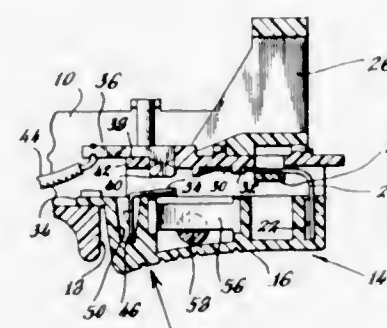
3,694,604

# SWITCH FOR ELECTRIC KNIFE WITH WIPING ACTION CONTACT SHORTING BAR

Arthur H. Freeman, and Giacinto Vallone, both of Brockport, N.Y., assignors to General Electric Company  
Filed April 9, 1971, Ser. No. 132,702  
Int. Cl. H01h 23/12, 9/06, 1/18

U.S. Cl. 200—157

3 Claims



The invention is directed to an electric slicing knife with improved switch structure wherein no movable leads are employed in opening and closing the switch and the parts of the switch are constructed and arranged to avoid the need for precise alignment and permitting automatic assembly.

A pivotal switch actuator supports an L-shaped shorting contact with slots struck in it and directed toward the pivot. Thereby the closing distance between the shorting bar and stationary contacts is minimized while the moment arm required to close the actuator is maximized. This gives maximum contact scrubbing action with minimum force.

3,694,605

# MUTUALLY INSULATED BRIDGING CONTACTS FOR HEAVY CURRENTS

Gian Luigi Quario, Torino, Italy, assignor to Ghisalba S.p.A., Torino, Italy

Filed Dec. 10, 1970, Ser. No. 96,737

Claims priority, application Italy, Jan. 9, 1970, 67058 A/70  
Int. Cl. H01h 1/34

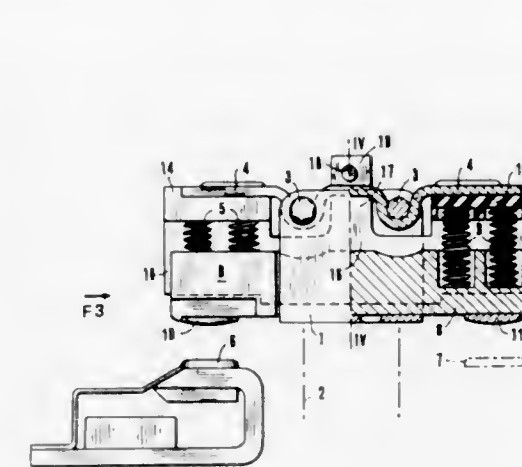
U.S. Cl. 200—166 D

4 Claims

A multiple bridging contact for each conduction path of a contactor has a common support member and two adjacent bridging contact elements mounted therein. Each bridging

contact element has at each end a contact plate for cooperation with stationary contact plates of the contactor. An insu-

or less. The toggle has a lever supported in pivoting relation in a support frame at its mid-section and oppositely extending



lating wall is disposed within the support member between the adjacent bridging contact elements for preventing conduction from one bridging contact element to the other.

3,694,606

# ELASTIC DIAPHRAGM SWITCH ACTUATOR

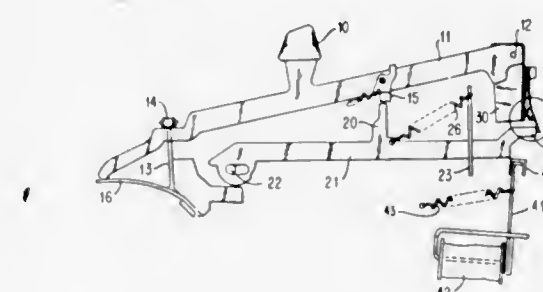
Richard H. Harris, and Louis H. Sedaris, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1971, Ser. No. 157,909

Int. Cl. H01h 9/04, 3/04

U.S. Cl. 200—168 G

5 Claims



An elastic diaphragm switch actuator molded from a soft rubber-like material to apply the actuating force to the elastic diaphragm. The actuator has shoulder portions which engage a stop plate to prevent the application of excessive force to the diaphragm member.

3,694,607

# PLASTIC SPRING TOGGLE ACTION

Anthony J. Fontana, Warwick, R.I., assignor to General Electric Company

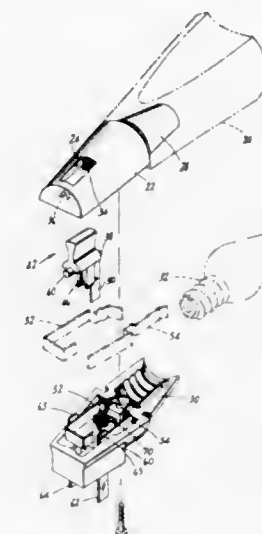
Filed Oct. 22, 1971, Ser. No. 191,730

Int. Cl. H01h 3/04

U.S. Cl. 200—172 R

2 Claims

A toggle mechanism for a switch is provided adapted for switches operating at relatively low amperages of one ampere



# ERRATUM

For Class 219—69 G see:  
Patent No. 3,694,599

3,694,608

# METHOD OF CONSISTENTLY REDUCING MOISTURE LOSS IN HEATING FROZEN FOODS WITH MICROWAVE ENERGY AND APPARATUS THEREFOR

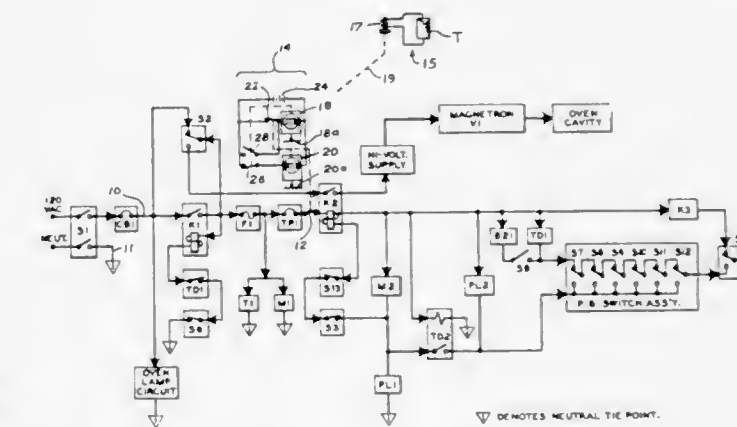
Donald W. Loubert, Minneapolis, Minn., and James A. Meyer, St. Louis Park, Minn., assignors to Pillsbury Company, Minneapolis, Minn.

Filed Feb. 8, 1971, Ser. No. 113,476

Int. Cl. H05b 9/06

U.S. Cl. 219—10.55

7 Claims



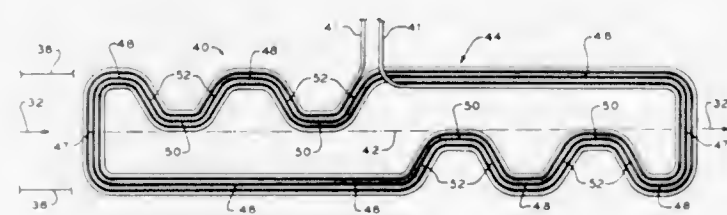
Food products are thawed by a series of intermittent microwave energy pulses. The duration of each pulse is maintained within a period of time during which Phase I heating takes place and before Phase II heating occurs. In the first phase of heating moisture is evolved at a relatively low rate, in a second phase of heating, moisture is evolved at a relatively rapid rate. The duration of the pulses is regulated so that heating in Phase II is avoided. The invention also concerns a microwave oven including a pulsing timer for providing a series of short pulses of microwave energy of adjustable duration from a fraction of a second to about a minute so that the food can be heated by means of intermittent pulses of energy without being removed from the oven.



3,694,609

**METHOD AND APPARATUS FOR INDUCTIVE HEATING**  
 Leo J. Kennedy, Toledo, Ohio, assignor to Owens-Illinois, Inc.  
 Filed Feb. 1, 1971, Ser. No. 111,479  
 Int. Cl. H05b 9/02  
 U.S. Cl. 219—10.79

19 Claims



Method and apparatus for exercising effective electromagnetic influence across an entire planar surface of an electrically conductive object to inductively heat the planar surface when the dimensions of the planar surface exceed the effective limits of a field provided by opposite runs of an inductive heating coil. The method and apparatus is particularly applicable to sealing wide-mouth containers by bonding across and to the container finish a closure member. An assembly of the closure member, thermoplastic bonding material and the container finish is conveyed in a linear direction past the novel inductive heating coil. The heating coil acts to shift the effective magnetic influence of the coil across the path without physically moving the coil. Novel structures of inductive heating coils are also disclosed.

3,694,610

**PROCESS FOR PREPARING A METAL MOLD BY ELECTRICAL MACHINING**  
 Nagao Saito, Nagoya, and Kazushige Koike, Kasugai, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan  
 Filed Dec. 6, 1971, Ser. No. 205,135  
 Claims priority, application Japan, March 29, 1971, 46/18532; Dec. 12, 1970, 45/110751  
 Int. Cl. B23p 1/08, 1/04  
 U.S. Cl. 219—69 M

8 Claims



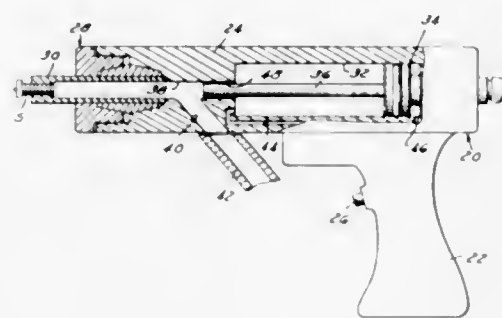
A metal mold is prepared by an electrical machining process wherein one of a base metal mold and an upper metal mold is electrically shaped by using an electrode having a desired shape on a surface thereof facing the workpiece, and the electrode then is fitted into the shaped metal mold to make a composite electrode of the two, and if necessary, the opposite surface of the electrode is also shaped. The other metal mold is then electrically shaped by using the composite electrode having the desired shape. With this invention, it is possible to provide a metal mold for thin articles, such as plastic articles.

3,694,611

**APPARATUS FOR PNEUMATICALLY FEEDING STUDS TO A WELDING GUN**  
 Donald H. Ettinger, Royal Oak, Mich., assignor to USM Corporation, Warren Division, Mt. Clemens, Mich.  
 Filed Dec. 1, 1971, Ser. No. 203,679  
 Int. Cl. B23k 9/00

U.S. Cl. 219—98

5 Claims



A stud welding gun to which studs are sequentially fed by fluid pressure in an axial direction, the gun including a plunger operable to transfer the stud to a welding position and retain it during welding, and a fluid pressure stream coaxial with the plunger for urging the stud toward the welding position, thereby preventing stud jams within the gun.

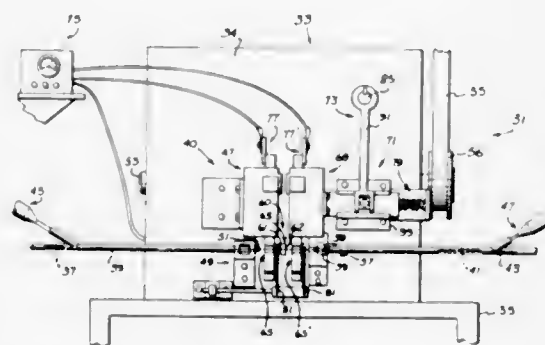
3,694,612

Patent Not Issued For This Number

3,694,613

**BUTT WELDING AND WORKPIECE ALIGNING APPARATUS**  
 Paul E. Ballard, North Warren, and Thomas E. Gannoe, Warren, both of Pa., assignors to GTE Sylvania Incorporated  
 Filed May 14, 1971, Ser. No. 143,405  
 Int. Cl. B23k 9/02  
 U.S. Cl. 219—101

13 Claims

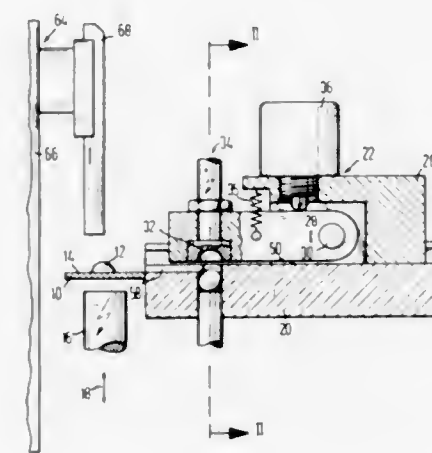


An apparatus for producing a butt weld between two pieces of longitudinally aligned material through the agency of supplying a first piece of material to one side of a stop member, whereupon it is rigidly retained by a stationary first clamping means. A second piece of material is fed to another side of the stop member, where it is rigidly retained by a movable second clamping means. The stop member is then withdrawn and a slide member, propelled by a cam actuated linkage assembly and affixed to the second clamping means, moves this means with the second piece intact toward the first piece of material, until the two pieces contact. Current is then supplied to the two pieces to effect a butt weld whereafter both clamping means release their grip on the respective pieces, allowing an extractor to move forward and eject the welded article.

3,694,614

**APPARATUS FOR PROVIDING CONTACT HEADS ON CONTACT MEMBERS**  
 Otto Bihler, Halblech-Fussen, Germany, assignor to Otto Bihler KG, Halblech-Fussen, Germany  
 Filed Jan. 28, 1971, Ser. No. 110,441  
 Claims priority, application Germany, Feb. 4, 1970, P 20 05 094.6  
 Int. Cl. B23k 9/02  
 U.S. Cl. 219—103

8 Claims



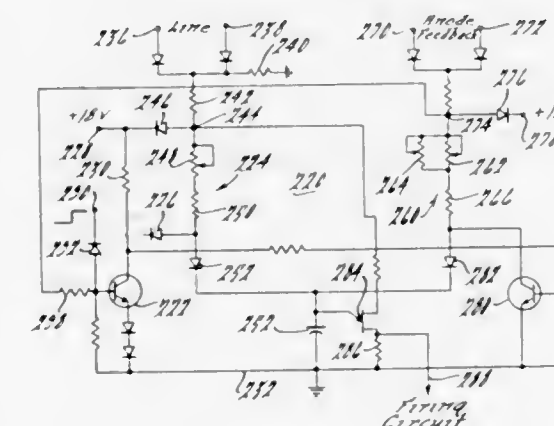
In a welding apparatus for welding contact beads on a strip of spring metal, the bead material is fed in the form of pellets to a receptacle on one of the welding electrodes. The electrode is mounted on a carrier by means of a pivoted arm. In a position of the carrier remote from the welding area, a single pellet is transferred from a conduit to the receptacle. The carrier then moves to the welding area, the pivoted arm is swung to bring the receptacle into engagement with a strip which is also engaged by another electrode, and the pellet in the receptacle is welded to the strip.

Contact members for electric circuits are frequently to be provided with contact heads of highly conductive material; this is true, e.g., for spring metal contact members which have a rather poor electric conductivity themselves. This invention relates to mechanical feeding systems for feeding contact metal pellets to the contact member in welding apparatuses.

3,694,615

**WELDING CONTROL SYSTEM**  
 Richard Brandeis, Detroit, Mich., assignor to Weltronic Company, Southfield, Mich.  
 Filed April 26, 1971, Ser. No. 137,564  
 Int. Cl. B23k 9/10  
 U.S. Cl. 219—114

23 Claims



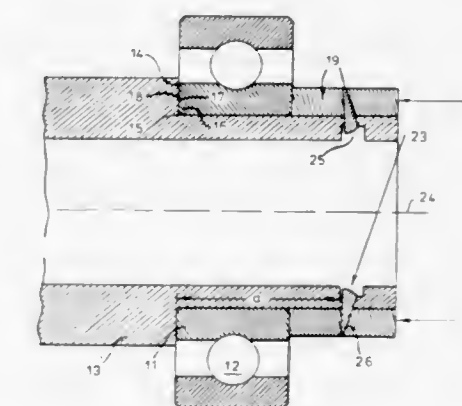
A firing control system for controlling the application of electrical energy to a welding load including sensing the power factor of the load and generating a firing curve having a fixed slope portion and a variable slope portion, the variation in slope of the variable slope portion determining the percent

heat being fed to the load, the system also includes means for disabling the power factor sensing system during the first half wave.

3,694,616

**METHOD OF SECURING A BEARING RACE BY WELDING USING HEAT**  
 Edward Reginald Brealey, Derby, England, assignor to Rolls-Royce Limited, Derby, England  
 Filed Nov. 3, 1970, Ser. No. 86,581  
 Claims priority, application Great Britain, Nov. 26, 1969, 57,807/69  
 Int. Cl. B23k 15/00  
 U.S. Cl. 219—121 EB

4 Claims

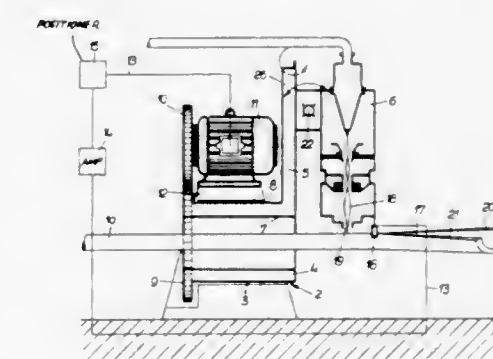


The invention concerns a method of securing a bearing track which is journaled on a hollow shaft against rotational movement relative to the shaft. The bearing inner track is journaled against a step on the shaft and abutted by a retaining collar mounted on the shaft. An electron beam is applied to the bore of the shaft in a radial direction to penetrate firstly the shaft wall and then the retaining collar to weld them together so that a residual axial compressive load is produced sufficient to hold the bearing track against rotation relative to the shaft.

3,694,617

**APPARATUS FOR FUSION WELDING OF TUBES**  
 Hans Koch; Willi Oppermann, and Heinz Pfeffer, all of Duisburg, Germany, assignors to DEMAG Aktiengesellschaft, Duisburg, Germany  
 Filed July 31, 1970, Ser. No. 59,870  
 Claims priority, application Germany, Aug. 5, 1969, P 19 39 763.8  
 Int. Cl. B23k 15/00  
 U.S. Cl. 219—121 EB

9 Claims



This invention relates in general to a method and apparatus for welding tubes from a metal sheet which is formed into a tubular configuration with a longitudinally extending slot or welding gap, and which includes sensor means adjacent the slot for accurately positioning a welding device. The welding device comprises an electron beam welder having means as-



sociated therewith for shifting the beam or the holder for the beam welder in accordance with the position of the longitudinal slot of the formed tube prior to welding. The position of the beam may be regulated by deflecting it electrostatically or electromagnetically and the feeler or sensor which is associated with the formed slot of the tube is connected either electrically or mechanically for effecting the shifting of the beam. The sensor may comprise a three-pole magnet having windings between adjacent poles and which is oriented over the gap of the tube to be welded and which is connected so that the variations of voltage in the windings caused by the shifting of the gap of the tube which is to be centered in respect to the welding apparatus will provide the necessary control pulse for the shifting of the electron beam for centering it during the welding. The same control may be effected by a mechanical shifting device, by an air deflecting device, or by a mirror operated arrangement.

3,694,618

**HIGH PRESSURE THERMAL PLASMA SYSTEM**

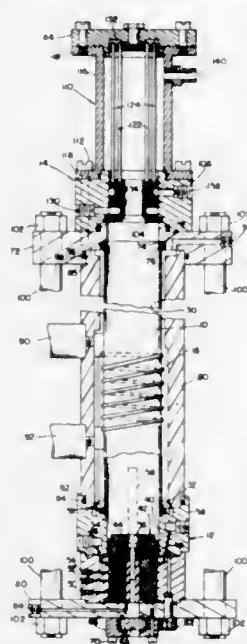
John W. Poole, Bow; Merle L. Thorpe, Hopkinton, and Charles E. Vogel, Bow, all of N.H., assignors to Humphreys Corporation, Bow, N.H.

Filed Aug. 3, 1971, Ser. No. 168,686

Int. Cl. B23k 9/00

U.S. Cl. 219—121 P

8 Claims



A high pressure induction plasma system of the flowing type includes structure defining a plasma chamber, an electrical coil surrounding the plasma chamber for creating an intense electromagnetic field within the plasma chamber, means to supply a gas for flow through the chamber under at least 10 atmospheres of pressure and conversion to plasma condition under the influence of the electromagnetic field, a flow restriction structure spaced at least one chamber diameter downstream from the electrical coil and structure defining a stabilizing volume between the coil and the flow restriction. This stabilizing volume provides aerodynamic and electrical compensation and allows flowing operation of the system at pressures of 50 atmospheres and above.

3,694,619

**GAS-SHIELDED ARC-WELDING SYSTEM**

Bertus Leendert Nahuijsen, and Johan Machiel Schmidt, both of Emmasingel, Eindhoven, Netherlands

Filed Feb. 3, 1970, Ser. No. 8,288

Claims priority, application Netherlands, Feb. 3, 1969, 6901721

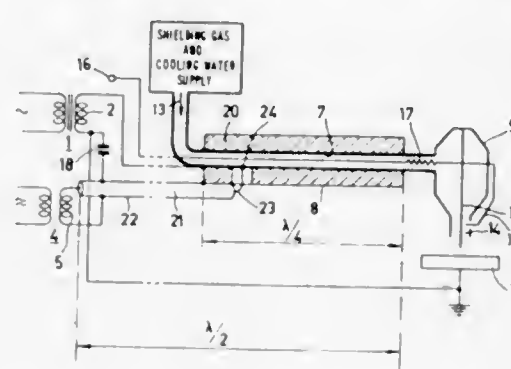
Int. Cl. B23k 9/00

U.S. Cl. 219—130

10 Claims

The invention relates to a gas-shielded arc-welding system in which the welding arc is struck and/or stabilized by a high-

frequency discharge which takes place between a welding electrode and the workpiece. The matching of the high-frequency voltage source to the high-frequency discharge is improved and the welding torch is simplified by using a first coaxial cable of a length equal to a quarter wavelength of the



high-frequency voltage and a second coaxial cable connected to a point of the first coaxial cable in a manner such that the sum of the lengths of the two cables up to the welding electrode is equal to one half wavelength of the high-frequency voltage or to an integral multiple thereof.

3,694,620

**DUAL WELDING WIRE FEED FOR ARC WELDER**

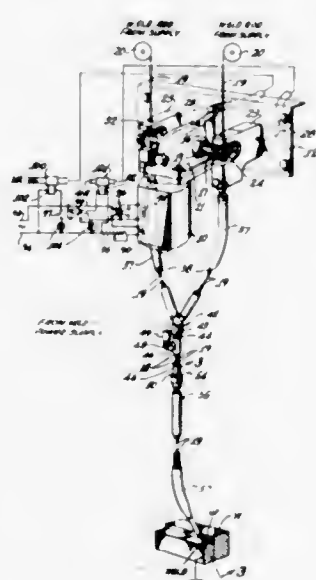
William R. Gleason, 204 S. Wilson Ave., Covina, Calif.

Filed Dec. 10, 1970, Ser. No. 96,959

Int. Cl. B23k 9/00

U.S. Cl. 219—130

5 Claims



This application discloses an electric arc welding system using two welding wires fed through a single torch, with means for driving either wire in either direction. The torch, or torch tip, has a wire passage which, at the extremity of the tip, will pass only one of the two wires. The two wires are threaded through the torch side-by-side, and with one in a retracted position, the other can be fed from the torch. Thus, assuming two wires of different characteristics, a change over from one to the other can be quickly made.

3,694,621

**NULL LAW PENETRATION CONTROL APPARATUS FOR FUSION WELDING**

David Wofsey, 3368 South Ulster Ct., Denver, Colo.

Filed Jan. 25, 1971, Ser. No. 109,338

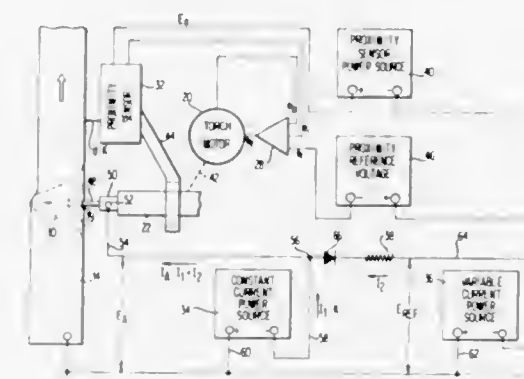
Int. Cl. B23k 9/10

U.S. Cl. 219—131 F

11 Claims

A non-consumable electrode welding system providing direct control of penetration while maintaining a constant

distance with respect to the surface of the weld plate and the welding torch while the welding arc current is varied as a function of the distance between the tip of the welding electrode and the surface of the weld puddle. The arc voltage is automatically compared with a reference voltage with the dif-



ference therebetween effecting a change in the arc current to cause the puddle position to immediately vary until the arc voltage is equal to the reference voltage. In the subject system the weld puddle is removed as an element in the control loop of the servo system controlling the torch position which results in a higher degree of stability and relatively faster response.

3,694,622

**HEATER**

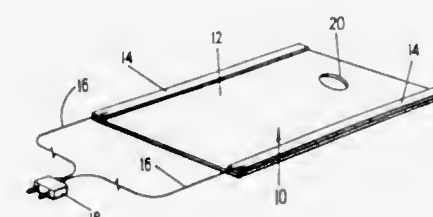
Ralph L. Bentley, 79 Dascomb Road, Andover, Mass.

Filed Jan. 7, 1971, Ser. No. 104,637

Int. Cl. H05b 1/00

U.S. Cl. 219—213

13 Claims



A heater, that is adapted to be integrally formed as part of a structure to provide heating along or over a surface of the structure, comprises a plurality of layers including at least a resistive layer of a plastic filled with metallic or non-organic particles or powders, a thermally insulating dielectric layer adjacent one side of the resistive layer, and a thermally conductive dielectric layer adjacent another side of the resistive layer. A source of electrical energy is coupled to the resistive layer to cause heating thereof. The thermally insulating layer directs generated heat toward the thermally conductive layer to cause heating over a surface of the structure.

3,694,623

**SURFACE HEATER FOR A TOASTER**

Tadao Toyooka, Toyonaka; Hiromitsu Ueda, Ibaragi; Takeo Nishida, and Atsuo Ono, both of Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

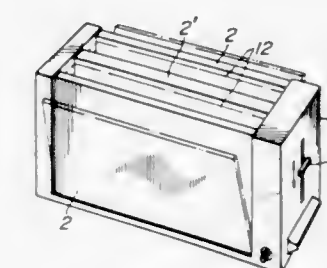
Filed Sept. 3, 1970, Ser. No. 69,398

Claims priority, application Japan, Sept. 11, 1969, 44/73051; Sept. 11, 1969, 44/87558; Oct. 20, 1969, 44/00008; April 20, 1970, 45/39091

Int. Cl. H05b 1/00

U.S. Cl. 219—200

3 Claims



A surface heater for a toaster is formed by sandwiching a heating element between heat-resistant insulating materials made of a glass fiber impregnated with a silicone enamel.

3,694,624

**INFRARED RADIATOR ARRANGEMENT**

Eberhard Buchta, Muenchen, Germany, assignor to Beckman Instruments GmbH

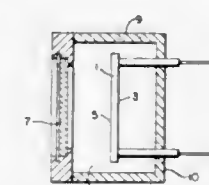
Filed June 24, 1970, Ser. No. 49,361

Claims priority, application Germany, July 16, 1969, P 19 36 245.9

Int. Cl. H05b 1/02, 3/26; H01c 7/00

U.S. Cl. 219—358

3 Claims



An infrared radiator for use in infrared analyzers includes a ceramic platelet having a front surface and a rear surface. A thin heating resistance layer is deposited on the front surface. A thin temperature measuring layer deposited on the rear surface provides a signal proportional to the platelet temperature. The signal is amplified and supplied to a sensing and control device which regulates the electrical power supplied to the resistance layer from a variable power supply whereby the platelet is maintained at a constant temperature. The platelet may be enclosed in a housing having a radiant energy transmitting window opposite the resistance layer. Electrical leads connected to the resistance layer and temperature measuring act to support the platelet in the housing.















3,694,651

## TRAY FOR LIQUID STERILIZERS

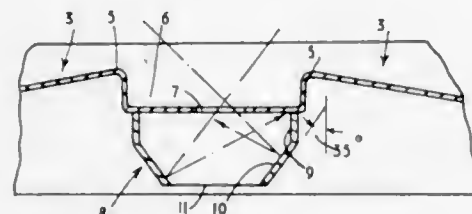
Douglas Haigh Glasson, Marrickville, New South Wales, Australia, assignor to Aquatron Corporation (Aust.) Pty. Limited, Marrickville, New South Wales, Australia  
Filed Feb. 1, 1971, Ser. No. 111,268

Claims priority, application Australia, May 19, 1970, 1245

Int. Cl. G01n 21/26

U.S. Cl. 250—43

8 Claims



A tray for use in sterilizing liquid by U.V. rays, the tray having an outlet and a reflector mounted on the tray adjacent to the outlet to reflect the sterilizing U.V. rays onto the underside of the tray around the outlet.

3,694,652

## ELECTRON PROBE APPARATUS USING AN ELECTROSTATIC FIELD TO CAUSE SECONDARY ELECTRONS TO DIVERGE

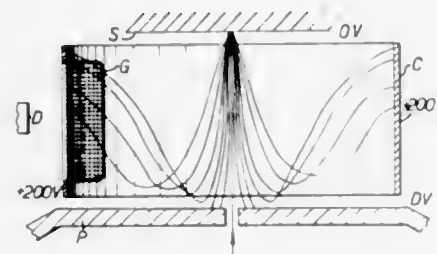
John R. Banbury, 13 Gough Way, and William C. Nixon, 2 Causewayside Fen Causeway, both of Cambridge, England  
Filed Jan. 30, 1970, Ser. No. 7,198

Claims priority, application Great Britain, Feb. 1, 1969, 5,855/69

Int. Cl. H01j 37/26; G01n 23/00

U.S. Cl. 250—49.5 PE

9 Claims



In electron beam apparatus in which a probe-like beam of electrons impinges on a specimen surface and the resulting secondary electrons are detected to give information about the specimen surface topography or other properties such as electric potential or electrostatic or magnetic field, there is formed between the point of impact and the detector a field which modifies the trajectories of the secondary electrons, causing them to diverge and, in some cases, to be retarded. The field can be electrostatic, set up by a cylindrical shield-like electrode and an end electrode, with the detector set in a limited angular region of the wall of the shield.

3,694,653

## X-RAY FILM CASSETTE HOLDER

Charles D. Allard, San Leandro, and Eugene R. Allard, Alameda, both of Calif., assignors to Sana Products, Inc., San Leandro, Calif.

Continuation-in-part of Ser. No. 863,649, Oct. 3, 1969, Pat. No. 3,626,186. This application Nov. 4, 1971, Ser. No. 195,741

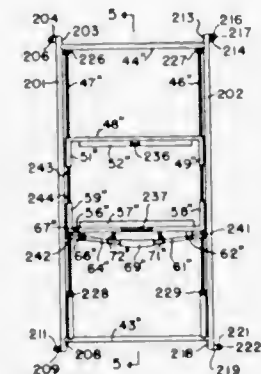
Int. Cl. G01n 21/00

U.S. Cl. 250—50

7 Claims

An X-ray film cassette holder for releasable mounting on a portable wheeled patient carrier or for mounting on a wall

consisting essentially of a frame, a pair of elongated members mounted on the frame, a first slide member for engaging the top of the cassette and a second slide member for engaging the bottom of the cassette, and a locking means carried by the



second slide member consisting of pivoting arms which lockingly engage the elongated members in one position and are moveable to another position permitting sliding of the slide members upon the elongated members.

3,694,654

## LONG WAVELENGTH INFRARED TEST SET

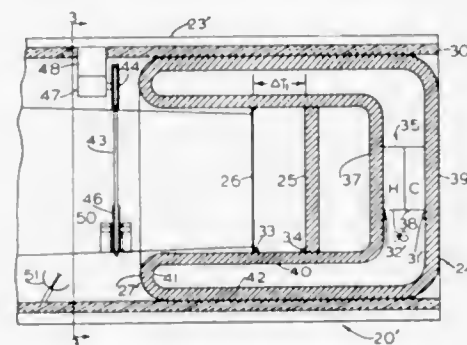
James D. Crownover, 4206 Goodfellow, Dallas, Tex.

Filed May 12, 1971, Ser. No. 142,631

Int. Cl. G01j 1/00

U.S. Cl. 250—83.3 H

24 Claims



A test set for forward looking infrared systems or cameras with test set optics projecting onto the field of view of devices being tested the infrared radiation from two plates at a controlled temperature differential subject to calibrated adjustment. A first plate of the two plates contains openings in chosen patterns through which radiations from portions of the second plate are viewed simultaneously with radiation of the first plate. This is with the two plates spaced a predetermined  $\Delta T_1$  temperature distance apart in a heat flux circuit system having at least one energy exchange device and an extended  $\Delta T_2$  temperature circuit path of heat flux media material with the  $\Delta T_1$  temperature spacing a relatively small portion thereof.

3,694,655

## COSMIC DUST OR OTHER SIMILAR OUTER SPACE PARTICLES IMPACT LOCATION DETECTOR

Siegfried O. Auer, Ludwigshafen-Rhein, Germany, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 29, 1970, Ser. No. 102,412

Int. Cl. G01t 1/18

U.S. Cl. 250—83.6 R

13 Claims

A system for detecting the impact position of cosmic dust and other similar outer space particles on a detector surface includes means for forming an ionized stream in response to impact of a particle thereon. The ionized stream is collected

3,694,657

## HOLOGRAPHIC CORRELATOR WITH A FOLDED PATH ACOUSTIC CELL INPUT

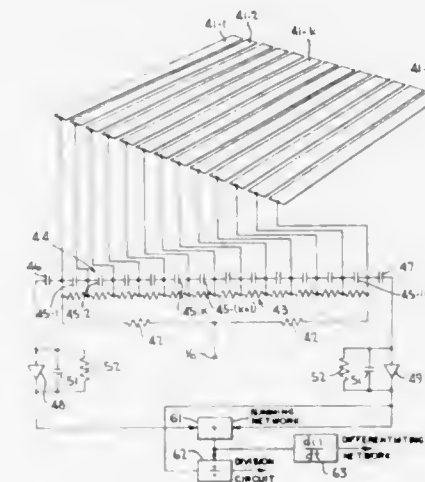
Robert E. Brooks, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed March 30, 1971, Ser. No. 176,090

Int. Cl. G06g 9/00; G02t 1/32

U.S. Cl. 250—216

6 Claims



ected to input terminals of amplifiers which drive circuitry to indicate the strip on which the particle impacted. To prevent the plasma stream from impinging on a strip other than the strip in closest proximity to the source of the stream, shield walls are provided along the edges of the strips.

3,694,656

## BALANCED OPTICAL DEMODULATOR

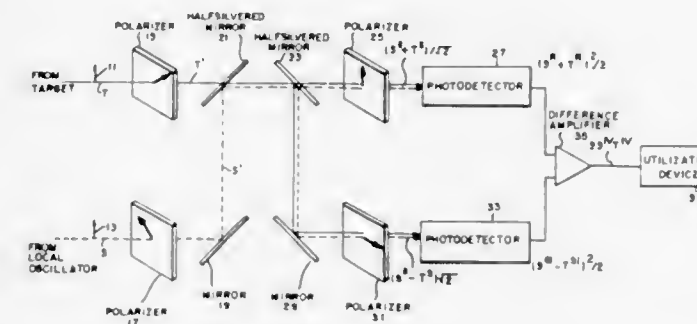
Harley B. Henning, Sharon, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 28, 1970, Ser. No. 84,710

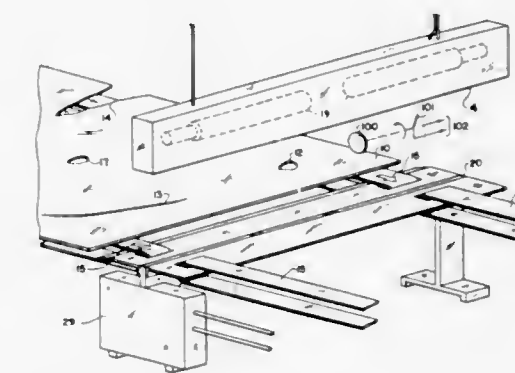
Int. Cl. H04b 9/00

U.S. Cl. 250—199

1 Claim



A demodulator for optical signals, the contemplated demodulator including a polarizer and mirror arrangement for combining the signals to be demodulated and optical local oscillator signals into a first and a second composite beam, the first beam being modulated in a manner corresponding to the algebraic sum of the signals to be detected and the optical local oscillator signals and the second beam being modulated in a manner corresponding to the algebraic difference between such signals. Each composite beam is directed to a different photodetector and the difference signal between the electrical output signals of the photodetectors is derived. Such difference signal, which is proportional only to the product of the signals to be demodulated and a constant related to the optical local oscillator signals, may then be processed to derive the desired demodulated signals.



On-line apparatus for inspecting a moving strip of veneer for the presence of cracks, knotholes, voids and similar type wood defects utilizing light transmission through the material to detect discontinuities therein. Light radiation transmitted through such a wood defect is detected by a scanner head formed of a plurality of flexible, light-conducting optical fibers whose terminal ends are positioned adjacent the surface of the veneer strip on the side opposite the light source and at spaced locations along the transverse width of the strip. The detected light radiation is conveyed by the flexible fibers to a corresponding array of photoelectric transducers which are strobe interrogated in serial sequence so as to generate as an output a composite waveform indicative of the light transmissibility pattern of the cross-section of veneer strip passing over the scanner head at the instant of the strobe. This strobe interrogation process is repeated at regular close intervals, so as to generate successive waveforms representative of the character of the wood strip passing over the scanner head. The presence of through-wood defects produces corresponding variations in



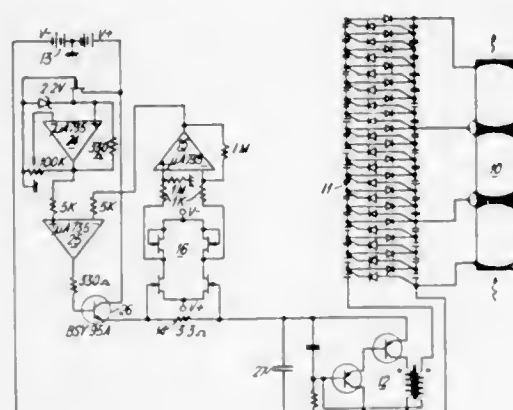
the successive waveform outputs of the photosensor array which, after digitizing, are fed into arithmetic and logic circuitry. Counter and comparator elements operate on this digital information to measure the cross-grain and with-grain dimensions of individual defects and generate an actuating signal when a defect exceeds predetermined dimensional limits. The logic circuitry distinguishes cracks and splits on the one hand, which have large with-grain and quite narrow cross-grain dimension, from knotholes and other voids in the wood having substantially larger cross-grain dimension than cracks or splits.

### 3,694,659 AUTOMATIC CONTROL CIRCUIT FOR IMAGE INTENSIFIER

Melvin Murray Ramsay, Broxbourne, and William Geddes Barnes, Harlow, both of England, assignors to International Standard Electric Corporation, New York, N.Y.  
Filed Sept. 15, 1971, Ser. No. 180,589  
Int. Cl. H01j 31/50

U.S. Cl. 250-213 VT

11 Claims



An automatic brightness control circuit for an image intensifier tube includes direct current limiting means for limiting the output of an oscillator which provides alternating current to a voltage divider supplying high voltages to the cascaded stages of the tube. Means for monitoring the direct current is provided in series with the oscillator or with the tube output electrodes, changes are amplified, compared to a reference and a difference signal applied to the current limiter to control the direct current in the oscillator. Additional means may be provided for monitoring the direct voltage at the oscillator or output stage and for combining the monitored current and voltage signals. Flash response circuitry may also be added to monitor the current in the input electrode or first stage of the tube and temporarily disconnect the high voltage to the output electrode or cut-off the first stage of the tube upon the occurrence of a predetermined current surge.

### 3,694,660 RADIATION SENSITIVE READOUT HEAD WITH CIRCUIT BOARD CONSTRUCTION

Harvey W. La Branche, Palos Verdes Peninsula, and John H. Northrop, La Canada, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

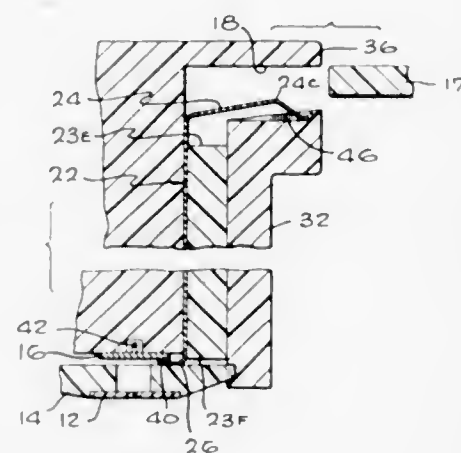
Filed Jan. 12, 1971, Ser. No. 105,889  
Int. Cl. H01l 15/00

U.S. Cl. 250-239

2 Claims

A connector which includes a circuit board wherein the conductive strips thereof are formed of a resilient conductive material and their ends extend past the edges of the supporting board. The circuit board is mounted in a housing which has a plug-receiving recess, and the projecting strips at one end of the circuit board extend into the recess, so that another circuit board can be plugged into the recess to establish contact between the strips of the two circuit boards. The housing can be part of an optical readout head, and the projecting ends of the circuit board which lie opposite those in the plug-receiving

recess can support and contact photocells. The circuit board with projecting strips is constructed by adhesively fastening a conductive sheet to an insulative board of smaller length, ap-



plying an acid resist in strips to the completely exposed face of the sheet and a continuous coating to the exposed ends of the other face, and etching away the resist-free strips.

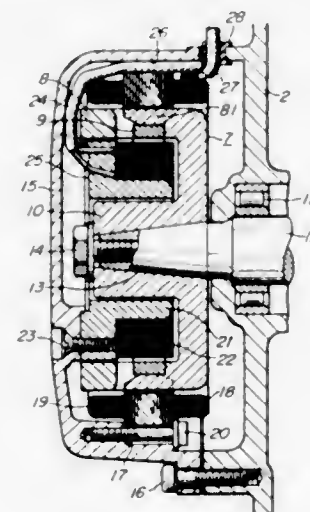
### 3,694,661 AC GENERATOR DIRECTLY COUPLED TO AN INTERNAL COMBUSTION ENGINE

Tsutomu Minowa, Hitachi-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 17, 1969, Ser. No. 867,299  
Claims priority, application Japan, Oct. 18, 1968, 43/7599  
Int. Cl. H02k 19/20

U.S. Cl. 290-1

1 Claim



An AC generator directly coupled to an engine wherein a cup-shaped rotor having a pair of claw pole pieces is mounted on an extension of the engine crankshaft which is projected to the outside of the engine block on the side reverse to the engine output such that an opening is provided on the side opposite to the engine, an armature core with an armature coil and a field core with a field coil are respectively disposed, being separated by a small air gap, at the radially outer and inner sides of the interposed claw pole pieces, and said armature core and said field core are securely mounted on the inside of a non-magnetic cover which is fastened to the engine block to cover said armature and field cores.

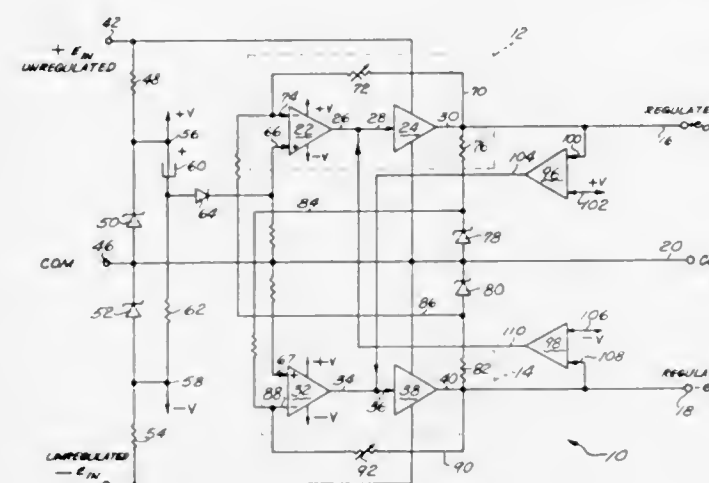
### 3,694,662 CROSS REFERENCE POWER SUPPLY

James W. Grygera, Racine; James R. Charlton, and Kenneth S. Swenson, both of Kenosha, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed June 10, 1971, Ser. No. 151,663  
Int. Cl. G05f 1/58

U.S. Cl. 307-24

14 Claims



A cross reference regulated power supply including a first regulated power supply having an output terminal for establishing a positive regulated voltage thereon, a second regulated power supply having an output terminal for establishing a negative regulated voltage thereon, a first sensor connected to the output terminal of the first regulated power supply for sensing the first output voltage and directing a signal to an input of the second regulated power supply to deenergize the second regulated power supply in the event the output voltage of the first power supply varies by a predetermined amount, and a second sensor connected to the output terminal of the second regulated power supply for sensing the output voltage thereon and directing a signal to an input of the first power supply to deenergize the first power supply in the event the voltage on the second power supply output varies by a predetermined amount.

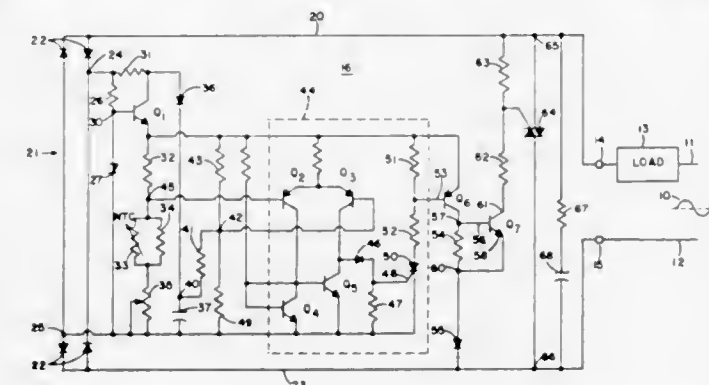
### 3,694,663 CONDITION RESPONSIVE CIRCUIT WITH LIMITED INTERNAL DISSIPATION

Balthasar Hubert Pinckaers, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 5, 1971, Ser. No. 169,565  
Int. Cl. H01h 35/00

U.S. Cl. 307-116

10 Claims



A condition responsive circuit, disclosed as including a temperature responsive element, is adapted to be connected by a pair of terminals to an alternating current load and to a source of alternating current voltage. The condition responsive circuit contains two different input impedances connected through a transistor to a differential amplifier to control a

solid state switch, shown as a Triac. One of the input impedances is connected by a four-layer diode across the input of the condition responsive circuit and shorts the circuit out if the differential amplifier has not been energized to in turn operate the solid state power switching means, or Triac, prior to the voltage across the four-layer diode reaching its breakover potential. This arrangement allows for switching to a relatively high impedance within the condition responsive circuit to limit the dissipation except during the initial energizing portion of the applied waveform.

### 3,694,664

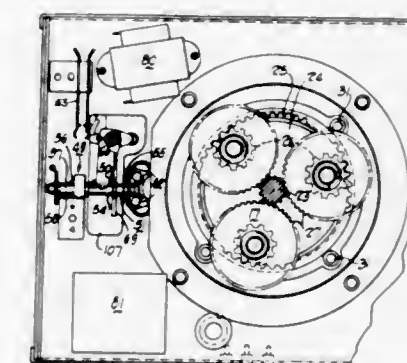
#### REVERSING DOOR OPERATOR

Alvin J. Carli, Sebring, Ohio, assignor to The Alliance Manufacturing Company, Inc.

Filed May 4, 1971, Ser. No. 140,129  
Int. Cl. F16d 71/00

U.S. Cl. 307-149

12 Claims



A garage door motor driven operator is disclosed which, when the door is being driven in the closing direction, is capable of automatically reversing direction to be moved in the door opening direction should the door strike an obstruction which stops or slows the door. A torque sensitive switch actuator actuates a first switch upon an overload condition of the door moving in a closing direction. This overload of torque compresses an overload torque spring urging a reaction member toward a neutral position. The first switch de-energizes the motor and thus there is no longer any torque to oppose the torque spring which thereupon moves the reaction member in a return direction whereupon a second or reversing switch is actuated. This energizes the motor for driving the door in an opening direction. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

### 3,694,665

#### WIRED OR CIRCUIT

Robert A. Belluche, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Nov. 5, 1970, Ser. No. 87,031  
Int. Cl. H03k 17/00

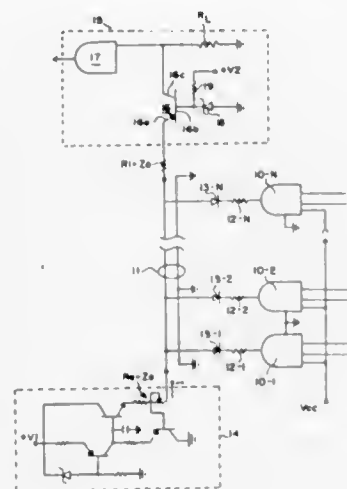
U.S. Cl. 307-208

6 Claims

WIRED OR circuit arrangement in which a transmission line is used as the OR'ING media. The transmission line is



driven from a source of substantially constant current having a source impedance which is substantially equal to the charac-



teristic impedance of the line. Changes in line current are sensed by a current sensing device which also maintains a constant voltage between the line and circuit ground.

3,694,666

## TRANSISTOR LOGIC CIRCUITS

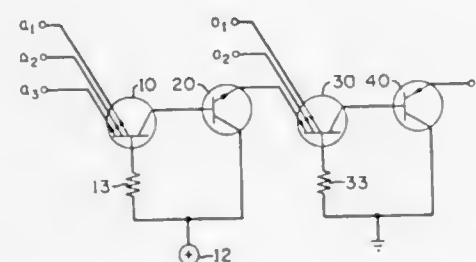
Bruce Edwin Briley, Countryside, Ill., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed May 14, 1971, Ser. No. 143,314

Int. Cl. H03k 19/22, 19/30

U.S. Cl. 307—218

3 Claims



A general purpose transistor logic circuit comprising an AND and an OR stage serially connected in either sequence. Each stage comprises multiemitter input transistor and a single emitter output transistor, the transistors of each stage being of the opposite conductivity type. Each stage provides an emitter follower output to achieve a substantial increase in switching speed and the combined stages effectively cancel voltage shifts occurring across each.

3,694,667

## SINGLE PULSE TEST CIRCUIT

William C. Staker, Jr., Springfield, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 22, 1971, Ser. No. 182,595

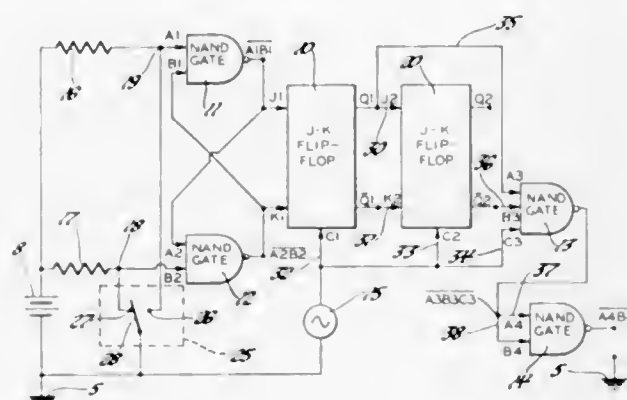
Int. Cl. H03k 5/20

U.S. Cl. 307—232

4 Claims

A single pulse test circuit for separating, upon the operation of an electrical switch, a single electrical pulse from a series of electrical pulses simultaneously applied to the clock pulse input terminal of each of two J-K flip-flop circuits. The Q and Q output terminals of the first J-K flip-flop circuit are connected to the J and K input terminals, respectively, of the second J-K flip-flop circuit. Circuitry, including the electrical switch, is provided for applying a logic "one" electrical signal to a selected one of the input terminals and a logic "zero" electrical signal to the other input terminal of the first J-K flip-flop circuit and, upon the operation of the electrical switch, for reversing the electrical signals applied to each one of the

input terminals. NAND gate logic circuitry responsive to the same logic electrical signal upon each the Q output terminal of the first J-K flip-flop circuit and the Q output terminal of the second J-K flip-flop circuit and one of the series of electrical



pulses is provided for producing a single output electrical pulse of a magnitude and width equal to the magnitude and width of the pulses of the series of electrical pulses upon the operation of the electrical switch.

3,694,668

## TRACK AND HOLD SYSTEM

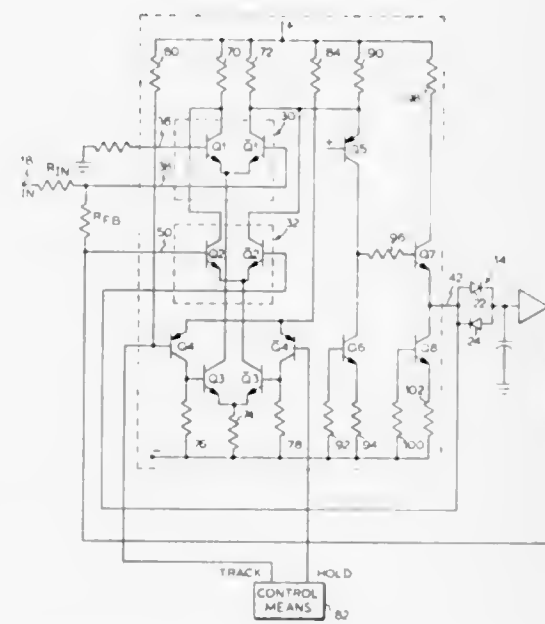
Roy P. Foerster, Thousand Oaks, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Jan. 2, 1970, Ser. No. 84

Int. Cl. H03k 5/08

U.S. Cl. 307—235

9 Claims



A system for enabling a capacitor to track an analog input signal and hold the signal level, on command. The system includes a high speed operation amplifier having first and second independent and selectable pairs of differential inputs. The amplifier output is connected through a pair of diodes connected in inverse parallel to the capacitor. Feedback means couple the capacitor to one pair of inputs in the track mode in a manner such that the high amplifier gain compensates for nonlinearities and offset effects to enable the capacitor to precisely track the input signal. In the hold mode, the other pair of inputs is selected to enable the amplifier to act as a unity gain voltage follower providing an output substantially equal to the capacitor voltage and insufficient to exceed the forward threshold of the diodes.

3,694,669

## TIMING CIRCUIT FOR A PROGRAMMABLE TIMER

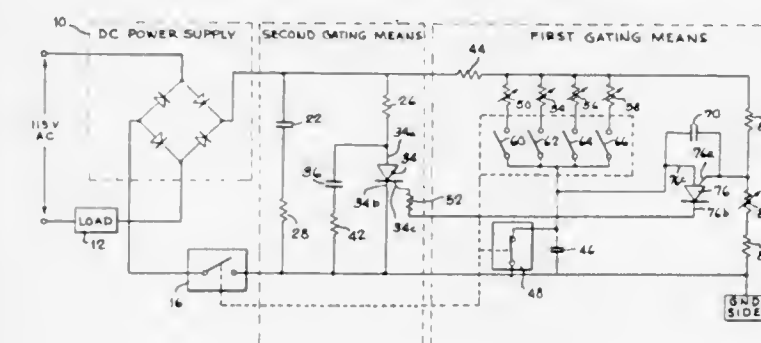
Allan E. Witt, Fairfield, and George M. Suhm, Bridgeport, both of Conn., assignors to Food Automation Service Techniques Inc., Bridgeport, Conn.

Filed April 27, 1971, Ser. No. 137,806

Int. Cl. H03k 17/00

U.S. Cl. 307—252 F

3 Claims



A timing circuit providing a number of adjustable time intervals by pressing one of a number of timing switches. The circuit includes a DC power supply and a first and a second gating means connected across the power supply. The first gating means includes a bank of timing switches mechanically ganged such that only one switch can be closed at any particular time. Each of the timing switches connects a charging element in a series circuit including a trimmer resistor and connected across the power supply. A programmable unijunction transistor detects the current through the charging element and is turned on when the current reaches a specified value. The programmable unijunction transistor controls a silicon controlled rectifier which shorts the DC power supply. A timing interval is chosen by pressing one of the several timing switches. The chosen timing switch connects the charging element across the DC power supply through a particular trimmer resistor. After the time interval determined by the timing constant of the series circuit including the charging element, the programmable unijunction transistor is turned on. The output signal provided by the turned on programmable unijunction transistor in turn turns on the silicon controlled rectifier to delineate the end of the timing interval started with the closing of one of the timing switches.

3,694,670

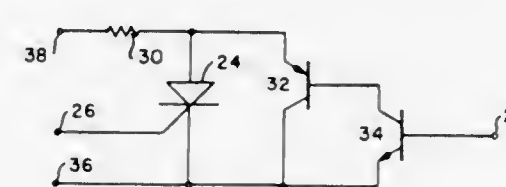
## EASILY SWITCHED SILICON CONTROLLED RECTIFIER

Joseph M. Marzolf, 3304 Garland Drive, Falls Church, Va.

Filed Oct. 26, 1971, Ser. No. 192,099

U.S. Cl. 307—252 M

5 Claims



A combination of transistors, which can be integrally formed with an SCR is used to effect a turn-off. The magnitude of the turn-off pulse is less than that required to turn it on. When the entire circuit is self contained, only four leads to the device are required. Two of the leads handle the load current in the typical well known manner. The SCR turn-on is effected by a pulse applied to the gate through a third lead. A fourth lead is provided to turn the SCR off by causing an anode to cathode short across the SCR. This short is controlled by two transistors connected in an "inverted darlington" configuration.

3,694,671

## DRIVER CIRCUIT FOR SPEEDING RESPONSE OF

## REMOTELY CONTROLLED APPARATUS

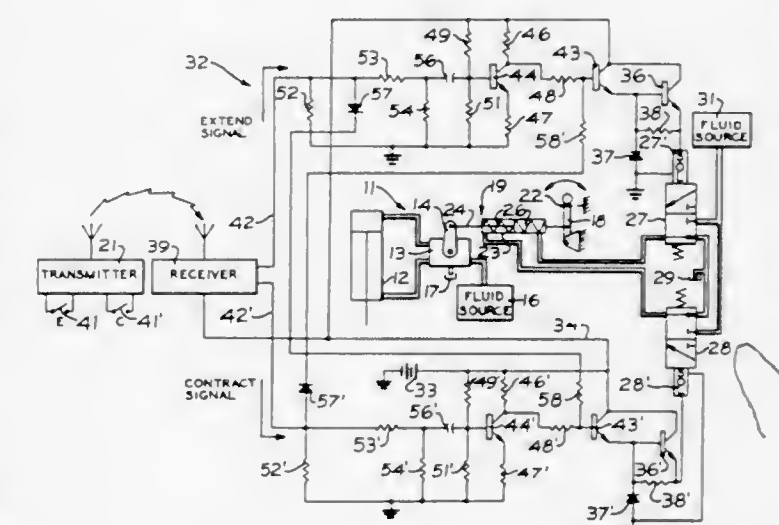
Donald F. Coleman, Dunlap, and Joe E. Fuzzell, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 2, 1970, Ser. No. 85,853

Int. Cl. G05b 5/01

U.S. Cl. 307—254

9 Claims



A fluid motor system controlled by electrical signals originating at a remote location has driver circuits, for energizing motor control valve solenoids in response to signals, with means for assuring fast termination of motor operation upon termination of a control signal. Upon termination of a signal causing motor operation in one direction, the circuit momentarily actuates the motor in the opposite direction. Capacitive means in the driver circuit undergoes a change of charge condition while a control signal is received and thereafter produces a momentary reverse operation signal while reverting to the original charge condition.

3,694,672

## TIMING CIRCUIT WITH MULTIPLE TIME CONSTANTS

## AND SWITCHING MEANS TO CONNECT AND

## DISCONNECT SAID TIME CONSTANTS SELECTIVELY

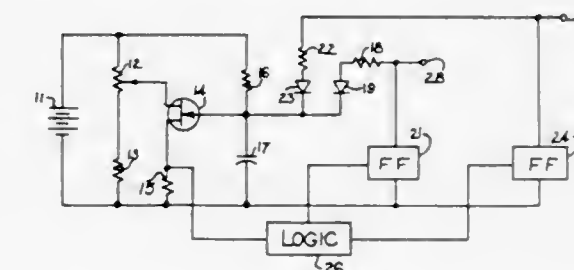
William P. Buyak, New Hartford, Conn., assignor to North American Phillips Corporation, New York, N.Y.

Filed March 23, 1971, Ser. No. 127,275

Int. Cl. H03k 4/50, 5/13

U.S. Cl. 307—293

13 Claims



A circuit utilizing a unijunction transistor or equivalent relaxation oscillator with a flip flop connected to the output thereof and having its output connected to control the time constant of the relaxation oscillator so that on alternate oscillations the time constant will be relatively low and on the remaining oscillations it will be relatively high to generate a signal having two time intervals in succession. A logic network controls driving circuits in response to the signals produced by the oscillator and the logic circuit divides the frequency of the oscillations to values suitable for timers such as interrupter timers for telephone systems.



3,694,673

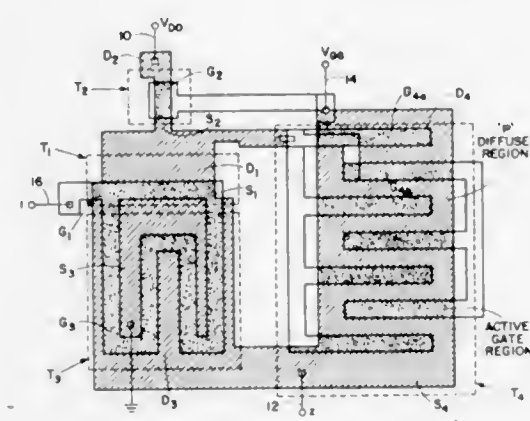
**FIELD EFFECT DEVICE AND CIRCUIT HAVING HIGH CURRENT DRIVING CAPABILITIES UTILIZING SUCH DEVICE**

Kenneth K. Au, Ottawa, Ontario, Canada, assignor to Microsystems International Limited, Ottawa, Ontario, Canada

Filed March 15, 1971, Ser. No. 124,278  
Int. Cl. H011 1/14, 19/00

U.S. Cl. 307—304

3 Claims



High speed, high voltage swing, low output impedance clock circuit is described. The circuit is designed to provide high current drive and uses a novel field effect device to resistively couple supply voltage to output voltage. The invention further relates to the field effect device per se.

**ERRATUM**

For Class 307—150 see:  
Patent No. 3,694,729

3,694,674

**HIGH VOLTAGE GENERATING APPARATUS**

Keiji Inoue, Yokohama, Japan, assignor to Denki Onkyo Company Limited, Tokyo, Japan

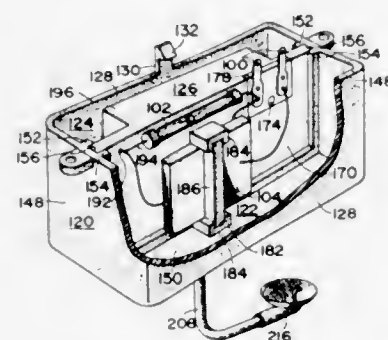
Filed Sept. 25, 1970, Ser. No. 75,603

Claims priority, application Japan, Sept. 29, 1969, 44/92983; Sept. 29, 1969, 44/92984; Sept. 29, 1969, 44/92985; Sept. 29, 1969, 44/92986; Sept. 29, 1969, 44/92316; Sept. 29, 1969, 44/92317

Int. Cl. H01v 7/00

U.S. Cl. 310—8.2

8 Claims



In a high voltage generating apparatus comprising a piezoelectric transformer element for generating a high AC voltage and a voltage step-up rectifier connected to the output electrode for generating a high DC voltage, there is provided a casing divided into two compartments by means of a partition wall for containing the piezoelectric transformer element and the rectifier respectively. Sealing means is provided between the periphery of the partition wall and the inner surface of the casing to electrically isolate the piezoelectric transformer element from the voltage step-up rectifier.

3,694,675

**COOLED ULTRASONIC TRANSDUCER**

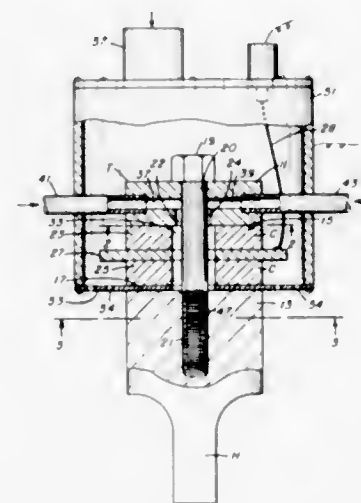
Thomas E. Loveday, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 25, 1971, Ser. No. 118,797

Int. Cl. H04r 17/00

U.S. Cl. 310—8.9

8 Claims



Ultrasonic apparatus comprises a centrally bolted ultrasonic transducer having passages for internal cooling by a stream of fluid such as air. Radial ducts in a metal back mass open into an enlarged portion of a first bolt hole adjacent the bolt for supplying air. Air then flows forward through an annular passage in the piezoelectric crystal means and enters an enlarged portion of a second bolt hole in a metal front mass from which it is discharged through radial ducts in the front mass. Both enlarged portions should be of oval shape to assure strength and rigidity. A housing can surround the transducer for externally cooling it with a stream of air. The transducer can be mounted on the housing by a perforate plate or flange.

3,694,676

**SHEAR MODE PIEZOELECTRIC FILTER**

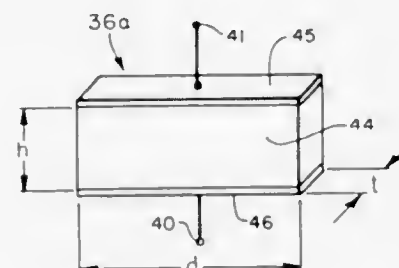
Adrian J. De Vries, Elmhurst, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed March 17, 1971, Ser. No. 125,244

Int. Cl. H01v 7/00

U.S. Cl. 310—9.5

1 Claim



A rectangular block of piezoelectric material serves as a filter for electric signals, presenting series resonance at a selected frequency between a pair of terminals. The block has a length and height substantially greater than its thickness and is poled in the direction of the thickness. A pair of electrodes on opposing faces of the block are coupled respectively to the terminals for developing a signal field transverse to the thickness direction and, in response to which, shear waves are propagated in the block. The thickness is one-half the shear wavelength. To prevent the development of spurious wave modes, the ratio of the height to the thickness is an odd integer.

3,694,677

**VHF-UHF PIEZOELECTRIC RESONATORS**

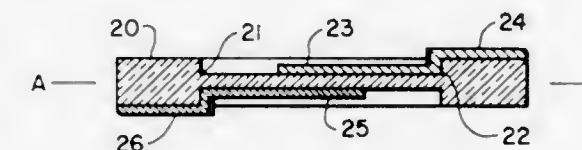
Gunter K. Guttwein, West Long Branch; Arthur D. Ballato, Long Branch, and Theodore J. Lukaszek, Ocean, all of N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed March 3, 1971, Ser. No. 120,390

Int. Cl. H01v 7/00

U.S. Cl. 310—9.6

4 Claims



This disclosure relates to crystals and particularly to very high frequency crystals. More particularly, this disclosure relates to techniques for increasing the fundamental resonant frequency of crystals beyond the limits of currently available mechanical techniques by reducing the thickness of a portion of the center of a standard crystal. This provides an effective resonant sector of an area and thickness that would be virtually impossible to manufacture or to mount by conventional techniques or use in existing mechanical structures.

3,694,678

**LINEAR MOTORS FOR HEAD ACTUATORS**

Gordon George Scarrott, Welwyn Garden City, England, assignor to International Computers Limited, London, England

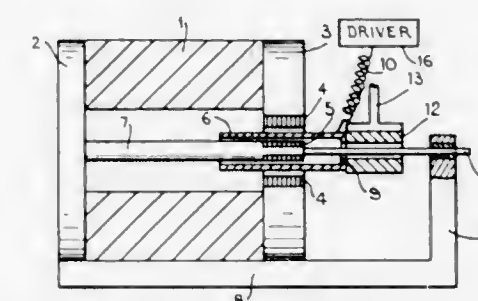
Filed Dec. 30, 1970, Ser. No. 102,772

Claims priority, application Great Britain, Jan. 28, 1970, 4,053/70

Int. Cl. H02k 41/02

U.S. Cl. 310—13

2 Claims



A moving coil linear motor is described having an annular non-magnetic gap defined by an annular permanent magnet and a pair of pole pieces on the magnet, one pole piece having a circular aperture therethrough, the center of which is coaxial with the annular magnet. A hollow tubular coil is movably situated in the annular gap and coaxial therewith. One or both pole pieces have attached thereto a layer of material positioned in the annular gap, the material having a high electrical conductivity in a circumferential direction to provide a closed electrical path coaxial with the coil and having a high magnetic permeability in a radial direction. Composite material may be used in the form of alternate annular laminations of copper and iron.

3,694,679

**ELECTROMAGNETIC ENGINE**

Everett W. Erdoesy, Osprey, Fla., assignor to Gretha M. Erdoesy, Osprey, Fla., a part interest

Filed May 27, 1971, Ser. No. 147,544

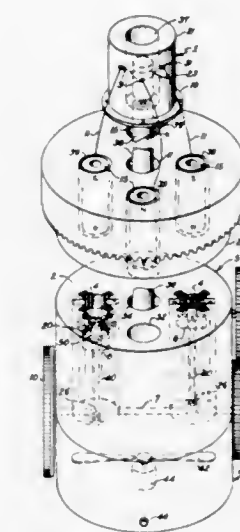
Int. Cl. H02k 7/00

U.S. Cl. 310—24

15 Claims

An electromagnetic engine is disclosed. The engine has a rotational voltage power distributor, an air-cooled circular head having fixed electromagnets, an air-cooled engine block

with crankshaft and an engine pan having a cooler blower system. The engine block contains electromagnetic pistons. The engine utilizes magnetic attraction and repulsion, in



proper timed sequence, of the fixed electromagnets in the circular head and the electromagnetic pistons to drive the crankshaft.

3,694,680

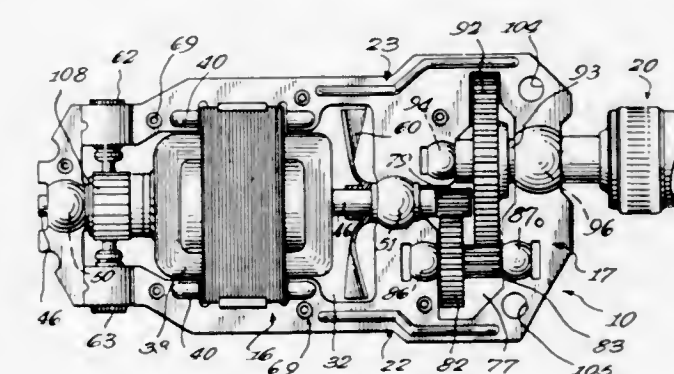
**STAMPED SHELL SHEET METAL FRAME MODULE FOR A POWER TOOL**

Anthony Jacyno, Aurora, Ill., assignor to G. W. Murphy Industries, Inc. Portable Electric Tools Division, Houston, Tex. Continuation-in-part of Ser. No. 850,834, Aug. 18, 1969, abandoned. This application Oct. 6, 1970, Ser. No. 78,434

Int. Cl. H02k 5/06, 7/14

U.S. Cl. 310—50

21 Claims



A motor and transmission frame module defined by plates that are at least in part similar to one another and are fastened rigidly together in engagement over a substantial area thereof by any of a variety of securing means. Two cut out portions in the plates provide receiving means for a motor assembly and transmission gearing, respectively, with bearing receiving means being provided in the plates by aligned semispherical struck out portions that provide radial and axial support for the various bearings and permit alignment of the same upon assembly. Alternatively, struck out portions may be cylindrical to receive stub shafts of bearing blocks or the like. The plates are stiffened by ribs or flanges. The assembled plates mounting a motor and transmission are adapted to be received in a cast housing of a power unit and/or a power tool.



3,694,681

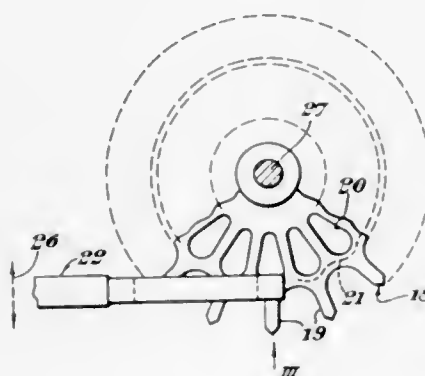
## PIEZOELECTRIC MOTOR

Frederick Otto Horstmann, and Cecil Frank Clifford, both of Newbridge Works, Bath, Somerset, England  
Filed Oct. 16, 1970, Ser. No. 81,207

Claims priority, application Great Britain, Oct. 21, 1969, 51,541/69; March 13, 1970, 12,073/70  
Int. Cl. H04r 17/00

U.S. Cl. 310—8.3

3 Claims



An electromechanical motor has a piezoelectric reed, anchored at one end and co-operating at its free end with a rotor. The rotor or the reed is provided with a wavy track, for example a flux gap, or a magnetic element which forms a magnetic coupling with a magnetic element or elements carried by the reed or rotor respectively. Upon the application of an alternating driving voltage to the piezoelectric reed, at a frequency other than the natural frequency of the reed, the latter undergoes flexural oscillations which induce rotation of the rotor through the magnetic coupling.

3,694,682

Patent Not Issued For This Number

3,694,683

Patent Not Issued For This Number

3,694,684

## CYLINDRICAL COIL WINDING FOR AN ELECTRICAL MACHINE

Bodo Futterer, Schonbuhrling 37, Luzern, Switzerland  
Continuation-in-part of Ser. No. 760,009, Sept. 16, 1968, abandoned. This application March 26, 1971, Ser. No. 128,456

Int. Cl. H02k 3/00  
U.S. Cl. 310—198

5 Claims



A cylindrical coil for an electrical machine having a plurality of turns wherein each turn overlaps a plurality of adjacent turns and a portion of each turn lies in a first cylindrical layer and the remaining portion of each turn lies in a second cylindrical layer. The wire turns have a rhomboidal contour.

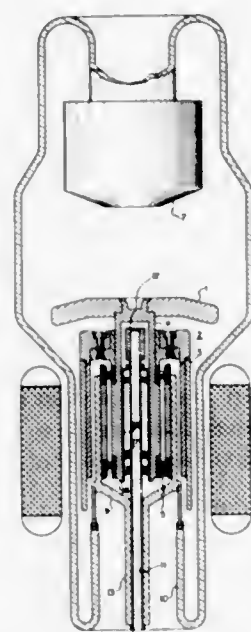
## SYSTEM FOR CONDUCTING HEAT FROM AN ELECTRODE ROTATING IN A VACUUM

John M. Houston, Schenectady, N.Y., assignor to General Electric Company  
Filed June 28, 1971, Ser. No. 157,483

Int. Cl. H01j 35/10

U.S. Cl. 313—60

13 Claims



Heat is conducted from an electrode moving in an evacuated enclosure and subject to heating by an electron beam by interposing a film of liquid metal between stationary and moving parts of the thermal path between the moving electrode and a stationary metal surface and cooling the stationary metal surface.

3,694,686

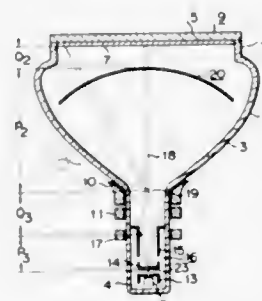
## UNIDIRECTIONAL DOUBLE DEFLECTION TYPE CATHODE RAY TUBE

Norio Harao, and Motohiro Yano, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co. Ltd., Kawasaki-shi, Japan  
Filed Jan. 11, 1971, Ser. No. 105,279

Claims priority, application Japan, Jan. 9, 1970, 45/2517; Jan. 9, 1970, 45/2518  
Int. Cl. H01j 29/06, 29/76

U.S. Cl. 313—75

16 Claims



A unidirectional double deflection type cathode ray tube comprises an evacuated envelope, a target at one end of the envelope, an electron gun at the other end of the envelope for emitting an electron beam, main deflection means positioned between the electron gun and the target for deflecting the electron beam in one direction, an arcuate lens electrode device curved about the deflection center of the electron

beam caused by the main deflection means, the lens aperture electrode device being provided with a plurality of lens apertures equally spaced apart in the direction of the scanning of the electron beam. Further provided is an auxiliary deflection means co-operating with and synchronized with the main deflection means for further deflecting the beam by a length equal to the pitch of the projection of the lens apertures the electron beam being thereby deflected to the positions of respective lens apertures.

3,694,687

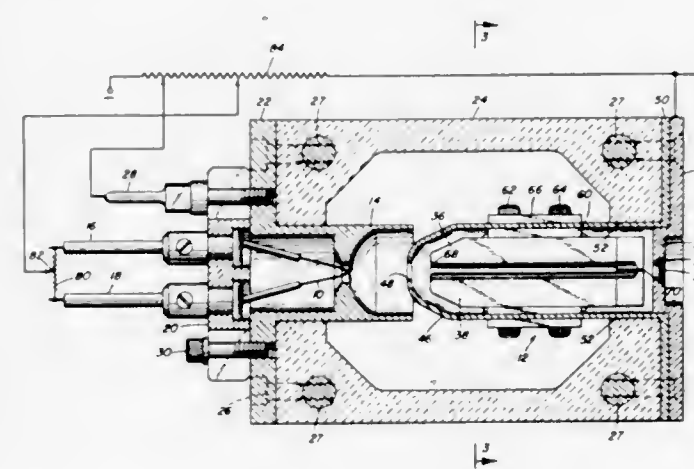
## ELECTRON GUN WITH ANODE SEGMENTS FOR BEAM POSITION DETECTION

William Ellis Glenn, Stamford, Conn., assignor to Columbia Broadcasting System, Inc.  
Filed Aug. 12, 1970, Ser. No. 63,226

Int. Cl. H01j 29/74, 29/02, 29/82

U.S. Cl. 313—78

2 Claims



In an electron gun, an anode structure in which the electron beam aperture is defined by four mutually insulated anode segments which may be energized to provide beam centering. In a preferred embodiment, the anode segments are shaped to intercept the beam if it is off-center, and are returned to ground potential through respective resistors thereby being operative automatically to center the beam.

3,694,688

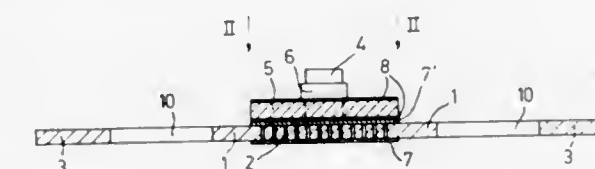
## DIRECTLY HEATED OXIDE CATHODE

Adrianus Kuiper; Jan Willem Brouns, and Bauke Visser, all of Emmasingel, Eindhoven, Netherlands  
Filed Sept. 21, 1971, Ser. No. 182,379

Claims priority, application Netherlands, Sept. 30, 1970, 7014337  
Int. Cl. H01j 1/14, 1/15

U.S. Cl. 313—346 DC

8 Claims



A directly heated cathode assembly comprising a tape-shaped member having a perforated central plane portion and end portions longitudinally extending from two sides of the central portion, a cathode plate member in spaced confronting relationship with one surface of the central portion, and electron emissive material embedded within the perforations of the central portion and interposed between the cathode plate member and the central portion. The width of the cen-

tral portion of the tape-shaped member is greater than that of the end portions. The cathode plate member is secured to the central portion of the tape-shaped member at two oppositely located positions of the central portion spaced from the end portions.

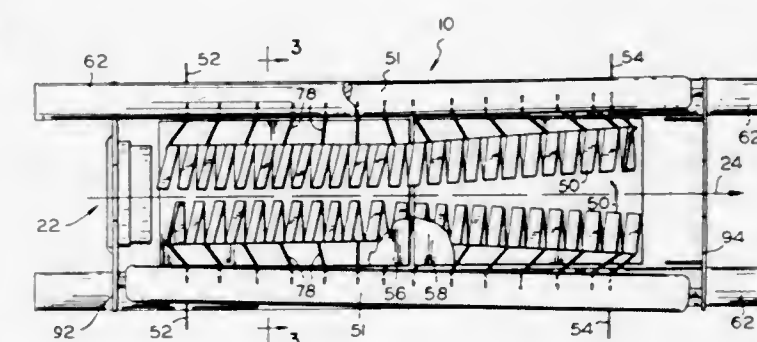
3,694,689

## ELECTRON BEAM DEFLECTION APPARATUS

Conrad J. Odenthal, Beaverton, and George K. Hashizume, Portland, both of Oreg., assignors to Tektronix, Inc., Park, Beaverton, Oreg.  
Filed Feb. 24, 1971, Ser. No. 118,293

Int. Cl. H01j 29/70, 25/36; H03h 7/30  
U.S. Cl. 315—3

22 Claims



A delay line type of deflection apparatus for deflecting an electron beam in a cathode ray tube is described, which includes a helical deflector members having rectangular turns each having a pair of flat side portions separated by a deflector portion of different width. Two pairs of grounded adjustable compensator plates are positioned adjacent the flat side portions on opposite sides of both helical members to form delay lines of substantially uniform characteristic impedance. The width and spacing of adjacent deflection portions is substantially uniform while the width and spacing of adjacent side portions varies for successive turns along the path of the electron beam. This provides the deflection apparatus with good deflection sensitivity, an extremely wide bandwidth frequency response from DC to over one gigahertz and a high characteristic impedance of about 365 ohms.

3,694,690

## ELECTRIC CIRCUIT FOR AUTOMATICALLY IGNITING PARKING LAMPS AT DUSK

Tetsuji Shimizu; Takaomi Yoshida, both of Nagoya; Sugako Otake, Kariya; Hajime Sumida, and Shinichi Ueno, both of Nagoya, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishi-Kasugai-gun Aichi Prefecture, Japan  
Filed Feb. 2, 1970, Ser. No. 7,499

Claims priority, application Japan, Feb. 20, 1969, 44/14253  
Int. Cl. B60g 1/08

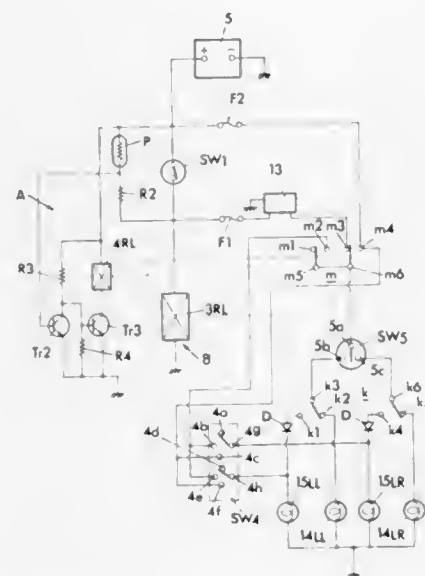
U.S. Cl. 315—82

10 Claims

The present invention discloses an electric circuit for automatically igniting parking lamps at dusk which comprises a light detecting circuit composed of one or more photoconductive elements, and one or more relays connected to the photoconductive element and having a plurality of contacts connected to a below mentioned parking lamp circuit; the parking lamp circuit adapted to be selectively operated through operation of the relay of said light detecting circuit thereby to ignite one or all of parking lamps; and a switching circuit composed of a relay connected between an ignition switch arranged for closing and opening a power source and the light detecting circuit and having a plurality of contacts breaking or completing a winker circuit and the light detecting circuit according to operation of said ignition switch. The electric circuit can ignite the left and right parking lamps



simultaneously and automatically as it becomes dark, hence the sign of parking is more effectively known by other car.



This will contribute to more complete prevention of traffic accidents.

3,694,691

### SUBLIMATION GETTER PUMP WITH CATHODE TRIGGER MEANS

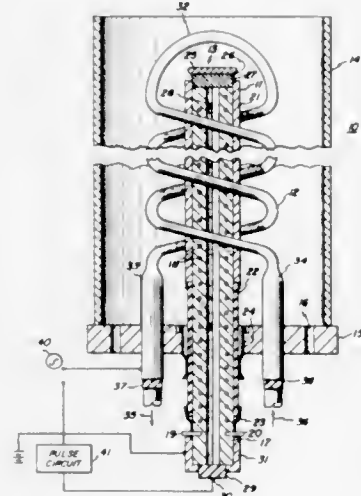
James M. Lafferty, Schenectady, N.Y., assignor to General Electric Company

Filed Nov. 23, 1970, Ser. No. 91,978

Int. Cl. H01j 7/18

U.S. Cl. 315-108

12 Claims



Sublimation getter pump includes, in one embodiment, a cathode electrode made of an active gas gettering material, an anode electrode closely juxtaposed to the cathode electrode and defining therewith an electric discharge gap, and a trigger electrode assembly in close juxtaposition to the cathode electrode. Upon the application of a suitable pulse to the trigger electrode assembly, an electric discharge is established between the cathode and anode electrodes, causing the evolution of active gas gettering material from the cathode electrode. Active gas gettering material is deposited in a clean film upon a closely adjacent surface where it reacts with and removes from the atmosphere active gases, causing the reduction of pressure within the pumped volume.

### 3,694,692 MERCURY VAPOR LAMP WITH AUXILIARY LIGHT SOURCE

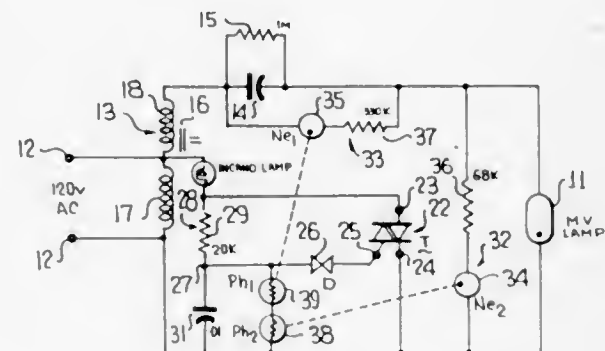
Sidney Pressman, Flushing, N.Y., assignor to Current Industries, Inc., Oceanside, N.Y.

Filed June 24, 1971, Ser. No. 156,387

Int. Cl. H05b 37/02, 39/04

U.S. Cl. 315-154

20 Claims



An auxiliary lamp is energized to illumination in response to a mercury vapor lamp being energized to less than full illumination because of either a cold start or a hot start condition existing in the mercury vapor lamp. The mercury vapor lamp is energized from an a.c. source through a ballast circuit including a capacitor. In response to the a.c. voltage across the mercury vapor lamp being less than a predetermined magnitude, as exists during cold start condition, or in response to the capacitor a.c. voltage being less than a predetermined magnitude, as exists in response to hot start conditions, a switch having an a.c. control terminal is closed to enable activation of the auxiliary lamp. In certain embodiments, voltage detectors for the mercury lamp and capacitor a.c. voltages are neon tubes optically coupled with photocells controlling the impedance between the a.c. source and the control electrode of a semiconductor switch, such as a triac. In another embodiment, the voltage detectors for the mercury vapor lamp and capacitor voltage are energizing coils of a.c. relays adapted to handle voltages having a substantial range without inducing chatter into contacts of the relays.

3,694,693

### CIRCUIT FOR OPERATING MULTIPLE POSITION DISPLAY TUBES

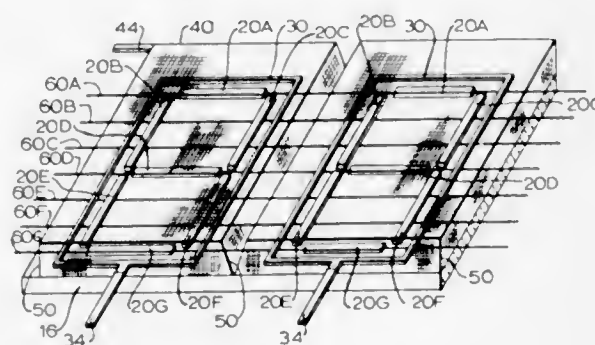
George E. Holz, North Plainfield, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 5, 1970, Ser. No. 87,058

Int. Cl. H05b 37/00

U.S. Cl. 315-167

3 Claims



The circuit of the invention is adapted for operation with a display device which includes a plurality of side-by-side groups of display cathode segments, each group having an

anode electrode, and there being an auxiliary electrode common to all of the groups of electrodes for electrically isolating each group of display segments and preventing spurious glow between groups. In the circuit, means are provided for providing current flow to the auxiliary electrode in proportion to the total number of display cathode segments glowing at any instant.

3,694,694

### ARC TESTING DEVICE

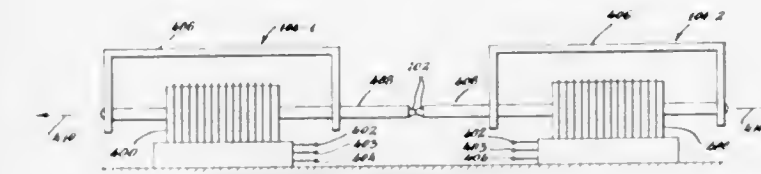
Robert S. Russakoff, Weston, Conn.; Carlo Bruno DeLuca, Monroe, Conn.; Henry Schenker, Fairfield, Conn.; Alfred L. Henchcliffe, Trumbull, Conn., and Dennis C. Williams, Norwalk, Conn., assignors to Burndy Corporation

Filed Dec. 29, 1970, Ser. No. 102,283

Int. Cl. H05b 31/20, 31/32

U.S. Cl. 315-194

3 Claims



A testing device for switching a pair of electrical contacts to draw an arc at a precisely controlled phase angle and for a precisely controlled time interval across a high voltage AC source. A phase sensor detects a selected phase angle of the source and starts a time delay circuit which measures a selected delay interval. At the end of that interval a triggering circuit turns on a three phase power output stage which energizes a pair of opposed synchronous linear actuators to switch the contacts, thus initiating an arc at a precisely controlled phase angle. Control of the actuator drive voltage enables the contact transport speed to be controlled, which in turn governs arc duration. A protective circuit determines when the arc tester starts and stops operation.

3,694,695

### COMMUTATING CIRCUIT

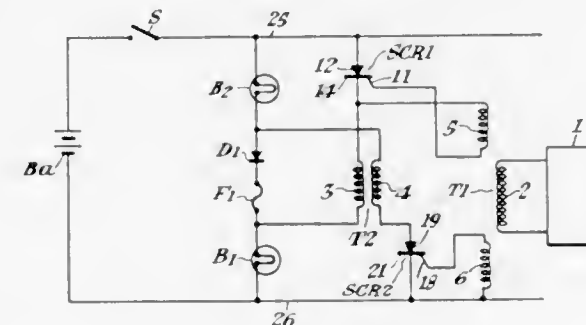
John O. G. Darrow, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Feb. 16, 1971, Ser. No. 115,315

Int. Cl. H03k 17/00

U.S. Cl. 315-222

18 Claims



This disclosure relates to a commutating circuit for alternately fully energizing a first load and a second load for use in highway crossing warning applications. Associatively connected to the first and second loads are first and second gates through first and second windings of a commutating transformer, respectively. A source of gating alternately triggers the first and second gates to fully energize the load associated

therewith. The commutating transformer alternately disables the first and second gates; thereby alternately substantially deenergizing the first and second loads.

3,694,696

### DIODE CIRCUIT FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS

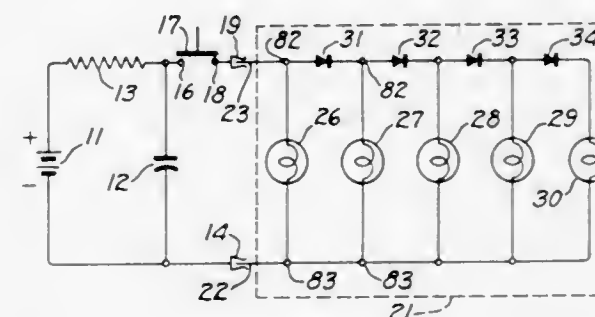
Edward L. Laskowski, Parma, Ohio, assignor to General Electric Company

Filed April 17, 1970, Ser. No. 29,547

Int. Cl. H05b 37/00

U.S. Cl. 315-241 P

18 Claims



A diode circuit for causing sequential flashing of photoflash lamps from pulses of electrical energy. The diodes are successively connected in series between the individual photoflash lamps. Circuits comprising resistance in combination with diodes also are disclosed. The circuits are inexpensive and may be built into a disposable unitary array of photoflash lamps.

3,694,697

### TRANSISTOR CIRCUIT FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS

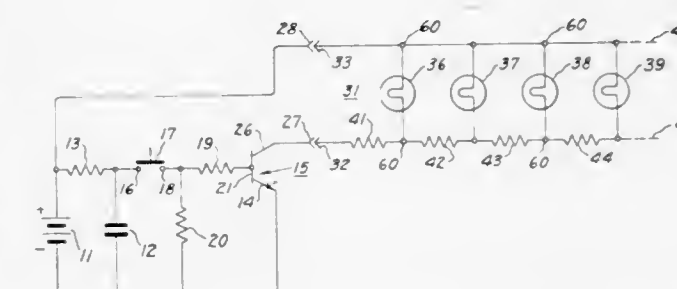
Sang-Chul Kim, 3670 Woodridge Road, Cleveland Heights, Ohio, assignor to General Electric Company

Filed Dec. 28, 1970, Ser. No. 101,861

Int. Cl. H05b 41/34, 41/38

U.S. Cl. 315-325

8 Claims



A circuit combination of impedance devices and a transistor amplifier for causing sequential flashing of a plurality of photoflash lamps by sequential firing voltage pulses. The transistor amplifier is connected between a source of firing pulses and an impedance network constituted by the flash lamps and impedance devices, this impedance network functioning as the output load of the amplifier. The transistor amplifier causes differing amounts of sequential firing pulse power to be applied to the impedance network, in accordance with changing impedance of the network as the various lamps are flashed, so that the lamps will be flashed by equal amounts of firing pulse energy.

3,694,698

Patent Not Issued For This Number



3,694,699

# CERAMIC BASED SUBSTRATES FOR ELECTRONIC CIRCUITS WITH IMPROVED HEAT DISSIPATING PROPERTIES AND CIRCUITS INCLUDING THE SAME

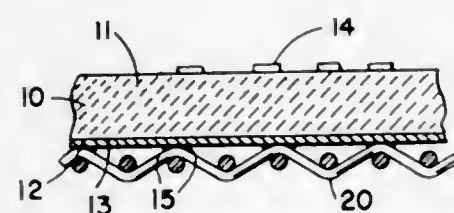
Christopher L. Snyder, Plainfield, and Phillip S. Hessinger, West Caldwell, both of N.Y., assignors to National Beryllia Corp., Haskill, N.J.

Filed March 30, 1970, Ser. No. 23,568

Int. Cl. H05k 7/20

U.S. Cl. 317—100

3 Claims



At least one irregularly shaped, metal, radiating film is applied in heat conducting relation to a ceramic substrate which contains, or is adapted to contain, an electronic circuit on a non-conducting or non-coated region thereof.

3,694,700

# INTEGRATED CIRCUIT INCLUDING FIELD EFFECT TRANSISTOR AND CERMET RESISTOR

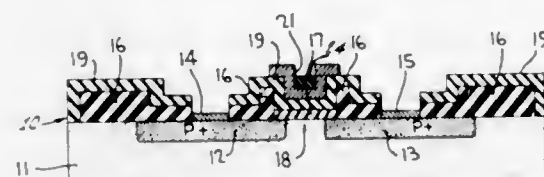
George M. Low, Acting Administrator of the National Aeronautics and Space Administration to an invention of: George A. Brown, 919 Melrose, Richardson, Tex., and Victor Harrap, 3603 High Vista Drive, Dallas, Tex.

Filed Feb. 19, 1971, Ser. No. 116,778

Int. Cl. H05k 3/10

U.S. Cl. 317—101 A

11 Claims



A single integrated circuit chip includes a field effect transistor having an insulating layer of silicon nitride covering an interface between a silicon substrate and a silicon oxide layer. A thin film cermet resistor on the nitride layer is connected to an ohmic contact of a field effect transistor electrode.

3,694,701

# INSULATING BASE, PLUG-ON BUS BAR AND CONNECTOR ASSEMBLY FOR CIRCUIT BREAKER PANELBOARD

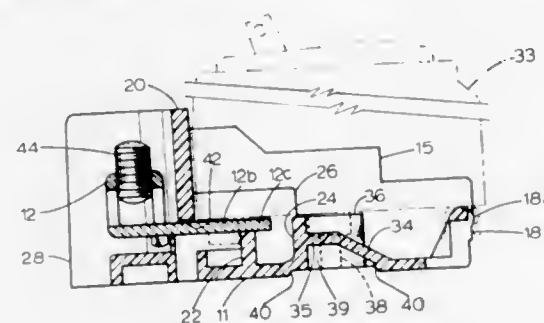
Harris I. Stanback, Lexington, N.Y., assignor to Square D Company, Park Ridge, Ill.

Filed June 9, 1971, Ser. No. 151,216

Int. Cl. H01r 9/16

U.S. Cl. 317—118

2 Claims



Each of a plurality of integral plug-on bus bar and connector body members is secured to an insulating base of a circuit

breaker panelboard or load center by inserting a bus bar portion of the member through a barrier portion of the base and straightening an up-turned tang on the bus bar portion to dispose the tang in interlocking relationship with another portion of the base.

3,694,702

# FAIL-SAFE TIME DELAY RELAY

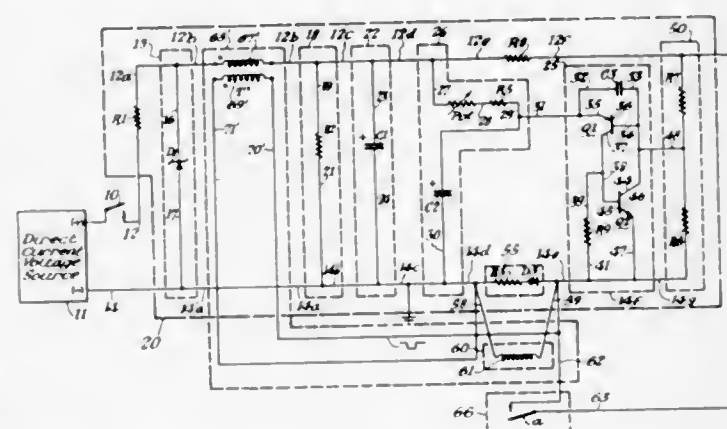
William R. Popp, Allison Park, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Aug. 25, 1971, Ser. No. 174,614

Int. Cl. H01h 47/18

U.S. Cl. 317—141 S

3 Claims



This invention relates to a fail-safe solid state time element relay circuit to prevent relay energization and pickup where there has been an open circuit condition during the timing cycle. The circuit includes the following components, electrically connected respectively to each other: an externally controlled direct current voltage source, a predetermined time delay voltage storage means, a solid state relay energization control means and a relay. In addition there is safety voltage storage means respectively electrically connected to the direct current voltage source and to a pulse source which is in turn electrically coupled to the relay to offset the charge of the predetermined time delay storage means in the event that the direct current voltage source should be momentarily disconnected from the remainder of the time element relay circuit to thereby ensure there would not be a relay actuation before the end of the predetermined time delay.

In one embodiment of the invention the discharge means is a current transformer which produces a pulse and has a primary winding electrically connected in series with the externally controlled direct current voltage source and a secondary winding electrically connected to the relay.

In the second embodiment the pulse transformer is a voltage transformer with its primary winding connected in series with the externally controlled direct current voltage source and in series with the predetermined time delay voltage storage means and the solid state relay energization control means.

3,694,703

# HEAT DISSIPATOR FOR ENCASED SEMICONDUCTOR DEVICE HAVING HEAT TAB EXTENDING THEREFROM

Seymour Wilens, Wantagh, and Edmund G. Trunk, East Meadow, both of N.Y., assignors to The Staver Company, Incorporated, Bay Shore, N.Y.

Filed Sept. 2, 1970, Ser. No. 68,994

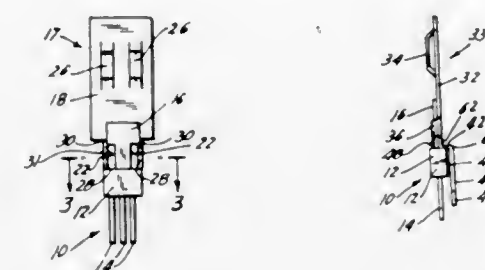
Int. Cl. H01h 3/00, 5/00

U.S. Cl. 317—234 R

9 Claims

A heat dissipator is adapted for use with an encased semiconductor device having a heat conductive tab extending through its casing. The dissipator comprises a stamped sheet metal body having a slot formed in one edge thereof by means of bent over fingers, the slot being adapted to firmly engage the heat conductive tab on the transistor to provide a solid heat path from the tab to the sheet metal body. In one embodiment the fingers are bent over along a line perpendicular to

the direction of their extension. In the second and third embodiments the projections are bent over along a line oblique to



the direction of their extension. An offset leg is provided in two embodiments for stabilization of the semiconductor body on a circuit board.

3,694,704

# SEMICONDUCTOR DEVICE

Tetsuo Ando, Tokyo, and Hiroshi Yamazaki, Kanagawa-ken, both of Japan, assignors to Sony Corporation, Tokyo, Japan

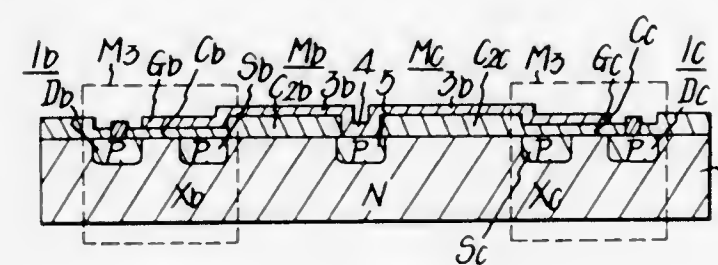
Filed Sept. 28, 1970, Ser. No. 75,910

Claims priority, application Japan, Sept. 29, 1970, 45/77645

Int. Cl. H01l 19/00

U.S. Cl. 317—235 R

4 Claims



A semiconductor for a memory circuit has a semiconductor substrate with a plurality of MIS transistors formed therein, and a conductive layer is provided on an insulating layer of the semiconductor device to supply a clock pulse to said memory circuit and is connected to a diffusion region formed in the substrate under the conductive layer.

3,694,705

# SEMICONDUCTOR DIODE WITH PROTECTIVE RING

Wolfgang Wenzig, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

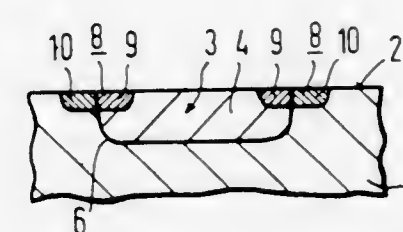
Filed Feb. 8, 1971, Ser. No. 113,382

Claims priority, application Germany, Feb. 13, 1970, P 20 06 729.2

Int. Cl. H01l 11/00, 15/00

U.S. Cl. 317—235 R

3 Claims



In a semiconductor diode in which a zone of another conductance type is inserted into the surface of a zone of one conductance type, the zone of the other conductance type is enclosed by a ring-shaped region of the other conductance type, the depth of penetration of the ring-shaped region being less than the depth of penetration of the zone of the other conductance type. Due to appropriate doping of the ring-shaped region only the middle portion of the PN junction which pos-

3,694,706

Patent Not Issued For This Number

3,694,707

# SEMICONDUCTOR DEVICE

Masakatsu Nakamura; Toshio Yonezawa; Taketoshi Kato, all of Yokohama; Masaharu Watanabe, Kawasaki, and Minoru Akatsuka, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co. Ltd., Kawasaki-shi, Japan

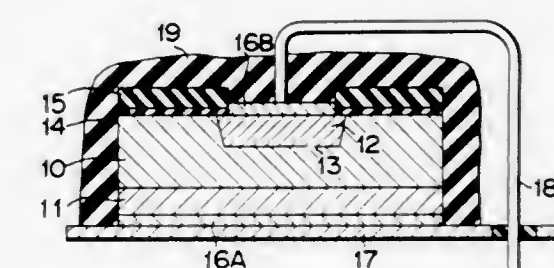
Filed Sept. 29, 1970, Ser. No. 76,582

Claims priority, application Japan, March 27, 1970, 45/25373; June 24, 1970, 45/54335

Int. Cl. H01l 7/00

U.S. Cl. 317—235 R

8 Claims



A semiconductor device comprising a semiconductor substrate having a p-n junction of which end is exposed at one main face of the substrate, and an insulating film covering the exposed end of the p-n junction, the protecting film including arsenic and phosphorus.

3,694,708

# CONTACT ARRANGEMENT FOR EMITTER ZONE OF SEMICONDUCTOR DEVICE

Manfred Arlt, Krailling; Joachim Dathe, Munich, and Helmut Guckel, Baldham, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

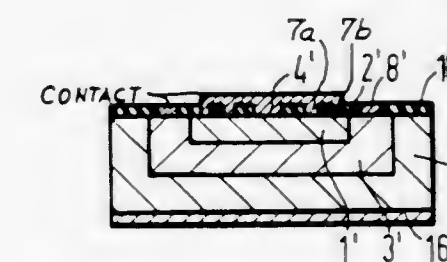
Filed Nov. 3, 1970, Ser. No. 86,465

Claims priority, application Germany, Nov. 6, 1969, P 19 55 954.7

Int. Cl. H01l 5/00

U.S. Cl. 317—235 R

3 Claims



The emitter zone of a transistor has a p-n junction which limits the surface thereof and an edge formed by the p-n junction between the emitter and base zones. A contact arrangement comprises contact material provided on only part of the surface area of the emitter zone so that the surface area of the emitter zone in the vicinity of the emitter edge is free of contact material. Insulating material covers the surface area of the emitter zone which is free of contact material. The contact material covers at least part of the insulating material.



3,694,709

**ELECTRICAL HIGH VOLTAGE CONDENSER FOR PULSE DISCHARGES**

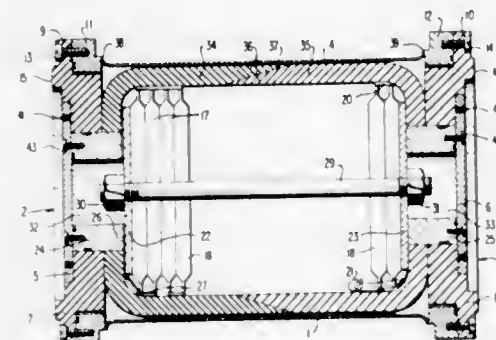
Dieter Kind, Knappstrasse 4, 33 Braunschweig; Manfred Naglik, Am Spitzen Hey 26, Braunschweig-Mascherode; Albert Kaltfen, Herrenleite 1, Amlingstadt, and Karl Zwecker, Oberer Stephensberg 93a, 86 Bamberg, all of Germany

Filed Sept. 21, 1971, Ser. No. 182,452

Int. Cl. H01g 3/28

U.S. Cl. 317—242

15 Claims



An electrical high voltage condenser with high energy content for current surge discharges which consists of a number of condenser elements connected with each other by series and parallel connections, which are installed into a metal housing and insulated with respect thereto, whereby the two connecting terminals of the condenser are arranged insulated at opposite surfaces of the metal housing and the connecting terminals are arranged at least approximately in a plane with connecting elements of the metal housing for external connections.

3,694,710

**VARIABLE CAPACITANCE MULTILAYERED CERAMIC CAPACITOR**

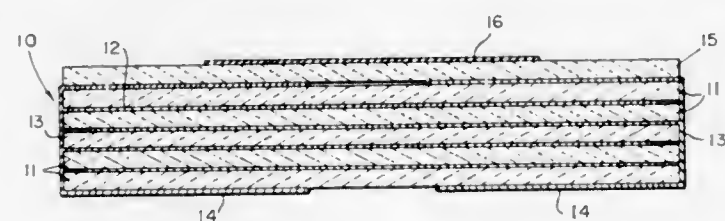
John G. Kirschner, Northbrook, Ill., assignor to P. R. Mallory and Co. Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 876,969, Nov. 14, 1969. This application April 13, 1970, Ser. No. 27,574

Int. Cl. H01g 1/00

U.S. Cl. 317—261

5 Claims



A multilayered ceramic capacitor, particularly a multilayered ceramic chip capacitor which can be varied in capacitance, primarily for use in hybrid integrated circuits. The capacitor's body includes a plurality of alternate ceramic and inner electrode layers. Outer termination portions, on the oppositely opposed surfaces of the body, electrically connects alternate inner electrode layers. Overlying the outer termination layer portions on one of said oppositely opposed surfaces is a ceramic layer having an external counterelectrode layer surface. The capacitor can be varied in capacitance by varying the surface area of the counterelectrode.

**ERRATUM**

For Class 317—234 R see:  
Patent No. 3,694,719

3,694,711

**APPARATUS FOR DETECTING FAULTS IN ELONGATED FLEXIBLE MATERIAL**

Zbigniew Bonikowski, London, W.S. and Bruce Henry Keen, Hounslow, both of England, assignors to British Insulated Callendar's Cables Limited, London, England

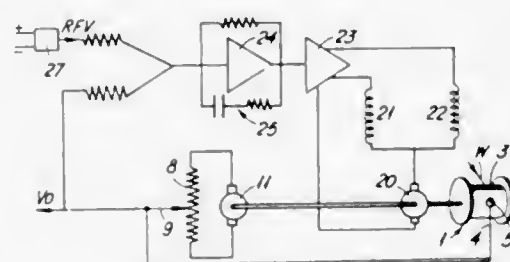
Filed April 26, 1971, Ser. No. 137,177

Claims priority, application Great Britain, April 27, 1970, 20,025/70

Int. Cl. H02p 7/00

U.S. Cl. 318—6

13 Claims



Apparatus for passing wire from a reversible supply drum through or past at least one fault detector to a reversible take-up drum and, upon detection of a fault, for automatically decelerating and reversing the movement of the wire comprises reversible means, for instance a split field reversible motor, for driving the wire through the apparatus and a device for integrating the velocity of the wire. A signal generated by the fault detector, when a faulty region of wire passes through or past it, initiates the integrating device and causes the reversible wire-driving means to decelerate the wire and eventually to reverse its direction of movement and to move in the reverse direction until the integrated value of the velocity of the wire is approximately zero. Preferably the wire velocity-integrating device comprises an electrical device for generating a voltage proportional to the linear velocity of the wire being wound on to or from a coil wound on the take-up drum or supply drum and means for integrating the voltage signal generated by the electrical device.

3,694,712

**SPEED CONTROL APPARATUS**

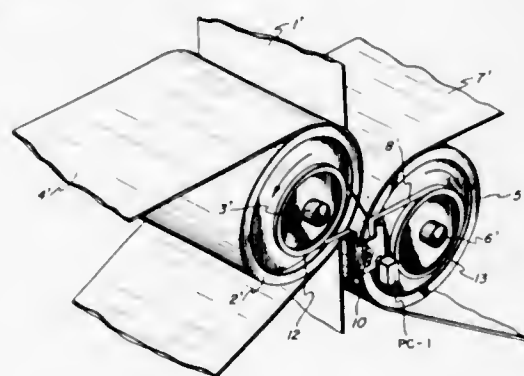
Raymond G. Ticknor, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 1, 1970, Ser. No. 33,566

Int. Cl. H02p 5/46

U.S. Cl. 318—7

8 Claims



An arrangement for controlling the surface speed of one endless xerographic plate relative to another in a duplex xerographic machine. According to the arrangement, an endless member along a first portion thereof is operatively associated with one of the xerographic plates to be driven at a surface speed proportional to the respectively associated xerographic plate and along a second portion thereof is operatively associated with the other of the xerographic plates to be driven at a surface speed proportional to the other of the respectively associated xerographic plates. The endless member along a third portion thereof is formed into a loop, the size of which may vary according to variations in the relative surface speeds

between the xerographic plates. Upon detection in variations in the size of the loop portions of the endless member, the surface speed of the respective xerographic plates may be operatively varied to maintain equal surface speeds between each of the xerographic plates.

3,694,713

**ULTRASONIC GENERATORS**

Lennart Axel Duren, and Arne Andersson, both of Nynashamn, Sweden, assignors to Amlab AB, Nynashamn, Sweden

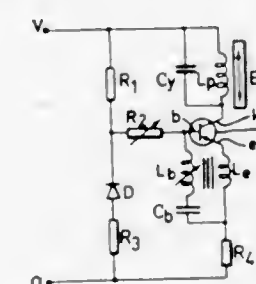
Filed March 6, 1970, Ser. No. 17,080

Claims priority, application Sweden, March 12, 1969, 3405/69

Int. Cl. H02b 9/00

U.S. Cl. 318—116

3 Claims



An ultrasonic generator including an amplifier coupled in oscillator configuration for initiating via an exciting impedance ultrasonic vibrations in an electro-acoustic element such as that associated with a dental instrument. Connected in parallel with the exciting impedance in an additional impedance to form a tuned parallel resonance circuit. Maximum current is supplied to the exciting impedance through the amplifier and the primary winding of a current transformer also having a secondary winding connected in series with a capacitor to form a tuned series resonance circuit additionally emphasizing the maximum current. The transformer forms an inductive coupling in phase-aiding relationship between the output circuit of the amplifier and the control electrode thereof for continuously maintaining optimal effect at the prevailing resonance frequency with an automatic adaptation of the oscillation frequency to variations from the nominal mechanical resonance frequency of the electro-acoustic element.

3,694,714

**SINGLE PHASE INVERTER CONTROL CIRCUIT**

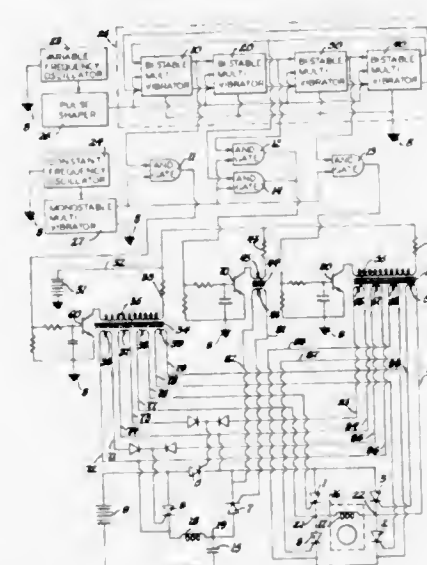
Michael B. Miller, Bellbrook, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 28, 1971, Ser. No. 184,353

Int. Cl. H02k 29/00

U.S. Cl. 318—138

3 Claims



A four-stage shift register, responsive to the output signals of a variable frequency oscillator, produces a discrete square

wave output signal during each of four time periods, each of which is applied to a corresponding AND gate. The output signals of a constant frequency oscillator are applied to all of the AND gates in parallel. The output signals of the AND gate corresponding to the first time period are applied across the gate-cathode electrodes of the two inverter silicon controlled rectifiers through which energizing current may be supplied to the motor in a first direction from a direct current potential source, a power silicon controlled rectifier switch through which the source of direct current operating potential is applied across the inverter circuit and a capacitor charge circuit silicon controlled rectifier through which an extinguishing capacitor is charged across the source of direct current operating potential, the output signals of the AND gates corresponding to the second and fourth time periods are applied across the gate-cathode electrodes of an extinguishing silicon controlled rectifier through which the charge upon the extinguishing capacitor is applied across the anode-cathode electrodes of the power silicon controlled rectifier switch in an inverse polarity relationship and the output signals of the AND gate corresponding to the third time period are applied across the gate-cathode electrodes of the other two inverter silicon controlled rectifiers through which energizing current may be supplied to the motor in a second opposite direction, the power silicon controlled rectifier switch and the capacitor charge circuit silicon controlled rectifier.

3,694,715

**CONTACTLESS DIRECT CURRENT MOTOR REVERSING CIRCUIT**

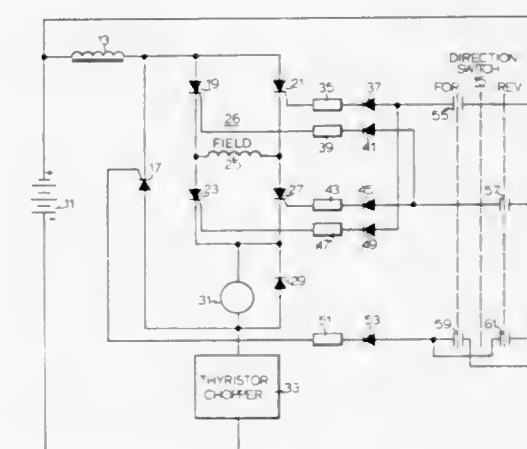
John R. Van Der Linde, Salem, and Lyle W. Fairey, Roanoke, both of Va., assignors to General Electric Company

Filed Sept. 28, 1970, Ser. No. 75,853

Int. Cl. H02r 5/16

U.S. Cl. 318—139

5 Claims



A contactless, reversing circuit for a direct current motor, wherein the current from a variable frequency pulsed, direct current source is applied to the series field of the motor by a first pair of solid state switching devices for forward rotation of the motor, and by a second pair of solid state devices for reverse rotation of the motor. An additional single solid state switching device, common to both pairs of devices and normally carrying the induced armature current during a blocking period between pulses, is de-energized during the transfer of conduction between the one direction pair to the other direction pair of devices, in order to assure the blocking state of the one pair before the other pair is turned on.

3,694,716

**GYROMOTOR SYNCHRONIZATION SYSTEM**

Paul D. Eland, Dumont, N.J., assignor to Singer-General Precision, Inc., Little Falls, N.Y.

Filed Aug. 14, 1970, Ser. No. 70,614

Int. Cl. H02p 7/36

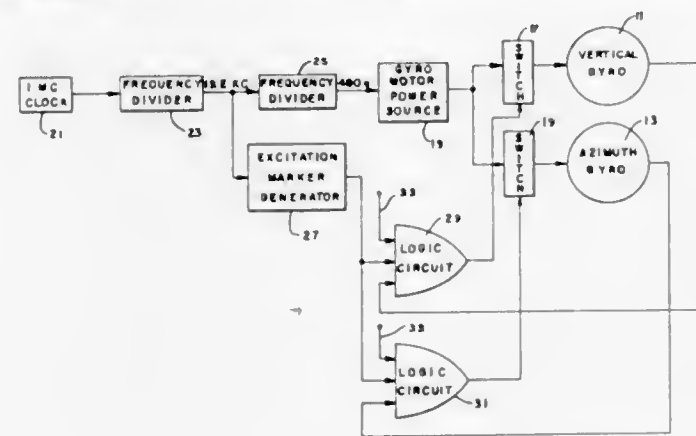
U.S. Cl. 318—175

5 Claims

In a system employing gyroscopes driven by AC motors at synchronous speeds the motors are controlled so that their ro-

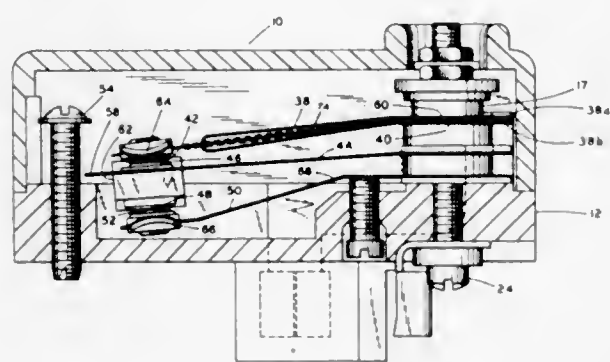


tors always occupy the same synchronous position with respect to the rotating magnetic fields in the motors. This control, which makes the drift of the gyroscope due to rotor unbalance constant, is achieved by generating a rotor marker



pulse each time the rotor passes through a predetermined angular position and causing the rotor to be positioned so that this pulse occurs at a preselected point in the cycle of energization of the AC motor.

**3,694,717**  
**STARTING AND OVERLOAD CONTROL DEVICE FOR ELECTRIC MOTORS**  
Robert F. Prouty, and James J. Smith, both of Logansport, Ind., assignors to Essex International Inc., Fort Wayne, Ind.  
Filed Oct. 26, 1971, Ser. No. 192,266  
Int. Cl. H01h 37/66, 61/03; H02k 17/08  
U.S. Cl. 318—221 C 5 Claims

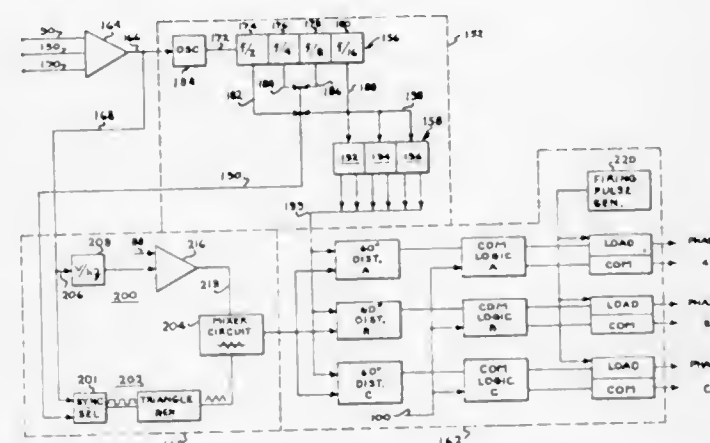


A starting and overload control device is provided whereby current is automatically supplied to both the starting and the main winding of an electric motor when the motor is first energized. Current to the starting winding is automatically terminated a predetermined time after the motor commences running. Also, the device automatically de-energizes the electric motor during overload conditions. The current control is accomplished by means of a bimetallic strip together with a heater operating in conjunction with a pair of leaf springs, all of which are mounted for cantilever movement.

**3,694,718**  
**METHODS OF INVERTER VOLTAGE CONTROL BY SUPERIMPOSED CHOPPING**  
Carlton E. Graf, Harborcreek, and Werner K. Volkmann, Fairview, both of Pa., assignors to General Electric Company  
Filed Oct. 19, 1970, Ser. No. 81,758  
Int. Cl. H02p H02m 7 Claims

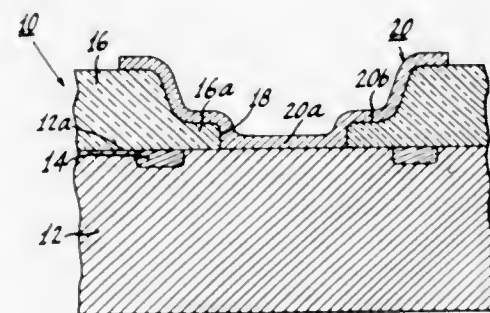
An adjustable speed polyphase a-c motor drive featuring an inverter in which the same power switching devices, typically SCRs, are controlled to provide both variable frequency and variable voltage polyphase power to the motor. This is accom-

plished by sequentially operating selected switching devices in a time ratio controlled mode of operation within the principal polyphase operation thereof. During successive 60 electrical degree intervals in a three phase inverter, the switching



devices of two phases are connected to a source of electrical potential of one polarity and a switching device of the remaining phase is connected to a source of electrical potential of the other polarity is subjected to time ratio controlled switching.

**3,694,719**  
**SCHOTTKY BARRIER DIODE**  
Arjun Nath Saxena, Princeton Jct., N.J., assignor to RCA Corporation  
Filed Nov. 27, 1970, Ser. No. 92,968  
Int. Cl. H01l 9/00 5 Claims

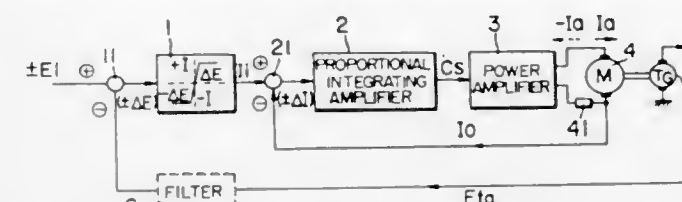


A Schottky barrier diode includes a body of a semiconductor material of one conductivity type having a guard ring region of the opposite conductivity type therein at a surface of the body. The guard ring extends along the surface of the body in a closed path. A layer of an insulating material is on the surface of the semiconductor body and has an opening therethrough extending to the area of the semiconductor body surface within the guard ring. A metal layer is on the surface of the semiconductor body within the opening in the insulating layer and forms a surface barrier rectifying junction with the semiconductor body. The metal film is also coated on the insulating layer and extends over the guard ring.

**3,694,720**  
**SPEED CONTROL FOR D.C. MOTOR**  
Kazuo Nakajima, Kitakyushu, Japan, assignor to Kabushiki Kaisha Yaskawa Denki Seisakusho, Fukuoka-ken, Japan  
Filed Nov. 13, 1970, Ser. No. 89,163  
Claims priority, application Japan, Nov. 14, 1969, 44/90749  
Int. Cl. H02p 3/04 11 Claims

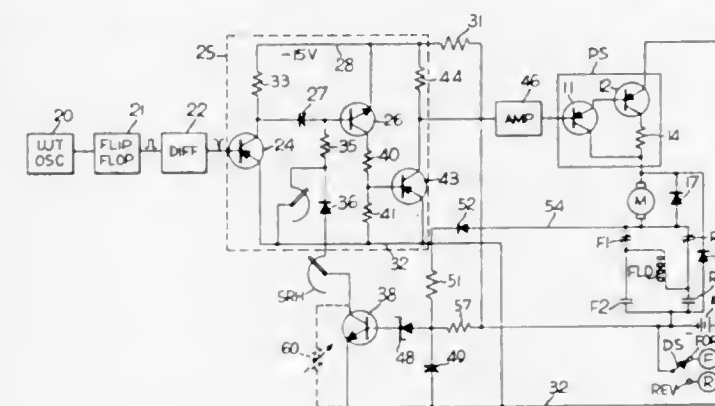
A control system is composed of a saturation amplifier delivering a positive or negative saturated voltage depending on the sign of a difference voltage between a command voltage and a negatively fed back speed-representing voltage of the motor to be controlled, a proportional-integrating circuit (operable in P-I mode) receiving a difference voltage between

the output of the saturation amplifier and a negatively fed back voltage representing the actual armature current through the motor as its input, and a power amplifier in the form of a



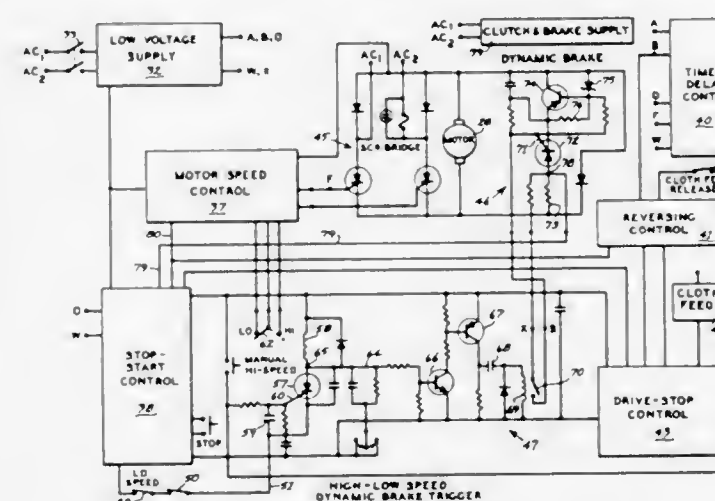
chopper amplifier operated in a shorter repetition period in comparison with the mechanical time constants of the d.c. motor for supplying an output current to the d.c. motor.

**3,694,721**  
**SYSTEM TO CONTROL PLUGGING OF VEHICLE DIRECT CURRENT MOTOR**  
Luke F. Henry, Homewood, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.  
Filed Aug. 31, 1971, Ser. No. 176,591  
Int. Cl. H02r 5/06 17 Claims



A soft-plugging control for a DC traction motor has a speed rheostat which regulates the duty cycle of variable width pulses applied by a power switch from a battery to the motor armature, means for algebraically summing the voltage across the power switch and the armature and means for decreasing the repetition rate of the pulses when said algebraic sum decreases below a predetermined magnitude as the armature voltage decays when said armature reverses direction.

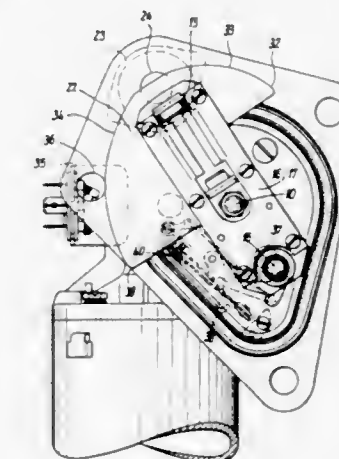
**3,694,722**  
**SPEED REDUCING APPARATUS FOR A CLOTH SPREADING MACHINE**  
Robert G. Reed, Nashville, Tenn., assignor to Cutters Machine Company, Inc., Nashville, Tenn.  
Filed March 18, 1971, Ser. No. 125,470  
Int. Cl. H02r 3/12 7 Claims



An electrically driven and controlled cloth spreading machine including means for controlling the high and low

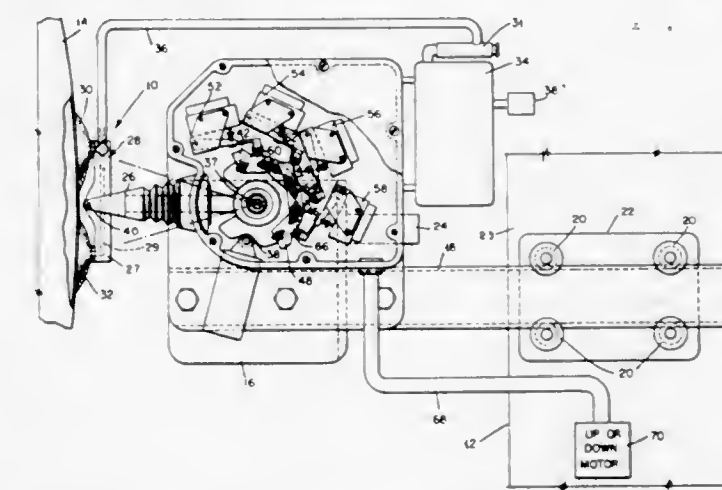
speeds of the machine, and for dynamically braking the machine from a high speed to a pre-set low speed upon signal.

**3,694,723**  
**MOTOR VEHICLE WINDSHIELD WIPER HAVING A PARKING POSITION OUTSIDE THE WIPING AREA**  
Theodor Schneider, Seestrasse 30, 7121 Freudental Wurttemberg; Karl-Friedrich Schubert, Friedrich Naumannstrasse 10, and Jacob Helnz, Frankfurter Strasse 15, both of 712 Bietigheim Wurttemberg, all of Germany  
Filed Aug. 24, 1971, Ser. No. 174,336  
Claims priority, application Germany, Dec. 30, 1970, P 20 64 423.9 5 Claims



A windshield wiper for motor vehicles has a parking position of the wiper arm outside the wiping area, and includes a motor having a drive shaft, a crank guide member secured to the shaft, a resiliently biased crank member adjustable longitudinally of the guide member, switching means operable to initiate a parking movement and control means included in the switching means and engageable with a cam rotated with the crank member, upon activation of the switching means, to vary the crank radius against the resilient bias. The control cam has, with respect to its direction of rotation, a steep ascent surface and an extended descent surface, which are engageable by the control member. Preferably the control cam is fixedly connected to the crank member and actuates an additional contact of the switching means only in the wiper parking position, to effect final switching off of the wiper motor.

**3,694,724**  
**VERTICAL MOVEMENT SENSOR**  
Walter S. Eggert, Jr., Huntingdon Valley, Pa., assignor to The Budd Company, Philadelphia, Pa.  
Filed Sept. 29, 1970, Ser. No. 76,346  
Int. Cl. B64c 17/02 5 Claims



An automatic levelling system is provided for maintaining the relative position of two bodies. An extendible member



movably mounted on one of the bodies is attached to the other body. Means including the extendible member are responsive to the relative movement between the two bodies to restore them to their original relative positions.

3,694,725

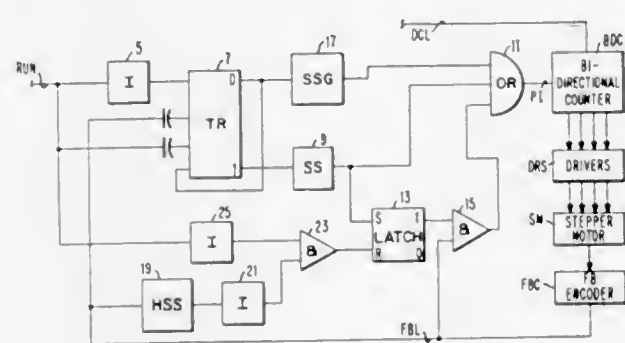
### STEPPING MOTOR CONTROL SYSTEM USING PULSE INJECTION

Dennis G. Abraham, Vestal, and Joseph P. Pawletko, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,704  
Int. Cl. H01k 37/00

U.S. Cl. 318—685

5 Claims



Single step operation of a stepping motor and deceleration of the stepping motor utilized in a closed-loop mode are obtained utilizing a pulse injection arrangement in which a suitable plurality of pulses are supplied in rapid succession to the drive circuits for the stepping motor in order to quickly step the magnetic fields to the proper condition at a rate too fast for the rotor to follow.

3,694,726

### COMBINED TRANSFORMER AND INDUCTOR DEVICE

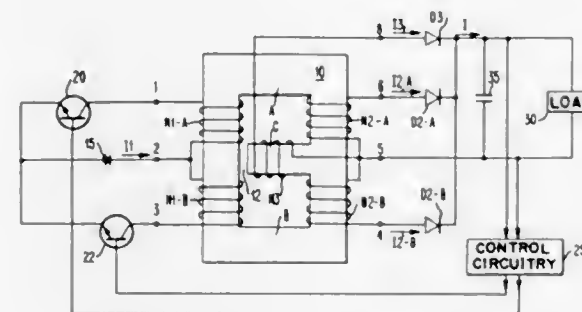
John R. Cielo, Kingston, and Harry S. Hoffman, Jr., Saugerties, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 691,996, Dec. 20, 1967, Pat. No. 3,553,720. This application March 30, 1970, Ser. No. 29,313

Int. Cl. H02m 3/26

U.S. Cl. 321—2

11 Claims



A DC-to-DC power converter incorporating a combined transformer and inductor device comprised of a three-legged magnetic structure having an air gap in the center leg and primary and secondary windings arranged on the three legs to provide combined cooperative transformer and inductor action.

3,694,727

### INVERTER DEVICE

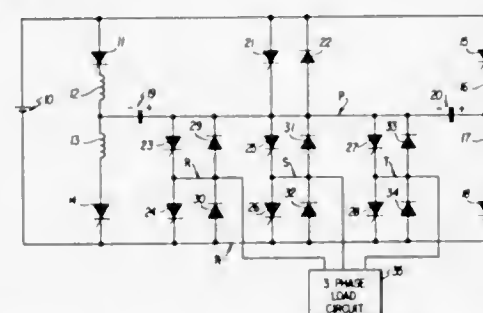
Nagataka Seki, Tokyo, Japan, assignor to Tokyo Shibaura Electric Company, Ltd., Kanagawa-ken, Japan  
Filed Nov. 12, 1971, Ser. No. 198,200

Claims priority, application Japan, Nov. 14, 1970, 45/100047

Int. Cl. H02m 7/52

U.S. Cl. 321—5

8 Claims



A thyristor bridge inverter is energized from a D.C. voltage supply through a switching thyristor. First and second commutation circuits, each having a series combination of a first commutation thyristor, a reactor and a second commutation thyristor, are connected in parallel with the series combination of the bridge inverter and the switching thyristor. A commutating condenser is connected at the interconnecting point between the reactor and the second commutation thyristor of the respective first and second commutation circuits and an interconnecting point between the bridge inverter and the switching thyristor. When commutation is intended among the thyristors provided in the bridge inverter, the first commutation thyristor of the first commutation circuit is turned on to thereby cause the switching thyristor to be biased negatively by the discharge of one of the commutation condensers. The second commutation thyristor of the second commutation circuit is then turned on to cause the bridge inverter to be biased negatively by the discharge of the other commutation condenser. Similarly, the first commutation thyristor of the second commutation circuit and the second commutation thyristor of the first commutation circuit are turned on when sequential commutation of the inverter is made. In this way, it is possible to turn on the second thyristor in one of the commutation circuits before the first thyristor in the other commutation circuit is turned off and without causing a short circuit across the D.C. voltage supply such that the deenergization period of the inverter from the D.C. voltage supply is effectively reduced during the commutation period of the inverter.

3,694,728

### CIRCUIT ARRANGEMENT FOR ALTERING CURRENT DISTRIBUTION IN MESH-OPERATED HIGH VOLTAGE DIRECT CURRENT TRANSMISSION NETWORKS

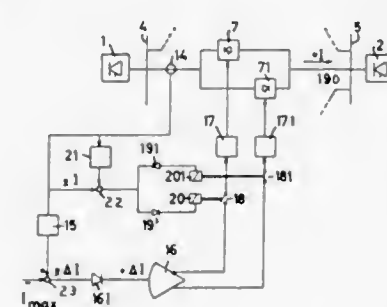
Karl-Werner Kanngiesser, Viernheim, and Dietrich Kluge, Mannheim, both of Germany, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland  
Filed March 18, 1971, Ser. No. 125,733

Claims priority, application Germany, March 25, 1970, P 20 14 375.3

Int. Cl. H02m 1/18

U.S. Cl. 321—11

7 Claims



A high voltage direct current mesh-operated network comprises several interconnected stations for effecting an

exchange of power by means of converters located at the stations and which are connected to alternating current networks, the station converters being operated selectively either in a rectifier mode or an inverter mode depending upon the direction of the flow of direct current over the branch line between any two stations. To control the level of the direct current flowing over the branch lines, an auxiliary regulatable rectifier arrangement is disposed in each branch and is constituted by two regulatable rectifier systems connected in an anti-parallel manner. One of the rectifier systems conducts while the other system blocks depending upon the direction of the current flow in the branch.

3,694,729

### PORTABLE ELECTRIC POWER APPARATUS

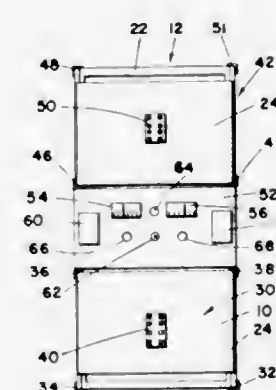
Jack D. Jones, Lima, Ohio, assignor to National Can Retinning Company, Lima, Ohio

Filed Dec. 28, 1971, Ser. No. 212,918

Int. Cl. H02j 7/00

U.S. Cl. 307—150

18 Claims



Two portable battery packs are removably mounted on a truck and connected to the truck's electrical system. Each pack contains four 6-volt battery units which are wired to a battery pack connector mounted at the rear of the battery pack housing. Means are provided for connecting the battery units in parallel for charging by the truck generator alternator or battery. When the pack is (1) withdrawn from the truck, and (2) used to power a tool, the battery units are connected in suitable series — parallel — to provide output voltages greater than the charging voltage.

In one embodiment, a charging rack is permanently mounted on and to the truck, the rack having a mating connector which during the charging process engages the battery pack connector. A program connector at other times engages the battery pack connector to provide proper output voltage at the battery pack output connector.

In another embodiment, the charging rack is dispensed with and two double pole double throw switches are used to effect the different series or parallel connections in and to the battery pack.

3,694,730

### THYRISTOR C. C. SWITCH

Richard G. Hoft, Columbia, Mo., and Tsuneo Kume, Kanda-machi, Japan, assignors to Emerson Electric Co., St. Louis County, Mo.

Filed May 3, 1971, Ser. No. 139,393

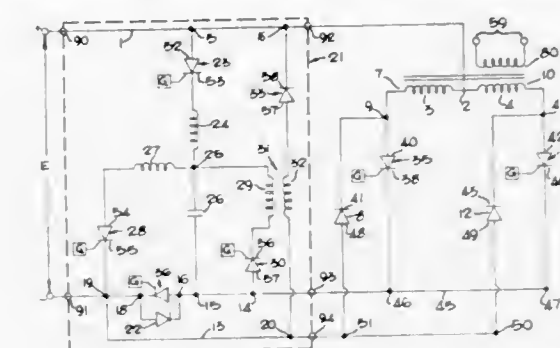
Int. Cl. H02m 7/48

U.S. Cl. 321—21

12 Claims

An inverter commutation circuit has a thyristor (SCR) line switch interposed in one side of a D.C. line. Opening the line switch provides commutation for the inverter. The line switch is opened by discharging a capacitor through a diode connected in parallel with the switch. Load current is transferred to a diode coasting path while the line switch is open. The line switch is closed and the capacitor is charged to commutation voltage before the switch is reopened. Frequency control is provided by the cyclic repetition of the line switch and cor-

responding inverter operation. The line switch may be applied in a variety of inverter systems. The circuit provides means for



a method of static inverter commutation by interruption of the supply line.

3,694,731

### MULTIPLE MODE VEHICLE POWER SUPPLY SYSTEM

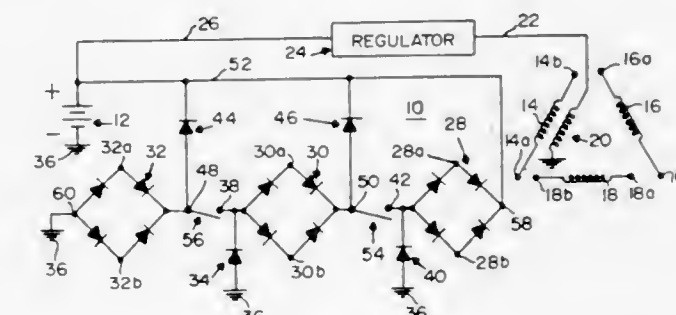
James R. Cherry, Barrington, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 18, 1971, Ser. No. 154,332

Int. Cl. H02m 7/04; H02h; H02j

U.S. Cl. 321—27 R

5 Claims



A motor vehicle power supply system includes an alternator having a three winding stator with the windings being disconnected electrically. The output of each winding is rectified by a full wave bridge circuit. Switches are positionable to a first condition for connecting the bridge circuit outputs in series at relatively low alternator speeds, to a second condition for connecting two of the bridge circuit outputs in series and in parallel with the third bridge circuit output for higher alternator speeds and to a third condition for connecting the bridge circuit outputs in parallel for even higher alternator speeds.

3,694,732

### INVERTER PROVIDING A VARIABLE OUTPUT VOLTAGE

Pierre Nollace, Lamanon, France, assignor to Compagnie Generale D' Electronique Industrielle Lepaute, Paris, France

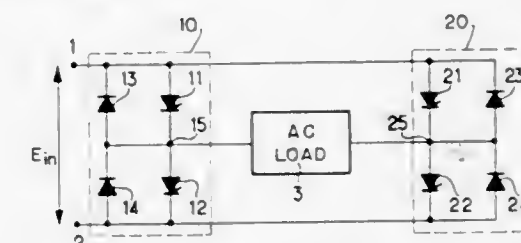
Filed Sept. 22, 1970, Ser. No. 74,343

Claims priority, application France, Sept. 23, 1969, 6932445

Int. Cl. H02m 7/48

U.S. Cl. 321—45 R

6 Claims



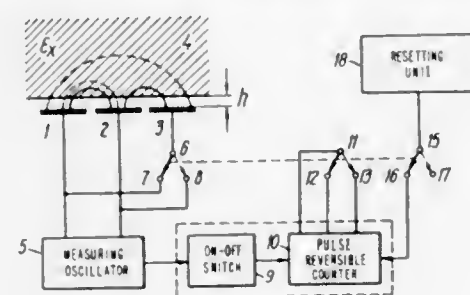
An inverter circuit for supplying an AC output from a DC input. The circuit comprises a bridge circuit including four controlled diodes, one in each leg of the bridge. The diodes are fired by a control circuit in such a manner that an AC output is supplied to a load connected across a diagonal of the bridge.







capacitor connected to the material being tested and to a measuring oscillator the output of which is coupled to the input of a frequency meter in the form of a series combination of a switch and a pulse counter with a resetting unit, said capacitor being formed by at least two main electrodes permanently connected to the input of said measuring oscillator, and one additional electrode which is alternately connected by a chan-



geover switch to one of said main electrodes in the course of measurement, while said resetting unit is connected to said pulse counter in the form of a reversible counter by an on-off switch actuated synchronously with said switch of the measured capacitor electrodes, the direction of counting of said reversible counter being determined by the position of said changeover switch of the measured capacitor electrodes.

3,694,743

## FIELD PLOTTER

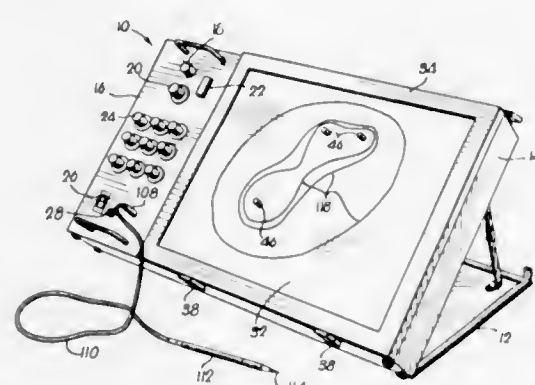
George W. Dalke, Lawrence, Kans., assignor to Interpretation Systems Incorporation, Lawrence, Kans.

Filed Oct. 1, 1970, Ser. No. 77,065

Int. Cl. G01r 31/02

U.S. Cl. 324—72

10 Claims



A field plotter for conductive sheet analog simulation having constant current sources and calibration circuitry that permits the resistance of the model to be readily accommodated and enables the operator to normalize the contour voltages by establishing the relative contour value of the point on the sheet of highest potential. The sheet is supported on an easel and connections thereto are made from the front with pins that pierce both the sheet and the easel, leads then being attached to the pins at the rear of the easel. A hold-down frame automatically makes contact with the perimeter of the sheet for those models utilizing a grounded outer boundary.

3,694,744

## PULSE FREQUENCY DETECTOR

Paul Zoltan Kalotay, Monterey Park, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 871,914, Oct. 28, 1969, abandoned. This application Feb. 8, 1971, Ser. No. 113,172

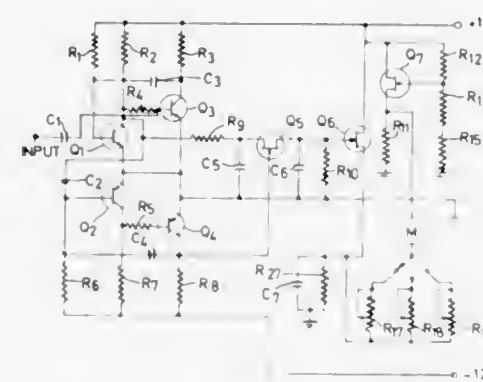
Int. Cl. G01r 23/02

U.S. Cl. 324—78 E

6 Claims

A circuit for use with a milliammeter or the like calibrated in pulse repetition frequency (PRF). An averaging circuit

receives pulses at the PRF to be indicated. The averaging circuit includes a first capacitor which is charged. A substantially isolated second capacitor provides an output through a source follower. A switch connects the capacitors to allow the charge



3,694,745

## METHOD AND CIRCUIT FOR PROVIDING A FREQUENCY METER HAVING IMPROVED GATE PERIOD MEANS

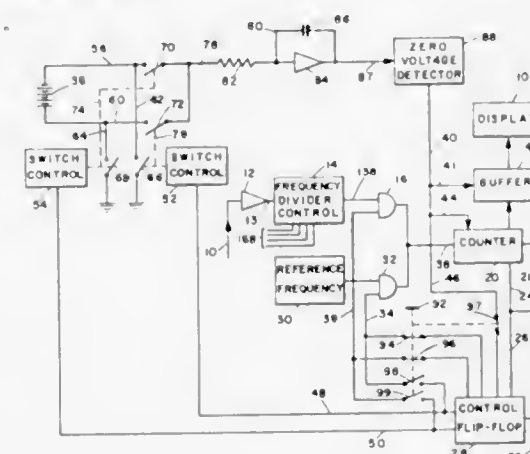
Guy A. Thrap, San Diego, Calif., assignor to California Instruments Co., Division of Aiken Industries, Inc., San Diego, Calif.

Filed Aug. 13, 1971, Ser. No. 171,523

Int. Cl. G01r 23/02

U.S. Cl. 324—78 D

9 Claims



A frequency meter in which a reference voltage is applied to an integrator circuit for the time period required to count out a given reference frequency, and the polarity of the reference voltage is then switched discharging the integrator circuit for the same time period to provide a fixed gate time period for counting the Hertz of an unknown frequency and displaying same.

3,694,746

## THIN-FILM THERMOELECTRIC CALORIMETER FOR MEASURING LARGE VALUES OF MICROWAVE POWER

Samuel Hopper, Brooklyn, N.Y., assignor to General Microwave Corporation

Filed Feb. 9, 1970, Ser. No. 9,725

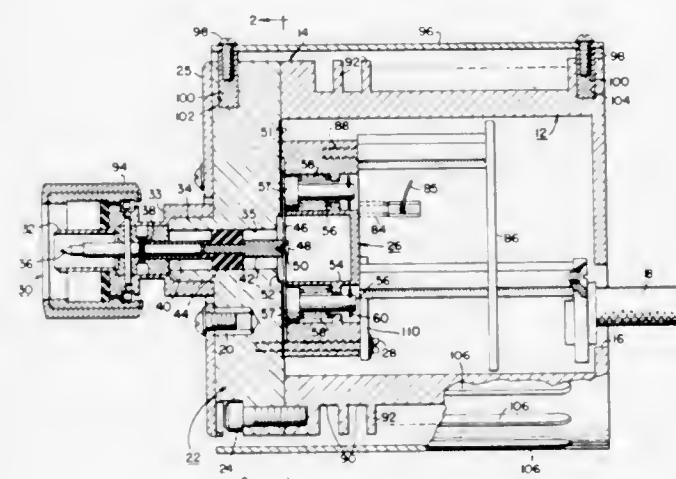
Int. Cl. G01r 21/04, 5/26

U.S. Cl. 324—95

21 Claims

A thermoelectric calorimeter for measuring microwave power in the watt range, and using a thin-film resistive load, maintains the temperature balance of the thermoelectric junctions by means of an aluminum oxide substrate on which the thermoelectric films are deposited. The substrate is effective for conducting the high level of heat energy produced with absorption of input power by the load to a heat sink (which is

also used as the outer conductor of a waveguide that transmits the power to the load) and to a finned housing that receives the heat by conduction from the heat sink and is effective for



transferring the heat energy to the ambient air by convection. The thin films of the load face frontwards in the unit and an electrical insulation having a low thermal resistance is provided.

3,694,747

## RF DIRECTIONAL POWER MONITOR

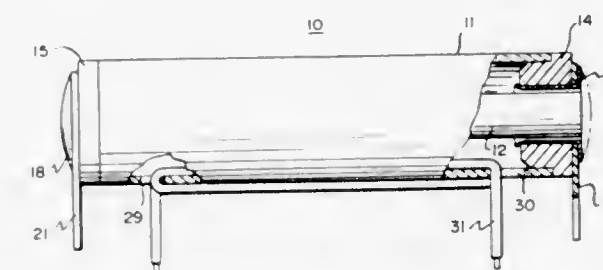
Winston Wayne White, Hillside, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed July 22, 1970, Ser. No. 57,237

Int. Cl. G01r 21/04; H01p 5/12

U.S. Cl. 324—95

7 Claims



An RF directional power monitor includes an air dielectric coaxial line section has inner and outer connectors separated by insulating supports and is equipped with printed circuit board terminals at opposite ends of the line. Provision is made for a multiple turn coupling loop between spaced openings in the outer coaxial conductor to permit a single basic assembly to be used over a wide RF power and frequency range merely by changing the number of turns of the coupling loop.

3,694,748

## PEAK-TO-PEAK DETECTOR

Norris C. Hekimian, Rockville, Md., assignor to Hekimian Laboratories, Inc., Rockville, Md.

Filed July 19, 1971, Ser. No. 163,872

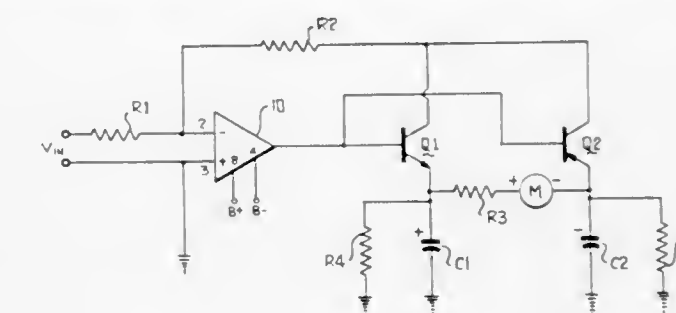
Int. Cl. G01r 19/16; H03k 17/66

U.S. Cl. 324—103 P

3 Claims

A peak-to-peak detector includes an operational amplifier driving the bases of two complementary transistor switches in parallel, amplifier feedback being provided from the collectors of the transistors. Each transistor conducts in response to a different input signal polarity and, when conducting, permits

a capacitor in its emitter circuit to charge to the peak amplifier output voltage. The charged capacitors bias their respective



transistors off until the amplifier output voltage exceeds the stored capacitor voltage. The sum of the stored capacitor voltages is a measure of the peak-to-peak input voltage.

3,694,749

## AC LINE VOLTAGE DROP INDICATOR PLUG

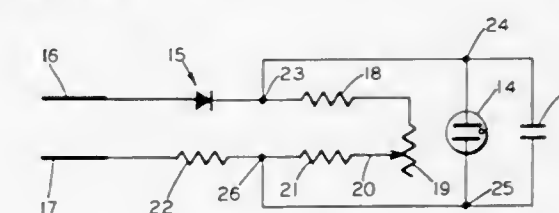
Joseph Worble, 55 Morgan Place, North Arlington, N.J.

Filed Nov. 25, 1970, Ser. No. 92,567

Int. Cl. G01r 19/22, 13/36

U.S. Cl. 324—119

3 Claims



An AC line voltage-drop indicator plug comprises a small hollow body, from the rear of which project the plug prongs for insertion into a wall outlet. Within the body is contained an electrical circuit consisting of a silicon rectifier and a neon lamp blinker circuit having a variable resistor with a rotatable terminal. The front face of the body has a transparent portion through which the blinking of the neon lamp may be observed, and a rotatable shaft projecting through this face, which is connected to the variable resistor for varying the voltage. To the outer end of the shaft is connected an indicator knob intended to designate, on a scale on the front face, the minimum voltage at which the lamp begins to blink, which is calibrated to be the true voltage in the line.

3,694,750

## ALTERNATOR DRIVEN TACHOMETER

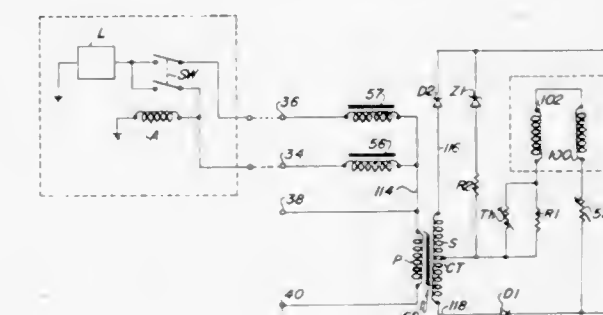
Donald K. Schuhrke, Chicago, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Oct. 29, 1970, Ser. No. 85,089

Int. Cl. G01p 3/48

U.S. Cl. 324—173

7 Claims



The following specification describes an alternator operated tachometer utilizing an air core gauge driven by a saturable transformer having one or more choke coils selectively connected to the transformer primary for providing a relatively constant energy input to the transformer independent of alter-







a bistable circuit which operates to provide delayed output pulses at a pair of output terminals thereof. Output pulses are also provided by the transition detector circuit. The temporal relationships of these output pulses, with respect to each other, will be proportionally varied in accordance with changes in the clock signal frequency.

3,694,759

# SOLID STATE ELECTRONIC DEVICE USING QUATERNARY COMPOUND SEMICONDUCTOR MATERIAL CONSISTING OF GALLIUM, INDIUM, PHOSPHOR AND ARSENIC

Hiroyuki Kasano, Akishima; Kazuhiro Kurata, Hachioji; Masahiko Ogirima, Tokyo; Masao Kawamura, Kokubunji, and Hazime Kusumoto, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

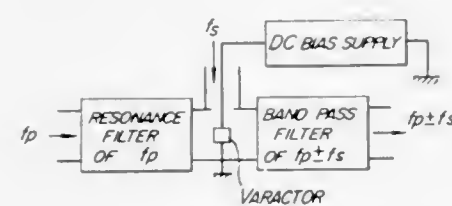
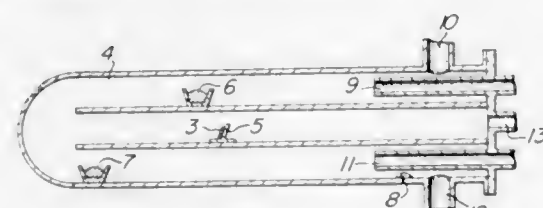
Filed July 21, 1970, Ser. No. 56,875

Claims priority, application Japan, July 23, 1969, 44/57701

Int. Cl. H03F 7/00

U.S. Cl. 330—4.9

30 Claims



A single crystal of quaternary compound semiconductor material consisting of gallium, indium, phosphor and arsenic has excellent properties including a large band gap, high mobility, high thermal conductivity and satisfactory crystallinity. A solid state electronic device having a microwave element or light-emitting element made from this single crystal exhibits excellent performance.

3,694,760

# FEEDBACK SWITCHING CIRCUIT FOR ELIMINATING ERROR SIGNALS

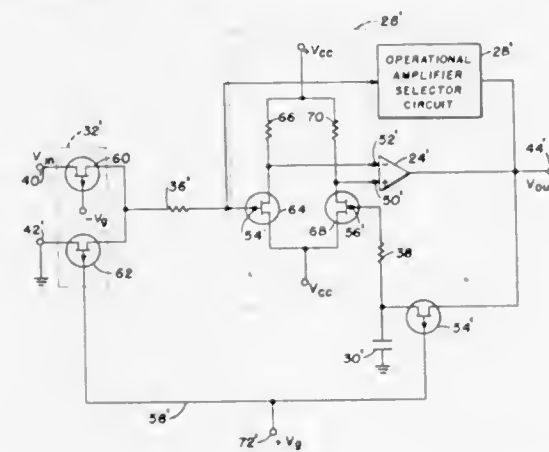
Jack C. Loessi, Ellicott City, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 30, 1970, Ser. No. 76,900

Int. Cl. H03F 1/02

U.S. Cl. 330—9

4 Claims



Apparatus for eliminating error currents normally prevalent when an associated operational amplifier is disconnected from

its input source. A feedback arrangement comprising a field effect transistor switch in conjunction with a memory circuit reflects these error signals to the operational amplifier via a differential buffer amplifier, thereby causing said operational amplifier to null out the effects of the error currents.

3,694,761

# EQUALIZATION CIRCUIT EMPLOYING DIFFERENTIAL AMPLIFIER

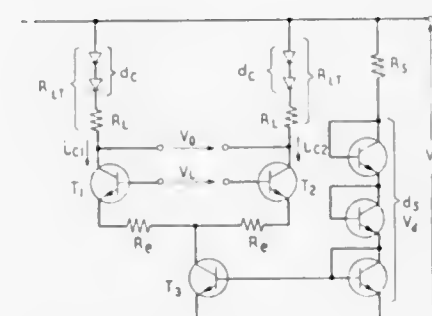
John Joseph Golembeski, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 5, 1970, Ser. No. 87,264

Int. Cl. H03F 3/04

U.S. Cl. 330—24

13 Claims



An equalizer for a communication circuit employs a transistor differential amplifier which combines the functions of amplification, gain magnitude equalization and frequency response equalization.

3,694,762

# VOLTAGE AMPLIFIER

Cornelis Mulder, Emmasingel, Eindhoven, Netherlands

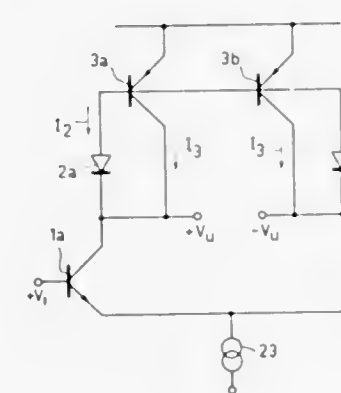
Filed Nov. 13, 1970, Ser. No. 89,390

Claims priority, application Netherlands, Nov. 28, 1969, 6917885

Int. Cl. H03F 3/04

U.S. Cl. 330—24

18 Claims



An increase voltage amplification is obtained by reduced direct current biasing of a diode connected as a collector load resistance, whilst retaining linearity.

3,694,763

# DIFFERENTIAL CURRENT SENSE AMPLIFIER

Thomas W. Hart, Jr., Phoenix, and Panayotis C. Economopoulos, Scottsdale, both of Ariz., assignors to Semi-Conductor Electronic Memories Incorporated, Phoenix, Ariz.

Filed July 7, 1970, Ser. No. 52,972

Int. Cl. H03F 3/68

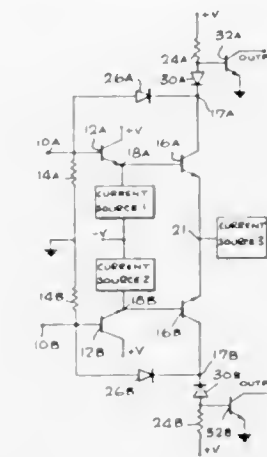
U.S. Cl. 330—30 D

7 Claims

A differential amplifier is provided which, by the addition of diodes and transistors isolates input from output for common

mode while enabling a low differential impedance. A constant current source is also provided for the amplifier which is sub-

stantially unaffected by power supply or temperature variations.



3,694,764

# HIGH POWER AUDIO AMPLIFIER SYSTEM

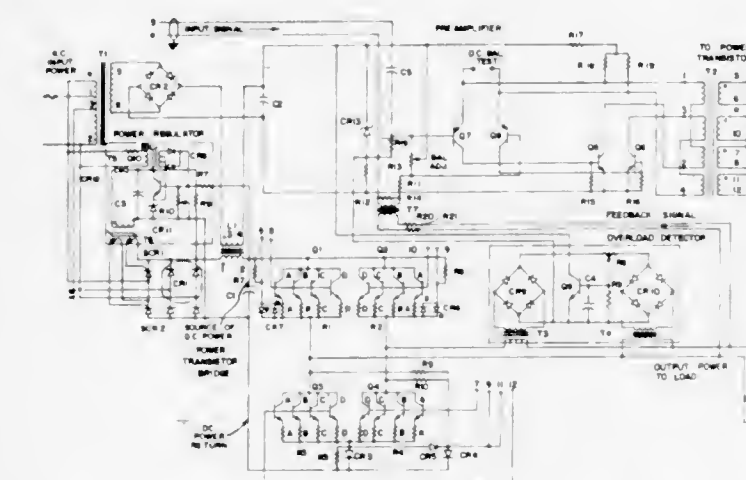
Benjamin Barron, 1335-143rd Street, Whitestone, N.Y.

Filed Feb. 3, 1970, Ser. No. 8,230

Int. Cl. H03F 3/00

U.S. Cl. 330—146

12 Claims



The invention disclosed is for a new high power transistorized audio amplifier having a circuit characterized by high efficiency, and light weight resulting from a bridge configuration of power transistors, and a uniquely arranged A.C./D.C. power supply system; low distortion and stable operation over wide temperature variations resulting from a stabilized current driver arrangement which forces opposite arms of the bridge configuration to function identically with "on" bias voltages that are created through uniquely arranged sets of diodes. This arrangement also allows the amplifier units to be connected in parallel directly with the load currents dividing equally between them, automatically.

3,694,765

# SIGNAL COUPLING CIRCUIT

Henry Richard Beurrier, Old Chester Road, Far Hills, Chester Township, Morris County, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

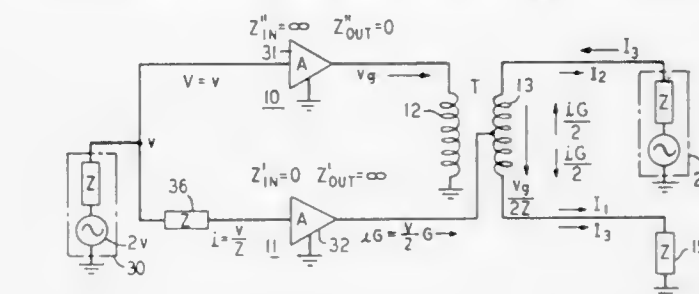
Filed Feb. 8, 1971, Ser. No. 113,213

Int. Cl. H03F 1/00

U.S. Cl. 330—165

9 Claims

This application describes a coupling circuit for coupling one or more signal sources to a common load without disturbing any of the coupled circuits. Each coupling circuit comprises a pair of amplifiers and a two-winding transformer. One amplifier, whose output impedance is much less than the load impedance, is connected to the transformer secondary winding. The other amplifier, whose output impedance is much



load, the transformer primary windings are connected in series. A similar arrangement can be used at the input end of each amplifier. The suggested network can be used as the error injection network of a feed-forward amplifier.

3,694,766

# FREQUENCY SYNTHESIZER APPARATUS

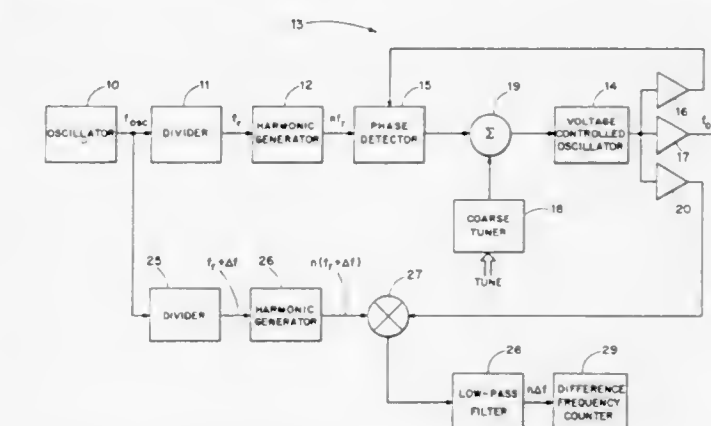
Gilbert L. Boelke, West Seneca, N.Y., assignor to GTE Sylvania Incorporated

Filed Aug. 30, 1971, Ser. No. 175,839

Int. Cl. H03B 3/04, 21/00

U.S. Cl. 331—11

9 Claims



Harmonic generator type of frequency synthesizer employing a reference frequency signal equal to the spacing between adjacent channels and a displaced reference frequency signal which differs from the reference frequency by a few hertz. The reference frequency signal is applied to a first harmonic generator which generates a spectrum of harmonics of the reference frequency. The spectrum is applied to a phase-locked loop which produces an output frequency signal equal to a particular one of the harmonics of the reference frequency. The displaced reference frequency signal is applied to a second harmonic generator which generates a spectrum of harmonics of the displaced reference frequency. The spectrum of harmonics of the displaced reference frequency is combined with the output signal of the phase-locked loop in a mixer and the output of the mixer is applied to a low-pass filter. The frequency of the only output signal from the filter is equal to the same particular harmonic to which the phase-locked loop is locked times the difference in frequency between the reference frequency and the displaced reference frequency. Since the difference between the frequencies is a known, fixed value, the signal from the filter is thus a precise measure of the particular harmonic of the reference frequency being produced by the phase-locked loop.

The output frequency of the filter may be counted and compared with a preset count representing the value of a predetermined harmonic of the reference frequency to which it is desired to tune the phase-locked loop. The difference between the counts is employed to generate a voltage signal which is coupled to the phase-locked loop to change the tuning of the phase-locked loop to another harmonic of the reference frequency.







3,694,776

# ADAPTIVE FILTER WHEREIN OPPOSITE CONDUCTIVITY TRANSISTORS ARE OPERATIVE IN RESPONSE TO SIGNALS IN EXCESS OF PREDETERMINED AMPLITUDE

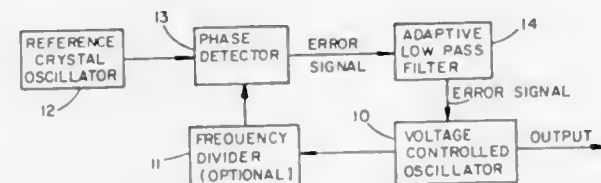
Donald L. Linder, Elmhurst, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 14, 1970, Ser. No. 97,741

Int. Cl. H03g 5/16; H03h 7/10

U.S. Cl. 333-17

8 Claims



An adaptive filter circuit for filtering and attenuating signals coupled thereto which includes first and second opposite conductivity transistors having base electrodes coupled together and emitter electrodes coupled together. The first and second transistors are operative to conduct in response to portions of the signal coupled thereto in excess of a predetermined amplitude. A filter network is coupled to the first and second transistors and has a first predetermined attenuation characteristic when the transistors are non-conductive and a second predetermined attenuation characteristic when the transistors are conductive.

3,694,777

# COMPACT ELECTROMAGNETIC RELAY

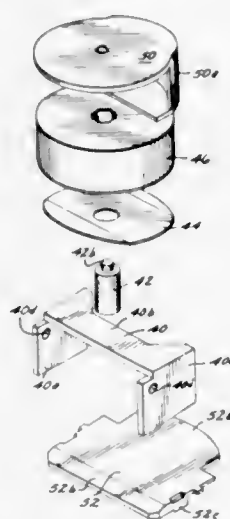
Michael Muller, Newport, Calif., assignor to Babcock Electronics Corporation, Costa Mesa, Calif.

Filed May 14, 1971, Ser. No. 143,408

Int. Cl. H01h 51/06

U.S. Cl. 335-128

10 Claims



A small compact relay comprises a contact assembly having a header which carries electrical connectors as well as relatively movable electrical contacts, and an electromagnetic operator having a frame member to which is secured one end of a core and whereon is mounted an electromagnetic winding, there being another frame member fixed to the other end of the core and having a pole portion extending adjacent the winding. An armature is pivotally mounted on the first mentioned frame member to provide an electromagnetic air gap with said pole member, and a return spring is mounted relative to said first mentioned frame to urge said armature in a given position relative to said pole member.

3,694,778

Patent Not Issued For This Number

3,694,779

# LATCHING RELAY ASSEMBLY

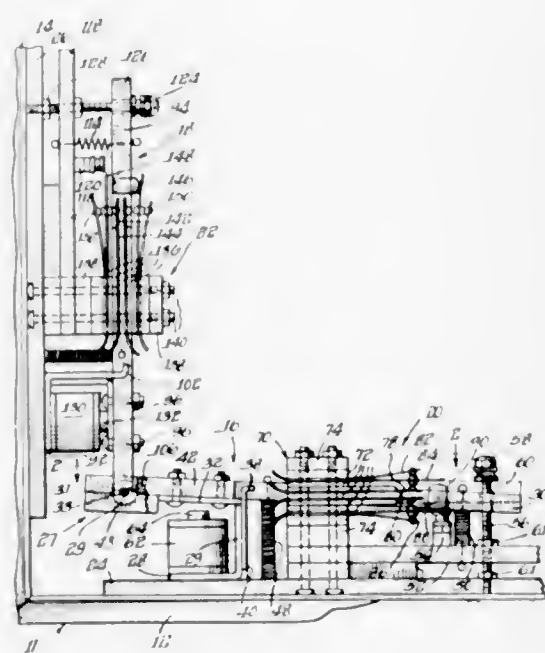
Mitchell F. Komar, 2334 North Monitor Ave., Chicago, Ill.

Filed Oct. 2, 1970, Ser. No. 77,580

Int. Cl. H01h 3/20

U.S. Cl. 335-169

9 Claims



A latching relay assembly is disclosed herein and generally comprises first and second elongated latching members which are mounted to opposite legs of an L-shaped bracket for pivotal movement between biased unlatched positions and latched positions. A cam roller mounted on and carried by the first latching member and a notch formed with the second latching member cooperate with each other for locking only one of the members in its respective latched position at any given time. First and second electromagnetic solenoids are positioned adjacent the first and second members respectively, and, upon energization, drive their associated members from the unlatched to latched position, wherein the solenoids are immediately deenergized.

3,694,780

Patent Not Issued For This Number

3,694,781

# TOROIDAL TYPE DEFLECTION COILS FOR CATHODE RAY TUBES

Eiji Sawada, Tokyo, Japan, assignor to Denki Onkyo Company Limited, Tokyo, Japan

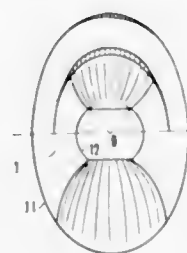
Filed Jan. 28, 1971, Ser. No. 110,724

Claims priority, application Japan, Jan. 30, 1970, 45/8193

Int. Cl. H01f 7/00

U.S. Cl. 335-210

2 Claims



In a toroidal type deflection coil for use in a cathode ray tube of the type comprising a funnel shaped magnetic core and a coil wound about the core to create a magnetic field having different distributions at the fore and rear edges of the core, portions of the peripheries of the fore and rear edges of the core on which the coil is wound take the form of curves of different radii of curvature.

3,694,782

# ROTARY ACTUATOR

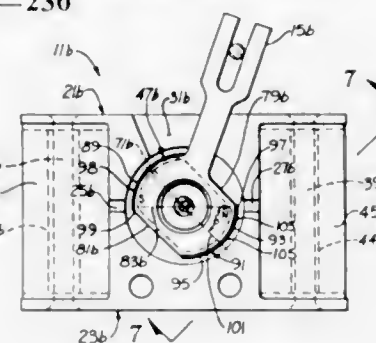
Ralph D. Ray, 834 Production Place, Newport Beach, Calif.

Filed Nov. 20, 1970, Ser. No. 91,359

Int. Cl. H01f 7/08

U.S. Cl. 335-230

7 Claims



A rotary actuator comprising a rotor including a permanent magnet and a stator of magnetic material substantially surrounding the rotor. A force field is set up in the magnetic material of the stator, and the permanent magnet of the rotor adds to this field to apply magnetic forces to the rotor tending to rotate the latter. The rotary actuator has various features which contribute to a relatively long stroke and high torque output.

3,694,783

# RELAY COIL FORMER FOR A FLAT-TYPE RELAY

Rolf Henrik Collin, Segeltorp; Arne Rudolf Kjallstrom, Hagersten, and Rune Nils Anders Thysk, Alvsjo, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

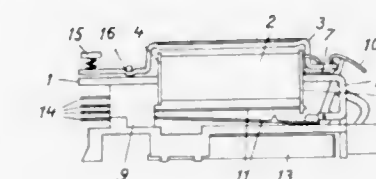
Filed Dec. 17, 1970, Ser. No. 99,134

Claims priority, application Sweden, Feb. 23, 1970, 2238/70

Int. Cl. H01f 7/08

U.S. Cl. 335-276

2 Claims



In order to simplify the production of electromagnetic flat-type relays a separately manufactured relay coil former is slotted along one edge so that the flat magnet core can be inserted from the side and snapped into its position in the coil former.

3,694,784

# LAMINATED MAGNETIC CORE FOR INDUCTION DEVICES AND LAMINATIONS FOR FORMING SUCH MAGNETIC CORE

Ernst Meili, Zurich, Switzerland, assignor to Elektro-Apparatebau F. Knobel & Co., Ennenda, Switzerland

Filed Dec. 27, 1971, Ser. No. 212,454

Claims priority, application Switzerland, Dec. 28, 1970, 19231/70

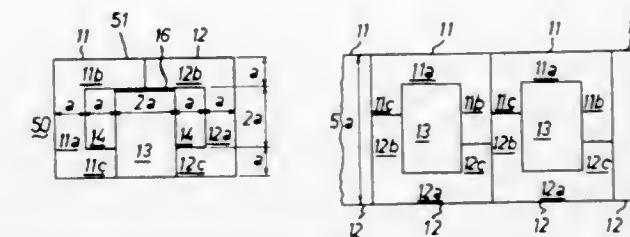
Int. Cl. H01f 21/06, 27/24

U.S. Cl. 336-134

8 Claims

A laminated magnetic core for electric induction devices comprising a shell formed of laminations. Each of said laminations comprising two parallel yoke legs and two outer legs arranged between and perpendicular to such parallel yoke legs. A central leg is disposed parallel to the outer legs and forms with one of said parallel yoke legs an air gap. Each of the laminations of the shell embodying similar U-shaped lamination elements comprising a respective outer leg and unequal length yoke leg sections protruding from the ends of such respective outer legs. These lamination elements bear against

one another at the end faces of their longer yoke leg sections to form a shell lamination for the magnetic core. Further, such



lamination elements bear at the end faces of their shorter yoke leg sections against a central web forming the central leg and arranged between such shorter yoke leg sections.

3,694,785

# TEMPERATURE COMPENSATING DIFFERENTIAL TRANSFORMER

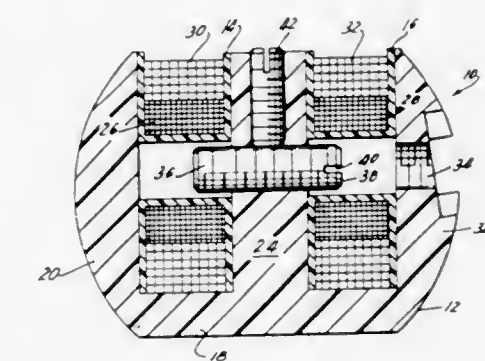
Jacob Chass, Rego Park, N.Y., assignor to Pickering & Co. Inc., Plainview, Long Island, N.Y.

Filed Feb. 22, 1972, Ser. No. 228,078

Int. Cl. H01f 15/16, 21/06

U.S. Cl. 336-136

5 Claims



A temperature compensating differential transformer is provided including a yoke of magnetic material having two cavities therein. First and second bobbins, each carrying a primary and secondary winding thereabout, are provided in the cavities in axial alignment. The primary winding is formed of two coils connected in parallel. One of the primary coils is formed, in part, of a wire having an extremely low temperature coefficient of resistance. The other primary winding coil and the remainder of the first primary winding coil is formed of the same material as the secondary winding coils. A magnetic core is positioned along the bobbin axis to magnetically couple the primary and secondary windings.

3,694,786

# HIGH VOLTAGE RESISTOR

Arthur L. Rosema, Elkhart, Ind.; Lynn J. Brady, Edward-sburg, Mich., and Wayne A. Barden, Elkhart, Ind., assignors to CTS Corporation, Elkhart, Ind.

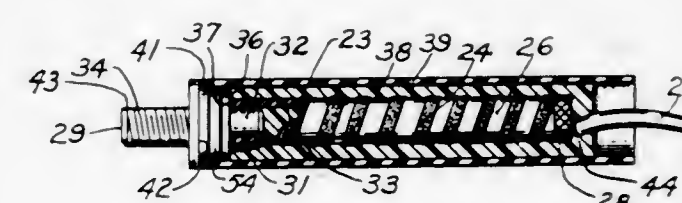
Division of Ser. No. 809,655, March 24, 1971, Pat. No.

3,579,819. This application March 11, 1971, Ser. No. 123,267

Int. Cl. H01c 1/02

U.S. Cl. 338-256

5 Claims



High voltage circuit arrangement includes a load connected to a power supply of at least 20,000 volts, and a single discrete



high voltage electrical resistor connected to the power supply and load. The high voltage resistor comprises a spiral resistive path supported on a ceramic substrate which provides a uniform and continuous heat dissipation path between the ends of the resistor. A heat dissipating mounting member forms an electrical termination for the resistor, rapidly transfers heat away from the substrate, and includes a substrate alignment surface and seat in close proximity to a surface of the substrate. A threaded portion of the heat dissipating member is useful for mounting the resistor on a supporting surface and insulative means including an insulative jacket surrounds the substrate. High voltage corona inhibiting means include an insulative body that extends one-half inch beyond an end of the resistive path and embeds a lead wire connected to the resistive path. The resistive path is a cermet film type material having resistivity of 5 megohms per square, a voltage coefficient of less than 400 parts per million per volt per square, and a voltage withstanding ability of 3,000 volts per inch of resistive path. The resistive path itself comprises an intersticed mass of inert particles and a conductive phase forming an interstitial mass within the intersticed mass.

3,694,787

## TIME PROPORTIONING ELECTRICAL CONTROL DEVICE

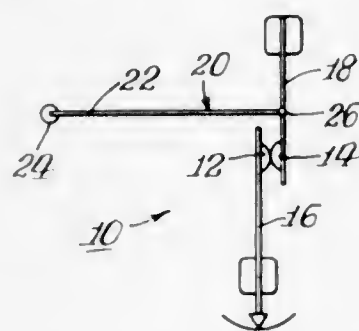
Robert Eugene Emmons, Goshen, Ind., assignor to Penn Controls, Inc., Oak Brook, Ill.

Filed May 6, 1971, Ser. No. 140,883

Int. Cl. H01h 71/22

U.S. Cl. 337—124

10 Claims



An electrical control device designed to produce a variable electrical signal proportional to the degree of change of an environmental parameter over a preselected band width. A pair of electrical contacts in a normally spaced apart relation are connected in series between a signal source and the element to be controlled so that the signal is allowed to be transmitted to the element upon the closing of the contacts. This invention operates by using a high frequency interruption of a signal current by means of a pair of opening and closing contacts. One contact is positioned relative to the other by means of an environmental sensing device responding to changes in a particular environmental parameter. The second contact is mechanically coupled to the current responsive device for effecting movement of the second contact away from the first contact when energized to provide a continuous interruption of the signal, where the ratio of the current responsive device's on-time to off-time is proportional to the degree of change of the environmental parameter within the preselected band width.

3,694,788

## ELECTRICAL COMPONENT CONTROL DEVICE

Richard Perrisini, 534 Bergen Blvd., Palasades Park, N.J.

Filed July 6, 1971, Ser. No. 159,631

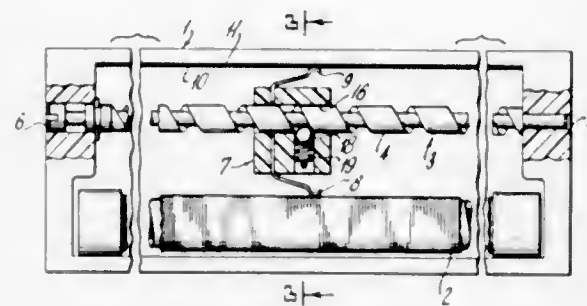
Int. Cl. H01c 1/12

U.S. Cl. 338—180

2 Claims

An electrical device having a parameter made variable by a control assembly which includes a shaft having a helix-like thread along its longitudinal length and a wiper block having a bore therethrough for receiving the shaft. The block also in-

cludes a second smaller bore orthogonal to the first bore and contains therein a small ball held under tension and disposed to ride along the threaded portion of shaft in response to the



rotation thereof. The block contains wiper means for engaging the variable parameter to provide continuity between said parameter and external circuitry.

3,694,789

## ELECTRICAL RESISTANCE ELEMENT

William L. Brown, Minneapolis, Minn., assignor to Rosemount Engineering Company, Minneapolis, Minn.

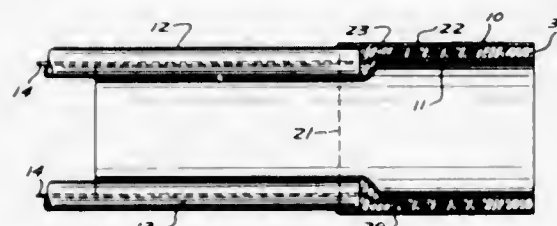
Division of Ser. No. 649,186, June 27, 1967, Pat. No.

3,513,541. This application Feb. 9, 1970, Ser. No. 14,693

Int. Cl. H01c 1/02

U.S. Cl. 338—238

3 Claims



This disclosure teaches a new electrical resistance element construction and a method of making same. The elements are commonly used for resistance thermometer construction wherein the electrical resistance of a material, normally a fine metallic wire, changes with respect to temperature. The resistance wire is wound onto an electrically insulated or insulating mandrel and is subsequently shielded and protected with an outer shell. A cavity (which is purposely left between the mandrel and the outer shell) is sealed at one end and then filled with a liquid, normally very pure water. If necessary, the unit is centrifuged to insure that the water fills all of the air pockets in the cavity. A container is then placed around the outer shell and a plug (if the inner mandrel is hollow) inserted inside the mandrel thus extending and enlarging the cavity beyond the extremes of the unit. The extended cavity is then filled with a very finely powdered dielectric material and water slurry. The unit is again centrifuged and the heavier dielectric material (normally alumina) will replace the water originally centrifuged into the cavity between the mandrel and the outer shell and will be compacted tightly around the resistance wire. The unit is then removed from the centrifuge and dried in an oven to evaporate any of the liquid (water) which may still be present in the unit. The open end of the cavity is then sealed and the element is ready for use. Suitable lead wires are attached prior to centrifuging and means are provided for maintaining the resistance wire wrapped around the mandrel in position so that it does not electrically short out to the mandrel or the adjacent winds of the wire do not short to each other during centrifuging. As shown, one way of doing so is to affix portions of the wire to the mandrel, or the mandrel can contain grooves which will hold the wire from longitudinal displacement during centrifuging.

An alternate approach, utilizing the above described centrifuging technique is also employed. That is, a resistance element of any volume is mounted within an outer shell of any volume slightly larger than the element volume. The remain-

ing cavity is then filled with material by centrifuging as previously described thus producing a completely supported and contained resistive element.

3,694,790

## DUPLEX LOCKING RECEPTACLE

Robert L. Martin, Cranston, R.I., assignor to General Electric Company

Continuation of Ser. No. 771,829, Oct. 30, 1968, abandoned.

This application Feb. 25, 1971, Ser. No. 118,955

Int. Cl. H01r 3/06

U.S. Cl. 339—14 R

7 Claims



A duplex grounded convenience outlet is provided adapted to receive power blades in twist lock relationship. Simplicity of connector construction and disposition is achieved through use of symmetrical connector strips and feed through mounting bracket with mounting of grounding contacts thereon.

3,694,791

## LOCKING TRANSISTOR SOCKET

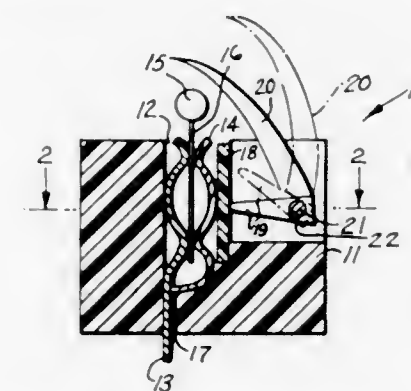
Joe F. Urban, 3000-N. 43rd St., Waco, Tex.

Filed Jan. 11, 1971, Ser. No. 105,259

Int. Cl. H01r 13/54

U.S. Cl. 339—75 T

1 Claim



A socket for locking transistors into electronic circuits. This socket includes a pivotable lever which when pivoted towards the transistor, will urge the socket closed on the transistor's connectors, the lever also when in closed position will prevent the removal of the transistor until the lever is released, thus preventing damage to the transistor.

3,694,792

## ELECTRICAL TERMINAL CLAMP

William H. Wallo, Chicago, Ill., assignor to Wall-Able Manufacturing Corporation, Chicago, Ill.

Filed Jan. 13, 1971, Ser. No. 106,050

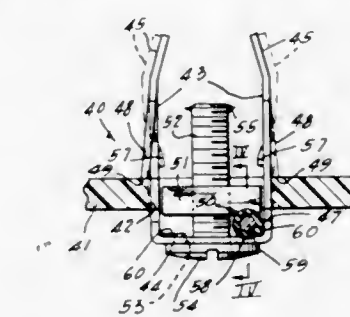
Int. Cl. H01r 9/08

U.S. Cl. 339—97 R

11 Claims

An electrical terminal clamp has opposed clamping members at least one of which is electrically conductive and

between which is adapted to be received an electrical wire covered with pliable insulation, the electrically conductive member having thereon a rigid contact ridge across which the insulated wire is received such that when the clamping members are forced together to squeeze the insulated wire therebetween, the ridge is pressed into the insulation to effect



an electrical contact with the wire. The contact ridge feature may be embodied in a generally U-shaped electrical connector equipped to be snapped into position in a prepared aperture in a terminal board, with the clamping members comprising a base web and a nut threaded on the web, the ridge being pressed in said web so that the nut will be drawn theretoward by tightening the screw.

3,694,793

## SNAP LOCK COAXIAL CONNECTOR

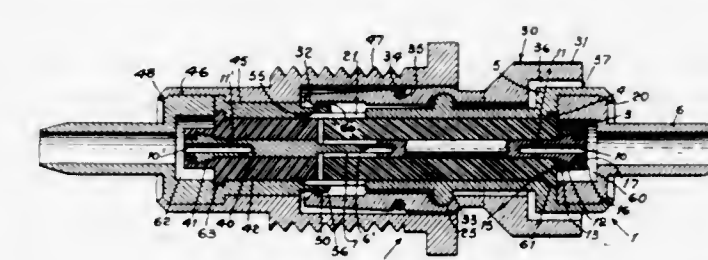
Carl W. Concelman, Wilmington, Mass., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 18, 1969, Ser. No. 850,800

Int. Cl. H01r 13/54, 17/04

U.S. Cl. 339—91 P

3 Claims



This invention is for a quick connect and disconnect coaxial coupling. The connector plug portion has a split outer shell latch type of coupling that allows for locking upon direct engagement, and releases when two tabs are pressed inwardly. The connector also has a new method of contact captivation comprising contacts having barbs that allow for easy insertion into a resilient insulation material and tend to retain their axial position when subjected to an axial withdrawal force.

3,694,794

## BATTERY TERMINAL BRIDGE

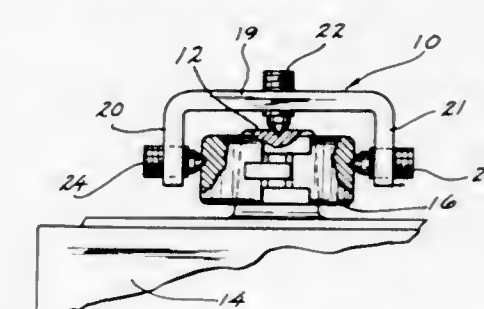
Louis T. Hein, 3515 4-Mile Road, Racine, Wis.

Filed Aug. 16, 1971, Ser. No. 172,142

Int. Cl. H01r 11/20

U.S. Cl. 339—95 B

4 Claims



A means to be mounted over the cable terminal clamp of a storage battery, that will assure uninterrupted flow of current



through the ignition system of an automobile, in instances when corrosion has taken place between the post and the terminal clamp. It comprises a bridge having contact means that positively engage, and is embedded into, the terminal post and the terminal clamp; thus assuring continuity of current through the system, by bridging the corrosive condition.

3,694,795

Patent Not Issued For This Number

3,694,796

Patent Not Issued For This Number

3,694,797

Patent Not Issued For This Number

3,694,798

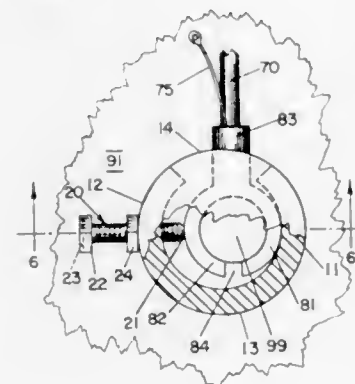
# CLAMP FOR ENSURING LATERAL CONTACT BETWEEN AXIAL-POST AND LATERALLY-CONSTRICTIBLE CONNECTOR

Robert A. Julian, 1608 Brenda Drive, Bellevue, Nebr.  
Filed Dec. 7, 1970, Ser. No. 95,530

Int. Cl. H01r 11/26

U.S. Cl. 339—224

4 Claims



There is provided a removable tightener clamp for ensuring lateral contact between an axial-post and a laterally-constrictible connector (such as a dual-prongs connector on a current-carrying cable). For chemical action type batteries, such as in the automobile battery environmental situation, each of the two battery terminal-posts and their respective dual-prongs connectors gradually chemically erode to such dimensional extent that it is impossible to maintain an electrically conductive relationship therebetween. The novel tightener clamp herein is adapted to enclose therewithin the chemically eroded dual-prongs connector and its axial terminal post and to apply lateral pressure against one of the connector prongs whereby electrically conductive relationship between the terminal-post and the connector is effected and maintained.

3,694,799

# ELECTRICAL CABLE CONNECTOR

John K. Shannon, and John K. Shannon, Jr., both of Kenosha, Wis., assignors to Quick-Cable Corporation, Racine, Wis.

Filed Feb. 22, 1971, Ser. No. 117,318

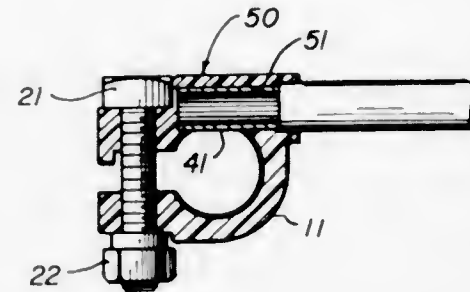
Int. Cl. H01r 11/26

U.S. Cl. 339—230 R

2 Claims

An electrical cable connector is disclosed which in one portion receives a stripped cable end in a barrel-shaped receiving

element. The body portion of the cable connector has a pair of opposed jaws which, when squeezed together by means of a bolt or similar construction, simultaneously locks the cable in position while the jaws secure the member to a terminal or electrical elements.



other cable. Embodiments are shown in which a thin wall section tangentially overlaps the intended position of the terminal or other cable, and where the cable passes through a tangentially opening recess to provide for contact with the two electrical elements.

3,694,800

# ACOUSTICAL GAUGE

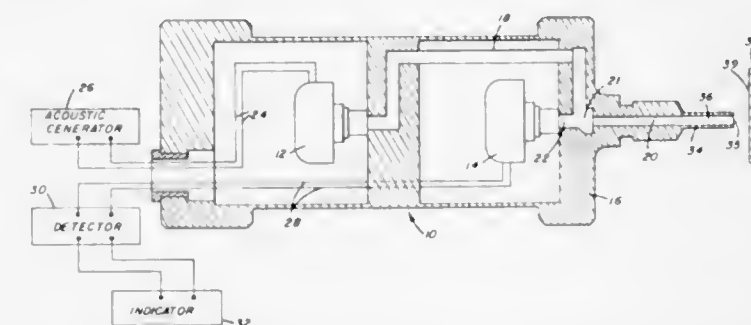
Lee Fitzpatrick Frank, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed April 24, 1970, Ser. No. 31,708

Int. Cl. G01s 9/68

U.S. Cl. 340—1 R

12 Claims



An acoustical gauge is disclosed for measuring the distance between an acoustic wave transmitting and receiving or sensing port and the surface of a material. One device disclosed comprises a Y-shaped tube where the bottom of the Y ends in the sensing port. During operation of the gauge, an acoustic wave is produced in the first branch of the Y, travels to the intersection point of the branches and then propagates down the stem, i.e., the channel which is the bottom of the Y and out the sensing port. As the standing wave encounters the hydraulic impedance created by the distance between the sensing port and location of the reference surface near the sensing port, a complex interaction of standing and travelling waves are set up. At the Y intersection a resultant wave formed by the interference of the original wave produced with the feedback from the hydraulic impedance encountered at the sensing port, is investigated and measured for phase or amplitude variation. These measurements can be calibrated in terms of distance between the sending port and the reference surface.

3,694,801

Patent Not Issued For This Number

3,694,802

Patent Not Issued For This Number

3,694,803

# VEHICLE TIRE PRESSURE MONITOR SYSTEM

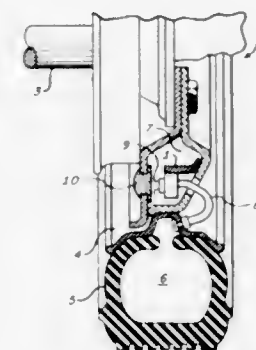
Harry F. Strenglein, Clearwater, Fla., assignor to Sperry Rand Corporation

Filed July 28, 1971, Ser. No. 166,892

Int. Cl. B60c 23/02

U.S. Cl. 340—58

19 Claims



The condition monitor provides information as to the state of a monitored dual state device having, for example, possible satisfactory and unsatisfactory conditions. Use is made of a passive transducer element powered by a space-transmitted radio frequency signal of fundamental carrier frequency. In the unsatisfactory condition of the monitored device, the passive transducer emits a signal that is a harmonic of the carrier frequency, which signal is detected for the operation of a suitable alarm or remedial control. In the normal or satisfactory condition of the monitored device, the carrier frequency energy causes the passive transducer to inhibit production of second harmonic energy.

3,694,804

# COOLANT LEVEL DETECTOR FOR ENGINE COOLING SYSTEM

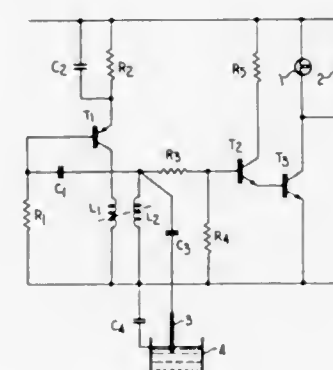
Frederick Norman Hill, Anglesey, North Wales, assignor to Thomas Electronics Limited, Marple, Cheshire, England  
Filed June 11, 1970, Ser. No. 45,530

Claims priority, application Great Britain, June 11, 1969, 29,069/69

Int. Cl. B60g 1/00; G01f 23/24

U.S. Cl. 340—59

5 Claims



In a liquid level detector for an engine cooling system an oscillator is arranged to apply a continuous output signal to a probe located in a liquid coolant reservoir presenting to the oscillator a variable electrical impedance according to the liquid level therein and a relaxation oscillator is operative in response to signals from said oscillator and arranged to actuate an indicator device giving intermittent visual and/or audible warning when the surface of the liquid coolant falls to below a predetermined level; a clamp circuit is arranged to inhibit operation of the relaxation oscillator when the surface of the liquid coolant is at or above the predetermined level and thereby improve the noise immunity of the detector.

3,694,805

# STOLEN VEHICLE INDICATING DEVICE

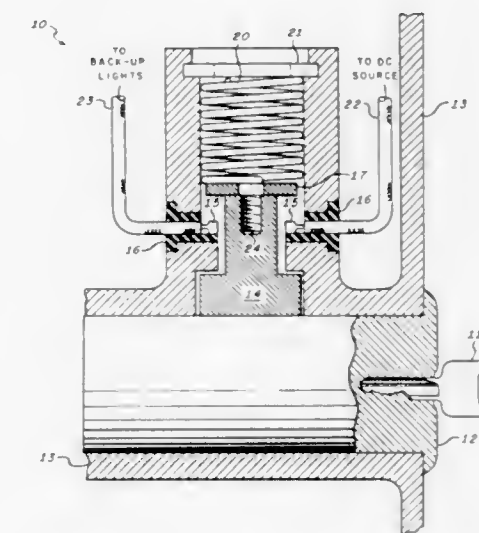
Robert L. Cashman, Mineola, N.Y., assignor to Sperry Rand Corporation

Filed July 14, 1971, Ser. No. 162,361

Int. Cl. B60r 25/10

U.S. Cl. 340—64

7 Claims



A vehicle ignition lock which includes a spring actuated contact for completing an electrical circuit upon removal of the ignition lock cylinder that illuminates the backup lights of the vehicle to provide an indication that the vehicle has been stolen.

3,694,806

# CHARACTER RECOGNITION SYSTEM

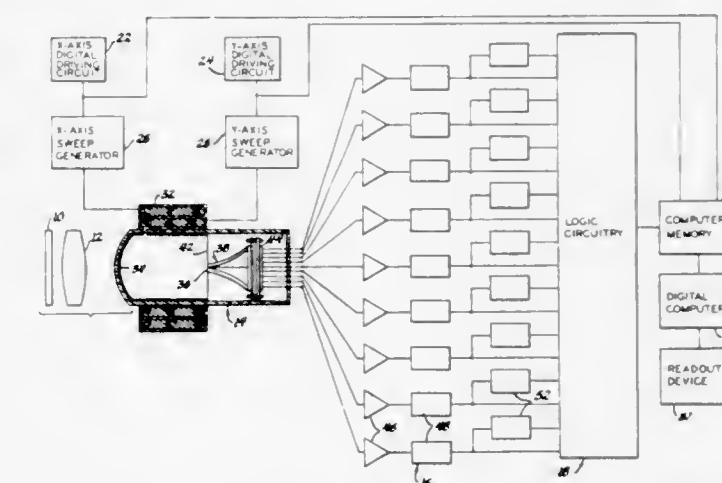
Morris D. Freedman, Southfield, Mich., assignor to The Bendix Corporation

Filed Aug. 20, 1970, Ser. No. 65,555

Int. Cl. G06k 9/12

U.S. Cl. 340—146.3 F

14 Claims



A character recognition system utilizing an image dissector device to first develop an electronic image of a character and then to scan and to dissect the character into elemental areas. From this scan and dissect operation multiple analog signals are developed which simultaneously correspond to several of the elemental areas. Threshold circuits serve as quantizers and digitize the analog signals into digital signals with discrete levels representing black and white. These digital signals are supplied to logic circuitry which detects geometric features and encodes them as feature vectors. This vector information is stored in a computer memory along with the positional information for locating the vector. The positional information is derived from the scan driving circuitry. Classification and readout is subsequently made. In another embodiment, comparators are used for comparing the contrast between the elemental areas and developing outputs to be supplied to the logic circuitry.



3,694,807

# CHARACTER SEGMENTATION USING PATTERN MEASUREMENTS, ERROR RESCAN AND ADAPTIVE FONT DETERMINATION

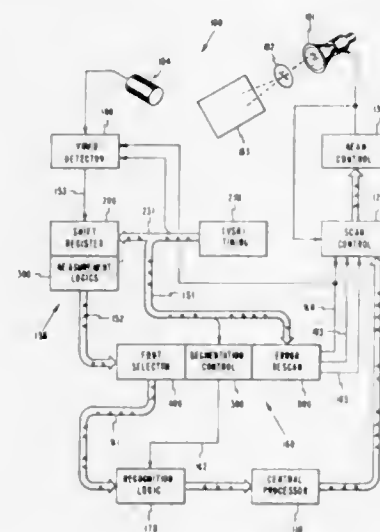
Milton F. Bond, and John F. Shatford, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 889,409, Dec. 31, 1969, abandoned. This application Aug. 12, 1971, Ser. No. 171,326

Int. Cl. G06r 9/10

U.S. Cl. 340—146.3 SG

25 Claims



Several types of input pattern measurements are gated together to determine the point at which adjacent characters will be separated by a segmentation signal. One type of pattern is effective to segment the characters unless an inhibitory pattern has also been received. The second pattern type will segment the characters only after an initializing pattern has been received, but only if an inhibitory pattern has not been received. A third type of pattern is effective for segmentation only after the receipt of both an inhibitory pattern and a subsequent enabling pattern. The enabling pattern may also remove the effect of the inhibitory pattern upon some or all of the first two pattern types. When the pattern size exceeds a preset maximum width without having been segmented, all three pattern types are inhibited, the pattern is rescanned and segmented with a blank scan, and a forced segmentation is produced at predetermined points within the pattern. The pattern types for both segmentation and recognition purposes may be selected from a number of pattern subsets, each subset being identified with a character set in a particular font. The characters on a document are initially scanned using a general measurement set. The number of measurements belonging to a particular subset are then counted until a predetermined number of them has appeared. At this point, the measurement switch from the general set to the subset identified as the font which is being read.

3,694,808

# INSTRUCTION CONTROLLED DIGITAL SIGNAL DISPLAY CIRCUIT

William C. Booth, Reisterstown, Md., assignor to The Singer Company, New York, N.Y.

Filed July 28, 1970, Ser. No. 58,969

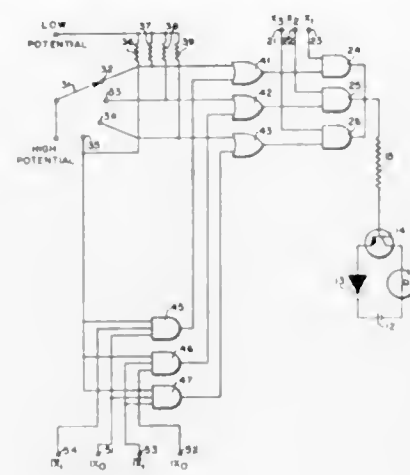
Int. Cl. H04q 1/22

U.S. Cl. 340—147 R

6 Claims

Digital computers utilize signal lamps on display panels for indicating the contents of the various registers in the computer. Many such displays are multiplexed; that is, the same panel lamps display the contents of all registers. To avoid the continual switching from one register to another, this invention uses in those cases where several registers may be used exclusively from each other a switching circuit which permits the operator to select the register to be displayed or to place

the circuitry into a mode which will automatically display the contents of the particular register being used at that time. The



circuit uses a selector switch for selection purposes and a matrix of gates for automatic operation.

3,694,809

Patent Not Issued For This Number

3,694,810

# ELECTRONIC SECURITY SYSTEMS FOR MULTI-ROOMED BUILDINGS

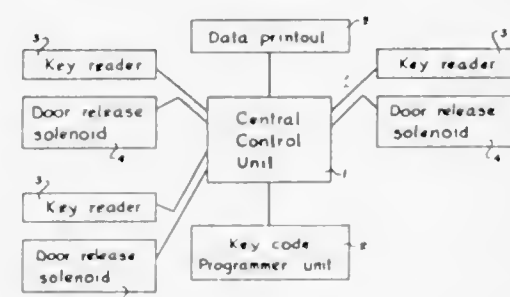
Thomas R. Mullens, 3323 Redfern Place, North Vancouver, British Columbia, and Trevor J. Glave, Burnaby, British Columbia, both of Canada, assignors to said Mullens by said Glave

Filed Dec. 1, 1969, Ser. No. 881,199

Int. Cl. E05b 49/00; G06k 7/06; H04q 3/02

U.S. Cl. 340—149 R

14 Claims



An electronic security system is provided for use in large institutions, such as hotels. A particular room is assigned a data-bearing room access device, (which may physically resemble a key), chosen at random from a group of such devices, the device bearing coded information which is entered and stored in a control unit at a memory location previously assigned to that room number. Until this information is removed from the memory, access to the room cannot be obtained except through the use of a device containing the required information, and further, attempted unauthorized access will cause an alarm signal to be activated.

3,694,811

# QUERY AND RESPONSE SYSTEM WITH AUDIO MESSAGE SYNTHESIZING

Stanley J. Wood, Cherry Hill, N.J., assignor to Technitrend, Inc., Pennsauken, N.J.

Filed Jan. 4, 1971, Ser. No. 103,735

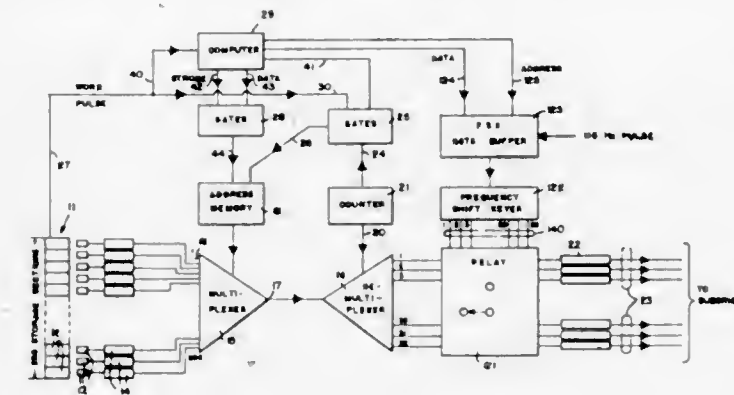
Int. Cl. H04m 11/08

U.S. Cl. 340—152 R

8 Claims

A query and response system embodying an audio response generator for synthesizing audio messages responsive to subscriber queries, said audio response generator comprising an

audio memory unit for storing data in analog form regarding a plurality of speech words, means for converting audio outputs from the memory to digital form, multiplexer and demultiplexer means controlled by data from a computer for distributing word data to individual subscriber output channels to



provide responses to subscriber queries, and means for converting the demultiplexer output from digital back to audio form for supply to subscribers. In one form of the invention means are provided for supplying either audio response or a response capable of actuating a teletype printer to each subscriber output channel as desired.

3,694,812

# SWITCHING CIRCUIT HAVING A CONTROLLABLE SEMICONDUCTOR SWITCHING ELEMENT AND A SWITCHING MATRIX EMPLOYING THE SWITCHING CIRCUIT

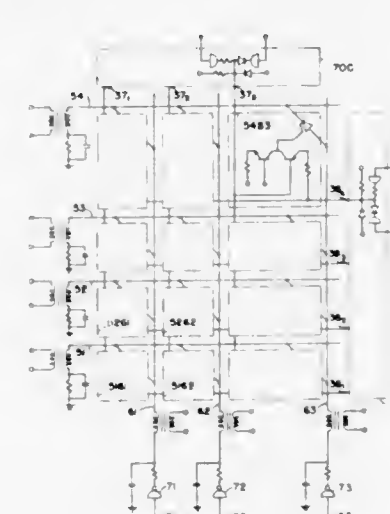
Osamu Enomoto, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Aug. 20, 1971, Ser. No. 173,600

Int. Cl. H04q 3/50

U.S. Cl. 340—166 R

13 Claims



A circuit for switching analog signals between an input and output and having a high S/N ratio includes a controllable semiconductor switching device coupled between the input and output terminals and having a control electrode. The latter is coupled to a bypass circuit which grounds the control

electrode at the analog signal frequency. The bypass circuit acts as a constant-current source when the voltage at the control electrode exceeds a predetermined value, the magnitude of the constant current being less than the current flowing through the switching element when the latter is conductive.

3,694,813

# METHOD OF ACHIEVING DATA COMPACTION UTILIZING VARIABLE-LENGTH DEPENDENT CODING TECHNIQUES

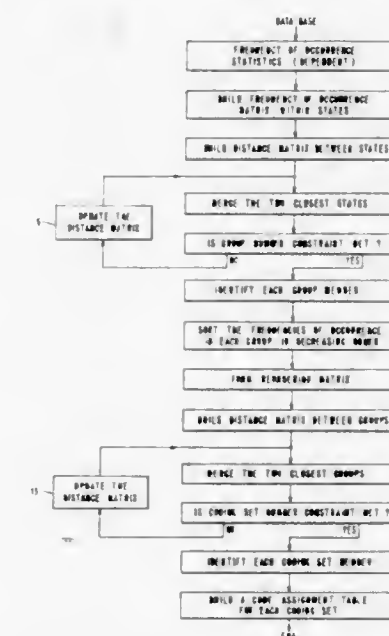
Louis S. Loh, Mohegan Lake; Jacques H. Mommens, Briarcliff Manor, and Josef Raviv, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,575

Int. Cl. G11b 13/00; G06f 7/00

U.S. Cl. 340—172.5

15 Claims



The present invention relates to a method practiceable on a general purpose electronic computer for statistically analyzing a data set and for producing a set of encoding and decoding (E/D) tables for achieving compaction of the original data set utilizing a variable length code. The method disclosed may operate under constraints of available core, desired compaction rate and speed of compaction/decompaction to produce differing sets of encoding/decoding tables depending upon the constraints imposed. The method would most normally be provided and utilized as a software package wherein the primary inputs are the data set itself and the above enumerated constraints. By utilizing a variable-length code wherein the code assignment is dependent upon the characteristic of preceding data good compaction rates may be achieved utilizing reasonable amounts of memory for the E/D tables.

The method comprises three principle steps. The first is the construction of a matrix showing the probability of occurrence of every member of the data set with respect to the immediately preceding member. The second step comprises grouping various rows or columns of this matrix having similar probabilities of occurrence, the third step comprises a reordering of all of the previously grouped rows or columns and finally a second clustering into coding sets may be performed.



# DESIGNS

SEPTEMBER 26, 1972

224,820  
SLIP

Harvey B. Wittcoff, St. Louis County, and James L. Watel, Clayton, Mo., assignors to Wonder Maid, Inc., St. Louis, Mo.

Filed Feb. 22, 1971, Ser. No. 117,850  
Term of patent 14 years  
Int. Cl. D2—01

U.S. Cl. D2—19



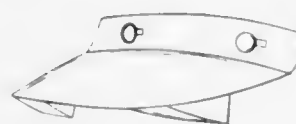
224,821

REAR VISION VISOR FOR A HELMET

Wyly Kenneth Crowder, 3255 Winderhoff Drive, Pontiac, Mich. 48054

Filed July 30, 1969, Ser. No. 18,473  
Term of patent 14 years  
Int. Cl. D2—03

U.S. Cl. D2—233



224,822

FRAME FOR A BABY CRIB

William Lee, Jr., 2800 Gordon Road, Atlanta, Ga. 30311

Substituted for abandoned design application Ser. No. 18,483, July 31, 1969. This application June 28, 1971, Ser. No. 157,780

Term of patent 14 years  
Int. Cl. D6—01

U.S. Cl. D5—5



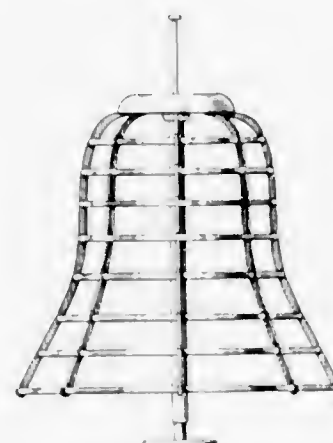
224,823

DECORATIVE DISPLAY RACK

John F. Roberts, Plymouth, Pa., assignor to John F. Roberts, Harry C. Fine II, and Karl Landmesser, Jr., fractional part interest to each

Filed June 3, 1971, Ser. No. 149,886  
Term of patent 14 years  
Int. Cl. D6—01

U.S. Cl. D6—20



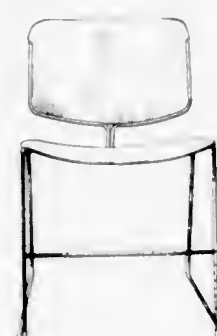
224,824

CHAIR

Randall P. Buhk, Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed June 22, 1970, Ser. No. 23,612  
Term of patent 14 years  
Int. Cl. D6—02

U.S. Cl. D6—75



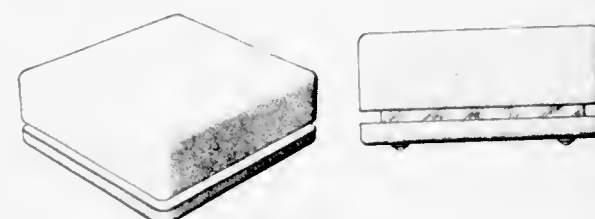
224,825

TABLE

Dennis L. Jenkins, 4449 Ponce de Leon Blvd., Coral Gables, Fla. 33146

Filed Dec. 31, 1970, Ser. No. 26,725  
Term of patent 14 years  
Int. Cl. D6—03

U.S. Cl. D6—146



SEPTEMBER 26, 1972

U. S. PATENT OFFICE

1523

224,826

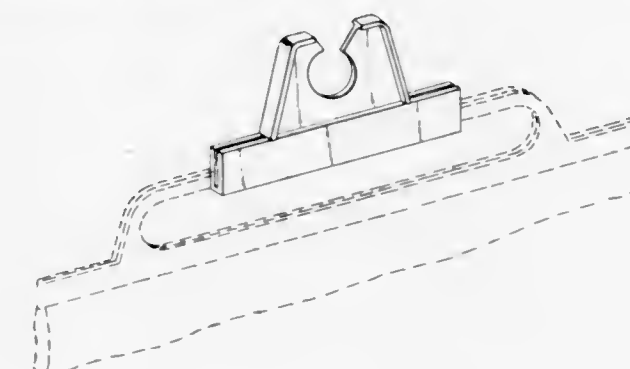
HOOK SUPPORT FOR CARRIER BAG HANDLE

Seymour Kamins, Oceanside, and Norman Rosenberg, Bayside, N.Y., assignors to CTP Industries Inc., Brooklyn, N.Y.

Original design application Oct. 9, 1968, Ser. No. 13,910. Divided and this application Oct. 6, 1969, Ser. No. 19,788

Term of patent 14 years  
Int. Cl. D8—08

U.S. Cl. D8—246



224,827

BOTTLE OR SIMILAR ARTICLE

Harry Kravitz, Wynnewood, Pa., assignor to Andorra Nurseries, Inc., Wynnewood, Pa.

Filed Apr. 8, 1971, Ser. No. 132,627  
Term of patent 14 years  
Int. Cl. D9—01

U.S. Cl. D9—47



224,828

JUG

Edward J. Kretz, 2120 Marlon, Toledo, Ohio 43601

Filed Aug. 30, 1971, Ser. No. 176,449  
Term of patent 14 years  
Int. Cl. D9—01

U.S. Cl. D9—42



224,829

PLASTIC JAR

Ralph G. Amberg, Monticello, Ind., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 4, 1971, Ser. No. 150,265  
Term of patent 14 years  
Int. Cl. D9—01

U.S. Cl. D9—154



224,830

DOOR

Melvyn Dale Stilwell, Boise, Idaho, assignor to Old World Arts, Inc., Boise, Idaho

Filed Mar. 30, 1970, Ser. No. 22,115  
Term of patent 14 years  
Int. Cl. D25—02

U.S. Cl. D13—1



224,831

BUILDING

William F. Bigoney, Jr., Fort Lauderdale, Fla., assignor to Buning the Florist, Inc., Fort Lauderdale, Fla.

Filed July 19, 1971, Ser. No. 164,232  
Term of patent 14 years  
Int. Cl. D25—03

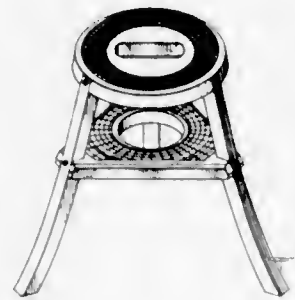
U.S. Cl. D13—1





224,832  
**STEP STOOL**  
 Harold R. Furno, Ontario, Calif.  
 (112 College Way, Claremont, Calif. 91711)  
 Filed Jan. 11, 1971, Ser. No. 105,784  
 Term of patent 14 years  
 Int. Cl. D6—02

U.S. Cl. D15—8



224,833  
**FISHING LURE BODY**  
 Joseph F. Voros, 9930 Elmonte,  
 Overland Park, Kans. 66207  
 Filed Nov. 2, 1970, Ser. No. 25,761  
 Term of patent 14 years  
 Int. Cl. D22—05

U.S. Cl. D22—28



224,834  
**HAND SHOWER BODY**  
 Harper Landell, Whitmarsh, Pa., assignor to Speakman  
 Company, Wilmington, Del.  
 Filed Dec. 7, 1970, Ser. No. 26,310  
 Term of patent 14 years  
 Int. Cl. D23—01

U.S. Cl. D23—35



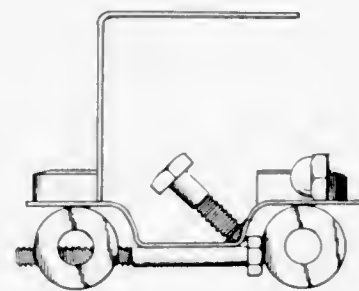
224,835  
**MONOLITHIC LIGHT EMITTING SEMI-  
 CONDUCTOR DISPLAY**  
 Enghua Lim, Los Gatos, Calif., assignor to Monsanto  
 Company, St. Louis, Mo.  
 Filed Mar. 23, 1970, Ser. No. 22,019  
 Term of patent 14 years  
 Int. Cl. D14—02

U.S. Cl. D26—5



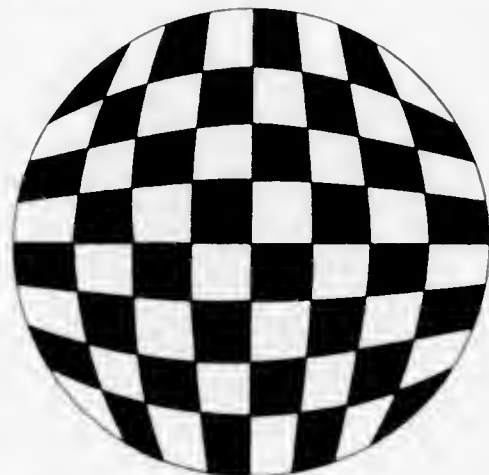
224,836  
**TOY VEHICLE FIGURE**  
 Gary B. Waldron, Rte. 4, P.O. Box 1892,  
 Gresham, Oreg. 97030  
 Filed Mar. 9, 1970, Ser. No. 21,793  
 Term of patent 14 years  
 Int. Cl. D21—02

U.S. Cl. D34—15



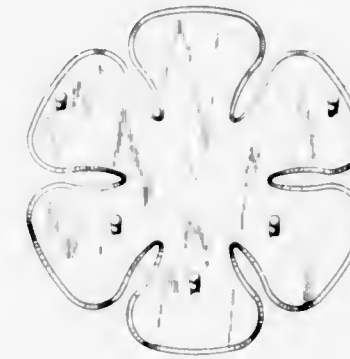
224,837  
**GAME BOARD**  
 Byron L. La Goy, 5121 1/2 Brighton Ave.,  
 San Diego, Calif. 92107  
 Filed Mar. 12, 1970, Ser. No. 21,878  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D34—5



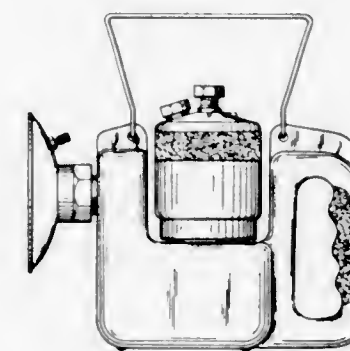
224,838  
**UTENSIL HANGER OR SIMILAR ARTICLE**  
 David Douglas, 1119 Lincoln Blvd.,  
 Manitowoc, Wis. 54220  
 Filed Oct. 23, 1970, Ser. No. 25,628  
 Term of patent 14 years  
 Int. Cl. D7—99

U.S. Cl. D44—29



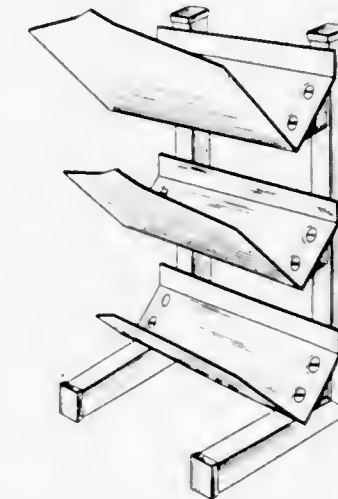
224,839  
**CARBIDE LAMP**  
 Frank S. Flider, Chicago, Ill., assignor to The Justrite  
 Manufacturing Company, Chicago, Ill.  
 Filed Mar. 26, 1971, Ser. No. 128,654  
 Term of patent 14 years  
 Int. Cl. D26—02

U.S. Cl. D48—24



224,840  
**PLASTIC FILM DISPENSER**  
 John T. Talman and Wilbur C. Paddock, St. Louis, Mo.,  
 assignors to TSI, Inc., St. Louis, Mo.  
 Filed Feb. 8, 1971, Ser. No. 113,811  
 Term of patent 14 years  
 Int. Cl. D31—99

U.S. Cl. D52—2



224,841  
**STRINGED MUSICAL INSTRUMENT**  
 Calvert A. Dawson, 4680 Glibbens Payne Drive,  
 East Baton Rouge Parish, La. 70714  
 Filed Mar. 18, 1971, Ser. No. 125,909  
 Term of patent 14 years  
 Int. Cl. D17—03

U.S. Cl. D56—1





224,842  
**WRITING PAPER OR THE LIKE**  
 Janice L. Lee, 85 Birch St., Troy, Mich. 48084  
 Filed Apr. 22, 1970, Ser. No. 22,558  
 Term of patent 14 years  
 Int. Cl. D19—01

U.S. Cl. D59—14



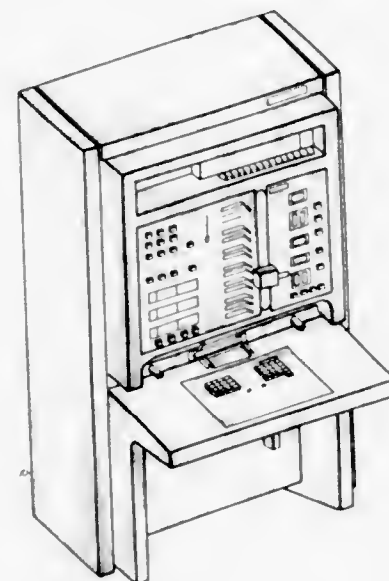
224,843  
**CARBON PAPER**  
 Arthur W. Young, Pennsauken, N.J., assignor to Curtis-Young Corporation, Pennsauken, N.J.  
 Filed July 13, 1971, Ser. No. 162,330  
 Term of patent 14 years  
 Int. Cl. D19—01

U.S. Cl. D59—6



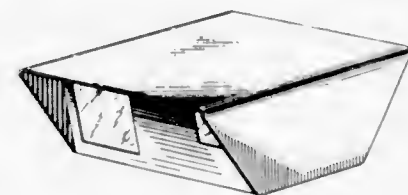
224,844  
**PHOTOGRAPHIC PRINTER**  
 Ernest Muchenberger, Oberwil, Zurich, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland  
 Filed Mar. 31, 1971, Ser. No. 130,054  
 Claims priority, application Switzerland Nov. 13, 1970  
 Term of patent 14 years  
 Int. Cl. D16—03

U.S. Cl. D61—1



224,845  
**TRAFFIC MONITORING AND SURVEILLANCE SYSTEM HOUSING**  
 Edward C. Matza, Dallas, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.  
 Filed Oct. 29, 1970, Ser. No. 25,850  
 Term of patent 14 years  
 Int. Cl. D29—99

U.S. Cl. D72—1



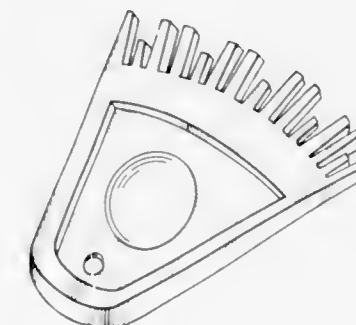
224,846  
**PENCIL**  
 Perry Feuer, Roslyn, N.Y., assignor to Creative Creations, Inc., New York, N.Y.  
 Filed Apr. 21, 1971, Ser. No. 136,293  
 Term of patent 14 years  
 Int. Cl. D19—06

U.S. Cl. D74—24



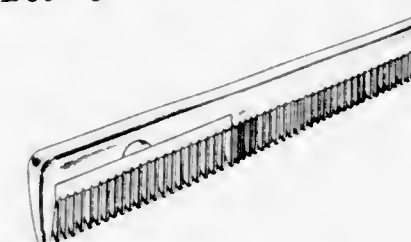
224,847  
**PALM HELD HAIR STYLING TOOL**  
 Annie R. Thomas, 700 E. Emily, Longview, Tex. 75601  
 Substituted for abandoned design applications Ser. No. 2,718, June 20, 1966, and Ser. No. 10,653, Feb. 20, 1968. This application June 2, 1970, Ser. No. 23,261  
 Term of patent 14 years  
 Int. Cl. D28—03

U.S. Cl. D86—8



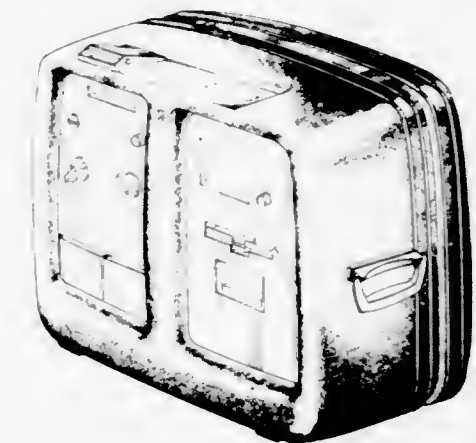
224,848  
**CARTRIDGE COMB**  
 Nicholas D. McKay, 5314 Territorial Road, Grand Blanc, Mich. 48439  
 Filed June 29, 1970, Ser. No. 23,713  
 Term of patent 14 years  
 Int. Cl. D28—03

U.S. Cl. D86—8



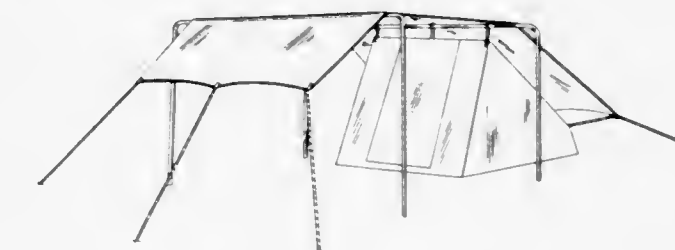
224,849  
**PORTABLE CARRYING CASE FOR PHOTOGRAPHIC I.D. EQUIPMENT**  
 James M. Conner, Westchester, N.Y., assignor to Polaroid Corporation, Cambridge, Mass.  
 Filed June 17, 1971, Ser. No. 154,257  
 Term of patent 14 years  
 Int. Cl. D3—02

U.S. Cl. D87—1



224,850  
**COMBINED TENT AND FLY COVER THEREFOR**  
 Fred W. Enzel, St. Louis, Mo., and Edmund P. Hillary, Auckland, New Zealand, assignors to Kellwood Company, St. Louis, Mo.  
 Filed June 17, 1971, Ser. No. 154,266  
 Term of patent 14 years  
 Int. Cl. D3—03

U.S. Cl. D88—3



224,851  
**SHEET OR SIMILAR ARTICLE OF BED LINEN**  
 John W. Rock, Wyckoff, N.J., assignor to Cannon Mills Company, Kannapolis, N.C.  
 Filed Feb. 16, 1971, Ser. No. 115,924  
 Term of patent 14 years  
 Int. Cl. D16—13

U.S. Cl. D92—26

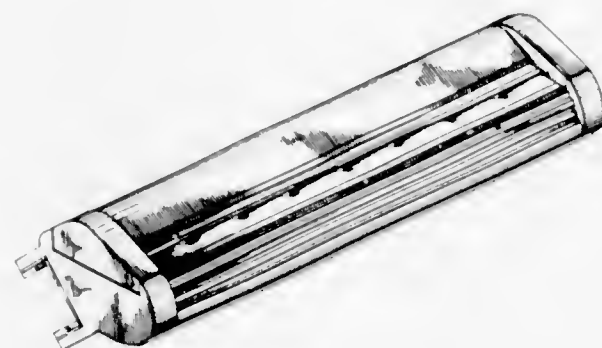




224,852

**DUAL BLADE UNIT FOR A SAFETY RAZOR**  
Francis W. Dorion, Jr., Hingham, Mass., assignor to The  
Gillette Company, Boston, Mass.  
Filed Mar. 15, 1971, Ser. No. 124,620  
Term of patent 14 years  
Int. Cl. D28—03

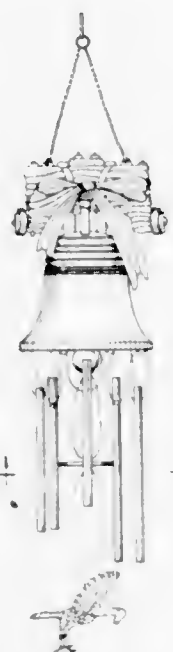
U.S. Cl. D95—3



224,853

**WIND CHIMES, OR SIMILAR ARTICLE**  
Rudi P. Meyer, Chicago, Ill., assignor to  
Glovemakers, Inc., Chicago, Ill.  
Filed Jan. 12, 1972, Ser. No. 217,439  
Term of patent 14 years  
Int. Cl. D29—99

U.S. Cl. D72—1



## LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF SEPTEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Aarhus Metalemballage Industri: See—  
Pedersen, Johannes Sigurd, 3,693,398.
- Aaron, Herbert S.; and Ferguson, Clyde Parker, Jr., to United States of America, Army. Preparation of 1-acetate-3-(alkyl)6,9-trimethyl-7,8,9,10-tetrahydro-6H-benzo[5,6-b]pyridine-2-carboxylic acid. 3,694,464, Cl. 260-345.300.
- AB Emmaboda Glasverk: See—  
Nilsson, Leif Billy, 3,693,321.
- AB Tico: See—  
Frisk, Knot Olov, 3,693,655.
- Abbe, Robert C., to ADE Corporation. Coupled inductance impedance measuring circuit with increased sensitivity and frequency independence. 3,694,741, Cl. 324-60.00c.
- Abbott Laboratories: See—  
Donahoe, Joseph F.; and Macalalad, Fidel V., 3,693,612.
- Abegg, Jean-Louis: See—  
Kalopissis, Gregoire; Abegg, Jean-Louis; Ghilardi, Giuliano; and Philippe de Beaulieu, Henri, 3,694,141.
- Abel, Edmund A., Jr. Pour-in, instant brewing electric coffee maker. 3,693,535, Cl. 99-282.000.
- Abraham, Dennis G.; and Pawletko, Joseph P., to International Business Machines Corporation. Stepping motor control system using pulse injection. 3,694,725, Cl. 318-685.000.
- Abu-Isa, Ismat A., to General Motors Corporation. Platable polypropylene. 3,694,249, Cl. 117-47.00a.
- ACF Industries, Incorporated: See—  
O'Leary, Walter E.; and Thornton, Duane V., 3,693,554.
- Ackermann, Harry John; Blessin, Louis Dewey; Hermann, Leroy Nicholas; Ririe, Max Henry; and Swinbank, Everett John. Automatic poultry feeding device. 3,693,593, Cl. 119-52.0af.
- Acme Products Incorporated: See—  
Stanfield, Howard E.; Stanfield, Gary W.; and Camp, George F., 3,693,800.
- Adamovske strojirny, narodni podnik: See—  
Jurny, Josef; and Janecsek, Jaroslav, 3,693,971.
- Adams, Patrick James; and Lewis, Richard Newton, to Stauffer Chemical Company. Process for grafting organopolysiloxanes. 3,694,478, Cl. 260-448.20c.
- Adcole Corporation: See—  
Cole, Addison D., 3,693,626.
- Addor, Roger Williams; and Wagner, Frank Albert, Jr., to American Cyanamid Company. Novel oximecarbamates. 3,694,481, Cl. 260-453.00r.
- Addoutte, Roland: See—  
Cuenoud, Gerard; and Addoutte, Roland, 3,693,549.
- Addressograph-Multigraph Corporation: See—  
Morgan, Edward T., 3,693,547.
- ADE Corporation: See—  
Abbe, Robert C., 3,694,741.
- Adickes, Cecil F., to Tonka Corporation. Toy vehicle launching device with safety mechanism. 3,693,282, Cl. 46-1.00r.
- Adolphi, George; to Ametek, Inc. Multiple riveting machine. 3,693,832, Cl. 221-93.000.
- Aerazur Constructions Aeronautiques Societe Anonyme: See—  
Collec, Henri, 3,693,917.
- Aerojet-General Corporation: See—  
Kromrey, Robert V., 3,694,284.
- Affsil, A. Brom: See—  
Koenig, Wolf M., 3,694,062.
- Agfa-Gevaert Aktiengesellschaft: See—  
Frick, Hans-Dieter; Geyken, Erwin; Dawidowitsch, Peter; and Schausberger, Helmut, 3,693,528.  
Knapp, Walter; and Ramsauer, Kurt, 3,694,082.  
Matejec, Reinhart; and Ranz, Erwin, 3,694,207.  
Ranz, Erwin; Von Rintelen, Harald; Schutz, Heinz-Dieter; Muller, Gerhard; and Neumann, Wolfram, 3,694,208.  
Sauer, Theo, 3,693,656.
- Agmac, Inc.: See—  
Richter, John Edward; and Tiura, George Olavi, 3,693,331.
- Air Intake Renu: See—  
Tobin, Benjamin F., III, 3,693,406.
- Air Preheater Company, Inc.: See—  
Theoclitus, Gregory, 3,693,558.
- Aishima, Itsuho; Takashi, Yukichi; and Koseki, Toshinori, to Asahi Kasei Kogyo Kabushiki Kaisha. Polyolefin compositions. 3,694,403, Cl. 260-41.00r.
- Aisin Seiki Kabushiki Kaisha: See—  
Hirozawa, Koichiro, 3,693,605.  
Yamazaki, Shinichiro, 3,693,937.
- Akatsuka, Minoru: See—  
Nakamura, Masakatsu; Yonezawa, Toshio; Kato, Taketoshi; Watanabe, Masaharu; and Akatsuka, Minoru, 3,694,707.
- Akifrat, John C.; and Gardon, Robert, to Ford Motor Company. Glass tempering die construction. 3,694,182, Cl. 65-288.000.
- Akitektbolaget Tudor: See—  
Sundberg, Erik Gustav, 3,694,265.
- Akiyama, Kazuo: See—  
Honda, Kiyoshi; Miyazaki, Mitsumasa; Nomura, Shozaburo; Akiyama, Kazuo; and Hirose, Kazutoyo, 3,694,415.
- Aktiebolaget Bofors: See—  
Bakke, Jan Magnus; Heikman, Harald Erik; Hakanson, Christer Lennart; and Nilsson, John Martin, 3,694,505.
- Aktiebolaget Karstads Mekaniska Werkstad: See—  
Skeppstedt, Nils Petri, 3,694,311.
- Aktiengesellschaft Brown, Boveri & Cie: See—  
Kanggiesser, Karl-Werner; and Kluge, Dietrich, 3,694,728.
- Alberti, Jon; and Weber, Franz, to Boeing Company, The. Cargo handling system automatic center. 3,693,919, Cl. 248-119.00r.
- Aldi, Angelo J. Aircraft rotor blade mechanism. 3,693,910, Cl. 244-7.00a.
- Alexander, Milton; Garrett, John W.; and Riepenhoff, Ralph R., to United States of America, Air Force. Pilot armreach and cockpit control locator machine. 3,693,265, Cl. 35-12.00f.
- Alexander, Stuart: See—  
Wakefield, Norman; Alexander, Stuart; Morrish, James Francis; Beck, William; Groves, Raymond Sturgis; and Harvey, Michel J., 3,693,930.
- Allard, Charles D.; and Allard, Eugene R., to Sana Products, Inc. X-ray film cassette holder. 3,694,653, Cl. 250-50.000.
- Allard, Eugene R.: See—  
Allard, Charles D.; and Allard, Eugene R., 3,694,653.
- Allegheny Ludlum Steel Corporation: See—  
Chivinsky, Joseph A., 3,693,242.  
McCabe, Richard W.; and Johnson, Mark J., 3,694,326.
- Allen, Francis E. Shear blade. 3,693,675, Cl. 143-22.000.
- Allen, Richard H., to Joseph, David J., Company, The. Pollution control apparatus for combustive dismantling. 3,693,559, Cl. 110-18.00r.
- Alliance Manufacturing Company, Inc., The: See—  
Carli, Alvin J., 3,694,664.
- Allied Chemical Corporation: See—  
Barton, Oliver A.; and Murphy, Kevin P., 3,694,368.  
Beckham, Leland J., 3,694,433.  
Carter, John Ed, 3,694,019.  
Josephsen, Roy C.; and Weir, Clifford L., 3,694,529.  
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- Allis-Chalmers Corporation: See—  
Henry, Luke F., 3,694,721.
- Allis-Chalmers Manufacturing Company: See—  
Hahn, Mathew P., 3,693,793.  
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- Alps Electric Co., Ltd.: See—  
Iwasaki, Sadaoyoshi, 3,694,602.
- Aluminum Company of America: See—  
Hoch, Fred R.; and McIntee, James W., 3,693,238.
- Alvarez, Francisco, to Syntex Corporation. (6-Methoxy-2-naphthyl) cadmium halide. 3,694,476, Cl. 260-429.00r.
- Amazon Natural Drug Company, The: See—  
Persinos, Georgia J., 3,694,557.
- Ambruso, Alex: See—  
United States of America, National Aeronautics and Space Administration, 3,693,346.
- American Air Filter Company, Inc.: See—  
Cole, Saxon, 3,694,625.
- American Cutting & Binding Co.: See—  
Siegal, Burton L., 3,693,853.
- American Cyanamid Company: See—  
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- American Home Products Corporation: See—  
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- American Hospital Supply Corporation: See—  
Fulton, Bertram A.; and Slouka, Richard A., 3,693,258.
- American Optical Corporation: See—  
Berkovits, Barouh V., 3,693,627.  
Deeg, Emil W.; and Young, Robert W., 3,694,179.  
Dianetti, Joseph C., 3,693,416.
- American Smelting and Refining Company: See—  
Lebedeff, Yuri E.; and Klein, William C., deceased, 3,694,191.
- American Standard Inc.: See—  
Gordon, Frederick Armstrong; Griffin, James Richard; and Pez-zarossi, John Joseph, 3,693,649.



- Ametek, Inc.: *See—*  
Adolph, George, 3,693,832.  
Summers, Stanley E., 3,693,691.
- Amlab AB: *See—*  
Duren, Lennart Axel; and Andersson, Arne, 3,694,713.
- AMP Incorporated: *See—*  
Loose, Winfield Warren, 3,694,593.
- Ampex Corporation: *See—*  
Prader, James Edward; and King, Harless W., II, 3,694,293.  
Smit, Jan; Baba, Paul David; and Argentina, Giltan Michael, 3,694,361.
- Amstutz, Edwin A.: *See—*  
Harte, Richard A.; and Amstutz, Edwin A., 3,693,623.
- Anchor Hocking Corporation: *See—*  
Oglesbee, Richard K., 3,693,788.  
Oglesbee, Richard K., 3,693,830.
- Anders, Hans Joachim, to ITT Industries, Inc. Spot-type disc brake shoe, 3,693,764, Cl. 188-73.100.
- Anderson, Bror E.: *See—*  
Larson, Leonard G.; Anderson, Bror E.; and Schick, Margery L., 3,694,244.  
Anderson, Bror E.; and Schick, Margery L. Thermographic stencil sheet, manufacture thereof, and method of making an imaged stencil sheet, 3,694,245, Cl. 117-35.500.
- Anderson, Jerrold L.; Haines, Robert C., Jr.; and Powell, Thomas C., to National Cash Register Company, The. Minute capsules and their manufacture, en masse, 3,694,372, Cl. 252-316.000.
- Anderson, Roger. Apparatus for treating woven plastic bandages used in orthopedic casts, 3,693,587, Cl. 118-304.000.
- Anderson, Tage O.: *See—*  
United States of America, National Aeronautics and Space Administration, 3,694,581.
- Andersson, Arne: *See—*  
Duren, Lennart Axel; and Andersson, Arne, 3,694,713.
- Ando, Tetsuo; and Yamazaki, Hiroshi, to Sony Corporation. Semiconductor device, 3,694,704, Cl. 317-235.000.
- Andoniev, Sergei Mikhailovich; Gerber, Leonid Moiseevich; Kasyanov, Grigori Ivanovich; Kudinov, Gennady Alexandrovich; Kutsyovich, Dorina Borisovna; Nissenbaum, Tamara Izovna; Raikovskiy, Yuri Borisovich; Somchenko, Mikhail; and Filipiev, Oleg, to Vsesoyuzny Nauchno-Issledovatel'skiy i Predpriyatiy, Chernoi Metallurgii. Device for evaporative cooling of metallurgical furnaces, 3,693,708, Cl. 165-101.000.
- Andreev, Pavel Alexeevich; Blinov, Konstantin Andreevich; Gremilov, Dmitry Ivanovich; Kanaun, Boris Izrailevich; Kanaev, Andrei Andreevich; Aslanian, Gurken Nazarovich; Paramonov, Pavel Mikhailovich; Panshin, Boris Mikhailovich; Sobolev, Sergei Petrovich; and Shubenko-Shubin, Leonid Alexandrovich. Inter-stage steam separator-superheater apparatus for turbines operating with saturated steam, 3,693,599, Cl. 122-483.000.
- Andres, Rudolf; and Huber, Guntram, to Daimler-Benz Aktiengesellschaft. Anchoring arrangement of a safety belt in a motor vehicle, 3,694,028, Cl. 297-386.000.
- Andrews, David; and Saucy, Gabriel. 3-Vinyl-cyclo penta (FM1) benzopyrans, 3,694,463, Cl. 260-345.200.
- Andrews, Fred R.: *See—*  
Fueslein, Jerome L.; and Andrews, Fred R., 3,693,724.
- Andrews, Otis H. Legal load indicator for a liquid tanker, 3,693,738, Cl. 177-141.000.
- Angelovich, Stephen J., to Mallory, P. R., & Co., Inc. Leak proof closure seal for battery, 3,694,267, Cl. 136-133.000.
- Aoki, Masaru, to Tomy Kogyo Co., Ltd. Toy vehicle and playing board, 3,693,291, Cl. 46-202.000.
- Appel, Arthur V.; Davis, John S.; and Pontarelli, Donald E., to Bliss & Laughlin Industries, Incorporated, mesne. Method for making encoded cards, 3,694,285, Cl. 156-179.000.
- Appleton, Arthur I. Take-up reel, 3,694,588, Cl. 191-12.200.
- Aqua-Chem, Inc.: *See—*  
Cleaver, John C., 3,693,598.
- Aquatron Corporation (Australia) Pty. Limited: *See—*  
Glasson, Douglas Haigh, 3,694,651.
- Araya, Takeshi; and Udagawa, Tsugio, to Hitachi, Ltd. Device for feeding a consumable wire electrode to an arc welding torch, 3,693,858, Cl. 226-108.000.
- Arcata Graphics: *See—*  
Maniaci, Philip J.; and McKinsey, Byron E., 3,693,486.
- Argentina, Giltan Michael: *See—*  
Smit, Jan; Baba, Paul David; and Argentina, Giltan Michael, 3,694,361.
- Arikawa, Yoshiji: *See—*  
Sagusa, Hisayuki; Takeuchi, Seiji; and Arikawa, Yoshiji, 3,694,160.
- Arlt, Manfred; Dathe, Joachim; and Guckel, Helmut, to Siemens Aktiengesellschaft. Contact arrangement for emitter zone of semiconductor device, 3,694,708, Cl. 317-235.000.
- Arm, Herbert G.: *See—*  
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- Armco Steel Corporation: *See—*  
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- Arndt, George D. System for improving signal-to-noise ratio of a communication signal, 3,694,753, Cl. 325-373.000.
- Arnold, Eugene W.; and Hasenwinkle, Earl D., to Weyerhaeuser Company. Apparatus and technique for harvesting plants rooted in the ground, 3,693,721, Cl. 171-61.000.
- Arnold, William Charles. Heald frame, 3,693,667, Cl. 139-91.000.
- Aron, Edward A.; Griffith, Louis E.; and Tidd, James A., to Graphic Systems, Inc. Photocomposing machine with flexible fiber optics scanning member, 3,693,516, Cl. 95-4.500.
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- Assmus, Friedrich; Ganter, Wolfgang; and Flaig, Hans, to Gebrüder Junghans G.m.b.H. Wrist watch with a piezoelectric crystal as time-keeping oscillator, 3,693,343, Cl. 58-231.000.
- Atkinson, Denzil Malcolm. Electric switches, 3,694,601, Cl. 200-144.000.
- Atlantic Richfield Company: *See—*  
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- Au, Kenneth K., to Microsystems International Limited. Field effect device and circuit having high current driving capabilities utilizing such device, 3,694,673, Cl. 307-304.000.
- Auer, Siegfried O., to United States of America, National Aeronautics and Space Administration. Cosmic dust impact location detector or other similar outer space particles, 3,694,655, Cl. 250-83.600.
- Auphan, Michel Joseph, to U.S. Philips Corporation. Heart stimulator and heart-powered energy supply therefor, 3,693,625, Cl. 128-419.000.
- Aurenge, Jacques; and Desfeuille, Jean. Multiple-way valve, 3,693,661, Cl. 137-625.180.
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- Ayoub, Theodore A.; and Ayoub, Alfred. Suspension device for a cake of soap, 3,693,923, Cl. 248-360.000.
- Azami, Kyoichiro; Ohotani, Hiroshi; and Fukutomi, Hiroshi, to Dainippon Ink and Chemicals, Incorporated. Process for the production of light-sensitive polymer, 3,694,383, Cl. 260-2.00a.
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- Baker, Charles W. Optical reflector system, 3,693,515, Cl. 95-4.500.
- Baker, Peter John; Gale, Graham John; and Jacobs, Barry Edward Adrian. Fluid pulsing device, 3,693,646, Cl. 137-81.500.
- Bakke, Jan Magnus; Heikman, Harald Erik; Hakanson, Christer Lennart; and Nilsson, John Martin, to Aktiebolaget Bofors. Method of producing O-aminobenzamide, 3,694,505, Cl. 260-558.00a.
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- Ballard, Paul E.; and Gannoe, Thomas E., to GTE Sylvania Incorporated. Butt welding and workpiece aligning apparatus, 3,694,613, Cl. 219-101.000.
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- Balzer, Winton E.; and Knobel, Kenneth M. Tray covering and sealing apparatus, 3,693,318, Cl. 53-329.000.
- Ban, Isuki. Tape playing apparatus for use with plurality of endless magnetic tape cartridges, 3,693,981, Cl. 274-4.000.
- Banbury, John R.; and Nixon, William C. Electron probe apparatus using an electrostatic field to cause secondary electrons to diverge, 3,694,652, Cl. 250-49.500.
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- Baron, Frank A.; Benner, Roland G.; and Weinberg, Alan E., to Mal-linckrodt Chemical Works. Purification of p-aminophenol, 3,694,508, Cl. 260-575.000.
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Bergmanis, Karl Alfredovich; Klotinsh, Erik Ernestovich; and Matis, Imant Gustovich. Device for measuring permittivity of materials. 3,694,742, Cl. 324-61.0qs.

Bergstrand, Karl Gunnar, to Essem Metotest AB. System for the magnetic non-destructive testing of materials for long and short defects. 3,694,740, Cl. 324-37.000.

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Blitzer, Richard R.; and Reichard, William H., to Gates Rubber Company. The Polyurethane elastomer rendered anti-static by treatment with iodine. 3,694,413, Cl. 260-75.00a.

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Blue, James W.; Smith, Wayne R.; and Sodd, Vincent J., to United States of America, National Aeronautics and Space Administration. Production of high purity <sup>125</sup>I. 3,694,313, Cl. 176-11.000.

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Bobard, Emile. Self-propelled machines for farming and analogous purposes. 3,693,332, Cl. 56-15.100.

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Bonikowski, Zbigniew; and Keen, Bruce Henry, to British Insulated Callender's Cables Ltd. Apparatus for detecting faults in elongated flexible material. 3,694,711, Cl. 318-6.000.

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Court, Charles T. Vertically sliding door mounted in horizontally pivoted frame. 3,693,693, Cl. 160-195.000.

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Cozzarin, Virgil J.; Kappermann, Francis C.; and Kipple, Harry P., to Westinghouse Electric Corporation. Aerated powder pump. 3,693,842, Cl. 222-195.000.

Craig, Jack C. Fishing lure. 3,693,275, Cl. 43-15.000.

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Crandall, Stanley C.; and Puryear, David B., to Gilbert & Barker Manufacturing Company. Fluid pressure controlled power unit. 3,693,500, Cl. 91-4.000.

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Cummins, Alfred B. Centered platform type play exerciser. 3,693,998, Cl. 280-87.010.

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Dalman, Donald P., to Gulf & Western Industrial Products Company. Infeed mechanism for can machinery. 3,693,567, Cl. 113-115.000.

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Deane, Clifford T., to Vortex Air Corporation. Air pollution control device. 3,693,326, Cl. 55-230.000.

Dear, Terrence A., to PPG Industries, Inc. Apparatus for controlling glass fractures. 3,694,181, Cl. 65-158.000.

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Deschenes, Pierre A.; and Villaret, Michel. Pulse code modulation digital compander. 3,694,639, Cl. 235-154.000.

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Di Peri, Leonard J. Thermodynamic control device. 3,693,367, Cl. 62-45.000.

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Eibl, Hansjorg E.; and Westphal, Otto: to Boehringer Ingelheim G.m.b.H. High alkanol yl-propanediol-(1,3)-2-trimethylammonium-ethyl phosphates. 3,694,473, Cl. 260-403.000.  
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Harding, Albert Frederick; Pearce, Brian; and Thomas, William Llewellyn, to British Petroleum Company, Limited, The. Sample injection device. 3,693,455, Cl. 73-422.00r.  
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Harfap, Victor: See—  
United States of America, National Aeronautics and Space Administration, 3,694,700.  
Harfenist, Morton; and Bautzly, Richard, to Burroughs Wellcome & Co. Anti-tapeworm infection composition. 3,694,556, Cl. 424-326.000.  
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Harper, William Sheridan; and Daigler, David Wayne, to FMC Corporation. Production of hydrogen peroxide from aqueous acidic solution obtained by hydrolysis. 3,694,154, Cl. 23-207.000.  
Harries, David Anthony: See—  
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Hart, Thomas W., Jr., and Economopoulos, Panayotis C., to Semi-Conductor Electronic Memories Incorporated. Differential current sense amplifier. 3,694,763, Cl. 330-30.00d.  
Harte, Richard A.; and Amstutz, Edwin A., to Gregory System, Inc. Photocoagulation means and method for depilation. 3,693,623, Cl. 128-303.100.  
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Harvey, Joseph-Eric: See—  
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Jackson, Billy G., to Lilly, Eli, and Company. Process for preparing cephalosporin compounds. 3,694,437, Cl. 260-243.00c.  
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- Jantzen, Charles A.; and Canziani, Victor J. Exposure meter. 3,694,093, Cl. 356-226,000.
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- Jennings, Ralph L., to Economy Forms Corporation. Release plate for a collapsible culvert form. 3,693,927, Cl. 249-11,000.
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- Johnson, Kermit B., to Hydraulic Products Corporation. Adjustable hydraulic shock absorber. 3,693,767, Cl. 188-287,000.
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- Johnson, Sven J. Liquid level measurement device. 3,693,445, Cl. 73-290,000.
- Jomar Industries, Inc.: *See—*  
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- Jones, Doyal H.; and Stiebel, Hanna. Motorcycle helmet communication system. 3,693,748, Cl. 181-20,000.
- Jones, Howard W.; and Whitmore, Robert A. Collagen food coating composition and method of preparation. 3,694,234, Cl. 99-169,000.
- Jones, Jack D., to National Can Retinning Company. Portable electric power apparatus. 3,694,729, Cl. 307-150,000.
- Jones, John Leslie, Sr. Waste fluid flow control element. 3,693,622, Cl. 128-290,000.
- Jones, Nelson A., to Caterpillar Tractor Company. Vibration damper test machine. 3,693,402, Cl. 73-11,000.
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- Joux, Jean-Louis Fernand; Mignot, Bernard Michel; and Billon, Michel Gaston Albert, to Fromageries Bel-La Vache Qui Rit. Process and apparatus for continuously separating and washing a coagulum and more particularly curd for making cheese and casein. 3,693,256, Cl. 31-46,000.
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- Jurny, Josef; and Janecek, Jaroslav, to Adamovske strojirny, narodni podnik. Mechanism for lateral orienting of paper sheets. 3,693,971, Cl. 271-59,000.
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- Kalopissis, Gregoire; and Bugaut, Andree, to Societe Anonyme dite: L'Oreal. Dyeing human hair with N,N-diaryl alkylendiamine oxidation dye compositions. 3,694,138, Cl. 8-10,200.
- Kalopissis, Gregoire; Bugaut, Andree; and Zorayan, Vahan, to L'Oreal. Method and composition containing nitroparaphenylene dyes for dyeing keratinic fibers. 3,694,140, Cl. 8-10.
- Kalopissis, Gregoire; Abegg, Jean-Louis; Ghilardi, Giuliani; and Philippe de Beaulieu, Henri, to Societe Anonyme dite: L'Oreal. Method of hair conditioning. 3,694,141, Cl. 8-127,510.
- Kalotay, Paul Zoltan, to International Telephone and Telegraph Corporation. Pulse frequency detector. 3,694,744, Cl. 324-78,000.
- Kalousek, George L.; and Enger, Phillip F., to United States of America. Interior. Apparatus for measuring thixotropy. 3,693,411, Cl. 73-59,000.
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- Kanai, Hiroyuki; and Kojima, Tuneo. Spindle speed controlling device for ring spinning and twisting machines. 3,693,340, Cl. 57-93,000.
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- Kapell, Gerhard; and Schummer, Anton. Method of detaching galvanically-produced sheets from master sheets. 3,693,236, Cl. 29-423,000.
- Kaplan, Sam H., to Zenith Radio Corporation. Screening process for color cathode-ray tube. 3,693,223, Cl. 29-25,130.
- Kaplow, Milton; and Halik, Joseph John, to General Foods Corporation. Stabilization of combined foods and liquids. 3,694,233, Cl. 99-150,000.
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- Kaspereck, Walter E.; deceased (by Kaspereck, Anni; administratrix); Swords, Ben B.; and Rosinski, Werner K., to United States of America, National Aeronautics and Space Administration. Adjustable force probe. 3,693,418, Cl. 73-85,000.
- Kastner, Arnold. Cigarette making machine. 3,693,630, Cl. 131-70,000.
- Kasuga, Noboru, to Janome Sewing Machine Co., Ltd. Ornamental cam selecting device for zig zag sewing machine. 3,693,563, Cl. 112-158,000.
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- Kawabe, Tsuneo; Sakakibara, Naoji; and Kawabata, Yasuhiro. Safety mechanism for brake holder of automotive hydraulic brake system. 3,694,039, Cl. 303-21,000.
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- Ketterer, Stanley J., to Singer Company. The. Bobbin thread replenishing mechanism for sewing machines. 3,693,566, Cl. 112-184,000.
- Kida, Nobutoshi; and Saito, Kazo. Rib assembly for folding umbrella. 3,693,642, Cl. 135-25,000.
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- Kirsch, Jordan. Color display system utilizing plural birefringent elements having different retardances. 3,694,054, Cl. 350-157.000.
- Kirschner, John G., to Mallory, P. R., & Co., Inc. Variable capacitance multilayered ceramic capacitor. 3,694,710, Cl. 317-261.000.
- Kisaki, Hisashi; Mabuchi, Shunsuke; and Mizuno, Toshikatsu, to Toyo Soda Manufacturing Co., Ltd. Method for concentration of aqueous tetrahydrofuran solutions by extraction with aqueous alkali metal hydroxide. 3,694,465, Cl. 260-346.100.
- Kishimoto, Shoji: See—  
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- Kistner, John F.: See—  
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- Kleiman, Joseph P.; Malec, Robert E.; and Plonsker, Larry, to Ethyl Corporation. Ester lubricant. 3,694,382, Cl. 252-56.00s.
- Klein, Bernard; and Searcy, Ronald Loy. Substrate and method for  $\alpha$ -amylase assay. 3,694,318, Cl. 1.
- Klein, Marvin Bertrand; and Silfvast, William Thomas, to Bell Telephone Laboratories, Incorporated. Broad spectrum selenium ion laser. 3,694,767, Cl. 331-94.500.
- Klein, William C., deceased: See—  
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- Kleinhagauer, Otmar: See—  
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- Kleszynski, Richard Raymond; and Bastian, James Winslow, to Armour Pharmaceutical Company. Method for measuring platelet aggregation. 3,694,161, Cl. 23-230.00b.
- Kliwer, George G., to Commodity Marketers, Inc. Temperature indicator. 3,693,579, Cl. 116-114.500.
- Kloss, Hans-Joachim; to Montz, Julius, GmbH. Bubble caps for bubble columns. 3,693,948, Cl. 261-114.00a.
- Klotinsh, Erik Ernestovich: See—  
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- Knabenbauer, Melvin W. Combination back pack and pack sled. 3,693,849, Cl. 224-9.000.
- Knapp, Walter; and Ramsauer, Kurt, to Agfa-Gevaert Aktien-gesellschaft. Photographic printer. 3,694,082, Cl. 355-97.000.
- Kneisel, Joseph P. Lap assembly for roof ridge. 3,693,305, Cl. 52-276.000.
- Knell, Martin; and Dexter, Martin. Thiodialkanoamidophenol antioxidants. 3,694,375, Cl. 252-402.000.
- Knell, Martin; and Steinberg, David H., to Ciba-Geigy Corporation. Tris (hydroxyalkylphenyl) derivatives of thiopropionyl hexahydrotriazine. 3,694,440, Cl. 260-248.00s.
- Kneusel, Raymond H. P.; and Potts, Vinson S., to Crown Cork & Seal Company, Inc. Seamless steel containers. 3,693,828, Cl. 220-66.000.
- Knobel, Kenneth M.: See—  
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- Knotts, Darlene P. Sackbed barf bags. 3,693,192, Cl. 4-267.000.
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- Kobayashi, Isamu: See—  
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- Kobe Steel, Ltd.: See—  
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- Kobori, Yasuhiro; and Morita, Yukiji, to Kaijo Denki Kabushiki Kaisha, a/k/a Kaijo Denki Co. Ltd. Ultrasonic anemometer. 3,693,433, Cl. 73-189.000.
- Koch, Hans; Oppermann, Willi; and Pfeffer, Heinz, to DEMAG Aktiengesellschaft. Apparatus for fusion welding of tubes. 3,694,617, Cl. 219-121.00b.
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- Koch, Walter; Lemm, Helmut; Voss, Eitel; and Hospital, Peter, to Koch, Walter and said Voss, and said Hospital assor. to said Lemm, Helmut. Method of and apparatus for forming gaseous analysis products from solid samples. 3,694,157, Cl. 23-230.00c.
- Koehler, Albert M., to Brown & Root, Inc. Method and apparatus for transporting and launching an offshore tower. 3,693,361, Cl. 61-46.500.
- Koenig, Robert H., to Tapeswitch Corporation of America. Cushion switch means. 3,694,600, Cl. 200-86.00r.
- Koenig, Wolf M., to Kroitor, Roman and Afsil, A. Brom. Stroboscopic display. 3,694,062, Cl. 352-100.000.
- Koett, Lee E. Golf practice device. 3,693,979, Cl. 273-195.00b.
- Kogan, Samson, Borisovich: See—  
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- Kozlik, Robert F.: See—  
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- Krause, Irving: See—  
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- Kreuter, Kenneth G.: See—  
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- Kuhn, Edmund W., to Westinghouse Electric Corporation. Isolating switch having improved separable contact assembly. 3,694,592, Cl. 200-48.00r.
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 Linder, Donald L., to Motorola, Inc. Adaptive filter wherein opposite conductivity transistors are operative in response to signals in excess of predetermined amplitude. 3,694,776, Cl. 333-17.000.  
 Lineberry, Dewey D.; and Dudrow, Frank A., to Chemetron Corporation. Apparatus and method for deodorizing oils. 3,693,322, Cl. 55-54.000.  
 Linkletter, Robert P. Safety closure cap. 3,693,820, Cl. 215-9.000.  
 Linville, Richard O., to Budd Company, The. Vertically expandable cargo vehicle body. 3,694,024, Cl. 296-26.000.  
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 Litteral, Carl James, to Union Carbide Corporation. Rearrangement of organosiloxanes using macroreticular sulfonic acid cation exchange resin. 3,694,405, Cl. 260-46.50r.  
 Little, Donald R. Portable useful horsepower measuring instrument. 3,693,426, Cl. 73-133.000.  
 Little, Glen Melvon. Horse barn. 3,693,592, Cl. 119-16.000.  
 Livingston, William H. Neutralization of the systemic toxic principle in oak by feeding iron compounds. 3,694,549, Cl. 424-147.000.  
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 Llewellyn, David Myers, to International Nickel Company, Inc., The. Production of carbonyl iron. 3,694,187, Cl. 75-5aa.  
 Llewellyn, David Myers, to International Nickel Company, Inc., The. Thermal decomposition of iron carbonyl. 3,694,188, Cl. 75-5aa.  
 Lloyd, James R.: See—  
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   Lloyd, Norman E.; Lewis, Leonard T.; Logan, Robert M.; and Pagel, Dilip N., 3,694,314.  
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 Lombard, Daniel L.; and Katko, Daniel A. Apparatus for compacting refuse. 3,693,541, Cl. 100-137.000.  
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- Meyers, Kenneth Donald, to North American Rockwell Corporation. Plastic laminated shuttles having plastic cures of improved impact resistance. 3,693,670, Cl. 139-196.000.
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- Michel, George H., to Armorlite Lens Company, Inc. Apparatus and method of forming a liquid curtain and thermal gradient control system. 3,693,953, Cl. 263-50.000.
- Michels, Charles E.: *See—*  
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- Middleton, Thomas E., to Pre-Stress Concrete, Inc. Support for elongated reinforcing members in concrete structures. 3,693,310, Cl. 52-685.000.
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- Miller, Eugene J., Jr.; Mais, Ago; Berenschot, Donald J.; and Berger, Robert L., to Armour Industrial Chemical Company. Epoxy resin cured with a fatty tetraamine. 3,694,409, Cl. 260-47.00n.
- Miller, Harold N., to Esso Research and Engineering Company. Polymers comprising ethylene and ethylenically unsaturated dicarboxylic acids or esters thereof, and oil compositions containing said polymers. 3,694,176, Cl. 44-62.000.
- Miller, Herman C. Concrete insert. 3,693,312, Cl. 52-699.000.
- Miller, Marvin; Miller, Robert P.; and DeCholonoky, Tibor, Jr. Fingerprint identification system and method. 3,694,240, Cl. 117-500.
- Miller, Michael B., to General Motors Corporation. Single phase inverter control circuit. 3,694,714, Cl. 318-138.000.
- Miller, Robert D. Method of separating water from a solution. 3,693,368, Cl. 62-58.000.
- Miller, Robert P.: *See—*  
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- Mills, Robert I.: *See—*  
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- Mingus, Alex W. Apparatus for assembling elongated components in side-by-side relation. 3,593,232, Cl. 29-211.00r.
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- Mitsubishi Denki Kabushiki Kaisha: *See—*  
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- Morgan, Thomas E., to International Telephone and Telegraph Corporation. Wire guide. 3,693,230, Cl. 29-203.000.
- Mori, Masanori. Steel plate bending apparatus. 3,693,391, Cl. 72-173.000.
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Nellen, Wilhelm; Sevenich, Theodor; and Wladika, Hans, to Hoesch Aktiengesellschaft. Rolling of metal ingots into bands. 3,693,393, Cl. 72-226.000.  
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Noble, Herman; and Hartel, Edward H., to United States of America, Navy. Aircraft seat restraint tensioning mechanism. 3,694,029, Cl. 297-389.000.  
Noguchi, Masaaki: *See—*  
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Noguchi, Shunsaku; Kisimoto, Shoji; and Kawai, Kiyohisa, to Takeda Chemical Industries, Ltd. 1-Disubstituted aminopyrazoles. 3,694,456, Cl. 260-310.00r.  
Nogues, Federico Sanfelix. Yarn feeding method and apparatus for circular warp knitting machines. 3,693,378, Cl. 66-81.000.  
Nollace, Pierre, to Compagnie Generale d'Electronique Industrielle. Inverter providing a variable output voltage. 3,694,732, Cl. 321-45.00r.  
Noller, Harry F., to Singer Company, The. Imprinting mechanism. 3,693,543, Cl. 101-287.000.  
Nolte, Albert C., Jr., to Elton Industries Corporation. Method for treating sewage. 3,694,354, Cl. 210-18.000.  
Nomura, Shozaburo: *See—*  
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Norris, William P., to United States of America, Navy. Preparation of poly alpha, alpha 2,3,5,6-hexafluoro-p-xylylene. 3,694,495, Cl. 260-515.00a.  
Norsby, Norrain E.; Kozlik, Robert F.; and Roach, John R., to General Mills, Inc. Process for preparing dry layer cake mix and the resulting product. 3,694,229, Cl. 99-94.000.  
North American Philips Corporation: *See—*  
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North American Rockwell Corporation: *See—*  
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Norton, Allyn S., Jr., to General Electric Company. Shape control sensor for cold rolling mills. 3,693,427, Cl. 73-144.000.  
Nouvel, Jacques, to Rhone-Poulenc S.A. Process for the hydrogenation of cycloalkane hydroperoxides. 3,694,511, Cl. 260-586.00r.  
Novikov, Albert Pavlovich: *See—*  
Vereschagin, Leonid Fedorovich; Yakovlev, Evgeny Nikolaevich; Konyaev, Jury Sergeevich; Polyakov, Evgeny Valentinovich; Novikov, Albert Pavlovich; Bakul, Valentin Nikolaevich; Skripko, Gely Fomich; and Tsypin, Nekhemian Veniaminovich, 3,694,177.  
Novikov, Vladimir Vasilievich; Gubin, Alexandr Ivanovich; and Sorokin, Vasily Mikhailovich. Brazing solder. 3,693,246, Cl. 29-504.000.  
Nutku, Ata. Rotary machine with ducted eccentric rotor and sliding stator vane. 3,693,600, Cl. 123-8.390.  
N.V. Industrielle Handelscombinatie: *See—*  
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Oates, John E. Delivery of flowable materials into containers. 3,693,673, Cl. 141-237.000.  
Occidental Petroleum Corporation: *See—*  
Williams, Kenneth A.; and Stern, David R., 3,694,153.  
Odell, Norman F., to Morton-Norwich Products, Inc., *mesne*. Resin flow test apparatus and method. 3,693,458, Cl. 73-432.00r.  
O'Dell, Sterling L.: *See—*  
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Odenthal, Conrad J.; and Hashizume, George K., to Tektronix, Inc. Electron beam deflection apparatus. 3,694,689, Cl. 315-3.000.  
Oehl, Adolf, to General Motors Corporation. Selector levers for variable-ratio transmission of motor vehicles. 3,693,467, Cl. 74-473.00r.  
Oehm, Otto, to Stahlwerke Bruninghaus Gesellschaft mit. Method and apparatus for the production of elongated conical metallic articles. 3,693,390, Cl. 72-107.000.  
Oehmke, Richard W., to Minnesota Mining and Manufacturing Company. Use of chelates in preparing polycyanurates. 3,694,410, Cl. 260-47.00r.  
Oetiker, Hans, to Gebruder Buhler AG. Method and apparatus for separating granular goods. 3,693,794, Cl. 209.000.  
Ogasawara, Takeo: *See—*  
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Ogawa, Mutsuo, to Kabushiki Kaisha Ricoh. System of reading out information upon recording medium in optical information reader. 3,694,629, Cl. 235-61.11e.  
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Oglesbee, Richard K., to Anchor Hocking Corporation. Sleeve package. 3,693,788, Cl. 206-65.00s.  
Oglesbee, Richard K., to Anchor Hocking Corporation. Package for tumblers and the like. 3,693,830, Cl. 220-102.000.  
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Ohno, Junji, to Nippon Gakki Seizo Kabushiki Kaisha. Key guide for electronic musical instrument. 3,693,492, Cl. 84-436.000.  
Ohotani, Hiroshi: *See—*  
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Ohtani, Takemitsu. Sea rescue ball unit. 3,693,202, Cl. 9-317.000.  
Ohyama, Hideki, to Nippon Kogaku K.K. Instrument for observing colored bubble image. 3,694,090, Cl. 356-148.000.  
Okamoto, Akio; and Uno, Taiko, to Mitsubishi Petrochemical Co., Ltd. Method and apparatus for coating with plastics. 3,694,538, Cl. 264-173.000.  
Okano, Takeshi, to Fuji Shashin Film Kabushiki Kaisha. Magazine for card retrieval. 3,694,045, Cl. 312-186.000.  
Okell, Roy E.: *See—*  
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Okubo, Kinji; and Nagai, Toshihiko; deceased (by Nagai, Kenichi; legal representative). Reproduction process by powder development and fixation of transferred image. 3,694,203, Cl. 96-27.000.  
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O'Leary, Walter E.; and Thornton, Duane V., to ACF Industries, Incorporated. Flat car having a plurality of fixed intermediate bulkheads. 3,693,554, Cl. 105-366.00r.  
Olin Corporation: *See—*  
Haugwitz, Rudiger D.; and Uhoch, John, Jr., 3,694,553.  
Olson, Donald O. Flow restrictor with flushing means. 3,693,657, Cl. 137-608.000.  
Olson, Jack R., to United States of America, Navy. Electromagnetic flowmeter. 3,693,440, Cl. 73-194.00c.  
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Omietskii, George M., to Union Carbide Corporation. Novel organofunctional silicon compounds substituted with halogen and processes for making same. 3,694,480, Cl. 260-448.20b.



- Ono, Atsuo: *See*—  
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- Ono, Naoya: *See*—  
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- Ono, Shigeo: *See*—  
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- Onufer, George R., to Russell, Burdall & Word Bolt and Nut Co. Fastener, 3,693,685, Cl. 151-21.00c.
- Oosterveen, Lodewijk: *See*—  
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- Oritel, William Charles Gormley, to Bell Telephone Laboratories, Incorporated. Electrooptic modulator utilizing phase retardation effect of internal reflections, 3,694,052, Cl. 350-150.000.
- Ost, Walter; Thomas, Klaus; and Jerchel, Dietrich, to Boehringer, C. H., Sohn. 1-[(1'-Carboxyacylamino-2',2',2'-trichloro) ethyl]-2-(hydrocarbyloxy-carbonyl-amino)-benzimidazoles, 3,694,454, Cl. 260-309.200.
- Otake, Sugako: *See*—  
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- Otani, Yasuhiko, to Kobe Steel, Ltd. Apparatus for continuously winding up a linear product such as wire, 3,693,898, Cl. 242-25.00a.
- Otsuka, Ichiro: *See*—  
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- Otsuka, Shigenobu: *See*—  
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- Otte, Walter G. H. Flight path calculator, 3,693,873, Cl. 235-88.000.
- Otterlet, Jon L. Slide switch with improved movable contact actuator resilient biasing means, 3,694,590, Cl. 200-16.00c.
- Owen, William John: *See*—  
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- Owens-Corning Fiberglass Corporation: *See*—  
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- Gelin, Robert J., 3,694,541.
- Owens-Illinois, Inc.: *See*—  
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- Weaver, Edward A., 3,694,360.
- Ozaki, Nobuo, to Maeda Industries, Ltd. Bicycle gear shift lever, 3,693,469, Cl. 74-489.000.
- Pabich, Richard W.; and Treiber, Richard W.; deceased (by Treiber, E. Louise; executrix). Wing headed fasteners and process for attaching same, 3,693,220, Cl. 24-221.00r.
- Pabst Brewing Company: *See*—  
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- Pacciarini, Antonio; and Pirovano, Dante, to Industrie Pirelli S.p.A., mesne. Apparatus for the manufacture of pneumatic tires, 3,694,290, Cl. 156-401.000.
- Pagano, Joseph F., to Smith Kline & French Laboratories. Complexes of phosphoric acid and  $\alpha$ -amino-3-nitroacridine, 3,694,447, Cl. 260-279.00r.
- Pagel, Dilip N.: *See*—  
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- Paget, Birgitta Helena: *See*—  
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- Palmer, Oakley Butler; and Spencer, Paul E. Torque power wrench marking device, 3,693,483, Cl. 81-524.000.
- Palmer, Patsy B.: *See*—  
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- Palsson, Jan: *See*—  
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- Palumbo, Henry Joseph, to Johns-Manville Corporation. Compressed asbestos sheet packing products and method, 3,694,304, Cl. 161-168.000.
- Panesko, James V., to United States of America, Atomic Energy Commission. Process for palladium recovery, 3,694,370, Cl. 252-301.10r.
- Panshin, Boris Mikhailovich: *See*—  
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- Panson, Armand J.; and Ruka, Roswell J., to Westinghouse Electric Corporation. Homogeneous precipitation of alkaline-earth metal halophosphate phosphors, 3,694,371, Cl. 252-34.40p.
- Papaionnou, Christos George, to American Cyanamid Company. Process for preparing a 1-(lower alkyl)-5-nitro-2-imidazolecarboximidate ester, 3,694,452, Cl. 260-309.000.
- Paper Converting Machine Company: *See*—  
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- Paramonov, Pavel Mikhailovich: *See*—  
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- Pardoel, Machiel; and Oosterveen, Lodewijk. Apparatus for aerating cattle sheds, particularly pigsties, 3,694,222, Cl. 98-33.00r.
- Parker, Vernon D., to Dow Chemical Company, The. Electrolytic reduction of halogenated pyridines, 3,694,332, Cl. 204-73.00r.
- Parker-Hannifin Corporation: *See*—  
Ulanovsky, Jack M., 3,693,915.
- Parola, Gary D., to Grove Valve and Regulator Company. Silent operating valve, 3,693,659, Cl. 137-625.300.
- Pasbrig, Max. Make-and-break spark plug, 3,693,607, Cl. 123-143.00r.
- Pater, Edward Henry, to Lucas, Joseph, (Industries) Limited. Electrical terminals assembly, 3,694,564, Cl. 174-72.00r.
- Patmore, Edwin L., to Texaco Inc. Carboxylation process, 3,694,494, Cl. 260-514.00b.
- Patmore, Edwin L., to Texaco Inc. Carboxylation process, 3,694,496, Cl. 260-515.00r.
- Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Podola, Nikolai Vasilievich; Bondarenko, Oleg Petrovich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovich; Smolyakov, Vadim Filimonovich; Eltsov, Konstantin Sergeevich; Gabuev, Georgy Kharitonovich; and Gladky, Dmitry Fedorovich. Installation for the electroslag remelting of consumable electrodes with modulated current, 3,693,700, Cl. 164-250.000.
- Patzelt, Heinz-Wolfgang: *See*—  
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- Paucha, Gene, to Forr Company. Filter apparatus with removable filter elements, 3,693,328, Cl. 55-436.000.
- Paul, Donald G., to Chemalytics Corporation. Gas analysis apparatus and method using parallel gas density detectors and different carrier gases to determine molecular weight, 3,693,403, Cl. 73-30.000.
- Paulsen, Jens C. Wrist band with high resistance to expansion and relatively low contractive force, 3,693,375, Cl. 63-5.00r.
- Pavon, Miguel Sancho: *See*—  
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- Pawletko, Joseph P.: *See*—  
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- Payson, Buford L., 25% to Strauss, Robert E. Carpet stretcher improvements, 3,693,936, Cl. 254-62.000.
- Pearce, Brian: *See*—  
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- Pearl, David R., to Gerber Garment Technology, Inc. Apparatus for cutting sheet material, 3,693,489, Cl. 83-374.000.
- Pearson, Johnnie Prine: *See*—  
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- Pechthold, Heinz, to Etablissement Bonatex. Apparatus for the automatic continuous manufacture of filled and closed containers, 3,694,126, Cl. 425-326.000.
- Pedersen, Johannes Sigurd, to Aarhus Metalemballage Industri. Method for producing cases having rounded sides and being open at both ends, 3,693,398, Cl. 72-368.000.
- Pek, Inc., mesne: *See*—  
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- Penn Controls, Inc.: *See*—  
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- Pensa, Carlo. Hydraulic apparatus for regulating the flow of one or more pumps, 3,694,108, Cl. 417-222.000.
- Pepmeier, Carl R.: *See*—  
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- Perkins, Gilbert Thornton: *See*—  
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- Perrisini, Richard. Electrical component control device, 3,694,788, Cl. 338-180.000.
- Perry, Robert D. O.; and Markiewicz, Joseph F. Slitted resilient closure having substantially rigid cap, 3,693,843, Cl. 222-212.000.
- Persinos, Georgia J., to Amazon Natural Drug Company, The. Anti-inflammation compositions containing tospine or acid salts thereof and method of use, 3,694,557, Cl. 424-279.000.
- Pesch, Albert Tho: *See*—  
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- Peschke, Karl, Kapitalverwaltungsgesellschaft Karl Peschke m.b.H.: *See*—  
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- Peters & Company, Inc.: *See*—  
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- Peters, Alfred; and Morelos, Salvador. Superfatted soap, 3,694,367, Cl. 252-121.000.
- Peterson, Edward C.: *See*—  
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- Peterson, Norman L.: *See*—  
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- Pettersson, Rolf: *See*—  
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- Petro, John D.; and Hodgson, Robert F., to Commercial Shering & Stamping Company. Hydraulic control circuits and apparatus, 3,693,350, Cl. 60-52.00r.
- Petrolite Corporation: *See*—  
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- Petrov, Ivan Yordanov, to Nipkiem. Driving axle for electric vehicles, 3,693,745, Cl. 180-60.000.
- Pezzarossi, John Joseph: *See*—  
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- Pfeffer, Heinz: *See*—  
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- Pfisterer, Hermann; and Dietrich, Isolde, to Siemens Aktiengesellschaft. Hard superconductive materials and method of producing the same, 3,694,270, Cl. 148-11.50r.
- Pflegler, Hans, to Deutsche Gold und Silber Scheideanstalt vormals Roessler. Process of making ammonium rhodanide (NH<sub>4</sub> SCN), 3,694,148, Cl. 23-75.000.
- Philippe de Beaulieu, Henri: *See*—  
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- Phillips, Charles E., to Lockwood Manufacturing Company. Bakery pan, 3,693,824, Cl. 220-23.200.
- Phillips Petroleum Company: *See*—  
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- Needham, Donald G.; Walker, Howard B.; and Myers, Luther O., Jr., 3,694,543.
- Rollmann, Kurt W.; and Wood, Harold V., 3,694,523.
- Phillips, Robert F., to Ethyl Corporation. Pipe saddle, 3,694,009, Cl. 285-197.000.
- Phillips, Wendell Gary, to Monsanto Company. 2,6-Diorgano-1,5-dithia-2,6-diazacyclo octane-3,4,7,8-tetraones and their manufacture, 3,694,434, Cl. 260-239.30r.
- Phillips, Wendell Gary, 4,4,8,8-Tetra chloro-2,6-diorgano-15-dithia-2,6-diazacyclo-octane-3,7-diones and their manufacture, 3,694,435, Cl. 260-239.30r.
- Phillipson, John Maddison: *See*—  
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- Phoenix, Lancelot: *See*—  
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- Phonocopy, Inc.: *See*—  
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- Piazza, Thomas E., to Continental Can Company, Inc. Apparatus for making heat sealed tubes, 3,694,289, Cl. 156-380.000.
- Picard, Jean P.; and Voight, H. William, Jr., to United States of America, Army. Process and composition for use in munitions containing white phosphorus, 3,694,278, Cl. 149-29.000.
- Piccatelli, Ugo. Clam shell excavator, 3,693,274, Cl. 37-187.000.
- Picchiottino, John B.: *See*—  
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- Pickering & Co., Inc.: *See*—  
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- Piedboeuf, Georges, to Bombardier Limited. Snowmobile ski leg, 3,693,992, Cl. 280-26.000.
- Pickenbrink, Rolf; and Reinhardt, Albert. Pressure casting machine with pressure increase system, 3,693,702, Cl. 164-314.000.
- Pierce, Chardo, Micronizing Company: *See*—  
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- Pierce, Chardo W., to Pierce, Chardo, Micronizing Company. Infrared radiation of seed, 3,694,220, Cl. 99-2.000.
- Pierrot, Victor Charles, III, to Deere & Company. Delimbing and topping blade control linkage, 3,693,679, Cl. 144-2.00z.
- Pilat, Michael J., to Battelle Development Corporation, The, mesne. Source test cascade impactor, 3,693,457, Cl. 73-432.00p.
- Pilipovich, Donald: *See*—  
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- Pillsbury Company, The: *See*—  
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- Pinckers, Balthasar Hubert, to Honeywell Inc. Condition responsive circuit with limited internal dissipation, 3,694,663, Cl. 307-116.000.
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- Pioneer Electronic Corporation: *See*—  
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- Pioneer Products Company, mesne: *See*—  
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- Piotrowski, Chester J. Edible ink, 3,694,237, Cl. 106-30.000.
- Pirovano, Dante: *See*—  
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- Plastic Coating Corporation, The: *See*—  
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- Ploss, William R., to Minnesota Mining and Manufacturing Company. Valve for stethoscopic monitoring, 3,693,611, Cl. 128-205.00s.
- Pociluyko, Alexander: *See*—  
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- Podell, Howard I.; and Kehoe, Stephen J., to USM Corporation. Self-locking fasteners, 3,693,389, Cl. 72-88.000.
- Podola, Nikolai Vasilievich: *See*—  
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- Pogonowski, Ivo C., to Texaco Inc. Water surface skimmer with check valve, 3,693,801, Cl. 210-242.000.
- Poiter, Robert M.: *See*—  
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- Polaroid Corporation: *See*—  
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- Gerber, Arthur M.; Story, Sybil N.; and Walworth, Vivian K., 3,694,252.
- Gerber, Arthur M.; and Walworth, Vivian K., 3,694,253.
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- Polizzano, Fred F.: *See*—  
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- Porta-Test Manufacturing Ltd.: *See*—  
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- Pressman, Sidney, to Current Industries, Inc. Mercury vapor lamp with auxiliary light source, 3,694,692, Cl. 315-154.000.



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- Price, Rita L. Protective apron for container. 3,693,829, Cl. 220-90.000.
- Price, William H., to Eastman Kodak Company. Modified triplets with reduced secondary spectrum. 3,694,057, Cl. 350-227.000.
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- Sakamaki, Hisashi; Kimura, Yoshimasa; Sawamura, Osamu; and Sugiura, Susumu, to Canon Kabushiki Kaisha. Electrophotographic apparatus. 3,693,969, Cl. 271-57.000.
- Sakamoto, Kenro. See—
- Iwama, Masakuni; Inoue, Isaburo; Hanzawa, Teruo; Sakamoto, Kenro; and Endo, Takaya, 3,694,214.
- Salonen, Albert R. Motorized shearing implement. 3,693,254, Cl. 30-228.000.
- Salotti, Charles A. Reduction process for removing iron from spodumene. 3,694,189, Cl. 75-21.000.
- Salyer, Ival O.; and Jefferson, Robert T., to United States of America, Atomic Energy Commission. Process for open-cell rigid polyurethane foams. 3,694,385, Cl. 260-250a.
- Salzmann, Ferdinand F., to Consolidated Foods Corporation. Traverse assembly for draperies and the like. 3,693,696, Cl. 160-345.000.
- Sample, Thomas E., Jr.; and Tate, Jack F. Process for paraffin removal from hydrocarbon-bearing formations. 3,693,719, Cl. 166-304.000.
- Sana Products, Inc. See—
- Allard, Charles D.; and Allard, Eugene R., 3,694,653.
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- Young, Donald S.; and Fricke, William C., 3,694,768.
- Sanderson, George H., Jr. Snap-on spanner wrench. 3,693,484, Cl. 81-90.00c.
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- Sato, Akira. See—
- Sakaguchi, Yoshikata; Sakai, Masakado; Ohki, Masanaga; Nakamura, Yasuharu; Tsubota, Motohiko; and Sato, Akira, 3,694,217.
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- Satou, Takehide. See—
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- Saucy, Gabriel. See—
- Andrews, David; and Saucy, Gabriel, 3,694,463.
- Sauder, Kenneth D. Rotary engine. 3,693,601, Cl. 123-8.410.
- Sauer, Theo, to Agfa-Gevaert Aktiengesellschaft. Device for adding and distributing a liquid or a gas in other media. 3,693,656, Cl. 137-604.000.
- Saul, George. See—
- De Pierre, Vincent; Male, Alan T.; and Saul, George, 3,693,419.
- Saumsiegle, Robert W.; and Segmuller, Bruno J., to Rucker Company, The. Injection blow molding equipment. 3,694,124, Cl. 425-242.000.
- Sauter Packaging Company. See—
- Nichols, Matthew, 3,694,295.
- Savit, Carl H., to Western Geophysical Company of America. Method for measuring the characteristics of mechanical-to-electrical transducers. 3,693,400, Cl. 73-1.000.
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- Carville, James G.; and Rekesius, John F., 3,693,536.
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- Sawamura, Osamu. See—
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- Sawyer, Edgar W., Jr.; and Dzierzanowski, Frank J. Paper containing electroconductive pigment and use thereof. 3,694,202, Cl. 96-1.800.
- Saxena, Arjun Nath, to RCA Corporation. Schottky barrier diode. 3,694,719, Cl. 317-234.00r.
- Sayles, David C., to United States of America, Army. Polyurethane propellant composition containing isodecyl orthoformate. 3,694,277, Cl. 149-19.000.
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- Scarrott, Gordon George, to International Computers Limited. Linear motors for head actuators. 3,694,678, Cl. 310-13.000.
- Schack, Carl J.; Pilipovich, Donald; and Wilson, Richard D., to North American Rockwell Corporation. Synthesis of chlorine and bromine perchlorate. 3,694,172, Cl. 23-367.000.
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- Scheinberg, Israel Herbert. Filters and carbon monoxide indicators. 3,693,327, Cl. 55-274.000.
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- Scher, Stanley. Method of and instrument for micro-biological analysis. 3,694,317, Cl. 195-103.50r.
- Scheuerle, Willy. Driving device for heavy motor-trucks. 3,693,741, Cl. 180-23.000.
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- Schindel, Arnold, to Singer General Precision, Inc. Thrust actuator. 3,693,759, Cl. 185-40.00r.
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- Schneider, Jean-Claude, to Fabrique d'Horlogerie Chis. Tissot et Fils S.A. Calendar watch movement. 3,693,345, Cl. 58-58.000.
- Schneider, Theodor; Schubert, Karl-Friedrich; and Jakob, Heinz. Motor vehicle windshield wiper having a parking position outside the wiping area. 3,694,723, Cl. 318-443.000.
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- Schon, Kenneth A. Exercise apparatus and method for paralytic patients. 3,693,614, Cl. 128-25.000.
- Schott, Charles W. Method for making spherical beads. 3,694,528, Cl. 264-8.000.
- Schreinemakers, Josephus. Method to determine the correct depth of the lingual rim of a bite plate during the construction of a denture for a toothless mandible, or to check the correctness of the depth of the lingual rim of a lower denture as well as a plate-shaped registering element adapted to be used in this method. 3,693,257, Cl. 32-19.000.
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- Thorpe, Merle L.: *See—*  
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- Thrap, Guy A., to California Instruments Co. Method and circuit for providing a frequency meter having improved gate period means. 3,694,745, Cl. 324-78.00d.
- Thysk, Rune Nils Anders: *See—*  
Collin, Rolf Henrik; Kjallstrom, Arne Rudolf; and Thysk, Rune Nils Anders, 3,694,783.
- Ticknor, Raymond G., to Xerox Corporation. Speed control apparatus. 3,694,712, Cl. 318-7.000.
- Tidd, James A.: *See—*  
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- Tien, Ping King: *See—*  
Bergman, John George, Jr.; McFee, James Hoffman; and Tien, Ping King, 3,694,055.
- Tierney, John Robert, to Sperry Rand Corporation. Lubricating device for electric dry shaver. 3,693,758, Cl. 184-102.000.
- Tiger Products, Inc.: *See—*  
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- Tillett, Thomas J.; and Straus, Barry, to FMC Corporation. Shrouded drum skimmer. 3,693,805, Cl. 210-519.000.
- Tinger, Harold G.; and Colombo, Edward A., to Mobil Oil Corporation. Blends of low density polyethylene and butene/ethylene copolymers and high tear strength blown film made therefrom. 3,694,524, Cl. 260-897.00a.
- Tinghitella, Michael J.; and Roon, Kenneth E., to International Business Machines Corporation. Gravure printing process and apparatus using moisture-setting inks. 3,694,238, Cl. 106-30.000.
- Titangesellschaft mbH: *See—*  
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- Titus, Jack B. Integrated flight data air navigation computer system. 3,693,872, Cl. 235-78.000.
- Tiura, George Olavi: *See—*  
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- Tobey, Stephen W.; and Lourandos, Marilyn Z. Direct nitration of alkylphenols with nitric acid. 3,694,513, Cl. 260-622.00n.
- Tobin, Benjamin F., III, to Air Intake Renu. Method for inspecting filters. 3,693,406, Cl. 73-38.000.
- Toda, Kazuo; Murai, Tosuke; Miura, Chikatoshi; and Tanura, Yuichi, to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha and Nihon Boshoku Kogyo Kabushiki Kaisha. Aluminum alloy for galvanic anode. 3,694,196, Cl. 75-146.000.
- Togel, Kurt: *See—*  
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- Tokeda Chemical Industries, Ltd.: *See—*  
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- Tokyo Gas Company Limited: *See—*  
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- Tokyo Shibaura Electric Co., Ltd.: *See—*  
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- Nakamura, Masakatsu; Yonezawa, Toshio; Kato, Taketoshi; Watanabe, Masaharu; and Akatsuka, Minoru, 3,694,707.
- Tokyo Shibaura Electric Company, Ltd.: *See—*  
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- Tolman, Thomas William Charles, to Brown and Williamson Tobacco Corporation. Tobacco-smoke filter. 3,693,632, Cl. 131-266.000.
- Tomiat, Umberto. Hair curl setting and drying device. 3,693,636, Cl. 132-33.00r.
- Tomy Kogyo Co., Ltd.: *See—*  
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- Tonka Corporation: *See—*  
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- Tonsfeldt, Wayne S. Diverging tool mounts having a plurality of apertures for lateral adjustment of the tools. 3,693,725, Cl. 172-655.000.
- Toperzer, John W.; Neogi, Shibendra P.; and Beachy, Dale K., to Koppers Company. Cooling bed. 3,693,954, Cl. 266-2.00r.
- Topol, George J. Apparatus for adding material to liquids. 3,693,797, Cl. 210-96.000.
- Torrey, Anthony J. Material spreader attachment for trucks. 3,693,890, Cl. 239-668.000.
- Totius Communications Inc.: *See—*  
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- Touchette, Albert Francis, to Plastic Coating Corporation, The. Apparatus for prewetting photoelectrostatic offset masters. 3,694,071, Cl. 355-15.000.
- Toutain, Gerard Roland L. Electrical commutating switches with ball bridging contacts. 3,694,589, Cl. 200-11.00a.
- Toyama Chemical Co., Ltd.: *See—*  
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- Toyo Katsui Industries, Incorporated: *See—*  
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- Toyoda, Eiji; Noguchi, Masaaki; and Ito, Osamu, to Nippondenso Kabushiki Kaisha and Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic transmission system having a variable speed changing point. 3,693,479, Cl. 74-731.000.
- Toyoda Koki Kabushiki Kaisha: *See—*  
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- Toyooka, Tadao; Ueda, Hiromutsu; Nishida, Takeo; and Ono, Atsuo, to Matsushita Electric Industrial Co., Ltd. Surface heater for a toaster. 3,694,623, Cl. 219-200.000.
- Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*  
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- T.P.I. Limited: *See—*  
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- Trautman, Robert D., to Boeing Company, The. Retractable cargo securing device. 3,693,920, Cl. 248-119.00r.
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- Treiber, Richard W.: *See—*  
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- Trepka, William J.; and Sonnenfeld, Richard J. Halphenyllithium initiators for conjugated diene polymerization. 3,694,515, Cl. 260-665.00r.
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- Trick, Robert E., to Bucyrus-Erie Company. Multiple fulcrum valve operating lever. 3,693,474, Cl. 74-522.000.
- Trippett, Milton J., to United States of America, Air Force. Natural circulation liquid pumping system in plume pumping system for test engines. 3,693,423, Cl. 73-117.100.
- Trippet, Raymond: *See—*  
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National Aeronautics and Space Administration; Acting Administrator; with respect to an invention of:  
Ambruso, Alex. Gas operated actuator. 3,693,346, Cl. 60-36.000.  
Anderson, Tage O. Digital slop threshold data compressor. 3,694,581, Cl. 179-15.55r.  
Brown, George A.; and Harfar, Victor. Integrated circuit including field effect transistor and cermet resistor. 3,694,700, Cl. 317-101.00a.  
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van den Kroonenberg, Henricus Hubertus, to N.V. Industriële Handelscombinatie. Equipment for moving step by step a structure for carrying out operations supported on a sea-bed or the like. 3,693,363, Cl. 61-46.500.  
Van Der Linde, John R.; and Fairey, Lyle W., to General Electric Company. Contactless direct current motor reversing circuit. 3,694,715, Cl. 318-139.000.  
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Van Run, Adrianus Martinus Jacobus Gerardus: See—  
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Vandenberg, Edwin J.; and Willis, William D., to Hercules Incorporated. Dimensional stabilization of wool. 3,694,258, Cl. 117-141.000.  
Vanderschueren, Emile, to European Atomic Energy Community (Euratom). Vapor deposition apparatus. 3,693,583, Cl. 118-49.500.  
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- Verling, Crenraad W. N.; and Grossen, Victor A., to Shell Oil Company. Pipeline for the transport of gold liquids. 3,693,665, Cl. 138-149.000.  
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Vetter, Rudolph P. Shaker. 3,693,943, Cl. 259-56.000.  
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Waclawiczek, Herbert V., to Vereinigte Österreichische Eisen- und Stahlwerk Aktiengesellschaft. Continuous casting plant for continuously casting hot liquid metals. 3,693,701, Cl. 164-260.000.  
Waddington, Rogor Strange; deceased (by Sharp, David Buckley; and Rubinstein, Joan; executors); and Duval, Bruce, to T.P.I. Limited. Simulating apparatus for teaching the art of sailing. 3,693,264, Cl. 35-11.000.  
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Wakai, Shuzo; and Nabae, Mitsuo, to Matsushita Electronics Corporation. Emitter coupled multivibrator with means for preventing generation of high frequency noise. 3,694,774, Cl. 331-113.00r.  
Wakamiya, Kinji; and Kobayashi, Isamu, to Sony Corporation. Method of making integrated circuits employing selective gold diffusion thru polycrystalline regions. 3,694,276, Cl. 148-174.000.  
Wakefield, Frederick W., to United States Steel Corporation. Apparatus for locating conductor discontinuity in semi-conducting shielded cable. 3,694,736, Cl. 324-51.000.  
Wakefield, Norman; Alexander, Stuart; Morrish, James Francis; Beck, William; Groves, Raymond Sturgis; and Harvey, Michel J., to Wates Limited. Pre-cast concrete panels. 3,693,930, Cl. 249-83.000.  
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Walker, James Donald, to Chicago Bridge & Iron Company. Air-lift pump with scalloped air-liberation rings, at two levels. 3,694,106, Cl. 417-109.000.  
Walker, Patrick J., to Kinlead Industries, Incorporated. Ladder stabilizer. 3,693,756, Cl. 182-129.000.  
Wall-Able Manufacturing Corporation: See—  
Wallo, William H., 3,694,792.  
Wallach, Karl-Erhard: See—  
Lauer, Karl; Spingler, Helmut; Wallach, Karl-Erhard; and Stoeck, Georg, 3,694,158.  
Wallo, William H., to Wall-Able Manufacturing Corporation. Electrical terminal clamp. 3,694,792, Cl. 339-97.00r.  
Walls, Patrick Joseph. Internal combustion engine or compressor. 3,694,109, Cl. 417-261.000.  
Walter, Robert: See—  
Yang, Jen T.; Walter, Robert; and Mallory, Charles W., 3,694,353.  
Walton, George N., to Bridge, David, & Company. Apparatus for the production of sheets of plastics or like materials. 3,694,120, Cl. 425-145.000.  
Waltronic Company: See—  
Brandeis, Richard, 3,694,615.  
Walworth, Vivian K.: See—  
Gerber, Arthur M.; Story, Sybil N.; and Walworth, Vivian K., 3,694,252.  
Gerber, Arthur M.; and Walworth, Vivian K., 3,694,253.  
Ward, Edward J.; and Way, Rodney, to Worcester Valve Company Limited. The Servo-systems. 3,693,501, Cl. 91-186.000.  
Ward, Michael Henry Evans. Battery economy apparatus. 3,694,755, Cl. 325-392.000.  
Ward, Raymond: See—  
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Warner-Lambert Pharmaceutical Company: See—  
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Watanabe, Tamotsu; Vando, Yasuo; and Tsurugi, Kozaburo, to Nippon Kogei Kogyo Co., Ltd. Device for spraying liquid. 3,693,882, Cl. 239-296.000.  
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Watson, John, to Monarch Western Equipment Ltd. Automobile conveyor. 3,693,392, Cl. 104-172.000.



- Watt, William Doyle, Jr.: *See*—  
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- Wattenburg, Willard Harvey. Tennis stroke training device. 3,693,973, Cl. 273-73.00r.
- Way, Rodney: *See*—  
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- Weber, Franz: *See*—  
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- Weber, Heinz, to Bemshey & Co. Collapsible umbrella. 3,693,643, Cl. 135-26.000.
- Weber, Leonard J.: *See*—  
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- Weber Marking Systems, Inc.: *See*—  
Larson, Leonard G.; Anderson, Bror E.; and Schick, Margery L., 3,694,244.
- Weber, Paul E. Multiple lenslet copier. 3,694,076, Cl. 355-50.000.
- Weber, Wilbert D.; and Ashton, Robert, to Massey-Ferguson Industries Limited. Self propelled sweet corn harvester. 3,693,330, Cl. 56-12.800.
- Weck, Edward & Company, Inc.: *See*—  
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- Wedco, Inc.: *See*—  
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- Wei, Peter H. L. 2-Substituted-3a,4,5,6,7,8a-hexahydro-5a,6,7,8,9a-hexahydro-9 a-hydroxypyrido (2,1-b) benzothiazolium halides. 3,694,449, Cl. 260-294.80b.
- Wei, Peter H. L., to American Home Products Corporation. 2-Substituted-4,5,6, 7-tetrahydrobenzothiazole-4-carboxylic acids and their alkyl esters. 3,694,450, Cl. 260-294.80c.
- Weinberg, Alan E.: *See*—  
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- Weinland, Stuart L.; and Coletti, Donn K. Core removal. 3,694,264, Cl. 134-22.00r.
- Weinstein, Benjamin; and Rein, Burton Maxwell, to Mobil Oil Corporation. Catalytic oxidation of polymethylstilbene compounds. 3,694,500, Cl. 260-524.00r.
- Weinstein, Daniel. Tilting chair mechanism. 3,693,925, Cl. 248-378.000.
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- Weissenfels, Franz: *See*—  
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- Weitz, Otto, to Troster, A. J. Sowing device with pneumatic seed separator. 3,693,833, Cl. 221-211.000.
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- Werner, Ervin R., Jr., to Du Pont de Nemours, E. I., and Company. Coating compositions containing fluorocarbon polymer and lithium polysilicate. 3,694,392, Cl. 260-29.60f.
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- Westinghouse Air Brake Company: *See*—  
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- Weyerhaeuser Company: *See*—  
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- White, Eugene B., to Ken-Flo Products Corporation. Aquarium filter device. 3,693,798, Cl. 210-169.000.
- White, James C., to Propper Manufacturing Co., Inc. Slide conveyor system and method. 3,693,811, Cl. 214-8.50g.
- White, Neil S.; Wenschhof, David E.; and Mosman, Richard R., to Eastman Kodak Company. Method and apparatus for exposing a portion of a photographic strip. 3,694,083, Cl. 355-133.000.
- White, Winston Wayne, to Motorola, Inc. RF directional power monitor. 3,694,747, Cl. 324-95.000.
- Whitmore, Robert A.: *See*—  
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- Whittington, Keith Richard, to T. I. (Group Services) Limited. Scanning ultrasonic inspection method and apparatus. 3,693,415, Cl. 73-67.900.
- Wickham, John L.; and De Witt, Erik J., to Black and Decker Manufacturing Company. The Carriage stop for radial arm saw. 3,693,773, Cl. 192-142.00r.
- Wickmann, Gerhard. Reciprocating-rotary motion conversion device. 3,693,464, Cl. 74-52.000.
- Wildhaber, Ernest. Rotary cutter for cutting teeth. 3,693,225, Cl. 29-103.00r.
- Wilens, Seymour; and Trunk, Edmund G., to Stover company, The. Heat dissipator for encased semiconductor device having heat tab extending therefrom. 3,694,703, Cl. 317-234.00r.
- Wilkerson, Herman W. Fuel burner crossover arrangement. 3,694,133, Cl. 431-191.000.
- Wilkins, Howard, to General Foods Corporation. Slidable locking closure. 3,693,864, Cl. 229-17.00g.
- Willeke, William Henry. Discharge means for particulate matter dispense. 3,693,844, Cl. 222-213.000.
- Willems, Donald J.; and Markey, Everett F., to Armour and Company. Animal shackling device. 3,693,216, Cl. 17-24.000.
- Willett, Norman F.; Stout, Perry R.; and Brownell, James R. Integrating water meter. 3,693,443, Cl. 73-229.000.
- Willette, Raymond W. Tire shredder. 3,693,894, Cl. 241-279.000.
- William, Edward S.: *See*—  
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- Williams, Dennis C.: *See*—  
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- Williams, Harry Albert. Cushion protector. 3,693,619, Cl. 128-149.000.
- Williams, Kenneth A.; and Stern, David R.; deceased (by Stern, Audrey E.; executrix), to Occidental Petroleum Corporation. Liquid-liquid extraction process for the purification of phosphoric acid. 3,694,153, Cl. 23-165.000.
- Williams, Robert C., III, to Cutler-Hammer, Inc. Planetary detent for rotary devices. 3,693,475, Cl. 74-527.000.
- Willis, Robin Burke, to Porta-Test Manufacturing Ltd. Hub assembly for in-line centrifugal separator. 3,693,329, Cl. 55-457.000.
- Willis, William D.: *See*—  
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- Winslow, Alfred Edwards. Epoxidized polyamide resin forming stable aqueous solutions of high concentration. 3,694,390, Cl. 260-29.10r.
- Winter, Hans Joachim, to Goodyear Tire & Rubber Company, The. Pneumatic tire. 3,693,689, Cl. 152-361.000.
- Winterthur, Hans Fickler. Double deck-bed arrangement. 3,693,199, Cl. 5-8.000.
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- Wolf, Tobin. Peek in model kit. 3,693,281, Cl. 46-228.000.
- Wolfe, James D., to Goodyear Tire & Rubber Company, The. Method of producing an integral skin polyurethane foam. 3,694,530, Cl. 264-48.000.
- Wolfgang, Schneidlr, to Goodrich, B. F. Company, The. Isomerization of 5-vinylbicyclo(2.2.1) heft-2-enes. 3,694,517, Cl. 260-666.00p.
- Wolski, Karlheinz: *See*—  
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- Wood, Ruey E., Jr., to TRW Inc. Rack and pinion steering assembly. 3,693,999, Cl. 280-95.000.
- Wood, Stanley J., to Technitrend, Inc. Query and response system with audio message synthesizing. 3,694,811, Cl. 340-152.00r.
- Woodson Enterprises, Inc.: *See*—  
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- Yamagisawa, Yoshinari: *See*—  
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- Yamagishi, Kazuo, to Tokyo Gas Company Limited. Method and apparatus for measuring the carbon potential in gas atmospheres. 3,693,409, Cl. 73-25.000.
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- Yamamoto, Akira. Automotive suspension mechanism. 3,693,746, Cl. 180-73.01l.
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- Young, Robert W.: *See*—  
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- Yuhas, Edward R., to Fluid Chemical Company, Inc. Striped product aerosol dispenser. 3,693,837, Cl. 222-94.000.
- Zalyalien, Mansur Abdullovich; Asfandiyarov, Khalim Akhmetovich; Gubarev, Yakov Fedorovich; and Arzamashev, Filipp Grigorievich. Valve mechanism. 3,693,934, Cl. 251-149.500.
- Zangl, Karl: *See*—  
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- Zaweski, Edward F., to Ethyl Corporation. Lubricating oil. 3,694,357, Cl. 252-48.200.
- Zdanuk, Edward J.: *See*—  
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- Zdanuk, Edward J.; Krock, Richard H. and Shen, Yuan Shou, to Mallory, P. R., & Co., Inc. Electrical contact materials of silver-cadmium oxide containing additives. 3,694,197, Cl. 75-173.00r.
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- Zellweger Ltd.: *See*—  
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- Zorayan, Vahan: *See*—  
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114.5	3,693,579	133	3,694,267	30	3,694,307	40R	3,693,759	467	3,693,794	33	3,693,865	
134	3,693,580	175	3,694,268	55	3,694,308	CLASS 187	3,693,761	7	3,694,353	39B	3,693,866	
5	3,694,240	57	3,693,666	157R	3,694,310	CLASS 188	52	3,693,762	21	3,694,354	54R	3,693,867
15	3,694,241	71	3,693,644	290	3,694,311	71.4	3,693,763	78	3,693,795	56	3,693,868	
17	3,694,242	81.5	3,693,646	342	3,694,312	73.1	3,693,765	83	3,693,796	73	3,693,869	
27	3,694,243	86	3,693,645	CLASS 164	3,693,697	73.5	3,693,767	84	3,693,797	16	3,693,870	
35.5	3,694,244	363	3,693,647	51	3,693,698	285	3,693,768	96	3,693,798	CLASS 232	306.7	
36.7	3,694,245	375	3,693,648	119	3,693,699	289	3,693,769	169	3,693,799	CLASS 235	60.28	
36.9	3,694,246	414	3,693,650	250	3,693,700	CLASS 190	242	3,693,800	61.11E	3,694,629	49.6	3,694,357
37LE	Re.27,490	493	3,693,651	260	3,693,701	CLASS 191	330	3,693,801	88	3,693,873	56S	3,694,382
47A	3,694,249	557	3,693,652	314	3,693,702	CLASS 192	330	3,693,802	92PK	3,694,630	62.1	3,694,359
50	3,694,250	596	3,693,653	CLASS 165	3,693,703	CLASS 193	330	3,693,803	100R	3,693,809	62.59	3,694,360
62	3,694,251	599.1	3,693,654	8	3,693,704	CLASS 194	330	3,693,804	150.25	3,694,631	67	3,694,362
93	3,694,252	604	3,693,655	21	3,693,705	CLASS 195	330	3,693,805	150.53	3,694,632	72	3,694,363
93.31	3,694,253	608	3,693,656	22	3,693,706	CLASS 196	330	3,693,806	151.1	3,694,633	90	3,694,364
100M	3,694,254	624.18	3,693,657	23	3,693,707	CLASS 197	330	3,693,807	151.3	3,694,634	106	3,694,365
107.2P	3,694,255	625.18	3,693,658	39	3,693,708	CLASS 198	330	3,693,808	151.3	3,694,635	121	3,694,366
136	3,694,256	625.18	3,693,659	101	3,693,709	CLASS 199	330	3,693,809	151.3	3,694,636	171	3,694,367
139.5F	3,694,257	625.3	3,693,660	152	3,693,710	CLASS 200	330	3,693,810	151.3	3,694,637	301.1R	3,694,368
141	3,694,258	625.4	3,693,661	164	3,693,711	CLASS 201	330	3,693,811	151.3	3,694,638	301.4P	3,694,369
206	3,694,259	636.1	3,693,662	165	3,693,712	CLASS 202	330	3,693,812	151.3	3,694,639	316	3,694,370
210	3,694,260	184	3,693,663	184	3,693,713	CLASS 203	330	3,693,813	151.3	3,694,640	373	3,694,371
235	3,694,261	111	3,693,664	CLASS 166	3,693,715	CLASS 204	330	3,693,814	151.3	3,694,641	400	3,694,372
7	3,693,581	149	3,693,665	285	3,693,717	CLASS 205	330	3,693,815	151.3	3,694,642	402	3,694,373
49.5	3,693,582	91	3,693,667	302	3,693,718	CLASS 206	330	3,693,816	151.3	3,694,643	413	3,694,374
50	3,693,583	127P	3,693,668	304	3,693,719	CLASS 207	330	3,693,817	151.3	3,694,644	431R	3,694,375
104	3,693,584	136	3,693,669	CLASS 171	3,693,721	CLASS 208	330	3,693,818	151.3	3,694,645	451	3,694,376
304	3,693,585	196	3,693,670	61	3,693,722	CLASS 209	330	3,693,819	151.3	3,694,646	455R	3,694,377
407	3,693,586	273A	3,693,671	CLASS 172	3,693,722	CLASS 210	330	3,693,820	151.3	3,694,647	CLASS 254	62
504	3,693,589	7	3,693,672	4.5	3,693,723	CLASS 211	330	3,693,821	151.3	3,694,648	126	3,693,936
CLASS 119	3,693,590	237	3,693,673	212	3,693,724	CLASS 212	330	3,693,822	151.3	3,694,649	134	3,693,937
1	3,693,591	242	3,693,674	456	3,693,725	CLASS 213	330	3,693,823	151.3	3,694,650	172	3,693,938
16	3,693,592	22	3,693,675	655	3,693,726	CLASS 214	330	3,693,824	151.3	3,694,651	CLASS 256	1
52AF	3,693,593	32R	3,693,676	12	3,693,727	CLASS 215	330	3,693,825	151.3	3,694,652	172	3,694,284
98	3,693,595	CLASS 144	3,693,677	13	3,693,728	CLASS 216	330	3,693,826	151.3	3,694,653	CLASS 259	1
109	3,693,596	2Z	3,693,678	23	3,693,729	CLASS 217	330	3,693,827	151.3	3,694,654	1	3,693,941
32	3,693,597	3D	3,693,680	72R	3,694,564	CLASS 218	330	3,693,828	151.3	3,694,655	2	3,693,942
274	3,693,598	130	3,693,681	97	3,694,565	CLASS 219	330	3,693,829	151.3	3,694,656	56	3,693,943
483	3,693,599	325	3,693,682	117R	3,694,566	CLASS 220	330	3,693,830	151.3	3,694,657	114	3,693,944
CLASS 123	3,693,600	105	3,693,683	135	3,694,567	CLASS 221	330	3,693,831	151.3	3,694,658	146	3,693,945
8.39	3,693,601	CLASS 146	3,693,684	CLASS 174	3,694,568	CLASS 222	330	3,693,832	151.3	3,694,659	191	3,693,946
8.41	3,693,602	1.6	3,694,269	6	3,693,730	CLASS 223	330	3,693,833	151.3	3,694,660	CLASS 260	2XA
41.7	3,693,603	11.5R	3,694,270	11	3,693,731	CLASS 224	330	3,693,834	151.3	3,694,661	2.2R	3,694,383
102R	3,693,604	12	3,694,271	25	3,693,732	CLASS 225	330	3,693,835	151.3	3,694,662	2.5AT	3,694,384
119C	3,693,605	12.7	3,694,272	66	3,693,733	CLASS 226	330	3,693,836	151.3	3,694,663	2.5A	3,694,385
140MP	3,693,606	32	3,694,273	122	3,693,734	CLASS 227	330	3,693,837	151.3	3,694,664	2.5F	3,694,386
141	3,693,607	171	3,694,274	329	3,693,735	CLASS 228	330	3,693,838	151.3	3,694,665	18S	3,694,427
143R	3,693,608	174	3,694,275	410	3,693,736	CLASS 229	330	3,693,839	151.3	3,694,666	23PF	3,694,388
193C	3,693,609	CLASS 124	3,694,276	CLASS 149	3,694,277	CLASS 230	330	3,693,840	151.3	3,694,667	23TN	3,694,389
19	3,693,610	85B	3,693,610	19	3,694,278	CLASS 231	330	3,693,841	151.3	3,694,668	29.1R	3,694,390
CLASS 126	3,693,610	CLASS 127	3,694,262	29	3,693,685	CLASS 232	330	3,693,842	151.3	3,694,669	29.6F	3,694,391
44	3,694,262	21C	3,693,685	CLASS 151	3,693,685	CLASS 233	330	3,693,843	151.3	3,694,670	29.6F	3,694,392
CLASS 128	3,693,612	CLASS 152	3,693,687	CLASS 178	3,694,279	CLASS 234	330	3,693,844	151.3	3,694,671	29.7P	3,694,393
2.05D	3,693,613	5.4CK	3,694,567	6.6A	3,694,571	CLASS 235	330	3,693,845	151.3	3,694,672	29.7P	3,694,394
2.05S	3,693,614	6.6B	3,694,570	6.6B	3,694,570	CLASS 236	330	3,693,846	151.3	3,694,673	29.7P	3,694,395
24A	3,693,615	69.5TV	Re.27,492	69.5TV	Re.27,492	CLASS 237	330	3,693,847	151.3	3,694,674	29.7P	3,694,396
25R	3,693,616	CLASS 156	3,694,279	1CN	3,694,578	CLASS 238	330	3,693,848	151.3	3,694,675	32.6R	3,694,397
66	3,693,617	5R	3,694,280	5R	3,694,579	CLASS 239	330	3,693,849	151.3	3,694,676	37N	3,694,398
69	3,693,618	15AQ	3,694,580	15AQ	3,694,580	CLASS 240	330	3,693,850	151.3	3,694,677	40R	3,694,401
83B	3,693,619	15.55R	3,694,581	15.55R	3,694,581	CLASS 241	330	3,693,851	151.3	3,694,678	41B	3,694,402
132D	3,693,620	18BA	3,694,582	18BA	3,694,582	CLASS 242	330	3,693,852	151.3	3,694,679	41R	3,694,403
149	3,693,621	18EB	3,694,583	18EB	3,694,583	CLASS 243	330	3,693,853	151.3	3,694,680	41R	3,694,404
287	3,693,622	18D	3,694,584	18D	3,694,584	CLASS 244	330	3,693,854	151.3	3,694,681	41R	3,694,405
290R	3,693,623	100.2S	3,694,585	100.2S	3,694,585	CLASS 245	330	3,693,855	151.3	3,694,682	41R	3,694,406
303.1	3,693,624	100.41K	3,694,586	100.41K	3,694,586	CLASS 246	330	3,693,856	151.3	3,694,683	41R	3,694,407
351	3,693,625	107H	Re.27,487	107H	Re.27,487	CLASS 247	330	3,693,857	151.3	3,694,684	41R	3,694,408
419P	3,693,626	175.2R	3,694,587	175.2R	3,694,587	CLASS 248	330	3,693,858	151.3	3,694,685	41R	3,694,409
5	3,693,627	CLASS 180	3,693,740	8R	3,693,741	CLASS 249	330	3,693,859	151.3	3,694,686	41R	3,694,410
70	3,693,630	23	3,693,741	23	3,693,742	CLASS 250	330	3,693,860	151.3	3,694,687	41R	3,694,411
140P	3,693,631	24.05	3,693,743	24.05	3,693,743	CLASS 251	330	3,693,861	151.3	3,694,688	41R	3,694,412
266	3,693,632	53R	3,693,744	53R	3,693,744	CLASS 252	330	3,693,862	151.3	3,694,689	41R	3,694,413
9	3,693,633	60	3,693,745	60	3,693,745	CLASS 253	330	3,693,863	151.3	3,694,690	41R	3,694,414
33R	3,693,634	73.2R	3,693,746	73.2R	3,693,746	CLASS 254	330	3,693,864	151.3	3,694,691	41R	3,694,415
55	3,693,635	79.2R	3,693,747	79.2R	3,693,747	CLASS 255	330	3,693,865	151.3	3,694,692	41R	3,694,416
91	3,693,636	CLASS 181	3,693,748	10	3,694,342	CLASS 256	330	3,693,866	151.3	3,694,693	41R	3,694,417
CLASS 134	3,694,263	20	3,693,749	20	3,693,749	CLASS 257	330	3,693,867	151.3	3,694,694	41R	3,694,418
22R	3,694,264	31A	3,693,750	31A	3,693,750	CLASS 258	330	3,693,868	151.3	3,694,695	41R	3,694,419
69	3,693,639	33F	3,693,751	33F	3,693,751	CLASS 259	330	3,693,869	151.3	3,694,696	41R	3,694,420
169R	3,693,640	33G	3,693,752	33G	3,693,752	CLASS 260	330	3,693,870	151.3	3,694,697	41R	3,694,421
CLASS 135	3,693,641	CLASS 182	3,693,753	86	3,693,753	CLASS 261	330	3,693,871	151.3	3,694,698	41R	3,694,422
25	3,693,642	102	3,693,754	102	3,693,754	CLASS 262	330	3,693,872	151.3	3,694,699	41R	3,694,423
26	3,693,643											



## CLASSIFICATION OF DESIGNS

D 2—	19	224,820	D 8—	246	224,826	D15—	8	224,832	D44—	29	224,838	D61—	1	224,844		224,848	
	233	224,821	D 9—	42	224,828	D22—	28	224,833	D48—	24	224,839	D72—		224,845	D87—	1	224,849
D 5—	5	224,822		47	224,827	D23—	35	224,834	D52—	2	224,840			224,853	D88—	3	224,850
D 6—	20	224,823		154	224,829	D26—	5	224,835	D56—	1	224,841	D74—	24	224,846	D92—	26	224,851
	75	224,824	D13—	1	224,830	D34—		224,837	D59—	6	224,843	D86—	8	224,847	D95—	3	224,852
	146	224,825			224,831		15	224,836		14	224,842						

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## PATENTS

1	3,693,418	3,693,659	3,694,412	3,694,310	3,693,223	3,694,014
	3,693,825	3,693,663	3,694,451	3,694,669	3,693,235	3,694,049
	3,693,831	3,693,691	3,694,476	3,694,672	3,693,237	3,694,051
	3,694,277	3,693,710	3,694,495	3,694,687	3,693,258	3,694,061
3	3,693,195	3,693,724	3,694,521	3,694,694	3,693,273	3,694,076
4	3,693,302	3,693,738	3,694,566	3,694,770	3,693,290	3,694,078
	3,693,334	3,693,795	3,694,581	3,693,590	3,693,298	3,694,106
	3,693,972	3,693,818	3,694,603	3,693,621	3,693,304	3,694,161
	3,694,104	3,693,820	3,694,620	3,693,939	3,693,335	3,694,244
	3,694,733	3,693,823	3,694,642	3,694,226	3,693,351	3,694,245
	3,694,763	3,693,832	3,694,653	3,694,258	3,693,381	3,694,263
5	3,693,212	3,693,843	3,694,657	3,694,323	3,693,386	3,694,264
	3,693,365	3,693,849	3,694,660	3,694,363	3,693,402	3,694,285
6	Re 27,491	3,693,872	3,694,668	3,694,386	3,693,406	3,694,293
	3,693,194	3,693,880	3,694,744	3,694,422	3,693,407	3,694,298
	3,693,227	3,693,888	3,694,745	3,694,431	3,693,430	3,694,324
	3,693,239	3,693,915	3,694,752	3,694,460	3,693,431	3,694,344
	3,693,247	3,693,921	3,694,758	3,694,499	3,693,458	3,694,347
	3,693,248	3,693,924	3,694,769	3,693,580	3,693,459	3,694,350
	3,693,261	3,693,931	3,694,771	3,693,688	3,693,495	3,694,352
	3,693,280	3,693,936	3,694,772	3,694,023	3,693,503	3,694,369
	3,693,282	3,693,940	3,694,775	3,693,287	3,693,512	3,694,374
	3,693,288	3,693,953	3,694,777	3,693,293	3,693,544	3,694,409
	3,693,289	3,693,973	3,694,782	3,693,560	3,693,545	3,694,432
	3,693,305	3,693,982	3,693,192	3,693,601	3,693,564	3,694,561
	3,693,331	3,694,025	3,693,411	3,693,611	3,693,595	3,694,588
	3,693,346	3,694,047	3,693,412	3,693,638	3,693,612	3,694,591
	3,693,364	3,694,059	3,693,489	3,693,718	3,693,647	3,694,595
	3,693,367	3,694,067	3,693,666	3,693,817	3,693,671	3,694,630
	3,693,370	3,694,081	3,693,918	3,693,841	3,693,678	3,694,648
	3,693,375	3,694,086	3,694,147	3,693,929	3,693,680	3,694,666
	3,693,382	3,694,105	3,694,413	3,694,398	3,693,737	3,694,671
	3,693,387	3,694,122	3,694,621	3,694,433	3,693,756	3,694,676
	3,693,440	3,694,131	3,694,773	3,694,503	3,693,762	3,694,680
	3,693,443	3,694,133	3,693,210	3,694,533	3,693,774	3,694,710
	3,693,446	3,694,150	3,693,224	3,694,644	3,693,776	3,694,721
	3,693,461	3,694,153	3,693,226	3,694,679	3,693,798	3,694,731
	3,693,463	3,694,166	3,693,228	3,694,803	3,693,807	3,694,737
	3,693,464	3,694,172	3,693,413	3,693,307	3,693,815	3,694,747
	3,693,465	3,694,174	3,693,436	3,693,491	3,693,846	3,694,750
	3,693,483	3,694,184	3,693,462	3,693,637	3,693,853	3,694,776
	3,693,486	3,694,200	3,693,557	3,693,784	3,693,857	3,694,779
	3,693,496	3,694,218	3,693,572	3,693,804	3,693,863	3,694,792
	3,693,525	3,694,236	3,693,778	3,693,868	3,693,864	3,693,197
	3,693,543	3,694,272	3,693,910	3,693,869	3,693,870	3,693,277
	3,693,579	3,694,284	3,694,129	3,693,913	3,693,883	3,693,424
	3,693,619	3,694,317	3,694,205	3,694,189	3,693,907	3,693,449
	3,693,622	3,694,321	3,694,224	3,693,357	3,693,928	3,693,506
	3,693,623	3,694,343	3,694,250	3,693,213	3,693,978	3,693,609
	3,693,624	3,694,345	3,694,273	3,693,216	3,693,985	3,693,654
	3,693,657	3,694,361	3,694,280	3,693,220	3,693,996	3,693,706



## GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

3,693,761	3,694,513	32	Re: 27,488	3,693,347	3,694,785	3,694,291
3,693,781	3,694,622		3,694,128	3,693,355	3,694,800	3,694,658
3,693,839	3,694,631	33	3,694,618	3,693,368	3,694,805	3,694,689
3,693,943	3,694,645		3,694,665	3,693,373	3,694,813	3,694,711
3,693,988	3,694,647		3,694,768	3,693,383	3,694,827	3,694,727
3,694,006	3,694,656	34	Re: 27,486	3,693,389	3,693,341	3,693,204
3,694,163	3,694,734		Re: 27,490	3,693,416	3,693,475	3,693,231
3,694,190	3,694,736		Re: 27,492	3,693,445	3,693,500	3,693,238
3,694,406	3,694,741		3,693,250	3,693,448	3,693,552	3,693,242
3,694,437	3,694,793		3,693,281	3,693,473	3,693,631	3,693,251
3,694,567	3,693,189	26	3,693,342	3,693,504	3,693,775	3,693,268
3,694,717	3,693,243		3,693,388	3,693,517	3,694,516	3,693,315
3,694,756	3,693,262		3,693,432	3,693,520	3,694,606	3,693,322
3,694,786	3,693,309		3,693,490	3,693,521	3,694,649	3,693,324
3,694,787	3,693,320		3,693,510	3,693,526	3,693,692	3,693,356
3,693,229	3,693,399		3,693,515	3,693,558	Re: 27,484	3,693,403
3,693,507	3,693,410		3,693,536	3,693,581	Re: 27,495	3,693,420
3,693,593	3,693,471		3,693,561	3,693,591	3,693,209	3,693,426
3,693,653	3,693,478		3,693,565	3,693,596	3,693,219	3,693,444
3,693,679	3,693,480		3,693,566	3,693,613	3,693,230	3,693,502
3,693,886	3,693,494		3,693,589	3,693,635	3,693,241	3,693,538
3,693,901	3,693,497		3,693,618	3,693,672	3,693,265	3,693,548
3,693,905	3,693,508		3,693,658	3,693,715	3,693,303	3,693,568
3,693,927	3,693,567		3,693,687	3,693,767	3,693,306	3,693,604
3,693,944	3,693,614		3,693,713	3,693,780	3,693,350	3,693,704
3,694,100	3,693,641		3,693,759	3,693,787	3,693,421	3,693,717
3,694,314	3,693,644		3,693,783	3,693,836	3,693,421	3,693,785
3,693,193	3,693,676	20	3,693,811	3,693,837	3,693,805	3,693,805
3,693,278	3,693,703		3,693,828	3,693,842	3,693,862	3,693,862
3,693,534	3,693,729		3,693,847	3,693,859	3,693,865	3,693,874
3,693,873	3,693,748		3,693,850	3,693,932	3,693,874	3,693,892
3,694,004	3,693,770		3,693,875	3,693,975	3,693,892	3,693,954
3,694,332	3,693,856		3,693,877	3,693,993	3,693,954	3,693,970
3,694,423	3,693,903		3,693,911	3,694,021	3,693,993	3,694,011
3,694,483	3,693,963		3,693,923	3,694,050	3,694,029	3,694,029
3,694,596	3,693,964		3,693,983	3,694,052	3,694,064	3,694,064
3,694,743	3,694,001		3,694,015	3,694,057	3,694,103	3,694,103
3,693,313	3,694,002	21	3,694,053	3,694,058	3,694,124	3,694,124
3,693,425	3,694,003		3,694,055	3,694,068	3,693,705	3,694,180
3,693,562	3,694,017		3,694,088	3,694,073	3,693,734	3,694,181
3,693,629	3,694,024		3,694,093	3,694,074	3,693,749	3,694,192
3,693,649	3,694,027		3,694,097	3,694,075	3,693,757	3,694,234
3,694,070	3,694,048		3,694,112	3,694,079	3,693,771	3,694,237
3,694,701	3,694,156	22	3,694,113	3,694,083	3,693,788	3,694,239
3,693,569	3,694,175		3,694,121	3,694,085	3,693,809	3,694,286
3,693,732	3,694,182		3,694,132	3,694,096	3,693,824	3,694,295
3,693,733	3,694,249		3,694,176	3,694,101	3,693,830	3,694,299
3,694,009	3,694,269		3,694,191	3,694,107	3,693,844	3,694,326
3,694,256	3,694,325		3,694,202	3,694,145	3,693,866	3,694,351
3,694,397	3,694,328		3,694,231	3,694,154	3,693,914	3,694,365
3,694,466	3,694,357	23	3,694,232	3,694,171	3,693,916	3,694,371
3,693,190	3,694,382	24	3,694,238	3,694,201	3,693,941	3,694,389
3,693,296	3,694,416		3,694,240	3,694,210	3,693,946	3,694,392
3,693,439	3,694,478		3,694,246	3,694,216	3,693,950	3,694,393
3,693,482	3,694,479		3,694,275	3,694,228	3,693,976	3,694,430
3,693,493	3,694,498		3,694,278	3,694,233	3,693,994	3,694,447
3,693,577	3,694,502		3,694,281	3,694,235	3,693,998	3,694,449
3,693,773	3,694,536		3,694,287	3,694,251	3,693,999	3,694,450
3,693,955	3,694,552		3,694,304	3,694,254	3,694,007	3,694,455
3,694,041	3,694,611		3,694,305	3,694,255	3,694,010	3,694,514
3,694,042	3,694,615		3,694,306	3,694,260	3,694,012	3,694,528
3,694,241	3,694,627		3,694,346	3,694,267	3,694,018	3,694,531
3,694,353	3,694,637		3,694,368	3,694,294	3,694,040	3,694,537
3,694,464	3,694,806		3,694,377	3,694,296	3,694,043	3,694,592
3,694,557	3,693,573	27	3,694,407	3,694,318	3,694,084	3,694,593
3,694,558	3,693,610		3,694,442	3,694,338	3,694,094	3,694,613
3,694,748	3,693,725		3,694,446	3,694,354	3,694,134	3,694,634
3,694,760	3,693,750		3,694,452	3,694,356	3,694,215	3,694,636
3,694,808	3,693,782		3,694,463	3,694,358	3,694,230	3,694,650
3,693,266	3,693,848		3,694,481	3,694,359	3,694,243	3,694,695
3,693,267	3,693,894		3,694,482	3,694,362	3,694,257	3,694,702
3,693,318	3,693,900		3,694,491	3,694,375	3,694,262	3,694,718
3,693,354	3,694,072		3,694,500	3,694,384	3,694,283	3,694,724
3,693,374	3,694,111		3,694,508	3,694,390	3,694,289	3,694,735
3,693,384	3,694,229		3,694,509	3,694,411	3,694,313	3,694,757
3,693,396	3,694,301		3,694,512	3,694,426	3,694,331	3,694,767
3,693,516	3,694,336		3,694,529	3,694,429	3,694,360	3,693,260
3,693,571	3,694,404		3,694,553	3,694,440	3,694,364	3,694,308
3,693,627	3,694,590		3,694,587	3,694,462	3,694,372	3,693,285
3,693,712	3,694,608		3,694,594	3,694,484	3,694,385	3,693,376
3,693,758	3,694,663		3,694,677	3,694,494	3,694,405	3,693,617
3,693,806	3,694,789		3,694,693	3,694,496	3,694,424	3,693,739
3,693,808	3,694,807		3,694,699	3,694,524	3,694,480	3,694,607
3,693,829	3,693,626	28	3,694,716	3,694,527	3,694,517	3,694,790
3,693,878	Re: 27,493	29	3,694,719	3,694,556	3,694,541	3,693,222
3,693,890	3,693,472		3,694,749	3,694,571	3,694,599	3,693,314
3,693,891	3,693,542		3,694,761	3,694,579	3,694,609	3,693,338
3,693,893	3,693,553		3,694,765	3,694,583	3,694,664	3,693,371
3,693,906	3,693,554		3,694,788	3,694,585	3,694,667	3,693,484
3,693,926	3,693,555		3,694,811	3,694,586	3,694,696	3,694,019
3,693,967	3,693,574		3,693,731	3,694,600	3,694,697	3,694,117
3,694,044	3,693,634	35	3,693,902	3,694,604	3,694,714	3,693,423
3,694,054	3,693,673		3,694,274	3,694,626	3,694,729	3,693,584
3,694,071	3,693,909		3,694,367	3,694,628	3,693,323	3,693,840
3,694,080	3,693,938		3,694,437	3,694,643	3,693,408	3,693,945
3,694,099	3,694,137	36	Re: 27,485	3,694,675	Re: 27,485	3,693,576
3,694,197	3,694,144		Re: 27,494	3,694,685	3,694,685	3,694,722
3,694,198	3,694,165		3,693,225	3,694,691	3,693,800	3,693,274
3,694,204	3,694,221		3,693,233	3,694,692	3,694,515	3,693,310
3,694,206	3,694,434		3,693,269	3,694,703	3,694,523	3,693,360
3,694,247	3,694,435		3,693,270	3,694,712	3,694,543	3,693,361
3,694,252	3,694,518		3,693,271	3,694,725	3,693,232	3,693,362
3,694,253	3,694,625		3,693,283	3,694,726	3,693,275	3,693,400
3,694,329	3,694,730		3,693,286	3,694,746	3,693,585	3,693,435
3,694,439	3,694,530	31	3,693,292	3,694,764	3,693,592	3,693,451
3,694,477	3,694,798		3,693,327	3,694,766	3,693,754	3,693,452

## GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

3,693,460	3,694,095		3,694,033	3,694,373	3,693,920	3,693,855
3,693,487	3,694,143	50	3,693,297	3,694,458	3,694,183	3,694,164
3,693,531	3,694,220		3,694,539	3,694,670	3,694,370	3,694,266
3,693,537	3,694,341	51	3,693,427	3,694,715	3,693,326	3,694,268
3,693,711	3,694,342		3,693,530	3,694,742	3,693,252	3,694,300
3,693,714	3,694,490		3,693,690	3,693,312	3,693,319	3,694,399
3,693,719	3,694,654		3,693,722	3,693,333	3,693,474	3,694,410
3,693,720	3,694,700		3,693,835	3,693,457	3,693,598	3,694,461
3,693,736	3,694,753		3,693,979	3,693,587	3,693,696	3,694,501
3,693,801	3,694,754		3,694,123	3,693,721	3,693,792	3,694,662
3,693,884	3,694,791		3,694,135	3,693,813	3,693,793	3,694,794
3,693,951	3,694,819	49	3,694,136	3,693,919	3,693,838	3,694,799
3,694,008						3,694,146

## DESIGN PATENTS

6	224,832	16	224,830	25	224,852	224,840	224,846	224,827
	224,835	17	224,839	26	224,821	224,850	224,849	224,834
	224,837		224,853		224,824		224,828	224,845
12	224,825	18	224,829		224,842	34	224,843	224,847
	224,831	20	224,833		224,848	36	224,826	224,838
13	224,822	22	224,841	29	224,820		224,823	



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**MICRO PHOTO DIVISION**



**BELL & HOWELL**

**S<sub>W</sub>**